NYC Recovery | Community Development Block Grant Disaster Recovery

THE CITY OF NEW YORK

ACTION PLAN INCORPORATING AMENDMENTS 1-9

May 14, 2015

For CDBG-DR Funds
Disaster Relief Appropriations Act of 2013
(Public Law 113-2, January 29, 2013)

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I. EXECUTIVE SUMMARY

Hurricane Sandy hit New York City on October 29, 2012. Over the course of 48 hours, wind, rain, and water destroyed approximately 300 homes, left hundreds of thousands of New Yorkers without power, damaged critical public and private infrastructure, and left many New Yorkers vulnerable with limited access to food, drinking water, healthcare, and other critical lifesaving functions. The City of New York's immediate preparation and response to Hurricane Sandy was one of the largest mobilizations of public services in the City's history.

The response to Hurricane Sandy has demonstrated the dedication of the City's workforce and the perseverance of New Yorkers to recover and rebuild. The Community Development Block Grant Disaster Recovery (CDBG-DR) program provides communities with resources to address a wide range of community development needs; the programs outlined in this Action Plan describe how New York City will use its CDBG-DR allocations to support recovery from Hurricane Sandy and to build resiliency to the challenges of climate change. This Action Plan includes programs to build and support housing, businesses, resiliency, and New York City infrastructure and other City services. On May 7, 2013, the Department of Housing and Urban Development (HUD) approved the City's initial Action Plan, which detailed the City's plans for its first allocation of $1,772,820,000 of CDBG-DR funding. On November 18, 2013, HUD announced a second round of funding and the City of New York was awarded an additional $1,447,000,000. The City was awarded a third allocation totaling $994,056,000 on October 16, 2014, bringing the City's total CDBG-DR funding to $4,213,876,000.

Any change greater than $1 million in funding committed to a certain program, the addition or deletion of any program, or change in the designated beneficiaries of a program constitutes a substantial amendment and such amendment will be available for public review and approval by HUD. A comment period of at least thirty (30) days and at least one public hearing are required for all substantial amendments to the Action Plan. From time to time, the City may also make non-substantial amendments to its Action Plan. Non-substantial amendments do not require a public comment period but must be posted on the City's website.

The City's Action Plan, all amendments, and its responses to public comments can be found on the City's CDBG-DR website: www.nyc.gov/cdbg. The City's amendments to its Action Plan are listed below. More detail on what was part of the amendment can be found on the City's website.

- Amendment 1 (substantial amendment) – approved by HUD on August 23, 2013
- Amendment 2 (non-substantial amendment) – acknowledged by HUD on August 5, 2013
- Amendment 3 (non-substantial amendment) – acknowledged by HUD on October 4, 2013
- Amendment 4 (substantial amendment) – approved by HUD on November 25, 2013
- Amendment 5A (substantial amendment) – approved by HUD on April 18, 2014
- Amendment 5B (substantial amendment) – approved by HUD on June 13, 2014
- Amendment 6 (non-substantial amendment) – acknowledged by HUD on July 24, 2014
- Amendment 7 (non-substantial amendment) – acknowledged by HUD on December 17, 2014
- Amendment 8A (substantial amendment) – approved by HUD on February 13, 2015
- Amendment 8B (substantial amendment) – approved by HUD on April 13, 2015
- Amendment 9 (non-substantial amendment) – acknowledged by HUD on May 14, 2015

For details of the citizen participation plan, see the Citizen Participation Plan in Section XIII of this document.

Table: Summary of programs and allocations in the New York City CDBG-DR Action Plan

Program Name ($s in Ks)	Approved 1st and 2nd Allocations (as of Amendment 8A)	Reallocations to Build it Back and Other Adjustments	$98M in Business Reallocations	Total of Reallocation of 1st and 2nd Allocations	3rd Allocation (Formula Funds)	3rd Allocation (Rebuild By Design)	Total
Housing	**1,695,000**	**200,000**	**-**	**200,000**	**564,056**	**-**	**2,459,056**
Build it Back Rehab and Reconstruction (1-4 Unit Homes)	1,019,000	200,000		200,000	494,056		1,713,056
Build it Back Multi-Family Building Rehabilitation (5+ Units)	346,000			-	70,000		416,000
Build it Back Workforce Development	3,000			-	-		3,000
Rental Assistance	19,000			-			19,000
Public Housing Rehabilitation and Resilience	308,000			-			308,000
Business	**266,000**	**(90,000)**	**(53,000)**	**(143,000)**	**-**	**-**	**123,000**
Business Recovery Loan and Grant Program	42,000	6,000		6,000			48,000
Business Resiliency Investmnet Program	110,000	(12,000)	(98,000)	(110,000)			-
Neighborhood Game Changer Investment Competition	84,000	(84,000)		(84,000)			-
Business PREP			3,000	3,000			3,000
Resiliency Innovations for a Stronger Economy (RISE:NYC)	30,000			-			30,000
Restoration of Saw Mill Creek Marsh			12,000	12,000			12,000
Coney Island Green Infrastructure Improvements			15,000	15,000			15,000
Rockaways Commercial Corridor Resiliency	-		15,000	15,000			15,000
Infrastructure and Other City Services	**805,000**	**(50,000)**	**-**	**(50,000)**	**-**	**-**	**755,000**
Public Services	367,000	(44,500)		(44,500)			322,500
Emergency Demolition	2,000			-			2,000
Debris Removal/Clearance	12,500			-			12,500
Code Enforcement	1,000			-			1,000
Rehabilitation/Reconstruction of Public Facilities	324,500	(5,500)		(5,500)			319,000
Interim Assistance	98,000			-			98,000
Coastal Resiliency	**284,000**	**(62,000)**	**53,000**	**(9,000)**	**-**	**355,000**	**630,000**
Coastal Protection	224,000	(65,000)		(65,000)			159,000
Residential Building Mitigation Program	60,000			-			60,000
Staten Island University Hospital			28,000	28,000			28,000
East Side Coastal Resiliency	-	3,000		3,000		335,000	338,000
Hunts Point Resiliency	-		25,000	25,000		20,000	45,000
PROGRAM TOTAL	**3,050,000**	**(2,000)**	**-**	**(2,000)**	**564,056**	**355,000**	**3,967,056**
Planning and Administration	**169,820**	**2,000**	**-**	**2,000**	**75,000**	**-**	**246,820**
Planning	74,463	(13,723)		(13,723)	25,000		85,740
Administration	95,357	15,723		15,723	50,000		161,080
GRAND TOTAL	**3,219,820**	**-**	**-**	**-**	**639,056**	**355,000**	**4,213,876**

These allocations are based on the best data currently available and reflect projections of need to support the programs. It can be anticipated there will be future adjustments based on actual experience as programs are implemented; however, neither planning nor administrative expenses will surpass their statutory caps.

The amounts for Planning and Administration in the table above consist of new funds set aside from the City's third allocation, as well as other reallocations within existing allocations. The City anticipates that only 5.9 percent of grant funding will go to Planning and Administration; this includes 3.8 percent of the total budget for Administration. The HUD requirements for this grant are that no more than 20 percent of funds go towards Planning and Administration and no more than 5 percent of total funds go towards Administration. The City is well within this requirement. A total of 94.2 percent of CDBG-DR funds are going directly to recovery and resiliency programs.

II. INTRODUCTION

Initial Storm Response

With more than 520 miles of waterfront and 400,000 people in the highest risk areas for flooding, New York City is one of the cities most susceptible to hurricanes and coastal storms in the country. Hurricane Sandy, which hit New York City on October 29, 2012, was unlike any storm in the City's long recorded history and followed a century in which sea levels have risen by more than one foot. The power and strength with which the storm hit and the destruction it left in its wake resulted from a worst-case scenario combination of weather patterns: Sandy's arrival coincided with a full moon that gave rise to astronomical high tides approximately 5 percent higher than normal; a rare "leftward hook" that changed the course of the storm and putNew York City in its northwest quadrant which had the strongest winds. These factors led to the massive storm surge that hit many waterfront neighborhoods – from the Rockaways, to Midland Beach and other communities on Staten Island's East and South shores, to Coney Island, Hamilton Beach, Gerritsen Beach, Orchard Beach, and the South Street Seaport in Lower Manhattan. Water levels at the Battery reached an unprecedented 14 feet – a scenario that the Federal Emergency Management Agency (FEMA) estimated had a less than 1 percent chance of happening in any given year. Tragically, 44 New Yorkers lost their lives in the storm.

Starting several days before the storm, Mayor Bloomberg convened daily executive-level briefings at City Hall and New York City's Office of Emergency Management (OEM) headquarters in Brooklyn to receive detailed information from City Commissioners and senior staff, the National Weather Service, and partners such as the Metropolitan Transportation Authority (MTA) and the New York State Department of Health (NYS DOH). These briefings, along with worsening weather forecasts, led OEM to activate the Emergency Operations Center (EOC), which became the nerve center for all decision-making and storm response management and centralized active preparations for the storm across City agencies and relevant partners. Based on the storm's trajectory and strength, the City opened the Logistics Center (LC) to provide various supplies and equipment; the Healthcare Evacuation Center (HEC) to prepare for the possible evacuation of healthcare facilities; and deployed the Emergency Supply Stockpile (ESS) to ready the schools within the City's shelter system. The decision with the most significant repercussions – whether to issue a mandatory evacuation – resulted from updated storm surge predictions from the National Weather Service (NWS) on the morning of October 28, 2012.

After the storm arrived, the New York City Police Department (NYPD) Special Operations division rescued more than 1,200 people, with likely many more unreported rescues by other divisions, and the Fire Department of New York (FDNY) rescued at least another 500 New Yorkers. Power outages beginning at approximately eight o'clock on the evening of October 29, 2012 disrupted other aspects of maintaining public safety. In response, the City sourced approximately 500 light towers to place in affected communities. The NYPD also provided traffic management and intersection control in some areas without signals. The City also deployed as many generators as it could source to meet a demand that exceeded the number of requests from any other incident. Prioritizing placement to locations that asked for generators to protect life and safety, the City worked with FEMA and the US Army Corps of Engineers (USACE) to deploy approximately 230 generators to hospitals, nursing homes, large multi-family buildings, and New York City Housing Authority (NYCHA) developments in the days following the storm. The City worked closely with Con Edison and the Long Island Power Authority (LIPA) to monitor power restoration, which was largely restored to Manhattan south of 39th Street by November 3, 2012, approximately five days after the storm.

To provide New Yorkers with a safe place to evacuate, the City opened the first tier of evacuation shelters – enough for up to 71,000 people – the morning of Sunday, October 28, 2012, with enough time to allow

people to collect their belongings and travel inland while it was safe to do so, and before the MTA shut down the subway and bus system. The City also opened eight Special Medical Needs Shelters (SMNS) staffed with medical professionals and administration from the City's Health and Hospitals Corporation (HHC), mental health professionals from the City's Department of Health and Mental Hygiene (DOHMH), medical volunteers from the City's Medical Reserve Corps, and Federal Disaster Medical Assistance Teams (DMATs) comprised of 25 doctors, nurses, mental health professionals, and clinical personnel. The City's Medical Reserve Corps, a group of medical professional volunteers organized and managed by DOHMH also worked more than 18,000 hours over the course of the storm.

After the storm, New Yorkers' ability to live and work in the City's building stock was compromised in two ways: through immediate damage from storm surge and wind and through outages from damage to power, gas, and water networks. The restoration of homes and commercial buildings required City agencies, utility companies, and private property owners to work together to assess the needs of each property and sequence the work, which included dewatering, structural assessment, and generator installation, to ensure everyone's safety and as efficient a use of resources as possible. Saltwater inundation of building systems was particularly destructive – NYCHA sourced temporary boilers from as far away as Texas in order to restore heat and hot water to all occupied buildings by November 18, 2012.

The City's Department of Environmental Protection (DEP) and the Department of Transportation (DOT) pumped out many of their own facilities, including wastewater treatment plants, and worked closely with USACE and the Navy to pump out the Battery Park Underpass and the West Street Underpass. USACE also assisted in major tunnel and subway pumping operations for the MTA and Port Authority, and many of the critical parts of the City's transportation network came back online in record time. The City's and MTA's extensive preparations leading up to the storm, including shutting down the subway system to move trains and equipment to higher ground and placing sandbags at vulnerable assets, allowed the City's transportation and wastewater systems to endure the storm with far less damage than otherwise would have been the case.

On Wednesday, October 31, 2012, the City's Department of Buildings (DOB) began conducting damage assessments of residential and commercial buildings in inundated areas. The first set of assessments – called windshield assessments – provided a rough overview of flooding damage and provided the baseline from which DOB made building-specific assessments, categorizing each as green (safe), yellow (use caution), or red (structurally unsound). DOB followed the windshield, or "rapid" assessments, with detailed assessments of all red- and yellow-tagged properties and conducted extensive outreach to homeowners, architects, and contractors. Many homes were reclassified from red or yellow to yellow or green as property owners made repairs. The Mayor's Fund to Advance New York City[1] sponsored local cleanup teams from the Doe Fund and the Center for Employment Opportunities, two local non-profits that provide training and employment to underemployed New Yorkers. Hurricane Sandy completely destroyed approximately 300 homes across Brooklyn, Queens, and Staten Island, and damaged thousands more, creating a need for many New Yorkers to seek temporary housing or immediate home repairs. For those evacuees who were unable to return to their homes and remained in emergency shelters, the City entered into agreements with hotels to provide alternative stable, short-term evacuation sheltering. The newly-created Office of Housing Recovery Operations (HRO) created the Hotel Operations Desk, staffed with personnel from the City's Department of Housing Preservation and Development (HPD), Department of

[1] The Mayor's Fund to Advance New York City is a 501(c)(3) non-profit organization, which is supporting immediate needs as well as long-term restoration efforts in the wake of Hurricane Sandy.

Homeless Services (DHS), and the Mayor's Office to reserve hotel rooms and place families into them. DHS transitioned remaining evacuees from shelters to hotels beginning November 12, with additional incoming referrals from the National Guard's door-to-door outreach program and from non-profit providers at public evacuation shelters through November 19, 2012. DHS providers delivered on-site case management services at the hotels to connect evacuees to City or Federal benefits and worked with households to develop a longer-term plan for permanent housing.

On the principle that the best temporary housing is permanent housing, the City worked with FEMA to develop and implement the Federal Sheltering and Temporary Essential Power (STEP) program as NYC Rapid Repairs, a free program to restore power, heat, and hot water to private homes. Rapid Repairs was the first program of its kind in the country, repairing more than 11,800 homes representing more than 20,000 units when it concluded at the end of March 2013. At the peak of the program in January 2013, Rapid Repairs completed work on more than 200 homes per day with labor from more than 2,300 skilled workers in a single day working under 9 prime contractors. The City will use CDBG-DR funds to reimburse this program.

After the demand for generators in the interest of life and safety was met, the next highest priority was the restoration of NYCHA's building systems: approximately 80,000 residents in over 400 buildings were affected by loss of power, heat, or hot water. NYCHA staff worked to restore at least temporary services as quickly as possible, though many buildings subjected to salt water and sand required a significant amount of work to bring them even to this standard. The City also worked with the owners of large multi-family buildings in the HPD portfolio and used contact information from tax records and water accounts to reach out to building owners to work with them and to hold them responsible for restoring habitability.

Sandy triggered one of the most severe fuel shortages in the City's history by damaging energy infrastructure along the regional supply chain, including fuel terminals, pipelines, and gas stations. City agencies had prepared for this possibility by fueling vehicles and generators before the storm, but the enormous scale of the cleanup and recovery operation required more fuel than the maximum capacity of the City's fuel sites. Beginning Sunday, November 4, the City worked with the National Guard to set up a fueling operation at Floyd Bennett Field for City vehicles, para-transit vehicles, and other first responders and critical recovery-related personnel. Along with two satellite locations at Fort Wadsworth in Staten Island and Orchard Beach in the Bronx, more than 22,000 emergency and other essential vehicles filled up through this partnership with the National Guard. First responders, including private ambulances, also had the option to fuel at 10 NYPD-managed Hess locations throughout the City.

Sandy generated an estimated over 700,000 tons of storm debris, which included construction and demolition debris, sand, concrete, and more than 27,000 tons of wood debris from nearly 20,000 downed trees and limbs. Clearing this debris from the public right-of-way and from storm-damaged homes removed obstacles and hazards from roads and allowed residents to safely and quickly dispose of wet and damaged housing materials. The City activated its Debris Removal Task Force (DRTF) to coordinate the collection and removal of debris from the City's rights-of-way to seven NYS Department of Environmental Conservation (DEC)-licensed Temporary Storage Sites, including Floyd Bennett Field and Jacob Riis Park, both part of the National Parks Service's Gateway National Recreation Area in Jamaica Bay. Five of the Temporary Storage Sites closed by November 19, 2012 and two remained open longer to receive remaining debris, including from Rapid Repairs. From the Temporary Storage Sites, the City's Department of Sanitation (DSNY) and contractors hired through USACE transported the debris out of the City for permanent disposal. DEP monitored debris piles in the Rockaways and Staten Island for asbestos and all samples met the clearance criteria established for asbestos abatements conducted indoors. Major damage to waterfront and coastal infrastructure, including beaches, boardwalks, and waterfront structures will

require extensive repair. New York City's beaches lost more than three million cubic yards of sand, including 1.5 million cubic yards on the Rockaway Peninsula alone.

Widespread coastal flooding also damaged 10,000 recreational boats and 100,000 personal vehicles, many of which were carried by floodwaters onto streets, sidewalks, and private properties. Although the City regularly tows vehicles for parking violations, the scale of the post-Sandy tow operations outstripped the City's towing capabilities. Within two weeks following the storm, the City executed a contract to tow and store damaged cars and boats, located paved storage areas tolerant of leaking fluids without leading to environmental contamination, and created a process for the public to locate and reclaim their property. In total, the City towed approximately 3,400 cars and 135 boats.

Sandy left thousands of New Yorkers without the ability to prepare hot food and closed supermarkets throughout entire communities. On Thursday, November 1, 2012, the City and the National Guard set up a major food and water distribution operation based at Floyd Bennett Field that served 17 community food distribution points on City-owned land that ultimately gave out more than 2.1 million Meals Ready to Eat (MREs), and more than 925,000 bottles of water. In addition to major distribution points in communities, the City, along with the National Guard and volunteers through NYC Service, worked with NYCHA and human services agencies to identify homebound populations and deliver food, water, and other goods directly to residents in single- and multi-family homes, as well as high-density, multi-family dwellings. In addition to emergency food distribution, several City agencies provided relief by extending existing services. The City's Department of Education (DOE) received approval from the U.S. Department of Agriculture (USDA) to provide free school lunches to all public school students during the months of November and December, for menu flexibility, and to provide free lunches in Sandy-impacted districts through March. New York City's Human Resources Administration (HRA) obtained a Federal waiver to replace 50 percent of the October Supplemental Nutrition Assistance Program (SNAP) grant for 311,000 households in 82 zip codes at an average benefit of $140, totaling more than $43 million, and processed applications manually where there were no working computers or internet connection. More than 107,000 households received these replacement benefits, totaling more than $23 million (average benefit $219). HRA also increased its support of Emergency Food Assistance Providers, delivering about 535,000 pounds of food to food pantries that served affected neighborhoods.

The City opened Disaster Assistance Service Centers (DASCs) in the hardest hit areas of the City – Coney Island, the Rockaways, Staten Island, and Breezy Point – on Friday, November 2, just four days after the storm. As client needs became clearer, on November 13, 2012, Mayor Bloomberg opened the first of seven Restoration Centers, one-stop-shops for City, State, and Federal resources for those most impacted by the storm. Restoration Centers served more than 30,000 clients from opening on November 13, 2012 to the closing of the last three centers in Coney Island, Arverne, and Staten Island on February 23, 2013. Restoration Centers served personal households and businesses with a focus on financial assistance, housing, and reconstruction. In the financial assistance category, HRA registered new clients for SNAP, the City's Department of Consumer Affairs (DCA) scheduled appointments at its Financial Empowerment Centers, and the City's Department of Small Business Services (SBS) helped with applications to the Hurricane Sandy Relief Fund and referred clients to the Workforce1 Career Centers and business owners to its Business Solutions Centers. Housing resources included short-, medium-, and long-term solutions that ranged from hotel placements and emergency transfer vouchers for Section 8 residents to registration with the HPD Housing Recovery Portal, which connects households that need shelter to available rental units in the HPD portfolio. Homeowners accessed information about building cleanup, demolition, debris removal, reconstruction, as well as guidance on mold removal and how to hire reputable and licensed contractors. Rapid Repairs, the City's free program to restore temporary heat, hot water, and power to homes, was one of the most requested services and enrolled more than 17,000 homeowners across all methods of

registration, although the number of requests for each service varied across Restoration Centers based on neighborhood characteristics.

Distribution sites and Restoration Centers met the needs of many New Yorkers, including those with disabilities, but for people who were unable to leave their homes, the City launched a door-to-door outreach program on November 9, 2012; from November 9th through November 15th the U.S. Department of Health and Human Services (HHS), FEMA, and the National Guard knocked on doors in high-rise buildings in the Rockaways and on Coney Island. Along with a NYCHA program to provide medical care in Red Hook, the teams canvassed more than 42,000 people and provided food and water to 1,700 residents, prescriptions for 335 people, and evacuated 44 for medical reasons. A second major wave of door-to-door outreach began on November 26, 2012 to visit residents of severely damaged single-family homes and multiple-unit dwellings with six or fewer stories in affected areas of Brooklyn, Queens, and Staten Island. On December 8, 2012, the outreach operation expanded to include all single-family homes and buildings with fewer than six stories in affected neighborhoods, or approximately 140,000 households, in order to check on overall resident wellness, distribute supplies, provide information about available resources and Restoration Centers, make client referrals to medical teams, and identify homes for Rapid Repairs.

To provide basic primary care in affected communities, the City brought temporary mobile healthcare services to areas with extensive power outages and incorporated health referrals in door-to-door outreach. Eleven mobile medical vans offered basic primary care and prescriptions to adults and children in rotating areas in the Rockaways, Brooklyn, and Staten Island based on community needs. These vans performed, on average, more than 40 visits each day. By January 14, 2013, more than 600 people had received medical care from the National Guard at their homes and another 1,100 received follow-up care from the Visiting Nurse Service.

In addition to providing a safe home for New Yorkers to return to, food and water, convenient enrollment for City public services, and medical care, the City launched a suite of programs, including financial assistance and the coordination of in-kind donations, to help businesses recover from both physical damage and losses from extended closures. To focus resources and identify neighborhood-specific needs, Mayor Bloomberg announced the creation of five Business Recovery Zones (BRZs) on December 5, 2012 with designated leaders to organize City resources and provide a central point of contact for businesses and agencies. In total, there are approximately 13,200 businesses with more than 143,000 employees in the Business Recovery Zones. Mayor Bloomberg also announced the creation of the Recovery Business Acceleration Team, modeled after the City's New Business Acceleration Team, to streamline and expedite City agency processes to re-open at the same time. SBS's Business Outreach Team's Emergency Response Unit also visited severely impacted areas in order to assess damages and work with individual business owners to expedite re-inspections, applications, and permit processes necessary to re-open; replace lost or damaged City permits and/or paperwork; work with the New York State Insurance Department to resolve issues; and connect businesses to free legal services and tax abatements for reconstruction, utility rebates, and other incentives.

In the form of financial assistance, the City's Emergency Loan Fund and matching grant program provided businesses that experienced direct damage through flooding or power outages with up to $25,000 through a low-interest loan (interest and payment free for the first six months) and up to $10,000 in a matching grant to cover working capital, repairs, and equipment replacement. The $25.5 million loan and grant fund included contributions from the New York City Economic Development Corporation (NYCEDC), Goldman Sachs, the New York Bankers Association, the Mayor's Fund to Advance New York City, and the Partnership for New York City. The City, through the New York City Industrial Development Authority (IDA), also issued emergency sales tax letters to waive up to $100,000 in New York City and New York State sales taxes for up to 250 businesses on materials purchased for recovery efforts. NYC Business Solutions, a division of

SBS, offers technical assistance to accessing Federal loan applications as a part of their normal expertise. For displaced businesses that could not return to their previous office space, NYCEDC secured more than 300,000 square feet of temporary office space across the five boroughs, as well as donated services.

CDBG Disaster Recovery Program

The Community Development Block Grant Disaster Recovery (CDBG-DR) program provides communities impacted by disasters with resources to address a wide range of disaster-related needs. CDBG-DR allocations provide funding to develop viable communities, particularly for low- and moderate-income persons, through decent housing, a suitable living environment, and opportunities to expand economic opportunities. The programs outlined in this Action Plan will support New York City's recovery.

On October 28, 2012, President Obama signed an emergency declaration for the States of New York and New Jersey. The declaration meant that State and local governments could receive Federal assistance for the costs of evacuation, sheltering, and other measures. On January 29, 2013, President Obama signed into law the "Disaster Relief Appropriations Act, 2013" (Public Law 113-2), which included $16 billion in CDBG-DR funds "for necessary expenses related to disaster relief, long-term recovery, restoration of infrastructure and housing, and economic revitalization in the most impacted and distressed areas resulting from…Hurricane Sandy and other eligible events in calendar years 2011, 2012, and 2013." The U.S. Department of Housing and Urban Development (HUD)administers CDBG-DR funds, and grantees are required to submit a plan to the HUD Secretary "detailing the proposed use of all funds, including criteria for eligibility and how the use of these funds will address long-term recovery and restoration of infrastructure and housing and economic revitalization in the most impacted and distressed areas."

On March 5, 2013, the City received an initial allocation of $1,772,820,000 of CDBG-DR funds from HUD. On November 18, 2013, the City was awarded an additional $1,447,000,000. The City was awarded a third allocation totaling $994,056,000 on October 16, 2014, bringing the City's total CDBG-DR funding to $4,213,876,000. The City's Action Plans detail how the City intends to use these allocations to fulfill unmet funding needs as a result of the storm. According to detailed needs assessments performed by the City, the City's needs still exceed its total CDBG-DR award (needs assessment and unmet needs are discussed in subsequent sections of this document). It is the City's intention to design and implement programs that will address the greatest needs in each of the programmatic areas outlined within the Plan. The City's Action Plan will also describe how it will leverage other funding sources to address areas of unmet need.

Consultation with Stakeholders and Other Governments

The programs in the City's Action Plans are the product of significant stakeholder outreach, which was conducted to ensure that programs meet the City's most crucial needs and reflect the characteristics of neighborhoods and businesses throughout the five boroughs. A summary of the City's outreach and stakeholder consultation efforts following the storm is included below. The City has included community engagement as part of the substantial Action Plan amendment process and will continue to do so throughout the implementation of its recovery programs.

Housing

In addition to working with local elected officials, the City's Housing agencies – the New York City Housing Authority (NYCHA), the Department of Housing Preservation and Development (HPD), the Housing Development Corporation (HDC), the Department of Environmental Protection (DEP), and the Mayor's Office of Housing Recovery Operations (HRO) – partnered on a comprehensive outreach plan to gather feedback from affected communities and elected officials and leverage existing community connections.

The outreach efforts included:

- Touring affected neighborhoods with local residents.
- Engaging in small group conversations with elected officials, community stakeholders, and constituents.
- Hosting housing forums in each impacted area of the City to provide information to residents about the rebuilding process, zoning ordinances, FEMA assistance, financial resources, and to capture resident feedback, needs, and concerns.
- Presenting to community board and civic association meetings.
- Collaborating with housing non-profit partners to distribute information and administer tenant needs assessment surveys.
- Convening a working group with banks and other housing and financial industry partners.

Business

The City has completed extensive marketing and outreach for each of its business programs. A summary of completed and planned efforts is included below.

Hurricane Sandy Business Loan and Grant Program

Application intake for the Hurricane Sandy Business Loan and Grant Program (HSBLGP) begins at the NYC Business Solutions Centers, administered by the NYC Department of Small Business Services (SBS). The program team has developed and continues to implement a multi-pronged approach to marketing and outreach for the program. Key activities include:

- Canvassing by Business Solution Center staff throughout Staten Island, the Rockaways, Chinatown, Coney Island and Red Hook.
- Providing program flyers in multiple languages (e.g. Russian, Spanish, Chinese, and Korean) to disseminate general information.
- Providing application intake locations at NYC Business Solutions Centers in storm-impacted areas and providing online assistance through the NYC Business Solutions Center website at www.nyc.gov/smallbiz.
- Conducting training sessions for community organizations such as merchants' associations, BIDs, local development corporations, chambers of commerce, etc. The in-depth training helps these organizations, which interact with small business owners on a daily basis, learn about the application process and how to best assist small business owners looking for financial assistance.
- Establishing remote field offices to make it easier for business owners to learn about the program and review their application in person with an account manager.

RISE : NYC – Resiliency Innovations for a Stronger Economy

RISE : NYC launched on January 21, 2014. Prior to the launch of the competition, the City, working with the New York City Economic Development Corporation (NYCEDC), completed (and continues to complete) several efforts to market the program, including:

- Creating a program website at http://rise-nyc.com.

- Issuing press releases and sending emails to more than 120 community board members and elected officials in Sandy-impacted areas announcing the program.
- Sending promotional email blasts to more than 350 stakeholders.
- Conducting telephone outreach to organizations identified as potential partners to request assistance in distributing the information and promotional materials among their constituents.
- Creating program pages on social media sites, such as Twitter and Facebook.
- Developing program flyers, which have been translated into Russian, Spanish, Chinese, and Korean, to disseminate general information.
- Hosting public information sessions.
- Setting up a dedicated e-mail account to receive and respond to questions.

  Hosting a public Technology Demo Night (on October 7, 2014) to showcase the 27 Stage 2 competition finalists' technologies to an audience of nearly 300 people.

Coastal Resiliency

The Special Initiative for Rebuilding and Resiliency is responsible for developing a plan to make New York City more resilient in the face of climate change. The team undertook a massive effort to increase the resiliency of the hardest hit areas. The team held more than two dozen group and one-on-one briefings for more than 60 elected officials, met with more than 100 community-based organizations, and hosted 10 public meetings in impacted areas to solicit input on resiliency priorities. The result of this analysis, planning, and outreach was a 438-page report entitled *A Stronger, More Resilient New York*, released on June 11, 2013. The report contains over 250 detailed initiatives addressing the vulnerabilities of the City's infrastructure, built environment, and coastal communities. Among the report's initiatives are the crucial programs included in this Action Plan to address important unmet needs that Sandy highlighted. The plan can be reviewed here: http://www.nyc.gov/html/sirr/html/report/report.shtml

The PlaNYC 2014 Progress Report, which details the progress made for each initiative in the year following the initial plan release, can be viewed online here:
http://www.nyc.gov/html/planyc2030/downloads/pdf/140422_PlaNYCP-Report_FINAL_Web.pdf
http://www.nyc.gov/html/sirr/html/report/report.shtml

In March 2014, Mayor de Blasio released *One City, Rebuilding Together* to accelerate the City's housing recovery program and expand the City's climate resiliency plan. The plan outlined four goals: (1) enhance policy and planning; (2) expedite efforts to secure Federal funds; (3) continue collaboration with State efforts; and (4) expand economic opportunity for New Yorkers. These changes were designed to accelerate delivery of key resiliency projects and ensure that Sandy recovery works better for all New Yorkers. This led to the creation of a new Mayor's Office of Recovery and Resiliency (ORR), which oversees recovery and resiliency efforts for New York City. Then plan can be reviewed here: http://www.nyc.gov/html/builttolast/pages/home/home.shtml

ORR is charged with working with City agencies and partners to execute these plans.

Additional Stakeholder Consultation

A March 2014 report released by the Rockefeller Institute,[2] argues that "grappling with sea level rise in a multijurisdictional setting is clearly fraught with governance challenges," citing a number of institutional problems. However, through the New York-Connecticut (NY-CT) Sustainable Communities Consortium, the City has discussed flood zone management, climate resiliency, and long-term planning with its partners in New York State, Connecticut, and New Jersey. The NY-CT Sustainable Communities Consortium will advance both on-the-ground implementation strategies to create more livable, economically vibrant places, and regional strategies to integrate and enhance housing, transportation, and economic and environmental plans and programs. The initiative will work to reduce congestion, improve the environment, and create a strategy to build resiliency to the effects of climate change in New York City, with applications for other parts of the region. The NY-CT Sustainable Communities Consortium includes the following entities:

- City of New York (Department of City Planning);
- City of Mount Vernon (NY);
- City of New Rochelle (NY);
- City of New Rochelle (NY);
- City of White Plains (NY);
- City of Yonkers (NY);
- New York Metropolitan Transportation Council (NYMTC);
- Long Island Regional Planning Council (LIRPC) (NY);
- Nassau County (NY);
- Suffolk County (NY);
- City of Bridgeport (CT);
- City of New Haven (CT);
- City of Norwalk (CT);
- City of Stamford (CT);
- South Western Regional Metropolitan Planning Organization (SWRMPO) (CT);
- Greater Bridgeport/Valley Metropolitan Planning Organization (GBVMPO) (CT);
- South Central Regional Council of Governments (SCRCOG) (CT); and
- Regional Plan Association (RPA).

[2] "Responding to Sea Level Change in the Northeast: Is a Regional Solution Possible?" James W. Fossett and Kathryn Friedman, The Nelson A. Rockefeller Institute of Government, March 2014, http://www.rockinst.org/pdf/disaster_recovery/gulfgov/2014-03-Sea_Level_Changesv2.PDF

The Consortium's Advisory Board consists of eleven State agencies and non-profit organizations, including:

- Connecticut Department of Economic and Community Development;
- Connecticut Housing Finance Agency;
- Empire State Development Corporation;
- International Council for Local Environmental Initiatives;
- Local Initiatives Support Corporation;
- New York State Department of State;
- New York State Homes & Community Renewal;
- North Jersey Transportation Planning Authority
- One Region Funders Group;
- Urban Land Institute; and
- WE ACT for Environmental Justice.

Following Hurricane Sandy, the Consortium, in cooperation with partners in the North Jersey Sustainable Communities consortium, has convened a Joint Climate Resilience Committee. Participants in the joint committee, including the cities of Jersey City and Hoboken, face many similar challenges to those confronting New York City. The joint committee's goals include coordinating among local, State, and Federal initiatives, and sharing key information resources and best practices within the region, as well as integrating climate resiliency within the consortium's activities.

For the City's infrastructure programs, the City has coordinated and will continue to coordinate with its State and Federal partners, such as USACE, FEMA, the New York State Department of Environmental Conservation, and the New York State Division of Homeland Security and Emergency Services. The City will continue to perform such outreach to all relevant and/or impacted parties for all future CDBG-DR projects.

III. GEOGRAPHIC AREAS AFFECTED

The Hurricane Sandy Operational Inundation Area, which consists of areas in New York City that FEMA determined were inundated with flood waters, encompassed areas well beyond the pre-storm flood zones identified by FEMA. The disparity was particularly pronounced in the areas in the southern half of New York City subject to Atlantic Ocean wave action. The Inundation Area includes the full range of land uses in the City, from homes to commercial office towers. This section contains maps showing the Inundation Area for each borough and a description of the Inundation Area on a citywide basis, as well as an assessment of conditions by borough. Each borough map depicts the Operational Inundation Area with its 2010 census tracts indicated.

The "Selected Housing Characteristics," "Land Use," and "Demographics and Housing Profile" charts that follow the maps are based on the Operational Inundation Area on a citywide basis. For charts depicting this information on a borough basis, please see Appendix C. This information has been and will continue to be used to inform planning decisions for the City's long-term recovery.

Citywide Inundation Area

Hurricane Sandy impacted a broad cross-section of New Yorkers. According to 2010 Census data, approximately 10.3 percent of New York City's population (846,056 persons) resided in the Inundation Area. The impact varied across geography. In terms of absolute population, Brooklyn had the highest number of persons impacted (310,227), followed by Manhattan (230,742), Queens (188,444), Staten Island (75,651), and the Bronx (40,992).

In terms of percentage within a specific borough, Staten Island, which has the smallest portion of the City's overall population, had the highest percentage of its residents impacted (approximately 16.0 percent). Manhattan had 14.5 percent of its residents impacted, Brooklyn 12.4 percent, Queens 8.4 percent, and the Bronx 3.0 percent, respectively.

In New York City, no one racial group comprises more than half the total population. New York City's population is 33.3 percent White non-Hispanic, 22.8 percent Black non-Hispanic, 28.6 percent Hispanic origin, and 12.6 percent Asian non-Hispanic. In addition, approximately 2 percent of New York City's population is multi-racial non-Hispanic. Within the Inundation Area, approximately 45.5 percent are White non-Hispanic, 22.3 percent Black non-Hispanic, 20.6 percent Hispanic, and 9.4 percent Asian non-Hispanic, respectively. Slightly more than 1.5 percent are multi-racial non-Hispanic.

The mean household size in the Inundation Area is 2.41, slightly less than the mean household size citywide (2.57).

With respect to age, 25.9 percent of the persons within the Inundation Area are young adults (ages 18-34), the highest percentage of all age intervals. The elderly (age 65 and over) comprised 14.5 percent of the population within the Inundation Area, 2.4 percentage points higher than the City's elderly population overall.

Hurricane Sandy also impacted people with disabilities. The U.S. Census Bureau's 2009-2011 American Community Survey (ACS) data indicates that 11.4 percent of the population within the Inundation Area is comprised of persons with a disability living in a non-institutional setting. This is nearly 1.0 percentage point higher than the City's total population of people with disabilities living in non-institutional settings.

In terms of poverty, 2006-2010 ACS data indicate that 19.1 percent of New Yorkers are below the poverty line, and 5.1 percent are considered near poor. Within the Inundation Area, poverty is slightly less

pronounced than New York City as a whole, but nonetheless significant: 17.3 percent of persons within the areas are below the poverty line, and 4.7 percent are considered near poor.

According to 2006-2010 ACS data, the total number of housing units (vacant and occupied) in New York City is 3,371,062. The total number of occupied units is 3,109,784. Approximately 335,300 (10.7 percent) of these occupied units are within the Inundation Area.

In terms of tenure, owner-occupied units constitute 34.4 percent of all occupied units within the Inundation Area (115,195 units). This is 3.4 percentage points higher than the percentage of owner-occupied units within New York City overall.

Of the 3,371,062 housing units in the City, the majority of units are within multi-family buildings (three or more units within the structure).[3] Approximately 1,080,400 units are in multi-family elevator buildings, and approximately 828,700 units are located in multi-family walk-up buildings, respectively. These two types of structures contain 32.0 percent and 24.6 percent of the housing units within the City, respectively. One- and two-family buildings, which constitute the majority of owner-occupied housing, contain 24.4 percent of the housing units citywide (822,717). Mixed-use residential/commercial buildings accounted for 18.0 percent of the housing units (606,838 units).

Within the Inundation Area, 36.4 percent of the housing units are in multi-family elevator buildings, which is 4.4 percentage points higher than for the City overall. One- and two-family buildings contain a higher percentage of housing units impacted than their percentage of the City's total housing stock (29.0 percent versus 24.4 percent, respectively).

The vast majority of the City's stock (87.2 percent) was built prior to the 1980 census, which was the last decennial census before the Building Code was amended in 1983 to include flood-resistant construction. Of the housing stock within the Inundation Area, 80.1 percent was constructed prior to 1980.

Among renter-occupied units within the Inundation Area, 10.2 percent of renters have a cost burden between 30.0 and 34.9 percent of their household income. Another 37.4 percent of renters have a cost burden greater than 35.0 percent of their household income.

Bronx

The Inundation Area in the Bronx includes portions of major industrial areas, including Port Morris and Hunts Point along the East River, Zerega along Westchester Creek, and Eastchester along the Hutchinson River. It also includes low-density residential communities in the Soundview, Throgs Neck, and Country Club neighborhoods.

Of the approximately 1,385,100 persons who reside in the Bronx, just 3.0 percent were located within the Inundation Area (approximately 41,000 persons).

A majority of the Bronx's residents are Hispanic (53.5 percent). Black non-Hispanics make up 30.1 percent of the population and 10.9 percent are White non-Hispanic. Within the borough's Inundation Area, no one

[3] Please note that this definition of a multi-unit building differs from the Federal definition of a multi-unit building, which is five or more units.

racial group comprises more than half of the impacted population. Hispanics account for 34.4 percent, White non-Hispanics 34.7 percent, and Black non-Hispanic 26.8 percent.

The mean household size within the Bronx's Inundation Area is 2.45, slightly less than the borough's mean household size of 2.77.

With respect to age, 31.4 percent of the persons within the Bronx's Inundation Area are young adults (ages 18-34), the highest percentage of all age intervals. The elderly (age 65 and over) comprised 13.7 percent of the population within the borough's Inundation Area that is 3.2 percentage points higher than the borough's overall elderly population.

Persons with disabilities living in a non-institutional setting make up 13.7 percent of the Bronx's population. Within the borough's Inundation Area, people with disabilities constitute 14.8 percent of its impacted population.

In terms of poverty, 2006-2010 ACS data indicate that 28.4 percent of Bronx residents are below the poverty line. Within the borough's Inundation Area, the percentage of persons below the poverty line is 18.7 percent. The percentage of persons considered near poor in its Inundation Area is also lower than for the borough as a whole (4.9 percent versus 6.7 percent, respectively).

According to 2006-2010 ACS data the total number of housing units (vacant and occupied) in the Bronx is approximately 511,900. The total number of occupied units is approximately 483,450. Approximately 11,400 (2.4 percent) of these occupied units are within the borough's Inundation Area.

In terms of tenure, owner-occupied units constitute 19.3 percent of the housing units within the borough overall. However, in the Bronx's Inundation Area, 45.7 percent of the housing units are owner-occupied.

Of the approximately 511,900 housing units in the Bronx, approximately two-thirds are within multi-family buildings, 17.8 percent are in mixed-use residential/commercial buildings, and 14.7 percent are in one- and two-family buildings.

Within the Bronx's Inundation Area, 44.1 percent of the housing units are in one- and two-family buildings, 20.5 percent are in mixed-use residential/commercial buildings, and 35.3 percent are in multi-family buildings.

A significant percentage of the borough's housing stock is pre-1980 construction (90.1 percent). Of the housing stock within its Inundation Area, 78.2 percent of the units were constructed prior to 1980.

Among households within the Bronx's Inundation Area that rent, 7.5 percent of renters who reported that they pay rent have a cost burden between 30.0 percent and 34.9 percent of their household income and 44.8 percent have a cost burden greater than 35.0 percent of their household income.

Brooklyn

Beginning with Community District 1 in Greenpoint/Williamsburg, the Inundation Area encompasses largely industrial areas along the south side of Newtown Creek and the English Kills, a Federally-designated Superfund site, as well as the East River waterfront, largely rezoned in the past decade to permit mid- to high-rise residential redevelopment. Moving south along the East River, the Inundation Area includes the Brooklyn Navy Yard industrial and business park and the mixed residential and commercial DUMBO area, dominated by converted industrial loft buildings. Beyond Brooklyn Heights, the Inundation Area includes the Red Hook container port and the mixed-use neighborhood of Red Hook, including older residential

buildings, converted industrial lofts, the Red Hook public housing development, and commercial and industrial businesses. It also includes the mixed-use areas along the Gowanus Canal, a Federally-designated Superfund site. South of the Gowanus Canal, the Inundation Area includes portions of the Sunset Park industrial area.

Due to changes in topography, the Inundation Area is limited in extent until it reaches the low-lying areas of southern Brooklyn. There, it includes all of the beachfront neighborhoods of Coney Island, Brighton Beach, and Manhattan Beach. These include the low-density Seagate neighborhood to the west; the Coney Island neighborhood dominated by high-rise public housing as well as other publicly-assisted housing, with the beach, New York Aquarium, minor league baseball stadium and amusements to the south; and the medium-density Brighton Beach neighborhood and the mainly low-density Manhattan Beach neighborhood, including Kingsborough Community College, to the east. Also inundated were portions of the Gravesend and Sheepshead Bay neighborhoods, including commercial and low- to mid-density residential areas, the Coney Island subway yards, and Coney Island Hospital.

Moving east from Sheepshead Bay, the Brooklyn shoreline is dominated by finger inlets adjacent to low-density residential communities that were inundated. These include Gerritsen Beach, Mill Island, Bergen Beach, Paerdegat Basin, and portions of Canarsie.

The borough of Brooklyn had the highest total number of residents impacted by the storm (310,227 persons). This represents 12.4 percent of the borough's total population.

Similar to New York City as a whole, no one racial group comprises more than half of the borough's total population. Brooklyn's population is 35.7 percent White non-Hispanic, 31.9 percent Black non-Hispanic, 19.8 percent Hispanic origin, and 10.4 percent Asian non-Hispanic. In addition, 1.6 percent of the borough's population is multi-racial non-Hispanic. Within the borough's Inundation Area, White non-Hispanic represented the majority of persons impacted with 53.6 percent. As a result, the percentage of Black non-Hispanic and Hispanic persons within impacted areas (20.7 percent and 13.6 percent, respectively) is less than the borough's overall population in the Inundated Area. The percentage of Asian non-Hispanic within the borough's Inundation Area is the same as the percentage of the borough's overall population (10.4 percent).

The mean household size within the Inundation Area is 2.48, slightly less than the borough's mean household size (2.69).

With respect to age, 23.4 percent of the persons within Brooklyn's Inundation Area are young adults (ages 18-34), the highest percentage of all age intervals. The elderly (age 65 and over) comprised 16.4 percent of the population within the borough's Inundation Area. This is 4.9 percentage points higher than the borough's elderly population and 1.9 percentage points higher than the elderly population within the Inundation Area citywide.

Hurricane Sandy also impacted people with disabilities. The 2009-2011 ACS data indicates that 12.8 percent of the population within the borough's Inundation Area is comprised of persons with a disability living in a non-institutional setting. This is 3.3 percentage points higher than Brooklyn's total population of people with disabilities living in non-institutional settings.

In terms of poverty, 2006-2010 ACS data indicate that 28.4 percent of Brooklyn residents are below the poverty line, and 6.7 percent are considered near poor. Within the Inundation Area, the percentage of persons below the poverty line is significantly less (18.7 percent). The percentage of persons considered near poor is 4.9 percent.

According to 2006-2010 ACS data, the total number of housing units (vacant and occupied) in Brooklyn is 1,000,293. The total number of occupied units is 916,856. Approximately 122,600 (13.4 percent) of these occupied units are within the borough's Inundation Area.

In terms of tenure, owner-occupied units constitute 37.5 percent of all occupied units within the Inundation Area (45,992 units). This is 9.8 percentage points higher than the percentage of owner-occupied units within the borough (27.7 percent).

Of the 1,000,293 housing units in Brooklyn, the majority of units are within multi-family buildings (three or more units within the structure). Approximately 282,000 units are in multi-family elevator buildings, and approximately 336,300 units are located in multi-family walk-up buildings. These two types of structures contain approximately 28.2 percent and 33.6 percent of the housing units within the borough, respectively. One- and two-family buildings contain 25.5 percent of the borough's housing units (254,672). Units in mixed-use residential/commercial buildings accounted for 11.9 percent of the housing units (118,940 units).

Within its Inundation Area, 37.5 percent of the housing units are in multi-family elevator buildings, which is 9.3 percentage points higher than for the borough. One- and two-family buildings represented a higher percentage of housing units impacted than its percentage of Brooklyn's total housing stock (32.6 percent versus 25.5 percent, respectively).

In terms of year the structures were built, a significant percentage of Brooklyn's housing stock is pre-1980 construction (89.2 percent). Of the housing stock within its Inundation Area, 88.9 percent were constructed prior to 1980.

Among households within the borough's Inundation Area that rent, 10.5 percent of renters who reported that they pay rent have a cost burden between 30.0 and 34.9 percent of their household income, and 40.7 percent of renters have a cost burden greater than 35.0 percent of their household income.

Manhattan

In Community District 1 in Lower Manhattan, the Inundation Area includes the Water Street corridor, an important high-rise office district, as well as upland areas that include a mix of commercial office and residential uses and the South Street Seaport Historic District. On the west side of Lower Manhattan, the Inundation Area runs along the Route 9A corridor and includes mixed-use areas including portions of TriBeCa, the West Village, and Chelsea. Along the East Side, the Inundation Area includes residential portions of the East Village, Con Edison facilities, and north of 14th Street, the mid-rise residential developments of Stuyvesant Town and Peter Cooper Village. North of 23rd Street, the Inundation Area includes the important medical corridor that contains the Veterans Administration, Bellevue, and NYU Langone hospitals. To the north, the Inundation Area includes residential portions of East Harlem and areas of northern Manhattan including the Dyckman Houses public housing development and the 207th Street subway yards.

According to 2010 Census data, there are 1,585,873 persons living in Manhattan. Of those, 14.5 percent reside in the Inundation Area (230,742 persons).

Within the borough the impact of the storm varied by race and ethnicity. Approximately 30.8 percent of persons residing in Manhattan's Inundation Area are Hispanic, approximately 5 percentage points higher than the percentage of Hispanics living within the borough. In addition, Black non-Hispanic persons constituted 17.4 percent of the persons residing in its Inundation Area, 4.5 percentage points higher than the percentage of Black non-Hispanics within the borough. Asian non-Hispanic persons are 12.7 percent of

the impacted population, slightly higher than its borough percentage (11.2 percent). In contrast, 36.6 percent of persons within the Inundation Area are White non-Hispanic, approximately 12 percentage points lower than the percentage of White non-Hispanics within Manhattan.

The mean household size within Manhattan's Inundation Area is approximately two persons per household (2.09 persons), which is similar to the borough's small household size (1.99 persons).

With respect to age, 31.4 percent of the persons within Manhattan's Inundation Area are young adults (ages 18-34), the highest percentage of all age intervals. The elderly (age 65 and over) comprised 13.5 percent of the population within the borough's Inundation Area. This is the same percentage of elderly persons within the borough overall.

According to 2009-2011 ACS data, persons with a disability living in a non-institutional setting represented 10.1 percent of the population within the borough's Inundation Area.

For Manhattan residents for whom poverty status was determined, a greater percentage of persons living below the poverty line lived within the borough's Inundation Area (21.8 percent) than within the borough overall (17.8 percent), based on 2006-2010 ACS data. The percentage of persons considered near poor is also higher in the Inundation Area (5.4 percent versus 4.3 percent, respectively).

According to 2006-2010 ACS data, the total number of housing units (vacant and occupied) in Manhattan is 847,090. The total number of occupied units is 763,846. Approximately 105,800 (13.9 percent) of the occupied units are within the borough's Inundation Area.

In terms of tenure, renter-occupied units constitute 84.7 percent of all occupied units within its Inundation Area (89,632 units).

A majority of Manhattan is zoned for higher density. Of its 847,090 housing units, the majority of units are within multi-family buildings (approximately 506,100 units). Units in multi-family elevator buildings accounted for 42.4 percent of Manhattan housing units, while units in mixed-use residential/commercial buildings accounted for approximately 321,900 housing units, or 38.0 percent of the borough's housing stock.

The borough's Inundation Area contains 13.9 percent of Manhattan's occupied housing units, with 50.6 percent of these units in multi-family elevator buildings (53,555 units). Approximately 48,800 housing units (46.1 percent) are in mixed-use residential/commercial buildings.

A significant percentage of Manhattan's housing stock is pre-1980 construction (84.6 percent). However, of the housing stock within its Inundation Area, the percentage constructed prior to 1980 is 74.9 percent.

Among households within the borough's Inundation Area that rent, 10.0 percent of renters who reported that they pay rent have a cost burden between 30.0 and 34.9 percent of their household income and 32.9 percent of impacted renters have a cost burden greater than 35.0 percent of their household income.

Queens

The Queens Inundation Area has two distinct components: a northern area along the East River and a southern area bordering Jamaica Bay and the Atlantic Ocean. Beginning at Community District 2 in the north, the Inundation Area includes the industrial northern shore of Newtown Creek and areas bordering the Dutch Kills in Maspeth and Long Island City. Moving north along the East River, the Inundation Area

includes the Queens West development in Long Island City and the peninsula that includes the Astoria Houses public housing development.

Moving east of the Robert F. Kennedy Bridge, the Inundation Area includes the northern Astoria waterfront dominated by power generating facilities and LaGuardia Airport. It also includes much of Flushing Meadows-Corona Park, Citi Field, two subway yards, and the Willets Point industrial area. Farther to the east, it includes much of the College Point industrial park and shoreline areas of low-density residential communities including College Point, Whitestone, Bay Terrace, Bayside, Douglaston, and Little Neck.

In the south, the Inundation Area includes most of the Rockaway peninsula, lying between the Atlantic Ocean and Jamaica Bay. Beginning in the west, the peninsula includes the Breezy Point cooperative, comprised of individual homes with private streets. To the east are the low-density communities of Neponsit and Belle Harbor. Moving farther east, the peninsula is served by the subway and is more developed. Rockaway Park and Rockaway Beach have commercial areas oriented towards local residents and summer visitors. Residential areas are a mix of single-family homes and multi-family housing. The eastern portion of the peninsula includes several public housing developments and other high-rise publicly assisted housing.

As in Brooklyn, the Queens perimeter of Jamaica Bay is low-density. It includes the Howard Beach residential communities of Old Howard Beach, New Howard Beach, and Hamilton Beach, Ramblersville, and Lindenwood. To the east are John F. Kennedy International Airport and the communities of Brookville and Rosedale, bordering Nassau County. Within Jamaica Bay is the low-density residential community of Broad Channel.

Of the 2,230,722 persons who reside in Queens, approximately 188,400 reside in its Inundation Area.

The borough's racial and ethnic composition is diverse. White non-Hispanic and Hispanic persons are 27.6 percent and 27.5 percent of the Queens population, respectively. Black non-Hispanic persons constitute 17.7 percent of its population. Queens' Asian non-Hispanic population (22.8 percent) is the largest Asian non-Hispanic population of any of the five boroughs in terms of both persons and percentage.

Within the borough's Inundation Area, White non-Hispanics and Black non-Hispanics were disproportionally impacted: 73.0 percent of the population within the Queens Inundation Area is either White non-Hispanic or Black non-Hispanic (36.7 percent and 36.3 percent, respectively). In contrast, only 6.6 percent of the population within the borough's Inundation Area is Asian non-Hispanic. Hispanics constitute 17.7 percent of the population within these areas.

The mean household size for Queens is 2.82 persons per household, which is the highest average for all of the five boroughs. Within its Inundation Area, the mean household size is 2.64 persons.

With respect to age, 23.5 percent of the persons within Queens' Inundation Area are young adults (ages 18-34), the highest percentage of all age intervals. The elderly (age 65 and over) comprised 13.8 percent of the population within the borough's Inundation Area, which is 1.0 percentage point higher than the borough's overall elderly population.

According to data based on the 2009-2011 ACS, 10.6 percent of the population within Queens' impacted areas is comprised of persons with a disability, 1.1 percentage points higher than the borough's total population of people with disabilities living in non-institutional settings.

In terms of poverty, 2006-2010 ACS data indicate that 13.0 percent of Queens' residents are below the poverty line. Within the borough's Inundation Area, the percentage of persons below the poverty line is higher at 15.3 percent. The percentage of people considered near poor within the Inundation Area is relatively the same as the percentage for the borough as a whole (4.1 percent and 4.7 percent, respectively).

According to 2006-2010 ACS data, the total number of housing units (vacant and occupied) in Queens is 835,127. The total number of occupied units is 780,117. Approximately 68,850 (8.8 percent) of these occupied units are within the borough's Inundation Area.

In terms of tenure, renter-occupied units comprise 57.0 percent and owner-occupied units comprise 43.0 percent of all occupied units within the borough. Within Queens' Inundation Area, the percentages are 55.3 percent and 44.7 percent, respectively.

Of the 835,127 housing units in Queens, 49.1 percent are within multi-family buildings. Approximately 209,900 units are in multi-family elevator buildings, and approximately 200,200 units are located in multi-family walk-up buildings.

One- and two-family buildings, which constitute the majority of owner-occupied housing, contain 41.9 percent of the borough's housing units (349,800). Units in mixed-use residential/commercial buildings account for 8.5 percent of Queens' housing units (approximately 71,000 units).

Within Queens' Inundation Area, 33.2 percent of the housing units are in multi-family elevator buildings, which is 8.1 percentage points lower than for the borough overall. Additionally, 13.2 percent of impacted units are located within multi-family walk-up buildings, which is 10.8 percentage points lower than for the borough overall.

In contrast, units within one- and two-family buildings represent a higher percentage of housing units impacted relative to its percentage of Queens' total housing stock (45.7 percent versus 41.9 percent, respectively).

A significant percentage of Queens' housing stock is pre-1980 construction (89.8 percent). Of the housing stock within its Inundation Area, 80.2 percent was constructed prior to 1980.

Among households within the borough's Inundation Area that rent, 10.4 percent of renters who reported that they pay rent have a cost burden between 30.0 and 34.9 percent of their household income. In addition, the percentage of Queens renters within the Inundation Area who have a cost burden greater than 35.0 percent of their household income is 38.7 percent.

Staten Island

Beginning at the St. George Ferry Terminal and moving south, the Inundation Area includes the Bay Street Landing mid-rise residential development and the vacant former Navy base on the Stapleton waterfront. South of the Verrazano-Narrows Bridge, the Inundation Area encompasses large areas of one- and two-family homes in the communities of South Beach, Midland Beach, New Dorp Beach, and Oakwood Beach. Farther south, it includes Great Kills harbor, an area dominated by marinas, and portions of the waterfront developed with single-family homes.

On the West Shore of Staten Island, the Inundation Area includes vacant land, natural areas, and parks, as well as some industrial businesses and the New York Container Terminal at Howland Hook. On the North

Shore, the Inundation Area includes the waterfront, which is largely industrial or vacant, as well as portions of upland low-density residential communities.

Staten Island's population is 468,730 based on the 2010 Census. The total number of Staten Islanders within the borough's Inundation Area is 75,651, or 16.1 percent of its total population. As stated previously, this represents the highest percentage of people impacted relative to the borough's overall population.

The majority of Staten Island residents are White non-Hispanic (64.0 percent). Hispanics constitute 17.3 percent of the borough's population. Black non-Hispanic and Asian non-Hispanic are 9.5 percent and 7.4 percent, respectively. Similarly, within the borough's Inundation Area, 67.6 percent of those impacted are White non-Hispanic and 17.6 percent are Hispanic. The percentage of Black non-Hispanic persons within the Inundation Area is 6.6 percent.

The mean household size within Staten Island's Inundation Area and for the borough overall is 2.78.

With respect to age, 22.7 percent of the persons within the borough's Inundation Area are young adults (ages 18-34), the highest percentage of all age intervals. The elderly (age 65 and over) comprised 11.8 percent of the population within Staten Island's Inundation Area.

According to 2009-2011 ASC data, persons with a disability living in a non-institutional setting represented 9.9 percent of the population within the borough's Inundation Area. This is slightly higher than the percentage of Staten Island's total population of people with disabilities living in non-institutional settings (9.6 percent).

In terms of poverty, 2006-2010 ACS data indicate that 10.3 percent of Staten Island residents are below the poverty line. Within the borough's Inundation Area, the percentage of persons below the poverty line is lower at 9.0 percent. However, the percentage of persons considered near poor is higher in its Inundation Area than for the borough as a whole (4.5 percent versus 3.4 percent, respectively).

According to 2006-2010 ACS data the total number of housing units on Staten Island is 176,656 (vacant and occupied). The total number of occupied units is approximately 165,500. Approximately 26,600 (16.1 percent) of these occupied units are within the borough's Inundation Area.

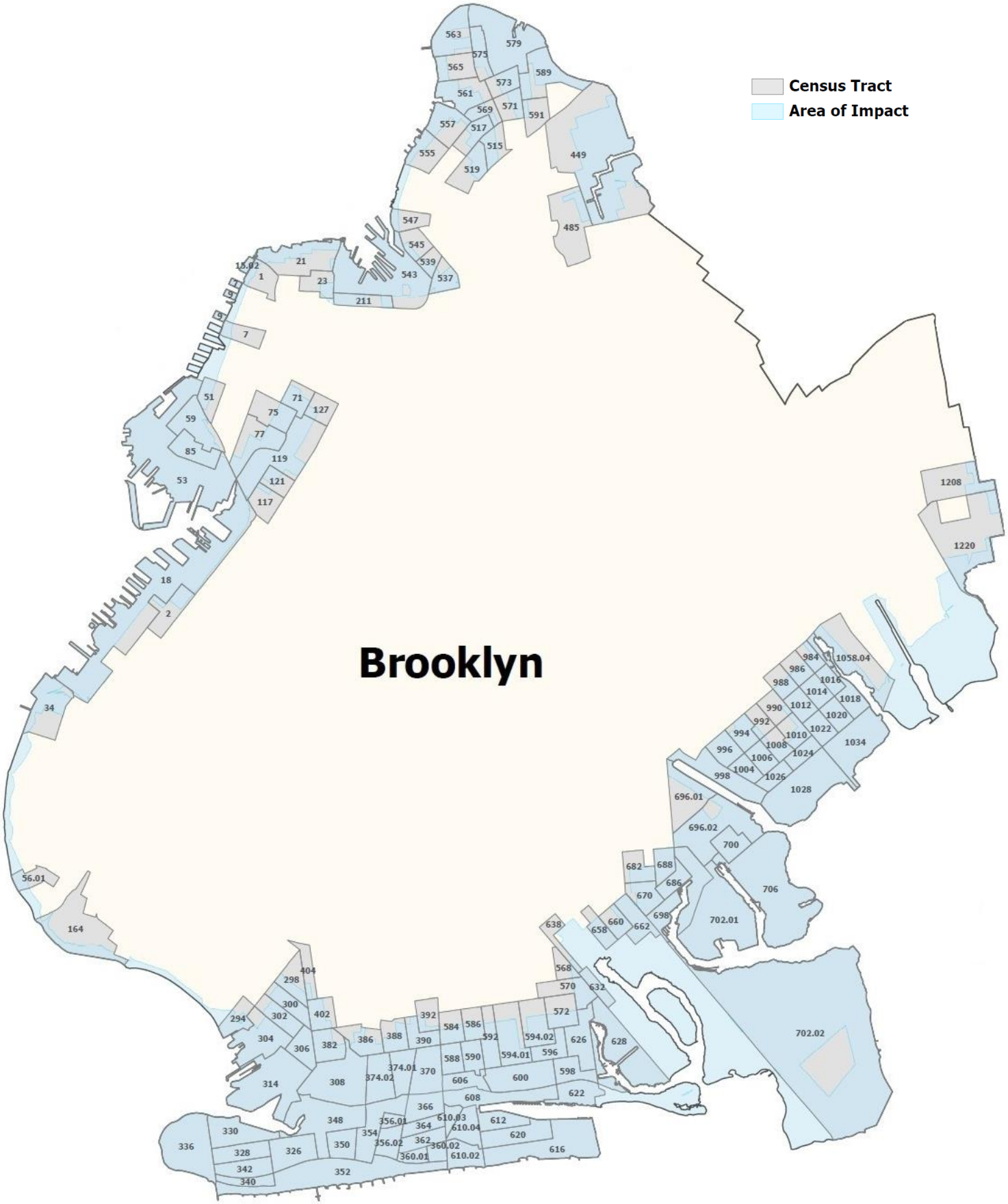
In terms of tenure, approximately two-thirds of Staten Island's occupied units are owner-occupied. Within its Inundation Area, owner-occupied units were 63.8 percent of the units impacted.

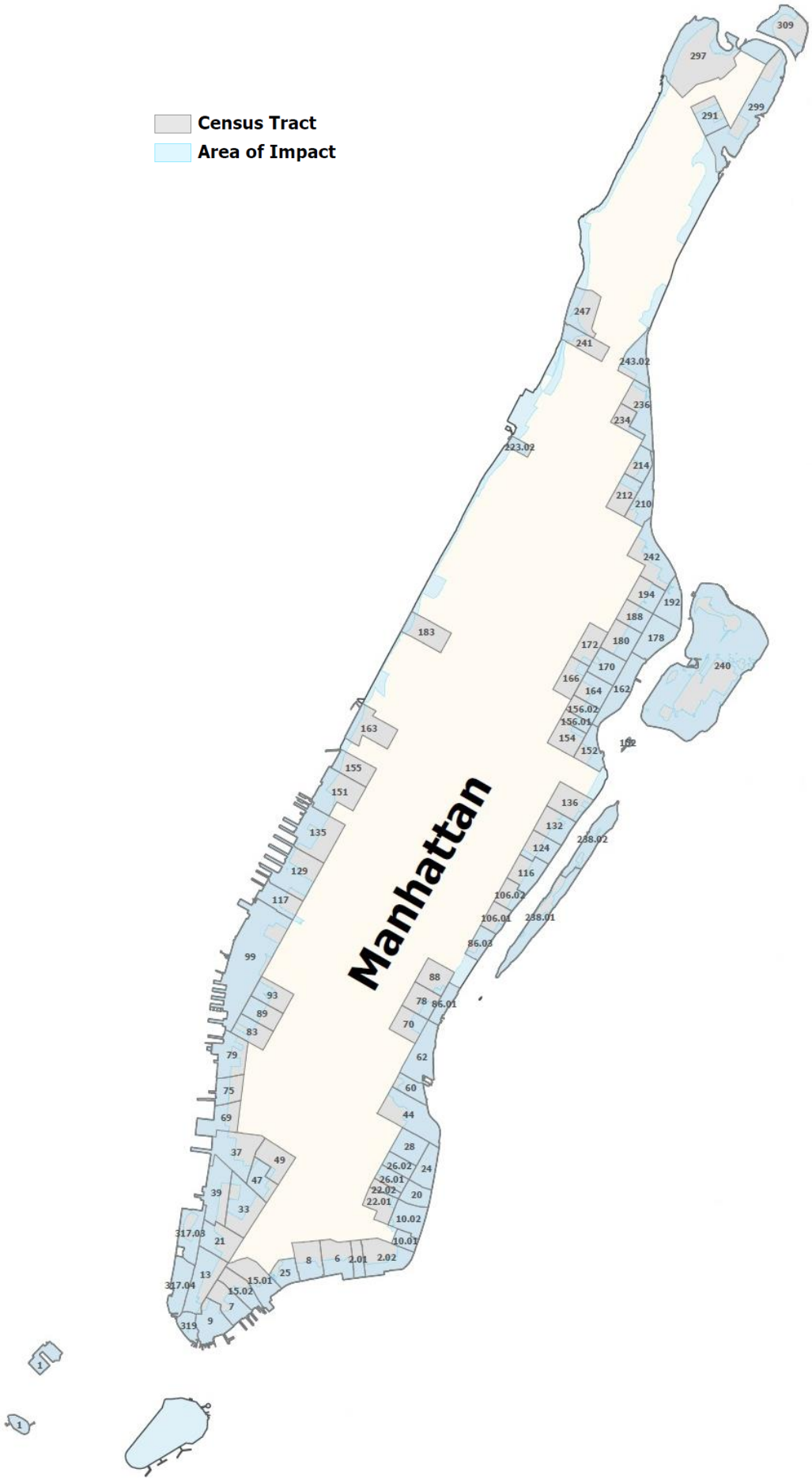
A majority of Staten Island is zoned for low-density. Of its 176,656 housing units, the majority of units are one- and two-family buildings (137,610 units or 77.9 percent). Approximately 14,800 units are in multi-family elevator buildings, and approximately 19,700 units are located in multi-family walk-up buildings (8.4 percent and 11.1 percent, respectively).

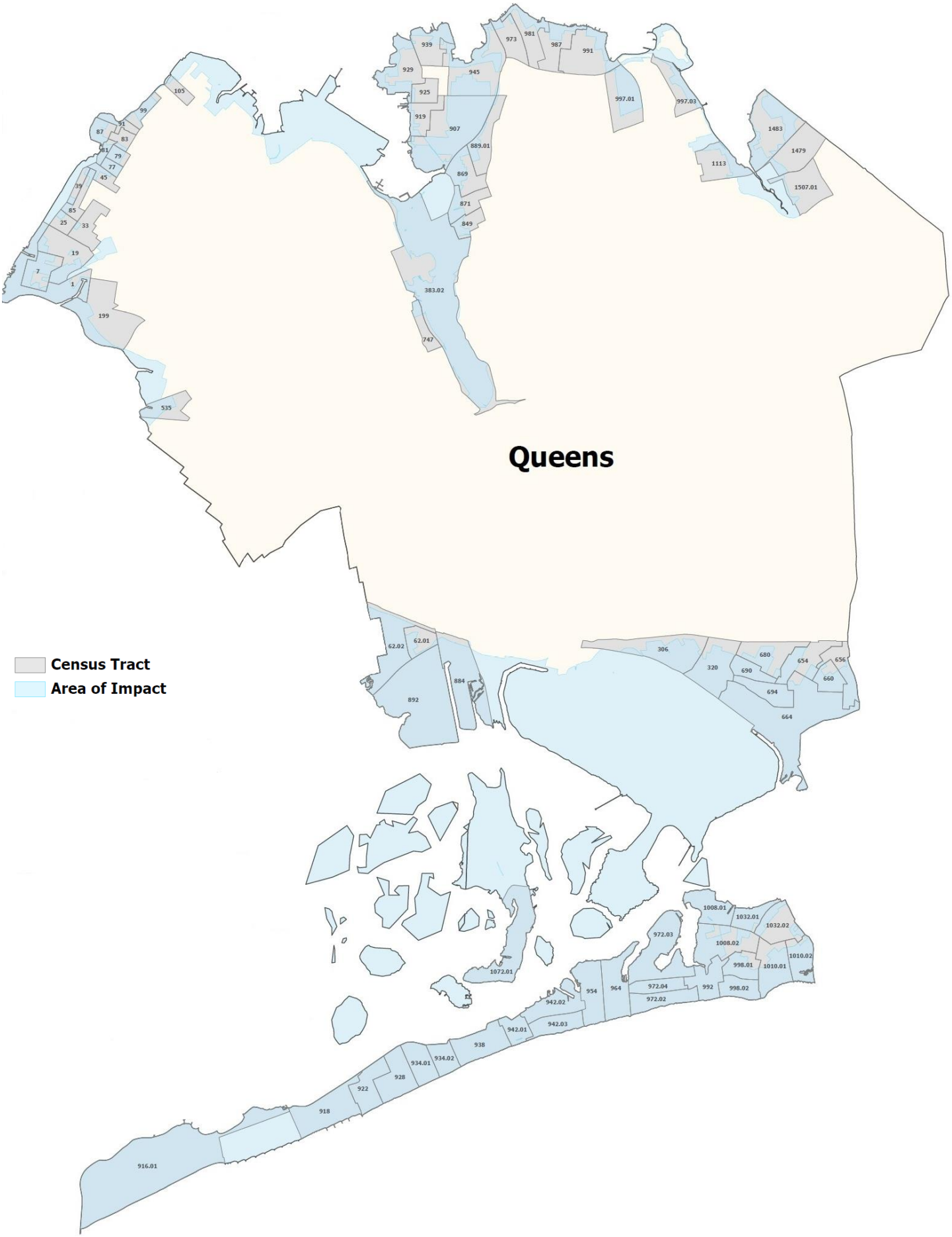
Regarding the units located in the borough's Inundation Area, the percentage of units within a particular type of structure reflected Staten Island's overall housing profile. Slightly more than 78 percent of the impacted units are in one- and two-family buildings (22,375 units). Multi-family elevator buildings accounted for 9.6 percent (2,732 units) and multi-family walk-up buildings 8.8 percent (2,516) of the units.

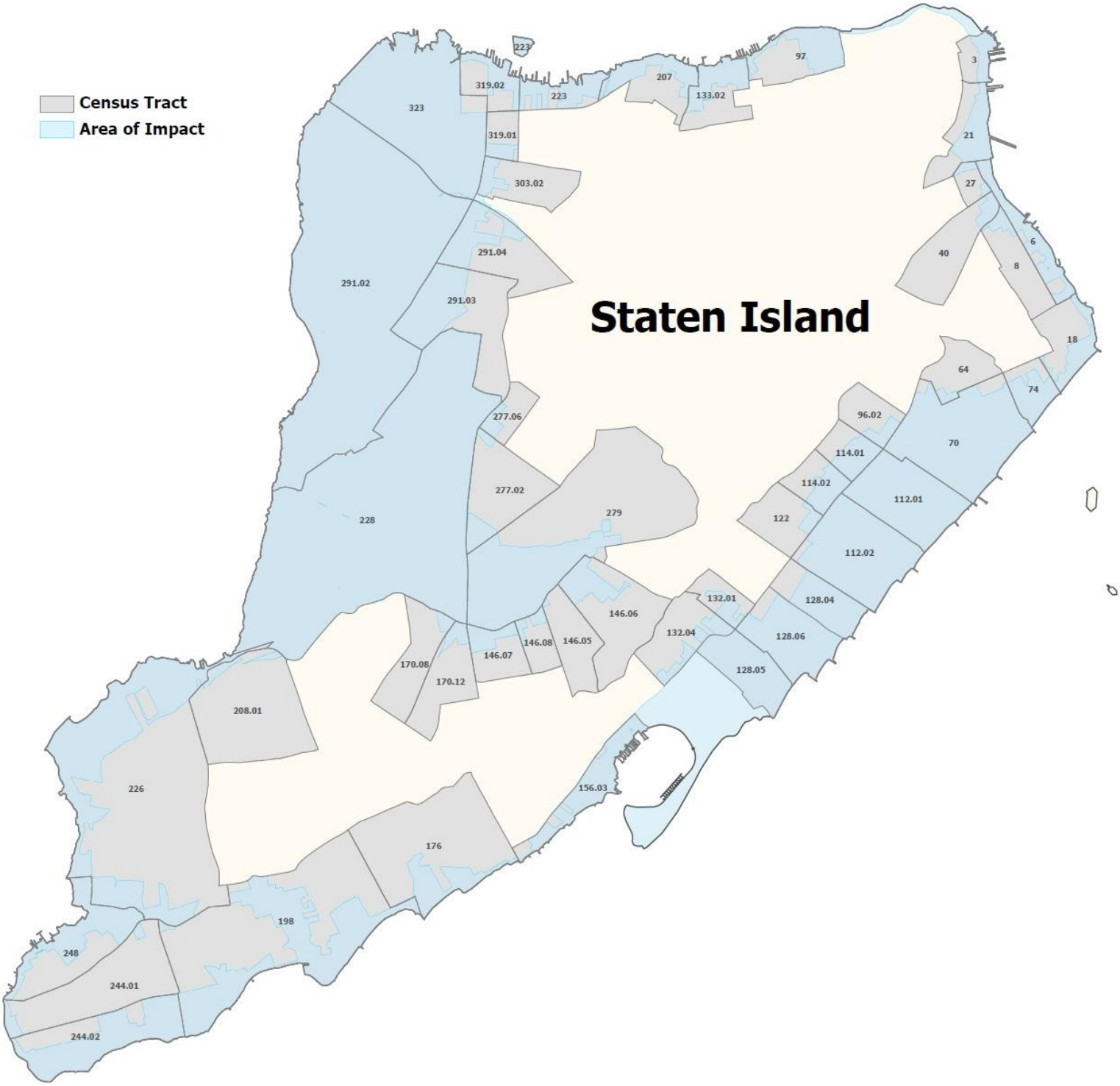
Approximately 63 percent of Staten Island's housing stock was constructed prior to 1980. Within its Inundation Area, the percentage is 56.7 percent.

Among households within the borough's Inundation Area that rent, 10.0 percent of renters who reported that they pay rent have a cost burden between 30.0 and 34.9 percent of their household income and 44.0 percent report that they pay more than 35.0 percent of their household income towards rent.


Census Tract
Area of Impact
Brooklyn


Census Tract
Area of Impact
Manhattan
309
297
299
291
247
241
243.02
236
234
223.02
214
212
210
242
194
192
188
178
183
172
180
240
170
166
164
162
156.02
156.01
154
152
163
155
151
136
132
238.02
135
124
129
116
117
106.02
106.01
238.01
86.03
99
88
93
78
86.01
89
83
70
79
62
75
60
69
44
37
49
28
26.02
24
47
26.01
22.02
39
20
22.01
33
10.02
317.03
21
10.01
8
6
2.01
2.02
13
25
15.01
317.04
15.02
7
319
9
1
1


Queens
Census Tract
Area of Impact
939
973
981
987
991
929
945
925
997.01
997.03
105
99
919
907
91
87
83
81
79
889.01
1483
1479
1113
77
45
869
1507.01
39
871
85
25
33
849
19
7
1
383.02
199
747
535
62.02
62.01
306
680
654
656
320
690
660
884
694
892
664
1008.01
1032.01
1032.02
972.03
1008.02
1010.02
998.01
1010.01
1072.01
954
964
972.04
992
998.02
942.02
972.02
942.03
942.01
938
934.01
934.02
928
922
918
916.01


Census Tract
Area of Impact
Staten Island
223
319.02
223
207
133.02
97
3
323
319.01
21
303.02
27
291.04
40
6
8
291.02
291.03
18
64
74
277.06
96.02
70
114.01
277.02
114.02
112.01
279
122
228
112.02
132.01
128.04
146.06
132.04
128.06
146.08
146.05
146.07
170.08
128.05
170.12
208.01
226
156.03
176
198
248
244.01
244.02

Demographic and Housing Profile
Hurricane Sandy Operational Inundation Area*
New York City, 2010 Census

	New York City			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Population	846,056	100.0	8,175,133	100.0
Under 5 years	48,062	5.7	517,724	6.3
5 to 17 years	120,952	14.3	1,250,387	15.3
18 to 34 years	219,249	25.9	2,261,789	27.7
35 to 44 years	115,599	13.7	1,154,687	14.1
45 to 54 years	117,511	13.9	1,107,376	13.5
55 to 64 years	102,051	12.1	890,012	10.9
65 years and over	122,632	14.5	993,158	12.1
In Households	809,249	95.6	7,989,603	97.7
In Group Quarters	36,807	4.4	185,530	2.3
In Group Quarters	36,807	100.0	185,530	100.0
Institutionalized	23,914	65.0	70,041	37.8
Correctional Facilities for Adults	12,888	35.0	18,056	9.7
Juvenile Facilities	84	0.2	2,107	1.1
Nursing Facilities	9,481	25.8	45,516	24.5
Other Institutionalized	1,461	4.0	4,362	2.4
Non-Institutionalized	12,893	35.0	115,489	62.2
College/University Housing	3,624	9.8	51,101	27.5
Military Quarters	0	0.0	60	0.0
Other Non-Institutionalized	9,269	25.2	64,328	34.7
Housing Units	369,907	100.0	3,371,062	100.0
Occupied Housing Units	335,327	90.7	3,109,784	92.2
Occupied Housing Units	335,327	100.0	3,109,784	100.0
Renter-Occupied	220,135	65.6	2,146,892	69.0
Owner-Occupied	115,192	34.4	962,892	31.0
Average Household Size		2.41		2.57

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with floodwaters.

Civilian Non-Institutionalized Population with a Disability
Census 2010 Summary Files and American Community Survey 2009-2011 Estimates
Hurricane Operational Inundation Area in New York City*

	New York City			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Total civilian non-institutionalized population	836,990	100.0	8,106,684	100.0
With a disability	95,541	11.4	830,972	10.3
	Bronx			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Total civilian non-institutionalized population	39,727	100.0	1,360,310	100.0
With a disability	5,865	14.8	185,967	13.7
	Brooklyn			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Total civilian non-institutionalized population	308,785	100.0	2,492,534	100.0
With a disability	39,536	12.8	236,290	9.5
	Manhattan			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Total civilian non-institutionalized population	228,945	100.0	1,574,487	100.0
With a disability	23,198	10.1	153,877	9.8
	Queens			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Total civilian non-institutionalized population	184,864	100.0	2,215,874	100.0
With a disability	19,536	10.6	210,192	9.5
	Staten Island			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Total civilian non-institutionalized population	74,668	100.0	463,479	100.0
With a disability	7,406	9.9	44,646	9.6

Note: While population data were available for the Hurricane Operational Inundation Area, disability data were only available for a larger area that included all Public Use Microdata Areas (PUMAs) intersecting the Hurricane Operational Inundation Area. The percent distributions for the disability data were applied to the total civilian non-institutionalized population in the Operational Inundation Area for each respective PUMA to produce a set of estimates. PUMA estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. It should also be noted that the civilian non-institutionalized population for each borough was determined by taking the ratio of the civilian non-institutionalized population to the overall population, according to the 2009-2011 American Community Survey, and applying it to the overall population according to the 2010 Census. For consistency of comparison, the same process was used to produce overall City and borough estimates.

Ratio of Income to Poverty Level in the Past 12 Months for Persons for Whom Poverty Status is Determined
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Inundation Area in New York City*

	New York City			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
Persons for Whom Poverty Status is Determined	832,735	100.0	8,041,580	100.0
Under 1.00 (Below poverty threshold)	144,035	17.3	1,537,289	19.1
Under .50 (Extreme poverty)	61,069	7.3	679,880	8.5
.50 to .99	82,966	10.0	857,409	10.7
1.00 to 1.24 (Near poor)	39,276	4.7	412,961	5.1
1.25 to 1.49	39,357	4.7	402,813	5.0
1.50 to 1.84	46,730	5.6	522,361	6.5
1.85 to 1.99	19,652	2.4	212,097	2.6
2.00 and over	543,685	65.3	4,954,060	61.6

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with floodwaters.

Note: While population data were available for the Hurricane Operational Inundation Area, poverty data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the poverty data were applied to the population for whom poverty was determined (the poverty universe) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. It should also be noted that the poverty universe for each borough was determined by taking the ratio of the poverty universe to the overall population, according to the 2006-2010 American Community Survey, and applying it to the overall population according to the 2010 Census. For consistency of comparison, the same process was used to produce overall City and borough estimates.

	New York City Inundation Area									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	102,790	100.0%	812,894,840	100.0%	410,606,050	100.0%	401,440	100.0%	100,994	100.0%
One & Two Family Buildings	69,281	67.4%	133,031,679	16.4%	133,022,220	32.4%	101,969	25.4%	82,264	81.5%
Multi-Family Walk-Up Buildings	8,825	8.6%	46,270,792	5.7%	45,936,551	11.2%	52,625	13.1%	12,550	12.4%
Multi-Family Elevator Buildings	893	0.9%	150,764,892	18.5%	146,688,453	35.7%	154,316	38.4%	1,650	1.6%
Mixed Residential and Commercial Buildings	3,089	3.0%	92,463,298	11.4%	78,594,913	19.1%	89,369	22.3%	4,065	4.0%
Commercial and Office Buildings	2,709	2.6%	110,608,568	13.6%	537,758	0.1%	707	0.2%	213	0.2%
Industrial and Manufacturing	2,685	2.6%	87,220,805	10.7%	204,184	0.0%	293	0.1%	100	0.1%
Transportation and Utility	1,587	1.5%	54,624,859	6.7%	52,067	0.0%	31	0.0%	42	0.0%
Public Facilities and Institutions	1,046	1.0%	99,174,877	12.2%	5,504,647	1.3%	1,914	0.5%	83	0.1%
Open Space and Outdoor Recreation	1,553	1.5%	26,977,620	3.3%	47,930	0.0%	17	0.0%	17	0.0%
Parking Facilities	1,775	1.7%	7,462,622	0.9%	-	0.0%	-	0.0%	-	0.0%
Vacant Land	8,049	7.8%	13,107	0.0%	4,587	0.0%	-	0.0%	-	0.0%
No Data	1,298	1.3%	4,281,721	0.5%	12,740	0.0%	199	0.0%	10	0.0%

	New York City									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	858,968	100.0%	5,384,064,839	100.0%	3,481,433,365	100.0%	3,424,836	100.0%	917,916	100.0%
One & Two Family Buildings	563,788	65.6%	1,107,942,751	20.6%	1,107,886,836	31.8%	814,770	23.8%	677,317	73.8%
Multi-Family Walk-Up Buildings	129,807	15.1%	733,071,747	13.6%	728,670,636	20.9%	838,882	24.5%	164,141	17.9%
Multi-Family Elevator Buildings	11,658	1.4%	1,085,937,630	20.2%	1,052,655,082	30.2%	1,109,550	32.4%	15,383	1.7%
Mixed Residential and Commercial Buildings	48,479	5.6%	716,367,625	13.3%	563,365,287	16.2%	628,303	18.3%	56,549	6.2%
Commercial and Office Buildings	24,338	2.8%	763,448,885	14.2%	5,095,359	0.1%	7,122	0.2%	2,199	0.2%
Industrial and Manufacturing	12,153	1.4%	263,088,198	4.9%	2,139,665	0.1%	2,129	0.1%	720	0.1%
Transportation and Utility	6,617	0.8%	75,442,694	1.4%	252,679	0.0%	203	0.0%	222	0.0%
Public Facilities and Institutions	11,959	1.4%	559,598,872	10.4%	20,183,750	0.6%	23,503	0.7%	1,312	0.1%
Open Space and Outdoor Recreation	4,897	0.6%	38,007,145	0.7%	935,964	0.0%	41	0.0%	32	0.0%
Parking Facilities	11,499	1.3%	35,373,545	0.7%	68,467	0.0%	94	0.0%	14	0.0%
Vacant Land	29,628	3.4%	364,374	0.0%	121,599	0.0%	14	0.0%	-	0.0%
No Data	4,145	0.5%	5,421,373	0.1%	58,041	0.0%	225	0.0%	27	0.0%

Selected Housing Characteristics
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Impact Area in New York City*

	New York City			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
UNITS IN STRUCTURE (PLUTO distribution applied to 2010 Census control)				
Total housing units	369,907	100.0	3,371,062	100.0
One & Two Family Buildings	107,133	29.0	822,717	24.4
Multi-Family Walk-Up Buildings	53,073	14.3	828,722	24.6
Multi-Family Elevator Buildings	134,683	36.4	1,080,418	32.0
Mixed Residential and Commercial Buildings	72,197	19.5	606,838	18.0
Other	2,822	0.8	32,368	1.0
YEAR STRUCTURE BUILT (PLUTO distribution applied to 2010 Census control)				
Total housing units	369,907	100.0	3,371,062	100.0
Built 2000 or later	39,715	10.7	227,866	6.8
Built 1990 to 1999	12,789	3.5	81,110	2.4
Built 1980 to 1989	21,190	5.7	122,847	3.6
Built 1970 to 1979	31,367	8.5	184,761	5.5
Built 1960 to 1969	77,869	21.1	400,374	11.9
Built 1950 to 1959	55,544	15.0	381,862	11.3
Built 1940 to 1949	24,823	6.7	216,145	6.4
Built 1930 to 1939	39,107	10.6	476,732	14.1
Built 1920 to 1929	37,118	10.0	700,590	20.8
Built 1910 to 1919	11,823	3.2	287,255	8.5
Built 1900 to 1909	12,457	3.4	210,162	6.2
Built Before 1900	3,234	0.9	62,829	1.9
Unknown	2,871	0.8	18,530	0.5
ROOMS (ACS distribution applied to 2010 Census control)				
Total housing units	369,907	100.0	3,371,062	100.0
1 room	22,632	6.1	204,957	6.1
2 rooms	29,785	8.1	232,076	6.9
3 rooms	84,072	22.7	833,525	24.7
4 rooms	96,792	26.2	840,265	24.9
5 rooms	61,961	16.8	565,197	16.8
6 rooms	35,165	9.5	333,449	9.9
7 rooms	15,959	4.3	145,998	4.3
8 rooms	9,309	2.5	83,473	2.5
9 rooms or more	14,230	3.8	132,121	3.9
VEHICLES AVAILABLE (ACS distribution applied to 2010 Census control)				
Occupied housing units	335,327	100.0	3,109,784	100.0
No vehicles available	170,701	50.9	1,704,988	54.8
1 vehicle available	109,404	32.6	975,973	31.4
2 vehicles available	42,535	12.7	335,915	10.8
3 or more vehicles available	12,687	3.8	92,908	3.0
TELEPHONE SERVICE (ACS distribution applied to 2010 Census control)				
No telephone service available (excluding cell phones)	15,584	4.6	157,721	5.1

	New York City			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
HOUSE HEATING FUEL (ACS distribution applied to 2010 Census control)				
Occupied housing units	335,327	100.0	3,109,784	100.0
Utility gas	201,646	60.1	1,683,818	54.1
Bottled, tank, or LP gas	4,231	1.3	44,974	1.4
Electricity	39,691	11.8	258,890	8.3
Fuel oil, kerosene, etc.	78,650	23.5	1,048,618	33.7
Coal or coke	282	0.1	2,630	0.1
Wood	238	0.1	1,821	0.1
Solar energy	302	0.1	790	0.0
Other fuel	5,419	1.6	36,993	1.2
No fuel used	4,866	1.5	31,250	1.0
VALUE (ACS distribution applied to 2010 Census control)				
Owner-occupied units	115,192	100.0	962,892	100.0
Less than $50,000	3,763	3.3	23,593	2.5
$50,000 to $99,999	2,034	1.8	22,852	2.4
$100,000 to $149,999	2,541	2.2	22,185	2.3
$150,000 to $199,999	4,219	3.7	33,125	3.4
$200,000 to $299,999	9,615	8.3	77,914	8.1
$300,000 to $499,999	35,323	30.7	282,048	29.3
$500,000 to $999,999	47,414	41.2	393,911	40.9
$1,000,000 or more	10,282	8.9	107,264	11.1
GROSS RENT (ACS distribution applied to 2010 Census control)				
Occupied units paying rent	214,741	100.0	2,091,175	100.0
Less than $200	5,821	2.7	39,111	1.9
$200 to $299	16,076	7.5	98,747	4.7
$300 to $499	18,786	8.7	132,189	6.3
$500 to $749	32,986	15.4	260,064	12.4
$750 to $999	33,769	15.7	398,756	19.1
$1,000 to $1,499	52,184	24.3	674,842	32.3
$1,500 or more	55,120	25.7	487,465	23.3
No rent paid	5,394		55,717	
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) (ACS distribution applied to 2010 Census control)				
Occupied units paying rent (excluding units where GRAPI cannot be computed)	210,504	100.0	2,048,952	100.0
Less than 15.0 percent	34,768	16.5	294,824	14.4
15.0 to 19.9 percent	25,135	11.9	237,920	11.6
20.0 to 24.9 percent	25,042	11.9	238,490	11.6
25.0 to 29.9 percent	25,319	12.0	225,497	11.0
30.0 to 34.9 percent	21,416	10.2	184,014	9.0
35.0 percent or more	78,823	37.4	868,208	42.4
Not computed	9,631		97,940	

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Note: While general housing data were available for the Hurricane Operational Inundation Area, more detailed housing data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the detailed housing data were applied to the general housing data (housing units, occupied housing units, owner occupied housing units, and renter occupied housing units) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. For consistency of comparison, the same process was used to produce overall City and borough estimates.

IV. FUNDING JUSTIFICATIONS

New York City plans to spend its allocation of $4.21 billion of CDBG-DR funds to address the most urgent housing, business, resiliency, and infrastructure needs in the neighborhoods hardest hit by Hurricane Sandy through several new programs, which fall into four categories of immediate need (housing recovery, business support, long-term resiliency, and infrastructure and other City services). It is the City's intention to design and implement programs that will address the greatest needs in each of those four categories. The unmet needs assessment described in the Action Plan shows that the current CDBG-DR allocation does not cover all of the City's overall recovery and rebuilding needs. The City used the unmet needs assessments to help inform the allocation of funds as well as the need to fulfill HUD requirements such as using at least 50 percent of the City's CDBG-DR funds to benefit low- and moderate-income persons. A comprehensive plan, addressing all impacts from Sandy, is needed for the City and its residents to recover and rebuild after Hurricane Sandy. Housing recovery is a top priority of the City, and recognizing that priority more funds than the proportion of the unmet need (described below in the Proportionality of CDBG-DR Allocation of Unmet Needs section) were allocated to the Housing program. Funds will also be used for administration of the programs and for long-term planning. The City's programs are described below.

Housing– $2.459 billion

Build it Back – $2.15 billion

Of the $2.459 billion identified for housing assistance in the Action Plan, the City allocated $2.15 billion to fund a permanent housing recovery program that will address nearly all of the $2.4 billion identified as the unmet need for single-family and multi-family homeowners and landlords. Within this program, the City has further broken down funding into allocations for different types of assistance to address the distinct needs of homes and multi-family buildings as follows:

- $1.71 billion to provide for the rehabilitation and reconstruction of one to four unit homes that are either occupied by the homeowner or year-round tenants.
- $416 million to provide for the rehabilitation of multi-family buildings (five or more units).
- $19 million for the Temporary Disaster Assistance Program (TDAP) rental subsidy program to serve low-income households displaced by Hurricane Sandy, and
- $3 million for a workforce development program as part of Build it Back.

Public Housing – $308 million

In addition, the City has allocated $308 million to NYCHA to make necessary repairs and fund targeted efforts to strengthen resiliency to future floods at the City's public housing facilities. The CDBG-DR allocation will be used as the local match portion of FEMA-funded repair and resiliency projects at impacted facilities. In addition, NYCHA will also use this funding to projects that are not FEMA-eligible, including the installation of flood-resilient standby power generators at housing facilities directly impacted by Hurricane Sandy.

Business – $123 million

Hurricane Sandy Business Loan and Grant Program: $48 million to provide loans and grants to at least 150 businesses impacted by Hurricane Sandy. This program will provide expedited grants of up to $100,000 and will provide up to $1 million in 1:1 matching loans and grants for unmet needs above the $100,000. The City may, at its discretion, provide grants of up to $1.1 million and 1:1 matching loans and grants above $1.1 million to businesses that can demonstrate significant additional unmet need. Businesses that can demonstrate extreme hardship may be eligible to receive, at the City's discretion, higher loan and grant amounts.

Business PREP (Preparedness & Resiliency for Emergencies Program): $3 million to assist businesses implement operational and physical resiliency measures, through one or more of the following activities: (1) provide one-on-one site visits and assessment, (2) develop a business resiliency assessment tool, (3) hold targeted workshops featuring technical experts, (4) if unable to secure private fudning, potentially offer micro-grant to help businesses implement low-cost resiliency improvements.

Resiliency Innovations for a Stronger Economy (RISE : NYC)**:** $30 million competition to identify and allocate, funding for the most innovative and cost-effective technologies that help prepare small businesses for future climate events by improving the resiliency of their (1) energy infrastructure, (2) telecom networks, and (3) building systems.

Restoration of Saw Mill Creek Marsh**:** $12 million for the restoration of Saw Mill Creek marsh, a component of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) Initiative, to restore approximately 68 acres of severely degraded City-owned wetlands and uplands in northwestern Staten Island in an area heavily inundated during Hurricane Sandy. Reestablishing the previously degraded wetland ecosystem will serve to protect against the harmful impacts of storm related flooding for hundreds of businesses adjacent to the marsh and starts New York City's first mitigation bank to catalyze further wetland restoration.

Coney Island Green Infrastructure Improvements: $15 million to enhance ongoing Department of Environmental Protection infrastructure work with installation of right-of-way bioswales along business corridors throughout the Coney Island peninsula. The new infrastructure will improve stormwater retention, filter and maintain water quality in local waterways and enhance business/retail areas through beautification.

Rockaways Commercial Corridor Resiliency**:** $15 million for streetscape and stormwater management upgrades and redevelopment of underutilized properties in key commercial corridors throughout the Rockaways, such as Beach 108th street, Mott Avenue, and surrounding business districts.

Infrastructure and Other City Services – $755 million

The City is allocating $755 million to direct City agency costs, nearly 10 percent of the total unmet need for these costs. Of this, $319 million is for infrastructure and $436 million is for other City services. Of the $436 million for **other City services**, $322.5 million has been allocated for public service activities that assisted the public during and after the storm, $2 million has been allocated for emergency demolition, $12.5 million has been allocated for debris removal and clearance, $1 million has been allocated for code enforcement, and $98 million has been allocated for interim assistance. For **infrastructure**, $319 million has been allocated for the rehabilitation and reconstruction of public facilities. As permitted in the March

5, 2013 Federal Register, the City plans to use CDBG-DR funds to leverage the non-Federal share of FEMA Public Assistance disaster grants and other Federal grants including funding from FHWA and US Army Corps of Engineers. The City is prioritizing its funds to address its public hospitals, public safety, and for the restoration of its beaches. These services, and the additional programs identified, have been prioritized both for the speed with which funds can be expended as well as accounting for HUD's requirement for programs to benefit to low- and moderate-income persons. This will enable the City to expend obligated funds within two years, which is another requirement of the appropriation.

The City expects to employ a range of mitigation measures as it restores and rehabilitates structures that were damaged by Hurricane Sandy or otherwise directly or indirectly impacted. These measures include raising boilers and electrical above the appropriate preliminary Flood Insurance Rate Map base flood elevations, creating protective structures such as dunes and retaining walls as part of certain coastal infrastructure projects, and incorporating green infrastructure features into rebuilding.

Additional mitigation needs will be determined on a site-specific basis.

As part of the Infrastructure and Other City Services Program, the City is using CDBG-DR funds as reimbursement for expenses already incurred for the City's response to Hurricane Sandy, primarily in the form of funding for the non-Federal contribution to projects and activities significantly funded with resources from other Federal agencies, such as FEMA.

Coastal Resiliency – $630 million

The report, *A Stronger, More Resilient New York,* outlines the City's blueprint to make New York City more resilient to the impacts of climate change. This report was released on June 11, 2013 and included recommendations and identified a variety of specific unmet resiliency needs related to Hurricane Sandy that are eligible for and dependent upon Federal and other funding sources, including CDBG-DR funds. The recommendations included in *A Stronger, More Resilient New York* and the City's long-term resiliency projects will be implemented by the Mayor's Office of Recovery and Resiliency (ORR), acting through a variety of City agencies. The City has outlined how CDBG-DR funds, totaling $630 million, will be used for long-term resiliency projects in this Action Plan.

Coastal Protection Program: $159 million for the Coastal Protection Program which includes installing armor stone revetments; repairing, installing, and raising bulkheads, and installing an integrated flood protection system in Red Hook.

***Residential Building Mitigation Program*:** $60 million for the Residential Building Mitigation Program, which will offer loans to owners of residential flood-impacted and vulnerable multi-family properties in the Build it Back program for the incremental cost of full scope resiliency measures.

Staten Island University Hospital Resiliency: $28 million to protect and elevate mechanical systems and the north and south campuses of Staten Island University Hospital.

Rebuild by Design:

- ***East Side Coastal Resiliency:*** $338 million for the City to implement a coastal protection project along the East Side of Manhattan. These funds include $335 million for "Compartment 1" as defined in the winning Rebuild by Design proposal in the area between Montgomery St. and East 23rd

Street. The area has one of the deepest floodplains in Manhattan and is comprised of the largest concentration of affordable, subsidized, and public housing in Manhattan. Protecting this area is a priority for the City. Also included are an additional $3 million, reallocated from the Integrated Flood Protection System competition which is ending, for additional planning and feasibility studies for the two other compartments in the proposal that extend from Montgomery Street down to the Battery.

- ***Hunts Point Resiliency***: $45 million for the continued study, analysis, planning, and stakeholder engagement related to the Rebuild by Design Hunts Point Lifelines proposal and the design and construction of a resulting pilot project. Of these funds, $20 million are from the third allocation of CDBG-DR as part of Rebuild by Design, and an additional $25 million are reallocated from existing Business programs.

Planning and Administration – $246.82 million

The City will use CDBG-DR funds for long-term community planning and rebuilding efforts, such as the planning and implementation of neighborhood recovery strategies; citywide zoning changes; urban design; geographic, demographic and legal support; environmental review of zoning and land use changes; integration of coastal protections into local land use and waterfront planning; and increasing resiliency of enclosed industrial facilities.

Additionally, the City must provide administrative and support services necessary to formulate, implement, and evaluate the City's CDBG-DR programs. These overall grant management activities include preparation of and amending the CDBG-DR Action Plan; ensuring the public is aware of and understands the Plan; developing program policies and procedures; monitoring program expenditures; ensuring compliance with all requirements; creating reporting functionality on Recovery websites, etc. Planning and Administration also include program-specific Planning and Administration costs.

Please note that the Planning and Administration allocations are based on the best data currently available. It can be anticipated that, as programs are implemented and actual needs are determined, these allocations may be adjusted accordingly. However, planning and administrative expenses will not surpass their statutory caps (20 percent for Planning and Administration and 5 percent for Administration).

HUD Allocation Methodology

As reference, the March 5, 2013 Federal Register Notice (78 FR 14349) and the November 18, 2013 Federal Register Notice (78 FR 69112), each contain an Appendix detailing the Allocation Methodology based on an estimate of best available data. Due to the timing of the first allocation, HUD did not use data on infrastructure need to calculate the value of the allocation but did allow grantees to use funds from the first allocation towards infrastructure, which the City chose to do. The amount the City received in the first allocation was based on an Allocation Methodology that made the calculation based only on estimates for the restoration of housing and for economic revitalization. The Allocation Methodology for the second allocation updated that data for housing and economic revitalization and additionally used estimates for infrastructure unmet needs from FEMA Public Assistance, US Army Corps of Engineers, and US Department of Transportation sources. The Allocation Methodology calculation for the second allocation also included adjustments for public housing and an application of an additional 30 percent to estimates for damaged homes, infrastructure, and small businesses in order to address resiliency costs. One of the requirements of the Action Plan is for a grantee to address how disaster relief, long-term recovery, restoration of infrastructure and housing, and economic revitalization are being implemented in the most impacted and

distressed areas. The City is allocating funds towards recovery programs that address the greatest need – Housing, Business for small businesses and economic revitalization, Infrastructure and Other City Services for disaster relief and restoration of infrastructure, and Resiliency for long-term recovery and resiliency – in a manner generally consistent with how the Federal government calculated the CDBG-DR allocation awards.

Proportionality of CDBG-DR Allocation to Unmet Needs

The following table demonstrates the proportionate allocation of resources relative to areas and categories of unmet need. Unmet need was used to determine funding allocations as well as the need to fulfill HUD requirements. Recognizing that the CDBG-DR allocation to the City is not sufficient to cover all unmet need, as part of Action Plan Amendment 8B, funding from other programs was re-allocated to Housing programs, and the full value of the third allocation not specified for Rebuild by Design projects was allocated to Housing programs.

These figures are based upon best available data and projections for unmet need as defined in the individual unmet need sections. For more information on these amounts, please see the analyses of unmet need in each Action Plan section.

Table: CDBG-DR Allocations in Relation to Unmet Need (Amounts in Millions)

Category	Allocation by Category	% of Total Allocation	Unmet Need by Category*	% of Total Unmet Need*
Housing	$2,459	62%	$4,900	29%
Business	$123	3%	$2,400	14%
Infrastructure	$319	8%	$5,300	31%
Other City Services	$436	11%	$2,100	12%
Resiliency	$630	16%	$2,400	14%
Total	**$3,967**		**$17,100**	

*Note: These figures are estimates based upon the best available data. Numbers may be adjusted as more accurate data is identified. Numbers may not add up due to rounding.

As part of Action Plan Amendment 8B, the City reviewed its existing recovery programs and made changes that are necessary to make the programs work best for New Yorkers. The reallocations made as part of Amendment 8B make more targeted investments in hard-hit areas that ultimately will have tremendous value for businesses and jobs. These benefits are not all reflected in the percentages shown above. Benefits to businesses are achieved throughout many of the programs funded by CDBG-DR, in particular through resiliency efforts to make buildings and communities more resilient to future climate events.

The City assessed additional unmet needs within each of the existing programs, as described in each section of the Plan. The City also conducted an assessment to determine if there were additional needs that were not previously identified in the plan and has determined that those needs have been addressed through other resources or that there were no additional unmet needs.

V. SOURCES OF FUNDING TO BE LEVERAGED

The CDBG-DR allocation of $4.21 billion will be leveraged by numerous other sources of Federal, State, City, and private funding. The allocation of these combined funds will result in a more comprehensive and effective recovery effort by: (1) ensuring that a wide and diverse range of recovery needs are met; (2) assuring flexibility to address short-term and long-term recovery needs; (3) enabling communities to meet needs that would not likely be addressed by other funding sources; and (4) assisting communities to better position themselves to meet their post-disaster recovery needs.

Housing

The CDBG-DR Housing allocation will be leveraged against numerous other sources of Federal, State, City, and private funding, including proceeds from FEMA (Individual Assistance, Hazard Mitigation Grant Program, and Public Assistance), SBA Disaster Loans, National Flood Insurance Program payouts, private insurance payouts, and other Disaster Relief Appropriation funds. In compliance with program guidelines and regulations, CDBG-DR housing funding has been allocated toward recovery efforts in the most impacted and distressed areas of the City to support unmet needs not funded by these sources.

In addition to Federal sources and private insurance payouts, the private and non-profit sectors provide financial resources and support to New Yorkers impacted by Hurricane Sandy. Since the storm, the Mayor's Fund to Advance New York City has played a critical role in the relief and recovery efforts by facilitating privately-funded programs that leverage flexible capital to address unmet housing needs while the CDBG-DR programs are put in place. Additionally, NYC Service, a City agency that leads targeted volunteer opportunities and initiatives, has worked with the FEMA Volunteerism staff and the housing agencies to leverage work from the volunteer community, including long-term recovery efforts in impacted areas, and serve as an interface for coordination with the City's recovery efforts.

A few of the housing-related programs that have taken place are as follows:

- Neighborhood Recovery Fund and Counseling: The Center for New York City Neighborhoods, through support from the Mayor's Fund and Goldman Sachs Gives, deployed $1.4 million in funding to help affected homeowners. The Mayor's Fund funded a network of housing counselors and legal services professionals to help homeowners secure resources and relief from FEMA, insurance providers, and other public and private programs. Goldman Sachs supported a complementary Neighborhood Recovery Fund, an emergency grant program that provides direct assistance with unmet needs to homeowners impacted by the storm.
- Mold Removal and Safe Practices Training: The mold program was supported by more than $13 million in private funds from the Mayor's Fund, the American Red Cross, and the Robin Hood Foundation. The program removed mold in approximately 2,000 homes in the hardest hit areas. The work was administered by Neighborhood Revitalization NYC, an affiliate of the Local Initiatives Support Corporation (LISC), a community development non-profit corporation with 30 years of experience working in New York City. In addition to the direct mold treatment program, the Mayor's Fund also sponsored awareness and safe practices workshops on mold led by a consortium of university partners, which included free supplies. The workshops were located in targeted locations, including NYCHA campuses, with the help of City and community partners.
- Partnerships with Non-Profit Rebuilding Efforts: The City also worked to leverage private resources and the work of voluntary agencies and contractors to make rehabilitations to homes that may not

be eligible for Build it Back due to Federal rules and restrictions. The Mayor's Fund to Advance New York City, with additional support from the Robin Hood Foundation, the American Red Cross and JPMorgan Chase, and in partnership with HRO, created the NRNYC Home Repair Program to use private dollars to rehabilitate up to 550 homes that may not be served by the publicly-funded program. The NRNYC Home Repair Program is administered by Neighborhood Revitalization NYC, an affiliate of the Local Initiatives Support Corporation, a community development not-for-profit corporation with 30 years of experience working in New York City.

- Hurricane Sandy Housing and Neighborhood Recovery Donors Collaborative: A public-private team, led by HPD, HDC, and HRO in partnership with 16 of the City's leading philanthropic organizations and the Mayor's Fund to Advance NYC, raised over $3.4 million in grants to support community-based organizations across the five boroughs to reach vulnerable populations under the Hurricane Sandy Housing and Neighborhood Recovery Donors Collaborative.

The Department of Housing Preservation and Development's (HPD) loan programs will leverage CDBG-DR funds, beginning with programs launched immediately after the storm, including:

- Emergency Loan Program: Neighborhood Housing Services (NHS), through its Emergency Loan Program, provided owner-occupants of one- to four-unit homes with loans and grants to repair water mains, boilers, sewer lines, sidewalk violations, roofs, plumbing, and electrical problems, and to eliminate conditions dangerous to health and safety. The maximum loan amount is $10,000, with low-interest rates and a maximum term of five years. NHS also operated the Landlord One emergency loan program for small property owners, corporations, non-profit owners, investors, and owner-occupants of 5- to 20-unit residential and mixed-use buildings in the five boroughs. The maximum loan amount is $25,000, available in increments of $10,000, $15,000, $20,000, and $25,000. The funds were used to replace building-wide systems, eliminate code violations, upgrade vacant apartments, eliminate dangerous health and safety conditions, and make other essential rehabilitations.

Business

In addition, the Sandy I loan and grant program, led by NYCEDC and SBS, leveraged funds from private investors with funds from Goldman Sachs and 23 additional banks. The Hurricane Sandy Business Loan and Grant Program builds upon a variety of other government and private assistance programs that have provided assistance to date, including SBA loans, the Hurricane Emergency Sales Tax Exemption program, National Grid grants, and other institutional assistance.

Infrastructure and Other City Services

The CDBG-DR allocation for Infrastructure and Other City Services will be leveraged against supplemental sources of Federal funds allocated toward recovery, including FEMA (Public Assistance Grant Program and Hazard Mitigation Grant Program), the U.S. Army Corps of Engineers, Federal Highway Administration and Federal Transit Administration, SBA Disaster Loans, and National Flood Insurance Program payouts.

Coastal Resiliency

The CDBG-DR allocation for Coastal Resiliency will be leveraged against and dependent upon a variety of other funding sources as detailed in *A Stronger, More Resilient New York*.

VI. CDBG-DR PROGRAM ALLOCATIONS

Table: CDBG-DR funds benefitting Low and Moderate Income Persons

Program	CDBG-DR Allocations ($ millions)	% of Funds Expected to Benefit Low/Mod Persons	Total Funds Expected to Benefit Low/Mod Persons
Housing Programs	***$2,459***		***$1,399***
Build it Back: Rehabilitation, Reconstruction and Reimbursement for 1-4 Unit Buildings	$1,713	50%	$856
Build it Back Multi-Family Building Rehabilitation	$416	52%	$216
Rental Assistance	$19	100%	$19
Build it Back Workforce Development	$3	100%	$3
Public Housing Rehabilitation and Resilience	$308	100%	$308
Business Programs	***$123***		***$48***
Hurricane Sandy Business Loan and Grant Program	$48	50%	$24
Business PREP	$3	50%	$2
Restoration of Saw Mill Creek Marsh	$12	0%	$0
Resiliency Innovations for a Stronger Economy (RISE : NYC)	$30	25%	$8
Coney Island Green Infrastructure Improvements	$15	50%	$8
Rockaways Commercial Corridor Resiliency	$15	50%	$8
Infrastructure and Other City Services	***$755***		***$618***
Public Services	$323	78%	$252
Emergency Demolition	$2	0%	$0
Debris Removal/Clearance	$13	100%	$13
Code Enforcement	$1	0%	$0
Rehabilitation/Reconstruction of Public Facilities	$319	80%	$255
Interim Assistance	$98	100%	$98
Resiliency	***$630***		***$339***
Coastal Protection	$159	51%	$81
Residential Building MitigationProgram	$60	80%	$48
Staten Island University Hospital Mitigation	$28	51%	$14
Rebuild by Design			
East Side Coastal Resiliency	$338	51%	$172
Hunts Point Resiliency	$45	51%	$23
TOTAL	**$3,967**	61%	**$2,404**

**These allocations are based on the best data currently available and reflect projections of need to support the programs. It can be anticipated there will be future adjustments based on actual experience once programs are implemented. At least 50 percent of grant program funds must benefit Low- and Moderate-Income populations. The table above excludes Planning and Administration funding which is not included in this calculation.*

Please note that, although New York City has identified the programs to which it will commit its Hurricane Sandy CDBG-DR allocation, the City intends to pursue incremental obligations, as agreed to in consultation with HUD, in order to control the expenditure and delivery of these funds in the most efficient and effective manner.

VII. HOUSING

Needs Assessment

Impact to the City's Housing Stock

To understand the significant damage Hurricane Sandy caused to New York City's housing stock and the need for temporary and permanent housing, the City analyzed field inspections and a variety of data sources to estimate the number and severity of damaged buildings across the five boroughs. These data sources include Department of Buildings (DOB) and Department of Housing Preservation and Development (HPD) inspections, FEMA building inspections, inundation assessments, utility outages, and registrations for the Rapid Repairs program. The section below describes the City's assessment of impact to its non-public housing stock.

The City also worked in close partnership and consultation with the New York City Housing Authority (NYCHA) to quantify the storm's impact on its buildings. A description of NYCHA's needs assessment, unmet needs, and recovery programs can be found in this chapter following information about the Build it Back programs.

Non-Public Housing

Based on the analyses conducted, the City estimates that more than 69,000 residential units have been impacted by physical damage as a result of Hurricane Sandy. In addition, many thousands of New Yorkers were temporarily displaced from their homes due to power outages or other service interruptions. Following the storm, the New York City Housing Recovery Portal website allowed impacted residents to register with the City and be referred to vacant affordable housing or, depending on eligibility, a NYCHA unit. The Portal, in addition to registration data collected through the City's 311 system, provided the City with further information about impacted residents with housing needs, including accessible housing for people with disabilities. However, given the dynamic nature of post-disaster housing, there is no accurate way to definitively quantify the number of families displaced at any given time.

The City's analysis shows that there are three main categories of housing damage:

- **Severe damage (Reconstruction required):** More than 800 buildings (more than 900 units) were destroyed or became structurally unsound. More than 95 percent of these buildings are one- or two-family homes.
- **Major damage:** Approximately 1,700 buildings (more than 20,000 units) suffered major damage, of which approximately 1,400 are one- or two-family homes. Major damage typically corresponds to flooding of basements and ground floor living spaces.
- **Moderate damage:** Approximately 16,000 buildings (more than 42,000 units) suffered moderate damage, of which approximately 15,000 are one- or two-family homes. Moderate damage typically corresponds to basement flooding with little or no impact to ground floor living spaces.

Note that these categories are based on damage estimates developed in advance of the Program's design of scope and standards and are not tied to the type of repair work required. Projections for the Build it Back program are discussed later in this Action Plan.

New York City's Response to Impact to the Housing Stock

Department of Environmental Protection (DEP): NYC Rapid Repairs

Typically after a disaster of Hurricane Sandy's magnitude, families are forced to relocate for extended periods of time to shelters and other forms of temporary housing, which delays the real recovery that begins when families return to their homes. Founded on the premise that the best temporary shelter is permanent shelter, the City implemented the Rapid Repairs program, which restores the basic services that families need to return home. Rapid Repairs is New York City's implementation of FEMA's Sheltering and Temporary Essential Power (STEP) program, created to address the unique housing challenges created by Hurricane Sandy. STEP funds emergency and necessary residential repairs such as restoration of temporary electricity, heat, and hot water so that residents can remain in their homes while permanent repair work continues.

DEP administers the Rapid Repairs program, which was first announced on November 9, 2012. Through Rapid Repairs – the first program of its kind – the City has deployed dozens of contractors and thousands of skilled construction workers to make emergency repairs, free of charge, on residential properties affected by Hurricane Sandy. The assistance provided through Rapid Repairs does not impact the assistance that families are eligible to receive through FEMA's Individual Assistance program. All work is supervised by the City and compliant with the relevant safety and building codes.

The program ended in March 2013. NYC Rapid Repairs assisted with over 11,800 home repairs comprising over 20,000 residential units in the five boroughs. Rapid Repairs has also provided significant construction opportunities for the City's Minority- and Women-Owned Business Enterprises (MWBEs). Rapid Repairs employed 9 prime contractors and approximately 185 subcontractors, including 37 MWBEs.

Rapid Repairs also provided priority assistance to people with disabilities by installing ramps so people could gain access into their homes.

Department of Housing Preservation and Development (HPD)

HPD, in conjunction with the Housing Development Corporation (HDC) and other key partners, designed and implemented a number of housing and neighborhood relief and recovery programs to help stabilize those whose housing was impacted by Sandy. HPD specifically led the following key work streams to address immediate relief and response efforts:

Field Operations

HPD staff immediately started working in the affected neighborhoods, bringing relief to residents whose homes and buildings required services.

- Inspections, Emergency Repairs, and Demolitions: HPD attempted more than 9,100 inspections at approximately 6,000 properties affected by Sandy, and notices were mailed to the owners of these properties. HPD has also assisted agency partners and private owners with finding resources to restore essential services. HPD is responsible for the demolition of approximately 400 affected structures, and is conducting emergency repair work in affected multi-family properties where owners are not participating in Rapid Repairs. In addition, HPD has conducted community outreach in several affected areas. HPD conducted approximately 900 survey visits to buildings

and made approximately 1,150 calls and 5,000 robo-calls to owners. A special e-mail address (HPDSandyIssues@hpd.nyc.gov) was created for owners who have property damage resulting from Sandy that would result in a Housing Code violation under normal circumstances.

- As of January 25, 2013, approximately 200 HPD staff members had been working overtime on critical Sandy-related recovery efforts in partnership with FEMA and other City agencies. HPD staff members were assigned to the three areas below:
  - Housing Recovery Link Desk/Hotel Operations: perform intake, data management, and technical assistance; assist 311 callers with registering online and addresses caller issues; liaise with FEMA, HPD's Code Enforcement Division, and other City agencies.
  - Restoration Centers: assist residents with registration for the Rapid Repairs program, conduct follow-ups, and coordinate services with contractors; help residents connect to City services including interim housing; and assist homeowners with HPD mortgages or liens who need insurance/FEMA checks endorsed.
  - Rapid Repairs: assist contractors in assessing properties for repairs.

Financial Sector

HPD convened banks and other housing and financial industry partners to consider development of new loan and grant programs. These proposals build on existing expertise and programs in both the private and public sector and on lessons learned from past disasters. The working group's discussions drove both immediate storm response and shaped plans for HPD's use of CDBG-DR funds.

Developer Coordination and Housing Match Program

HPD, in conjunction with HDC, the U.S. Department of Housing and Urban Development (HUD), and the New York State Division of Homes and Community Renewal (HCR), worked with development partners at the NYS Association for Affordable Housing, the Real Estate Board of New York, and the Rent Stabilization Association to identify vacant apartments at different levels of affordability and make them available to affected New Yorkers.

The New York City Housing Recovery Portal website was launched in December 2012 for City residents displaced by Hurricane Sandy. Households could register with HPD, which sought to identify alternative housing options for that household. As of March 2013, 1,831 accounts had been created and 1,687 registrations had been completed. Income-eligible New Yorkers may also have been referred to public housing vacancies within NYCHA. The Portal closed when 311 Build it Back registration opened.

In addition to the Portal, HPD explored other housing options including a Section 8 Housing Choice Voucher pilot program. The pilot program provided approximately 111 Housing Choice Vouchers to displaced New Yorkers affected by Hurricane Sandy who meet eligibility requirements.

Non-Profit Coordination

HPD, in partnership with the Citizens Housing and Planning Council (CHPC), collaborated with established non-profit organizations to assist affected residents and rehabilitate damaged housing.

- Canvassing: HPD convened non-profits including CHPC, Local Initiatives Support Corporation (LISC), Mutual Housing Association of New York (MHANY), Center for NYC Neighborhoods (CNYCN), and others to develop and administer tenant needs assessment surveys. Staff developed

and distributed fact sheets on humanitarian resources (Restoration Centers, warming centers, food distribution, Rapid Repairs, FEMA registration, etc.)

- Proposal development: HPD reviewed, developed, and aligned multiple recovery initiatives proposed to the Mayor's Fund by groups such as Enterprise Community Partners, LISC, Habitat, Restored Homes, and CNYCN.
- Communications: HPD sent periodic e-mail blasts to non-profit partners providing updates on City initiatives and resources and coordinated briefings and structured feedback between non-profits and City agencies (HPD, Mayor's Office of Housing Recovery Operations [HRO], and HDC).

Department of Homeless Services (DHS)

DHS played a major role in the evacuation process and continues to provide services to those impacted by Hurricane Sandy through the programs listed below. (For an analysis of how Hurricane Sandy affected the City's existing homeless population, please see the "Impact to the City's Homeless Population" section.)

Emergency Shelter

DHS provided managerial oversight of the emergency storm sheltering operations via the Unified Operations and Resource Center (UORC). UORC uses a unified command structure where multiple agencies work to coordinate and assist shelter staff on a tactical level. Sixteen key agencies provided staff to the UORC; DHS employees made up the largest percentage of workers. At the same time that DHS staffed the UORC, closed evacuation sites, and opened new ones, the agency prepared to close its homeless shelters located in Evacuation Zone A to protect shelter residents. The closing and opening of shelters was manageable because of immense preparation and planning for such an emergency. Notwithstanding the magnitude and devastation of Hurricane Sandy, DHS continued to meet its mandate to shelter all eligible New Yorkers and manage a homeless shelter program totaling approximately 48,000 individuals (single adults and families).

DHS deployed staff to various sites, resulting in overtime costs in three main areas of service to the public: sheltering families and single adults (who were no longer able to stay in their homes) in evacuation centers; setting up and staffing evacuation centers and providing equipment, volunteers, supplies, etc.; and setting up and staffing the UORC, which supports tactical management of shelter operations by filling resource requests and resolving problems at individual shelter system facilities.

City Hotel Program

The provision of services in the City Hotel Program was originally administered through the American Red Cross. Later, DHS began to work with local, community-based experts to provide services to evacuees in hotels. BASICS, BRC, Project Hospitality, Samaritan Village, Inc., and SCO Family Services provided services to approximately 3,132 displaced households across 50 different locations. Organizations provided case management services, connecting evacuees to any City or Federal benefits for which were eligible. These organizations also helped with housing plans, including collaboration with FEMA to ensure that all eligible evacuees were registered with the appropriate programs.

Homebase

The role of Homebase at the Restoration Centers was to provide information on temporary housing options and, when available, immediate hotel/apartment placement. Individuals displaced by the storm were

counseled by Homebase staff at Restoration Centers beginning on November 15, 2012. Providers included the Archdiocese of New York, BronxWorks, CAMBA, Catholic Charities of Queens, HELP USA, and Palladian. By November 29, 2012, Homebase sites were making hotel placements with the Hotel Operations Desk.

In addition to making emergency shelter placements, Homebase assisted consumers with navigating the array of benefits and assistance available to them. Of those served, 33 percent were referred to FEMA; 24 percent were referred to HRA; 36 percent were assisted with the HPD Housing Recovery Portal; and 16 percent were referred to NYCHA. (Please note that individuals may have been referred to more than one organization.)

Relocation Services

DHS and the Mayor's Fund to Advance New York City were responsible for moving furniture donated to affected residents who relocated into permanent housing in NYCHA apartments.

Providing Adequate Housing for All Income Groups

NYCHA, HPD, HDC, HRO, and the Department of Environmental Protection (DEP), which administers the Rapid Repairs program, are active partners in developing the housing element of the Action Plan. To identify and address the needs of housing across all income groups and housing types impacted by Hurricane Sandy, the team has actively engaged community stakeholders to gather input on how to serve the range of household types affected by the storm. These agencies have worked collaboratively to address housing needs in developing programs to be leveraged with CDBG-DR funds.

City leadership established a foundation for recovery that focuses on resiliency. They have made the difficult decision to enforce the requirement for Hurricane Sandy-impacted New Yorkers to reconstruct to a higher standard than was in place before the storm. As evidenced by the impacts on properties that were built after floodplain management requirements became law, buildings with materials and methods targeted to be disaster resistant were measurably less impacted than those built prior to the requirements.

Disaster-resistant measures have been incorporated into all housing programs.

Impact to the City's Homeless Population

Single Adults and Childless Families

To date, Hurricane Sandy does not appear to have had a significant lasting effect on the demand for traditional shelter services for single adults or adult families. The average daily single adult census in September before the storm was 9,281. In November 2012, the average daily census was 9,365. For childless families, the September and November average daily censuses were 1,680 and 1,689, respectively.

However, during and immediately after the storm, services were impacted and the Department of Homeless Services took all steps necessary to preserve the continuity of services to the City's homeless. Five single adult shelters located in low-lying areas were evacuated, which required the relocation of approximately 1,350 clients, along with the City's intake operations for single men and childless families (families with no minor children). Clients were moved into reserved emergency beds, a new shelter facility that had not yet opened, or absorbed into existing vacancies in the system. Shelter staff accompanied clients to these locations and made every effort to minimize the disruption of services.

The City's intake operations for single men and childless families were relocated to sites designated for back-up intake operations according to the agency's Continuity of Operations Plan. Single men were redirected to Brooklyn and childless families to Queens. The public was notified of the relocations through 311 and the Department continued to accept applications and place clients in accordance with all applicable laws and regulations.

With respect to the street homeless population, the City's outreach teams ramped up their operations to offer services to at-risk street homeless individuals during and after the storm. Many of them, some displaced by the storm, ended up in evacuation centers where they were engaged by shelter and outreach staff and, where possible, connected with appropriate shelter and outreach services.

The relocated shelters and their capacities are as follows:

- McGuiness: 200
- Huntington: 18
- Borden: 240
- Turning Point: 37
- 30th Street: 850

The evacuees from these shelters returned within the following few weeks. Borden Avenue Shelter in Queens required significant capital work – including hazmat sewage abatement, floor replacement, and wall replacement – that was completed by the end of November. Additionally, the Pamoja House men's shelter in Brooklyn required a partial restoration of its roof, which was damaged in the storm. Furthermore, the drill floor of the Park Slope Armory was damaged as a result of using the facility for evacuees with medical needs. The roof at the Schwartz Shelter at Wards Island had to be repaired due to a fallen tree and the generator had to be repaired at the George Daly House.

Families with Children

The storm did not appear to have a significant lasting effect on the demand for traditional Family with Children shelter services. The average daily census for Families with Children in September before the storm was 9,616. In November 2012, the average daily census was 9,845 (2 percent increase).

Since the hurricane, DHS identified over 420 families with children who either reported issues related to the hurricane as their primary reason for seeking shelter (112 families) or whose last residence prior to shelter was in an area that may have been affected by the hurricane (311 families during the time period covering the hurricane through January 2013). DHS made efforts to engage all of these families at intake or in shelter and link them to FEMA and City public services to help victims of the hurricane. Some were then referred to hotels and received services at those hotels. Only ten families who reported the hurricane as their primary reason for seeking shelter were subsequently found eligible for DHS shelter.

In preparation for the storm, four family shelters located in low-lying areas were evacuated. Clients were given passes to make their own arrangements or transported to one of the City's evacuation shelters. Four shelters also lost power during the storm or immediately after the storm. These shelters were Helen's House, Nazareth, Children's Rescue Fund East, and LaGuardia. Meals and blankets were delivered to those sites.

The relocated shelters and their capacities were as follows:

- LIFE: 93
- Huntington House: 18
- Henry Street Settlement Urban Family Center: 82
- Bay Family Center: 99

The evacuees from LIFE, Huntington House, and the Urban Family Center returned to their shelters by the end of October 2012. The majority of the households from Bay Family were also returned by the end of October. Final repairs were made to the last 38 units at the Bay Family Center in January and all families were able to return by February 1st, 2013.

Several family shelters also required significant capital work as a result of the storm. A boiler replacement is required at Urban Family Center (Manhattan) and a replacement generator is needed at Life Family Residence (Manhattan). Other repairs, such as roof and a sidewalk shed, were needed at Auburn Family Residence in Brooklyn and Regent Family Residence in Manhattan.

Homeless Population Needs Assessment

Pre-Storm Homeless

As described above, shelter counts taken one month prior to the storm and approximately one month after the storm did not show any significant increase in the homeless population, therefore indicating that there was not a new, quantifiable unmet need for this population. Accordingly, the pre-Sandy homeless population will continue to be served through the City's existing homeless programs. New York City has the largest and most robust shelter system of any municipality in the nation to meet the needs of the homeless. The City is unique in that it is mandated to shelter the homeless, stemming from the 1981 Callahan v. Carey lawsuit, which established the right to shelter for all homeless men and set standards for shelter conditions, capacity, and staffing ratios. Two years later, the right was extended to single women and families (Eldredge v. Koch and McCain v. Koch). Even under the City's considerable financial constraint and the diminution of State assistance toward the costs of sheltering the growing homeless population, the City has maintained its commitment to meeting the needs of the homeless and helping shelter clients move toward self-sufficiency and stable housing in the community. Below is the Department of Homeless Services' budget for City Fiscal Year 2013.

DHS Division	Total (in millions)	City Tax Levy	New York State	CDBG	Other Federal	Other
Central Administration	$92.1	$32.5	$0.5	$0.0	$59.1	$0.1
Adult Shelter	$254.1	$174.4	$71.1	$0.0	$8.6	$0.0
Street Homeless Programs	$33.4	$31.8	$0.0	$0.6	$1.0	$0.0
Single Room Occupancy	$20.9	$10.4	$10.4	$0.0	$0.0	$0.0
Family Shelter	$420.2	$122.7	$45.7	$3.5	$248.3	$0.0
Other Adult Programs	$5.7	$4.8	$0.0	$0.0	$0.1	$0.9
Other Family Programs	$36.4	$9.2	$0.4	$0.0	$26.8	$0.0
Adult PS and OTPS	$73.4	$64.2	$0.0	$0.0	$9.2	$0.0
Family PS and OTPS	$64.0	$18.4	$0.5	$0.0	$45.1	$0.1
Total	$1,000.3	$468.4	$128.6	$4.1	$398.2	$1.1

DHS primarily funds family shelters with a mix of Federal Temporary Assistance for Needy Family (TANF) funds, CDBG entitlement funds, NYS State Safety Net funds, and City resources. Single adult shelters are primarily funded with a capped grant from the State (the Adult Shelter Cap) and City resources. Those households that have already entered the shelter system as a result of Sandy are being provided with services funded with these resources.

DHS only utilizes a small amount of McKinney-Vento funding to operate their shelters. DHS receives two grants under the McKinney Program – the Emergency Solutions Grant (ESG) and the Supportive Housing Program. About $3 million of ESG helps fund ten different single adult shelters, while the rest goes to supporting programs (such as homeless prevention and street homeless outreach). The latter is used for a Homeless Management Information System (HMIS).

DHS plans to claim all directly Sandy-related expenses under FEMA's Public Assistance Grant Program as either Category B (emergency work) or Category E (permanent work). Additionally, DHS is investigating what can be done to be better prepared for a future event. These efforts are part of the analysis in *A Stronger, More Resilient New York* and include moving sensitive equipment to higher ground at facilities that are vulnerable to flooding, and possibly relocating facilities that are in flood zones.

Finally, HPD plans to spend at least $10 million of the CDBG-DR allocation to rehabilitate supportive housing projects that will serve chronically homeless individuals with a variety of special needs, such as mental illness or addictions. On-site supportive services are provided through a variety of City- and State-funded contracts to ensure that these individuals remain stably housed. Investment in these projects, in addition to separate resources committed to rehabilitation and new construction in supportive housing, addresses permanent housing for pre-storm homeless. Please refer to Chapter 4 of "Housing New York: A Five-Borough, Ten Year Plan" at www.nyc.gov/housing for more information. In addition, the City will actively seek opportunities to convert damaged nursing homes, rooming houses, and other appropriate facilities to supportive housing. The City will continue to monitor this population.

Post-Storm Homeless

Some households have reported being made homeless as a result of Sandy. The City-managed hotel program ended in the fall of 2013, serving 3,132 households. DHS is provided these households with case management services with the goal of relocating these evacuees home or to other permanent housing as

quickly as possible through referrals to the myriad of services being provided by City agencies. Some of these households returned home after necessary repair work, while others were relocated to Section 8 or NYCHA public housing units. However, in the absence of continued FEMA funding of these transitional arrangements, some were served by other programs.

For those households that have been and may potentially be made homeless by Sandy, the Department of Housing Preservation and Development (HPD) implemented a 25 percent marketing preference for households displaced by Sandy in new development projects. HPD will also use CDBG-DR funds to operate a rental assistance program for displaced, low-income households. (Please see the TDAP program description below for further information.) Finally, DHS will provide households with the same services that more traditionally homeless household receive, including assistance relocating to permanent housing.

Remaining Unmet Housing Needs

Assessing the Demand

For the NYC Build it Back Program, the City's program to assist homeowners, landlords, and tenants in the five boroughs whose homes and properties were damaged by Hurricane Sandy, the assessment of demand is further refined by registrations for the program. On Monday, June 3, 2013, Mayor Bloomberg announced the opening of registration for the Build it Back program. As of October 31, 2013, the closing date for registration, the program received registrations for more than 20,000 buildings and encompassing 60,000 residential units.

Consultation with Stakeholders

Starting in May 2013, the Build it Back team conducted outreach to both inform stakeholders about the City's post-storm efforts and to gather feedback from impacted households, community partners, and elected officials. In June 2013, the City held a series of housing forums in the most impacted neighborhoods. Over the course of four events, which built upon events the City held in spring 2013, over 1,000 residents met with staff to learn about the Build it Back program before registration opened. Once registration opened, additional sessions were held in August and September for over 200 homeowners to educate and inform them about rebuilding options. Interpretation was offered in seven languages at these events: Chinese, Spanish, Italian, Yiddish, Hebrew, Russian, and American Sign Language.

During the months of September and October 2013, HRO led expansive efforts to ensure that homeowners in impacted communities were aware of Build it Back and had the opportunity to register. Based on analyses, the City identified neighborhoods with the greatest damage, as well as demographic characteristics of those areas, to develop targeted outreach. This included publicizing the Program via traditional and digital media outlets, utilizing local print, radio, and social media in both English and foreign languages. Additional efforts included a series of phone banking, door-to-door outreach, and letter mailing campaigns to reach as many impacted community members as possible. These efforts continued through the October 31, 2013 registration deadline. In total, 25,699 applicants registered for the Program.

Outreach efforts also relied on input and help from community partners, long-term recovery groups, and elected officials. An interagency team, led by HPD, HDC and HRO and funded through a philanthropic collaborative, engaged a group of community-based organizations across the five boroughs to reach vulnerable populations under the Hurricane Sandy Housing and Neighborhood Recovery Donors Collaborative. To access hard-to-reach immigrant communities, the Mayor's Fund, in partnership with the

Mayor's Office of Immigrant Affairs and Federation of Protestant Welfare Agencies, sponsored teams of outreach workers to survey immigrant households about their needs, connect them with services for which they were eligible, and provide information on the City's plans for long-term disaster case management. Almost seven thousand households were surveyed and assisted through these efforts. Consultation with these groups also helped HRO adjust program guidelines and policies to ensure that they reflect community needs as they evolve.

As a result of Build it Back's outreach efforts, as described above, and a review of the Program's registration results after the close of the October 31, 2013 deadline, the City did not identify any additional programmatic unmet needs.

Since the close of registration, Build it Back has collaborated with elected officials to engage the public and create additional access points for homeowners. Beginning in May 2014, the Program has expanded its operation by opening Build it Back satellite centers in Mill Basin and Howard Beach and by having staff conduct sessions at the offices of elected officials and community organizations in Brooklyn (Coney Island, Sheepshead Bay, Gerritsen Beach, Red Hook, Seagate), Queens (Belle Harbor, Rockaway Park, Rockaway Beach), Staten Island (Dongan Hills, Arthur Kills), and the Bronx (Throgs Neck). Build it Back has conducted over 100 of such sessions. To learn about and address community needs, the Program also participates in recovery task forces in Staten Island, Queens, and Brooklyn. These groups consist of local elected officials, City agencies, and local civic associations.

Additionally, Build it Back has helped organize special events and is a regular participant in civic organization and community board meetings. These efforts include: "Sandy Design Help Desk" events in Staten Island and Brooklyn and a "Sandy Recovery Opportunity and Resource Fair" in Queens.

Public engagement is continuing via a customer service call center through which applicants can determine their status and find answers to application questions, and via active social media and web platforms used to deliver up-to-the-minute information about Program policies.

These engagement efforts have allowed the Program to provide additional resources and support to applicants, including homeowners who have difficult cases, or who have withdrawn or been unresponsive. This includes senior citizens who may be unable to travel to Build it Back centers and applicants who require financial or design counseling.

Cost to Rehabilitate, Reconstruct, or Reimburse Damaged Buildings

By matching estimates for the distribution of types of damage with estimates for the cost to reconstruct or rehabilitate, the City has concluded that the likely overall cost to reconstruct or rehabilitate destroyed, substantially damaged, or non-substantially damaged buildings that are registered for the program is approximately $2.4 billion.

- Approximately $1.7 billion is needed to reconstruct, acquire, rehabilitate, elevate or reimburse single family homes.
- Approximately $570 million is needed for multi-family rehabilitation, reimbursement and resiliency measures to mitigate future flood risk, consistent with the principles set forth by the Hurricane Sandy Rebuilding Task Force and the Federal Register November 18, 2013 Notice (78 FR 69111)
- Approximately $19 million is needed for TDAP.

Housing (excluding public housing) Unmet Need

To understand the unmet need to be addressed by City programs, the City built upon the above estimates of the demand (or required funding) for Sandy-related reconstruction, rehabilitation, and mitigation by estimating the "supply" of funding already available to registrants of the program to meet these needs. The City subtracted the estimated funds authorized or received thus far from City, State and Federal programs, as well as privately-funded programs, from demand estimates to calculate the unmet need for reconstruction, rehabilitation and mitigation measures. The unmet need for housing also addresses the preservation and development of affordable units in multi-family buildings affected by the storm, as well as the development of new affordable housing to address the rental housing shortage. The City therefore supports the financing of additional unmet capital improvements in storm-impacted buildings, and the development of new housing units as means of creating affordability and housing stock in storm-damaged neighborhoods. Many City, State, and Federal programs have funded some of the need for homeowners and landlords to undertake rebuilding and rehabilitation measures. The City will use CDBG-DR funding to complement and build upon such sources, and to support the long-term affordability of storm damaged buildings and communities.

Housing Goals

The City's housing recovery programs are designed to meet the unmet needs described above and help people affected by Hurricane Sandy – including homeowners and tenants of rental properties – achieve permanent, sustainable housing solutions.

The objectives of the programs include:

1. Helping people affected by Sandy directly by replacing and rehabilitating housing units, including identifying opportunities for additional affordability and mitigation enhancement measures.
2. Helping people affected by Sandy by improving the resiliency of their housing units while restoring their buildings/residences.
3. Supporting resiliency improvements to reduce risk and strengthen neighborhoods in flood zones.
4. Leveraging philanthropic investments and engaging local communities directly to both address immediate gaps with flexible capital and maximize CDBG-DR dollars.

To pursue these objectives, the City has built a program that incorporates lessons from past disasters; builds upon stakeholder input from agencies and relevant organizations across the City, State, and Federal levels; and leverages the experience of locally-based organizations to ensure the diverse needs and particular contexts of New York City's affected residents are addressed.

The City's focus is to provide assistance to affected New Yorkers quickly while ensuring accountability and proper use of funds. The City has also accounted for the complexities faced by affected residents incorporating customer service and counseling options to help applicants understand their options and the impacts (financial and otherwise) of their decisions.

The City's strategy will balance speedy response with adequate planning and support equity, and take into account the distinct needs of different communities and abilities of those community members. For

program operations, the City will maximize private and non-profit sector expertise and the deep experience of the housing infrastructure in New York City while putting appropriate accountability and oversight mechanisms in place.

Housing Programs

Overview - NYC Build it Back

Based on lessons learned from past disasters, NYC Build it Back has been designed as a single program with several permanent housing recovery paths that maximize agency expertise. The City's program will leverage scale, where possible, while providing solutions tailored for the different needs of homeowners or landlords in need of assistance (e.g., by geography, building type, and size). Specifically, the City will have the following core paths to provide assistance to those who suffered damage from Sandy:

- **Rehabilitation and Reconstruction – 1-4 Unit Homes**: The City will invest a total of $1.71 billion overall in providing assistance to all homeowners whose primary residences or rental properties with year-round tenants were destroyed or experienced damage. Although the Program had created a prioritization schedule for serving impacted homeowners, it is now processing applications and addressing need across all income levels.
- **Multi-Family Buildings**: The City will invest $416 million overall in its multi-family housing stock – both affordable and market rate – capitalizing on the strong HPD and HDC institutional infrastructure. An additional $60 million for the Residential Building Mitigation Program, discussed in the Coastal Resiliency chapter, will address this housing stock.
- **TDAP**: The City will invest $19 million for the TDAP rental subsidy program to serve low-income households displaced by Hurricane Sandy.
- **Workforce Development:** The City will invest $3 million for a workforce development program to boost long-term recovery by supplying residents of impacted communities with the necessary skills to increase household income.

Definitions, eligibility requirements, and other specifics for each of these paths are described below. Additional funding may be used to support resiliency measures for homes or multi-family buildings that suffered less severe damage and for undamaged properties within the FEMA Special Flood Hazard Areas (Zones A and V).

Temporary relocation assistance for tenants is a standard component of existing HPD rehabilitation programs and will be applied to this program. Tenants have the right to return and tenants will be provided relocation assistance where applicable in compliance with the HUD Uniform Relocation Assistance and Real Property Acquisition Policies Act (URA) final rule (49 CFR Part 24). In compliance with Federal definition, a tenant will be considered permanently displaced if relocated for more than 12 months. Please note that homeowners who voluntarily apply for assistance are not required by URA to be assisted with relocation funds.

The Build it Back Single and Multi-family programs share unified program elements across program paths:

- Coordinated outreach and branding.
- Common intake and processing staff and procedures.
- Geographic areas to be served.
- Coordinated program administration.

Coordinated outreach and branding

The City's housing recovery program will have a common outreach strategy, executed by the various participating City housing agencies through a coordinated approach. This outreach will be supported by the Mayor's Office and other relevant City agencies and initiatives and will coordinate with the State outreach activities whenever appropriate. The City will also leverage the broad network of community service and volunteer organizations with well-established ties to our communities.

The program will have a single branding (NYC Build it Back) that will be leveraged in all its communication and outreach activities.

Common intake and processing staff and procedures

A single City program management entity, the Mayor's Office of Housing Recovery and Operations, will oversee intake and processing of all applications before applicants are connected directly with a specific program path and oversight agency. Program path options will be based on building type and an assessment of damage and financial need that will take place as part of the intake process. Existing affordable housing developments that have been previously assisted by HPD and/or HDC may be routed through separate intake procedures.

Coordinated program administration

The City's permanent housing recovery program will be led by the Build it Back Program, which leverages City agencies that are responsible for housing preservation, rehabilitation and development, capital construction, and environmental protection for all building types (except public housing). These agencies include the Mayor's Office of Housing Recovery Operations (HRO), DDC, EDC, HPD, HDC, and DEP.

To support completion of the work in an efficient and effective manner, the team will use the City's procurement procedures (consistent with HUD procurement requirements at 24 CFR Part 85.36) to leverage the expertise and capabilities of private non-profits, community-based organizations, Community Development Financial Institutions, and contractor and consultant support. Please note that the City will enforce and monitor compliance with Davis-Bacon Labor Standards, Exec. Order 11246,and Section 3 requirements where applicable.

Geographic area to be served

The program will cover areas in all of the five boroughs of New York City that were affected by Hurricane Sandy.

In the following charts, the City utilized U.S. Census and American Community Survey data to estimate the demographic makeup (including race, income, and homeownership rates) of the impacted housing units by the housing type and associated level of necessary rehabilitation or reconstruction. As all programmatic framework is based on damage and unmet needs, and owners of residential buildings that serve as a primary residences or have year-long tenants will be eligible to apply for assistance, subject to additional eligibility criteria, these projections represent a reasonable assessment of beneficiaries of programs. However, it is impossible to forecast who will apply for assistance, and their level of unmet need, thus the demographic makeup of the actual recipients may be significantly different. The City's outreach plan will include considerations of this data.

Demographic and Housing Profile
Hurricane Sandy Estimated Units in Damaged Buildings
New York City

	Proportion of Units in Damaged Buildings				
	Single-family (SF)[1]			Multi-family (MF)[2]	Overall
	Reconstruction	Rehabilitation	All SF Damaged Units[3]	All MF Damaged Units[3]	All Damaged Units[3]
Overall	1.0%	48.2%	49.2%	50.8%	100.0%
Race of householder	100.0%	100.0%	100.0%	100.0%	100.0%
White	89.5%	63.8%	64.4%	65.3%	64.8%
Black / Af. Amer.	5.8%	27.7%	27.2%	18.0%	22.6%
Asian	2.1%	3.6%	3.6%	9.5%	6.6%
Other	2.6%	4.9%	4.8%	7.2%	6.0%
Household Income	100.0%	100.0%	100.0%	100.0%	100.0%
<$25k	17.8%	24.9%	24.7%	28.3%	26.5%
$25-50k	16.5%	20.6%	20.5%	19.9%	20.2%
$50-75k	13.7%	15.7%	15.6%	14.2%	14.9%
$75-100k	16.3%	12.7%	12.7%	10.3%	11.5%
$100-150k	19.8%	15.2%	15.3%	13.0%	14.2%
$150k or more	15.8%	11.0%	11.1%	14.3%	12.7%
Homeownership	100.0%	100.0%	100.0%	100.0%	100.0%
Owner-Occupied	75.8%	51.9%	52.4%	30.6%	41.4%
Renter-Occupied	24.2%	48.1%	47.6%	69.4%	58.6%
Age of householder					
65 years and over	30.1%	24.6%	24.7%	23.7%	24.2%
75 years and over	16.2%	12.2%	12.2%	11.9%	12.1%
85 years and over	4.8%	3.2%	3.2%	3.3%	3.3%

Methodology

Demographic information (race, household income, and homeownership) was collected at the zip code-level for all zip codes in which one or more building was damaged by Hurricane Sandy. The overall demographic makeup of each zip code was assumed to apply in the same proportion to all units within damaged buildings in that zip code. Individual zip code-level results were then aggregated into a citywide demographic profile of units within damaged buildings.

Data sources

U.S. Census, 2007-2011 5-year American Community Survey
NYC HRO Demand Assessment Model

1. 1- and 2-unit buildings
2. Buildings with 3 or more units
3. Note that % are of each column sub-section and are summed vertically, not horizontally.

Demographic and Housing Profile
Hurricane Sandy Demographics of Most-Impacted Neighborhoods
New York City

Top 10 neighborhoods by damage[4]	Share of City-wide Total Units in Damaged Buildings: Single-family (SF) [1] Recon-struction	Single-family (SF) Rehab-ilitation	Single-family (SF) All SF Damaged[3]	Multi-family (MF) [2] All MF Damaged[3]	Overall All Damaged Units[3]	Homeownership Owner-Occupied	Homeownership Renter-Occupied	Age of householder 65 years and over	75 years and over	85 years and over
Arverne	1.1%	9.2%	9.1%	2.6%	5.8%	32.3%	67.7%	12.5%	3.4%	0.3%
Bay Terrace, Staten Island	1.1%	0.8%	0.8%	0.0%	0.4%	83.1%	16.9%	25.0%	8.3%	1.6%
Belle Harbor / Rockaway Park	12.7%	12.5%	12.5%	10.2%	11.3%	58.0%	42.0%	26.6%	14.3%	3.1%
Breezy Point	44.3%	7.9%	8.7%	0.0%	4.3%	94.9%	5.1%	37.6%	21.4%	7.0%
Broad Channel	3.3%	4.1%	4.1%	2.3%	3.2%	50.1%	49.9%	19.1%	7.6%	1.2%
Canarsie	0.4%	6.8%	6.7%	1.3%	3.9%	49.7%	50.3%	14.5%	5.6%	1.4%
Coney Island / Seagate	2.5%	4.8%	4.8%	13.6%	9.3%	24.1%	75.9%	38.3%	18.0%	5.8%
Dongan Hills / New Dorp Beach / Midland Beach / Oakwood	17.9%	11.9%	12.1%	0.5%	6.2%	73.2%	26.8%	22.6%	11.4%	2.9%
Manhattan Beach / Sheepshead Bay / Brighton Beach	2.8%	5.0%	5.0%	13.9%	9.5%	38.0%	62.0%	30.8%	18.5%	4.9%
South Beach / Old Town	6.8%	4.3%	4.4%	0.2%	2.2%	64.1%	35.9%	22.1%	11.0%	3.0%
All other neighborhoods	**7.2%**	**32.5%**	**32.0%**	**55.5%**	**43.9%**					

Top 10 neighborhoods by damage[4]	Race of householder: White	Black / Af. Amer.	Asian	Other	Household income in the past 12 months [5]: <$25k	$25-50k	$50-75k	$75-100k	$100-150k	$150k+
Arverne	18.9%	72.9%	2.1%	6.1%	31.8%	27.7%	17.1%	8.5%	10.3%	4.6%
Bay Terrace, Staten Island	95.3%	0.0%	3.4%	1.3%	11.4%	13.5%	14.8%	16.7%	22.2%	21.4%
Belle Harbor / Rockaway Park	88.4%	7.7%	1.2%	2.7%	17.2%	19.6%	14.3%	11.6%	20.3%	17.0%
Breezy Point	99.4%	0.0%	0.0%	0.6%	15.1%	13.0%	11.0%	20.5%	22.5%	17.9%
Broad Channel	59.3%	33.2%	2.2%	5.3%	24.5%	25.4%	16.1%	14.8%	15.4%	3.8%
Canarsie	9.8%	83.0%	2.6%	4.6%	18.8%	21.9%	19.5%	15.9%	15.6%	8.3%
Coney Island / Seagate	68.8%	21.0%	3.9%	6.3%	41.6%	25.9%	14.6%	7.6%	7.2%	3.1%
Dongan Hills / New Dorp Beach / Midland Beach / Oakwood	89.9%	3.1%	3.5%	3.5%	15.2%	17.1%	16.4%	14.1%	20.2%	17.0%
Manhattan Beach / Sheepshead Bay / Brighton Beach	87.2%	2.5%	8.7%	1.6%	33.1%	22.1%	13.2%	11.4%	11.5%	8.7%
South Beach / Old Town	80.6%	5.1%	8.4%	5.9%	20.1%	20.7%	17.0%	14.7%	15.0%	12.5%

Methodology
Proportion of units within damaged buildings represents the proportion of total damage, by damage type, across New York City. Demographic information is zip code-level Census information.

Data sources
U.S. Census, 2007-2011 5-year American Community Survey
HRO Demand Assessment Model

1. 1- and 2-unit buildings
2. Buildings with 3 or more units
3. Note that %'s are of each column sub-section and are summed vertically, not horizontally.
4. Selected neighborhoods are top ten zip codes by number of buildings requiring reconstruction or major rehabilitation.
5. In 2011 inflation-adjusted dollars

Build it Back Single Family (Core Paths)

PROGRAM OBJECTIVE AND DESCRIPTION: Under this program, the City will offer three core paths to provide different assistance types for owners of homes that fall into one of the following three categories:

- Reconstruction: Residential property that has been destroyed or is determined to be more feasible to reconstruct than to rehabilitate.
- Major rehabilitation: Residential property that was damaged by Sandy but was not destroyed, and will require elevation according to New York City's Building Code.
- Rehabilitation: Residential property that was damaged by Sandy, but was not destroyed, and will not require elevation according to New York City's Building Code.

The City defines "homes" as single-family homes with one to four units that are either owner-occupied or occupied by a year-round tenant. Pursuant to the Federal requriements, second homes and vacation homes are not eligible for assistance. The City will incorporate mechanisms in its programs to prevent fraud, waste, and abuse; and allow for scale. Assistance will be provided subject to the following conditions:

1. Maintain Ownership: The property owner must maintain ownership of the home for a period of one year.
2. Flood Insurance: The property owner must maintain flood insurance in the amount and duration prescribed by FEMA's National Flood Insurance Program (typically the cost of the project) if the assisted property is located in a floodplain. The Program's grant agreement will enumerate the Program's CDBG-DR flood insurance requirements.

If assistance is provided to fund the repair or reconstuction of a home, the Program will require that the work be performed in compliance with the green building guidelines specified in the March 5th Federal Register Notice, as applicable. The Program has distinct policies that specify the application of the green building guidelines to rehabilitation and reconstruction projects.

In addition to the three core paths outlined above, homeowners, under specific circumstances, will be able elect to participate in the program through the following paths in lieu of the core paths:

- Acquisition for Redevelopment
- Buyout
- Resettlement

UNMET NEED

Build it Back program benefits are limited to needs unmet by other disaster recovery assistance. For purposes of program calculations, the unmet need is defined as the estimated cost to rehabilitate or reconstruct less any other assistance received or available for the same purpose (e.g., insurance, SBA loans, other Federal assistance). Unmet need is determined by analyzing:

- Funds received and spent on rehabilitation or reconstruction efforts in line with Program parameters should reduce the unmet need.

- Funds received and not yet spent on rehabilitation or reconstruction efforts will be pooled with the assistance provided through the Program and disbursed to support the rehabilitation or reconstruction efforts in line with the Program parameters.
- In instances where any funds already received and earmarked for housing rehabilitation or replacement have not been used for their intended purpose, the City will not replace that amount with grant/loan funding. Where appropriate and feasible, the City will adjust rehabilitation scopes to meet program objectives in a manner consistent with Duplication of Benefits Requirements.

ELIGIBILITY CRITERIA: Owners of one to four unit homes in New York City who are eligible for CDBG-DR assistance and had their homes impacted by Hurricane Sandy. Properties that contain five or more units are addressed by the Multi-family Building Rehabilitation assistance described below. There is no income limitation regarding eligibility.

All residential buildings that act as a primary residence (whether owner-occupied or renter-occupied year-round) and were impacted by damage from Hurricane Sandy are eligible. Second homes as defined by IRS Publication 936 are not eligible for assistance.

Homes that are deemed to be substantially damaged or improved will be elevated as required byNew York City Building Code to mitigate against future losses. The City requires elevation using the best available flood elevation data plus freeboard, a factor of safety specified in the Building Code. The City's intention is to use Preliminary Flood Insurance Rate Maps (P-FIRMs) and to require that projects funded with CDBG-DR meet P-FIRM elevation plus freeboard, a factor of safety specified in the Building Code.

Where feasible, homes with less severe damage are eligible for discretionary resiliency measures to mitigate future flood risk, consistent with the principles set forth by the Hurricane Sandy Rebuilding Task Force and the Federal Register November 18, 2013 Notice (78 FR 6911), funds permitting. The City is considering the viability of a more generally available mitigation program through funding mechanisms such as the Hazard Mitigation Grant Program.

PROGRAM PRIORITIES: Previously, the Program employed a prioritization schedule to assist New Yorkers with the greatest need based on level of damage and Area Median Income (AMI). The Program has now determined that all applications will be processed regardless of priority, although it will continue to utilize prioritization for internal reporting and tracking purposes.

Although the Program will no longer be classifying applications using the priority system, the Program will continue to classify all applications as meeting either the Low to Moderate Income ("LMI") or Urgent Need National Objectives as required by HUD.

CORE PATHS AND PROGRAM ACTIVITIES: Build It Back offers the following core paths and program options to eligible homeowners:

1)Reconstruction: The Program offers assistance to all eligible homeowners whose projects meet the low to moderate income or urgent need national objectives to reconstruct their Sandy damaged or destroyed residential property. Eligible homeowners may choose to utilize a builder approved by the City or they may choose to manage their own construction project using an architect and builder of their choice. The City will inspect the completed work and will make payments directly to the builder. The Program must review and approve the CDBG funded portion of the design and budget of all reconstruction projects.

Homeowners managing their own construction projects must make a commitment to achieve construction completion within a reasonable timeframe that, at minimum, meets the CDBG-DR program requirement of expending funds within two years of obligation. The City will conduct a damage assessment, compliance review, and environmental review in accordance with HUD guidelines, and the homeowner must adhere to standards determined by the City, and agree to City construction inspections to ensure timeliness and quality.

2)Major Rehabilitation or 3) Rehabilitation: The Program offers assistance to all eligible homeowners whose projects meet the low to moderate income or urgent need national objectives to elevate and repair or repair their Sandy damaged residential property. Rehabilitation assistance will be provided through city-administered rehabilitation, rehabilitation direct grants, and through reimbursement, as further described below.

City-administered Rehabilitation: Eligible homeowners may choose to utilize a construction contractor approved by the City or they may choose to manage their own construction project using an architect and construction contractor of their choice. The City will inspect the completed work and will make payments directly to the construction contractor. The Program must review and approve the CDBG funded portion of the design and budget of all rehabilitation projects.

Rehabilitation Direct Grants**:** The Program offers direct grant assistance to all eligible homeowners whose projects meet the low to moderate income or urgent need national objectives to repair their Sandy damaged residential property. In cases where homeowners elect to receive a direct grant to complete moderate rehabilitation projects (those projects not requiring elevation), homeowners will receive up to two payments with a payment upon passing a final inspection. Under the Rehabilitation Direct Grant program, the homeowner receives access to a restricted grant upon signing an assistance agreement detailing program priorities. The homeowner must:

- Adhere to the unit pricing determined by the City through a competitive process.
- Adhere to financial controls put in place by the City to ensure sound financial and project management.
- Agree to seek all required permits and must agree to a final program inspection before final payment is issued.

Homeowners receiving direct construction grants or managing their own construction projects must make a commitment to achieve construction completion within a reasonable timeframe that, at minimum, meets the CDBG-DR program requirement of expending funds within two years of obligation. The City will conduct a damage assessment, compliance review, and environmental review in accordance with HUD guidelines, and the homeowner must adhere to standards determined by the City, and agree to City construction inspections to ensure timeliness and quality.

Reimbursement**:** The Program offers reimbursement assistance to all eligible homeowners that have completed Sandy-related rehabilitation work with personal resources whose projects meet the low to moderate income or urgent need national objectives. Reimbursements are issued in line with applicable laws, regulations, and program requirements (e.g., eligibility criteria, grant restrictions). Repairs must be within the same footprint of the damaged structure, sidewalk, driveway, parking lot, or other developed area to be considered for reimbursement. To comply with Federal guidance, costs incurred after (or costs

associated with contracts signed after) the earlier of a homeowner's application to the Program or October 29, 2013 will not be eligible for reimbursements. The City has requested an extension of this deadline, established by HUD guidance, to accommodate program implementation timing and public concerns.

The City's reimbursement program provides a grant amount that covers a portion of eligible reimbursable expenses and includes checks to ensure that reimbursable expenses meet applicable program requirements.

In general, Multi-family reimbursements will also follow this framework.

Optional Relocation Assistance**:** The City has determined that many vital repair or reconstruction projects will be delayed or impeded unless it is able to provide temporary relocation assistance to homeowners who are voluntarily displaced by hazardous construction activities. Specifically, many homeowners face the burden of incurring significant rental or mortgage expenses for the duration of construction activities that may prevent them from participating in Build it Back's rehabilitation, major rehabilitation and reconstruction options. Accordingly, the City provides relocation payments to homeowners who are eligible to receive Build it Back construction assistance to repair or replace their owner-occupied properties.

Relocation payments will be made available to all homeowners whose projects meet the low to moderate income or urgent need national objectives when the homeowners must vacate their homes for more than 30 days as a result of hazardous construction activities. This determination is made as a part of Build it Back's normal construction process and will be made available to all existing Build it Back homeowners who qualify for construction assistance when the relocation duration exceeds 30 days.

Eligible Build it Back homeowners will not be required to apply to the Program for this benefit. Relocation payments will be made in the form of reimbursements to the homeowner for expenses incurred and will be tied to the HUD established fair market rent for New York City. Optional Relocation Assistance will be included in the CDBG-DR allocation for the Build it Back Program and is not a separate allocation. The City will make its Optional Relocation Plan available for review on the City's Build it Back website.

In addition to the three core program paths outlined above, Build it Back will offer the following additional paths to homeowners:

4) Acquisition for Redevelopment: Under the Build it Back program, the City will provide a program path to acquire properties for the rehabilitation or reconstruction of a home or cluster of homes in ways that mitigate future risks in limited and targeted cases. In some cases, using criteria set forth in the Program's policies and procedures, this land will be reused as open space.

New York State Acquisition for Redevelopment: The City has coordinated with New York State (NYS) on advancing this program.[4] Homeowners will go through the Build it Back registration, intake and eligibility process. All eligible Build it Back homeowners that meet the acquisition criteria defined by NYS will be

[4] A Memorandum of Understanding regarding the program was signed by New York City and New York State in December 2013.

provided the acquisition option. Homeowners that select the acquisition option will be referred to NYS. Please visit http://stormrecovery.ny.gov for further details.

Under the State's current design of the program as announced in the Action Plan, after acquisition and associated requirements are completed by the State, properties will be transferred to the City, through the Department of Housing Preservation and Development (HPD), or a designated entity. Once this transfer is completed, the City will be responsible for activities related to the property transaction.

New York City Acquisition for Redevelopment: The City will offer an acquisition program as an alternative to or in addition to the NYS acquisition program, if there is a programmatic need identified by the City such as the unavailability of the NYS acquisition program to the applicant. Acquisition will include the purchase of real property, which can include air rights, water rights, rights-of-way, easements or other interests held by program eligible homeowners. The City will acquire properties under the low to moderate-income limited clientele, urgent need or slum and blight national objectives. Properties that are purchased under the acquisition program will be redeveloped for residential or commercial use, including residential use for eligible Build it Back applicants, or retained by the City or its designees for public purposes to be outlined in the Program policies and procedures.

Under this program option, Acquisition would be offered to homeowners that are otherwise eligible for program assistance if the City determines that any of the following circumstances exist:

- The property is located in the floodplain, was substantially damaged by Sandy, and acquisition through New York State's acquisition for redevelopment program is unavailable to the homeowner.
- The property has site or environmental conditions that prevent the feasible reconstruction or rehabilitation of the residential units located on the property by the Build It Back program. This may include, but is not limited to, conditions such as homes that are located over bodies of water, homes that are located in or that are adjacent to wetlands or homes that present unique construction challenges that make the rehabilitation or reconstruction of the home infeasible.
- The property is subject to zoning or other restrictions that limit or impair the ability of the program to provide a feasible housing solution to the impacted homeowner without acquisition.
- The City has identified potential alternative redevelopment uses for the property that will contribute to the overall recovery of the City and its residents. This may include, but is not limited to, the redevelopment of individual properties or groups of properties to ensure greater resilience to future storms, the correction of hazardous conditions, the establishment of a safe means of ingress and egress to impacted areas or other eligible uses to be identified in the future.

The City will acquire identified properties for post-storm fair market value as determined by an independent appraisal. In order to facilitate the acquisition of properties by the City and in order to enable the long-term recovery of property owners who are impacted by acquisition, the City will combine its acquisition offer with resettlement incentive payments as described in the HUD March 5, 2012 Notice (78 FR 14345).

Resettlement incentives will include, but are not limited to, funding provided to eligible homeowners to relocate to a new primary residence. Resettlement incentives will be sized based upon the pre-storm value of the structure that was or will be demolished, the cost to purchase a new home, the cost that would have been incurred to reconstruct or rehabilitate the home on its original location, or other necessary and reasonable costs to be determined by the program based upon identified relocation needs.

Where rehabilitation or reconstruction is infeasible or unavailable to an applicant, the Program will evaluate the option of providing the construction or rehabilitation of a replacement primary residence for the homeowner in a new location on land owned by the City, land that was obtained through the New York City or New York State acquisition programs or land purchased for resettlement, as an alternative to the resettlement incentive payment.

The City will also utilize program funding for eligible costs associated with housing counseling to assist eligible homeowners in obtaining a permanent housing solution or employing the services of a realtor and other professionals to assist with the purchase of a replacement home or property on which to construct a replacement home.

Upon acquisition of an eligible property, the City will demolish all residential and commercial structures on the property and will clear the property of hazards or other improvements requiring clearance or rehabilitate the existing structure(s) to allow for future use. The City will also undertake the remediation of known or suspected environmental contamination, where feasible. The City will dispose of the acquired property by sale, lease or donation or will retain the property for public purposes to be outlined in the Program's policies and procedures, or dispose of the acquired property by transfer of ownership to eligible homeowners for the rehabilitation or construction of housing for use as a primary residence. The City will utilize program funds for reasonable costs incurred in temporarily managing the property and for other eligible costs associated with disposition, clearance, remediation, rehabilitation, or construction. All proceeds obtained from the sale or lease of the property shall be program income.

5) Buyout: The City believes that buyouts can be an important component of an overall housing mitigation and resiliency strategy in selected areas, alongside the resiliency measures outlined elsewhere in this proposed Action Plan.

New York State Buyout: The City is coordinating with New York State (NYS) to advance the NY Home Buyout Program as included in the NYS Action Plan. Applicants interested in pursuing this option and who own property in the targeted areas will be referred to the State program through the City's intake process. The City will pursue targeted buyouts where appropriate should program options, including State buyouts, become unavailable or infeasible.

New York City Buyout**:** The City will offer a buyout program for homeowners who were not in a buyout area that was identified by New York State in its buyout program, if there is a programmatic need identified by the City such as the unavailability of the NYS acquisition program to the applicant. The City's buyout program is specifically designed to purchase flood-prone properties and remove impacted residents from harm's way. Buyout will include the purchase of real property, including, for example, air rights, water rights, rights-of-way, easements or other interests held by program eligible homeowners. The City will purchase properties under the buyout program using the low to moderate-income area and/or limited clientele, urgent need, or slum and blight national objectives.

Properties that are purchased under the buyout program will be converted to open space or will be returned to nature. This will allow the City to create areas that will assist with mitigating the impacts of future flood or severe rain events by creating additional space to absorb floodwaters and mitigate the effects of wave action. Properties that are purchased through the buyout program will be used, for example, to create or add to, parks, wetlands, wildlife management areas, beaches or other open areas that will not be developed for residential or commercial purposes. Buyout will only be offered if the City

determines that the purchase of the property will meet its long term goals of mitigating against future storm risk.

At the City's sole discretion, buyout will be offered to homeowners that are otherwise eligible for program assistance if the City determines that any of the following circumstances exist:

- The property has site or environmental conditions that prevent the redevelopment of the property for residential or commercial use and the City determines that the property is otherwise suitable for the conditions outlined above.
- The property is located in a floodway, flood-prone area or an area that has sustained severe repetitive flood losses as defined by the program.
- The City determines that the conversion of the property to open space will assist it in mitigating against future flood losses.

The City will purchase identified properties under the buyout program for pre-storm fair market value and, if feasible, necessary, and cost-reasonable, the City will offer some or all of the alternative benefits listed in theNew York City Acquisition section above, such as resettlement incentives.

Upon purchase of a property under the buyout program, the City will demolish all residential and commercial structures on the property and will clear the property of hazards or other improvements requiring clearance. They City will also undertake the remediation of known or suspected environmental contamination, where feasible. The City will dispose of the property by donation or it may retain the property for public purposes to be outlined in the Program's policies and procedures. In no case will the property be utilized for the redevelopment of residential or commercial spaces. All properties purchased under the buyout program will be utilized for open space or returned to nature. The City will utilize program funds for reasonable costs incurred in temporarily managing the property and for other eligible costs associated with disposition, clearance and remediation.

6) Resettlement: The Program offers assistance to eligible homeowners who would otherwise be eligible for the New York City or New York State acquisition program, but whose properties cannot be acquired by the City or State because the land upon which the home is situated is not owned by the homeowner. Such projects must meet the low to moderate income or urgent need national objectives. This includes situations where the eligible homeowner owns the residential structure, but the land upon which the structure is situated is owned by a cooperative or condominium association (for example, the Breezy Point Cooperative, Inc.).

Under this program option, resettlment incentive payments are offered to eligible homeowners to relocate to an area that is less susceptible to future storm related hazards such as flooding. Homeowners receiving resettlement assistance will be considered to be the beneficiaries of such assistance. Homeowners accepting resettlement assistance will be required to relocate to a new suitable permanent residence outside of the cooperative or condominium, in accordance with HUD requirements. The resettlement incentive is based upon the pre-storm value of the structure that was or will be demolished. The resettlement incentive does not include the value of the land itself, which is tied to the condominium or cooperative shares. The homeowner may also opt to sell their ownership interest in the property to assist with resettlement costs. In no event will the City take an ownership interest in the subject property under this Program option.

The City will demolish all residential and commercial structures on the property and will clear the property of hazards or other improvements requiring clearance. They City will also undertake the remediation of known or suspected environmental contamination, where feasible. The City will not acquire or purchase the ownership interest that eligible homeowners have in the property where the impacted home was located. After demolition, Appendix G of the New York City Construction Code requires that any new construction meet resiliency standards, including elevation to Base Flood Elevation plus freeboard.

CDBG-DR ALLOCATION: $1,713,056,000

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Residential Structures, Construction of New Replacement Housing (24 CFR 570.202), Acquisition of Real Property (Buyout of Residential Properties or Redevelopment of Acquired Properites) (3/5/13 HUD CPD Notice, 78 FR 14345, 31.)Relocation (24 CFR 570.606), Housing Incentives to Resettle (3/5/13, 78 FR 14345, 29)

NATIONAL OBJECTIVE (UN, LMI, SLUM/BLIGHT): The program will serve populations that meet three National Objectives: those with an urgent need, those who are low- to moderate-income, and preventing or eliminating slum or blight. All beneficiaries demonstrate an urgent need, as they live within a Presidentially-declared disaster zone. The City expects that approximately 50 percent of funding for Build it Back will be directed to low- and moderate-income households. This calculation is based on the self-reported income of damaged households who registered for FEMA assistance.

PROJECTED ACCOMPLISHMENTS: Through the total funding for Build it Back, the City plans to serve approximately 12,000 single-family homes.

PERFORMANCE SCHEDULE: The City began outreach to homeowners in the spring of 2013. Intake and processing began in the summer of 2013, and construction work began in March 2014.

Build it Back - Multi-Family Building Rehabilitation

PROGRAM OBJECTIVE AND DESCRIPTION: The City has allocated $416 million for rehabilitation loans and reimbursement for multi-family (five units or more) housing damaged by Hurricane Sandy. Funds will be used throughout the City, and will serve a wide range of housing types, including market-rate properties, HUD-assisted properties, permanent housing for the homeless, and private market units receiving project-based assistance or with tenants that participate in the Section 8 Housing Choice Voucher Program.

As mentioned previously, HPD plans to spend at least $10 million of these funds to rehabilitate and build supportive housing projects that will serve chronically homeless individuals with a variety of special needs, such as mental illness or addictions. Many projects include on-site supportive services that would be provided through a variety of City- and State-funded contracts to ensure that these individuals remain stably housed. Investment in these projects will add to the preservation and supply of permanent housing for pre-storm homeless populations. Preservation projects meeting this description are processed through the Build it Back Program and therefore demonstrate impact from the storm, as required. Note that HPD, through separate resources, is more than doubling annual rehabilitation and new construction for supportive housing to address the broader issues related to housing pre-storm homeless populations.

Please refer to Chapter 4 of "Housing New York: A Five-Borough, Ten Year Plan" at www.nyc.gov/housing for more information.

HPD also plans to spend at least $75 million of the program's funds to rehabilitate and retrofit existing affordable housing developments. The portfolio of existing affordable housing includes HUD-assisted housing such as Section 202 senior housing, projects that receive Low Income Housing Tax Credits, and developments created through the State Mitchell-Lama program (many of which have or had Federal mortgage subsidies). In addition, HPD will work with HUD to identify any HUD-assisted projects that are not yet in the City's identified pipeline, but which are in need of CDBG-DR funds to recover from Hurricane Sandy.

This program includes partial reimbursements for storm-related costs already incurred for buildings housing the greatest majority of low-income tenants. Costs incurred after (or costs associated with contracts signed after) October 29, 2013, will not be eligible. The types of eligible costs include permanent repairs and temporary or emergency repairs such as those to stabilize damage and prevent future loss. In addition to what is described in the Build it Back Section for 1-4 Unit homes, priorities for multi-family reimbursement will be to address buildings that serve low-and-moderate income tenants and to provide affordable housing for New York City by addressing properties that are otherwise assisted. Applicants must comply with all program procedures.

The Residential Building Mitigation Program, described below in the Coastal Resiliency Chapter, will address comprehensive resiliency measures to the highest need buildings in this program.

The CDBG-DR funds will be conveyed as no-interest loans, which may be forgiven depending on property specific circumstances, or as restricted grants.

CDBG-DR funds can be used to reconstruct/rehabilitate property damaged by Hurricane Sandy, and to implement limited resiliency measures. On a case-by-case basis, the City will also consider scopes of work that include non-storm-related elements as required in order to meet program standards and unmet capital needs of affordable multi-family buildings. Non-storm-related scope items will be approved only when the work is necessary to maintain the property as a viable housing resource in a storm-impacted community through compliance with program standards, preservation or development of affordable units, or compliance with accessibility requirements under Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) pursuant to 24 part CFR 8 and the Uniform Federal Accessibility Standards (UFAS). All projects must meet cross-cutting requirements. Therefore, examples of non-storm related items that would be included in a scope for the program include those related to compliance with cross-cutting requirements and items addressed to ensure that a repaired area is left in habitable and structurally sound condition. Government assisted multi-family buildings may also be eligible for the program, subject to the Build it Back Policies and Procedures, regardless of registration with the program. All work in substantially damaged properties must meet Enterprise Green Communities, Energy Star Certified Homes, or Energy Star Multi-Family High Rise and all work in non-substantially damaged properties must comply with the HUD CPD Green Retrofit Checklist standards for environmentally sustainable construction. Any structures deemed to be substantially damaged or improved must be elevated as required by the local building code.

In cases where applicable, HPD will also undertake the reconstruction of substantially damaged multi-family buildings.

Lending Options

The City will employ three different mechanisms for making CDBG-DR-funded rehabilitation loans.

1. Direct lending: The City will lend funds directly to owners of impacted buildings. The City's use of CDBG-DR funds will be modeled after two extremely successful, existing loan programs – the Article 8A loan program and the Participation Loan Program (PLP) – to meet the needs of buildings damaged during Sandy. For most properties, the program will closely resemble the Article 8A loan program that uses public money to repair buildings without capacity to absorb additional debt. In instances where buildings have an existing mortgage that is unsustainable, the City will seek to provide CDBG-DR funds in combination with a new or refinanced private first mortgage using the PLP model– PLP loans blend private and public money to repair properties and ensure supportable debt service payments. In most cases, these models will be used to serve buildings with more than 100 units, and which are not currently subject to affordability requirements.
1. Partner lending: The City will enter into a subrecipient agreement with one or more Community Development Financial Institutions (CDFIs) to administer rehabilitation loans to buildings with fewer than 100 units. The CDFI, under HPD oversight, will be responsible for outreach to owners, underwriting of loans, and servicing of funds. HPD will participate in the CDFI review of loans for viability, monitor the CDFI implementation of CDBG-DR requirements such as income certification, and have lead responsibility for NEPA review and Davis-Bacon monitoring.
2. In addition, HPD will work closely with the Housing Development Corporation (HDC), a New York State public benefit corporation that finances multi-family affordable housing in New York City. HPD and HDC will collaborate on outreach to and underwriting of loans for impacted affordable housing developments in the HDC asset management portfolio. The majority of asset management properties should meet the low- and moderate-income threshold. HDC will service loans and asset-manage the properties.

The share of funds channeled through each lending mechanism will vary depending on the level of interest and need seen in different segments of the housing market.

ELIGIBILITY CRITERIA:

- Owners of rental properties, co-ops, and condos with five units or more.

All owners of multi-family buildings, rentals, cooperatives, or condominiums that are located in the five boroughs of New York City and that have suffered damage from Hurricane Sandy will qualify for assistance to rebuild, rehabilitate, and, in the case of buildings with substantial damage, mitigate against future losses to comply with local building and zoning codes as adjusted to address future flood risk. Also, some private associations may find that rehabilitation of their infrastructure is essential to the rebuilding of housing. In these cases, the infrastructure rehabilitation may be eligible for assistance.

PROGRAM PRIORITIES:

- Properties requiring loans to restore basic habitability.
- Significantly damaged buildings with basic services restored but in need of major rehabilitation.
- Buildings serving the most at-risk demographic populations.
- Buildings populated by higher percentages of low- and moderate-income households.

GRANT/LOAN SIZE LIMIT: Loans will be capped at $200,000 on a per unit basis, including rehabilitation, reconstruction, and resiliency scope items. Exceptions may be granted as determined by the City program management. However, the City anticipates that the average loan will be substantially smaller, approximately $20,000 per unit.

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Residential Structures (24 CFR 570.202), Construction of New Replacement Housing (24 CFR 570.202), New Housing Construction (3/5/13 HUD CPD Notice (78 FR 14345, 28), Acquisition of Real Property (Buyout of Residential Properties or Redevelopment of Acquired Properties) (3/5/13 HUD CPD Notice, 78 FR 14345, 31.), Rehabilitation/Reconstruction of Public Facilities (24 CFR 570.201(c)).

NATIONAL OBJECTIVE: The Multi-Family Building Rehabilitation program will primarily meet the Low- and Moderate-Income Housing (LMI) national objective. HUD issued a waiver to the City through the Federal Register March 27, 2014 Notice (79 FR 17175), allowing the "unit approach" to be leveraged to determine national objective for multi-unit housing. Therefore, the City will meet the Low- and Moderate- Income Housing (LMI) national objective for the relevant proportion of a building when units are alike, regardless of the overall percentage of units occupied by income eligible residents. For units within this program and within a project that do not meet LMI criteria, the Urgent Need national objective will apply. HPD, HDC, and CDFIs will attempt to collect income certifications from all tenants in buildings receiving CDBG-DR-funded loans, but the City also anticipates that some buildings with largely higher-income tenants will require assistance. In the aggregate, the City anticipates that approximately 52 percent of the 20,000 units will serve low- and moderate-income households.

If a property requires rehabilitation financing, the percentage that does not meet the Low- and Moderate-Income national objective will qualify as Urgent Need.

Assisted buildings may include rehabilitation scopes in certain supportive housing projects to spaces which are considered to be Public Facilities and serve the Limited Clientele (LMC) national objective by serving building residents. Other buildings may contain community space in their rehabilitation scope and serve the Area Benefit (LMA) by serving low- and moderate- income community residents. The relevant national objective will be based on the type of services provided.

CDBG-DR ALLOCATION: $416,000,000

PROJECTED ACCOMPLISHMENTS: Approximately 20,000 units, including market-rate properties, HUD-assisted properties such as developments with 202 or 236 contracts, permanent housing for the homeless, and private market units receiving project-based assistance, or with tenants that participate in the Section 8 Housing Choice Voucher Program.

PERFORMANCE SCHEDULE: New York City agencies began preliminary outreach to property owners during the initial Action Plan review process. The CDFIs, in concert with the City, have conducted targeted outreach to properties that are in their existing portfolios that they know to be in the hundred year floodplain and have also worked with community partners located within affected neighborhoods to outreach directly to Sandy-damaged multi-family buildings in their respective catchment areas. Also, as part of the program's outreach efforts, HPD identified all multi-family buildings with 5 or more units that had registered for the Rapid Repair Program or that as of January 2013 still had a yellow DOB placard, a

red DOB placard or a power outage and called every owner or property manager where that information was available through the City's annual Multiple Dwelling Registration.

Lending began in the fall of 2013 with the first loans closing on the anniversary of the storm. Each project is individually scoped and designed, and requires permits and, in some cases, zoning review. In HPD's experience, large scale rehabilitation projects require an 18- to 24-month construction period (after the pre-development phase just described). In the course of construction, HPD typically holds back a portion of loan funds, as well as after construction is substantially complete as a tool to ensure that compliance requirements, such as filing of all Davis-Bacon paperwork, Fair Housing requirements, etc. are met.

As a result, expenditures may lag construction. While the City will make every effort to ensure a speedy and effective program delivery, it is likely that the City may need to seek an extension of the 24-month expenditure period.

Temporary Disaster Assistance Program (TDAP)

PROGRAM OBJECTIVE AND DESCRIPTION: The City will use CDBG-DR funds to create a rental subsidy program, Temporary Disaster Assistance Program (TDAP), to serve households displaced by Hurricane Sandy. The period of assistance will be up to 24 months.

The City will assist households in finding apartments in the existing affordable housing portfolio, or participants may identify their own apartment. Clients will sign leases directly with the property owners, and will be responsible for paying up to 30 percent of income in rent. The City will use CDBG-DR to cover the gap between the contract rent and tenant share. To the extent practical, the program will be modeled to follow the regulations and procedures of Section 8 (units must pass Housing Quality Standards, etc.). The New York City Department of Housing Preservation and Development (HPD), which will oversee the program, successfully created a rental subsidy program from HOME funding to meet emergency rental assistance needs in the past, which was also based on the Section 8 model. All applicants must provide a pre-storm address and an explanation as to why they cannot return to their pre-storm residence.

The City recognizes that a CDBG-DR rental subsidy is only a bridge to permanent housing. During the two year subsidy period, the City will continue to work with families to ensure they remain stably housed. The City anticipates some flow of Public Housing and potentially Section 8 units may become available. The City will transition participants to any vacancies that open during the 24 month period on a flow basis (i.e. households need not have exhausted their two years of rental assistance to qualify for a vacancy). HPD will also outreach to owners and managers of various properties with project-based subsidies that will have vacancies over time, to create another pipeline of permanent housing options.

Finally, the City will seek ways to boost household income, so that participants are better able to afford suitable housing after program expiration. For example, the City will attempt to link households to income support payments for which they are eligible, but not currently enrolled. Outreach to participants will be ongoing during the two year subsidy period to try to avoid emergency situations at the end of the subsidy window. Households may also be linked to financial counseling. Initial outreach is proactively made to applicants during workshops and briefings. HPD will use a case manager to work with eligible TDAP participants to assist in the transition to more sustainable housing. This case manager will perform a needs

assessment and coordinate counseling and case management sessions and/or referrals for needs outside of housing.

ELIGIBILITY CRITERIA: Eligibility for the Rental Assistance program will initially be limited to displaced households at or below 50 percent of Area Median Income. After the initial launch of this program, HPD will open eligibility to include households at or below 50 percent of AMI which relocated following Hurricane Sandy and which now pay more than 40 percent of income in rent.

The TDAP program is currently unable to serve households with undocumented members. Eligibility for the CDBG-DR housing programs is determined by HUD. In accordance with HUD guidance, only "qualified aliens," as defined in Section 431 of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), are eligible to receive non-exempted Federal public benefits. The City has received a private grant which funds a parallel program to serve these households.

PROGRAM PRIORITIES: To prevent homelessness among low-income households that were displaced by Hurricane Sandy and face significant barriers to relocation. After the initial launch of the program, priority was given to households that meet at least one of the following criteria:

1. Households residing in transitional housing placements (hotels, shelters) due to the storm
2. Households with expiring FEMA rental assistance
3. Households registered through the HPD Housing Portal and not offered placements
4. Households that had relocated as a result of Sandy but are unable to afford their current housing due to a high rent burden

GRANT/LOAN SIZE LIMIT: Households may lease apartments with rents up to 110 percent of New York City Fair Market Rent. Subsidies will last up to two years. Actual subsidy per household will vary by household income and size, rent, and duration of subsidy.

HUD ELIGIBILITY CATEGORY: Housing Services – Tenant Based Rental Assistance, 4/19/13 Waiver (78 FR 23580, 4.)

NATIONAL OBJECTIVE (LMH): Low- to Moderate-Income Housing

CDBG-DR ALLOCATION: $19,000,000

PROJECTED ACCOMPLISHMENTS: 300 households

PERFORMANCE SCHEDULE: Rent subsidies will be limited to 24 months.

OTHER FUNDING SOURCES:
Although CDBG-DR funded rental assistance may bridge to other rental subsidies, tenants may not receive more than one rental subsidy simultaneously.

Build it Back Workforce Development

Sandy Impact Area Workforce1 Center

PROGRAM OBJECTIVE AND DESCRIPTION: The destruction and impact of Hurricane Sandy continue to pose significant challenges for residents of impacted communities. The New York City Department of Small Business Services (SBS) and the Mayor's Office of Housing Recovery Operations (HRO) have developed a partnership, Sandy Recovery Workforce1, to support the Build it Back Program and other Hurricane Sandy rebuilding and resiliency efforts in coordination with the Workforce1 system. Through this partnership, Sandy Recovery Workforce1 will connect qualified residents to job opportunities generated as a result of rebuilding efforts. To expand this effort beyond the resources and services already provided by the City in the Rockaways and Staten Island, HRO and SBS will open one or more Sandy Recovery Workforce1 Centers, the first of which is proposed to be located in Southern Brooklyn to serve low or moderate income residents of nearby Sandy-impacted neighborhoods.

The Sandy Recovery Workforce1 centers will deliver an economic improvement program with workforce development and supportive services tailored to the needs of Sandy-impacted neighborhoods that result in higher quality, full-time employment outcomes for the community by leveraging job opportunities available through the broader Workforce1 system, as well as those generated as part of the rebuilding effort. At least 51 percent of residents in the Center's service area will be low or moderate income persons as defined by HUD.

Employment services delivered through Sandy Recovery Workforce1 centers will include but are not limited to:

- Referrals to jobs (related to rebuilding and through broader Workforce1 system)
- Resume support
- Interview preparation
- Sector specific job preparation (information about the sector, common employer expectations, etc.)
- Screening, assessment and referrals to occupational training for in-demand occupations

Additional supportive services may include but are not limited to: financial empowerment counseling, entrepreneurship education, and job retention support.

ELIGIBILITY CRITERIA: Eligibility for employment services provided through the Center will be limited to residents of New York City and will initially be targeted to persons that are at or below 80% of Area Median Income.

PROGRAM PRIORITIES: To boost long-term recovery by supplying participants with the necessary skills to increase household income.

GRANT/LOAN SIZE LIMIT: The grant value for each participant will be 100 percent of the cost of the employment services provided to the participant at the Workforce1 Center.

HUD ELIGIBILITY CATEGORY: Public Services (24 CFR 570.201(e))

NATIONAL OBJECTIVE (LMA): Low-Moderate Income Area Benefit

CDBG-DR ALLOCATION: $1,600,000

PROJECTED ACCOMPLISHMENTS: 500 persons

PERFORMANCE SCHEDULE: The City will begin outreach to eligible persons in early 2015. The provision of services to eligible participants is expected to commence in the first half of 2015.

OTHER FUNDING SOURCES: None

Job Training Voucher Program

PROGRAM OBJECTIVE AND DESCRIPTION: The City will use CDBG-DR funds to create a program to provide subsidies for participation in job training programs, including pre-apprenticeship job training programs. The subsidies will be primarily for LMI persons in disaster affected areas. The City will assist participants in finding suitable programs through the use of a pre-qualified list. Programs must meet certain minimum requirements in order to be pre-qualified. On behalf of each program participant, the City will be responsible for paying a fixed amount to the program selected by the participant.

ELIGIBILITY CRITERIA: Eligibility for the job training program will initially be limited to households that reside in the Sandy Impacted Area[5] and that are at or below 80 percent of Area Median Income. After the initial launch of this program, the City may open eligibility to include persons above 80 percent of AMI and/or persons that reside elsewhere within New York City.

PROGRAM PRIORITIES: To boost long-term recovery by supplying participants with the necessary skills to increase household income.

GRANT/LOAN SIZE LIMIT: The grant value for each participant will be up to 100 percent of the cost of the qualifying job training program that is selected by the participant.

HUD ELIGIBILITY CATEGORY: Public Services (24 CFR 570.201(e))

NATIONAL OBJECTIVE (LMC): Low- and Moderate-Income Limited Clientele,

CDBG-DR ALLOCATION: $1,400,000

PROJECTED ACCOMPLISHMENTS: 350 persons

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[5] For the purposes of the Job Training Voucher Program, the "Sandy Impacted Area" is defined as the areas in the City of New York within the following ZIP codes: 10002, 10009, 10029, 10038, 10039, 10301, 10302, 10303. 10304, 10305, 10306, 10307, 10308, 10310, 10312, 10474, 11102, 11203, 11214, 11223, 11224, 11229, 11231, 11234, 11235, 11236, 11414, 11420, 11422, 11433, 11434, 11691, 11692, 11693, 11694, and 11697.

PERFORMANCE SCHEDULE: The City will begin outreach to eligible persons in early 2015. Processing of participant vouchers is expected to commence in the first half of 2015.

OTHER FUNDING SOURCES: **None**.

Public Housing Program

Needs Assessment

While no NYCHA buildings sustained permanent structural damage due to the storm, many buildings' systems – essential for supporting the living conditions for tens of thousands of New Yorkers served by NYCHA – were significantly impacted.

- Over 400 buildings in Brooklyn, Queens, and Manhattan, with 35,000 residential units housing roughly 80,000 residents, were affected significantly by Sandy. Of the over 400 buildings, 402 lost power and, with it, elevator and compactor service. 386 buildings lost heat and hot water.
    - In Coney Island, 42 buildings – home to 8,882 residents – were impacted.
    - In the Rockaways, 60 buildings – home to 10,100 residents – were impacted.
    - In Red Hook, 32 buildings – home to 6,173 residents – were impacted.
    - In Manhattan, 176 buildings – home to 41,513 residents – were impacted.
- NYCHA developments in Coney Island were especially impacted due to substantial sand and saltwater infiltration. The systems damage in other developments was due mostly to flooding.
- An additional 356 NYCHA buildings at 97 developments in all five boroughs sustained moderate damage, mostly due to wind damage to roofs and façades.

Immediately after Sandy, NYCHA had detailed condition assessments performed by various architectural and engineering consulting firms at each of the impacted developments. These assessments provided detailed information on exactly what building elements were damaged, the degree of damage, the estimated cost to repair or replace damaged building components, as well as concepts and conceptual cost estimates for various feasible approaches to permanent repair with resiliency. These assessments have been shared with NYCHA's insurance carriers and have served as a starting point for all FEMA reviews and the formal FEMA scope and cost estimate documents. Therefore, these assessments, the scope of work specified, and the associated construction cost estimates are the basis for the determination of the total impact on NYCHA and ultimately, NYCHA's unmet need.

Remaining Unmet Public Housing Needs

Assessing the Demand

To structure a program that addresses the unmet needs of NYCHA, single-family, and multi-family properties, the housing team coupled outreach efforts with a detailed assessment of damage at the building level. This allowed the City to understand the demand for housing repairs in monetary terms and related support to families. To estimate the demand for housing rehabilitation, the City defined the full cost to complete the work to rehabilitate or rebuild in a more resilient and sustainable way. The City focused on the "cost to complete" rather than any measure of the "market value" of a property. This anchored the City's approach around an end goal of completing rehabilitations to buildings, rather than on estimating need based on the value of the property or other figures, an approach that risks an inability to secure funding to complete rehabilitations.

NYCHA employed a rational methodology that pulled from numerous existing data sources and involved several sets of experts and interviews with individuals working on the ground. NYCHA performed

additional analyses to estimate the cost to comply with sustainability and green building standards and for construction methods to address increased resiliency to future storms. NYCHA continues to refine large-scale assessments of its infrastructure to determine the full cost of the storm and to inform decisions about how NYCHA can more strategically procure, locate, and protect important equipment.

Mandatory Rehabilitation - Affected Buildings

To date, the storm has resulted in costs related to NYCHA's immediate response efforts including: dewatering efforts, mobile boilers, emergency electrical restorations, debris removal, clean up, and operating expenses such as emergency overtime.

Beyond those immediate costs, additional funding is needed for permanent repairs or replacement of damaged infrastructure, including replacement of mechanical and electrical systems.

Resiliency and Rehabilitation of Affected Buildings

NYCHA is proactively seeking measures to further strengthen all of its affected developments, or those that were directly damaged by Hurricane Sandy. In addition to the immediate expenditures and required repair costs, funding is needed for mitigation and resiliency measures to be incorporated into the above referenced repairs. These measures are intended to both minimize the damage caused by future storms and minimize the direct impact to thousands of residents. Needed work includes:

- Resiliency measures that range from flood mitigation such as the installation of watertight enclosures, the use of submarine doors for mechanical rooms, and waterproofing basement areas to more advanced measures such as raised boiler rooms, elevated switch gear, combined heat and power systems and rain screen systems for building façades.
- Installation of permanent emergency generators at critical NYCHA buildings. Improving the resiliency of the electrical systems is one of the most critical places to begin resiliency work, as these systems are necessary for many other critical services. Permanent emergency generators do not currently exist at any NYCHA residential property. If added, these generators could provide backup power to critical systems such as elevators, boilers, emergency lighting, and critical life support systems.
- Resiliency measures for 60 Community Centers in damaged buildings located in Evacuation Zones 1, 2 and 3 to enable them to serve as warming centers, information distribution sites, local command centers, phone charging stations, or emergency shelters in future storms: Hurricane Sandy also revealed the vulnerability of NYCHA's community centers to the loss of power and water that crippled their ability to efficiently serve the needs of tenants in a major emergency. Applying similar resiliency and mitigation improvements to the Community Centers in affected developments would provide additional opportunity to ensure families have the critical services they rely on, especially during emergencies.
- Resiliency measures for NYCHA's Emergency Operations Center (EOC). In advance of Hurricane Sandy, NYCHA executed its plan for tenant evacuation of buildings in the 100-year floodplain. This was coordinated by NYCHA's Emergency Operations Center (EOC) located in Evacuation Zone 5, and which itself was flooded by the storm and therefore rendered inadequate to meet emergency response needs. In the storm's aftermath, NYCHA's EOC revealed programmatic vulnerabilities associated with its internal backup-information management system, resident evacuation plan, as well as its ability to provide emergency shelter and other tenant services at the capacities required. Given its tenant population in excess of 750,000, albeit scattered across

developments in the City's five boroughs, NYCHA's low income population equals the size of the 20th largest city in the US. NYCHA thus proposes allocating funds towards relocating the EOC to one of its developments outside the updated flood zone to directly serve the needs of its total resident population in an emergency. The goal is to either rehabilitate an existing facility or construct a new building, based on a cost-benefit analysis of options which would include the cost to adequately equip it with an Incident Command System (ICS).

Resiliency of Other Impacted Buildings

Several hundred buildings within NYCHA housing developments lost critical electrical and mechanical services, in part because of direct storm damage to systems that serve campus-wide facilities. In addition, hundreds of other NYCHA developments without direct storm damage to buildings were also severely impacted by the storm due to power outages. Residents of these impacted buildings suffered the effects of the storm when utility service to those vulnerable buildings was disrupted for long periods of time. Due to NYCHA's reliance on outside utilities, residents were left without heat, hot water, water to bathe, elevator service, lights, and electricity to operate basic household applicances for periods that extended to several weeks. Residents in these vulnerable buildings not only lost food and medicines stored in refrigerators, but many have expressed a feeling of being trapped in their apartments. There was very little NYCHA could do in these cases to support the residents.

Accordingly, NYCHA will look beyond replacement of the building infrastructure directly damaged by the storm and proactively seek measures to further make its impacted developments more resilient in the updated flood zone. Providing basic flood mitigation and resiliency measures in these buildings would ensure some 21,000 additional families do not lose critical services during future storm events. Subject to funding availability, these additional measures would include:

- Implementation of basic flood mitigation (e.g. elevated boilers and electrical switch gear) to all buildings in the 100-year flood plain as well as resiliency measures that minimize the impact of power outages on NYCHA's low income residents by the installation of standby power generators.
- Enhancements to 30 Community Centers in impacted buildings located in Evacuation Zones 2, 3, 4 and 5 that enable them to serve as warming centers, information distribution sites, local command centers, phone charging stations, or emergency shelters in future storms.

Public Housing Unmet Need

Based on the projects identified above, NYCHA estimates a total disaster recovery program need of $3.5 billion to address Hurricane Sandy-related damages, provide for flood mitigation, and needed resiliency measures. Approximately $3 billion in federal funds is now anticipated through FEMA to cover eligible costs at 33 public housing developments, as was publicly announced by Mayor Bill deBlasio and Senator Charles Schumer on March 31, 2015.

The methodology for the calculation of unmet need for public housing is slightly different from the methodology referenced in the November 18, 2013 Federal Register Notice. The damaged infrastructure has undergone extensive, well-documented, detailed assessments by third party engineers and architects. These assessments included detailed construction cost estimates based on standard cost estimating practices. These cost estimates were the basis of the calculation of unmet need. With the estimates broken down by development and by type of work, estimated insurance recovery could be calculated by

development. It was then assumed that FEMA would cover the balance of repairs. Assumptions were then also made, based on scope of proposed resiliency, on the percentage of FEMA reimbursement for mitigation and resiliency efforts. Unmet need is the sum of the local match of FEMA repairs, the local match of FEMA mitigation, and breakage related to FEMA resiliency and the balance of mitigation and resiliency measures not covered by FEMA.

As publicly-owned properties, NYCHA facilities are eligible for FEMA's Public Assistance Grant Program. Mandatory rehabilitation, flood mitigation, and a portion of the resiliency improvement measures necessary for storm-damaged buildings, should be covered by a combination of the National Flood Insurance Program (NFIP), existing commercial policies, and FEMA's Public Assistance Program, less the non-Federal cost share ("local match").

- NYCHA insurance coverage is capped at approximately $440 million. However, it cannot be assumed that NYCHA will receive 100 percent of all claims made against these NFIP and commercial policies.
- FEMA Public Assistance funds should cover a percentage of the remaining costs associated with repairs, rehabilitations, replacements, and mitigation.
- Funding has not yet been finalized from the Hazard Mitigation Grant Program, a FEMA program that awards grants for mitigation measures that can meet a benefit-cost ratio. NYCHA is currently working with FEMA to determine which projects will have a positive benefit cost analysis and which projects will need to be modified to meet requirements. At this time, however, it cannot be assumed that revenue from this source will satisfy NYCHA's unmet need for mitigations at vulnerable buildings served by storm-damaged systems in campus-wide developments.
- CDBG-DR funding will be used to fund the local match portion of FEMA projects and also to cover portions of projects which will not be funded by FEMA.

Based on current damages estimates, as described above, the City did not identify any additional programmatic unmet needs for the third allocation of CDBG-DR funds. However, discussions and analysis of project costs are ongoing. If there are revisions to unmet needs, those will be reflected in an upcoming Action Plan amendment.

Public Housing Rehabilitation and Resiliency

PROGRAM OBJECTIVE AND DESCRIPTION: Under this disaster recovery program, improvements will be made to the City's public housing developments where facilities were determined to be damaged by Hurricane Sandy. Proposed improvements include rehabilitation work that intends to replace or repair critical systems, in compliance with current building codes, and restore conditions for damaged facility features and services that will benefit approximately 27,000 NYCHA residential units. Improvements include flood mitigation measures that reduce the risk of repetive damages to these buildings in the future. Moreover, they include resilience measures that will protect NYCHA's low income residents from losses and disruptions associated with severe storm events and support the long-term preservation of the City's public housing assets and adjacent neighborhoods. The main program elements described below are being planned to address the disaster recovery needs of NYCHA's buildings and infrastructure in developments affected by Hurricane Sandy since October 29, 2012.

Repairs – This NYCHA program work is required and directly related to restoring affected NYCHA facilities and associated building systems to pre-storm conditions that are compliant with current building codes. Generally, this work is partly covered by NYCHA's commercial insurance and eligible for FEMA reimbursement, and includes only the most basic resiliency measures that can be implemented as part of required repairs at nominal cost. Under this element of the program, CDBG-DR funds will cover the required 10 percent local match of FEMA funded repairs.

Mitigation and Resiliency - Critical to NYCHA's recovery and the City's overall effort to preserve public housing will be to ensure that campus-wide infrastructure serving residential buildings across each Hurricane Sandy damaged development is replaced in a manner that reduces the risk of repetitive damages from future storms. For facilities to be compliant with current building code requirements, a broad combination of flood mitigation measures will be employed that protect housing units, operations and maintenance facilities, as well as a variety of administrative and community service areas. These measures include raising new boiler equipment and electrical control rooms above the design flood elevation (DFE). Additional 'flood-hardening' approaches include the use of flood walls, gates, doors, panels, and storm-resistant windows. Watertight and weather-resistant equipment enclosures as well as protective coating treatments are also being considered to achieve cost-efficient mitigation.

A variety of resiliency measures are planned or being considered as part of NYCHA's permanent storm recovery. Foremost among these will provide the Authority with the ability to continue serving residents if equipment were to fail or critical services were to be interrupted. The provision of standby power generators for all buildings located in storm-damaged public housing developments is a good example of these measures.. Additional building enhancements for resiliency do not necessarily protect existing equipment but instead reduce facility dependence on the regional power grid, as well as operational costs. These may include the use of combined heat and power plants using a variety of energy sources, or the re-cladding of facades that better weatherproof certain buildings. All of these elements of work are not eligible for any insurance reimbursement but are eligible for FEMA reimbursement for some of these costs. Eligibility varies based on the specific building element being made resilient (e.g. standby generator equipment, architectural feature, etc.). CDBG-DR allocations under this element of the program will be assigned to cover the required 10 percent local match on FEMA reimbursements, and may also be needed to fund standby generator installation on vulnerable buildings not funded by FEMA.

Projects currently identified for CDBG-DR resiliency funding include the following:

- Installation of standby power generators at residential buildings co-located with Hurricane Sandy-damaged buildings at NYCHA's public housing developments: As a result of Hurricane Sandy, thousands of public housing units lost electrical power service until NYCHA could procure interim power solutions to address the need or the regional power grid could be restored to service. Many buildings lost power during Hurricane Sandy for several weeks until temporary generators could be installed or services could be otherwise restored, and so are considered equally vulnerable under similar circumstances. While FEMA grants are expected to fund standby generators for storm-damaged buildings, NYCHA will invest CDBG-DR funds to purchase and install elevated standby generators to equally equip those vulnerable buildings co-located within damaged housing developments to maintain critical power services in a future flood emergency.
- Implementation of basic mitigation measures for vulnerable buildings located in the updated flood zones: Among these initiatives, NYCHA is considering the provision of new boilers in enclosed, elevated structures, the elevation of other mechanical and electrical equipment above the floodplain, and/or the installation of pumps along with flood gates and panels to otherwise flood proof critical building systems.
- Façade Improvements: More than 356 NYCHA buildings at 97 developments in all five boroughs sustained moderate damage, mostly due to wind damage to roofs and building facades. Pending available funding, NYCHA will evaluate advanced approaches to improve building façades using Exterior Insulation and Finish System (EIFS), the installation of prefabricated rain screens or other façade treatments to vulnerable buildings, where appropriate. Such façade systems are expected to further preserve the building envelope and prevent water intrusion. Added benefits may include thermal efficiency, increase in property value, and presenting buildings to the insurance marketplace in better light.
- Roof replacements to include insulation and structural improvements: At buildings targeted for boiler replacement, new electrical service and rooftop installation of standby power generators, roof replacement may be the preferred option to roof repair. NYCHA anticipates significant thermal efficiencies could be achieved especially where structural improvements are already required to support rooftop installation of standby power generators.
- Replacement of windows that include insulation and impact resistant treatments: Residential buildings targeted for boiler replacement and new electrical service would be considered appropriate for window improvements if significant thermal efficiencies could be gained.

ELIGIBILITY CRITERIA: With a wide variety of building types in all five boroughs and a program with multiple priorities, the threshold and other criteria for determining eligible developments may vary slightly depending on final damage assessments and cost estimates and the building-specific level. However, NYCHA developments affected by Hurricane Sandy are campus-like facilities located within the updated flood zones, their connected buildings are vulnerable to future flooding or other weather extremes, and are therefore eligible to be targeted with funds for mitigation and resiliency-strengthening work elements.

PROGRAM PRIORITIES: Each eligible property will be carefully assessed according to the program priorities. Criteria that will be considered for selection of NYCHA developments include: level of building damage; number of residents; resident population (e.g. seniors, vulnerable populations); whether or not it is a high rise building; how services will potentially be impacted; location of critical equipment; flood zone and overall vulnerability of a particular building or buildings.

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Residential Structures (24 CFR 570.202), Public Services (24 CFR 570.201(e)), Public Facilities and Improvements (24 CFR 570.201(c))

NATIONAL OBJECTIVE (LMH), (LMC): The Public Housing Rehabilitation and Resiliency program will meet the Low- and Moderate-Income Housing (LMH) or the Low-Moderate Income Limited Clientele (LMC) national objectives. Funding for restoration, mitigation, and resiliency will provide direct and long lasting benefits to all residents of a building. For example, permanent emergency backup generators to power critical building systems will provide residents safe egress via elevators, enhance resident safety by providing emergency lighting, and allow for temporary sheltering in place by ensuring domestic water, heat, and hot water can continue to be delivered. Programmatic elements will provide residents with essential emergency services in the event of future disasters.

CDBG-DR ALLOCATION: $308,000,000

PROJECTED ACCOMPLISHMENTS: The program is expected to directly benefit approximately 27,000 housing units and between 60,000 and 80,000 low income residents of NYCHA public housing, dependent upon the availability of funds.

PERFORMANCE SCHEDULE: NYCHA is currently preparing proposed design, environmental review, as well as construction procurement documents to address the rehabilitation and mitigation needs at each of the affected and impacted NYCHA developments. It is anticipated that a variety of resiliency measures will also be implemented together with this required work. FEMA grant applications have been or are being completed to help fund major portions of these proposed projects.

Design work for 19 housing developments identified as having category 1 and 2 damages will be finalized in the second quarter of 2015. Design specifications and drawings for 16 developments with category 3 and 4 damages requiring more complex improvements will be completed during the third quarter of 2015. Permanent rehabilitation and flood mitigations activities will begin in mid 2015. Construction activities at large developments could take several years to complete.

Planning and Administration Costs

Planning and Administration costs related to Housing measures are eligible under 570.205 and 570.206.

HOUSING PROGRAM ADMINISTRATION: Department of Housing Preservation and Development; Mayor's Office of Housing Recovery Operations; New York City Housing Authority

VIII. BUSINESS

Needs Assessment

Impact to the City's Economy

Hurricane Sandy's impairment of the City's economy falls into two categories. The first is the economic activity that was interrupted or irrevocably lost due to the storm. This includes activities such as business loss due to shuttered offices, cancelled tourist visits, and wages not paid to workers who could not commute into the affected region. The second is the outright damage to residential housing, buildings, businesses, and public infrastructure, which can be viewed as a reduction in the City's wealth and stock of productive resources.

Disruption of City's Economy

In New York City, record-breaking storm surges hit Lower Manhattan and the coastal areas of Staten Island, Queens, and Brooklyn, damaging transportation, energy distribution, and telecommunications infrastructure, which led to sustained disruptions to businesses and their employees. The primary economic indicator of Sandy's impact is the weekly initial jobless claims data for New York State. Jobless claims jumped by about 44,000 claims in the week following the storm. Moody's Analytics estimates that in November 2012 about 20,000 jobs were lost in the five boroughs of New York City, primarily in leisure and hospitality, local government, and education and healthcare.

Soon after Sandy moved out of the area, Moody's Analytics published initial estimates of lost output for the affected region, which stretched from Washington, D.C. to Bridgeport, CT. The estimates were derived from Moody's regional economic models and assumptions regarding the scope and duration of the disruption. Furthermore, their analysis took into account historical patterns noted in previous disasters; while most sectors are harmed, activity in others – such as the construction and manufacturing sectors – is actually enhanced. Moody's provided *net* estimates of base losses that account for both of these effects. From these base estimates, Moody's then scaled their values by the IMPLAN sector multipliers to include the additional impacts that losses would inflict on other parts of the economy. Their total net loss figure was $19.9 billion for the impacted region.

These aggregate estimates by sector were shared down to the five boroughs of New York City by NYC OMB using Moody's Analytics' county-level GDP estimates and then allocated to wage and business losses. Using this methodology, total losses in New York City economic activity is estimated to be $5.7 billion. Of this $5.7 billion, $2.4 billion is in the form of lost wage earnings, while $2.0 billion is due to lost business activity. The remaining losses were allocated to "All Other." Additional details are shown in the following table titled, "Sectoral Table of Economic Losses."

NYC OMB had to make certain assumptions to distribute the losses between wages and business surplus. The wage portion (49 percent) was estimated from OMB's economic model of the City and represents the total wage earnings in New York City in 2011 as a share of Gross City Product. The business share (40 percent) was derived from the 2010 Gross Operating Surplus for NY State as a share of NY GDP.

In January 2013, Moody's published an update to their original estimates. These new results increased the total net economic losses to the affected region to $25 billion. They also provided a breakdown of losses by region, and ascribed $10.3 billion of this loss to New York City alone, significantly higher than the original

$5.7 billion estimate produced by OMB. However, the data that will best measure Sandy's toll on area payrolls is the Quarterly Census of Employment and Wages (QCEW) published by the U.S. Bureau of Labor. The QCEW is the most comprehensive labor survey data and covers about 98 percent of all jobs. Because it is only available after a six month lag, the fourth quarter 2012 data is unavailable at this time.

Table: Sectoral Breakdown of Economic Losses

Net Losses Including Multiplier Effects ($ billions)					
Sector	**Net Losses for Region**	**NYC Share of Losses**	**Wage Income Losses**	**Business Losses**	**All Other Losses**
Finance & Insurance	7.00	1.99	0.98	0.78	0.22
Prof. & Business Services	4.60	1.31	0.64	0.52	0.14
Leisure & Hospitality	0.90	0.26	0.13	0.10	0.03
Information	1.80	0.51	0.25	0.20	0.06
Retail Trade	0.20	0.06	0.03	0.02	0.01
Other Services	0.50	0.14	0.07	0.06	0.02
Transportation & Utilities	0.70	0.20	0.10	0.08	0.02
Health	0.85	0.24	0.12	0.10	0.03
Education	0.85	0.24	0.12	0.10	0.03
Private Total	17.4	4.95	2.4	2.0	0.5
Government	2.6	0.74			
Total	20.00	5.69			

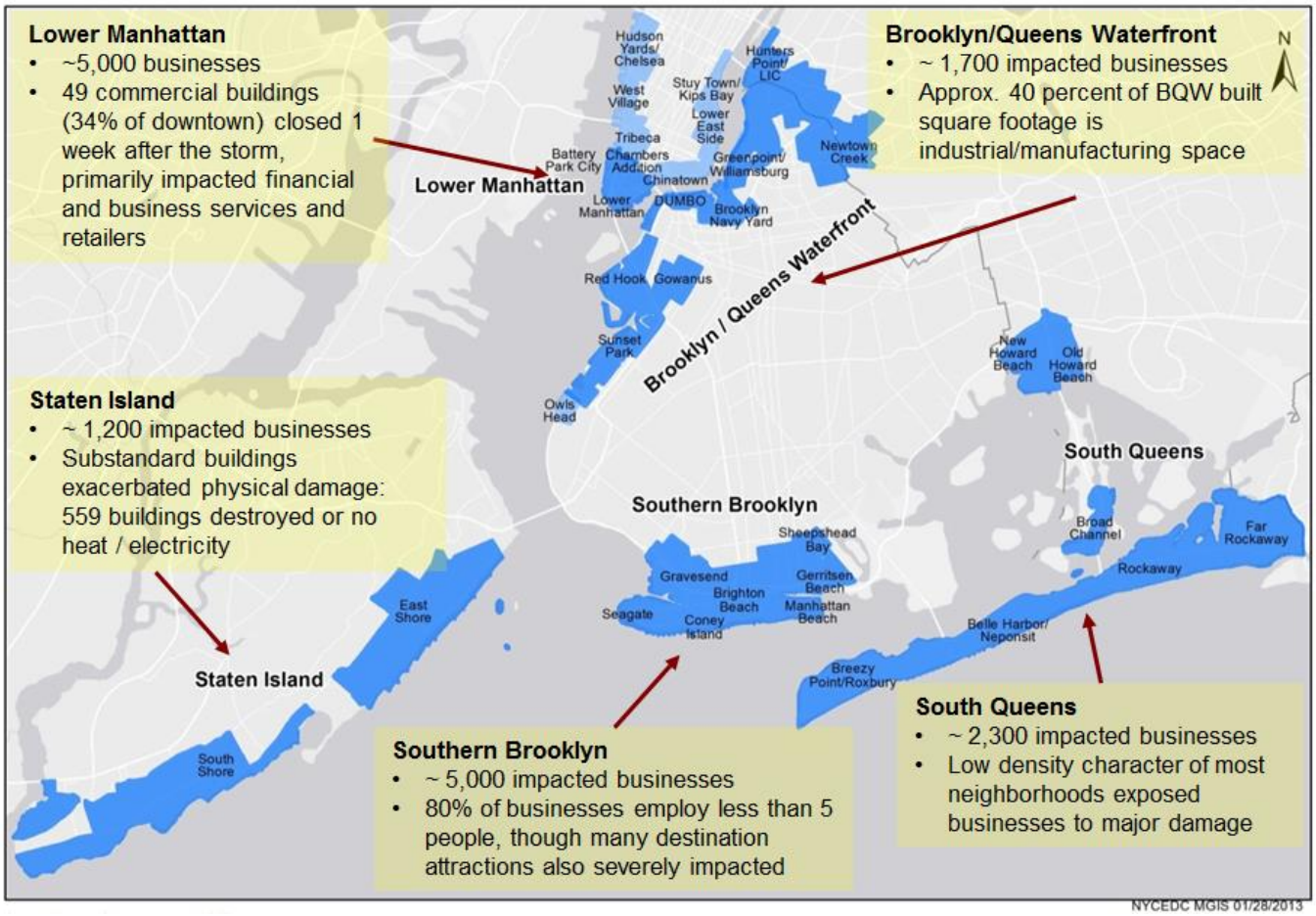
The economic losses initially estimated by NYC OMB derived from Moody's analysis resulted in a preliminary estimate that tax revenue would decline by approximately $250 million. However, recent tax collections data suggest that this estimate should be revised downward to approximately $160 million as there is little evidence that sales and hotel tax revenue were negatively impacted by the storm.

Damage to City Businesses

In addition to lost output, the City experienced significant outright damage to its wealth and stock of productive resources, including billions of dollars' worth of damages to businesses. Hurricane Sandy imposed significant commercial damages to neighborhoods across all five boroughs. Approximately 23,400 businesses and an associated 245,000 employees were located in flood-impacted areas and faced extensive damages from loss of inventory, ruined equipment, and damage to the interiors of their space and/or structural and extensive damage to their building systems. Approximately 65 percent of these flood-impacted businesses were located in five neighborhoods: Lower Manhattan, the Brooklyn-Queens Waterfront, Southern Brooklyn, South Queens, and Staten Island.

Impacts varied by neighborhood. Lower Manhattan, which is the fourth largest business district in the country and saw its residential population double to 45,000 residents between 2000 and 2010, experienced significant damage to large utilities and flooding in high-rise commercial and residential buildings. Along the Brooklyn-Queens Waterfront, large-scale industrial businesses including port facilities and warehouses were heavily impacted, whereas Southern Brooklyn's small businesses and nearby destination/tourist attractions experienced severe damage. In South Queens and Staten Island, most of the impacted businesses serve the local population and seasonal visitors in low-density neighborhoods.

Map: Neighborhood Economic Impacts from Hurricane Sandy



Note: Based on Hoover's data for businesses located in areas with any level of inundation.

However, key similarities exist across these neighborhoods: nearly 95 percent of impacted businesses were small- and medium-enterprises (SMEs), employing 50 people or less, and the businesses were primarily concentrated in the retail and service sectors. For these SMEs, storm damage was significant; survey reports suggest retail stores experienced thousands of dollars in lost sales for each day they remained closed and experienced equipment and inventory damage losses in the hundreds of dollars per square foot. For a small 1,000 square foot retail business that remained closed for two weeks, this would mean damages of at least $100,000, before accounting for the impact of a reduced customer base in some residential neighborhoods.

In total, across all industries, the City's initial estimate of private commercial direct losses was $3.4 billion. This figure was calculated using New York City's share of the upper range of overall insured losses from Sandy as estimated by multiple insurance and risk management companies based on data from prior storms, together with industry ratios of insured-to-uninsured and commercial-to-residential losses. Based on these ratios, the City estimated that between $1.9 billion to $2.4 billion of commercial losses were uninsured.

While SME commercial impacts were far reaching, the City's industrial sector, much of which is concentrated along the Brooklyn-Queens Waterfront, suffered some of the largest direct losses from the

storm, primarily from the destruction of high-value equipment and inventory. Nearly 7,000 industrial businesses were impacted and reports from wholesale/retail trade, transportation, utilities, construction, and manufacturing firms place direct damages in the tens to hundreds of millions of dollars. Additional losses have accrued from supply chain disruptions and delivery delays.

Table: Summary of Business Impacts by Industry

NUMBER OF BUSINESSES IMPACTED BY INDUSTRY (NAICS Codes in Parentheses)

INDUSTRY	# of Businesses	% of Total
SERVICES	**14,163**	**60%**
Information (51)	886	
Professional, Scientific, and Technical Services (54)	3,932	
Management of Companies and Enterprises (55)	79	
Administrative and Support and Waste Management and Remediation Services (56)	2,781	
Educational Services (61)	447	
Health Care and Social Assistance (62)	2,202	
Arts, Entertainment, and Recreation (71)	621	
Accommodation and Food Services (72)	1,084	
Other Services (except Public Administration) (81)	2,131	
FIRE	**2,315**	**10%**
Finance and Insurance (52)	1,196	
Real Estate and Rental and Leasing (53)	1,119	
TRADE	**3,672**	**16%**
Retail Trade (44-45)	2,339	
Wholesale Trade (42)	1,333	
MANUFACTURING (31-33)	**796**	**3%**
TRANSPORTATION & UTILITIES (48-49, 22)	**1,066**	**5%**
CONSTRUCTION (23)	**1,417**	**6%**
TOTAL PRIVATE	**23,429**	**100%**

Source: Hoovers Listing Data for flood-impacted businesses. Impacted businesses based on Hoover's business data for businesses that were located in areas with any level of inundation, Mayors Analytics Team.

New York City's Response to Economic Impact

In recognition of Sandy's severe impact on small businesses, Mayor Bloomberg announced the creation of Business Recovery Zones (BRZs) on December 5, 2012. The Zones include Lower Manhattan/South Street Seaport; Brooklyn Harbor Waterfront/Newtown Creek (DUMBO, Greenpoint/Newtown Creek, Red Hook, Gowanus, Sunset Park); South Brooklyn (Coney Island, Brighton Beach, Manhattan Beach, Sheepshead Bay, Gerritsen Beach); South Queens (Howard Beach and the Rockaways); and the South Shore of Staten Island. Business Recovery Zone leaders were assigned to each area to identify neighborhood-specific needs; coordinate action plans and follow-up; organize City resources; and provide a central point of contact for businesses and agencies. Captains of each area convened local steering committees of elected officials, community organizations, non-profit organizations, Local Development Corporations, Business Improvement Districts, small business owners, and other community representatives, to help find and implement solutions in each impacted Zone. The Mayor also announced the creation of the Recovery Business Acceleration Team, modeled after the City's New Business Acceleration Team, which helps

businesses open faster by streamlining and expediting City agency processes. A Restoration Business Acceleration Team was tasked with helping to expedite inspections and allow businesses to re-open their doors faster.

NYC Department of Small Business Services (SBS)

After the storm, with the help of community-based organizations, SBS was able to determine the extent of the damage and quickly distribute information on available City and Federal recovery resources. SBS' Business Outreach Emergency Response Unit worked closely with NYC's Office of Emergency Management to respond to immediate business issues including power restoration and large debris removal. In partnership with City Hall and the NYC Economic Development Corporation, SBS quickly set up five informational meetings – one in each borough – to speak about available services and to distribute emergency loan applications. Dozens of other outreach events took place across the City. Materials on recovery programs were made available in English, Spanish, Mandarin, and Russian, and were also available both online and in print. Between October 29, 2012 and February 28, 2013, SBS handled 1,037 storm-related phone inquiries transferred from 311.

SBS' seven NYC Business Solution Centers and eight Industrial Service Providers informed impacted businesses about available recovery resources and packaged emergency loan applications. As of February 28, these centers helped 2,356 clients with storm-related issues. SBS has worked closely with SBA, which co-located two of its Disaster Recovery Centers with the NYC Business Solutions Centers in Brooklyn and Lower Manhattan.

Sandy Recovery Employment Opportunities

In November 2012, New York State received its first allocation of Federal National Emergency Grant (NEG) funds to assist with recovery. To-date, the total grant award to New York City is $35.7 million. The grant provides resources to hire temporary workers to clean up communities impacted by the storm and to provide information and services to impacted individuals and businesses to help them get back on their feet. The grant is aimed at employing individuals who lost their jobs as a direct result of Sandy or who are long-term unemployed.

SBS managed several large events where hundreds of candidates were interviewed and hired. SBS worked with the NYC Department of Parks and Recreation (DPR) to hire nearly 800 workers to clean up beaches and repair playgrounds in the Rockaways, Coney Island, Red Hook, and Staten Island. SBS is now working with DPR on a second project to hire 200 young adults (18-24) to help restore a variety of parks and beaches around Jamaica Bay. SBS also worked with NYCHA to hire more than 400 NYCHA residents to clean up public housing developments and to collect information from impacted tenants about their needs. SBS has also worked with DSNY to hire additional Job Training Participants (JTPs). SBS has also hired several employees to assist in outreach efforts. In total, more than 2,100 individuals have been hired to date.

Support NYC Small Business Campaign

Even where businesses are reopening in impacted areas, pedestrian traffic is much lower than normal. SBS is combating this drop-off in foot traffic with marketing campaigns to attract visitors back to the hardest-hit areas. The campaigns highlight individual businesses and appeal to New Yorkers' sense of solidarity with owners who have fought to stay in their communities.

In partnership with the City Council, the Mayor's Office of Media and Entertainment and NYC & Company, SBS launched an ad campaign called *Support NYC Small Business*. The campaign highlights open businesses and their recovery stories and features them on radio, in bus shelters, and in print. These ads have been featured in major publications like the New York Daily News and the New York Post. The campaign also includes a *Support NYC Small Business* website with an interactive map that currently features over 1,300 businesses that have reopened after the storm. New Yorkers have consulted the website more than 20,000 times. SBS has also worked with 1010 WINS to highlight businesses in an "Open for Business" campaign – a daily segment on a reopened business. Segments have been done on businesses across all impacted areas.

Small Business Assistance Grants

In late January 2013, as part of the City's effort to rebuild neighborhoods, SBS began providing Small Business Assistance Grants to businesses that have reopened but need help repairing or replacing items necessary for full recovery. SBS partnered with Barclays, Citi, and UBS to create a $1 million fund for these grants. Businesses can apply for grants of up to $5,000 for structural repairs, equipment repairs, or to purchase replacement equipment. As of March 4, 2013, 645 businesses have applied for a Small Business Assistance Grant and 51 have been approved.

Insurance Assistance

Through a partnership with the New York State Department of Financial Services (DFS), SBS helped businesses receive assistance with insurance issues, including denial of coverage or unsatisfactory service. In the immediate aftermath of the storm, SBS referred more than 41 businesses to DFS. In addition to the referrals, SBS and DFS scheduled insurance workshops in each impacted zone for companies still dealing with insurance issues that included specialists to assist businesses looking to negotiate with their insurance providers.

NYC Economic Development Corporation (NYCEDC)

Neighborhood Canvassing

NYCEDC worked quickly to assess the damage done to the commercial corridors in New York City, immediately deploying neighborhood captains and beginning the process of formulating short- and long-term recovery plans. Neighborhood captains evaluated conditions, gathered economic data, documented damage, assisted impacted businesses, and coordinated with local business and non-profit organizations. The captains led teams that collected business surveys and helped organize business information sessions in the impacted areas. This work focused on commercial corridors in eight neighborhoods and resulted in the November 2012 joint NYCEDC/SBS report *Hurricane Sandy: An Assessment of Impacted Commercial Corridors and Recommendations for Revitalization.* The communities covered in the report were later organized as the five Business Recovery Zones (BRZs). This collective work was instrumental in identifying challenges and opportunities that informed the BRZs and the resiliency efforts that followed.

Loan and Grant Program

NYCEDC launched a loan and grant fund to address the immediate business needs of SMEs in the days following the storm. A $20 million loan fund was created with funds provided by NYCEDC, Goldman Sachs, and 23 other commercial banks. The Mayor's Fund to Advance New York City and the Partnership for NYC also provided $5.5 million for a matching grant program. The program offered maximum loans of $25,000

with matching grants of up to $10,000. This program provided approximately $20 million in loans and grants to more than 650 businesses. The average loan size was $22,895, and more than 80 percent of loans awarded were for the maximum amount.

Hurricane Emergency Sales Tax Exemption Program

The New York City Industrial Development Agency (IDA) provided emergency assistance to SMEs by establishing the Hurricane Emergency Sales Tax Exemption Program ("HESTEP"), to provide sales tax exemptions in an amount not to exceed $100,000 for each affected company on purchases of building, construction, and renovation materials; machinery and equipment; and other items of personal property and related services to such businesses. Through the program, 94 applications for waivers were determined to be eligible and approved and 64 businesses successfully obtained sales tax letters, allowing them to proceed with reconstruction work while saving up to $2.8 million in sales tax expenses.

Space Matching

NYCEDC partnered with the commercial real estate and development community to make temporary office and industrial space available at no rent to businesses displaced by Hurricane Sandy. Within three days after the storm, NYCEDC began advertising donated space on the NYCEDC website, detailing all necessary information about donated space in an easily accessible online location. As of February 2013, NYCEDC had secured more than 300,000 square feet of space for displaced businesses. Through this program, more than 45 companies with 680 employees, including those with disabilities, were able to move into temporary space and get back to work.

Remaining Unmet Economic Needs

According to the revised Moody's figures, the region suffered total net economic losses of $25 billion, which included direct private losses. Using a combination of insured loss estimates from multiple insurance and risk management companies and estimates of past storm ratios of insured-to-uninsured losses, initial cost estimates following Hurricane Sandy placed private direct losses, both commercial and residential, at $8.6 billion, $3.8 billion of which was insured and $4.8 billion of which was uninsured. Internal analysis based on industry sources estimated the commercial share of private uninsured losses to range from 40 to 50 percent or from $1.9 to $2.4 billion. While NYCEDC and SBS acted quickly to make capital available to impacted businesses immediately following the storm, these estimates, combined with the strong demand for the City's emergency loan and grant program indicated that there was significant unmet commercial need, especially amongst the significant amount of business owners, SMEs, and industrial companies that lacked business continuity or flood insurance to help weather the storm.

Applying the unmet needs formula and the available data at the time, the City of New York had incurred $10.3 billion in business and economic losses. After subtracting the insured losses of $4.1 billion and the SBA loans of $478.8 million, the City of New York was left with an unmet business and economic need of $5.7 billion. Through the City's various outreach efforts listed by program in the Introduction Chapter, and continued outreach to community partners, business recovery groups, and elected officials including the Action Plan public hearing, the City has not uncovered additional unmet need. However, with remaining unmet needs in excess of available CDBG-DR funds, the City is prioritizing Federal funding to pursue strategic, targeted, and cost-effective programing as outlined below.

Businesses also face significant Sandy-related impacts as a result of the expansion of the City's floodplain. Of the approximately 23,400 businesses located in Sandy Inundation Areas, many were located outside FEMA's 100-year flood zone. The revised preliminary FEMA Preliminary Flood Insurance Rate Maps have nearly doubled the number of New York City buildings located in the 100-year flood zone, suggesting that approximately 68,000 buildings could be at risk for wave action or flooding in future storms. Sea level rise will further expand vulnerable areas, and unchecked storm surges in the future could cause damage equal to or greater than Hurricane Sandy. As a direct result of Hurricane Sandy, businesses located in the floodplain – regardless of whether or not they experienced damage or power outages – are evaluating whether to expand or even continue operations in these vulnerable areas. There is therefore a significant risk that the impacts of Sandy will continue to be felt in the 100-year floodplain and across the City as companies consider taking valuable employment out of vulnerable areas, many of which are low- and moderate-income areas. Investments in resiliency measures, both at the infrastructure and individual business level that can protect against severe weather events, will address these concerns and reduce the direct, long-term effects of Hurricane Sandy.

In March 2014, Mayor de Blasio released One City, Rebuilding Together, within which the administration committed to "continually reassess and re-evaluate business recovery and resiliency programs to ensure effective support for small businesses." A variety of agencies, including City Hall, ORR, NYCEDC, SBS, and OMB underwent a thorough and extensive process to assess the current suite of Business programming funded with the limited CDBG-DR allocation to the City. The resulting analysis determined that:

- The Hurricane Sandy Business Loan and Grant Program is successfully serving eligible applicants with unmet needs.

- The RISE : NYC (Resiliency Innovations for a Stronger Economy) is on track to meet its stated goals- to deploy innovative technologies to further encourage both existing and new businesses to adopt mitigation measures to minimize the impact of future disasters and catastrophes.

- The Business Resiliency Investment Program would result in prohibitively high administrative costs and have a limited impact on the approximately 71,500 buildings in the 100-year floodplain. The City determined that the goals of this program could be achieved in a more strategic and cost-effective way.

- The Neighborhood Game Changer Investment Competition responses did not fully meet the City's expectations with regard to overall economic impact in the five most Sandy-impacted neighborhoods. The City determined that the goals of this program, including the goal for assistance provision with geographic parity among the most impacted areas of the City, could be met with new, more targeted investments.

With this in mind, the City has decided to pursue strategic, targeted, and cost-effective programing throughout the City that will have a greater impact on businesses and jobs. Building on the success of existing programs like Hurricane Sandy Business Loan and Grant Program and the RISE : NYC competition, which will assist sandy-impacted and vulnerable businesses throughout the five boroughs, reallocated CDBG-DR funding will be provided as follows:

- **Business PREP**: $3 million to assist businesses implement operational and physical resiliency measures, through one or more of the following activities: (1) provide one-on-one site visits and assessment, (2) develop a business resiliency assessment tool, (3) hold targeted workshops featuring technical experts, (4) if unable to secure private funding, potentially offer micro-grants to help businesses implement low-cost resiliency improvements.

- **Saw Mill Creek Marsh Restoration**: $12 million for the restoration of Saw Mill Creek marsh, a component of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) Initiative, to restore approximately 68 acres of severely degraded City-owned wetlands and uplands in northwestern Staten Island in an area heavily inundated during Hurricane Sandy. Reestablishing the previously degraded wetland ecosystem will serve to protect against the harmful impacts of storm related flooding for hundreds of businesses adjacent to the marsh and starts NYC's first mitigation bank to catalyze further wetland restoration.

- **Coney Island Green Infrastructure Improvements**: $15 million to enhance ongoing Department of Environmental Protection infrastructure work with installation of right-of-way bioswales along business corridors throughout the Coney Island peninsula. The new infrastructure will improve stormwater retention, filter and maintain water quality in local waterways and enhance business/retail areas through beautification.

- **Rockaways Commercial Corridor Resiliency:** $15 million for streetscape and stormwater management upgrades and open space creation throughout the Rockaways, in key commercial corridors such as Beach 108th street, Mott Avenue, and surrounding business districts.

- **Hunts Point Resiliency Assistance**: $25 million to match the Rebuild by Design award of $20 million (total project of $45 million). This would support resiliency for the region's food supply hub. *More information on this program can be found in the Coastal Resiliency Chapter.*

- **Staten Island University Hospital Resiliency**: $28 million to protect and elevate mechanical systems and the north and south campuses of Staten Island University Hospital. *More information on this program can be found in the Coastal Resiliency Chapter.*

Economic Goals

Economic objectives include:

1. Helping SMEs recover and rebuild resiliently, while minimizing their reliance on high-interest debt;
2. Protecting City businesses located in floodplain areas by assisting proactive investments in resiliency measures;
3. Improving building and infrastructure resiliency through competitions that identify and deploy the most promising and cost effective technologies;
4. Protecting vulnerable commercial corridors from future severe weather events by making targeted resiliency investments in hard-hit neighborhoods; and,
5. Anchoring new or existing industry clusters and catalyzing significant long-term economic growth in the five BRZ's and adjacent impacted areas.

Private capital is best leveraged with public investment to create public-private partnerships in order to foster economic and social economic empowerment within low- and moderate-income communities. The CDBG-DR program will provide resources to further the long-term recovery effort in neighborhoods throughout the communities whose businesses and overall quality of life have been negatively impacted. Also, stabilization of businesses and their employee base will lessen the relocation of residents seeking job opportunities in other parts of the City.

Business Programs

Hurricane Sandy Business Loan and Grant Program

PROGRAM OBJECTIVE AND DESCRIPTION:
Nearly 95 percent of impacted businesses were small-and-medium enterprises (SMEs), employing 50 people or less, and were primarily concentrated in retail and service sectors. For these SMEs, storm damage was significant; survey reports suggest retail stores experienced thousands of dollars of lost sales for each day closed and estimated equipment and inventory damage losses in the hundreds of dollars per square foot. In response, the New York City Economic Development Corporation (NYCEDC) launched an emergency loan and grant fund to address immediate business needs in the days following the storm. A $20 million loan fund was created with funds provided by NYCEDC and Goldman Sachs as well as 23 other commercial banks. The Mayor's Fund to Advance New York City and the Partnership for NYC also provided $5.5 million for a matching grant program. The program offered maximum loans of $25,000 with matching grants of up to $10,000. This emergency program provided approximately $20 million in loans and grants to more than 650 businesses. The average loan size was $22,895, and more than 80 percent of loans awarded were for the maximum amount.

The Hurricane Sandy Business Loan and Grant Program (formerly referred to as the Business Recovery Loan and Grant Program) will expand on the emergency loan and grant program., Businesses that can demonstrate extreme hardship may be eligible to receive, at the City's discretion (based on criteria outlined below and within the Policies and Procedures), awards above $1,100,000 and/or grant only awards above $100,000 to a maximum of $1,100,000. The operator of the emergency program, New York Business Development Corporation-Local Development Corporation (NYLDC), will assist in operating the program as a Subrecipient.

Funds for this program will be available for working capital, movable equipment, and inventory. Please note that, where loans and grants are used for certain physical restoration and resiliency activities, the City will enforce and monitor compliance with Davis-Bacon Labor Standards and Section 3 requirements wherever applicable. Eminent Domain will not be used in this program.

Experience with the existing program indicates that, while it has provided an important service to affected small businesses, additional funding is needed to both increase the number of businesses that can be served by the program and increase the size of the loans and grants that are provided. These programs will impact businesses that are currently in need of low- or no-interest, direct investment.

HUD ELIGIBILITY CATEGORY: Special Economic Development Activities (24 CFR 570.203) (aka Economic Development or Recovery Activity that Creates/Retains Jobs) and Microenterprise Assistance (24 CFR 570.201(o)(1)

NATIONAL OBJECTIVE (UN), (LMJ), (LMA), (LMC): Urgent Need; Low- and Moderate-Income Job Creation/Retention; Low- and Moderate-Income Area; and Low- and Moderate-Income Limited Clientele (Microenterprise).

CDBG-DR ALLOCATION: $48,000,000

The City has re-calibrated program funding based on application volume.

PROJECTED ACCOMPLISHMENTS: At least 150 businesses assisted and approximately 430 jobs created or retained.

PROGRAM ADMINISTRATION: This program will be administered by the City's Department of Small Business Services (SBS). NYC Business Solutions Centers are managed by SBS and may conduct activities related to this program such as application intake and packaging. Staff are available to assist applicants in multiple languages. The operator of the emergency program, NYLDC, may continue to operate the program as a subrecipient, and Community Development Financial Institutions (CDFIs) or other allowable entities may be chosen to operate the program as well.

ELIGIBLE APPLICANTS/PROPERTIES: Eligible applicants shall demonstrate that they are a credit-worthy for-profit small business (as defined by the SBA) currently operating in New York City that experienced loss, damage, and/or interruption as a result of Hurricane Sandy.

ELIGIBILITY CRITERIA: Businesses must demonstrate loss or damage as a result of the storm and exhibit ability to repay any loans received through this program. It is anticipated that this program will provide funds to eligible borrowers on a first-come, first-served basis.

GRANT/LOAN SIZE LIMIT: The City received several public comments requesting higher loan and grant amounts as well as additional grant-only funding, including grant funds without associated Sandy-related matching debt from a government or institutional lender, particularly in cases where the funds would support a significant number of jobs and economic activity. In response to these comments, the program has been restructured to offer the following loans and grants to eligible applicants:

Category I
First, the program will offer up to $100,000 in grant-only awards with no matching debt required. Any remaining unmet need above $100,000 will be addressed by providing up to $1,000,000 in 1:1 matching loans and grants.

Category II
Second, SBS and/or NYCEDC will review requests for any awards above $1,100,000 and/or grant-only funding in excess of $100,000 to a maximum of $1,100,000, for businesses that can demonstrate severe need. This review will evaluate businesses against the following criteria:

- Ability to demonstrate that the business anchors significant economic activity, above and beyond employment at the business's location (e.g., through suppliers, distribution partners, etc.,) particularly to benefit LMI individuals or areas
- Number of jobs at risk as a share of pre-Sandy employment (i.e., more than 30 percent); the type of jobs at risk, including wage and benefits
- All other program eligibility and underwriting standards are applicable

Category I	Category II
▪ Grant-only awards up to $100K ▪ Any unmet need above $100K receives 1:1 matching loan and grant for a total maximum award of up to $1.1M	▪ Grant-only awards up to $1.1M ▪ 1:1 matching loans and grants above $1.1M ▪ Evaluated by SBS and/or NYCEDC based on: ▪ Ability to demonstrate that the business anchors significant economic activity, above and beyond employment at the business's location (e.g., through suppliers, distribution

	partners, etc.,) particularly to benefit LMI individuals or areas ▪ Number of jobs at risk as a share of pre-Sandy employment (i.e., more than 30%); the type of jobs at risk, including wage and benefits, will also be a factor ▪ All other program eligibility and underwriting standards are applicable

Existing awardees who would like to have their application re-evaluated based on these criteria will be notified of these changes and will be eligible to re-submit their application to the program.

The City will also work to partner with organizations to provide technical assistance to all program applicants such as support developing business plans, credit training, and other technical assistance services. Businesses that have already applied to the program will be notified of this service and will also be able to request this technical assistance through the program.

PROGRAM PRIORITIES: It is anticipated that this program will provide funds to eligible borrowers that demonstrate need on a first-come, first-served basis.

GEOGRAPHIC AREA TO BE SERVED: Businesses located in all five boroughs at the time of the storm are eligible to apply.

PROGRAM START AND END DATES: Funds will initially be disbursed in the autumn of 2013 and the program will expire when funds are exhausted.

OTHER FUNDING SOURCES: It is expected that funds will be leveraged by SBA Disaster Loans, private funds and contributions, insurance proceeds, etc. Please note that, in accordance with Federal duplication of benefits requirements, other assistance awarded to businesses for the purpose of providing compensation for the replacement of inventory or equipment, or in support of working losses, arising from Hurricane Sandy will be deducted from assistance provided through this program.

Business PREP (Preparedness & Resiliency for Emergencies Program)

PROGRAM OBJECTIVE AND DESCRIPTION:

During Hurricane Sandy, approximately 23,400 businesses were located in the inundation area, many in areas that were outside FEMA's 100-year flood zone. With greater winds and more rain, Sandy could have had an even more serious impact on the areas of Staten Island, Southern Brooklyn, and South Queens that experienced the most devastation during the storm. Furthermore, according to the Special Initiative for Resiliency and Recovery, had Hurricane Sandy arrived at a slightly different time, it likely would have had significant effects on New York's northernmost neighborhoods, damaging small businesses in Hunts Point and many other vulnerable businesses in surrounding areas that were able to avoid damages during Sandy.

Sea level rise will further expand vulnerable areas, and unchecked storm surges in the future could cause damage equal to or greater than Hurricane Sandy.

The revised FEMA Preliminary Flood Insurance Rate Maps (FIRMs) have nearly doubled the number of buildings and increased the number of businesses located in the 100-year flood zone. If protective measures are not taken, approximately 71,500 buildings, 15,000 businesses, and 291,000 jobs will be at an increased risk from future climate events.

Much of the Sandy-related damage to businesses was non-structural in nature, and instead, was largely due to the flooding of building systems, equipment and inventory. The City's outreach to businesses and stakeholders, however, revealed that the majority of small businesses have implemented few, if any, flood mitigation measures and/or business continuity and recovery planning following Hurricane Sandy.

In order to ensure that businesses throughout New York City are better prepared for future severe weather events, this program will use CDBG-DR funds to assist businesses in enhancing the resiliency of their operations, assets, and physical space. The program is expected to provide one or more of the following activities:

- One-on-one site visits to businesses for resiliency assessments. Qualified consultants will assess both the physical infrastructure and business operations of participating small businesses and provide an audit report of the businesses' challenges, detailed recommendations with cost estimates for mitigation measures, and implementation plans.

- Resiliency assessment and disaster preparedness tool that offers customized resiliency recommendations and preparedness plans based on answers businesses' provide through a survey of operations, physical space and other relevant categories.

- Neighborhood-based workshops on resiliency and operational assistance. These workshops could be provided, but are not limited to, formats as those described below:
    - Long-term (6-8 weeks) neighborhood-based workshops in cohort style that offer a broad range of topics related to resiliency and key operational (finance, marketing, City regulations, insurance, etc.) functions.
    - Medium-term (2-4 weeks) focused workshops in cohort style with one-on-one assistance from technical experts.
    - Short-term (2-3 day) 'Help Desk' providing targeted one-on-one assistance in target neighborhoods on various topics – 30 minute individual Q&A sessions with experts.
    - Micro-grants to help businesses implement low-cost resiliency improvements. The City is seeking private funding to finance these awards; however, in the event private funds cannot be secured, the City will consider the CDBG-DR funds allocated to this program as a funding source.

HUD ELIGIBILITY CATEGORY: Special Economic Development Activities (24 CFR 570.203); Public Services (24 CFR 570.201(e)

NATIONAL OBJECTIVE (UN), (LMA): Urgent Need; Low to Moderate - Income Area

CDBG-DR ALLOCATION: $3,000,000

PROJECTED ACCOMPLISHMENTS: The City expects to directly assist up to 500 businesses through workshops, one-on-one site visits, and use of the resiliency assessment tool.

PROGRAM ADMINISTRATION: This program will be administered by the City's Department of Small Business Services (SBS). SBS will procure technical expertise to conduct program activities as needed (e.g. the development of an online resiliency tool).

ELIGIBLE APPLICANTS/PROPERTIES: Eligible businesses that can demonstrate impact as a result of Hurricane Sandy will be eligible for one-on-one assistance; businesses currently located in the city-wide federally declared Disaster Area will be deemed eligible for components of the program.

ELIGIBILITY CRITERIA: The program will benefit businesses located in the City-wide federally declared Disaster Area by bolstering their preparation for future disasters.

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: The program will provide services to eligible applicants on a first-come, first-served basis with priority for one-on-one resiliency assessments and workshops given to high-risk businesses that sustained direct physical damage as a result of Hurricane Sandy, were located in the inundation area of the storm, are located within FEMA's revised 100-year floodplain, and/or are located within the City's Hurricane Evacuation zone. Priority will also be given to businesses that demonstrate a benefit to low and moderate-income populations.

The workshops will primarily be held in neighborhoods that faced the most extensive damage during Hurricane Sandy.

GEOGRAPHIC AREA(S) TO BE SERVED: The one-on-one site visits will be targeted to businesses that sustained direct physical damage from Sandy, were located in the inundation area of the storm, or are within FEMA's revised 100-year floodplain, and/or are located within the City's Hurricane Evacuation zone. The workshop and resiliency assessment tool will be made available to businesses citywide.

The City reserves the right to target outreach by geography as necessary to address imbalances and incongruities in service delivery or other program components.

PROGRAM START AND END DATES: Detailed program design is currently in development. It is anticipated the program will launch late-2015 and will continue through 2017.

OTHER FUNDING SOURCES: The City will explore opportunities to leverage private funding from economic development grantors and philanthropic institutions, for micro-grants to small businesses to implement recommended low-cost resiliency measures.

Resiliency Innovations for a Stronger Economy (RISE:NYC)

PROGRAM OBJECTIVE AND DESCRIPTION: Sandy exposed significant vulnerabilities to critical infrastructure networks and building systems. Affected New York City infrastructure included, but was not limited to:

- Electric power (more than 800,000 customers lost power due to transmission substation failure, overhead line damage, and customer equipment flooding).
- Liquid fuels (supply chains disrupted on multiple levels, resulting in a three-week citywide gas shortage)
- Telecommunications networks (power outages and flooding resulted in outages leaving thousands without landline, cable, and mobile service).

The FEMA Preliminary Flood Insurance Rate Maps (FIRMs) have nearly doubled the number of buildings located in the 100-year flood zone, suggesting approximately 71,500 buildings could be at risk for wave action or flooding in future storms. Sea level rise will further expand vulnerable areas, and unchecked storm surges in the future could cause damage equal to or greater than Hurricane Sandy.

CDBG-DR funds will be used to improve building and infrastructure resiliency through a competition to identify and deploy the most promising and cost-effective technologies. Addressing these vulnerabilities will require investment in technologies to prepare critical networks and building systems for future risks. Post-storm analysis identified priority areas to prepare for the future, but sourcing specific, cost-effective, innovative technologies remains difficult. The goal of this competition is to competitively allocate funds to identify and deploy the most promising technologies that improve the resiliency of NYC's buildings and critical networks.

Proposals submitted under the competition will be selected via a competitive process. NYCEDC – in coordination with the Mayor's Office of Recovery and Resiliency– may convene a technical advisory panel of industry experts and key stakeholders to evaluate proposals submitted under the competition. The proposal evaluation process may take the form of several rounds to ultimately select and award grants to the most potentially impactful and cost-effective solutions.

The scope and content requirement in the competition will specify that proposals provide detailed and specific information demonstrating that the proposed activities and outcomes will not have adverse impacts on protected classes. Please note that the City will enforce and monitor compliance with Davis-Bacon Labor Standards and Section 3 requirements wherever applicable. Eminent Domain will not be used in this program.

HUD ELIGIBILITY CATEGORY: Special Economic Development Activities (aka Economic Development or Recovery Activity that Creates/Retains Jobs) (24 CFR 570.203)

NATIONAL OBJECTIVE (UN), (LMI), (LMA): Urgent Need; Low- and Moderate-Income Job Creation/Retention; and Low- and Moderate-Income Area. RISE : NYC will procure technology firms and use CDBG-DR funds to purchase the technology and provide it to eligible business. The City is therefore providing direct assistance to eligible businesses in the form of resiliency technology enhancements and solutions. In the absence of identified ways to secure infrastructure from future events, impacted areas, many of which are low- and moderate-income areas, are at risk of seeing a significant outflow of commercial enterprises, thereby extending and exacerbating the impact of Hurricane Sandy. Low- and Moderate-income jobs at small business that were considering relocating if not for the resiliency technology/solution installed at their site at no cost as a result of RISE:NYC may be considered under Low- and Moderate-Income Job Creation/Retention if they create/retain jobs. Investment that decreases the vulnerability of infrastructure and buildings through resiliency measures address the urgent need that exists in these areas.

CDBG-DR ALLOCATION: $30,000,000

PROJECTED ACCOMPLISHMENTS: Innovative, impactful, and cost-effective solutions will be identified and implemented in order to increase the resiliency of impacted and at-risk businesses, and prevent significant outflow of commercial enterprises in Sandy-impacted areas to ensure economic recovery from Hurricane Sandy via demonstration of such solutions at impacted and at-risk businesses. Approximately 200 small businesses will benefit from these technologies.

PROGRAM ADMINISTRATION: NYCEDC will be a subrecipient of the City of New York. NYCEDC – in coordination with the Mayor's Office of Recovery and Resiliency – will procure a partner with sufficient technical expertise to advise on the design and implementation of a competition to identify technologies and measures that improve the resiliency of (1) critical infrastructure networks, including power, liquid fuel, steam, natural gas and telecommunications and (2) building systems.

NYCEDC and the Mayor's Office may convene a technical advisory panel of industry experts and key stakeholders to evaluate proposals submitted under the competition and may award grants to the most potentially impactful and cost-effective solutions.

ELIGIBLE APPLICANTS/PROPERTIES: Entities that demonstrate the ability to successfully implement proposed projects using impactful and cost-effective resiliency measures are considered eligible applicants. Applicants who are awarded funds through this program will be considered as contractors installing and/or providing their technology/solution to the small business(es) receiving their technology/solution eligible under Section 24 CFR 570.203(a) and/or (b), who will be considered the project's beneficiary. Greater detail on the selection criteria used to evaluate applicants is provided within the competition brief and the program's Policies and Procedures. Greater detail on the eligibility criteria for small business beneficiaries is defined below.

ELIGIBILITY CRITERIA:

Eligible projects must benefit small businesses that:

- sustained physical damages as a result of the storm; or
- were located in the inundation area of the storm and can demonstrate direct or indirect impact from the storm; or
- sustained a loss of power or utility connection as a result of the storm; or
- are located within the 100-year floodplain, as defined by either the revised December 2013 FEMA Preliminary Flood Insurance Rate Maps (FIRMs) or subsequent updates and can demonstrate direct or indirect impact from the storm (i.e., are evaluating whether to expand or even continue operations in these vulnerable areas).

Eligible projects that can demonstrate a benefit to small businesses that incurred extensive physical damages as a result of the storm may be given preference, based on and identified in the program's Policies and Procedures.

GRANT/LOAN SIZE LIMIT: While NYCEDC intends to competitively award the $30 million grant to multiple proposals, award amounts will be based upon the proposal-specific proven financial need.

PROGRAM PRIORITIES: Proposals may be judged by a combination of NYCEDC and Mayor's Office employees and a technical advisory panel of industry experts, prioritizing based on technical potential and cost-effectiveness.

GEOGRAPHIC AREA(S) TO BE SERVED: Citywide

PROGRAM START AND END DATES:

Key program milestones and timing may include:

- Release solicitation and procure a technical consultant (Q2 2013)
- Launch competition and solicit proposals (Q1 2014)
- Select proposals (Q4 2014)
- Award grants (Q3 2015/Q4 2015)

OTHER FUNDING SOURCES: TBD

Restoration of Saw Mill Creek Marsh

PROGRAM OBJECTIVE AND DESCRIPTION: The northwest coast of Staten Island incurred some of the most severe flooding and inundation of any part of New York City during Hurricane Sandy. Many locations sustained more than six feet of water and inundation that pressed more than a mile inland from the coast.

The degraded condition of the Marsh, after years of filling, ditching, and industrial development, provided limited protection to these businesses and residents. The Marsh still experiences daily tidal flows and is surrounded by several tributaries and bodies of water (including Pralls Creek, a major tributary of Arthur Kill only 600 feet west of the Marsh site). However, the Marsh no longer maintains the same absorptive capacity and has largely been filled at-grade with nearby water systems, putting local businesses and residents at-risk during significant storm events.

CDBG-DR funding will be used to restore approximately 68 acres of wetlands in the Marsh in order to provide more effective protection against extreme weather events to businesses and residents in northeastern Staten Island. It is expected that a restored wetland at the site will act as a natural buffer to protect these populations by attenuating flood waters. By reestablishing tidal channels and upland high marsh, overall salt marsh function will be restored. The clean-up, enhancement, and restoration of the site will increase the acreage of tidal wetlands in the Saw Mill Creek watershed, and is expected to improve the watershed's water quality, sediment quality, and flood attenuation.

In addition, the City plans to leverage the restoration of the Marsh to create a pilot compensatory wetland mitigation bank that will generate credits based on the ecological uplift produced by the restoration of the wetland and the achievement of other related milestones. The restoration of the Marsh and the creation of the mitigation bank are part of the City's Mitigation and Restoration Strategies for Habitat and Ecological Sustainability initiative, also known as "MARSHES."

It is expected that the credits will be available to provide compensatory mitigation for the permitted and unavoidable impacts of waterfront construction projects within the mitigation bank's primary and secondary service area. It is also expected that this mechanism will provide efficiencies for permit applicants who, unable to identify appropriate compensatory mitigation options, often experience delays of up to three years in navigating the waterfront permitting and approval process. This project is expected to result in more ecologically successful wetland restorations in the New York City area because of scale

efficiencies in wetland ecosystems and cost efficiencies in carrying out monitoring and maintenance requirements for restored sites.

Currently, the City understands that net proceeds generated from the sale of credits will be considered Program Income by HUD. The City intends to pursue a waiver of these requirements for this program in order to provide flexibility in using these proceeds for future mitigation banking efforts. The City will comply with CDBG Program Income regulations until such point that a waiver is granted.

HUD ELIGIBILITY CATEGORY: Public Facilities and Improvements (24 CFR 570.201(c))

NATIONAL OBJECTIVE (UN): Urgent Need

CDBG-DR ALLOCATION: $12,000,000

PROJECTED ACCOMPLISHMENTS: Restoration of approximately 68 acres of wetlands in Saw Mill Creek Marsh. This results in nearly 3 million square feet of public improvements for the wetland.

PROGRAM ADMINISTRATION: NYCEDC will be a subrecipient of the City of New York for this project. NYCEDC will manage the preconstruction and construction activities associated with this project along with approximately six years of required active monitoring and maintenance of the site. After NYCEDC restores the site and ensures the restoration a success, it is expected that the NYC Department of Parks and Recreation will provide long-term stewardship of the site. NYCEDC currently expects to set aside funds for the wetland's long-term stewardship.

ELIGIBLE APPLICANTS/PROPERTIES: N/A

ELIGIBILITY CRITERIA: The project will benefit local small businesses and residents surrounding Saw Mill Creek Marsh.

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: N/A

GEOGRAPHIC AREA(S) TO BE SERVED: Saw Mill Creek Marsh, Staten Island

PROGRAM START AND END DATES: Restoration work on the site is currently anticipated to begin in Q4 2015 and be completed by Q1 2017.

OTHER FUNDING SOURCES: New York State Empire State Development Corporation, New York City Industrial Development Agency, New York City Economic Development Corporation

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Coney Island Green Infrastructure Improvements

PROGRAM OBJECTIVE AND DESCRIPTION: Local businesses on the Coney Island peninsula were hit hard by Hurricane Sandy. Over 5,000 businesses employing over 30,000 people suffered storm inundation and stillwater flooding as a result of the storm. In the days following the storm, many businesses that managed

to reopen found themselves with fewer customers because so many Southern Brooklyn residents had been displaced. Many other businesses were unable to reopen at all.

Sandy's primary impacts to much of the peninsula resulted from waters that entered through inland waterways- historic creeks and marshland that had been paved over in preceding decades. Along Coney Island and Brighton Beach, USACE beach nourishment efforts generally performed as intended, breaking waves before they made contact with buildings. However, the storm brought direct wave action in areas where coastal protections were lacking or inadequate, such as in Sea Gate and Manhattan Beach. At Sandy's peak, floodwaters reached a height of 10 feet in some places, including, for example, along Neptune Avenue in Coney Island.

Beyond the direct impacts from Sandy, climate change threatens to make the stillwater flooding that impacted much of the district more frequent by increasing rainfall resulting in flooding along business corridors and increases in the frequency and volume of combines sewer outflows (CSOs)

Because of the complexity of the district and varying impacts from storm surge and storm water, the City is currently pursuing a complement of programs to make the district more resilient, more attractive for businesses and consumers, and to prepare it for climate change, including:

- To improve the region's ability to manage stormwater, the City is investing in more than $240 million in infrastructure upgrades including new sewers and raising of street grades between W 2nd and W 22nd Streets.
- To protect from coastal wave action and storm surge inundation, the City will continue working with USACE on beach nourishment, T-groin construction, and related investments along Coney Island Beach.
- To prevent flooding from Coney Island Creek, the City is currently conducting a Coney Island Creek Tidal Barrier and Wetlands Feasibility Study to identify near-term and long-term solutions to protect vulnerable public and private infrastructure. The study is anticipated to have actionable recommendations by the 4th quarter of 2015.

To accompany these efforts, CDBG-DR funding will be used to install green infrastructure improvements, including right-of-way bioswales along commercial corridors approximately between W 8th Street and W 37th Street between Coney Island Creek and the ocean to improve storm water run-off quality and create capacity in storm water sewer structures by filtering and infiltrating storm flows. This will have a variety of benefits to the Coney Island peninsula, including improving the water quality in Coney Island Creek and enhancing existing/expanding neighborhood retail areas through beautification. Bioswale installation will provide a critical link among the existing initiatives listed above and will coincide with currently planned streetscape and sewer infrastructure upgrades currently planned.

HUD ELIGIBILITY CATEGORY: Public Facilities and Improvements (24 CFR 570.201(c)

NATIONAL OBJECTIVE (UN), (LMA): Urgent Need; Low- to Moderate-Income Area Benefit

CDBG-DR ALLOCATION: $15,000,000

PROJECTED ACCOMPLISHMENTS: Installation of approximately 200 bioswales throughout Coney Island. This will result in approximately 13.9 million square feet of public improvements.

PROGRAM ADMINISTRATION: NYCEDC will be a subrecipient of the City of New York for this project. NYCEDC will work to coordinate work with currently planning infrastructure upgrades performed by DEP and DOT.

ELIGIBLE APPLICANTS/PROPERTIES: Rights-of-ways approximately between W 8th Street and W 37th Street between Coney Island Creek and the ocean

ELIGIBILITY CRITERIA: N/A

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: N/A

GEOGRAPHIC AREA(S) TO BE SERVED: Coney Island, Brooklyn.

PROGRAM START AND END DATES: Design will begin in Q4 2015. Installation of bioswales will begin in 2017 and be completed by 2019 to coincide with existing sewer and streetscape improvements planned for the district.

OTHER FUNDING SOURCES: NYC Capital funding

Rockaways Commercial Corridor Resiliency

PROGRAM OBJECTIVE AND DESCRIPTION:

During Hurricane Sandy, the Rockaways experienced extensive flooding, with parts of the area exposed to direct wave action that caused severe damage to residents and businesses. Along the Peninsula, a commercial strip on Beach 129th Street was destroyed, more than 50 businesses experienced severe loss from fire and flooding on Rockaway Beach Boulevard from Beach 116th to Beach 100th Streets and more than 40 businesses on Beach 116th Street were seriously flooded. Several businesses were also damaged in Breezy Point, and while Far Rockaway's main commercial corridor on Mott Avenue experienced less impactful physical damage, long-term power outages led to economic loss.

In addition to direct physical impact, the storm also affected the commercial viability of business districts. Businesses that suffered damage continue to struggle in its aftermath from a decline in economic activity, in part due to surrounding vacant storefronts and damaged streetscape.

Across the Rockaways, flooding is also a year-round concern that recurs as a result of heavy rainfall events or tidal activity. Continuous flooding and resulting ponding damages and degrades the quality of street surfaces and landscaping, negatively impacting neighborhood character.

To address these issues, the City plans to use CDBG-DR funds for economic development and resiliency measures in targeted commercial corridors, such as Beach 108th Street, Mott Avenue, and surrounding business districts. This will help to preserve the commercial viability and resiliency of these areas, many of which employ low-income workers. Specific measures are to be determined through stakeholder and agency engagement, but could include economic development measures such as redevelopment of underutilized properties, streetscape enhancements, improved pedestrian access to commercial corridors, and resiliency measures such as permeable sidewalks, right-of-way bioswales, and stormwater

greenstreets. Additional open space creation would also improve the quality of community public spaces, and spur local economic development.

The City plans to use approximately $7.5 million for Downtown Far Rockaway commercial corridor improvements. The project will include streetscape enhancements, including: street furnishings, street trees, and wayfinding signs throughout the area. In addition, the project will include street reconstruction and site improvements along Beach 22nd to Beach 20th Street between Mott Ave. and Cornaga Ave., to improve access to business districts from the area's transit hub and to revitalize a central commercial corridor. The project will also include stormwater drainage improvements that will supplement existing plans by the City to upgrade and install a sewer system in Downtown Far Rockaway. This project will leverage planned investments from existing federal and city funding for improvements in the area. It will increase resiliency and promote economic revitalization by creating an accessible, vibrant, and thriving commercial/transit corridor for residents and businesses.

Additional projects will be determined through continued stakeholder and agency engagement.

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Public Facilities (24 CFR 570.201(c)) Special Economic Development Activity (24 CFR 570.203)

NATIONAL OBJECTIVE (LMJ), (LMA), (LMC), (UN): Low- to Moderate-Income Job Creation/Retention; Low- to Moderate-Income Area; Low- to Moderate-Income Limited Clientele – Microenterprise; Urgent Need

CDBG-DR ALLOCATION: $15,000,000

PROJECTED ACCOMPLISHMENTS: Support revitalization of commercial corridors and reduce risk of flooding through stormwater drainage improvements, and economic development through streetscape upgrades and open space creation in Sandy impacted key commercial corridors in the Rockaways. This will result in approximately 10,560 linear feet of public improvements.

PROGRAM ADMINISTRATION: The City expects that NYCEDC will be a subrecipient of the City of New York for the economic development and resiliency projects in the Rockaways. NYCEDC expects to coordinate work with DEP and DOT and other agencies for the specific projects.

ELIGIBLE APPLICANTS/PROPERTIES: N/A

ELIGIBILITY CRITERIA: The projects will benefit local small businesses in key commercial corridors in the Rockaways.

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: Targeted high-risk commercial corridors in the Rockaways to be determined through stakeholder and agency engagement

GEOGRAPHIC AREA(S) TO BE SERVED: Hurricane Sandy impacted commercial corridors in the Rockaways that lie within the 100-year floodplain

PROGRAM START AND END DATES: Planning, design, and engineering for projects is anticipated to begin in Q4 2015 and construction to begin in 2017.

OTHER FUNDING SOURCES: TBD

IX. INFRASTRUCTURE AND OTHER CITY SERVICES (IOCS)

For the purposes of this Action Plan, **Other City Services** is comprised of the Public Services, Emergency Demolition, Debris Removal/Clearance, Code Enforcement, and Interim Assistance and **Infrastructure** is comprised of Rehabilitation/Reconstruction of Public Facilities.

Needs Assessment

Storm Preparation and Emergency Response

The City undertook a massive preparation effort several days before Hurricane Sandy made landfall. The City's Office of Emergency Management (OEM) began tracking the storm that would eventually develop into Hurricane Sandy on Saturday, October 20, 2012. On October 25, 2012, as the forecast showed that Sandy might hit the Northeast, OEM activated the City's Coastal Storm Plan (CSP), which is a series of plans that guide the City's response to and recovery from the hazards that hurricanes bring. These plans included storm tracking and decision-making, evacuation, sheltering, logistics, public information, and recovery, outlining a coordinated citywide response to any coastal storm event. On October 26, 2012, the City activated OEM's Emergency Operation Center (EOC), which was the hub of the City's storm preparations and immediate response efforts.

Storm Preparation

Once the CSP and EOC were activated, City agencies began transitioning to emergency operations, which included testing and fueling generators; taking inventory of critical supplies; and securing and relocating vehicles and other equipment out of flood zones. Additionally, each of the eleven hospitals within the City's Health and Hospitals Corporation (HHC) and the HHC central offices activated command centers that were fully staffed until several days after the storm.

Also on October 26, 2012, OEM activated the City's Advanced Warning System (AWS), which pushes targeted emergency information to warn the most vulnerable populations, such as the elderly and people with disabilities, 24 to 48 hours in advance of an impending emergency. OEM sent 16 AWS messages before, during, and after the storm.

The City's Department of Environmental Protection (DEP) activated all applicable emergency storm preparedness procedures several days in advance of Sandy's landfall. This included inspecting and cleaning catch basins in flood-prone areas to ensure optimal drainage during the storm. DEP created comprehensive staffing plans to ensure effective and continuous operations both during and after Hurricane Sandy. Where possible, staff and equipment located in low-lying Zone A areas were moved to designated alternate operating facilities to minimize disruption in operations. This included relocating DEP's Emergency Communication Center, a critical operation during emergency events. DEP Distribution Operations personnel checked all critical structures and appurtenances to ensure uninterrupted operation of the water distribution system. Facilities personnel also undertook significant measures to minimize damage and disruptions to operations by securing items that could become compromised due to heavy winds, topping off chemical and fuel supplies, inspecting critical equipment for operational purposes, and rescheduling deliveries before the storm. DEP sandbagged wastewater treatment plants and pumping stations; fueled emergency generators; tied down loose equipment and suspended construction activities;

scheduled staff for double shifts; pre-positioned mobile pumping equipment; made arrangements with contractors to provide as-needed services; and preformed training drills on power-down, evacuation, and sheltering procedures in the event that a facility flooded. Throughout the storm, all wastewater treatment plants were fully staffed with personnel working around the clock.

As part of the Coastal Storm Plan, the City activated its Unified Operations Resource Center (UORC) on October 27, 2012, which coordinates operations of the City's emergency shelters. The UORC is staffed by 16 different City agencies, but is primarily made up of employees from the Department of Homeless Services (DHS). City employees who are designated as evacuation shelter staff reported to their respective shelters at 8:00A.M. on Saturday, October 27, 2012. These shelters and evacuation centers were located in Department of Education (DOE) and City University of New York (CUNY) public school buildings. DOE provided custodial staffing, food supplies, and food service workers to run the shelters. Eight of the shelters were special medical need shelters that would serve residents with certain medical conditions. In conjunction, OEM began mobilizing the City's emergency shelter supply stockpile, which consists of more than 5,700 pallets of medical supplies, personal care items, cots, blankets, food, water, and baby and pet supplies.

The shelters began accepting voluntary evacuees on Sunday, October 28, 2012. However, as weather models showed that the City would likely sustain a more direct impact than previously predicted, the Mayor ordered a mandatory evacuation order for Zone A[6] at 11:00A.M. Residents were ordered to evacuate to shelters by 7:00P.M., at which time MTA bus and subway service was suspended. The City utilized 200 DOE school buses to evacuate New York City Housing Authority (NYCHA) residents prior to NYCHA powering down elevators in its developments. By 9:00P.M. Sunday, October 28, 2012, MTA bus and subway service was essentially shut down.

Throughout this event, the City focused on ensuring that the public had the most up-to-date information. The Office of the Mayor coordinated efforts to inform the public, which included press conferences that were carried by major television and radio networks and were streamed on www.nyc.gov and YouTube, and other social media platforms; alerts sent through the City's NotifyNYC system; and through the Commercial Mobile Alert System (CMAS), which sent a text message to all City cellular phones notifying them of the evacuation order.

As the storm approached, the City's uniformed services drastically increased staffing levels. The NYPD switched its tours to 12-hour shifts and pre-positioned flat-bottom boats in the most vulnerable neighborhoods. Officers canvassed Zone A[7] areas with bullhorns from marked NYPD vehicles flashing their lights and alerting residents about the mandatory evacuation order. NYPD officers drove MTA buses and provided transport to anyone who still had not evacuated. These operations continued until it was no longer safe for first responders or anyone to be on the roads. The NYPD also relocated the City's homeless individuals to shelters that were out of harm's way.

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[6] Hurricane Evacuation Zone A was in effect during Hurricane Sandy. In 2013, the City updated the Hurricane Evacuation Zones to Zones 1-6, whereas Zone A no longer exists

[7] Ibid

The FDNY also increased its operations in Zone A[8], adding a fifth firefighter to forty engine companies and placing five additional chiefs in service. The Department activated their Incident Management Team (IMT); pre-positioned marine skiffs (hurricane boats) in the Rockaways, the Bronx, and Staten Island; deployed all seven brush-fire units to assist EMS response in Zone A; and deployed eight inflatable swift-water rescue boats with teams throughout the City. EMS operations had 100 percent staffing in all five divisions, including more than 100 additional ambulances. In total, the FDNY had more than 600 additional personnel, both firefighters and EMS, working during the height of the storm.

In addition to being fully staffed and working significant overtime, the City's Emergency 911 and informational 311 systems brought on additional, temporary call takers in anticipation of unprecedented call volume. The staffing levels proved to be invaluable, as call volume increased sharply. During the storm the 911 system reached its highest hourly call-volume ever, which peaked at 20,000 calls per hour. On October 29, 2012, 911 received over 100,000 calls – more than September 11, 2001 and the 2003 blackout. For 311, which is administered by the City's Department of Information Technology and Telecommunications (DoITT), call volumes increased prior to the storm as residents inquired about evacuation zone lookups and Sandy-related transit information. During and following the storm, call volume reached more than 274,000 calls per day, four times greater than the 2012 daily average.

Additionally, City agency staff took measures to protect City-owned property and equipment, which included, but were not limited to, securing windows; sandbagging buildings; removing loose items from facility exteriors; fueling generators; moving generators to higher ground, etc. Certain agencies required more extreme measures. For example, HHC safely discharged patients where possible, and one hospital in a primary flood zone transferred ventilator-dependent patients to other facilities. The City's Department of Transportation (DOT) took measures to protect the Staten Island Ferry fleet by either moving boats to dry docks or fully staffing the vessels throughout the storm to prevent damage.

Emergency Response

The unprecedented storm surge generated by Hurricane Sandy caused catastrophic damage to the City's coastal neighborhoods and substantial damage across a wide area of the interior, from Staten Island to the Rockaways, to the Bronx. Uniformed services switched to search and rescue operations as the NYPD, FDNY and EMS rescued stranded civilians who did not evacuate flood zones. Firefighters used the pre-positioned swift-water boats to rescue more than 500 individuals trapped by rising waters across Brooklyn, Queens, and Staten Island. There were a total of 94 fires the night of Hurricane Sandy, with the most devastating in Breezy Point destroying 126 homes and damaging 22 more. Additionally, all of the agencies worked with the Department of Buildings (DOB) and OEM to secure a collapsed crane on West 57th Street in Manhattan and evacuate the surrounding area.

The storm surge also required the evacuation of Coney Island Hospital on Tuesday, October 30, 2012 and Bellevue Hospital on Wednesday, October 31, 2012. Several hundred patients, including many of whom were critically ill and more than 15 neo-natal intensive care babies, were delivered safely and without incident to caregivers at HHC facilities and other hospitals. EMS also assisted with the evacuation of NYU Langone Medical Center.

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[8] Ibid

Following the storm, FDNY operations set up command posts in each of the hardest hit areas of Brooklyn, Queens, and Staten Island as bases from which to coordinate with other agencies and muster additional resources. The NYPD set up more than 500 light towers throughout the City and provided increased deployments to all five boroughs of the City, with larger deployments concentrated in Lower Manhattan, where power was out below 34th Street, and the hardest hit shore areas of Brooklyn, Staten Island, and Queens. Officers assisted with the distribution of necessities such as food and water to New Yorkers who lost their homes; enforcement activities including residential and commercial anti-looting patrols, focusing on key neighborhoods around the City that were without power; and performing neighborhood patrols and door-to-door checks on residents in the public housing facilities that lost water and electricity. Housing officers distributed food, water, and blankets and transported vulnerable residents to medical care, particularly senior citizens.

Many agencies, primarily DEP and DOT, began water removal operations from their facilities as soon as it was safe to do so. Agencies worked closely with the U.S. Army Corps of Engineers (USACE) and the Navy to pump out the Battery Park underpass and West Street underpass. DEP provided assistance with removing flood water citywide by lending out crews and industrial pumps. Of the City's 14 wastewater treatment plants, 13 came back online in record time and were treating 99 percent of the City's wastewater within days of the storm. The Rockaway Wastewater Treatment Plant came back online about a week later.

During the massive loss of power across the five boroughs, NYPD Traffic Enforcement Agents and DSNY employees directed traffic at hundreds of intersections. Additionally, throughout the citywide gasoline shortage, officers were posted at open gas stations throughout the City.

The Department of Citywide Administrative Services (DCAS), partnering with OEM, FEMA, and USACE, helped acquire many different types of supplies, including light towers, generators, portable toilets, pharmaceuticals, and bottled water to support emergency operations citywide. Generators and boilers were deployed to critical facilities such as nursing homes, hospitals, multi-unit housing, NYCHA developments, etc. Additionally, DCAS' Fleet Services coordinated the delivery of fuel to City entities and emergency fueling operations for City, State, and essential emergency response vehicles at Floyd Bennett Field in Brooklyn, Fort Wadsworth in Staten Island, and Orchard Beach in the Bronx.

The Department of Buildings (DOB) began conducting assessments of damaged properties on October 31, 2012. Buildings were tagged as red (seriously damaged and unsafe to enter or occupy), yellow (damaged with specific entry and restricted use), or green (no apparent structural hazards and no restrictions on use).

Restoration of Services

Nearly every City agency participated in recovery efforts. For example, during and immediately after the storm, Correction Officers provided security at relief stations, transported relief workers, and delivered food provisions and other emergency relief supplies. Correctional facility inmates also laundered clothes for thousands of New York City families temporarily residing in shelters after the storm.

In the immediate aftermath of Sandy, many of the City's recreational facilities were transformed into recovery centers. The East 54th Street Recreation Center in Turtle Bay provided recreation and shower facilities to children under the care of the Administration for Children Services (ACS) from the Lower East Side. The Sunset Park Recreation Center offered shower facilities to displaced New Yorkers from Red Hook. In Crown Heights, the St. John's Recreation Center was able to offer recreational opportunities and

shower facilities for children and their families being sheltered at P.S. 249. The Asser Levy Recreation Center in Kips Bay served as an alternative location for New Yorkers to cast their votes on Election Day.

DoITT required employees to work overtime to ensure adequate on-site coverage for technology and telecommunications problems. DoITT also procured emergency mobile equipment and devices, including pictometry for surveying damage.

Many City agencies' offices were damaged in the storm. In order to ensure that City government entities could return to serving the needs of the citizens as quickly as possible, the Department of Citywide Administrative Services (DCAS) identified alternative temporary space to relocate City staff from damaged offices. DoITT secured equipment, such as routers and computers, to replace items lost in the storm and provided desktop support, mobile communications services, and data analytics.

Limited critical care services were opened at Bellevue Hospital in the middle of December and at Coney Island Hospital in the beginning of January. Coney Island Hospital began to accept inpatients in the middle of January and began offering limited ambulance-related emergency services in late February. However, the hospital will not be able to fully restore all services until June 2014 . Bellevue fully re-opened on February 7, 2013 and resumed its Level I Trauma Center status.

DEP's Bureau of Water and Sewer Operations immediately responded to water and sewer complaints following the storm. Within a few days, DEP inspected approximately 1,000 catch basins and cleaned more than one-third of those. Through the month of November 2012, staff continued to inspect and clean catch basins citywide. More than 6,100 were inspected and more than 3,600 were cleaned as part of response operations. DEP crews conducted detailed visual surveys of all DEP assets in the Rockaways and along the coastline of Queens. Because of these surveys, DEP was able to repair approximately 900 hydrants citywide.

Throughout New York City, DEP flushed more than 37 miles of sewers. Contractor crews inspected approximately 51 miles of sewers in the Rockaways and cleaned more than eight miles of sewers in Brooklyn, Queens, and Staten Island. Approximately 450 cubic yards of debris was removed, nearly 85 percent of which was removed from Queens. DEP conducted a major cleanup effort to restore the natural drainage at Jefferson Creek in Staten Island. Two weeks after the storm, flusher trucks had cleaned nearly 10,000 linear feet of sewer lines and crews had removed almost 1,000 cubic yards of debris from Jefferson Creek.

Emergency Supply Distribution

Immediately following the storm, the City opened food, water, and emergency supply distribution sites in the hardest hit areas in order to protect the health and safety of the population in the hardest hit communities. The sites were staffed by City employees, volunteers, the Salvation Army, and the National Guard. From Thursday, November 1 through Monday, November 26, 2012, a wide assortment of urgently needed supplies was provided, including more than 2 million meals, water and other beverages, infant care items, garments, batteries, and cleaning and personal hygiene supplies.

As part of the *Support to Residents in Their Homes* operation, the Fire Department Incident Management Team, working with the Office of Emergency Management and the Department of Health and Mental Hygiene, sent teams of National Guard troops, FEMA personnel, and AmeriCorps volunteers door-to-door

in affected areas of the City to check on the health and well-being of residents in buildings without heat and/or power.

Restoration Centers

In order to assist the hardest hit communities to begin recovery efforts, between November 13, 2012 and February 23, 2013, the City operated NYC Restore, a comprehensive effort to connect residents and businesses impacted by Hurricane Sandy with financial, health, environmental, nutritional, and residential services, as well as FEMA reimbursement processing. The initiative consisted of seven NYC Restoration Centers, wheelchair-accessible offices located in the communities that were hardest hit to provide long-term assistance to New Yorkers, and brought together information and referrals for all of the City government services available in the aftermath of the storm.

Food Distribution

In the weeks immediately following the disaster, the Human Resources Administration (HRA) provided funding of approximately $4.8 million to distribute more than 720,000 prepared meals at eight sites in the most heavily damaged neighborhoods during November 2012. HRA's Emergency Food Assistance Program (EFAP) partnered with the Food Bank for New York City to provide an increase in emergency food deliveries to residents in storm affected areas.

Debris Removal

The strong winds, heavy rains, and storm surge also resulted in the accumulation of debris on streets, sidewalks, and other public properties. The debris was composed of woody material, sand, stones, street and building/household wreckage, and other objects deposited by the storm surge and wind. Hurricane Sandy generated more than 700,000 tons of debris in New York City. To tackle the massive amount of debris, the Office of the Mayor immediately stood up the Debris Removal Task Force (DRTF) to coordinate debris removal in order to ensure safe passage for emergency vehicles, open traffic flow, and to create a safe and clean environment to allow for rebuilding. The DRTF was comprised of over 25 City, State and Federal agencies, including the Office of Emergency Management, Department of Sanitation, Department of Parks and Recreation, New York State Department of Environmental Conservation, Federal Emergency Management Agency, U.S. Army Corps of Engineers, and the Environmental Protection Agency.

Most of the clearance work was done by the Department of Sanitation (DSNY), whose employees worked constantly 24 hours a day, 7 days a week, in 12-hour shifts that lasted from the end of Hurricane Sandy through the beginning of December. Tree debris was so prevalent that the Office of Emergency Management (OEM) convened a special multi-agency task force, which responded to more than 20,000 street tree-related emergencies received through 311 and the Department of Parks and Recreation. DEP personnel conducted asbestos air monitoring and hazardous materials inspections in order to ensure the proper disposal of all debris. Also, sand needed to be collected and sifted to remove debris before it could be returned to beaches.

City Response for Special Needs Populations

The City made every effort to inform special needs populations of the potential dangers of Hurricane Sandy. The Advanced Warning System (AWS) warned vulnerable populations of Sandy's threat several days before the storm made landfall. OEM sent Sandy-related AWS messages before, during, and after the storm. The

City used American Sign Language interpreters at every press conference and encouraged television networks to provide closed captioning during mayoral briefings.

Department for the Aging (DFTA)

The Department for the Aging (DFTA) was in constant contact with all senior service providers that had communication capability before, during, and after the storm to field questions, provide information on resources, direct requests for emergency services/assistance, disseminate information on the City's restoration efforts, coordinate donations, and respond to all storm-related needs. Daily updates were provided to the Mayor's Office and uploaded to the City's website for several weeks after the storm.

The Case Management Agencies contacted their clients in preparation for the storm, as well as during and following the storm. There were 14,995 contacts made between Friday, October 26 and Friday, November 2. Clients were referred for emergency care as needed. DFTA staff at the OEM Emergency Operations Center also helped coordinate evacuations, requests for supplies from senior housing residences, and search for missing seniors.

DFTA also coordinated canvassing efforts with the National Guard and provided home-delivered meals and other services when they were requested. In partnership with Citymeals-on-Wheels (CMOW), all 23 home delivered meal programs delivered meals to their clients. Between October 26, 2012 and November 17, 2012, DFTA and CMOW's home-delivered meals program delivered 363,945 meals, serving more than 15,000 clients. More than 15,000 meals were delivered daily. Providers mobilized volunteers to continue deliveries of meals and emergency food packs, often using creative solutions to fuel their delivery vehicles.

All 13 home care agencies stayed in touch with 2,575 clients when aides could not make visits.

During the first week after the storm, 201 senior centers were able to re-open by November 2; the rest followed as power was restored in the boroughs. More than 250 DFTA senior centers provided needed meals, support services, and operated as warming centers, some for extended hours and on weekends, in the months following the storm. A few remain closed due to more severe facility damage.

DFTA also provided additional miscellaneous assistance such as disseminating information on the FEMA reimbursement process for non-profit organizations; working with OEM and utility companies to restore power in senior residential buildings sponsored by a DFTA-contracted service provider in Far Rockaway and Brooklyn; coordinating delivery of 1,500 space heaters donated by National Grid for older residents who had power but no heat; staffing shelters and DFTA programs that were under-staffed; and volunteering at the FEMA Disaster Assistance Centers.

Human Resources Administration (HRA)

Home Care Services Program

Prior to Hurricane Sandy, Home Care ("CASA") offices contacted all 2,967 clients in Zone A[9]. CASA case managers informed clients of the evacuation order, provided them with information regarding the evacuation shelters, and discussed other options with them.

On November 3-4, 2012, CASA staff and first responders visited 51 previously unaccounted for clients in Far Rockaway. Home Care assisted in the evacuation of one client and provided food, water, and blankets to those who refused to evacuate. Home Care also provided food, water, and blankets to other (non-HRA Home Care clients) Far Rockaway residents who were in the immediate vicinity of the clients. Home Care contacted 1,515 clients who were high risk (i.e., 56 hours and higher of Home Care service) following the storm to check on their status.

Adult Protective Services

Adult Protective Services (APS) staff made nearly 5,000 phone calls and more than 500 visits to clients in Flood Zone A, Coney Island, and the Rockaways both before and immediately after the storm. Before the storm, APS focused on assisting clients in evacuating to shelters and hospitals. APS used EMS and HRA staff psychiatrists for assessments in cases where it was unclear if clients had the mental capacity to make appropriate decisions regarding evacuation.

HIV/AIDS Services Administration

In the aftermath of the storm, the HIV/AIDS Services Administration (HASA) worked to confirm the well-being of 393 clients residing in Zone A[10] who were considered at-risk due to medical limitations. HASA staff members, along with HRA police, also made home visits in Far Rockaway to check on clients whom they were unable to contact via telephone and those who had been contacted but were particularly frail. In November 2012, HASA staff, alone or partnering with other agencies including FEMA and the NYPD, successfully contacted all 393 clients and made more than 350 home visits.

Immediately following the storm, HASA clients' requests for emergency housing increased approximately 60 percent because clients were displaced by the storm. During the first two weeks following the hurricane, HASA placed 354 clients who were temporarily or permanently made homeless by the storm into emergency housing programs.

Supplemental Nutrition Assistance Program (SNAP)

After the hurricane, HRA was able to issue special SNAP benefits to assist existing SNAP recipients and other low-income New Yorkers with the purchase of food. Along with New York State, HRA secured a waiver to provide certain benefits and to permit SNAP recipients to use their benefits to purchase hot/prepared foods through November 30, 2012. The following combination of special SNAP programs provided additional benefits totaling more than $72 million to households that were impacted by the storm:

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[9] Hurricane Evacuation Zone A was in effect during Hurricane Sandy. In 2013, the City updated the Hurricane Evacuation Zones to Zones 1-6, whereas Zone A no longer exists

[10] Ibid.

- In the first week of November 2012, 311,445 households residing in 82 of the most highly impacted zip codes received an automatic replacement benefit of 50 percent of their October SNAP grant, under a special USDA waiver.
- More than 107,000 households applied in person through the beginning of November 2012 and also received SNAP replacement benefits. Some of these were people who did not get the automatic replacement and some were those who had already received the replacement but were eligible for additional benefits.
- Under the USDA's Disaster Supplemental Nutrition Assistance Program (D-SNAP), more than 31,000 households in 10 of the most highly affected areas received a special allotment of SNAP benefits equal to the maximum grant for households of that size.

Medicaid

HRA Medicaid offices were open in all five boroughs and the Medicaid Help Line was also operational immediately after the storm. The Medicaid Program relocated staff from flood-damaged offices to other locations so that operations could proceed normally. In addition, the Medicaid Program worked with the NYS Department of Health to implement program-easing measures to avoid case closings and lapses in coverage, including:

- A two month extension of Medicaid coverage for cases due to expire in November or December 2012.
- Cancellation of closings in process.
- Suspension of closing transactions for failure to renew or failure to respond to a request for additional information.
- A seven day increase in the amount of time allowed to respond to a request for information at new application.
- A thirty day extension of current authorization for personal care services, including CD PAP services, for those due to expire during the state of emergency.
- An extension of the period of acceptance of physician orders for personal care services authorizations from thirty days to sixty days from the date of examination.

Mayor's Office for People with Disabilities (MOPD)

People with disabilities faced unique difficulties as a result of Hurricane Sandy, particularly if they lived within Zone A[11] and faced mandatory evacuation. Those who lost power in other zones faced their own challenges, including being trapped in their apartments with no elevator access; being unable to power life-sustaining equipment; and dealing with shortages of food, durable medical equipment, and medication. In particular, those in need of dialysis found it very difficult to get treatment because sites were closed and transportation was not available.

MOPD undertook several initiatives to assist such populations, which included:

[11] Ibid.

- Visiting shelters and evacuation centers to determine accessibility and informing shelter staff how to work with people with disabilities.
- Helping to coordinate effective Mayoral press conference communication for those who are Deaf and Hard-of-Hearing through the use of a real-time American Sign Language interpreter.
- Having staff on-site at the OEM Emergency Operations Center taking calls and participating in meetings.
- Forwarding constituent calls directly to the cell phones of staff to ensure calls would be answered.
- Coordination of food delivery to those in need by working directly with Citymeals-on-Wheels.
- Working directly with City agencies, including the FDNY, to help remove those trapped in their apartments.
- Providing up-to-date information about the storm on its website.
- Keeping a direct line of communication open with members of the disabled community to address specific and general problems.
- Taking part in daily meetings with representatives of groups that represent people with disabilities, OEM, and FEMA to address needs and concerns.
- Working directly with DCAS so that Access-a-Ride vehicles were given priority to fuel their vehicles.
- Working with local non-profits to supply mobility devices to those whose equipment was destroyed by the storm.
- Working with local non-profits to set up temporary clothing distribution centers that employed people with disabilities.
- Working with FEMA to identify the percentage of accessible temporary housing for people with disabilities.
- Visiting NYC Restoration Centers to ensure that they were accessible and that staff were aware of the needs of people with disabilities.

The direct impact of Hurricane Sandy on the City extends beyond the immediate storm preparation and emergency response. As explained above, the City provided a tremendous amount of recovery and restoration services. In addition, the City's infrastructure, which includes buildings, roads and streets, water and sewer systems, parks and recreational facilities, etc., suffered extensive damage. An unmet needs analysis for the total cost of the storm response, recovery, and damaged City infrastructure is addressed in the next section.

Infrastructure and Other City Services

Hurricane Sandy caused more than $19 Billion in damage and economic activity, thousands of homes and businesses were destroyed or seriously impacted, infrastructure systems and vital services that serve millions were disrupted, and 44 New Yorkers tragically lost their lives. Billions of dollars of Federal assistance was provided to the City to support recovery efforts. Agencies including, FEMA, USCAE, FHWA, DOT, and HUD provided grants for recovery projects. The mandated sequence of delivery of Federal programs, each Agency's eligible activities, and the requirement to avoid duplication of benefits establishes the heirarcy and appropriateness for application of funds. In addition, the different environmental review processes for each Agency can affect the use of funds as local match.

FEMA, USACE, FHWA and DOT funds are the primary source of funding for eligible activities under their respective authorities. HUD CDBG-DR funds are used to meet the funding gap generated by the local match requirements and as such are the funds of last resort. The City is dependent on the policies, rules and regulations of the other federal agencies to determine which projects or portions of projects will be HUD eligible, when they will be approved, and when the City can identify a project for use of HUD funds. Due the complexity of these programs and projects, it can take months to years before the primary Federal Agency approves a project in order for the City to move forward for implementation. This process may cause some delay in the determination of projects eligible for HUD CDBG-DR funds and require the City to estimate the amount of unmet need requiring HUD funding. In many of these instances, the City has committed its own funds to avoid delays in the recovery of the community and its citizens.

Impact to the City's Infrastructure

As discussed in the Needs Assessment section, Hurricane Sandy caused damage to City infrastructure and facilities. Damaged facilities that provide essential services, such as police stations, fire stations, sanitation garages, and educational facilities, were among those hardest hit. Despite efforts to protect City-owned infrastructure, facilities, and other assets, damage to such property was extensive. The estimated impact to City facilities is $5.3 billion, which consists of approximately $3.5 billion for capital and $1.8 billion for mitigation, based on revised and update unmet needs analyses as of March, 2015.

The NYC Heath and Hospitals Corporation (HHC) had ten large hospitals damaged, including extensive damage to Bellevue Hospital Center, Coney Island Hospital, and Coler-Goldwater Memorial Hospital. HHC also experienced damage to five smaller healthcare facilities as well as to four of its administrative office spaces. Two hospitals and several community healthcare facilities were evacuated and displaced. Temporary administrative offices also had to be leased, built-out, and supplied with computers and telephones.

The New York City Police Department (NYPD) sustained storm-related damage to more than 20 of their facilities including station houses, warehouse/storage facilities, boat docks, tow pounds, an aircraft hangar, and the Department's firing range and bomb squad training buildings.

Seventy-one school buildings sustained damage from Hurricane Sandy. Damages to these school buildings included severe salt-water flooding, destroyed boilers and oil tanks, damaged electrical and computer/phone cabling and equipment, oil spills and the resulting contamination, sink holes, roof leaks, and ruined gym and auditorium flooring. Extensive upgrades, including the replacement of temporary boilers with permanent systems, are required to bring buildings back to their pre-storm condition.

The City had damage to approximately 400 Parks sites, in addition to the displacement of more than 3 million cubic yards of sand from the City's beaches.

Twenty-nine Fire Department facilities were damaged due to the storm; this includes 16 Firehouses, 6 EMS stations, 5 Marine facilities and 2 support facilities (Paidge Avenue and Fort Totten). There was widespread damage to apparatus doors (after being hit by a high quantity of seawater), basements (which filled to the top with water), electrical and heating systems (including pipes), and various structural aspects. Marine facilities suffered damage to piers, piles, electrical systems and transformers, as well as the wave attenuator at Marine 9, which is intended to reduce wave height in order to provide safe berthing for vessels. FDNY also suffered losses of information technology equipment, communications networks and infrastructure, fire apparatus, and ambulances.

The Department of Sanitation (DSNY) sustained damage at 61 of its facilities throughout the City, and needed to evacuate 14 of its facilities; it also suffered damage to its vehicle fleet including 9 light/medium duty vehicles and 34 heavy duty vehicles that require repairs after being damaged by salt water. DSNY also manages the former Fresh Kills landfill, which sustained damage to its pollution control infrastructure.

The Department of Correction (DOC) sustained damage along the northern shoreline of Rikers Island, losing an estimated four acres of land. All trailers located along the eroded north shore will need to be replaced and relocated. One facility's roof was significantly damaged. The electrical substation for the City's only jail barge, located in the Hunts Point section of the Bronx, will now need to be raised to meet FEMA's floodplain standards.

The Department of Transportation (DOT) determined that hundreds of lane miles of streets will require resurfacing and/or full reconstruction due to storm damage. Street lights, traffic signals, and underground wiring were damaged by floodwaters, and in some cases, backed up sewage. High wind speeds further caused extensive damage to the existing street fixtures and traffic equipment. Floodwaters severely damaged the Battery Park and West Street underpasses in Lower Manhattan, and repairs are also necessary for 20 movable bridges. The mechanical and electrical systems at the Whitehall (Manhattan) and St. George (Staten Island) Ferry Terminals incurred significant damages. In addition, ferry piers and other ferry facilities suffered damage. Finally, the Department's administrative offices were flooded and contents, including technological equipment, were irreparably lost.

Hurricane Sandy adversely affected ten of the City's 14 Wastewater Treatment Plants. Rockaway, the smallest wastewater facility by capacity, was the most severely affected. Most of the damage was to electrical systems including substations, motors, control panels, junction boxes, and instrumentation. Power outages required many DEP facilities to operate on their emergency generators for up to two weeks. Of the 96 DEP pumping stations, 42 were impacted by the storm.

The New York City Department of Environmental Protection ensured that the City's drinking water remained safe during and after the storm despite the fact that all of the City's water pollution control plants (WPCPs) experienced some degree of damage as a result of Hurricane Sandy. Power was lost at many facilities that compose the City's drinking water supply system, including a dam and several reservoir control stations. Power was lost at a number of water supply shafts, and fencing and security equipment was lost at several facilities. In addition, a water tunnel replacement project between Brooklyn and Staten Island has been delayed due to damage caused by the storm, and critical equipment at several landfills was damaged.

The City also suffered damage to its extensive array of public cultural institutions including museums, the New York Aquarium, the City's public library systems, the Brooklyn Navy Yard (a critical small business industrial park), historic buildings on Governors Island, and new public space facilities along the Brooklyn waterfront.

New York City's Response to Infrastructure Impact

The National Hurricane Sandy Rebuilding Task Force's Hurricane Sandy Rebuilding Strategy report was released in August 2013, and the City's response to infrastructure impact is being heavily informed by the Task Force's report. In particular, the report outlines a number of recommendations on the following topics that has influenced the City's IOCS funding allocations:

- Risk assessment (recommendations 1 & 2).
- Infrastructure resilience (recommendations 3-9, 11, 16, & 19-25).
- Green standards (recommendations 19-22).

The Task Force's report, along with the City's report *A Stronger, More Resilient New York*, have informed this Action Plan and may be consulted at various stages of IOCS's process.

The City's survey of the damage inflicted on infrastructure and the restoration thereof is ongoing and involves virtually every City agency. In conjunction with FEMA's Public Assistance Grant Program, the City is identifying and assessing damaged sites to develop cost estimates that quantify the scope of work and financial commitment required for the necessary capital infrastructure projects. A few of the most urgent issues that agencies must address are discussed below.

Health and Hospitals Corporation (HHC)

The unanticipated, record-level storm surge produced by Hurricane Sandy required the evacuation of Coney Island Hospital on Tuesday, October 30, 2012 and Bellevue Hospital on Wednesday, October 31, 2012. Additionally, the Coler campus of the Coler-Goldwater Specialty Hospital and Nursing Facility on Roosevelt Island was severely flooded, lost electricity and steam, and was forced to rely on generators as well as temporary boilers. Though Bellevue Hospital has fully reopened and Coney Island Hospital has reopened with limited services, HHC will further develop damage descriptions and scopes of work and conduct extensive repairs over the next several months in order to fully restore the medical and health facilities listed prior.

Department of Education (DOE)/School Construction Authority (SCA)

The School Construction Authority returned 48 schools in more than 30 buildings to operation by removing debris, installing temporary boilers, performing environmental remediation, pumping out millions of gallons of water and making other necessary repairs. The schools that were closed displaced 75,000 students who could not attend their assigned school after the storm. These students had to attend schools far from their homes and were taught in overcrowded public assembly spaces such as gyms, auditoriums, and cafeterias in undamaged buildings that had to be shared with the students who regularly attended those school buildings. Additional repair and restoration efforts are ongoing and necessary to return all school facilities to their pre-disaster capacity and function.

Department of Parks and Recreation (DPR)

After the storm, DPR staff went to work inspecting almost 2,000 parks and playgrounds to assess damage, clean and remove debris, and quickly re-open as many sites as possible. The Department's assessments of parks, playgrounds, recreational centers, and other facilities citywide after Hurricane Sandy revealed significant storm-related damage. Significant efforts are being made to restore the recreational facilities, beaches, and coastline areas.

Department of Transportation (DOT)

DOT's personnel quickly mobilized on numerous fronts to address damage from Hurricane Sandy. DOT bridge engineers inspected, cleared, and reopened the four East River bridges by 10:00A.M. the day after the storm. With assistance from the Army Corps of Engineers and DEP, DOT reopened all City-managed tunnels, with some 15 million gallons of water pumped from the Battery Park Underpass alone. DOT reopened long sections of the FDR Drive within 24 hours, restoring this vital north-south link. The crews of the Staten Island Ferry prevented damage to six ferryboats by manning them during the storm with 90 ship-board crew and another 60 on the docks to prevent the boats from striking slips and each other. DOT restored Staten Island Ferry service within 72 hours of the end of the storm. On New York's streets, DOT's crews assisted the Department of Sanitation to remove approximately 157,000 tons of debris. Crews inspected all storm-damaged streets and 2,525 acres of highway roadsides, removing more than 9,503 tons of downed trees and limbs, inspected 23,205 complaints of sidewalk damage, and repaired more than 6,000 traffic signals and signs damaged during the storm. Data pertaining to damaged streets was incorporated into a map portal to facilitate communication with other City and State agencies, Federal funding partners, as well as the general public.

Analysis of Unmet City Infrastructure and Other City Services Needs

Other City Services

Early estimates of the City's emergency response public services, and debris removal expenses were comprised of $1.6 billion for the costs of emergency response (protecting health and safety and assistance to special needs populations) and debris removal. The unmet need for these City services is estimated at approximately $2.1 billion. The City has completed a new needs assessment, as of November 11, 2014, and has concluded that expense needs have not changed.

For Other City Services programs the City is using CDBG-DR funds as a match to other Federal funding and non-match activities. Based on projected amounts from other sources of Federal funding it is estimated the unmet need will be more than $436 million.

Infrastructure

Previous estimates of the City's costs to repair and rebuild damaged City Infrastructure were $5.2 billion. Based on current information as of March 10, 2015, estimates to repair and rebuild damaged City Infrastructure are at approximately $5.3 billion, of which $3.5 billion is capital and $1.8 billion is for mitigation. For Infrastructure projects, the City is using CDBG-DR funds as a match to other Federal funding and for reimbursement of expenditures deemed ineligible by other federal agencies but determined eligible under HUD regulations. Based on projected amounts from other sources of Federal

funding it is estimated the unmet need will be more than $612 million. The City is currently dedicating $319 million in CDBG-DR funds to Infrastructure.

Method of Allocation

With remaining unmet needs in excess of available CDBG-DR funds, the City of New York is prioritizing Federal funding to limit the impact of Hurricane Sandy on its ability to serve the needs of its citizens. To the fullest extent possible, CDBG-DR funding is being used to leverage other Federal funding sources to maximize the total amount of Federal contribution to the recovery effort. As such CDBG-DR is used as a match to other Federal funding as well as to cover complete projects or portions of projects only eligible under CDBG-DR. Furthermore, because of the prohibition on a duplication of benefits as outlined in the Robert T. Stafford Disaster Relief and Emergency Assistance Act, the City cannot apply CDBG-DR funds to projects where other Federal resources are otherwise available. The allocation outlined in the Action Plan represents a prioritization of City services and infrastructure. Funding City services in response to the disaster allows the City to spread the impact of a shortfall in funding over several years rather than having to address a very large budget gap in a single year. The City is thus able to lessen the budgetary impact of the storm, ensure the continued provision of critical government services, and practice responsible financial management.

The City also believes that in covering costs first incurred during the relief phase of Sandy, CDBG-DR funds can benefit the public faster. By initially funding costs already incurred rather than large scale projects, Federal dollars can quickly reach the most impacted communities. The reason for this being that the emergency services activities were contracted for, executed, expensed and closed out within in months of the storm's impact. The development of capital project can be a long, complicated process. The City depends on project development in accordance with other Federal Agency regulations before beginning the processes of design and planning. Contracts for construction take additional time and are dependent on architectural and engineering design processes. In addition, necessary environmental assessments must be completed prior to beginning any portion of the process. Depending on the environmental assessment findings, complete project design can be delayed for months to years. Larger projects may take years to be approved sufficiently to determine the full project cost as well as the CDBG-DR portion. For example, the City immediately funded $183 million to continue operations at Coney Island and Bellevue Hospitals following Hurricane Sandy while the capital projects related to the repair of the two hospitals were still under development. While project costs can be determined more quickly when using CDBG-DR funds as the local match for FEMA 428 projects, the specific parts of the overall project cannot be precisely determined until the project has gone through the complete process mentioned above.

The City has additional needs for Infrastructure and Other City Services funding beyond what HUD has allocated. The City allocated the CDBG-DR funding for this section based on the reasoning detailed above. This method allocated funds to quickly benefit the public first through **Other City Services**.

Infrastructure Goals

The severe destruction and flooding brought on by Hurricane Sandy caused significant damage to the infrastructure systems and key public facilities within New York City. Roads, bridges, drainage systems, public utility infrastructure, schools, hospitals, and park sites throughout the City sustained damage, causing the loss of critical services to homes and businesses and the creation of severe hardships, inefficiencies, and decreased performance and operating capacities. New York City is committed to

addressing these needs and securing the health and stability of local communities and economies by helping to provide these essential services needed to attract and retain businesses as well as residents.

Infrastructure objectives include:

1. Rebuilding, repairing, and replacing health and hospital facilities damaged in the impacted areas enabling the affected communities access to medical attention.
2. Removing and disposing of all storm-related debris that impacted a community's public health, safety, and threaten life and property.
3. Repairing and upgrading existing City water, storm-water, and sewer systems for impacted residents returning to their neighborhoods, including addressing all storm-related damage to roads and streets in order to restore public use expeditiously in those areas most impacted.
4. Ensuring that school facilities and other public facilities such as fire, police, and other critical infrastructure damaged in the impacted areas are restored.
5. Restoring parks and recreational facilities in order for impacted communities to resume recreational activities.
6. Assisting residential communities impacted by Sandy with emergency repairs to properties to the extent necessary to alleviate the emergency conditions caused by the storm.
7. As part of its restoration projects for Sandy-damaged infrastructure, the City anticipates evaluating project design elements, such as elevating building systems equipment, and may incorporate these design elements, as applicable, to enhance preparedness for potential future disasters.

Comprehensive Risk Analysis

In December 2012, New York City began a long-term planning and rebuilding effort across all five boroughs. This effort culminated in the release of *A Stronger, More Resilient New York* in June 2013. The taskforce that worked on the plan was charged with analyzing the impacts of the storm on the city's buildings, infrastructure, and people; assessing the risks the city faces from climate change in the medium term (2020s), and long term (2050s and 2080s), and outlining ambitious, comprehensive, but achievable strategies for increasing resiliency citywide. *A Stronger, More Resilient New York* is the first report by any American city to address extreme weather events and climate change, including chronic stressors like higher temperatures, increased precipitation, and sea level rise, as well as acute impacts like coastal flooding and storm surges, higher intensity rain and wind, and heat waves. This rigorous science informs the comprehensive risk analysis for the infrastructure projects contained in the City's Action Plan.

Resilience Performance Standards

The Federal Register Notice for the second allocation of funds (78 FR 69104) includes guidelines for "Resilience Performance Standards" related to infrastructure projects. Section VI(2)(e) of the Notice states, "Using the guidelines in the Rebuilding Strategy, grantees are required to identify and implement resilience performance standards that can be applied to each infrastructure project."

The City is committed to developing and implementing a set of resilience performance standards for all infrastructure projects. The City will look to the best available science and promising practices in resiliency to inform the development of these performance standards. One resource will be the recommendations provided in the *Hurricane Sandy Rebuilding Strategy.* Specifically, the City will refer to the guidance

provided in the "A Regional Approach to Resilience" and "Infrastructure Resilience Guidelines" section of this document and will aim to develop a regionally coordinated, resilient approach to infrastructure investment through continued coordination with New York State and organizations such as the U.S. Army Corps of Engineers and FEMA. The City has already engaged in conversations with the Regional Coordination Working Group to discuss these projects.

In the development of these resilience performance standards the City will incorporate the risk analysis and climate action plan laid out *in A Stronger, More Resilient New York* which was the product of months of research and planning across City government and with our regional partners. The City stands behind this document but believes that developing and certifying "Resilience Performance Standards" requires additional study and coordination with other Federally funded disaster projects (including projects developed by Rebuild by Design, the United States Army Corps of Engineers, and FEMA). The City will also look to and utilize the mitigation principles and strategies developed in the city's 2014 Hazard Mitigation Plan adopted with FEMA in the identification and refinement of these performance standards. In March 2015 the New York City Panel on Climate Change released its updated report *Building the Knowledge Base for Climate Resiliency* which provides climate projections for the New York region through 2100, including temperature, precipitation and sea level rise. These analyses, which include a chapter on the development of indicators for and monitoring of resiliency efforts, will be integrated into the development of the city's resiliency performance standards. The City will work with grantees across the Federal, State, and City government to ensure consistency, quality, and feasibility of resilience performance standards it will adopt.

Other City Services Programs

During and after Hurricane Sandy, City services to the community were faced with demands far beyond the scope Other City Services programs include all of those programs that meet the following HUD Eligible Activities: Public Services (funded at $322.5 million), Emergency Demolition ($2 million), Debris Removal/Clearance ($12.5 million), Code Enforcement ($1 million), and Interim Assistance ($98 million). In general, these projects have already occurred, but CDBG-DR funds are now being sought to cover these unanticipated costs to the City in the wake of Hurricane Sandy. The City is now seeking reimbursement from HUD once the costs have been properly validated against pre-award guidance and other applicable regulations.

Public Services

PROGRAM OBJECTIVE AND DESCRIPTION: The City mobilized its vast workforce to provide various public services before, during, and following Hurricane Sandy to protect communities and to provide for the health, safety, and welfare of City residents. Detailed below are the services for which CDBG-DR funds will be used to leverage other Federal funding sources, primarily FEMA Public Assistance.

Some of these costs were incurred prior to the preparation of the City's original Action Plan approved by HUD in May 2013. Although the City incurred significant costs to prepare for the storm, the City will only use CDBG-DR funds to reimburse costs incurred from the date of the storm in accordance with the CDBG-DR rules. The City will ensure that all CDBG-DR reimbursements for such activities are consistent with the requirement of HUD's March 5, 2013 Notice, with regard to pre-award requirements. The City is subject to the provisions of 24 CFR 570.200(h) but may reimburse itself or its subrecipients for otherwise allowable costs incurred on or after the incident date of the covered disaster.

Emergency Services

To provide for the immediate protection of health and safety for communities endangered by the storm surge, high winds, damaged infrastructure, and debris-clogged transportation systems, emergency services included, but were not limited to, activities from the following City agencies:

Health and Hospitals Corporation (HHC): HHC is a public benefit not-for-profit corporation controlled by the City of New York that primarily serves low-income residents. HHC provided healthcare services to the public during and after the storm and incurred expenses in three areas – the provision of new services to alleviate emergency conditions in impacted communities, restoring facilities serving low- to moderate-income patients to their full operational capacity, and hastening service readiness to more quickly serve vulnerable populations. A total of $219.7 million of currently available CDBG-DR funds is allocated towards the Public Services provided by HHC. Of this $219.7 million, $183 million of CDBG-DR funds have been reimbursed to the City for this activity.

1) Provision of New Services:

Due to the impact from Hurricane Sandy, HHC facilities lost the ability to maintain all of their traditional services but quickly established several new service offerings to assist those vulnerable populations most affected by the storm. Each of the HHC hospitals and the Corporation's central offices staffed and maintained command centers through and after the storm. Moreover, HHC provided staff and supplies to New York City's Special Medical Needs Shelters for the most vulnerable populations. As soon as possible, both Bellevue and Coney Island Hospitals created urgent care clinics in their hospitals to provide additional services to the community because their Emergency Departments were unable to re-open. During a time of crisis and recovery, HHC and its staff adapted to the needs of the communities it serves, especially those most impacted by Hurricane Sandy.

Coney Island Hospital operated four mobile van units to provide services to neighborhoods that were tremendously impacted by the storm. Two of the mobile vans served Staten Island and Coney Island, another served Gerritsen Beach, Brooklyn immediately after the storm, and a fourth was opened in June 2013 and continues to serve the community 5-days-per-week for pediatrics and adults similar to services provided at Ida G. Israel Community Health Center, which was closed due to the hurricane. The mobile vans have provided services to over 4,000 patients since the storm.

Additional dental services are now being provided at the hospital to replace services lost due to the closure of the Community Health Center. Nearly 5,000 dental visits have taken place in this new service location. In addition, the Bellevue Cancer Center staff provided oncology services at Woodhull Medical & Mental Health Center in Bushwick. The Cancer Center was open at Woodhull from November 7, 2012, to February 18, 2013. Over 2,000 additional oncology visits were provided to 1,000 additional patients at Woodhull when compared to the same period the year before.

2) Restoration of Facilities to their Full Operational Capacity:

Urgent measures were required to alleviate existing conditions that posed an immediate threat to the health of the communities due to the disaster and restore HHC facilities to their full operational capacity as soon as feasibly possible. All eleven acute HHC facilities undertook comprehensive preparations to ensure that inpatient services could remain open throughout the storm despite the transit shutdown. Eight facilities provided the clinical staff for the Special Medical Needs Shelters located throughout the system. Several of its central administrative offices were dislocated for five months due to flooding damage in their

lower Manhattan office buildings. Ten facilities experienced physical damages from flooding or wind. Two facilities, Bellevue and Coney Island Hospitals were forced to evacuate due to major flooding. Coney Island Hospital is a 371-bed facility that admits an average of 18,000 patients a year and treats another 300,000 people a year on an outpatient basis. Bellevue Hospital is an 828-bed facility that annually treats over 30,000 inpatients, handles over 125,000 Emergency Service visits, as well as over 500,000 outpatient visits in more than 90 adult and pediatric ambulatory care clinics. Over 80 percent of Bellevue's patients come from the City's medically underserved populations.

Additional expenses were identified without which the physical facilities would not have been ready to re-open for the community. In addition to the emergency repair of the physical infrastructure, these staff and other expenses were critical to the continued maintenance, safety, and upkeep of the building. These include the regular-time labor of facility employees that responded in the immediate aftermath of the storm, such as engineering and plant maintenance, executive leadership and a variety of staff whose jobs were dedicated to responding to the hurricane-related damage and preparing the facility to re-open.

After the evacuations of Coney Island and Bellevue Hospitals, there was a four-month process to fully restore services at Bellevue and partially restore services at Coney Island Hospital. During that period, inpatient (and most of the outpatient) services were not being provided at these hospitals. Medical employees were redeployed throughout HHC to meet the demands of the community and to avoid staff attrition, which would have delayed the eventual reopening. In addition, non-medical staff were maintained to assist with the response and recovery of the closed facilities.

3) Service Readiness:

In order to re-open medical services to the community as quickly as possible, it was necessary for HHC to maintain its staff in the period after the storm. Some of the staff were in critical supportive functions, both clinical and administrative, throughout HHC's medical facilities. These areas include but are not limited to human resources, laboratories, pharmacy, radiology, finance, quality management, purchasing, and nursing administration. These staff provided essential support and ancillary services necessary for the provision of services to the community during the interim period. In addition, these staff provided administrative support, such as scheduling and payroll, to the essential facility staff. HHC was able to recover as quickly as it did and ramp up services to vulnerable populations so swiftly because staff were maintained and ready to serve.

By continuing work to repair the buildings as quickly as possible, certain areas of HHC's medical facilities became physically ready to re-open earlier than others, and often earlier than initially anticipated. The ability to gradually begin the provision of clinical services as each area became physically ready required the supportive services of the hospital to be fully operational before any such direct service could be provided. The staff in these supportive areas provided a variety of functions including testing and maintaining the laboratory and radiology equipment so that licensure could be maintained; ordering and purchasing supplies; providing payroll and other financial and human resources support to all staff; and managing employees to ensure sufficient staff were called back and available prior to re-opening. Other staff provided supportive patient care such as laboratory and pharmacy. Once all of HHC's facilities were fully repaired and functioning, staff were ready to meet the demands of the predominantly low-income populations it serves.

Office of Emergency Management (OEM): As the coordinating agency in the City's emergency response, OEM played a key role throughout preparations, during the storm itself and in the immediate aftermath. The agency incurred expenses related to supporting central operations at the Emergency Operations Center (EOC), logistics support citywide, and evacuation support (including the provision of buses and

ambulances). OEM also played a major role in the implementation of the City's Emergency Shelter System and incurred significant expenses in the deployment of the emergency shelter supply stockpile, along with their role as shelter support while the shelter system was activated. OEM assisted on a citywide level with the provision of trailers, janitorial services, portable toilet facilities, and with Logistics Staging Area operations at Citi Field. Other storm-related work done by OEM included wellness checks, provision of pumps and sandbags for the dewatering effort, debris management, and GIS mapping support.

Department of Education (DOE): City schools re-opened on Monday, November 5, 2012, but 48 schools in more than 30 buildings were not able to open due to storm damage. Several other buildings did not re-open because they had been used as shelters during the previous week and the people housed there on an emergency basis could not be re-located to their homes in a timely fashion. Approximately 75,000 students and thousands of school staff were displaced. Students were forced to attend schools far from their homes and were taught in overcrowded public assembly spaces such as gyms, auditoriums, and cafeterias in undamaged buildings that had to be shared with other schools. As an example, one school's students and staff had to travel 17 miles via shuttle buses to attend classes in another building. The Department of Education arranged for students at damaged schools to attend classes at alternate locations and provided transportation assistance to affected families and staff. Assistance included shuttle buses, MetroCards, and reimbursement for car service.

Department of Information Technology and Telecommunications (DoITT): The City's public information hotline provides the public with quick, easy access to all New York City government services and information while maintaining the highest possible level of customer service. This telephone, text, and web service is essential during emergencies, as it absorbs the important, yet non-emergency, calls that would otherwise overwhelm 911. DoITT retained additional call-taking services for 311 in anticipation of a spike in call volume during and after the storm. Call volume did indeed increase steeply; at the post-Sandy peak, daily call volume reached 274,000 calls, four times greater than the 2012 daily average. Storm-related 311 calls immediately before and during the storm tended to be inquiries on such topics as evacuation zone lookups and Sandy-related transit information. Post-storm, 311 calls concentrated on damages, such as requests for removal of large branches or trees; reports of power outages and sewer backups; and other hazardous location or situation reports; as well as information requests related to the storm and transit.

DoITT also required employees to work overtime to ensure adequate on-site coverage for technology and telecommunications problems, and procured emergency mobile equipment and devices, pictometry for surveying damage, and other equipment, such as routers and computers, to replace items lost in the storm. Since the storm passed, DoITT has also provided desktop support, mobile communications services, and data analytics for the City's Office of Housing Recovery Operations (HRO).

Department of Citywide Administrative Services (DCAS): During and after the storm, DCAS provided critical support for recovery efforts citywide. Its purchasing staff, partnering with OEM, helped acquire many different types of supplies, including light towers, generators, portable toilets, pharmaceuticals, and bottled water to support emergency operations citywide. Additionally, its Fleet Services coordinated delivery of fuel to City entities and the fueling operations at Floyd Bennett Field, which provided fuel to City, State and essential emergency response vehicles. DCAS also identified alternative temporary space or relocated City staff from offices damaged by the storm in order to ensure that City government entities could return to serving the needs of New York City residents. Additionally, hotel rooms for temporary shelter of displaced persons were procured through DCAS, although this program was coordinated by HRO.

New York City Police Department (NYPD): The NYPD's citywide uniform and civilian deployment levels significantly increased by extending daily tours of duty from eight to twelve hours per day. The NYPD provided increased deployments to all five boroughs of New York City with larger deployments concentrated in Lower Manhattan and the shore areas of Brooklyn, Staten Island, and Queens.

Uniform and civilian personnel coordinated and performed all types of rescue and security operations in areas that were affected to save lives and property prior to, during, and after the storm. Emergency response activities included but are not limited to the following examples:

- Preparation measures such as testing and fueling generators and relocating and securing Department assets such as aircraft, boats, and vehicles.
- Evacuation of citizens who reside in Zone A[12].
- Search and rescue of stranded civilians who did not evacuate flood zones.
- Assisting in relocating the City's homeless to shelters.
- Distribution of life-saving equipment and food and water to residents who lost their homes and personal property.
- Enforcement activities including residential and commercial anti-looting patrols, focusing on key neighborhoods around the City that were without power.
- Assisting in debris removal by moving fallen trees and pumping water from flooded tunnels and other flooded areas.
- Regulating traffic, and monitoring citywide gas distribution.
- During the citywide gas shortage officers were posted at open gas stations throughout the City.
- Neighborhood patrols and door-to-door checks on residents in the public housing facilities that lost water and electricity.
- Housing officers distributed food, water, blankets and transported residents, particularly senior citizens, to medical care.
- Police Communication Technicians worked significant overtime to ensure adequate coverage for the City's Emergency 911 system, handling unprecedented call volume.
- Traffic Enforcement Agents worked overtime to direct traffic in the neighborhoods without power throughout the duration of the power loss.

CDBG-DR funding for NYPD overtime activity is currently calculated at $17,428,062.55.

Fire Department of New York (FDNY including EMS): The Fire Department doubled staffing levels for FDNY and EMS at the 911 Dispatch Center to handle the surge in 911 calls, as well as the Department's Operations Center. EMS staffed all operational ambulances and EMS conditions cars (used by EMS officers), which, in addition to responding to emergencies, assisted with the evacuation of NYU Langone Medical Center.

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[12] Hurricane Evacuation Zone A was in effect during Hurricane Sandy. In 2013, the City updated the Hurricane Evacuation Zones to Zones 1-6, whereas Zone A no longer exists

During the storm, fire companies added a fifth firefighter to 40 engine companies in Zone A, activated the Fire Incident Management Team, deployed all seven brush-fire units to assist EMS response in Zone A, and deployed eight swift-water rescue boat teams throughout the City. Despite deploying an additional 500 firefighters, the number of units available to respond to emergencies dropped from the average level of 90 percent to 9 percent. There were a total of 94 fires the night of Hurricane Sandy; the most devastating in Breezy Point destroyed 126 homes and damaged 22 more.

Department of Environmental Protection (DEP): Hurricane Sandy had an enormous impact on the City's water and sewer infrastructure. DEP staff pumped approximately 50 million gallons of water and removed thousands of trees as a part of their response efforts. In addition, DEP performed air quality monitoring, hazardous material inspections, and fire hydrant repair across the City to ensure public safety.

Storm Recovery Services

The recovery efforts of several City agencies were centralized at the City's Restoration Centers. Recovery assistance mobilization included personnel; security; translation and sign language services; and set-up and lighting costs.

Restoration Centers: In order to assist the hardest hit communities to begin recovery efforts, between November 13, 2012 and February 23, 2013, the City operated NYC Restore, a comprehensive effort to connect residents and businesses impacted by Hurricane Sandy with financial, health, environmental, nutritional, and residential services, as well as FEMA processing. The initiative consisted of seven NYC Restoration Centers, accessible, neighborhood offices located in the communities that were hardest hit to provide long-term assistance to New Yorkers. The Centers were located in Breezy Point and Far Rockaway in Queens; Coney Island, Gravesend, and Red Hook in Brooklyn; Dongan Hills in Staten Island, and Throgs Neck-Pelham Bay in the Bronx. The Restoration Centers brought together information and referrals for all of the City government services available in the aftermath of the storm. FEMA staff was onsite to perform benefits intake as well as provide ongoing management and updates of applicants' FEMA cases. NYC Restore also partnered with non-profit, community-based organizations including SCO Family of Services, Metropolitan Council on Jewish Poverty, Catholic Charities of Brooklyn & Queens, Jewish Board of Children & Family Services, Catholic Charities Community Services – Staten Island, FEGS, Good Shepherd Services, Red Hook Initiative, Shorefront Y, and BronxWorks to provide wrap-around support services.

Each Center coordinated local resources to accommodate the specific needs of the communities where they were located. Staff from the Human Resources Administration (HRA) connected impacted New Yorkers with benefit information such as Medicaid, Supplemental Nutrition Assistance Program (SNAP), and temporary cash assistance. Additionally, the Centers made available information regarding financial and rebuilding assistance to residents whose homes were destroyed or severely damaged. The Department of Small Business Services also provided information and assistance on loans and reimbursements to small business owners. Other on-site New York City agencies included the New York City Department of Health and Mental Hygiene, Administration for Children's Services, Department of Consumer Affairs, Department of Housing Preservation and Development, and Department for the Aging.

While operational, Restoration Centers received more than 34,000 visits from people impacted by Sandy. More than 7,400 visits were for information and assistance related to the Medicaid and Supplemental Nutrition Assistance (SNAP) programs administered by HRA.

Public Information Services: Prior to the storm, the City increased the capacity of its 311 information system to handle the increased volume of calls. The City also took measures to ensure that 311 would be

operational throughout and after the storm. The costs associated with the increased services include increased personnel and generators.

Staten Island Fast Ferry Service: Between November 26, 2012 and January 21, 2013, the NYC Department of Transportation operated a temporary fast ferry service in conjunction with New York Water Taxi. The service was provided to ease the commute of Staten Island's South Shore residents, whose travel times to work increased drastically due to damage to the Staten Island Rapid Transit (SIRT) system and the Hugh L. Carey (Brooklyn Battery) Tunnel.

Department of Homeless Services (DHS): DHS played a major role in the evacuation process and continues to provide services to those impacted by Hurricane Sandy through the programs listed below:

DHS provided managerial oversight of the emergency storm sheltering operations via the Unified Operations and Resource Center (UORC). UORC uses a unified command structure where multiple agencies work to coordinate and assist shelter staff on a tactical level. Sixteen key agencies provide staff to the UORC; DHS employees made up the largest percentage of workers in the UORC. At the same time that DHS staffed the UORC, closed evacuation sites and opened new ones, the agency prepared to close its homeless shelters located in Zone A to protect shelter residents.

DHS deployed staff to various sites, resulting in overtime costs in three main areas of service to the public: sheltering in evacuation centers families and single adults who were no longer able to stay in their homes; setting up and staffing Evacuation Centers, which included providing equipment, volunteers, supplies, etc.; and setting up and staffing the Unified Operations and Resource Center (UORC), which supports tactical management of shelter operations by filling resource requests and resolving problems at individual shelter system facilities.

- **City Hotel Program:** The provision of services in the City Hotel Program was originally administered through the Red Cross. Later, DHS began to work with local, community-based experts to provide services to evacuees in hotels. BASICS, BRC, Project Hospitality, Samaritan Village, Inc., and SCO Family of Services continue to provide services to approximately 970 displaced households across 50 different locations. Organizations are providing case management services and connecting evacuees to any City or Federal benefits for which they may be eligible and helping with housing plans including collaborating with FEMA to ensure that all eligible evacuees have registered with appropriate programs.
- **Homebase:** Those displaced by the storm were counseled by Homebase staff at Restoration Centers beginning on November 15, 2012. The role of Homebase at the Restoration Centers was to provide information on temporary housing options and, when available, immediate hotel/apartment placement. Providers included the Archdiocese of New York, BronxWorks, CAMBA, Catholic Charities of Queens, HELP USA, and Palladian. By November 29, 2012, Homebase sites were making hotel placements with the Hotel Operations Desk.

  Homebase assisted consumers with navigating the array of benefits and assistance available to them. Among the most common service partner referrals given to evacuees, 33 percent were referred to FEMA, 24 percent were referred to HRA, 36 percent were referred to HPD, and 16 percent were referred to NYCHA. Individuals may have been referred to more than one organization.

- **Relocation Services:** DHS was given the role of managing the moving of furniture donated to affected residents who are relocating into permanent housing in NYCHA apartments. The cost of these moves is currently being paid by DHS as other funding sources are being researched.

HUD ELIGIBILITY CATEGORY: Public Services (24 CFR 570.201(e))

NATIONAL OBJECTIVE (LMA), (LMC), (UN): Low- and Moderate-Income Area; Low- and Moderate-Income Clientele; and Urgent Need

CDBG-DR ALLOCATION: $322,500,000

PROJECTED ACCOMPLISHMENTS: 8.2 million Persons Served. The activities under public services vary in terms of how they benefit the City. For example, NYPD overtime is stated to be citywide activity,based on the aggregation of individual precint services areas. The best information the City has is that activities under this category will benefit various service areas throughout the City.

PROGRAM ADMINISTRATION: Office of Emergency Management, Office of the Mayor, Department of Education, Department of Information Technology and Telecommunications, Department of Citywide Administrative Services, New York City Police Department, Fire Department (including EMS), Department of Sanitation, Department of Environmental Protection, Health and Hospitals Corporation, Department of Correction, the Board of Elections, Department for the Aging, Human Resources Administration, Department of Homeless Services, Administration for Children's Services, Department of Buildings, Department of Health and Mental Hygiene, Department of Investigation, Department of Youth and Community Development, District Attorney of New York, Department of Housing Preservation and Development, Department of Parks and Recreation, and Department of Transportation, Brooklyn Public Library; Campaign Finance Board; City Council; City University of New York; Civilian Complaint Review Board; Department of Cultural Affairs; Department of Cultural Affairs (WCS); Department of Consumer Affairs; Department of Design and Construction; Department of Finance; Department of Finance; Department of Investigation; Department of Probation; Department of Records and Information Services; Economic Development Corporation; Financial Information Services Agency; Law Department; Office of Administrative Trials and Hearings; Office of the Public Advocate; and Queens Borough Public Library.

ELIGIBLE APPLICANTS/PROPERTIES: All members of the public impacted by Hurricane Sandy.

ELIGIBILITY CRITERIA: N/A

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: To provide for the health, safety, and welfare of City residents.

GEOGRAPHIC AREA TO BE SERVED: Citywide

PROGRAM START AND END DATES: October 27, 2012 – June 30, 2016

OTHER FUNDING SOURCES: FEMA Public Assistance

15 PERCENT PUBLIC SERVICES CAP: With this reclassification of costs, the estimated Public Services IOCS activity of $322.5 million, the Housing program activities of Build it Back Workforce Development activity of $3 million, and an estimated $2 million for Business PREP under Business will account for 7.8 percent of the total $4.21 billion in grant funds, well under the 15 percent cap.

Emergency Demolition

PROGRAM OBJECTIVE AND DESCRIPTION: Nearly 400 structures throughout the City were so severely damaged by the storm that they posed a threat to the health and safety of the surrounding communities. The Department of Housing Preservation and Development demolished those sites for which the Department of Buildings issued an Emergency Declaration (order to demolish). The City will use CDBG-DR funds as the part of the non-Federal share and the portion of costs not covered by FEMA assuming CDBG-DR eligibility for all demolition activities utilizing FEMA Public Assistance. Accordingly, the City will be adopting FEMA's environmental reviews for all such projects. Some of these costs were incurred prior to the preparation of the City's original Action Plan approved by HUD in May 2013. The City will follow all relevant pre-award guidance in using CDBG-DR funds for the reimbursement of these costs.

HUD ELIGIBILITY CATEGORY: Clearance and Demolition (24 CFR 570.201(d))

NATIONAL OBJECTIVE (LMA), (SLUM/BLIGHT), (UN): Low- and Moderate-Income Area; Slum and Blight Spot; and Urgent Need

CDBG-DR ALLOCATION: $2,000,000

PROJECTED ACCOMPLISHMENTS: 400 Demolitions

PROGRAM ADMINISTRATION: Department of Housing Preservation and Development

ELIGIBLE APPLICANTS/PROPERTIES: Properties for which the NYC Department of Buildings issued an Emergency Declaration, which indicates that the building is an imminent threat to the public's health and safety and must be demolished.

ELIGIBILITY CRITERIA: N/A

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: Properties were assessed for structural integrity.

GEOGRAPHIC AREA TO BE SERVED: Staten Island, Brooklyn, and Queens

PROGRAM START AND END DATES: January 2013 - June, 2013

OTHER FUNDING SOURCES: U.S. Army Corps of Engineers, FEMA Public Assistance

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Debris Removal/Clearance

PROGRAM OBJECTIVE AND DESCRIPTION: Leverage FEMA funding for CDBG-DR-eligible debris removal and clearance activities to protect the health and safety of residents; allow for open, safe traffic flow; and provide for economic activity. The City's debris removal costs, some of which were incurred prior to the preparation of the City's original Action Plan approved by HUD in May 2013, included the following activities:

Storm Debris: The strong winds, heavy rains, and storm surge resulted in the accumulation of debris on streets, sidewalks, and other public properties. The debris was composed of woody material, sand, stones, street and building/household wreckage, and other objects. It hampered vehicular rights-of-way and posed an immediate threat to the public's health and safety. The Department of Sanitation (DSNY), in coordination with the Department of Parks and Recreation (DPR), the Department of Transportation (DOT), and the Department of Environmental Protection (DEP), has led the City's efforts to clear the streets in all five boroughs of storm-related debris to ensure safe passage for emergency vehicles, open traffic flow, and create a safe and clean environment to allow for rebuilding. As of late February, DSNY had collected more than 420,000 tons of Hurricane Sandy debris and more than 27,000 tons of woody debris throughout the City. This represented a substantial increase in tonnage over typical levels; last year, the Department disposed of 3.269 million tons. Given that the City no longer operates a landfill (the Fresh Kills landfill was closed in 2001), all refuse is exported, resulting in significant additional costs.

DSNY's debris removal operations were coordinated by a temporary, intensive Emergency Response Division (ERD) Operation. The ERD operated citywide, but focused on debris removal in the hardest hit areas, including, but not limited to, Breezy Point and Howard Beach in Queens; Coney Island, Gerritsen Beach, and Red Hook in Brooklyn; Midland Beach, New Dorp Beach, and Tottenville in Staten Island; and Battery Park in Manhattan.

DSNY employees worked full time with staff assigned to 12-hour shifts that lasted from the end of Hurricane Sandy through the beginning of December 2012 in the City's impacted communities to ensure that all storm-related debris was picked up expeditiously. The Department utilized collection trucks, front end loaders, and dump trucks to facilitate the removal of storm debris. In addition, DSNY equipment from other districts was temporarily re-assigned to the impacted areas to expedite the removal of the storm debris. DSNY also coordinated with DOT, DEP, and several branches of the military for assistance with debris removal. Extra collection service was provided to New York City Housing Authority sites that had their containerized systems damaged, and DSNY also provided collection service to special needs sites that were distributing important supplies and operating as feeding centers. Additionally, public use containers were placed out by the Department in the impacted areas to allow residents in those areas to discard storm-damaged materials. At the height of the storm cleanup, the Department placed out more than 100 containers, with roughly 30 containers remaining on-site in early March.

The enormity of the amount of debris, coupled with the City's desire to remove such debris as quickly as possible, led the City to open seven temporary debris storage and reduction sites for non-wood storm debris. Five of these sites were cleared and closed by November 19, 2012. All subsequent loads of storm debris were delivered to the temporary sites at Riis Park (Brooklyn and Queens) and Father Capodanno Boulevard (Staten Island). As of early March, these sites were still needed for storm debris collection operations. The NYS Department of Environmental Conservation issued a general permit for operating these temporary sites. The sites were staffed and managed by DSNY up until November 9, 2012 at which point the sites were taken over by a contractor for the United States Army Corp of Engineers.

In addition to establishing the temporary waste sites, the City entered into several emergency contracts for transfer station capacity of construction & demolition (C&D) material. The Department also utilized an existing contract with a C&D transfer station operator for disposal capacity. These contracts were used to deliver storm debris directly from street operations as well as from temporary debris storage sites. The Department also entered into three emergency contracts with operators of putrescible waste transfer stations. These contracts were necessary due to the impact of the storm on the City's export network, including rail disruptions, transfer trailers having difficulty getting fuel, and the temporary loss of the Covanta waste-to-energy plant, located in New Jersey, which serves Sanitation Districts in Manhattan and Brooklyn. The Department also contracted for piling and hauling equipment/operators through the use of an emergency contract for piling and hauling debris from the affected areas as well as piling and hauling at the temporary debris storage and reduction sites.

Sand Debris: In the area surrounding Rockaway Beach in Queens, DPR, working with DSNY and the NYC Economic Development Corporation, gathered sand that was pushed into the streets, much of it mixed with debris, and brought it to Jacob Riis Park, where the U.S. Army Corps of Engineers used a sifting machine to separate more than 150,000 cubic yards of sand from debris. This cleaned sand is now being returned to the beach. The City's agencies also worked to remove sand and other debris from public waterfront properties. A portion of this work had to be done by hand, especially in areas like playgrounds, where heavy equipment would have damaged benches, fences, and play equipment.

Tree Removal: Sandy was by far the biggest storm in terms of tree damage the City has ever experienced. DPR is responsible for tree emergencies on a daily basis, but in major storm events like Sandy, the Office of Emergency Management convenes the Downed Tree Taskforce, consisting of DPR, NYPD, FDNY, DoITT, DSNY, DOT, and representatives from the major utility companies. Following the storm, the Taskforce responded to more than 20,000 street tree emergencies received through 311. Approximately 13,000 street trees and 7,000 trees in parks and natural areas were destroyed. The trees, hanging limbs, and woody debris that accumulated on City streets and right-of-ways impeded vehicular traffic and posed an immediate threat to public health and safety. Additional public safety work included removing trees that had fallen on buildings or had become tangled in electrical wires.

During storms of this magnitude, nearly all of DPR is mobilized to respond. The response is led by trained in-house staff, the Climbers & Pruners in the borough Forestry units, supported by a network of Park Supervisors, Associate Park Service Workers, City Park Workers, and other staff including gardeners, construction engineers, Parks Enforcement Patrol Officers, and Urban Park Rangers. Central Forestry, Horticulture, and Natural Resources also played a key role in organizing contract support, information flow and inspections. In addition to the tireless work of DPR staff, the City had, at peak, 115 additional forestry contract crews working in all five boroughs. The City was also supported by mutual aid crews from NYS DOT, NYS DEC, NYC DEP, the Delaware County Department of Public Works, the National Forest Service, and the National Guard.

HUD ELIGIBILITY CATEGORY: Debris Removal (24 CFR 570.201(d))

NATIONAL OBJECTIVE (LMA), (UN): Low- and Moderate-Income Area; Urgent Need

CDBG-DR ALLOCATION: $12,500,000

PROJECTED ACCOMPLISHMENTS: 8.2 million Persons Served, including the Bronx, Brooklyn, Manhattan, Queens, and Staten Island. Stemming from information given in various FEMA PWs and the nature of the

City's response to the storm, the aggregation of all debris removal activities has benefitted the entire city. As the City reimburses each individual debris removal PW, the accomplishments will be refined.

PROGRAM ADMINISTRATION: Department of Sanitation; Department of Transportation; Office of Emergency Management; Department of Parks and Recreation; New York City Police Department; New York Fire Department; Department of Environmental Protection; Department of Citywide Administrative Services; Department of Education; Department of Health and Mental Hygiene; District Attorney of New York; Economic Development Corporation; Human Resources Administration; New York Fire Department; New York Police Department; Office of Emergency Management; and Queens Borough Public Library.

ELIGIBLE APPLICANTS/PROPERTIES: N/A

ELIGIBILITY CRITERIA: N/A

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: To clear the streets in all five boroughs of storm-related debris to ensure safe passage for emergency vehicles, open traffic flow, and create a safe and clean environment to allow for rebuilding.

GEOGRAPHIC AREA TO BE SERVED: Citywide

PROGRAM START AND END DATES: October 31, 2012 – June 30, 2013

OTHER FUNDING SOURCES: United States Army Corps of Engineers (USACE) debris teams have worked with the Department of Sanitation, operating temporary debris storage locations and disposing of waste. USACE costs associated with the debris mission assignment are estimated at $200 million. Additionally, SBS has worked with DPR to hire temporary workers to assist with cleanup efforts, using Federal National Emergency Grant funds.

Code Enforcement

PROGRAM OBJECTIVE AND DESCRIPTION: In response to the damage caused by Hurricane Sandy to privately-owned buildings, the Department of Buildings sent inspectors into the impacted areas to protect the health and safety of the population by assessing the structural integrity of residential and commercial buildings. The Department placed inspection stickers on inspected properties as follows:

- GREEN: No restriction. No apparent structural hazard was observed; occupants were not restricted from entering and re-occupying their building.
- YELLOW: Restricted use. Property is damaged; entry limitations were specified on each posting. Conditions exist at the building that required the owner to make repairs and may have restricted the use of the building.
- RED: Unsafe. Property was seriously damaged and is/was unsafe to enter or occupy; however, a red sticker did not represent an order to demolish.

Some of these costs were incurred prior to the preparation of the City's original Action Plan approved in May 2013. The City will use CDBG-DR funding for reimbursement of these costs in accordance with all relevant pre-award guidance and governing regulations.

HUD ELIGIBILITY CATEGORY: Code Enforcement (24 CFR 570.202(c))

NATIONAL OBJECTIVE (LMA), (UN): Low- and Moderate-Income Area; Urgent Need

CDBG-DR ALLOCATION: $1,000,000

PROJECTED ACCOMPLISHMENTS: 80,000 buildings were inspected

PROGRAM ADMINISTRATION: Department of Buildings

ELIGIBLE APPLICANTS/PROPERTIES: N/A

ELIGIBILITY CRITERIA: N/A

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: Assess building conditions to ensure the health and safety of the public.

GEOGRAPHIC AREA TO BE SERVED: Citywide

PROGRAM START AND END DATES: October 31, 2012 – June 30, 2015

OTHER FUNDING SOURCES: Code Enforcement activities will be primarily reimbursed by FEMA's Public Assistance grant. However, the City will use CDBG-DR funds as the non-Federal share and the portion of costs not covered by FEMA assuming CDBG-DR eligibility for these costs.

Interim Assistance

NYC Rapid Repairs

PROGRAM OBJECTIVE AND DESCRIPTION: The NYC Rapid Repairs Program assisted residential owners impacted by Hurricane Sandy with emergency repairs to their private properties to the extent necessary to alleviate the emergency conditions caused by the storm. These emergency repairs allowed residents to stay safely in their homes to complete permanent repairs. This was a pilot program approved by FEMA to be used in lieu of placing families into temporary housing units. Emergency repairs included restoration of heat, power and hot water, and other limited repairs to protect a home from further significant damage. NYC Rapid Repairs assisted over 11,500 buildings comprising nearly 20,000 residential units, in the five boroughs. Under the NYC Rapid Repairs program, the City deployed nine prime construction contractors and 185 subcontractors to make emergency repairs on residential properties affected by Hurricane Sandy. At the peak of the program, NYC Rapid Repairs completed work on more than 200 homes per day with a peak labor force of more than 2,300 skilled tradespeople working in a single day under 9 prime contractors. With the program near completion, NYC Rapid Repairs After-Care was launched, with a customer service team dedicated to assisting individual homeowners and answering their questions.

Residential property owners that received NYC Rapid Repairs assistance are also eligible to apply for the NYC Build It Back program to complete repairs to the housing unit.

Table: NYC Rapid Repairs – Borough Breakdown

Borough	Buildings Repaired	Residential Units Repaired
Bronx	36	49
Brooklyn	4,148	7,418
Manhattan	15	148
Queens	5,276	9,707
Staten Island	2,298	2,938
TOTAL	**11,773**	**20,260**

Table: NYC Rapid Repairs – Additional Statistics

Average Daily # of Workers	1,500 Workers
Average # Buildings Repaired Per Day	103 Buildings
Average # Residential Units Repaired Per Day	177 Residential Units

Substantially, these costs were incurred prior to the preparation of the City's original Action Plan approved by HUD in May 2013 and prior to Interim Assistance being identified as a contemplated activity in a subsequent substantial Action Plan Amendment. The City will ensure that all CDBG-DR reimbursements for Rapid Repair activities are consistent with the requirement of HUD's March 5, 2013 Notice, with regard to pre-award requirements. The City is subject to the provisions of 24 CFR 570.200(h) but may reimburse itself or its subrecipients for otherwise allowable costs incurred on or after the incident date of the covered disaster.

HUD ELIGIBILITY CATEGORY: Interim Assistance (24 CFR 570.201(f)(2)(iii))

NATIONAL OBJECTIVE (LMA), (SLUM/BLIGHT), (UN): Low- and Moderate-Income Area; Slum or Blighted Area; Urgent Need

CDBG-DR ALLOCATION: $98,000,000

PROJECTED ACCOMPLISHMENTS: Over 20,000 families (approximately 54,000 Persons) served.

PROGRAM ADMINISTRATION: Department of Environmental Protection, Mayor's Office of Housing Recovery, Department of Housing Preservation and Development, Office of Emergency Management, Office of the Mayor, Department of Buildings, Department of Citywide Administrative Services, Department of Sanitation.

ELIGIBLE APPLICANTS/PROPERTIES: Residential properties sustaining damage from Hurricane Sandy.

ELIGIBILITY CRITERIA:

- Residential property owners within the five boroughs of NYC.
- Owners of single or two-family homes were required to have a FEMA number. Owners of a multi-family building did not need a FEMA number to register with NYC Rapid Repairs.
- Homes were required to be deemed structurally safe by the NYC Department of Buildings as denoted by a Yellow or Green placard on the door, or no placard at all. Homes with Red placards had to make any necessary repairs to transition to a Yellow or Green placard before a NYC Rapid Repairs Team could safely enter their home.
- Homes were required to be free of standing water to allow for a safe inspection. If there was standing water in the home, homeowners were required to register with Rapid Repairs. The City dewatered homes prior to scheduling an appointment with a NYC Rapid Repairs Team.

GRANT/LOAN SIZE LIMIT: Determined based on need.

PROGRAM PRIORITIES: The highest priority of the program was to restore heat, electrical power and hot water to damaged homes.

GEOGRAPHIC AREA TO BE SERVED: Storm impacted areas of the five boroughs.

PROGRAM START AND END DATES: November 9, 2012 – March 31, 2013

OTHER FUNDING SOURCES: FEMA

Infrastructure Programs

The City of New York's CDBG-DR funds are being considered for a number of infrastructure projects that vary in scale and scope througout all five boroughs of New York City. The City intends to primarily provide CDBG-DR as matching funds to other federally-funded infrastructure projects, especially Public Assistance projects where FEMA funds provide 90% of the total project cost and HUD funds will provide the remaining 10% share.

As of this writing, no final decisions have been made as to which infrastructure projects will be funded using CDBG-DR. However, in an effort to be transparent, listed below are potential projects that are being considered for these funds. The City intends to make final determinations for CDBG-DR funding of infrastructure projects by the end of 2016. In part, this is to ensure that all FEMA-funded Public Assistance projects that are being considered for a CDBG-DR 10% cost share are included. The City's decisions for final CDBG-DR infrastructure projects will be based on the following criteria:

- Projects that are larger-scale and will have a higher impact on affected communities
- Projects that primarily benefit Low- and Moderate-Income (LMI) persons and vulnerable populations
- Projects where the City can best apply crosscutting Federal requirements
- Considering project timelines that can best meet HUD's two-year timeline for drawing down CDBG-DR funds
- Projects that were impacted by Hurricane Sandy and include additional resiliency measures.

These criteria may change over time, as the City's priorities may shift.

Rehabilitation/Reconstruction of Public Facilities

PROGRAM OBJECTIVE AND DESCRIPTION: Hurricane Sandy impacted a variety of City facilities througout the five boroughs of New York City which are operated by many City agencies. The current estimated impact to City infrastructure and public facilities is $5.3 billion (including costs for damage to water and sewer infrastructure, streets and roads, as well as other non-residential structures, and related mitigation). The City of New York's CDBG-DR funds are being considered for a number of these infrastructure projects. The City intends to provide CDBG-DR as matching funds to other Federally-funded infrastructure projects. The other Federal funding sources CDBG-DR funding anticipates it will leverage include FEMA Public Assistance grants as well as Army Corps of Engineers and Federal Highway Administration funds. Following HUD's guidance, the City will adopt FEMA and other federal agency environmental reviews when feasible. Because other Federal Agencies will be the primary source of funding and projects must go through agency-specific approval processes final determination of projects to apply HUD CDBG-DR funds to has yet to be completed. However, listed below are the current potential projects being considered for HUD CDBG-DR funds. The City intends to make final determinations for CDBG-DR funding of infrastructure projects by the end of 2016 based on the criteria above.

For a list of sites that were damaged, please see Appendix A and the narratives below. Please note that the City is prioritizing its funds to address its public hospitals as well as for the restoration of its beaches which are a focus for community activity.

Health and Hospitals Corporation (HHC)

HHC had ten large hospitals damaged, including extensive damage to three facilities. HHC also experienced damages to five smaller healthcare facilities as well as to four administrative office spaces. Two hospitals and several community healthcare facilities were evacuated and displaced. HHC patients who were impacted had to seek services elsewhere or delay services until HHC's facilities were fully operational.

HHC received a commitment from FEMA of at least $1.72 billion in 428 PAAP funding for four facilities: Coney Island Hospital in Brooklyn, Bellevue Hospital Center in Manhattan, Metropolitan Hospital Center in Manhattan, and Coler Specialty Hospital on Roosevelt Island. The City anticipates providing the 10 percent match in CDBG-DR funds for these projects. At Coney Island Hospital funds will be used to reimburse HHC for repairs it made to that facility's basement, first floor, and electrical systems, as well as for the construction of a resilient building that will house an emergency department and ancillary services as well as a 1,720-foot flood wall. Bellevue, HHC's flagship Manhattan hospital, will receive funding towards repair or replacement and relocation of much of its storm-damaged equipment as well as removable flood barriers at two loading docks. Metropolitan Hospital will use funds for electrical repairs and the construction of a flood wall. Coler Hospital will: replace a generator that was destroyed, complete electrical repairs, and construct a flood wall.

CDBG-DR funds in the amount of $172 million will cover the local match on this FEMA award. The HUD funding is anticipated to be used at Coney Island Hospital to cover design and initial construction costs associated with repair and reconstruction of a damaged public facility.

Department of Education (DOE)/School Construction Authority (SCA)

Seventy-one school buildings sustained damage during Hurricane Sandy. Damages to these school buildings included severe salt-water flooding; destroyed boilers and oil tanks; damaged electrical and computer/phone cabling and equipment; oil spills and resulting contamination; the creation of new sink holes; roof leaks; and destroyed gym and auditorium flooring. Extensive long-term repairs are required to bring buildings back to their pre-storm conditions, including the replacement of temporary boilers with permanent HVAC systems.

Department of Parks and Recreation (DPR)

The City of New York identified damage to approximately 400 park sites, including existing buildings and the displacement of more than 3 million cubic yards of sand from the City's beaches. DPR properties in the Rockaways, Coney Island, and the eastern shore of Staten Island suffered the most severe impacts from Hurricane Sandy. On Staten Island, more than 60 derelict boats washed up on DPR properties and required removal. In Coney Island, Steeplechase Pier sustained considerable damage.

The City of New York made it a priority to restore sections of the City's beaches and supporting infrastructure across Queens, Brooklyn, and Staten Island, to lessen hardship faced by the communities and small businesses that rely on this public asset for their very livelihood. Restoration activities included the replacement of lifeguard stations, accessible comfort stations, installation of wheelchair-accessible beach mobi-mats and ADA access ramps by the start of the 2013 beach season (May 24, 2013). As of August 2013, the design of the Rockaway Beach Boardwalk Phase II had begun. It is anticipated to provide for protective structures that are more resilient and able to withstand storm and tidal forces that may impact the coastline in future years. Rockaway Beach Boardwalk is considered a covered project and is further discussed in the "covered project" section.

The estimated HUD CDBG-DR share for Steeplechase and the affected existing buildings is up to $9.2 million. Work has been completed and evaluation for HUD eligibility and reimbursement are underway and expected to be complete by the end of June 2015.

See the "IOCS Covered Projects" section for a detailed description of DPR's major infrastructure project.

The New York City Police Department (NYPD)

The New York City Police Department (NYPD) sustained storm-related damage at more than 20 of their 240 facilities. Damaged facilities included station houses, warehouse/storage facilities, boat docks, tow pounds, an aircraft hangar and the Department's firing range and bomb squad training building as well as other NYPD facilities.

The damaged facilities are at a variety of locations throughout the five boroughs including Randall's Island, Lower Manhattan, Floyd Bennett Field, Red Hook, Brighton Beach and the Brooklyn Navy Yard in South Brooklyn; College Point and Rockaway Beach in Queens; Rodman's Neck in the Bronx; and Port Richmond in Staten Island. In many cases damaged facilities required significant de-watering and debris removal before emergency and permanent repairs could begin. Communication and electrical capability to and between these facilities was damaged by the storm and will require repair, replacement and resiliency measures to prevent future occurrences of similar types.

The estimated HUD CDBG-DR share for NYPD related projects is up to $5 million. Design has begun on the facilities portion of this project this project and sufficient work for HUD eligibility and reimbursement is expected to be complete by the end of the first quarter of calendar year 2017.

New York Fire Department (FDNY)

Fire Department facilities were also damaged due to the storm, including 16 Firehouses, 6 EMS stations, 5 Marine facilities and 2 support facilities (Paidge Avenue and Fort Totten). The damaged Firehouses, EMS stations, and Fort Totten facilities experienced storm surges ranging from one to seven feet. There was widespread damage to apparatus doors (after being hit by a high quantity of seawater), basements (which filled to the top with water), electrical and heating systems (including pipes), and various structural aspects. Marine facilities suffered damage to piers, piles, electrical systems, and transformers, as well as the wave attenuator at Marine 9, which is intended to reduce wave height in order to provide safe berthing for vessels.

The Department also suffered losses of information technology equipment, communications networks and infrastructure, firefighting equipment, and ambulances. Communications damages include the loss of 615 damaged street alarm boxes located throughout all five boroughs, as well as damage to the underground Emergency Communication System. Alarm boxes are two-way communication devices that allow the public to contact emergency services (Fire, Police, and EMS) from street corners. Vehicles determined to be a total loss included seven ambulances, eight pumpers, six ladders, five brush fire units, a HazMat truck, and a foam truck, as well as many support vehicles.

The estimated HUD CDBG-DR share for FDNY related projects is up to $17 million. This project is still being finalized by FEMA and design has not yet begun. Timelines are expected to be finalized by December 2015.

Department of Sanitation (DSNY)

DSNY documented damage at 61 of its facilities throughout the City. The Department evacuated 14 of its facilities on or before October 29, 2012 and has since returned to all facilities except the Manhattan Community District 1 Garage. The Garage, located directly across the street from the Hudson River, was severely damaged. Operations have been relocated to other facilities pending the completion of construction of the new Manhattan Community Districts 1, 2, and 5 Garage. Severe damage to the electrical

cabling at the Brooklyn Community Districts 1 and 4 Garage, as a result of salt water immersion, forced the facility to operate under temporary generator power until the electrical repair work was completed. Operations at Department offices located at 44 Beaver Street in Manhattan were displaced for four months following a complete loss of power to the building. Water entered elevator shafts, air conditioning and ventilation units, and electrical switches and transformers and also disabled domestic water pumps, and air compressors. The Department completed temporary repairs and has resumed operations at 44 Beaver Street.

The Department suffered damage to its vehicle fleet including 9 light/medium duty vehicles and 34 heavy duty vehicles that require repairs after being damaged by salt water. In addition, 22 light/medium duty vehicles and 10 heavy duty vehicles were damaged beyond repair.

The Bureau of Cleaning and Collection Warehouse was flooded, causing damage and destruction of DSNY supplies. Other DSNY facilities sustained damage to their contents and equipment including generators, air compressors, truck lifts, trash pumps, IT and communications equipment, appliances, and furniture.

The Department manages the former Fresh Kills landfill, which sustained damage to its leachate collection wells, storm water basins, and outfall pipes; this infrastructure is critical to maintaining environmentally prudent operations at the site. Leachate, water that passes through landfill material, requires treatment before it can be discharged, and this equipment facilitates the required treatment and discharge. The site also sustained damage at its Muldoon Avenue facilities.

Current DSNY projects identified for HUD CDBG-DR match are estimated up to $600 thousand. The development of the project timeline is still underway and expected to be ready for approval in 2016.

Department of Correction (DOC)

Rikers Island, located at the intersection of the East River and Flushing Bay, is home to nine of the City's twelve open correctional facilities, excluding two hospital prison wards managed by HHC. The facilities on Rikers Island are located at elevations of 15 feet or more and therefore were protected from the storm surge and flooding. One Rikers Island based facility, the Anna M. Kross Center, sustained serious roof damage caused by high winds. The storm surge and flooding did significantly impact the north shoreline of the Island eroding an estimated four acres of land. Dozens of permanent trailer complexes used as offices for both civilian and uniform staff members are located along the eroded north shore of the Island. Four trailers were immediately decommissioned and the remaining trailer complexes will need to be permanently evacuated before the next hurricane season. Off the Island, the Vernon C. Bain Center, the City's jail barge located in the East River in the Hunts Point section of the Bronx, sustained significant flooding, which damaged the land-based electrical substation, access road, and parking lot.

Hart Island, located in the Long Island Sound, off the east coast of the Bronx, is home to New York City's Potters Field. It is the largest tax funded cemetery in the world. Prison labor is used to perform the daily mass burials that number close to one million. DOC performs all burials and exhumations at Hart Island. There was significant damage to the shoreline and seawalls of Hart Island after Hurricane Sandy. Restoration of the Hart Island shoreline will consist of replacing fill material that was washed away in order to bring the shoreline back to pre-disaster condition; subsequently a designed revetment is planned to mitigate future damage.

The Anna M. Kross Center (AMKC) and Robert N. Davoren Center (RNDC) jail facilities on Rikers Island sustained roof damage so extensive as to warrant full roof replacements. In addition to the roof replacements, hazard mitigation work is planned in order to prevent similar damage in the future.

The estimated HUD CDBG-DR share for DOC related projects is up to $6.5 million. Design of this project is scheduled to begin in the 3rd quarter of 2016. Construction is expected to start in 2018 and sufficient work for HUD eligibility and reimbursement is expected to be complete before the end of calendar year 2019.

Department of Transportation (DOT)

- Ferries: The Staten Island Ferry system carries more than 20 million passengers per year and is the only direct connection between Staten Island and the economic center of Lower Manhattan. The mechanical and electrical systems at the Whitehall (Manhattan) and St. George (Staten Island) Ferry Terminals incurred significant damages. This includes the slip motor controllers, relays, contacts, and breakers. Passenger elevators, escalators, freight elevators, shops, and office spaces were flooded. In addition, ferry piers and other ferry facilities suffered millions of dollars in damage, including piers and ferry racks at the St. George Terminal, the Ferry Maintenance Facility on Staten Island, and smaller piers at Wall Street and 34th Street, which are used by privately-operated ferries, and on City Island, which serves a small ferry that transports the indigent dead to Hart Island.
- Equipment: The Department's headquarters at 55 Water Street in Lower Manhattan suffered heavy flooding and was closed for several weeks in the aftermath of the storm. While 55 Water Street has since reopened, there was extensive equipment damage, which will require full replacement. Currently no projects have been identified for HUD funding under these damages.

Department of Information Technology and Telecommunications (DoITT)

As a result of the storm, DoITT had to repair damage at 11 MetroTech's rooftop, as well as damage to the NYC Wireless Network (NYCWiN), a government-dedicated broadband wireless infrastructure created to support public safety and other essential City operations. Also, storm-damaged telephone infrastructure will be replaced with voice over Internet protocol (VOIP) systems.

Currently no projects have been identified for HUD funding associated with these damages.

Department of Citywide Administrative Services (DCAS)

DCAS is the Capital budgeting agency for several different City entities, as well as its own portfolio. DCAS has requested funding for two Capital projects in relation to Sandy. First, the agency will purchase a replacement surveillance van on behalf of the Manhattan District Attorney, whose previous van was destroyed by the storm. The other project is to restore a damaged elevator pit and controls at the Red Hook Community Justice Center in Brooklyn.

Currently no projects have been identified for HUD funding associated with these damages.

Brooklyn, New York, and Queens Public Library Systems

The Brooklyn, New York, and Queens Public Library systems are operated by non-profit organizations whose infrastructure is either owned by the City or the City is legally responsible for repairing. Hurricane

Sandy caused damage to six branches of the Queens Borough Public Library System (Arverne, Broad Channel, Peninsula, Seaside, Howard Beach, and Far Rockaway), six branches of the Brooklyn Public Library (Brighton Beach, Coney Island, Gerritsen Beach, Gravesend, Red Hook, and Sheepshead Bay), and one branch of the New York Public Library (Stapleton in Staten Island). The three systems require significant renovation and reconstruction of the affected branches.

Currently no projects have been identified for HUD funding associated with these damages.

Cultural Organizations Funded Through Department of Cultural Affairs (DCLA)

There are a number of cultural institutions operated by non-profit organizations whose infrastructure is either owned by the City or the City is legally responsible for repairing. A number of these cultural institutions were significantly damaged by Hurricane Sandy, including the New York Aquarium (which is run by the Wildlife Conservation Society), the Police Museum, the Snug Harbor Cultural Center, and the Staten Island Historical Society. City-owned equipment leased and operated by Coney Island USA, Eyebeam Atelier, and Smack Mellon was also damaged.

Two cultural groups that sustained the most significant damage are the New York Aquarium and the New York City Police Museum. The New York Aquarium experienced flooding that filled the lower levels of the facility and damaged electrical and mechanical equipment. Hurricane Sandy caused extensive flood damage to the Aquarium's 14-acre facility, which fronts on the Coney Island boardwalk and beach. The storm's 12- to 14-foot surge inundated campus buildings and grounds, and damaged the electrical and mechanical equipment that is critical to campus operations and the life support systems that are essential to the survival of the Aquarium's collection. In addition, the facility requires extensive repair and reconstruction in order to fully reopen to the public. The New York City Police Museum experienced roof damage due to wind and flooding in its basement and first floor galleries that destroyed the electrical and mechanical equipment as well as exhibition spaces. The landmarked building will require extensive repair, including remediation of mold and other potential contaminants, and will fully reopen to the public.

Currently no projects have been identified for HUD funding associated with these damages.

Department of Environmental Protection (DEP)

Construction/ Reconstruction of Water/Sewer Lines or Systems

The Department of Environmental Protection (DEP) protects public health and the environment by supplying clean drinking water and collecting and treating wastewater. Throughout the storm, New York City drinking water remained safe despite Hurricane Sandy's significant impact on drinking water reservoirs, water mains, Water Pollution Control Plants (WPCPs), wastewater pumping stations, sewers, landfills, and associated facilities. CDBG-DR funds may be used as the part of the non-Federal share and the portion of costs not covered by FEMA assuming CDBG-DR eligibility to repair storm damage and possibly mitigate against future disasters, which will also be funded with FEMA Public Assistance funds. Accordingly, the City will be adopting FEMA's environmental reviews (and possibly other Federal agencies) for all such projects. Please note that some of these costs were incurred prior to the preparation of the City's original Action Plan approved by HUD in May 2013.

DEP's Bureau of Water and Sewer Operations immediately responded to water and sewer complaints following the storm. Within a few days of the storm, DEP inspected approximately 1,000 catch basins, and cleaned more than one third of those. Through the month of November 2012, staff continued to inspect and clean catch basins citywide. More than 6,100 were inspected and more than 3,600 were cleaned as

part of response operations. DEP crews conducted detailed visual surveys of all DEP assets in the Rockaways and along the coastline of Queens. Because of these surveys, DEP was able to repair approximately 900 hydrants citywide.

Throughout New York City, DEP flushed more than 37 miles of sewers. Contractor crews inspected approximately 51 miles of sewers in the Rockaways and cleaned more than eight miles of sewers in Brooklyn, Queens, and Staten Island. Approximately 450 cubic yards of debris was removed, nearly 85 percent of which was removed from Queens. DEP conducted a major cleanup effort at Jefferson Creek in Staten Island to restore the natural drainage. Two weeks after the storm, flusher trucks had cleaned nearly 10,000 linear feet of sewer lines and crews had removed almost 1,000 cubic yards of debris from Jefferson Creek.

Of the 14 wastewater treatment plants, 10 were adversely affected by Hurricane Sandy. Most of the damage to wastewater facilities was to electrical systems: substations, motors, control panels, junction boxes and instrumentation. Due to utility power outages, many DEP facilities operated on their emergency generators for up to two weeks. Of the 96 DEP pumping stations, 42 were affected during the storm. Approximately half of the pumping stations failed due to damage from floodwaters, and half due to loss of power supply.

Currently no projects have been identified for HUD funding under these damages.

Department of Transportation (DOT)

Construction/Reconstruction of Streets
The City may use CDBG-DR funds to leverage other Federal funding sources to rehabilitate and reconstruct public facilities. The other Federal funding sources CDBG-DR will leverage include FEMA Public Assistance funds and Federal Highway Administration grants. Accordingly, the City will be adopting FEMA's environmental reviews (and, where possible, other federal agencies) for all such projects. Please note that some of these costs were incurred prior to the preparation of the City's original Action Plan approved by HUD in May 2013.

City transportation infrastructure sustained considerable damage as a result of Hurricane Sandy. DOT is responsible for the reconstruction or replacement of critical street and bridge infrastructure and the replacement of street lights, signals, and other traffic equipment.

DOT assessed conditions on all storm-damaged streets in New York City and determined that hundreds of lane miles of streets will require resurfacing and/or full reconstruction. Underground wiring beneath intersections was permeated by saltwater, damaging nearly 4,000 streetlights and 700 traffic signals, primarily in the Rockaways. In some cases, high winds damaged street light poles, bracket assemblies, and wiring. Flooding by saltwater corroded electrical components, requiring DOT to replace lights, signals, and traffic control devices throughout the impacted parts of the City. Underground conduit that houses cables and wires that act as the power source were flooded with salt water, sewage, and other contaminants, some of which remains stagnant within the conduit citywide. Emergency repairs were made to heavily damaged intersections immediately following the storm and temporary power was provided in locations as deemed necessary. The permanent restorations of these elements of the traffic infrastructure are currently in the process of being replaced and upgraded

Floodwaters also severely damaged the Battery Park and West Street underpasses in Lower Manhattan. While temporary measures have been taken to ensure these throughways are currently open to the public, the electrical systems and other repairs will need to be addressed through permanent repair work. Repairs

are also necessary for 15 movable bridges, primarily on the Harlem River (connecting Manhattan and the Bronx), the Gowanus Canal in Brooklyn, and along Newtown Creek (connecting Brooklyn and Queens). Rising waters destroyed electrical equipment, bridge operator consoles, and some mechanical components. Some bridges sustained damages to warning gates and navigation lights. Other damaged bridges include those along the Belt Parkway (which links southern Brooklyn and Queens with John F. Kennedy Airport), and the FDR Drive (the only highway serving eastern Manhattan's central business districts).

DOT projects have been identified for Movable Bridges and Underpass in Covered Projects sections below.

Department of Transportation (DOT)

Movable Bridges

The Department identified Hurricane Sandy-related damages to twenty movable bridges owned and operated by the City of New York. These bridges were subject to surge tides, flooding and high winds. The bridges are located over navigable waterways (the Gowanus Canal, Newtown Creek, Harlem River, etc.) and the movable span needs to operate properly to ensure continued mobility, reliability and safety of vehicular traffic, non-motorized traffic over the bridge and the water borne vessels.

Of the twenty movable bridges that had storm related damages, thirteen will have their capital repairs and rehabilitation funded by FHWA/FEMA, and five are considered as IOCS covered projects. The extent of the damages varies by facility, however for all the bridges, both the electrical and mechanical systems were exposed to saltwater and damaged. These systems need to be restored to pre-storm conditions. For some of the movable bridges, there are mitigation measures planned for the projects. The current cost estimate associated with the thirteen movable bridges is $120 million (including construction, design, REI, CSS).

All of these facilities are funded by USDOT Federal Highways Administration (FHWA) Emergency Relief program, except for the Carroll Street Bridge, which will be funded by FEMA Public Assistance program. Emergency repairs were completed immediately on all of the facilities to restore essential traffic, to minimize the extent of damages, and to protect the facility itself.

The estimated HUD CDBG-DR share for DOT non-Covered Projects is up to $19 million. Design has not begun on these projects and sufficient work for HUD eligibility and reimbursement is unavailable at this time.

See "IOCS Covered Projects" for a detailed description of DOT major infrastructure projects.

Department of Design and Construction (DDC)

Construction/Reconstruction of Streets
As mentioned earlier, Sandy's high winds downed thousands of trees across the City and the storm surge destroyed sidewalks in the Inundation Area. DDC will be managing the replacement of sidewalks and street trees, which also includes the removal of damaged sidewalks, tree removal, and stump grinding.

The estimated HUD CDBG-DR share for DDC sidewalks projects is up to $1.5 million. Design has not begun on these projects and sufficient work for HUD eligibility and reimbursement is unavailable at this time.

New York City Economic Development Corporation (NYCEDC)

Rehabilitation/Reconstruction of Other Non-Residential Structures

The City may use CDBG-DR funds to leverage other Federal funding sources to rehabilitate and reconstruct the City's other non-residential structures. These facilities include City-owned infrastructure managed by non-profit public entities such as the NYC Economic Development Corporation. Agencies that did this work include:

NYCEDC is the City's primary agent for economic development. Acting under annual contracts with the City, NYCEDC is a City-controlled public entity (local development corporation) that serves as the catalyst for promoting economic development and business growth. Its principal mandate is to engage in the public purpose of encouraging investment and attracting, retaining, and creating jobs in New York City. Part of the way that NYCEDC fulfills its mission is through the management of City-owned property and the management of City Capital construction projects. Several of NYCEDC's assets were damaged during the storm.

Emergency and Permanent work is categorized into the following groups:

- Group 1 – Maritime and Aviation Assets (includes repairs needed to the Skyport Marina, Downtown Manhattan Heliport, and cruise terminals)
- Group 2 – Homeport in Staten Island (Includes debris removal, pier improvements, shoreline stabilization)
- Group 3 – EDC-Managed New York City Assets (includes debris removal, roof repairs, and restoration of building systems)

The estimated HUD CDBG-DR share for activities under EDC, including but not limited to conduit and building facilities at Homeport and Bush Terminal is estimated at up to $12 million. A letter of understanding between FEMA and the City of New York regarding certain EDC activity was executed April 2, 2015. Design has not begun on these projects and sufficient work for HUD eligibility, including FEMA environmental review is unavailable at this time.

Hazard Mitigation Program (HMGP)

FEMA's Hazard Mitigation Grant Program (HMGP) provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. Projects utilizing HMGP funds are submitted by cities and counties to the state receiving the disaster declaration and then distributed based on evaluation, prioritization and determination by the state. There is no guarantee that the projects submitted by an entity will be approved for use of the limited funds. In anticipation of approval by New York State and FEMA, the City has identified priority mitigation projects to support community resiliency.

The City of New York has submitted 40 HMGP applications to the State of New York for review, for a combined total project cost of $546.12 million. FEMA can fund up to 75 percent of the eligible costs of each project. The State or grantee must provide a 25 percent match, which can be fashioned from a combination of cash and in-kind sources. Funding provided to states under CDBG can be used to meet the non-Federal share requirement and the City of New York expects to provide the 25 percent match for these projects. While it is not anticipated that all 40 projects will be funded, the City expects some portion to be funded. As such, the City is estimating between $50-137 million in CDBG-DR funds being used as the HMGP match. The specific projects and their associated timelines will be finalized upon State and Federal approval and notification to the City. These awards are being released in phases, with phase 0 or phase 1 generally for

technical review, application finalization, and project design not yet approved for all applications, subsequent phases beyond phase 1 not yet approved for all applications, and total project award values not yet known for all applications.

The HMGP projects for which the City intends to use CDBG-DR as a source of local match will directly respond to Sandy-related impacts in neighborhoods that were severly damaged by storm surge, flooding and wave action from Hurricane Sandy. Two of the proposed projects are located in Breezy Point and Red Hook and will protect infrastructure, public facilities, and homes that were damaged by the storm.

There are seven HMGP projects currently being contemplated under the Rehabilitation/Reconstruction of Public Facilities, one of which is also a Covered Project. Red Hook, also a Covered Project includes an award for HMGP, and is described under Coastal Protection in the Resiliency chapter below.

1) HMGP – Breezy Point Risk Mititgation
   City Agency: Economic Development Corporation

2) HMGP – Backup Power for Nursing Homes and Adult Care Facilities
   City Agency: Office of Emergency Management (interim)

3) HMGP – Emergency Power for 51 Critical Schools
   City Agency: Department of Education

4) HMGP – Hardening Tide Gates in Flushing Meadows Corona Park
   City Agency: Department of Parks and Recreation

5) HMGP – 26th Ward Wastewater Treatment Plant
   City Agency: Department of Environmental Protection

6) HMGP – HHC Metropolitan Hospital Center
   City Agency: Health and Hospitals Corporation

7) HMGP – HHC Coney Island Hospital
   City Agency: Health and Hospitals Corporation

See "IOCS Covered Projects" for a detailed description of the HMGP - Breezy Point Risk Mitigation project.

428 Public Assistance Alternative Procedures (PAAP) Pilot Program

The Sandy Recovery Improvement Act created a pilot program known as the Section 428 Public Assistance Alternative Procedures (PAAP). Section 428 develops alternative procedures for implementing Section 406 permanent work projects. The pilot allows FEMA to make Public Assistance (PA) grants for permanent repairs to Hurricane Sandy (Sandy) damaged facilities on the basis of mutually agreed upon fixed-cost estimates. This pilot eliminates the additional 10 percent penalty for Alternate Projects and allows hazard mitigation funds to be pooled across multiple projects to achieve large scale hazard mitigation projects using the 406 program. The flexibility of the 428 PAAP program may allow communities to mitigate non-disaster damages and may be of strategic advantage for a given community's long-term capital planning.

To participate in the 428 PAAP pilot, the City works with FEMA to come to full agreement on eligible Damage Description and Dimensions (DDD), Scope of Work (SOW), and Certified Cost Estimates for PAAP

projects; execute the required "Fixed Subgrant Agreement Letter;" and sign a "Letter of Undertaking" (LOU). The LOU will quantify the agreed upon fixed cost estimate for the project.

While the 428 Pilot offers an Applicant for PA funding flexibility on the use of project funds, the process for reaching agreement on a cost estimate is very similar to the standard process for completing a PW under normal Section 406 procedures. Similar to 406 PA projects, the City anticipates leveraging funds from the CDBG-DR program, funding up to a 10 percent match to cover the non-Federal share of certain 428 PAAP projects .

See "IOCS Covered Projects" for a detailed description of 428 Public Assistance Alternative Procedures (PAAP)_ major infrastructure projects.

IOCS Covered Projects

(Rehabilitation/Reconstruction of Public Facilities or a Public Improvement)

HUD's Federal Register Notice for the second allocation of funds (78 FR 69104) included additional requirements for assessing major infrastructure projects. The goal of the additional requirements is to have the City provide information about the long-term rebuilding strategy for major infrastructure projects and ensure that, where feasible, resiliency has been factored into the design. Executive Order 13632, published at 77 FR 74341, established the Hurricane Sandy Rebuilding Task Force, to ensure government-wide and region-wide coordination to help communities as they develop comprehensive rebuilding strategies. Section 5(b) of Executive Order 13632 requires that HUD, "as appropriate and to the extent permitted by law, align [the Department's] relevant programs" with the *Hurricane Sandy Rebuilding Strategy* which was released by the Task Force on August 19, 2013. An initiative of the Task Force is *Rebuild by Design* which is aimed at addressing structural and environmental vulnerabilities that Hurricane Sandy exposed in communities throughout the region and developing fundable solutions to better protect residents from future disasters.

The Federal Register for the second allocation of CDBG-DR funding states the following, "an infrastructure project is defined as an activity, or a group of related activities, designed by the grantee to accomplish, in whole or in part, a specific objective related to critical infrastructure sectors such as energy, communications, water and wastewater systems, and transportation, as well as other support measures such as flood control." HUD included additional requirements for assessing major infrastructure projects and set the threshold for the determining "Covered Projects." As stated on page 69107, major infrastructure projects are "defined as having a total cost of $50 million or more (including at least $10 million of CDBG-DR funds), or benefit multiple counties. Additionally, two or more related infrastructure projects that have a combined total cost of $50 million or more (including at least $10 million of CDBG-DR funds) must be designated as major infrastructure projects. Projects encompassed by this paragraph are herein referred to as 'Covered Projects.'"

In December 2012, the Special Initiative for Rebuilding and Resiliency (SIRR) convened to address the creation of a more resilient New York City in the wake of Hurricane Sandy, with a long-term focus on preparing for and protecting against the impacts of climate change. A final report, released in June 2013, presents actionable recommendations both for rebuilding the communities impacted by Sandy and increasing the resiliency of infrastructure and buildings citywide.

The following is a list of covered projects under the IOCS Chapter of this Action Plan Amendment:

- Department of Parks and Recreation (DPR) – Rockaway Boardwalk
- Department of Transportation (DOT) – Movable Bridges and Underpasses (6 Covered Projects)
- HMGP - FEMA's Hazard Mitigation Grant Program (HMGP) – Breezy Point
- Department of Parks and Recreation (DPR) – Beach Open-Up (2 Covered Projects)
- 428 Public Assistance Alternative Procedures (PAAP) – Fire Department of New York City (FDNY) – Emergency Communication System and Alarm Box Conduit
- 428 Public Assistance Alternative Procedures (PAAP) – Department of Environmental Protection (DEP) – Replacement of Electrical Conduit and Fittings

As mentioned above, Covered Projects are defined as infrastructure projects, or related infrastructure projects, that have a total cost of $50 million or more (including at least $10 million of CDBG-DR funds), or are physically located in more than one county. The City of New York is unique in its governmental structure with the governing body of the City encompassing five (5) distinct buroughs which can be interpreted as counties under the HUD definition of a covered project. The City has verified that none of the identified covered projects physically cross jurisdictional boundries of neighboring counties or states outside of the five burroughs located within the confines of New York City. Due to this unique government structure and relationship, the City has requested a waiver of the multiple-county requirement for the Covered Projects identified by the City. The March 27, 2014 Notice adds further detail to the definition of Covered Projects. The Notice states that, "the infrastructure requirements described in paragraph 2 at 78 FR 69107 will not apply to Hurricane Sandy grantees with PA [FEMA's Public Assistance Grant Program] projects where funds have been obligated by FEMA on or before November 25, 2013. The infrastructure requirements described in paragraph 2 at 78 FR 69107 apply in full to PA projects where funds have been obligated by FEMA after November 25, 2013."

Some of the projects identified as Covered Projects in the City's Action Plan Amendment 5B are no longer defined as Covered Projects. The re-definition was due to (1) the projects being PA projects where funds were obligated on or before November 25, 2013 (this further detail to the definition was published in a Federal Register after the City submitted the amendment to HUD on March 21, 2014), (2) further stages of project design, (3) more complete total project estimates, or (4) how the projects were defined for NEPA compliance. These projects are described in the IOCS section of the Action Plan under the appropriate HUD activity category.

In addition to these IOCS Covered Projects there is one other covered project identified in this Action Plan. For a detailed description of the Red Hook Integrated Flood Protection System, see the Resiliency section below.

Each Covered Project must address five (5) different analysis criteria within the Action Plan. These criteria are:

- Project Identification/Description
- Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis and the Rebuild by Design Collaborative Risk Analysis
- Transparent and Inclusive Decision Processes

- Long-Term Efficacy and Fiscal Sustainability
- Environmentally Sustainable and Innovative Investments

The City of New York has made it a priority to leverage other Federal funding sources in order to increase the number of projects the City can fund with CDBG-DR funds.

Department of Transportation (DOT)

The New York City Department of Transportation (DOT) oversees one of the most complex urban transportation networks in the world. DOT's staff of over 4,500 employees manages approximately 6,300 miles of streets and highways, over 12,000 miles of sidewalk, 781 bridge structures and six tunnels. DOT's staff installs and maintains over 1.3 million street signs, traffic signals at more than 12,000 signalized intersections, over 250,000 street lights, and 69 million linear feet of markings. DOT also promotes the use of sustainable modes of transportation.

NYC's transportation system suffered extensive damage due to Hurricane Sandy, affecting 8.5 million public transit riders and 4.2 million drivers. Of the thirteen (13) movable bridges the City has identified five (5) of them which comply with the covered project requirements as they cross burrough (county) boundries. The underpass project complys with the minimum funding requirement of exceeding $50 million in total cost with $ 10 million being identified for CDBG-DR funding.

All of the FHWA ER funded projects are replacement-in-kind of the mechanical, electrical equipment for the Movable Bridges and the electrical, mechanical and ventilation equipment for the Underpasses. The bridge and tunnel infrastructure are not changing in use, design, or operational functionality. There is no significant impact or significant change on how the community uses these assets. As part of the community engagement process, DOT consulted the impacted community boards, and during the construction process DOT will continue to coordinate with the impacted community and will have the construction liaison issue weekly or bi-weekly notifications to the interested public.

For the DOT Covered Projects identified below, FHWA has recognized the need to repair and mitigate by providing robust funds to these transportation projects. The City of New York is anticipating that FHWA will provide funding for some of these projects. The City is seeking, in part, to leverage CDBG-DR funds as the "non-Federal" share for these projects.

It was clear from the extensive damage suffered to the City's transportation system and the critical importance of this system in the daily lives of residents that the City of New York must prioritize CDBG-DR funds towards the reconstruction and rehabilitation of DOT road, bridges, underpasses, traffic signals, and street lights. The damages to this infrastructure put a strain on NYC's transportation system after Sandy.

Chapter 10 of *A Stronger, More Resilient New York* report provides a detailed analysis of what occurred to NYC's transportation during Sandy and offers an extensive risk assessment of the potential impact of climate change on the transportation system in New York City. The report, *A Stronger, More Resilient New York*, also presents 18 actionable recommendations for the improved resilience of transportation system in NYC. Among the recommendations are: (1) reconstruct and resurface key streets damaged by Sandy; (2) integrate climate resiliency features into future capital projects; (3) elevate traffic signals and provide backup electrical power; (4) protect NYCDOT tunnels in Lower Manhattan from flooding; and (5) install watertight barriers to protect movable bridge machinery.

Covered Project:
DOT - Movable Bridges and Underpasses

This section represents 6 separate Covered Projects (5 bridges and 1 underpass project). The information documented in sub-sections 1-5 below, and regarding A Stronger, More Resilient New York *applies to all 5 bridges and the 1 underpass project (consisting of two DOT underpasses) referenced below.*

1. Project Identification/Description

NYC has determined that 6 separate projects under DOT's Movable Bridges and Underpasses infrastructure work are Covered Projects, per HUD's definition. DOT identifies the movable bridges and the underpasses as two (2) individual projects. The City intends to utilize the coordinated match methodology to combine the total cost for each of the two projects and determine the total 10 % local match available. The City will evaluate the activities in the projects to identify which portions are HUD eligible and apply HUD CDBG-DR funds to only that portion.

DOT identified Hurricane Sandy-related damages to twenty movable bridges and underpasses owned and operated by the City of New York. These bridges and underpasses were subject to surge tides, flooding and high winds. The bridges are located over navigable waterways (the Gowanus Canal, Newtown Creek, Harlem River, etc.) and the movable span needs to operate properly to ensure continued mobility, reliability and safety of vehicular traffic, non-motorized traffic over the bridge and the water borne vessels.

Of the movable bridges that had storm related damages, thirteen will need capital repairs and rehabilitation. The extent of the damages varies by facility, however for all the bridges, both the electrical and mechanical systems were exposed to saltwater and damaged. These systems need to be restored to pre-storm conditions. Five of the thirteen movable bridges that will need capital repairs and rehabilitation are physically located in more than one county And, as defined by HUD currently, would be considered covered projects. In consideration of The City's waiver request regarding multiple counties and the individual project cost falling below the $50 million threshold, upon receipt of the waiver approval from HUD these projects will not fall under the definition of a covered project and will be processed individually. Current estimates for repairs alone to these 5 bridges are $25.3 million. These bridges are:

- Grand Street Bridge (over Newtown Creek)
- Third Avenue Bridge (over the Harlem River)
- Madison Avenue Bridge (over the Harlem River)
- 145th Street Bridge (over the Harlem River)
- Macombs Dam Bridge (over the Harlem River)

The two underpasses in Lower Manhattan, Battery Park Underpass and West Street Underpass, were both flooded to their roofs, which means that all tunnel ventilation, electrical, and mechanical systems were entirely submerged in saltwater. This resulted in closures and diminished operational capacity. These systems need to be restored to pre-storm conditions. Current estimates for repairs alone are $67 million (including construction, design, REI, CSS) for both underpasses. These two underpasses are considered one project and are defined as a Covered Project.

All of the movable bridges and underpasses Covered Projects are funded by USDOT Federal Highways Administration (FHWA) Emergency Relief program. Emergency repairs were completed immediately on

all of the facilities to restore essential traffic, to minimize the extent of damages, and to protect the facility itself. These repairs are 100 percent funded by FHWA. Permanent restoration is funded 80 percent by FHWA. Estimates of total project costs will continue to be refined as the City works with FHWA.

DOT retained an engineering consultant to conduct assessments, develop design plans for only the permanent restoration, and obtain the appropriate permits. The engineering consultants will also provide Construction Support Services and Resident Engineering/Inspection Services. This design work is currently in process.

DOT's intent is to complete all the necessary permanent restoration for all aforementioned facilities. Beyond permanent repair, DOT is investigating hazard mitigation and betterment plans for the underpasses and for several of the movable bridges to reduce the risk of damage and loss of function from flooding and other hazards as well as improving the reliability and resiliency of the infrastructure. These measures will likely require coordination and permitting with other Federal and State entities including the United Sates Army Corps of Engineers, the United States Coast Guards, the New York State Department of Environmental Conservation, and the State Historic Preservation Office, among others.

CDBG-DR funds may be used to supplement design and construction, as the local match, for the aforementioned facilities, which were damaged by Hurricane Sandy.

ELIGIBLE ACTIVITY: Rehabilitation/Reconstruction of Public Facilities

NATIONAL OBJECTIVE: Urgent Need; Low- and Moderate-Income Area, once a determination has been made regarding service area.

2. Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis, and the Rebuild by Design Collaborative Risk Analysis

Use of Impact and Unmet Needs Assessment

Sandy had a massive impact on the transportation system within New York City and the surrounding region, with the greatest impact felt on those elements located underground and close to the shoreline. The storm caused extensive damage and impaired the ability of the system to move people in and around the city and region.

DOT determined that hundreds of lane miles of streets will require resurfacing and/or full reconstruction due to storm damage. Street lights, traffic signals controlling nearly 700 intersections, and underground wiring were damaged by floodwaters, and in some cases, backed up sewage. High wind speeds further caused extensive damage to the existing street fixtures and traffic equipment.

As noted in the *A Stronger, More Resilient New York* report, stormwaters flooded tunnel entrances and ventilation structures in areas around the City such as Southern Manhattan, Long Island City, and Red Hook. Floodwaters severely damaged the Battery Park and West Street underpasses in Lower Manhattan, and repairs are also necessary for 20 movable bridges, as described in the above Identification/Description section. The mechanical and electrical systems at the Whitehall (Manhattan) and St. George (Staten Island) Ferry Terminals incurred significant damages. In addition, ferry piers and other ferry facilities suffered damage. Finally, DOT's administrative offices were flooded and contents, including technological equipment, were irreparably lost. As part of the Amendment 5B process, the City has reviewed its previous needs assessment analysis and has not noted any additional updates to this assessment.

See the Needs Assessment section for more unmet needs assessment detail.

Comprehensive Risk Analysis and Rebuild by Design Collaborative Risk Analysis

In December 2012, the Special Initiative for Rebuilding and Resiliency (SIRR) convened to address the creation of a more resilient New York City in the wake of Hurricane Sandy, with a long-term focus on preparing for and protecting against the impacts of climate change. A final report, released in June 2013, presents actionable recommendations both for rebuilding the communities impacted by Sandy and increasing the resilience of infrastructure and buildings citywide.

The Transportation chapter in *A Stronger, More Resilient New York*, which provides descriptions of what happened during Sandy to DOT's infrastructure, including the ferries, roadways, underpasses, and bridges. It also includes a risk assessment of climate change on transportation assets from sea level rises to storm surges, high winds and heat waves and initiatives to protect the City's assets for continual operation, prepare City infrastructure for extreme weather events and increase flexibility and redundancy.

Transportation Initiative 5 – "Install watertight barriers to protect movable bridge machinery" helps to address the damage incurred during Sandy. The mechanical equipment that allows 25 of the City's bridges to move to provide a clear path for marine traffic is vulnerable to flooding. Damage to this equipment could impact marine and roadway traffic if bridges were locked either open or closed. Subject to available funding, the City, through DOT, will implement measures to protect the bridges' mechanical equipment from flood damage to ensure that these critical crossings function properly.

The Rebuild By Design competition, an initiative of the Hurricane Sandy Rebuilding Task Force and HUD, has been tasked with developing fundable solutions to better protect residents from future climate events. Ten participating design teams are currently engaged in an extensive research process involving local community input and fieldwork. On June 2, 2014, HUD announced announced the award of $930 million to the winning ideas. The City will use the collaborative risk analysis developed by the winners of theNew York City projects. The City will use the Rebuild By Design risk analysis to evaluate Covered Projects. In the meantime, the City is basing its risk analysis on the *A Stronger, More Resilient New York* report. Public outreach was a priority during the process of developing the *A Stronger, More Resilient, New York* report. Elected officials, community leaders, and the general public were consulted and their input contributed to the recommendations outlined in the report.

3. <u>Transparent and Inclusive Decision Processes</u>

These DOT projects are funded through the FHWA Emergency Relief program. The transparent and inclusive decision processes were based upon coordination with FHWA and informed by the policies and procedures of that Federal agency. CDBG-DR funds may be used for the local match after FHWA has approved and obligated funds for these projects. In a press release on February 15, 2013, FHWA announced $287 million in emergency relief for New York to support Hurricane Sandy recovery. The press release explains that the funds will be used to reimburse for expenses associated with damage from Hurricane Sandy.

In addition to the FHWA press release, the public was informed of the City's proposal to fund the Covered Projects described in the Action Plan, through the outreach done during Action Plan Amendment 5B public comment period. The outreach includes a public comment period on the amendment, three public hearings, and information posed on the City's CDBG-DR website. The City's Action Plan amendment process is further detailed in the Citizen Participation section of the Action Plan.

The comment period for Amendment 5B started on December 27, 2013 and ended on March 2, 2014. The City held three public hearings to inform the public about the activities, changes, and updates included in Amendment 5B during the week of February 24, 2014. These hearings were held in communities most impacted by Hurricane Sandy in the boroughs of Staten Island, Brooklyn, and Queens. The public comment period is used to solicit comment on NYC's proposed funding allocations and activities funded with CDBG-DR. The City reviews all comments that are received as part of the amendment process, and the Action Plan may be revised subject to comments. The City's responses to comments received during the public comment period and from the public hearings are posted on the City's CDBG-DR website.

These projects may either be a restoration of the existing bridge or improved bridge project. For a restoration project, DOT will engage a community liaison who will coordinate outreach prior to the construction start and during the construction activity. For an improved bridge project, during the planning and design phases, DOT will meet with the community board/ elected officials to discuss the design and scope of the project. During the construction phase, DOT will have the community liaison handling outreach with the community board and elected officials to keep them informed of the project and other outreach items.

Further, the public will continue to be informed of decisions regarding the selected Covered Projects through City Council hearings related to Hurricane Sandy recovery, public documents and hearings related to the City's budget allocated for recovery efforts, and other transparency tools related to recovery efforts such as the City's NYC Sandy Funding Tracker. The Sandy Funding Tracker allows the public to track the City's use of Federal disaster recovery and resiliency funds. It also provides detailed information about projects and programs in each major category of disaster relief funds.

4. Long-Term Efficacy and Fiscal Sustainability

OMB and DOT will collaborate in the development of a plan to monitor and evaluate the movable bridges and underpasses Covered Projects. The purpose of this plan is to convey how DOT will monitor the planning, implementation, and achievement of key milestones in the delivery of the completed Covered Projects. The plan will also include the evaluation methodology, which DOT will implement after the projects are complete. The purpose of the evaluation methodology is to determine the Covered Projects' efficacy level in addressing the community needs over a period of time. Components of the evaluation methodology may include the use of data to establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes.

Environmental conditions, such as a rise in the sea level, flooding, heat waves, and other climate changes, may impact this Covered Project (See NPCC projections at http://www.nyc.gov/html/planyc/downloads/pdf/publications/NPCC_Climate%20Projections_2013.pdf). The Office of Recovery and Resiliency will continue to work with NPCC and key stakeholders to develop additional climate change projections and make these projections even more useful.

The plan to monitor and evaluate DOT's Covered Projects may use the City's resiliency performance measures, described earlier in the IOCS section, and utilize best practices from similar projects, such as HUD's Sustainable Housing and Communities Initiatives and the New York-Connecticut Sustainable Communities Consortium, to develop and implement risk management tools to identify the long-term impact of changing environmental conditions. In combination with the results from this evaluation, data from the risk management tools will guide the City in strengthening its strategic plan to mitigate the impact of future storms and climate changes.

DOT is expert in project monitoring, evaluation, and post-construction analysis as demonstrated by the "Sustainable Streets: 2013 and Beyond" report, which chronicles the implementation and effects of many

DOT programs. DOT intends to build projects that can flex and adapt to changing environmental conditions. This will be achieved through innovative design, new materials, and technological analysis of conditions and utilization of climate data projections. Each project will include regular visual inspection, ongoing traffic and usage monitoring and tracking any micro-climatic conditions present within the vicinity of each project's limits. Each of the proposed projects will undergo a climate responsive feasibility analysis ensuring the investments can withstand and/or be designed to accommodate future retrofits to changing climate conditions.

During implementation of the monitoring plan, the City will ensure that all the appropriate mitigation measures are put into place and meet government standards. The City will be vigilant in doing immediate assessments after future storms events. DOT will provide monitoring or assessment of the structures and equipment to see if they can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment.

The City will leverage the current funding partnerships for fiscal sustainability. The goal is to increase investments from the government, non-profit, and private sectors for the project. These investments will be vital to the maintenance and necessary improvements after the CDBG-DR funds are exhausted for this project.

5. Environmentally Sustainable and Innovative Investment

The NPCC develops climate projections using global climate models. These models are mathematical representations of the Earth's climate system (e.g., the interactions between the ocean, atmosphere, land, and ice.) They use estimates of future greenhouse gas and pollutant concentrations to project changes in climate variables such as temperature and precipitation. The City has worked with the NPCC to develop a series of future flood maps for New York that will help guide the City's rebuilding and resiliency efforts. The NPCC report states in its section on Initiatives for Improving the Quality of Climate Analysis that, "the Mayor's Office and the NPCC will work to identify a set of metrics that can help the City and others measure actual climate changes against predicted climate change in order to adjust policies and investment decisions in the future."

DOT's projects are in alignment with the *President's Climate Action Plan* under several categories of investments, specifically within the section entitled Boosting the Resilience of Buildings and Infrastructure (page 13). As outlined in the report, this project will integrate climate risk-management considerations and will make climate-resilient investments, where necessary. The bridges will be built stronger and more resilient than what was there previously, in preparation for future storms and floods.

DOT is a leader in the planning, design, and development incorporating resilient features into all of the agency's Capital Projects and will look to the Federal government's efforts in planning for climate change.

The Department demonstrated our ability to bounce back following Hurricane Sandy for both the emergency response/repairs to long-term planning and implementation of resilient designs. We are currently working with international planning/engineering consultants to identify innovative ways to design for our most vulnerable communities. We are examining resilient strategies and designs for incorporation into our capital roadway, bridge and ferry projects including hardening roadways, examining new classes of ferries, and coating our bridge cables. In particular, for the underpasses, the Department is developing an innovative water tight barrier system that can be rapidly deployed by in-house forces in the event of a future flood event.

In order to protect the Department's critical infrastructure it is crucial to examine sustainable and resilient elements that can be included in all of our projects to ensure our infrastructure can withstand the impacts of climate change.

Department of Parks and Recreation (DPR)

In Rockaway Beach, Queens, 37 blocks or nearly 3 miles of boardwalk, experienced severe damage as a result of Hurricane Sandy. CDBG-DR funds are anticipated to fund the planning, design, and related services for the Rockaway Beach Boardwalk, which was damaged by Hurricane Sandy. Design work began in August 2013 and construction began in April 2014. All work is scheduled to be complete by May 2017. It is anticipated to provide protective structures that are more resilient and able to withstand storm and tidal forces that may impact the coastline in future years.

Some examples of planned restoration include new railings, tree replacement, landscaping, safety surfacing, accessible play equipment, handball/basketball courts, fencing, planting, and general site work to replace the damaged or destroyed elements. DPR is also working to restore and replenish the sand on beaches along the shorelines in Queens, Brooklyn, and Staten Island to their pre-storm conditions. In the short-term, DPR will work with the U.S. Army Corps of Engineers (USACE) to dredge and replenish more than 3 million cubic yards of sand in Queens and Brooklyn. In addition to the Army Corps work, DPR will create a baffle wall, dunes, and other protective sand structures in Rockaway Beach, Queens to protect the community from future storm events. In Staten Island, DPR will be working with FEMA to restore 75,000 cubic yards of sand (USACE does not have jurisdiction in Staten Island for short-term sand replenishment work). In the medium/long term, DPR will work with USACE to develop and implement a more robust defense against future weather events, including the construction of sea walls and dunes.

Covered Project:

Department of Parks and Recreation (DPR) – Rockaway Boardwalk

1. Project Identification/Description

NYC has determined that DPR's design and construction of the Rockaway Boardwalk is a Covered Project, per HUD's definition.

The work proposed for this project will complete the reconstruction of the Rockaway Beach Boardwalk and provide structures that are more resilient and able to withstand storm and tidal forces that may impact the coastline in future years. CDBG-DR funds are anticipated to fund the planning, design, and construction services for the Rockaway Beach Boardwalk, which was damaged by Hurricane Sandy. Design work began in August 2013 and construction began in April 2014. As of November 2014, demolition work has also begun. All work is scheduled to be complete by May 2017.

As of the the City's Fiscal 2016 preliminary Financial Plan, project costs for the Rockaway Beach Boardwalk are estimated at $341 million for construction of the coastline protection measures and the boardwalk. Part of these projects will be covered by FEMA and the remainder by CDBG-DR. The proposed 428 PAAP activities of this project will bring the total cost up to $480 million. As this is a FEMA 428 PAAP project, funds are currently capped at $480 million. The City intends to allocate $48 million for the FEMA local match portion of this project to HUD eligible activities. Work has begun on this project, and the City anticipates sufficient work for HUD reimbursement to be complete by June 2015. The City is currently reviewing the activities associated with this project to determine eligibility and select activities for HUD CDBG-DR reimbursement.

This project would complete reconstruction of the Rockaway Beach Boardwalk and increase its resistance to future storms by raising its elevation by up to three feet above the 100 year flood elevation and by rebuilding in concrete as opposed to wood. The boardwalk would be primarily reconstructed in its pre-existing alignment, but the original pile foundation would be replaced. In a separate project that is currently being constructed by the U.S. Army Corps of Engineers (USACE) to provide flood protection to shoreline communities of the Rockaway Peninsula, new access to the beach would be included with stairs and ramps across the new dune.

In addition, this project would incorporate a sand-retaining wall underneath the northern (upland) edge of the rebuilt boardwalk. The wall would retain sand placed between it and the USACE-constructed dune, reducing the drift of sand into the neighboring community. The wall is being designed to retain the force of saturated sand fill behind it (and therefore the static pressure of water). It has not been designed to withstand the dynamic energy of waves since the wall will be protected by the USACE dune, the sand between the dune and the wall, and the nourished beach that will be extended 200 feet seaward from the USACE dune. USACE intends to maintain the dune and the beach, and nourish them as necessary. In addition, as a result of an ongoing Reformulation Study, USACE may provide additional protective measures to further protect the coastal structures, through a separate project than this Covered Project. The proposed wall design consists of a series of H-piles supporting concrete panels between the flanges. The panels would be attached to the piles so that the bottom of the slab is 2 feet above the calculated erosion depth of +5 feet NAVD88 (the lowest elevation assumed by USACE in the absence of any beach nourishment). During an extreme storm event, the scour would open a gap beneath the wall, allowing some of the water to pass under the wall. In some segments of the beach, the proposed work for Phase II would potentially include restoration and stabilization of the existing dunes through the addition of infill sand from an upland source, geotextile fabric, native plantings, and a sand fence.

Green Infrastructure

This project has been identified as a Green Infrastructure project, as it will incorporate elements integrating natural systems and processes in resilient infrastructure. Design work began in August 2013 and construction began in April 2014. All work is scheduled to be complete by May 2017. The designs for the boardwalk are expected to include green infrastructure elements, including planting of beach grass on the crest and toe of the dune implemented by USACE, further stabilizing the dune. Additional sand will also be added on the north side of the dune and underneath the boardwalk, which will be held in place by a sand retaining wall. This adds another layer of reinforcement to the dune installed by USACE.

ELIGIBLE ACTIVITY: Rehabilitation/Reconstruction of Public Facilities

NATIONAL OBJECTIVE: Low- and Moderate-Income Area, based on a citywide low/mod population; Urgent Need

2. Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis, and the Rebuild by Design Collaborative Risk Analysis

The City of New York identified damage to approximately 536 park sites, in addition to the displacement of more than 3 million cubic yards of sand from the City's beaches. DPR properties in the Rockaways, Coney Island, and the eastern shore of Staten Island suffered the most severe impacts from Hurricane Sandy. In Rockaway Beach, Queens, 37 blocks or nearly 3 miles of boardwalk experienced severe damage. On Staten

Island, more than 60 derelict boats washed up on DPR properties and required removal. In Coney Island, Steeplechase Pier sustained considerable damage.

Coastal protection is covered in Chapter 3 of the *A Stronger, More Resilient New York* report. This section of the report includes a Risk Assessment and projected impacts of climate change. The analysis concludes that the greatest risk to the City of New York is storm surge. As mentioned in the report, to address the risk of storm flooding, the City will work to keep water from storm surge out of vulnerable neighborhoods and away from critical infrastructure. To do this, the City will use flood protection structures, such as floodwalls, levees, and local storm surge barriers built, where possible, to the 100-year flood elevation with an additional allowance for future sea level rise. Generally, the City will seek measures that minimize damage if overtopped.

There are two initiatives identified within *A Stronger, More Resilient New York* that relate to this project: Initiative 2 and Initiative 11. The focus of Initiative 2 is to continue to work with USACE to complete emergency beach nourishment on the Rockaway Peninsula. The scope of Initiative 11 is to continue to work with USACE to complete existing studies of the Rockaway Peninsula and implement coastal protection projects.

The Rockaway Boardwalk project is an important element of the *A Stronger, More Resilient New York* initiative on community and economic recovery to ensure long-term activation of the beach and waterfront. The Climate Analysis chapter in the report discusses current and future vulnerabilities to New York City and sets the framework for the rest of the report where initiatives to address those vulnerabilities are discussed. As described above, the City has incorporated sustainability measures in the design of the project and continues to coordinate with USACE and other stakeholders to increase resistance to future storms.

The Rebuild By Design competition, an initiative of the Hurricane Sandy Rebuilding Task Force and HUD, has been tasked with developing fundable solutions to better protect residents from future climate events. On June 2, 2014, HUD announced the six winning proposals and additional four finalists. The City will use the Rebuild by Design risk analysis developed by the winners to help evaluate Covered Projects. The City is also basing its risk analysis on the *A Stronger, More Resilient New York* report. Public outreach was a priority during the process of developing the *A Stronger, More Resilient New York* report. Elected officials, community leaders, and the general public were consulted and their input contributed to the recommendations outlined in the report.

3. <u>Transparent and Inclusive Decision Processes</u>

The City began coordinating with USACE immediately after Sandy on the beach replenishment design plans and process. USACE had planned to replenish the beach to 1994 authorization levels (a +10 elevation), but at the request and encouragement of the City, USACE increased the berm profile to a +14 elevation. Coordination between the City and USACE continued through the first phase of beach replenishment (complete in 2013) and a decision was made to increase the height of the berm to a+16 profile through a process known as betterment. USACE is anticipated to begin construction of this berm in early 2014.

Relating to the boardwalk, the City has been in continuous coordination with USACE on the Jamaica Bay Reformulation Study and Environmental Feasibility Study, which looks at shoreline protection measures

for the bay and ocean sides of Rockaway. DPR attends design meetings with USACE to discuss the reformulation options they are considering, as well as share the City's goals for the boardwalk reconstruction project. Significant effort has been made to ensure that our projects work together to provide the most protection possible to the residents of Rockaway. Coordination is also necessary to ensure that the boardwalk reconstruction design does not interfere with or preclude future USACE investments in protection along the Rockaway peninsula.

The City has also engaged in discussions with the community and received input throughout the Rockaway Boardwalk project outreach process. Interested parties and project stakeholders have been invited to attend community listening sessions to discuss the needs to the community and presentations continue to be given at local Community Board meetings. City officials attend these meetings to engage in discussions on the project including planning and process. As of November 2014, City officials held approximately 30 meetings with the community to solicit input on design, and provide regular updates on the progress of the project. Early listening sessions also included solicitation of input on preferences for the aesthetic treatment of the boardwalk decking through a survey which was also posted on the DPR web site. 680 responses were received both in person and online, which informed the selected color and texture of the concrete for the boardwalk surface as well as programming of a dedicated bike lane.

In addition, the public was informed of the City's proposal to fund the Covered Projects described in the Action Plan through the outreach done during the Action Plan Amendment 5B public comment period. The outreach includes a public comment period on the amendment, three public hearings, and information posed on the City's CDBG-DR website. The City's Action Plan amendment process is further detailed in the Citizen Participation section of the Action Plan.

There has also been a transparent and inclusive process for the FEMA funding. Following a Presidential disaster declaration, the Federal Emergency Management Agency (FEMA) makes disaster assistance available to eligible applicants. One source of funding is the Public Assistance (PA) Program. Potential recipients of this assistance include State, Tribal, and local governments and certain types of private nonprofit organizations. PA funding is made available through an inclusive and transparent process that is open to representatives of the State as well as potential applicants for funding.

There are two ways that FEMA disseminates and makes available to the public and potential applicants information about the PA Program.

The first is through the use of a Joint Information System (JIS) initiated immediately after the disaster. The JIS provides the mechanism to organize, integrate and coordinate information to ensure timely, accurate, accessible and consistent messaging to multiple jurisdictions about the availability of and application deadlines for FEMA programs, including the PA Program. The JIS includes the plans, protocols, standard operating procedures, and structures used to provide public information. The JIS is supported by Federal, State, tribal, territorial, regional or local Public Information Officers and Joint Information Centers. As the disaster progresses FEMA, puts out press releases regarding funding for various projects.

A second way in which FEMA notifies potential applicants of the availability of PA funding is through a series of steps that all aim to educate and make information known about the PA Program. The steps are:

- Preliminary Damage Assessment (PDA): The PDA is a collaborative process in which FEMA, the State, and an applicant representative participate. The PDA is performed to document the impact

and magnitude of the disaster on individuals, families, businesses, and public property and to gather information for disaster management purposes.

- Applicants' Briefing: An Applicants' Briefing is a meeting conducted by a representative of the State for potential Public Assistance applicants. The briefing occurs after an emergency or major disaster has been declared and addresses application procedures, administrative requirements, funding, and program eligibility criteria. FEMA will use the JIS to publish notices in newspapers about the dates, times and locations of Applicant Briefings. FEMA personnel participate in the briefing to clarify issues and respond to questions regarding eligibility, floodplain management, insurance requirements, environmental considerations, hazard mitigation, and Federal procurement standards.
- Kickoff Meeting: The Kickoff Meeting is conducted by designated FEMA staff members and designed to provide a much more detailed review of the PA Program and the applicant's needs. The meeting is the first step in establishing a partnership among FEMA, the State, and the applicant, and is designed to focus on the specific needs of that applicant. The meeting focuses on the eligibility and documentation requirements that are most pertinent to an applicant.
- Project Formulation: Project formulation is done in cooperation between FEMA, the applicant and State representatives. It is an exchange of information to identify eligible scopes of work and to estimate the costs associated with that work for each of the applicant's projects.

4. Long-Term Efficacy and Fiscal Sustainability

NYC OMB and DPR will collaborate in the development of a plan to monitor and evaluate the Rockaway Boardwalk project. DPR has a formal inspection program handled by the Operations and Management Planning division (OMP) which conducts detailed inspections of 16 features at every property DPR maintains. The beach and boardwalk zones and any comfort stations therein are inspected a minimum of twice per year by the OMP inspectors, and a detailed report of conditions noted along with a photo report are generated from these inspections. Any hazardous condition that is identified would be emailed on the same day to the Chief of Operations and district Manager who would then assess the best means for repair. In addition to the formal OMP inspections, district management staff are asked to make regular assessments of the structural condition and cleanliness of these properties, and all staff are instructed to report any unsafe condition immediately upon discovery. Again, these conditions would be remedied in the manner that the district supervision deemed most appropriate, either with skilled trades from the shops or maintenance workers or district staff depending on the particular issue.

In addition, USACE intends to maintain the dune and the beach and renourish them as necessary. Efficacy and sustainability are considered in the design of this project. The boardwalk is being designed 3+ feet higher than the 100 year flood elevation to account for future changes in sea level or other natural forces. The engineers are also designing the structure for a 50+ year service life.

A Needs Assessment with the prevalent data and justification for the project is in previous sections of this Action Plan. As a result, the purpose of this plan is to convey how the CDBG-DR Partners and DPR will monitor the planning, implementation, and achievement of key milestones in the delivery of the completed Covered Project. The plan will also include the evaluation methodology, which the CDBG-DR Partners and DPR will implement after the project is complete. The purpose of the evaluation methodology is to determine the Covered Project's efficacy level in addressing the community needs over a period of time. Components of the evaluation methodology may include the use of data to establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes.

The environmental conditions, such as rise in the sea level, flooding, heat waves, and other climate changes, may impact this Covered Project. As reported in the *A Stronger, More Resilient New York* report and the PlaNYC's *A Greener, Greater New York* report, the City has been making a concerted effort to understand the effects that climate change will have on New York City. In 2008, Mayor Bloomberg convened the New York City Panel on Climate Change (NPCC). The NPCC is made up of a body of leading climate and social scientists charged with developing local climate projections. In September 2012, New York City formally codified the NPCC to institutionalize a process for updating local climate projections and identifying and implementing strategies to address climate risks.

Also, according to the Climate Analysis chapter of *A Stronger, More Resilient New York*, the Mayor's Office will work with NPCC and key stakeholders to develop additional climate change projections and to make these projections even more useful.

This plan to monitor and evaluate DPR's Covered Project may use the City's resiliency performance measures, described earlier in the IOCS section, and utilize best practices from similar projects, such as HUD's Sustainable Housing and Communities Initiatives and the New York-Connecticut Sustainable Communities Consortium, to develop and implement risk management tools to identify the long-term impact of changing environmental conditions. In combination with the results from the evaluation of this project, data from the risk management tools will guide the CDBG-DR partners and the City in strengthening their strategic plan to mitigate the impact of future storms and climate changes.

DPR maintenance regularly inspects the boardwalk for public safety concerns, and will report any issues to the Capital department if they notice what they believe to be structural issues beyond normal wear and tear. In addition, USACE intends to maintain the dune and the beach and renourish them as necessary.

During implementation of the monitoring plan, the City will ensure that all the appropriate mitigation measures are put into place and meet government standards. The City will be vigilant in doing immediate assessments after future storms events. DPR will provide monitoring or assessment of the structures and equipment to see if they can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment.

The City CDBG-DR Partners will leverage the current funding partnerships and Covered Project results for fiscal sustainability. The goal is to increase investments from the government, non-profit, and private sectors for the project. These investments will be vital to the maintenance and necessary improvements after the CDBG-DR funds are exhausted for this project.

5. <u>Environmentally Sustainable and Innovative Investment</u>

The NPCC develops climate projections using global climate models. These models are mathematical representations of the Earth's climate system (e.g., the interactions between the ocean, atmosphere, land, and ice). They use estimates of future greenhouse gas and pollutant concentrations to project changes in climate variables such as temperature and precipitation. The City has worked with the NPCC to develop a series of future flood maps for New York that will help guide the City's rebuilding and resiliency efforts.

A Stronger, More Resilient New York states in its section on Initiatives for Improving the Quality of Climate Analysis that, "OLTPS and the NPCC will work to identify a set of metrics that can help the City and others

measure actual climate changes against predicted climate change in order to adjust policies and investment decisions in the future." The *A Stronger, More Resilient New York* report's goal is to minimize the impacts of climate change and enable quick recovery after extreme weather events. The report identifies initiatives that will make the coastline more resilient.

The City is also informed by the President's Climate Action Plan. The Action Plan identifies the need for identifying vulnerabilities of key sectors to climate change (page 14) and states the following: "In 2013, the Department of Agriculture and Department of the Interior released several studies outlining the challenges a changing climate poses for America's agricultural enterprise, forests, water supply, wildlife, and public lands." The Action Plan also outlines actions for conserving land and water resources (page 15). The City of New York will look to the Federal government's efforts in planning for climate change.

Hazard Mitigation Grant Program (HMGP)

The City of New York is expecting to use CDBG-DR funds as a match for FEMA's Hazard Mitigation Grant Program (HMGP). HMGP provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

The Breezy Point Risk Mitigation System is one of the HMGP applications the City of New York has submitted to the State of New York for review. FEMA can fund up to 75 percent of the eligible costs of each project. The State or grantee must provide a 25 percent match, which can be fashioned from a combination of cash and in-kind sources. Funding provided to states under CDBG can be used to meet the non-Federal share requirement and the City of New York expects to provide the 25 percent match for these projects.

Covered Project:

HMGP – Breezy Point Risk Mitigation System

1. Project Identification/Description

The City has determined that the Breezy Point Risk Mitigation System is a Covered Project, per HUD's definition. The City will soon be submitting a waiver request to HUD in order to meet the eligibility requirements for this project. The City must seek a waiver in order to treat the activity as incidental to housing rehabilitation, which is only allowable under CDBG regulations for state grantees. The City has decided to pursue this project because the Breezy Point Risk Mitigation System provides a natural method of defense for the neighborhood and adjacent communities. This is the development of a new dune which provides layers of defense for the community and protects post-Sandy Federal housing investments; this is not the repair or reconstruction of a preexisting dune facility. Those layers of defense include protecting Rockaway Point Boulevard, the only public road in and out of Breezy Point, and the prevention of backdoor flooding through the community (a large cause of damage during Hurricane Sandy). The City has considered alternatives to this project including elevation and/or buyouts of the flood prone properties in the community. The City's analysis, however, determined that this recovery path would be more expensive and displace individuals from their homes, which would diminish the local tax base and decrease the economic vitality of the community.

Damage from Hurricane Sandy

Hurricane Sandy had a devastating impact on New York City. The storm took the lives of 44 individuals. It also damaged over 23,000 residential structures containing more than 69,000 housing units, forced 6,500 patients to be evacuated from hospitals and nursing homes, knocked out power to over 800,000 customers, compromised 23,400 businesses, and barred 1.1 million New York City children from attending school for a week.

Sandy's biggest impacts were the result of its massive storm surge and the flooding that the surge caused. A staggering 50.6 square miles of New York City flooded—17 percent of the City's total land mass—and in many areas the depth of floodwaters was unprecedented.

The neighborhood of Breezy Point suffered particularly harsh damage, from both storm surge and flooding, because of its location along Rockaway Inlet, the Harbor, and the Atlantic Ocean. Moreover, the Breezy Point area was excluded from the U.S. Army Corps of Engineers' Rockaway Beach project because Breezy point is a private cooperative property (USACE does not perform work on private property), which ends at Beach 149th Street, approximately 2.6 miles east of Breezy Point. The Breezy Point community begins at approximately Beach 200th Street. There is currently no active Federal, State, or City flood or protection project in the Breezy Point community.

During Hurricane Sandy, record waves of over 30 feet and storm surges of 10.70 to 12.70 (NAVD) were recorded by the National Buoy Data Center of NOAA and the US Geological Survey, respectively. The massive inundation and damage to homes and infrastructure (and the resulting loss of services) were unprecedented. Coastal flooding far exceeded predicted coastal flood heights for a 100-year storm on FEMA's Effective Flood Maps. Hurricane Sandy is not the first coastal storm to strike this area. As a barrier island, the Rockaways—and Breezy Point in particular—are susceptible to flooding and wave damage from hurricanes and nor'easters, especially over the past three decades.

Rockaway Point Boulevard was under six feet of water during the storm and impassable for four hours. The Fire Department of New York City (FDNY) was blocked from getting to the area as residential fires burned for over three hours leading to the complete destruction of 125 homes and approximately 25 homes and business in the neighboring communities of Belle Harbor and Rockaway Park. FDNY spent more than one week pumping sea water off the road.

The proposed project is in direct response to the damage this community suffered from Hurricane Sandy. The dune is designed to absorb storm water and protect Rockaway Point Boulevard from severe flooding and adjacent communities from back door flooding (a source of severe damage during Hurricane Sandy). This would enable emergency personnel to access the community during the next disaster and perform critical lifesaving services for 2,837 homes in the community, a commercial area with a bank, supermarket, lumber yard, hardware store and restaurant. The project would also help protect the three volunteer firehouse and ambulance organizations that serve the community.

The Breezy Point Risk Mitigation system will help protect dunes already constructed by the New York City Department of Parks and Recreation (NYC DPR) to the east of the area that are designed to mitigate against seven and one-half miles of housing.

Comprehensive Risk Assessment

The City's proposals for coastal protection measures, such as the Breezy Point Risk Mitigation System, are based on a multi-faceted analysis. This analysis considered factors ranging from the nature and likelihood of coastal hazards (such as destructive waves or flooding), to the possible impacts of these hazards on the built environment and critical infrastructure, to the likely effectiveness of certain protective measures. The City also considered whether an area included high concentrations of particularly vulnerable populations, such as the elderly or those with disabilities, who would be at greater risk during a storm event. Another

important consideration was the underlying geomorphology of the regions examined, as well as the coastal features already in place.

To inform this larger evaluation, the City engaged Swiss Re, a reinsurance company, to complete a quantitative assessment looking at the frequency and severity of an event (such as a coastal storm) as well as the magnitude of loss likely to be suffered if such an event were to occur. The City applied Swiss Re's natural catastrophe models to New York City to help understand the potential impacts of wind and storm surge on the City (FEMA's FIRMs do not model the impacts of wind), assuming a world of rising sea levels and more intense storms. This analysis was used as one piece of the larger and is described in further detail on pages 33-36 of *A Stronger, More Resilient New York*.

The Breezy Point Risk Mitigation Project

The Breezy Point Risk Mitigation Project is a critical part of barrier island protection for both the Breezy Point community and the Jamaica Bay watershed and floodplain. The proposed project has two principal components: a double dune system on the ocean-side of the community and new protective measures on the bayside. The objective of the proposed double dune system is to provide sustainable, natural flood and erosion protection utilizing natural protective features such as beaches, dunes, beach vegetation and the barrier island. The dune will be designed to withstand the forces associated with a 100-year flood height, as indicated on FEMA's latest maps, plus sea level rise (2.58 feet) over the life of the project and provide long term, sustainable protection with minimum project maintenance.

This approach is both sustainable and consistent with the Federally-approved New York State Coastal Management Plan (CMP) and the New York City Waterfront Revitalization Plan (WRP). The principal need at Breezy Point along the ocean side is to provide a double dune system where the primary dune (most seaward dune) can both survive the wave impact of a coastal storm (storm induced erosion) and the secondary dune (the landward dune) can provide protection from the storm surge (flooding).

The bayside of the peninsula needs special attention to widen the beach for urgent flood and erosion protection, which includes enhancing existing structures. Protection of the bayside of Breezy Point will be accomplished by creating a complementary series of bayside flood and erosion protection devises, including an H-Pile baffle wall, T-Head groins, PVC sheet pile and beach fill. These devices will be applied on a reach by reach basis along the bayside shoreline by apply engineering standards and practices to the underlying geological setting and observed flooding parameters to develop a consistent and coherent flood protection system.

The combined cost of the project, both ocean-side and bayside, is estimated at $58.2 million and is expected to mitigate damages, such as those incurred by Sandy amounting to over $400 million. More specific cost estimates on ocean and bay side investments will be available at the estimated completion of Phase II in 2016. Breezy Point Risk Mitigation System will explore several sources of potential funding, including FEMA Hazard Mitigation Grant Program funding (pending approval by FEMA) and FEMA Public Assistance funding for damaged properties in the community. New York City and FEMA are in discussion about funding this HMGP application in two phases. Phase One would consist of Technical Review and Design and the second phase will consist of construction.

The City estimates the total project cost for Phase One will be $2.1 million, which carries a 25% local match contribution to be covered by CDBG-DR, pending approval of applicable waivers.

The City has submitted a HMGP application to FEMA on October 30, 2013, for the full $58.2 million. NYS forwarded the application for Breezy to FEMA around March 20, 2014 (press release: https://www.governor.ny.gov/press/03202014-costal-protection-system). FEMA has one year to approve HMGP projects. The City intends to use CDBG-DR to fund the local match requirement of the HMGP grant.

Green Infrastructure

Breezy Point suffered damage from Sandy and remained exposed to extreme weather events, particularly along the ocean. The City, therefore, believes a dune project is necessary to protect this neighborhood and to demonstrate the general effectiveness of primary and secondary dune systems as a defense against storm waves and flooding. The objective of the proposed dune system is to provide sustainable, natural flood and erosion protection utilizing natural protective features such as beaches, dunes, beach vegetation and the barrier island. The dune will be designed to withstand the forces associated with a Sandy-level event and provide long term, sustainable protection with minimum project maintenance.

ELIGIBLE ACTIVITY: Rehabilitation/Reconstruction of Public Facilities; Rehabilitation/Reconstruction of a Public Improvement

NATIONAL OBJECTIVE: Urgent Need

2. Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis, and the Rebuild by Design Collaborative Risk Analysis

For a discussion of the City's comprehensive citywide risk analysis, see the section above.

Not building the Breezy Point Mitigation System would leave over 2,400 residential and commercial buildings in Breezy Point, as well as emergency personnel, resources and infrastructure, exposed to flooding during a 100-year flood height, plus a 2.58 feet sea level rise. The estimated cost of not building the dune exceeds the cost of the selected alternative. There is also a need to protect the bayside: The bayside shoreline of Breezy and Roxbury is low and level, inviting storm surge waters into areas and adversely impacting infrastructure including electric, gas, transportation and emergency services. No action would allow these periodic floods to gradually degrade systems.

In December 2012, the Special Initiative for Rebuilding and Resiliency was formed to focus on improving citywide infrastructure and building long-term resiliency. *A Stronger, More Resilient New York* put forth a comprehensive plan containing actionable recommendations for rebuilding Sandy-impacted communities and for increasing the resiliency of infrastructure and buildings citywide. The report includes a chapter on Coastal Protection which sets forth strategies for protecting the City's coastlines.

The Rebuild By Design competition, an initiative of the Hurricane Sandy Rebuilding Task Force and HUD, has been tasked with developing fundable solutions to better protect residents from future climate events. Ten participating design times are currently engaged in an extensive research process involving local community input and fieldwork. On June 2, 2014, HUD announced announced the award of $930 million to the winning ideas. The City will use the collaborative risk analysis developed by the winners for theNew York City projects. The City will use the Rebuild By Design risk analysis to evaluate Covered Projects. In the meantime, the City is basing its risk analysis on *A Stronger, More Resilient New York*. Public outreach was a priority during the process of developing the report. Elected officials, community leaders, and the general public were consulted and their input contributed to the recommendations outlined in the report.

3. Transparent and Inclusive Decision Processes

As part of the City's storm recovery effort, both the Special Initiative for Rebuilding and Resiliency (SIRR) and the Housing Recovery Office conducted extensive outreach in South Queens. Between January 2013 and June 2013, SIRR held three public meeting in South Queens, briefed elected officials on a monthly basis, briefed community-based organizations every 4-6 weeks, and engaged approximately 14 City, State, and Federal elected officials, two community boards, and over 55 faith-based organizations, community organizations, and businesses. Additionally, staff from the Mayor's Office of Housing Recovery Operations

(HRO), have had many conversations with residents of the Breezy Point Cooperative regarding this project and community.

In addition, the public was informed of the City's proposal to fund the Covered Projects described in the Action Plan, through the outreach done during the Action Plan Amendment 5B public comment period. The outreach includes a public comment period on the amendment, three public hearings, and information posed on the City's CDBG-DR website. The City's Action Plan amendment process is further detailed in the Citizen Participation section of the Action Plan.

This project will be subject to the public notice and comment period requirements of the Uniform Land Use Review Procedure.

4. Long-Term Efficacy and Fiscal Sustainability

The Breezy Point Mitigation System project will protect vulnerable lands, homes, infrastructure and natural resources, as well as the one and only road in and out of Breezy Point, from flooding and erosion caused by hurricanes and northeasters.

The ocean-side dune and bay-side structures will be designed to withstand the forces associated with a 100-year flood height, as indicated on FEMA's Preliminary Flood Insurance Rate Maps. They will also withstand sea level rise (2.58 feet) over the life of the project and provide long-term, sustainable protection with minimum project maintenance. This approach is both sustainable and consistent with the Federally-approved New York State Coastal Management Plan (CMP) and the New York City Waterfront Revitalization Plan (WRP).

The prevention of the storm surge will protect homes, businesses and Rockaway Point Blvd., which is the sole egress/ingress to Breezy Point, the designated Hurricane Evacuation Route and the sole means of emergency access to Breezy Point.

The project will mitigate damages of over $400 million at a cost of $58 million, resulting in a Benefit Cost Ratio of 1.65 over the lifetime of this project. This is based on the FEMA-approved Benefit Cost Analysis Software, version 4.8.

The City has proposed a phased FEMA 404 application. Phase I is a study to determine the appropriate design in terms of level of protection, design, and alignment to best conform with issues of efficacy and the environmental concerns in this sensitive location. A maintenance plan is required by the Hazard Mitigation Grant Program and will be established to ensure the system is maintained and continues to be effective for the proposed life of the project.

If funded, New York City will adhere to best practice standards for assuring the long-term efficacy and sustainability of this program through ongoing monitoring and evaluation in collaboration with partner regulatory agencies such as the Army Corps of Engineers and New York State Department of Environmental Conservation. The City is currently collaborating with these entities to develop monitoring methodology for the Rebuild By Design Offshore Breakwater and Spring Creek tidal wetland restoration project funded through FEMA Hazard Mitigation Grant Program. The City's monitoring and evaluation efforts will be led by agencies implementing and managing this project (New York City Economic Development Corporation, the Office of Emergency Management, and the Office of Recovery and Resiliency).

During implementation, the City will ensure that all the appropriate mitigation measures are put into place and meet government standards. The City will be vigilant in doing immediate assessments after future storms events. The agency will provide monitoring or assessment of the structures and equipment to see if

they can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment.

5. Environmentally Sustainable and Innovative Investment

A Stronger, More Resilient New York contains a chapter on climate analysis that sets forth a series of initiatives designed to strengthen the City's ability to understand and prepare for the impacts of climate change.

Furthermore, in 2008, Mayor Bloomberg convened the New York City Panel on Climate Change (NPCC). The Panel is made up of a body of leading climate and social scientists charged with developing local climate projections. In September 2012, New York City formally codified the NPCC to institutionalize a process for updating local climate projections and identifying and implementing strategies to address climate risks. The NPCC develops climate projections using global climate models. These models are mathematical representations of the Earth's climate system (e.g., the interactions between the ocean, atmosphere, land, and ice). They use estimates of future greenhouse gas and pollutant concentrations to project changes in climate variables such as temperature and precipitation. The City has worked with the NPCC to develop a series of future flood maps for New York that will help guide the City's rebuilding and resiliency efforts.

The City is also informed by the President's Climate Action Plan. The Action Plan identifies actions for conserving land and water resources (page 15). The City of New York will look to the Federal government's efforts in planning for climate change. The City will incorporate guidance from USACE studies and findings stipulated by Public Law 113-2, for long-term nature based resiliency measures.

The Breezy Point Mitigation System is a green investment that minimizes upland wave zones without disrupting the built environment. The Hurricane Sandy Rebuilding Task Force's Rebuilding Strategy focuses on the need for green infrastructure in Recommendations 19-22. As outlined in Recommendation 19: "Consider green infrastructure options in all Sandy infrastructure investments," this mitigation system takes habitat into account, upholds landscape conservation for the tourism, recreation, and aesthetic values on which economies depend; protects the Jamaica Bay watershed protection for clean drinking water and improved flood management; protects the threatened and endangered species population along Jamaica Bay; and preserves other associated ecosystem services from which people derive benefits including aquaculture.

Covered Project:

Department of Parks and Recreation (DPR) - Beach Open-Up: Contract 1 - Modular Structures and Contract 2 – Entry Islands

1. Project Identification/Description

NYC has determined that DPR's design and construction of Post-Sandy Beach Open-Up projects (Modular Structures and Entry Islands) are Covered Projects, per HUD's definition.

This section represents 2 separate Covered Projects (Modular Structures and Entry Islands). The information in this section applies to both projects.

The primary goal of these Beach Open-Up contracts was to provide safe access and the necessary facilities to get the beaches open to the public by Memorial Day Weekend 2013.

Following Sandy, the City made a commitment to open New York City's eight public beaches in time for Memorial Day 2013. However, several key facilities necessary to meet this goal—including bathrooms, lifeguard stations, maintenance and operations offices, and concessions—had been completely destroyed or significantly damaged in the storm. In a coordinated interagency effort led by the Department of Parks & Recreation, with the Department of Design and Construction and other City, State and Federal partners, the City invested over $270 million that not only removed debris, corrected hazardous conditions, restored beach access and renovated damaged buildings, but also replaced the key facilities that were destroyed with new facilities designed to withstand future storms.

The scope of work consists of two separate contracts which were entered into early 2013 with work beginning Spring of 2013 with substantial completion of construction prior to August 13, 2013.

The scope of work included in Contract 1, includes the construction of 35 prefabricated modular buildings which will be used as comfort stations (bathrooms) and lifeguard stations on the Rockaway Peninsula, Coney Island, and Staten Island and were designed and constructed to a height ranging from 7 to 14 feet above the existing grade to ensure maximum resiliency. These facilities are pre-fabricated, linear structures that utilize natural light and ventilation. These structures are sited perpendicular to the ocean, in the footprint of demolished buildings where possible, as far from the CEHA line and Tidal Wetland buffers as feasible, and installed on piles above the 500 year storm flood elevation. Solar panels were installed to off-set energy use. All new structures will be more resilient and able to withstand storm and tidal forces that may impact the coastline in future years.

The scope of work included in Contract 2, includes the repair of damaged boardwalk and critical supporting facilities at four critical locations in the Rockaway Peninsula. These locations were identified based on key public transportation, economic impact, established access to beaches, and population factors in the Rockaways. The Entry Islands were constructed at B86th St., B97th St., B106th St., and 116th St. in the Rockaways. These entry islands are built to Americans with Disabilities Act (ADA) standards to facilitate accessability by people with disabilities and other access and functional needs. At these locations, the boardwalk was reconstructed, and repairs were made to existing facilities that were damaged including masonry walls, structure, windows and doors to make the buildings stronger and raise all mechanical, electrical and plumbing systems above the new flood elevations. All occupied space will also be moved to be above the 100 year flood plain. Work in this contract began in the spring of 2013 and was substantially complete by Memorial Day 2013 for the start of the new beach going season.

DPR will repair and re-use as many existing buildings as possible. DPR will repair damaged masonry walls, structure, windows and doors to make the buildings stronger and raise all mechanical, electrical and plumbing systems above the new flood elevations. All occupied space will also be moved to be above the 100 year flood plain.

Where new structures are needed, they will be pre-fabricated, linear structures that utilize natural light and ventilation. These structures will be sited perpendicular to the ocean, in the footprint of demolished buildings where possible, as far from the CEHA line and Tidal Wetland buffers as feasible, and will be installed on piles above the 500 year storm flood elevation. Solar panels were installed to off-set energy use. All new structures will be more resilient and able to withstand storm and tidal forces that may impact the coastline in future years.

All site work will incorporate sustainable materials such as salvaged wood, recycled plastic lumber, high-albedo and porous pavement where feasible. New sections of boardwalk for access at the islands will have concrete ramps for resiliency and ADA accessibility.

CDBG-DR funds are anticipated to fund the planning, design, and construction services for the Beach Open-Up contracts which were completed prior to August 13, 2013. As of December 2012, the design for the Beach Open-Up contracts was underway with construction starting March 1st 2013.

The City estimates construction costs for these two contracts to total approximately $203 million. FEMA Project Worksheets (PWs) are under development and current estimates of FEMA eligible activities total $93 million with an estimated HUD match of $9.3 million. During the development of the FEMA PWs, an estimated $110 million of potentially FEMA ineligible improvements to the original structure have been identified. If all of these costs are determined eligible under HUD Regulations the total amount of HUD CDBG-DR funds to be applied to these two projects will be approximately $119 million. The development of the FEMA PWs is expected to be completed by December 2015. Upon completion of the PWs the City will evaluate the activities to ensure eligibility and avoid duplication of benefits and determine the final amount eligible for HUD CDBG-DR reimbursement.

ELIGIBLE ACTIVITY: Rehabilitation/Reconstruction of Public Facilities

NATIONAL OBJECTIVE: Low- and Moderate-Income Area, based on a citywide low/mod population; Urgent Need

2. Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis, and the Rebuild by Design Collaborative Risk Analysis

The City of New York identified damage to approximately 536 park sites, in addition to the displacement of more than 3 million cubic yards of sand from the City's beaches. DPR properties in the Rockaways, Coney Island, and the eastern shore of Staten Island suffered the most severe impacts from Hurricane Sandy. In Rockaway Beach, Queens, 37 blocks or nearly 3 miles of boardwalk experienced severe damage. On Staten Island, more than 60 derelict boats washed up on DPR properties and required removal. In Coney Island, Steeplechase Pier sustained considerable damage.

In December 2012, the Special Initiative for Rebuilding and Resiliency (SIRR) convened to address the creation of a more resilient New York City in the wake of Hurricane Sandy, with a long-term focus on preparing for and protecting against the impacts of climate change. A final report, released in June 2013, presents actionable recommendations both for rebuilding the communities impacted by Sandy and increasing the resilience of infrastructure and buildings citywide.

Beaches are an important recreational and economic resource for the City. They are also a critical part of the City's coastal defense network. Regular wave action and the natural sediment transport process (the ongoing movement of sand following the dominant wave direction) continue to erode beaches over time, however. Storms only accelerate this process.

Coastal protection is covered in Chapter 3 of *A Stronger, More Resilient, New York*. This section of the report includes a Risk Assessment and projected impacts of climate change. The analysis concludes that the greatest risk to the City of New York is storm surge. As mentioned in the report, to address the risk of storm flooding, the City will work to keep water from storm surge out of vulnerable neighborhoods and

away from critical infrastructure. To do this, the City will use flood protection structures, such as floodwalls, levees, and local storm surge barriers built, where possible, to the 100-year flood elevation with an additional allowance for future sea level rise. Generally, the City will seek measures that minimize damage if overtopped.

There are two initiatives identified within *A Stronger, More Resilient, New York* that relate to this project: Initiative 2 and Initiative 11. The focus of Initiative 2 is to continue to work with USACE to complete emergency beach nourishment on the Rockaway Peninsula. The scope of Initiative 11 is to continue to work with USACE to complete existing studies of the Rockaway Peninsula and implement coastal protection projects.

The Climate Analysis chapter in the report discusses current and future vulnerabilities to New York City and sets the framework for the rest of the report where initiatives to address those vulnerabilities are discussed. As described above, the City has incorporated sustainability measures in the design of the project and continues to coordinate with USACE and other stakeholders to increase resistance to future storms.

The Rebuild by Design competition was an initiative of the Hurricane Sandy Rebuilding Task Force and HUD. On June 2, 2014, HUD announced the six winning proposals and additional four finalists. New York City will use the Rebuild by Design risk analysis developed by the winners to help evaluate Covered Projects. The City is also basing its risk analysis on the *A Stronger, More Resilient New York* report. Public outreach was a priority during the process of developing the report. Elected officials, community leaders, and the general public were consulted and their input contributed to the recommendations outlined in the report.

3. Transparent and Inclusive Decision Processes

Due to the unprecedented aggressive timeline of the Beach Open-Up contracts, there was no time for community input or outreach during the six week design period. However, there was the standard public comment period for all NYS DEC permits and we included extensive public outreach throughout construction. With active construction happening 24 hours a day / 7 days a week, the Press Offices at City Hall, Parks and DDC worked together to keep the public abreast of what they could expect. Flyers were posted throughout the communities, email broadcasts were sent to the media and all community boards, groups and organizations and the Parks website was updated daily covering everything from the noise of pile driving to road closures for delivery of the modular buildings.

The City began coordinating with USACE immediately after Sandy on the beach replenishment design plans and process. USACE had planned to replenish the beach to 1994 authorization levels (a +10 elevation), but at the request and encouragement of the City, USACE increased the berm profile to a +14 elevation. Coordination between the City and USACE continued through the first phase of beach replenishment (complete in 2013) and a decision was made to increase the height of the berm to a+16 profile through a process known as betterment. USACE is anticipated to begin construction of this berm in early 2014.

USACE, which has broad authority over the waters of the United States, including responsibility for executing Federal flood protection projects, has been an important partner for New York City in the past. The importance of this partnership will only grow as the City seeks to implement the coastal protection projects.

In addition, the public will be informed of the City's proposal to fund the Covered Projects described in the Action Plan, through the outreach done during the Action Plan Amendment 8 public comment period. This outreach will include a public comment period on the substantial amendment, multiple public hearings at locations across New York City, and information posed on the City's CDBG-DR website. The City's Action Plan amendment process is further detailed in the Citizen Participation section of the Action Plan.

The public will continue to be informed of decisions regarding the selected Covered Projects through City Council hearings related to Hurricane Sandy recovery, public documents, and hearings related to the City's budget allocated for recovery efforts, and other transparency tools related to recovery efforts such as the City's NYC Sandy Funding Tracker. The Sandy Funding Tracker allows the public to track the City's use of Federal disaster recovery and resiliency funds. It also provides detailed information about projects and programs in each major category of disaster relief funds.

There has also been a transparent and inclusive process for the FEMA funding. Following a Presidential disaster declaration, the Federal Emergency Management Agency (FEMA) makes disaster assistance available to eligible applicants. One source of funding is the Public Assistance (PA) Program. Potential recipients of this assistance include State, Tribal, and local governments and certain types of private nonprofit organizations. PA funding is made available through an inclusive and transparent process that is open to representatives of the State as well as potential applicants for funding.

There are two ways that FEMA disseminates and makes available to the public and potential applicants information about the PA Program.

The first is through the use of a Joint Information System (JIS) initiated immediately after the disaster. The JIS provides the mechanism to organize, integrate and coordinate information to ensure timely, accurate, accessible and consistent messaging to multiple jurisdictions about the availability of and application deadlines for FEMA programs, including the PA Program. A JIS includes the plans, protocols, standard operating procedures, and structures used to provide public information. The JIS is supported by Federal, State, tribal, territorial, regional or local Public Information Officers and Joint Information Centers. As the disaster progresses FEMA, puts out press releases regarding funding for various projects.

A second way in which FEMA notifies potential applicants of the availability of PA funding is through a series of steps that all aim to educate and make information known about the PA Program. The steps are:

- Preliminary Damage Assessment (PDA): The PDA is a collaborative process in which FEMA, the State, and an applicant representative participate. The PDA is performed to document the impact and magnitude of the disaster on individuals, families, businesses, and public property and to gather information for disaster management purposes.

- Applicants' Briefing: An Applicants' Briefing is a meeting conducted by a representative of the State for potential Public Assistance applicants. The briefing occurs after an emergency or major disaster has been declared and addresses application procedures, administrative requirements, funding, and program eligibility criteria. FEMA will use the JIS to publish notices in newspapers about the dates, times and locations of Applicant Briefings. FEMA personnel participate in the briefing to clarify issues and respond to questions regarding eligibility, floodplain management, insurance requirements, environmental considerations, hazard mitigation, and Federal procurement standards.

- Kickoff Meeting: The Kickoff Meeting is conducted by designated FEMA staff members and designed to provide a much more detailed review of the PA Program and the applicant's needs. The meeting is the first step in establishing a partnership among FEMA, the State, and the applicant and is designed to focus on the specific needs of that applicant. The meeting focuses on the eligibility and documentation requirements that are most pertinent to an applicant.

- Project Formulation: Project formulation is done in cooperation between FEMA, the applicant and State representatives. It is an exchange of information to identify eligible scopes of work and to estimate the costs associated with that work for each of the applicant's projects.

4. Long-Term Efficacy and Fiscal Sustainability

DPR has a formal inspection program handled by the Operations and Management Planning division (OMP) which conducts detailed inspections of 16 features at every property parks maintains. The beach and boardwalk zones and any (lifeguard and) comfort stations therein are inspected a minimum of twice per year by the OMP inspectors, and a detailed report of conditions noted along with a photo report are generated from these inspections. Any hazardous condition that is identified would be emailed on the same day to the Chief of Operations and district Manager who would then assess the best means for repair. In addition to the formal OMP inspections district management staff are asked to make regular assessments of the structural condition and cleanliness of these properties, and all staff are instructed to report any unsafe condition immediately upon discovery. Again, these conditions would be remedied in the manner that the district supervision deemed most appropriate, either with skilled trades from the shops or maintenance workers or district staff depending on the particular issue.

A Needs Assessment with the prevalent data and justification for the project is in previous section(s) of this Action Plan. As a result, the purpose of this plan is to convey how DPR will monitor the planning, implementation, and achievement of key milestones in the delivery of the completed Covered Project. The plan will also include the evaluation methodology, which DPR will implement after the project is complete. The purpose of the evaluation methodology is to determine the Covered Project's efficacy level in addressing the community needs over a period of time. Components of the evaluation methodology may include the use of data to establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes.

The environmental conditions, such as a rise in the sea level, flooding, heat waves, and other climate changes, may impact this Covered Project. As reported in the *A Stronger More, Resilient New York* report and the PlaNYC's *A Greener, Greater New York* report, the City has been making a concerted effort to understand the effects that climate change will have on New York City. In 2008, the City convened the New York City Panel on Climate Change (NPCC). The NPCC is made up of a body of leading climate and social scientists charged with developing local climate projections. In September 2012, New York City formally codified the NPCC to institutionalize a process for updating local climate projections and identifying and implementing strategies to address climate risks. The NYC Office of Recovery and Resiliency (ORR) will work with NPCC and key stakeholders to develop additional climate change projections and to make these projections even more useful.

This plan to monitor and evaluate DPR's Covered Project may use the City's resiliency performance measures, described earlier in the IOCS section, and utilize best practices from similar projects, such as HUD's Sustainable Housing and Communities Initiatives and the New York-Connecticut Sustainable Communities Consortium, to develop and implement risk management tools to identify the long-term

impact of changing environmental conditions. In combination with the results from this evaluation of this project, data from the risk management tools will guide the City in strengthening its strategic plan to mitigate the impact of future storms and climate changes.

During implementation of the monitoring plan, the City will ensure that all the appropriate mitigation measures are put into place and meet government standards. The City will be vigilant in doing immediate assessments after future storms events. DPR will provide monitoring or assessment of the structures and equipment to see if they can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment.

The City CDBG-DR Partners will leverage the current funding partnerships and Covered Project results for fiscal sustainability. The goal is to increase investments from the government, non-profit, and private sectors for the project. These investments will be vital to the maintenance and necessary improvements after the CDBG-DR funds are exhausted for this project.

5. Environmentally Sustainable and Innovative Investment

This project will repair and re-use as many existing buildings as possible. DPR will repair damaged masonry walls, structure, windows and doors to make the buildings stronger and raise all mechanical, electrical and plumbing systems above the new flood elevations. All occupied space will also be moved to be above the 100 year flood plain.

Where new structures are needed, they will be pre-fabricated, linear structures that utilize natural light and ventilation. These structures will be sited perpendicular to the ocean, in the footprint of demolished buildings where possible, as far from the CEHA line and Tidal Wetland buffers as feasible, and will be installed on piles above the 500 year storm flood elevation. Solar panels were installed to off-set energy use. All new structures will be more resilient and able to withstand storm and tidal forces that may impact the coastline in future years.

All sitework will incorporate sustainable materials such as salvaged wood, recycled plastic lumber, high-albedo and porous pavement where feasible. New sections of boardwalk for access at the islands will have concrete ramps for resiliency and ADA accessibility.

The NPCC develops climate projections using global climate models. These models are mathematical representations of the Earth's climate system (e.g., the interactions between the ocean, atmosphere, land, and ice.) They use estimates of future greenhouse gas and pollutant concentrations to project changes in climate variables such as temperature and precipitation. The City has worked with the NPCC to develop a series of future flood maps for New York that will help guide the City's rebuilding and resiliency efforts.

The *A Stronger, More Resilient New York* report states in its section on Initiatives for Improving the Quality of Climate Analysis that, "OLTPS and the NPCC will work to identify a set of metrics that can help the City and others measure actual climate changes against predicted climate change in order to adjust policies and investment decisions in the future."

The City is also informed by the President's Climate Action Plan. The Action Plan identifies the need for identifying vulnerabilities of key sectors to climate change (page 14) and states the following: "In 2013, the Department of Agriculture and Department of the Interior released several studies outlining the challenges a changing climate poses for America's agricultural enterprise, forests, water supply, wildlife, and public

lands." The Action Plan also outlines actions for conserving land and water resources (page 15). The City of New York will look to the Federal government's efforts in planning for climate change.

Covered Project:

428 Public Assistance Alternative Procedures (PAAP) - New York Fire Department (FDNY) – Emergency Communication System and Fire House Conduit

1. Project Identification/Description

NYC has determined that FDNY's design and construction of the Emergency Communication System and Fire House Conduit is a Covered Project, per HUD's definition.

The City's CDBG-DR cost share for the FDNY Emergency Communication System Project is estimated at $16.4 million. The entire Project is made up of the Emergency Communication System rehabilitation comprising over 62 miles of damaged conduit (and lines) costing $153,483,938; Conduit at 17 Fire Facilities (Engine and Ladder Companies, EMS, and Marine Stations) totaling $4,646,399; and Direct Administrative Costs of $6,325,213; for a total project cost of $164,455,550. The CDBG-DR cost share for this project will be 10 percent of total project cost, with 90 percent covered by 428 PAAP funding. A letter of understanding between FEMA and the City was approved on April 2, 2015. This project is in initial phases and has not yet subtantially begun.

FDNY maintains an Emergency Communication System throughout the City. This system consists of links between fire houses and central dispatch facilities, and alarm boxes and central dispatch facilities via electrical lines, housed within conduit. The work proposed for this project will replace approximately 330,647 linear feet of Hurricane Sandy-damaged conduit (and the lines within) across all five boroughs. CDBG-DR funds are anticipated to partially fund the planning, design, and construction services for this project.

The Emergency Communication System performs a critical function for the FDNY. It affords the public a mechanism for notifying FDNY of a fire and, of critical importance, it provides a method of communication between the FDNY Central Offices and the individual Fire House Facilities to notify units of all 911 and alarm box calls for emergency assistance. The funding sought here will allow for the repair and replacement of the damaged portion of this critical network.

Hurricane Sandy also damaged 22,664 linear feet of conduit at 17 FDNY Fire Houses – housing engine and ladder companies, EMS, and Marine stations. The funding sought will assist FDNY in recovery in order to carry on their mission critical work of providing rescue, fire suppression, and medical emergency support to the community.

ELIGIBLE ACTIVITY: Rehabilitation/Reconstruction of Public Facilities.

NATIONAL OBJECTIVE: Urgent Need; Low- and Moderate-Income Area, once a determination has been made regarding service area.

The Hurricane Sandy Rebuilding Strategy (August 2013) issued recommendations, among which were:

Ensuring a Regionally Coordinated, Resilient Approach to Infrastructure Investment (page 49)

The planned rehabilitation of the conduit – both citywide and at the 17 Fire Houses – will provide a structure that is more resilient and able to withstand the effects of storm and tidal forces that may impact the coastline in future years.

In addition, *the Strategy* encourages: *Promoting Resilient Rebuilding Through Innovative Ideas and a Thorough Understanding of Current and Future Risk* (page 41)

The City is continually looking for innovative ideas to assure the long-term survival and resiliency of its Communication System and Fire House conduit.

2. Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis, and the Rebuild by Design Collaborative Risk Analysis

Hurricane Sandy had a massive impact on New York City's infrastructure and the surrounding region, with the greatest impact felt on those elements located underground and close to the shoreline. The storm caused extensive damage and impaired the ability of the Emergency Communication System.

The City of New York identified damage to approximately 615 Alarm Boxes and over 62 miles of conduit and the critically important Emergency Communication System cable lines within. Ongoing temporary repairs have proven to be inadequate and costly with a significant need for internal resources to keep the system operational. A permanent solution is necessary to maintain this as a functioning available and accessible system. The planned project will result in meeting long term needs, rather than patching it with short term fixes.

In December 2012, the Special Initiative for Rebuilding and Resiliency (SIRR) convened to address the creation of a more resilient New York City in the wake of Hurricane Sandy, with a long-term focus on preparing for and protecting against the impacts of climate change. A final report, released in June 2013, presents actionable recommendations both for rebuilding the communities impacted by Sandy and increasing the resilience of infrastructure and buildings citywide. The resiliency report specifically addresses the five communities hardest hit by Sandy, including: Brooklyn-Queens Waterfront, East and South Shores of Staten Island, South Queens, Southern Brooklyn, and Southern Manhattan.

A Stronger, More Resilient New York includes a chapter on Telecommunications, which provides descriptions of what happened during Sandy to underground cable and conduit. It also includes a risk assessment of climate change on utilities and telecommunications assets from sea level rises to storm surges, high winds and heat waves and initiatives to protect our assets for continual operation, prepare our infrastructure for extreme weather events and increase flexibility and redundancy.

As noted in *A Stronger, More Resilient New York*, "During Sandy, telecommunications outages followed the pattern of utility power outages and flooding. […] However, flood damage at critical facilities, in individual buildings, and to cable infrastructure led to longer-term outages" (page 166).

One of the Telecommunications initiatives in *A Stronger, More Resilient New York* is "Initiative 7: Study options to increase conduit infrastructure redundancy and resiliency" (page 172). Specifically, the City seeks "expanded spare conduit capacity and new approaches to laying cable" (ibid.).

See the Needs Assessment section for more unmet needs assessment detail.

The Rebuild by Design competition was an initiative of the Hurricane Sandy Rebuilding Task Force and HUD. On June 2, 2014, HUD announced the six winning proposals and additional four finalists. New York City will use the Rebuild by Design risk analysis developed by the winners to help evaluate Covered Projects. The City is also basing its risk analysis on the *Stronger, More Resilient New York* report. Public outreach was a priority during the process of developing the report. Elected officials, community leaders, and the general public were consulted and their input contributed to the recommendations outlined in the report.

3. Transparent and Inclusive Decision Processes

The City will engage in discussions with the community and receive input throughout the project outreach process. Interested parties and project stakeholders will be invited to attend community listening sessions to discuss the needs of the community and engage in discussions on the project including planning and process.

In addition, the public will be informed of the City's proposal to fund the Covered Projects described in the Action Plan, through the outreach done during the Action Plan Amendment 8 public comment period. This outreach will include a public comment period on the substantial amendment, multiple public hearings at locations across New York City, and information posted on the City's CDBG-DR website. The City's Action Plan amendment process is further detailed in the Citizen Participation section of the Action Plan.

The public will continue to be informed of decisions regarding the selected Covered Projects through City Council hearings related to Hurricane Sandy recovery, public documents, and hearings related to the City's budget allocated for recovery efforts, and other transparency tools related to recovery efforts such as the City's NYC Sandy Funding Tracker. The Sandy Funding Tracker allows the public to track the City's use of Federal disaster recovery and resiliency funds. It also provides detailed information about projects and programs in each major category of disaster relief funds.

There has also been a transparent and inclusive process for the FEMA funding. Following a Presidential disaster declaration, the Federal Emergency Management Agency (FEMA) makes disaster assistance available to eligible applicants. One source of funding is the Public Assistance (PA) Program. Potential recipients of this assistance include State, Tribal, and local governments, and certain types of private nonprofit organizations. PA funding is made available through an inclusive and transparent process that is open to representatives of the State as well as potential applicants for funding.

There are two ways that FEMA disseminates and makes available to the public and potential applicants information about the PA Program:

The first is through the use of a Joint Information System (JIS) initiated immediately after the disaster. The JIS provides the mechanism to organize, integrate and coordinate information to ensure timely, accurate, accessible and consistent messaging to multiple jurisdictions about the availability of and application deadlines for FEMA programs, including the PA Program. A JIS includes the plans, protocols, standard operating procedures, and structures used to provide public information. The JIS is supported by Federal, State, tribal, territorial, regional or local Public Information Officers and Joint Information Centers. As the disaster progresses, FEMA puts out press releases regarding funding for various projects.

A second way in which FEMA notifies potential applicants of the availability of PA funding is through a series of steps that all aim to educate and make information known about the PA Program. The steps are:

- Preliminary Damage Assessment (PDA): The PDA is a collaborative process in which FEMA, the State, and an applicant representative participate. The PDA is performed to document the impact and magnitude of the disaster on individuals, families, businesses, and public property and to gather information for disaster management purposes.

- Applicants' Briefing: An Applicants' Briefing is a meeting conducted by a representative of the State for potential Public Assistance applicants. The briefing occurs after an emergency or major disaster has been declared and addresses application procedures, administrative requirements, funding, and program eligibility criteria. FEMA will use the JIS to publish notices in newspapers about the dates, times and locations of Applicant Briefings. FEMA personnel participate in the briefing to clarify issues and respond to questions regarding eligibility, floodplain management, insurance requirements, environmental considerations, hazard mitigation, and Federal procurement standards.

- Kickoff Meeting: The Kickoff Meeting is conducted by designated FEMA staff members and designed to provide a much more detailed review of the PA Program and the applicant's needs. The meeting is the first step in establishing a partnership among FEMA, the State, and the applicant and is designed to focus on the specific needs of that applicant. The meeting focuses on the eligibility and documentation requirements that are most pertinent to an applicant.

- Project Formulation: Project formulation is done in cooperation between FEMA, the applicant and State representatives. It is an exchange of information to identify eligible scopes of work and to estimate the costs associated with that work for each of the applicant's projects.

4. <u>Long-Term Efficacy and Fiscal Sustainability</u>

OMB and FDNY will collaborate in the development of a plan to monitor and evaluate the Emergency Communication System and Fire House Conduit project. Central Dispatch Office technology enables the FDNY to monitor system outages and provides FDNY Communication teams with the wherewithal to identify and thereafter inspect the Emergency Communication System, and address any issues. Efficacy and sustainability will be considered in the design of this project. This project will be replacing damaged conduit and will consider innovative options to account for possible future seawater inundation.

OMB and FDNY will include sustainable and resilient design elements as a major focus in this project. They will seek to provide an Emergency Communication System and Fire House conduit able to be effective for the long term, while maintaining fiscal responsibility.

A Needs Assessment with the prevalent data and justification for the project is in previous section(s) of this Action Plan. As a result, the purpose of this plan is to convey how FDNY will monitor the planning, implementation, and achievement of key milestones in the delivery of the completed Covered Project. The plan will also include the evaluation methodology, which FDNY will implement after the project is complete. The purpose of the evaluation methodology is to determine the Covered Project's efficacy level in addressing the community needs over a period of time. Components of the evaluation methodology may include the use of data to establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes.

The environmental conditions, such as a rise in the sea level, flooding, heat waves, and other climate changes, may impact this Covered Project. As reported in *A Stronger, More Resilient New York* and the

PlaNYC's *A Greener, Greater New York* report, the City has been making a concerted effort to understand the effects that climate change will have on New York City. In 2008, the New York City Panel on Climate Change (NPCC) was convened. The NPCC is made up of a body of leading climate and social scientists charged with developing local climate projections. In September 2012, New York City formally codified the NPCC to institutionalize a process for updating local climate projections and identifying and implementing strategies to address climate risks. The Office of Recovery and Resiliency will continue to work with NPCC and key stakeholders to develop additional climate change projections and make these projections even more useful.

This plan to monitor and evaluate FDNY's Covered Project may use the City's resiliency performance measures, and utilize best practices from similar projects, such as HUD's Sustainable Housing and Communities Initiatives and the New York-Connecticut Sustainable Communities Consortium, to develop and implement risk management tools to identify the long-term impact of changing environmental conditions. In combination with the results from this evaluation of this project, data from the risk management tools will guide the City in strengthening its strategic plan to mitigate the impact of future storms and climate changes.

During implementation of the monitoring plan, the City will ensure that all the appropriate mitigation measures are put into place and meet government standards. The City will be vigilant in doing immediate assessments after future storms events. FDNY will provide monitoring or assessment of the system and equipment to see if they can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment.

The City CDBG-DR partners will leverage the current funding partnerships and Covered Project results for fiscal sustainability. The goal is to increase investments from the government, non-profit, and private sectors for the project. These investments will be vital to the maintenance and necessary improvements after the CDBG-DR funds are exhausted for this project.

5. Environmentally Sustainable and Innovative Investment

The NPCC develops climate projections using global climate models. These models are mathematical representations of the Earth's climate system (e.g. the interactions between the ocean, atmosphere, land, and ice). They use estimates of future greenhouse gas and pollutant concentrations to project changes in climate variables such as temperature and precipitation. The City has worked with the NPCC to develop a series of future flood maps for New York that will help guide the City's rebuilding and resiliency efforts.

A Stronger, More Resilient New York states in its section on Initiatives for Improving the Quality of Climate Analysis that, "NPCC will work to identify a set of metrics that can help the City and others measure actual climate changes against predicted climate change in order to adjust policies and investment decisions in the future." *A Stronger, More Resilient New York*'s goal is to minimize the impacts of climate change and enable quick recovery after extreme weather events. The report identifies initiatives that will make the coastline more resilient.

The City is also informed by the *President's Climate Action Plan*. The Action Plan identifies the need for identifying vulnerabilities of key sectors to climate change (page 14) and states the following: "In 2013, the Department of Agriculture and Department of the Interior released several studies outlining the challenges a changing climate poses for America's agricultural enterprise, forests, water supply, wildlife, and public

lands." The Action Plan also outlines actions for conserving land and water resources (page 15). The City of New York will look to the Federal government's efforts in planning for climate change.

The City and FDNY is considering – and seeks to implement – innovative approaches to their rehabilitation of the Emergency Communication System and Fire House Conduit. A chief goal will be to imbed sustainability as a bulwark of their final plans.

Covered Project:

428 Public Assistance Alternative Procedures (PAAP) - Department of Environmental Protection (DEP) – Replacement of Electrical Conduit and Fittings PAAP

1. Project Identification/Description

The NYC Department of Environmental Protection (DEP) manages the city's water supply, providing more than one billion gallons of water each day to more than nine million residents, including eight million in New York City. The water is delivered from a watershed that extends more than 125 miles from the City, comprising 19 reservoirs and three controlled lakes. Approximately 7,000 miles of water mains, tunnels, and aqueducts bring water to homes and businesses throughout the five boroughs, and 7,500 miles of sewer lines and 96 pump stations take wastewater to 14 in-city treatment plants. DEP has nearly 6,000 employees, including almost 1,000 in the upstate watershed. In addition, DEP has a robust capital program, with a planned $14 billion in investments over the next 10 years that will create up to 3,000 construction-related jobs per year. This capital program is responsible for critical projects like City Water Tunnel No. 3; the Staten Island Bluebelt program, an ecologically sound and cost-effective stormwater management system; the City's Watershed Protection Program, which protects sensitive lands upstate near the City's reservoirs in order to maintain their high water quality; and the installation of more than 820,000 Automated Meter Reading devices, which will allow customers to track their daily water use, more easily manage their accounts, and be alerted to potential leaks on their properties.

NYC has determined that DEP's design and construction of the demolition and replacement of electrical conduit and fittings at 15 critical DEP facilities impacted by Hurricane Sandy is a Covered Project, per HUD's definition. The project details outlined in this section apply to the work at all 15 facilities.

The proposed 15 facilities are:

1. 26th Ward WWTP
2. Manhattan Pump Station
3. Red Hook WWTP
4. Port Richmond WWTP
5. Rockaway WWTP
6. Tallman Island WWTP
7. Hunts Point WWTP
8. Bowery Bay WWTP
9. Wards Island WWTP
10. Spring Creek CSO
11. Owl's Head WWTP

12. Oakwood Beach WWTP
13. DEP Landfills
14. North River WWTP
15. Coney Island WWTP

During Sandy, 10 of DEP's wastewater treatment plants were damaged or lost power, and released untreated or partially treated wastewater into local waterways. Most of the damage to wastewater facilities involved electrical systems and equipment, including substations, motors, control panels, junction boxes, and instrumentation. The work proposed for this project will complete the replacement of electrical conduit and fittings, which were either directly damaged through contact with saltwater flooding or are located in areas identified as inundated on maps mutually agreed upon byNew York City and the Federal Emergency Management Agency (FEMA). This planning, design, and construction will also feature maximum use of mitigation under 42 U.S.C. § 5172 (c) (1) to reduce future risks at these critical facilities.

Project costs for the electrical conduit replacement are estimated at $123,202,952, plus $4,928,118 in Direct Administrative Costs for the demolition, replacement, and mitigation of electrical conduit and fittings at the impacted critical facilities. The FEMA-approved estimate combines $46,159,246 in base costs for demolition, labor, and materials and $77,043,708 in "soft costs" such as those for general contractor, design, contingency, and insurance and permitting fees. FEMA will fund 90 percent of the total project costs at $115,317,963, with CDBG-DR funding the remaining 10 percent match at $12,813,107.

The project is intended to restore electrical conduit and fittings to pre-disaster condition at twelve (12) Wastewater Treatment Plants, one Combined Sewer Overflow (CSO) Facility, one DEP Landfill (comprising two locations), and one pump station. The project envisions replacement of conduit and fittings that were surface mounted, concealed under a slab, concrete, or soil, buried under asphalt, or conduit in concrete duct banks. The project also envisions the replacement of cast iron pull boxes at these locations. Currently, the project is intended to replace over 500,000 linear feet of conduit at the 15 eligible critical facilities. The project also includes funding for mitigation planning to increase the resiliency of the restored conduit and fittings. **ELIGIBLE ACTIVITY:** Rehabilitation/Reconstruction of Public Facilities

NATIONAL OBJECTIVE: Low- and Moderate-Income Area, based on a citywide low/mod population; Urgent Need

2. <u>Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis, and the Rebuild by Design Collaborative Risk Analysis</u>

Hurricane Sandy demonstrated that many of the City's wastewater treatment plants and pumping stations were susceptible to flood damage from storm surge. The City of New York identified storm-related damage at its 14 wastewater treatment plants and 42 of 96 pumping stations. Power outages were responsible for much of this damage, but a significant number of facilities, particularly those in coastal communities such as Staten Island, Brooklyn, and Queens, were inundated by the storm surge and flooding. The corrosive impact of saltwater on electrical equipment, such as conduit, was acknowledged by FEMA through its award of a PAAP grant for the demolition and replacement of electrical conduit and fittings at 15 impacted facilities.

Comprehensive Risk Analysis and Rebuild by Design Collaborative Risk Analysis

In December 2012, the Special Initiative for Rebuilding and Resiliency (SIRR) convened to address the creation of a more resilient New York City in the wake of Hurricane Sandy, with a long-term focus on preparing for and protecting against the impacts of climate change. A final report, released in June 2013, presents actionable recommendations both for rebuilding the communities impacted by Sandy and increasing the resilience of infrastructure and buildings citywide. The report specifically addresses the five communities hardest hit by Sandy, including: Brooklyn-Queens Waterfront, East and South Shores of Staten Island, South Queens, Southern Brooklyn, and Southern Manhattan.

As described in the *A Stronger, More Resilient New York* report, after Sandy, 10 of DEP's wastewater treatment plants were damaged or lost power, and released untreated or partially treated wastewater into local waterways. Three of these facilities were non-operational for some time as a result of the storm: Coney Island for two hours, North River for seven hours, and Rockaway for three days. The other facilities maintained at least partial treatment, including removal of pollutants and disinfection of effluent before water from these plants was discharged into waterways. Although, collectively, wastewater treatment plants operated at more than twice their normal flow rate at the height of the storm, approximately 560 million gallons of untreated sewage was released into local waterways, equivalent to approximately half a day's worth of normal wastewater treatment.

Most of the damage to wastewater facilities involved electrical systems and equipment, including substations, motors, control panels, junction boxes, and instrumentation. Sandy's floodwaters inundated the lower levels of facilities, where much of this equipment is located. Even where electrical systems were not damaged during Sandy, utility power outages forced many facilities to operate on emergency generators for up to two weeks.

The City's Water and Wastewater protection plans are covered in Chapter 12 of *A Stronger, More Resilient New York*. This section of the report includes a Risk Assessment and projected impacts of climate change. The analysis concludes that the greatest risk to the City of New York is storm surge. As mentioned in *A Stronger, More Resilient New York*, to address the risk of storm flooding, the City will work to keep water from storm surge out of vulnerable neighborhoods and away from critical infrastructure. To do this, the City will use flood protection structures, such as floodwalls, levees, and local storm surge barriers built, where possible, to the 100-year flood elevation with an additional allowance for future sea level rise. Generally, the City will seek measures that minimize damage if overtopped. Since a considerable portion of the damage to pumping stations and wastewater treatment plants was caused by power outages, measures are also being designed to elevate electrical equipment above projected flood levels and provide backup power sources.

There are three initiatives identified within *A Stronger, More Resilient New York* that relate to this project: Initiatives 1, 2, and 3. Initiative 1 focuses on design and construction criteria for all wastewater facilities based on FEMA maps, modified to reflect sea level rise projections to the 2050s. Initiatives 2 and 3 focus on retrofitting pump stations and wastewater treatment plants, respectively, for resiliency. These protective measures include flood-proofing or raising critical equipment, constructing barriers, installing backup power sources or providing systems redundancy to minimize failure of critical systems. All of these measures would serve to increase protection for electrical conduit and fittings.

In addition, in October of 2013, the *NYC Wastewater Resiliency Plan – Climate Risk Assessment and Adaptation Study* was released by DEP. This plan provides a comprehensive assessment of facilities at risk from future storms, the potential costs, and the suggested measures to protect the critical equipment and to reduce the risk of damage and loss of service. This study covers all facilities including those not affected by

Hurricane Sandy. The study determined the benefits of the resiliency measures and the level of acceptable costs based not only on the value of wastewater assets, but also the impact to the population and to the critical facilities in the service areas and on potential impacts to the beaches.

The Rebuild by Design competition was an initiative of the Hurricane Sandy Rebuilding Task Force and HUD. On June 2, 2014, HUD announced the six winning proposals and additional four finalists. New York City will use the Rebuild by Design risk analysis developed by the winners to help evaluate Covered Projects. The City is also basing its risk analysis on the *Stronger, More Resilient New York* report. Public outreach was a priority during the process of developing the report. Elected officials, community leaders, and the general public were consulted and their input contributed to the recommendations outlined in the report.

3. Transparent and Inclusive Decision Processes

This DEP project is funded through a special provision of the FEMA Public Assistance program, authorized under section 428 of the Stafford Act (42 U.S.C. § 5121 et seq.) and enacted through the Sandy Recovery Improvement Act of 2013 (P.L. 113-2). The provision authorizes FEMA to implement Public Assistance alternate procedures through a pilot program. For permanent work, such as DEP's replacement of electrical conduit at multiple facilities, these alternate procedures allow FEMA to make PA grants for permanent work projects on the basis of fixed estimates if legally responsible entities assume responsibility for actual costs of the project which exceed the estimate. Further, FEMA is authorized to consolidate multiple facilities into a single project based upon estimates adopted under the procedures.

CDBG-DR funds may be used for the local match after FEMA has approved and obligated funds for this project. The DEP project is still in review, but is expected to be obligated shortly.

There has been a transparent and inclusive process for the FEMA funding. Following a Presidential disaster declaration, FEMA makes disaster assistance available to eligible applicants. One source of funding is the PA Program. Potential recipients of this assistance include State, Tribal, and local governments and certain types of private nonprofit organizations. PA funding is made available through an inclusive and transparent process that is open to representatives of the State as well as potential applicants for funding.

There are two ways that FEMA disseminates and makes available to the public and potential applicants information about the PA Program:

The first is through the use of a Joint Information System (JIS) initiated immediately after the disaster. The JIS provides the mechanism to organize, integrate and coordinate information to ensure timely, accurate, accessible and consistent messaging to multiple jurisdictions about the availability of and application deadlines for FEMA programs, including the PA Program. A JIS includes the plans, protocols, standard operating procedures, and structures used to provide public information. The JIS is supported by Federal, State, tribal, territorial, regional or local Public Information Officers and Joint Information Centers. As the disaster progresses, FEMA puts out press releases regarding funding for various projects.

A second way in which FEMA notifies potential applicants of the availability of PA funding is through a series of steps that all aim to educate and make information known about the PA Program. The steps are:

- Preliminary Damage Assessment (PDA): The PDA is a collaborative process in which FEMA, the State, and an applicant representative participate. The PDA is performed to document the impact

and magnitude of the disaster on individuals, families, businesses, and public property and to gather information for disaster management purposes.

- Applicants Briefings: An Applicants Briefing is a meeting conducted by a representative of the State for potential Public Assistance applicants. The briefing occurs after an emergency or major disaster has been declared and addresses application procedures, administrative requirements, funding, and program eligibility criteria. FEMA will use the JIS to publish notices in newspapers about the dates, times and locations of Applicants Briefings. FEMA personnel participate in the briefing to clarify issues and respond to questions regarding eligibility, floodplain management, insurance requirements, environmental considerations, hazard mitigation, and Federal procurement standards.

- Kickoff Meeting: The Kickoff Meeting is conducted by designated FEMA staff members and designed to provide a much more detailed review of the PA Program and the applicant's needs. The meeting is the first step in establishing a partnership among FEMA, the State, and the applicant and is designed to focus on the specific needs of that applicant. The meeting focuses on the eligibility and documentation requirements that are most pertinent to an applicant.

- Project Formulation: Project formulation is done in cooperation between FEMA, the applicant and State representatives. It is an exchange of information to identify eligible scopes of work and to estimate the costs associated with that work for each of the applicant's projects.

In addition, the public will be informed of the City's proposal to fund the Covered Projects described in the Action Plan, through the outreach done during the Action Plan Amendment 8 public comment period. This outreach will include a public comment period on the substantial amendment, multiple public hearings at locations across New York City, and information posed on the City's CDBG-DR website. The City's Action Plan amendment process is further detailed in the Citizen Participation section of the Action Plan. The public will continue to be informed of decisions regarding the selected Covered Projects through City Council hearings related to Hurricane Sandy recovery, public documents, and hearings related to the City's budget allocated for recovery efforts, and other transparency tools related to recovery efforts such as the City's NYC Sandy Funding Tracker. The Sandy Funding Tracker allows the public to track the City's use of federal disaster recovery and resiliency funds. It also provides detailed information about projects and programs in each major category of disaster relief funds.

4. Long-Term Efficacy and Fiscal Sustainability

OMB and DEP collaborate in the development of a plan to monitor and evaluate the electrical conduit and fittings replacement Covered Project. The purpose of this plan is to convey how DEP will monitor the planning, implementation, and achievement of key milestones in the delivery of the completed Covered Project. The plan will also include the evaluation methodology, which DEP will implement after the projects are complete. The purpose of the evaluation methodology is to determine the Covered Project's efficacy level in addressing the community needs over a period of time. Components of the evaluation methodology may include the use of data to establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes. After the electrical conduit and fittings replaced with CDBG-DR funds are in place, the long-term funding for operations and maintenance of this infrastructure will be built into the operating and capital budgets of the agency as a standard asset. Funding will be provided by a share of proceeds from DEP rate payers.

Environmental conditions, such as a rise in the sea level, flooding, heat waves, and other climate changes, may impact this Covered Project. As reported in *A Stronger, More Resilient, New York*, the City has been making a concerted effort to understand the effects that climate change will have on New York. In 2008, the New York City Panel on Climate Change (NPCC) was convened. The Panel is made up of a body of leading climate and social scientists charged with developing local climate projections. In September 2012, New York City formally codified the NPCC to institutionalize a process for updating local climate projections and identifying and implementing strategies to address climate risks.

The plan to monitor and evaluate DEP's Covered Project may use the City's resiliency performance measures, described earlier in the IOCS section, and utilize best practices from similar projects, such as HUD's Sustainable Housing and Communities Initiatives and the New York-Connecticut Sustainable Communities Consortium, to develop and implement risk management tools to identify the long-term impact of changing environmental conditions. In combination with the results from this evaluation, data from the risk management tools will guide the City in strengthening its strategic plan to mitigate the impact of future storms and climate changes.

During implementation of the monitoring plan, the City will ensure that all the appropriate mitigation measures are put into place and meet government standards. The City will be vigilant in doing immediate assessments after future storms events. DEP will provide monitoring or assessment of the structures and equipment to see if these can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment.

DEP will take under consideration budgetary requirements for the long-term operational maintenance of this project.

5. <u>Environmentally Sustainable and Innovative Investment</u>

The NPCC develops climate projections using global climate models. These models are mathematical representations of the Earth's climate system (e.g., the interactions between the ocean, atmosphere, land, and ice). They use estimates of future greenhouse gas and pollutant concentrations to project changes in climate variables such as temperature and precipitation. The City has worked with the NPCC to develop a series of future flood maps for New York that will help guide the City's rebuilding and resiliency efforts.

The Mayor's Office will work with NPCC to identify a set of metrics that can help the City and others measure actual climate changes against predicted climate change in order to adjust policies and investment decisions in the future.

The Department's projects are in alignment with the President's Climate Action Plan under several categories of investments, specifically within the section entitled Boosting the Resilience of Buildings and Infrastructure (page 13). As outlined in the report, this project will integrate climate risk-management considerations and will make climate-resilient investments, where necessary. The treatment facilities and pumping station will be stronger and more resilient in preparation for future storms and floods.

DEP is a leader in the planning, design, and development of incorporating resilient features into the entire agency's Capital Projects and will look to the Federal government's efforts in planning for climate change.

The Department demonstrated our ability to bounce back following Hurricane Sandy for both the emergency response/repairs to long-term planning and implementation of resilient designs. We are

currently working with engineering consultants to identify innovative ways to design for our most vulnerable communities. We are examining resilient strategies and designs for incorporation into our capital projects including hardening treatment plants and pump stations.

In order to protect the Department's critical infrastructure it is crucial to examine sustainable and resilient elements that can be included in all of our projects to ensure our infrastructure can withstand the impacts of climate change.

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Public Facilities and/or Improvements (24 CFR 570.201(c));

NATIONAL OBJECTIVE (LMC), (LMA), (UN): Low- and Moderate-Income Limited Clientele; Low- and Moderate-Income Area; Urgent Need

CDBG-DR ALLOCATION: $319,000,000

PROJECTED ACCOMPLISHMENTS: 96 Public Facilities (14 beaches; 71 schools; and 11 hospitals/health clinics)

PROGRAM ADMINISTRATION: Health and Hospitals Corporation; Department of Education; School Construction Authority; Department of Parks and Recreation; City Council; Department of Citywide Administrative Services; Department of Correction; Department of Cultural Affairs; Department of Design and Construction; Department of Environmental Protection; Department of Health and Mental Hygiene; Department of Homeless Services; Department of Investigation; Department of Sanitation; Department of Transportation; Economic Development Corporation; Fire Department of New York; Housing and Preservation Development; Human Resources Administration; Mayor's Office; Office of the Chief Medical Examiner; Office of Emergency Management; New York City Housing Authority; Department of Buildings; Office of Long Term Planning & Sustainability; Office of Recovery and Resiliency; Housing Recovery Office; and the New York Police Department.

ELIGIBLE APPLICANTS/PROPERTIES: N/A

ELIGIBILITY CRITERIA: N/A

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: The public hospitals, schools, and facilities have been prioritized both for the speed with which funds can be expended as well as for their direct benefit to low- and moderate-income clientele.

GEOGRAPHIC AREA TO BE SERVED: Citywide; exact locations will be noted in the City's Quarterly Performance Reports.

PROGRAM START AND END DATES: October 31, 2012–May 31, 2017

OTHER FUNDING SOURCES: FEMA Public Assistance, FEMA HMGP, 428 Public Assistance Alternative Procedures (PAAP), USACE (some beach replenishment), Federal Transit Administration Emergency Relief, Federal Highway Administration Emergency Relief

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X. COASTAL RESILIENCY

Overview

Hurricane Sandy had a devastating impact on New York City. The storm took the lives of 44 individuals. It also damaged over 23,000 residential structures containing more than 69,000 housing units, forced 6,500 patients to be evacuated from hospitals and nursing homes, knocked out power to over 800,000 customers, compromised 23,400 businesses, and barred 1.1 million New York City children from attending school for a week.

Sandy's biggest impacts were the result of its massive storm surge and the flooding that the surge caused. A staggering 50.6 square miles of New York City flooded—17 percent of the City's total land mass—and in many areas the depth of floodwaters was unprecedented.

Different parts of the city experienced the storm differently, with different consequences. For example, the coastline in the southern half of the city felt the full force of the surge, with powerful waves inflicting horrific damage on buildings, infrastructure, and communities while also causing extensive flooding. Meanwhile, other coastal areas experienced flooding only, though the damage from that flooding was serious and long-lasting.

The different types of flooding, in turn, caused different types of building damage. And the structural characteristics of the buildings themselves—which vary widely across the five boroughs of New York City—also affected the level and type of damage the buildings sustained.

Sandy underscored New York City's long-standing vulnerabilities as a large, diverse city with 520 miles of coastline. The storm also revealed additional vulnerabilities that had previously been unrecognized. Based on recently released flood maps from the Federal Emergency Management Agency (FEMA) and climate projections from the New York City Panel on Climate Change (NPCC), these vulnerabilities are likely to grow over time.

According to FEMA's Preliminary Flood Insurance Rate Maps (FIRMs), which represent the Federal government's current assessment of New York City's flood risk, the 100-year floodplain—the area with a 1 percent or greater chance of flooding in any given year—has expanded compared to the floodplain on the 1983 maps that were in effect when Sandy hit, increasing by about 17 square miles or 51 percent. The Preliminary FIRMs can be viewed at http://www.region2coastal.com.

The new floodplain includes larger portions of all five boroughs with significant expansion in Brooklyn and Queens. Citywide, there are now 71,500 buildings in the floodplain (an increase of 99 percent over the 1983 FEMA FIRMs) encompassing over 532 million square feet of floor area (up 42 percent). The number of residential units in the floodplain has increased to 253,300 (a jump of over 54 percent), with the majority of those residences in Brooklyn, Manhattan, and Queens. Over 400,000 New Yorkers now live in the floodplain (up 83 percent).

The risks for New York City are even more serious going forward, taking climate projections from the NPCC into account. These projections indicate that sea levels around New York City, which have already risen by more than a foot over the last 100 years, could rise by more than 2.5 feet by mid-century. It is estimated that rising sea levels could expand the floodplain to 59 square miles by the 2020s (up 18 percent from the Preliminary FIRMs), encompassing 93,600 buildings (up 31 percent). By the 2050s, New York City's floodplain could be 72 square miles—nearly a quarter of the City, an area that today contains 118,100

buildings, along with 97 percent of the City's power generation capacity, 20 percent of hospital beds, and a large share of its public housing. Over 800,000 New Yorkers (or 10 percent of the City's current population) now live in the 100-year floodplain projected for the 2050s, assuming the high end of sea level rise projections.

Following Hurricane Sandy, the City convened the Second New York City Panel on Climate Change (NPCC2) in January 2013 to provide up-to-date scientific information and analysis on climate risks for the creation of *A Stronger, More Resilient New York*. The second convening of the NPCC examined flood risks due to climate change defined for the 100-and 500-year coastal flood event in the 2080s and 2100. The panel finds that sea level rise projections in New York City could reach 18 to 39 inches by the 2080s, and could reach as high as 6 feet by 2100.

NPCC2 also found that sea level rise alone will lead to an increased frequency and intensity of coastal flooding leading to (absent any change in storms themselves) between a doubling and approximately 15-fold increase in the frequency of current 100-year coastal flood by the 2080s.

Because of all these factors—the size and diversity of New York City and its coastline, the different ways Sandy affected different parts of the city, and the effects that climate change is expected to have—there is no one-size-fits-all solution to the vulnerabilities various parts of New York face today and will continue to face in the future. Instead, a range of varied and nuanced solutions are needed to help vulnerable areas continue to recover from the storm and better withstand climate events in the future. These solutions include measures to protect the city's coastline and its building stock. The City is seeking to address some of these unmet needs through this CDBG-DR funding allocation. The programs outlined in this Action Plan complement other efforts the City is undertaking and represents essential investments targeted at vulnerable areas of the city that were impacted by Sandy and that are likely to face further damage from future climate events.

New York City's Sustainability and Resiliency Planning Pre- and Post-Sandy

The programs identified in this Action Plan are the result of careful, thorough, well-documented research and analysis that began under Mayor Bloomberg and have continued under Mayor de Blasio. In 2007, Mayor Bloomberg launched PlaNYC, a comprehensive effort to make New York a more sustainable city, with activities coordinated by the newly created Mayor's Office of Long-Term Planning and Sustainability. Under *PlaNYC*, the City sought to understand its vulnerabilities as a coastal city as well as the effects that climate change were likely to have. For example, the City began working with FEMA to update its 1983 Federal flood maps so that New York would have a better sense of its risks from coastal storms. It convened the NPCC to make climate predictions for New York so the City would understand its climate risks going forward. In addition, prior to Sandy, the City had started making resiliency investments so that it would be better prepared for the increasing and more intense coastal storms expected as a result of climate change. For example, the City required a climate risk assessment for major developments in vulnerable areas. As a result, new buildings and infrastructure located in areas that flooded during Sandy survived with minimal damage.

However, because of the magnitude of the storm and the impact it had on so many neighborhoods, the City realized that it was important to redouble resiliency efforts begun under *PlaNYC*. Therefore, in December 2012, while recovery efforts continued, the Mayor Bloomberg launched a taskforce, referred to in previous Action Plan Amendments as the Special Initiative for Rebuilding and Resiliency. This group was tasked with writing a plan for Hurricane Sandy recovery and resiliency and analyzing what happened during Sandy to the city's coastline, buildings, infrastructure systems, and communities; forecasting what could happen in the future, given climate change; and identifying steps the City could take to make New York

more resilient. Comprised of over 30 experts from inside and outside government, the team built on the resiliency efforts begun under *PlaNYC*. The team also worked with the Department of City Planning, the New York City Economic Development Corporation (NYCEDC), and more than 30 other City, State, and Federal agencies; consulted outside experts; met repeatedly with the offices of more than 60 elected officials; engaged with over 250 civic, advocacy, and community-based organizations; and hosted 11 public meetings in impacted areas to solicit input on resiliency priorities.

The result of this analysis, planning, and outreach is a 438-page report entitled *A Stronger, More Resilient New York*, released on June 11, 2013. The report contains over 250 detailed initiatives addressing the vulnerabilities of the City's infrastructure, built environment, and coastal communities. Among the report's initiatives are the crucial programs included in this Action Plan to address important unmet needs that Sandy highlighted. The 2014 update can be reviewed at:
http://www.nyc.gov/html/planyc2030/downloads/pdf/140422_PlaNYCP-Report_FINAL_Web.pdf

Since the plan's release, the City has made progress on 240 initiatives (or 93 percent). Below is a summary of the programs and allocations in the New York City CDBG-DR Action Plan dedicated to resiliency. More details for each of these programs can be found in the relevant sections of the Action Plan.

($s in thousands)

Resiliency Investments	
Program Name	**CDBG-DR Allocations**
Housing Resiliency Investments	$ 1,310,000
Single Family Housing	$ 900,000
Multi-Family Housing	$ 102,000
NYCHA Resiliency	$ 308,000
Business Resiliency Investments	$ 75,000
Business PREP	$ 3,000
Resiliency Innovations for a Stronger Economy (RISE : NYC)	$ 30,000
Saw Mill Creek Marsh Restoration	$ 12,000
Coney Island Green Infrastructure	$ 15,000
Rockaways Commercial Corridor Resiliency	$ 15,000
Infrastructure and Other City Services	$ 512,500
Section 404 Match*	$ 62,500
FEMA PA & Section 406 Match (for Infrastructure Resilience Projects)**	$ 450,000
Coastal Resiliency Investments	$ 630,000
Coastal Protection (Revetments, Bulkheads, Red Hook)	$ 159,000
Residential Building Mitigation Program	$ 60,000
Rebuild by Design	
East Side Coastal Resiliency	$ 338,000
Hunts Point Resiliency	$ 45,000
Staten Island University Hospital	$ 28,000
Planning and Administration	$ 41,143
Resiliency Studies: Coney Island Creek, Newtown Creek, Flood Maps	$ 41,143
TOTAL	**$ 2,568,643**

Workforce Development

Workforce development is key to economic resiliency and integral to the City's response to the devastation caused during Hurricane Sandy. Over 20, 000 New York City jobs were lost in the month after the storm and many business sectors have been directly affected. Investments in resiliency measures are needed to reduce long-term unemployment resulting from Hurricane Sandy in vulnerable communities.

The first allocation of Federal National Emergency Grant (NEG) funds to assist with recovery provided resources to hire temporary workers to clean up communities impacted by the storm and was aimed at employing individuals who lost their jobs as a direct result of Sandy or those classified as long-term unemployed. Over the next decade, the City's commitment to public infrastructure and construction spending could create thousands of new construction jobs as well as many more permanent jobs from increased economic activity. Estimates suggest that each billion dollars in infrastructure spending generates between 4,000 and 18,000—mostly middle-class—jobs. Assuming roughly five [5] construction

projects every year on average—this translates to 7500 jobs per year at the peak of the City's resiliency program.

The City's workforce development goal is to leverage our resiliency programs to create multiple career pathways for our most vulnerable and disadvantaged residents by connecting employers, primarily in the construction and building trades, with a qualified pool of job seekers in low-income communities across the five boroughs. Please note that the City will enforce and monitor compliance with Davis-Bacon Labor Standards and Section 3 requirements wherever applicable.

Green Infrastructure

CDBG-DR Green Infrastructure Requirements

Per the November 18, 2013, Hurricane Sandy notice, green infrastructure is defined as "the integration of natural systems and processes, or engineered systems that mimic natural systems and processes, into investments in resilient infrastructure. Green infrastructure takes advantage of the services and natural defenses provided by land and water systems such as wetlands, natural areas, vegetation, sand dunes, and forests, while contributing to the health and quality of life of those in recovering communities."

The City's Action Plan is required to "describe the process for the selection and designed of green infrastructure projects or activities, and/or how selected projects or activities will incorporate green infrastructure components.

Overview of NYC Green Infrastructure

The City's methodology for coastal green infrastructure is detailed in *A Stronger, More Resilient New York* which identified the most vulnerable coastal areas and then proposed structural, non-structural, natural and nature-based measures tailored to specific site conditions and social characteristics of the specific area. The City's approach to stormwater green infrastructure is described in the NYC Green Infrastructure Plan available online at: http://www.nyc.gov/html/dep/html/stormwater/nyc_green_infrastructure_plan.shtml

Green components, or what the City refers to as Natural and Nature-Based Features includes living shorelines, vegetated features, tidal marsh, maritime forest, wetlands, and reefs. The New York City Department of Environmental Protection (DEP) defines green infrastructure as any infrastructure investment that absorbs rainfall. Stormwater green infrastructure includes bluebelts (constructed wetlands), right-of-way bioswales (planted areas in the sidewalk that are designed to collect and manage stormwater), stormwater greenstreets (like right-of-way bioswales, but typically larger and constructed in the roadway rather than the sidewalk), green roofs, blue roofs (designed without vegetation for the primary purpose of detaining stormwater), rain gardens, permeable paving, subsurface detention systems, cisterns, and rain barrels.

Ongoing projects

In September 2010, the Department of Environmental Protection (DEP) launched the NYC Green Infrastructure Plan, a comprehensive 20-year effort to meet water quality standards, and in March 2012, the plan was incorporated into a consent order with the State that will eliminate or defer $3.4 billion in traditional investments and result in approximately 1.5 billion gallons of combined sewer overflow (CSO) reductions annually by 2030. DEP's Bluebelt program complements its Green Infrastructure program. Bluebelts are natural areas that often enhance existing drainage corridors (such as streams, ponds, and

other wetland areas) and convey, treat, and retain stormwater in place of traditional "grey" infrastructure. Bluebelts engineer these natural elements to slow the flow of water and use vegetation and other elements to absorb and filter impurities. DEP's Bluebelt program started in Staten Island (with almost 10,000 acres now in place) and is now expanding in Staten Island and into other parts of the City, including Southeast Queens.

The Department of Parks and Recreation (DPR) focuses on active stormwater capture and how best to use soil beds and other natural features to divert water. By using specially designed soils and plants in these areas, Greenstreets projects absorb runoff from an area 10 or more times their size. Greenstreets are city streets that are transformed into green landscapes. Greenstreets were first constructed in 1996 as a joint project between DPR and the New York City Department of Transportation (DOT). Greenstreets have been built throughout the five boroughs in unused road areas, traffic islands, and industrial areas and provide benefits that include beautifying communities, improving air quality, reducing air temperatures, and enhancing safety by shortening street-crossing distances and slowing traffic.

DEP and DRP partnered to create new stormwater Greenstreet designs. These enhance cost-effective rainwater capture practices in priority areas of the City. This work prevents runoff from entering the City's combined sewer system, which, in turn, lessens the frequency of CSOs.

The City may also experience shifts in the frequency and volume of CSOs as climate change brings more rainfall to the City. The City will continue to implement its Green Infrastructure Plan and CSO Long-Term Control Plans (LTCPs) to reduce such CSOs. For this purpose, DEP, working with the Department of Parks & Recreation (DPR) and Department of Transportation (DOT), will continue to pursue its plan to capture the first inch of runoff in 10 percent of impervious surfaces citywide in areas within the combined sewer system by 2030. At the same time, DEP also will continue to develop LTCPs to evaluate long-term solutions to reduce CSOs and improve water quality in New York City's waterways.

According to the NYC Green Infrastructure Plan, DEP modeling showed that the Green Strategy would reduce more CSO volumes at significantly less cost to New Yorkers than the all-Grey Strategy that was previously contemplated under the CSO Order and Facility Plans submitted to the NYS Department of Environmental Conservation. The Green Infrastructure Plan builds on DEP's Cost-Effective Grey Infrastructure with investments that will provide both water quality and other public sustainability benefits. The green infrastructure component – capturing 10 percent of the impervious area of combined sewer watersheds – was projected to cost approximately $1.5 billion in public funds compared to $3.9 billion in public funds for additional grey investments. According to the Plan, the overall cost of the Green Infrastructure Plan was projected at approximately $5.3 billion, $1.5 billion less than the $6.8 billion required for the Grey Strategy.

Other significant activities that incorporate green components include:

- Prioritizing beach nourishment as part of a strategy to increase coastal edge elevations. A regular program of beach nourishment is critical to ensuring that City beaches continue to serve their vital coastal protection role. The City would like to pursue beach nourishment along Rockaway Peninsula, Coney Island peninsula, East Shore and South Shore of Staten Island, and Orchard Beach in the Bronx.
- Using dunes to help break waves and keep floodwaters from inundating neighborhoods. Dunes work well when planted and reinforced. In some locations, they work even better when there is enough land to allow for both primary and secondary dunes, which also provide redundant coastal protection. The City is pursuing dunes along Rockaway Peninsula and Coney Island Peninsula.

- Pursuing wetlands, reefs, and living shorelines. These natural features are known to offer significant ecosystem and water quality benefits, and also to aid in the retention of stormwater, sediment, nitrogen, and other nutrients. The City is pursuing these measures along Jamaica Bay; Tottenville in Staten Island; Bay Ridge Flats; along the Arthur Kill and Kill van Kull; and along the Long Island sound.
- Incorporating an array of practices that use or mimic natural systems to manage urban stormwater runoff. Stormwater green infrastructure controls runoff by either directing it to engineered systems for infiltration or detaining it at a slower rate before it enters the sewer system. The City is pursuing these measures in priority areas that drain to specific combined sewer overflow (CSO) outfalls along the Gowanus Canal, Newtown Creek, Jamaica Bay, Flushing Bay, and the Bronx River, and in areas where open space and wetlands can be used to facilitate drainage, particularly in Staten Island.
- Adapting parks and expanding green infrastructure to shield adjacent communities from the impacts of extreme weather events. This includes increasing the capacity of its parks to absorb floodwaters (from storm surge and heavy precipitation) and to absorb the driving impact of surge-related wave action. The City also will seek to expand its green infrastructure citywide.

A lack of high-quality performance data could hamper the City's ability to make smart decisions about its green infrastructure. Subject to available funding, the City, through DPR and DEP, will commission studies on the impact of the City's green infrastructure and natural areas, seeking to quantify the program's impacts on air pollution, stormwater capture and flood control, the urban heat island effect, public health, and biodiversity. The City will adapt and employ tools developed by the US Forest Service for these studies, and will use the information to prioritize future projects. DEP is currently monitoring these projects and DRP will begin this year.

Green Infrastructure Cost-Benefit Analysis

The City's cost-benefit analysis is rooted in two approaches. The coastal Nature and Natural-Based Features approach is detailed in the City's report *A Stronger, More Resilient New York* and the non-coastal green infrastructure approach is detailed in the "*NYC Green Infrastructure Plan.*"

The City believes that the right approach to coastal protection is an integrated system of discrete coastal projects that together would constitute the elements of a multilayered approach also involving resiliency measures for buildings and protections for critical infrastructure. The cost and benefit analysis of green infrastructure is built into each facet of the City's approach.

The first facet of the City's approach is select a diverse set of measures to increase exposure to different technologies. Second, the City's proposed approach also has the advantage of being scalable to available resources, rather than requiring all resources to be secured before anything moves forward. Finally, certain elements of the City's plan can begin almost immediately, making New Yorkers safer today, rather than waiting years or perhaps even decades for a solution that may never be completed.

This breadth of calculations the City considers when selecting infrastructure measures reflect the fact that different coastal areas in the city face different risks and therefore require protection that is specifically tailored to their needs. Some of the proposed measures mimic existing coastal features that performed well during Sandy. Others have been proven to be successful elsewhere. Where possible, the City has derived inspiration from the historic natural features that once protected the coastline throughout the city. Elsewhere, both traditional and newly developed technologies have been considered.

Coastal protection measures first will be designed to match the risks facing a given area. For example, in areas where land is very low-lying and exposed to daily fluctuations in tide levels, the City will seek to increase edge elevations with bulkheads, revetments, and beach nourishment. Where wave action is expected, wave attenuation measures—such as dunes offshore breakwaters, wetlands or oyster reefs, and groins—likely will be more suitable.

Measures also will consider the geomorphology and land use of neighborhoods. For ocean facing beaches, beach nourishment and dune construction are viewed as most appropriate, because these areas already feature natural sand movement, sandy soils, and supporting topography. Along the protected coves of the Upper East River and within Jamaica Bay, strengthened or new wetlands and other measures that break waves are likely to be effective. Finally, in areas where small inlets and other passages have served or could serve as "backdoors" for flooding of large inland areas, measures that address these passages, such as local stormsurge barriers, are proposed.

In evaluating each risk-reduction measure, and groupings of measures, the City employed sophisticated storm surge modeling to explore the performance of coastal protection measures. The City used these digital hydrodynamic models to test the effectiveness of each measure in reducing wave heights and storm surge levels in Sandy-like storms, as well as in scenarios of future 100-year and 500-year storms assuming the sea level rise projections from NPCC. This analysis informed the location and configuration of each measure, including heights of proposed floodwalls and dunes.

After modeling the effectiveness of different coastal protection options, the next step in the City's analysis was an evaluation of the cost- effectiveness of the approach. Both upfront construction costs and long-term maintenance costs were estimated to calculate total lifecycle expenses. Benefits were then quantified based on each measure's ability to reduce risk, decrease damage, and increase resiliency, based on commonly accepted insurance industry models and predictions. When evaluated at specific locations, cost-benefit ratios were developed and used for comparison with other measures.

Finally, the City also evaluated measures in light of other important public considerations. These included waterfront access, navigation impacts, recreational benefits, environmental impact, contribution to ecosystem restoration, social and environmental justice, and impact on neighborhood character and quality of life for residents and businesses.

Resiliency Performance Standards

Per the November 18th, 2013 Federal Register Notice, required infrastructure projects in Coastal Resiliency will follow the Resilience Performance Standards outlined in the IOCS section of the Action Plan.

Needs Assessment

The Impact of Coastal Flooding

To understand the unmet needs that this Action Plan seeks to address, it is important to understand what happened during Sandy. According to the analysis presented in *A Stronger, More Resilient New York*, the storm surge and flooding that affected different parts of the City generally occurred in three ways.

- First, floodwaters came directly from the ocean, with water surging over beaches and bulkheads.

Crashing waves brought destruction to ocean-facing areas of southern Brooklyn, the southernmost part of Queens, and the East and South Shores of Staten Island.

- Second, Sandy's floodwaters also came via a less direct channel: The storm surge from the ocean pushed into many bays, creeks, and inlets, and these "backdoor" channels overflowed onto land. For example, most of the floodwaters in Southern Brooklyn came not over the Atlantic beaches but instead via Coney Island Creek and Sheepshead Bay. Likewise while ocean waves crashed into the Rockaway Peninsula from the south, the surge also elevated water levels in Jamaica Bay, which flooded the Peninsula from the north side.

- Finally, a third source of flooding along the coast was the City's extensive array of shoreline drainage infrastructure. Although this piping network normally drains water from land and into the area's waterways, Sandy's surge overwhelmed this infrastructure, reversing water direction in these pipes, and channeling floodwaters into neighborhoods. (While the initiatives discussed herein do not address this third source of flooding, projects to strengthen shoreline drainage infrastructure and protect commercial corridors are outlined in the Business chapter. In addition, *Chapter 12: Water and Wastewater* in *A Stronger, More Resilient New York* provides further details of the City's plans.)

Though Sandy's surge generally devastated all areas that it touched, some coastal measures provided protection against waves and flooding. For example, dunes (reinforced sand mounds, usually found at the back end of a beach) and nourished beaches (where large mounds of sand had been added to widen and elevate beaches) served to absorb the destructive energy of waves and floodwaters, in many cases buffering inland neighborhoods. Along other waterways, armor stone revetments—massive rocks, also known as rip-rap—hardened vulnerable shorelines and thus protected adjacent areas. Elsewhere, bulkheads—vertical retaining walls—were able to break waves and reduce the destructive energy of the storm surge. Elevated development sites, too, helped raise buildings and infrastructure up out of harm's way. Finally, drainage systems that implemented best practices guarded against spillover from the pipes.

Because these coastal protection measures were effective during Sandy, they were among the options that *A Stronger, More Resilient New York* considered during its analysis of measures that might be implemented in New York City to protect vulnerable areas from damage in the future.

Unmet Coastal Protection Need

The need for the coastal protection measures outlined in this Action Plan was demonstrated by the damage caused to specific coastal communities and to critical healthcare facilities. According to Federal flood maps and climate projections, these areas and facilities will be at increasing risk from future climate events if protective measures are not taken. Therefore, it is essential to invest in neighborhoods that have been damaged by Sandy before severe flooding happens again.

South Shore of Staten Island

The South Shore is separated from the ocean in places by red clay bluffs, and even before Hurricane Sandy, ocean waves had eroded these bluffs over time, threatening homes and businesses in some locations. During the storm, powerful wind-driven waves running almost parallel to the coast carved away at the area's bluffs, completely shattering houses near the shoreline and in some cases leaving behind only their foundations.

Coney Island Creek in Southern Brooklyn

During Sandy, powerful waves from the ocean inflicted damage on buildings along the Atlantic coast of Southern Brooklyn, but much of the flooding damage in Southern Brooklyn came from Coney Island Creek. The Creek's low edges were overtopped early in the storm (in fact, there was flooding along Neptune Avenue, adjacent to Coney Island Creek, a full 12 hours before the surge's peak). Even in the ocean-facing neighborhoods of Coney Island, Brighton Beach, and Manhattan Beach, floodwaters came primarily from their "backdoors" until the peak of the storm when, in many areas, waters from the ocean met waters from the north on land. This flooding damaged residential ground-floor and basement spaces, destroyed electrical equipment and other building systems, and disrupted power service. Additionally, thousands of commercial spaces were inundated, resulting in the loss of inventory and valuable equipment that was not elevated, as well as the destruction of interior finishes.

Based on extensive analysis done during the *A Stronger, More Resilient New York* research and planning process, the City believes that installing armor stone revetments along the South Shore of Staten Island and Coney Island Creek would have helped limit the damage done during Sandy and will help avert similar devastation in the future. Revetments are a proven coastal protection technique in New York City, and experience has demonstrated that they require minimal maintenance, and that their shallow slopes can provide near-shore habitat for marine organisms and vegetation. In evaluating revetments as a risk-reduction measure for Coney Island Creek and the South Shore of Staten Island, *A Stronger, More Resilient New York* examined the geomorphology of both areas—the natural landforms, underlying geological conditions, and existing built conditions. It also employed sophisticated storm surge modeling to assess what level of protection revetments at this location would provide; evaluated the cost-effectiveness of this approach, considering both upfront construction costs and long-term maintenance costs to calculate total lifecycle expenses; and evaluated the proposed measures in light of other important public considerations, such as impact on waterfront access, environmental impact, effect on neighborhood character, and protection offered for vulnerable populations such as low- and moderate-income people.

Other Vulnerable Low-Lying Areas Citywide

Although bulkheads in some parts of the city were effective at breaking waves and minimizing the amount of floodwaters that infiltrated land during Sandy, the storm damaged some bulkheads. Furthermore, the absence of bulkheads or the inadequacy of existing bulkheads in some areas exposed adjacent neighborhoods to "backdoor" flooding. This was the case, for example, along the Brooklyn-Queens waterfront and on the north side of the Rockaway Peninsula. Furthermore, some low-lying parts of New York City that lack bulkheads or adequate bulkheads are exposed to flooding during non-storm conditions—simply from the regular movement of tides over the course of the monthly tidal cycle. This effect is likely to worsen as sea levels rise with climate change. Sandy revealed that all areas within the 100-year floodplain are vulnerable to extensive flooding and damage.

Based on extensive analysis, research and planning as described in *A Stronger, More Resilient New York*, the City believes that repairing, installing, and raising bulkheads in vulnerable areas throughout the city could have averted flooding of adjacent areas during Sandy and will help prevent similar impacts from coastal storms in the future as well as protect against tidal inundation as sea levels rise. Bulkheads, typically made of stone or concrete, are a proven coastal protection technique in New York City. In evaluating the construction, repair, and elevation of bulkheads as a risk-reduction measure for vulnerable areas throughout the City, *A Stronger, More Resilient New York* pursued the same rigorous level of research and method of evaluation, as discussed above, to determine bulkheads were the right coastal protection intervention.

Hospital Row in Southern Manhattan

Funding is no longer needed for this project because FEMA funds are being used for protection and resiliency measures along the east side of Manhattan.

The Impact of Coastal Protection Measures on New York City

When completed, the combined effects of revetments, bulkheads, an integrated flood protection system and Rebuild by Design would provide enhanced protection for approximately 31,995 buildings representing roughly 124,708 housing units.

Additionally, these coastal protection measures would help safeguard homeowners and business owners who have received loans and grants for recovery from the City and private partners in the aftermath of Sandy. For example, New York City's Hurricane Sandy Emergency Loan and Matching Grant Program has assisted over 400 small businesses, with almost $4 million in loans (as of June 2013), in neighborhoods adjacent to Coney Island Creek, Hospital Row, and in the South Shore of Staten Island.

A Stronger More Resilient New York identifies a set of coastal protection initiatives targeted at particularly vulnerable areas impacted by Sandy with a total cost of approximately $3.7 billion, of which approximately $850 million is expected to be funded from other, primarily Federal, sources. The unmet need to begin these projects is approximately $2.25 billion. The unmet need for the full build-out of coastal protection measures would be tens of billions of dollars. These coastal protection initiatives discussed herein set out to place revetments, floodwalls, and bulkheads in strategic areas that protect neighborhoods impacted by Sandy from further flood-related damages. The United States Army Corps of Engineers (USACE) is funding additional coastal protection measures, while another set of coastal protection measures not financed with CDBG funding will be funded out of New York City's capital budget (see *A Stronger More Resilient New York* for detail). The coastal interventions identified in this Action Plan are attainable first steps that the City estimates can be completed within the allowable CDBG-DR timeframe.

Coastal Protection

PROGRAM OBJECTIVE AND DESCRIPTION: This program aims to protect neighborhoods and infrastructure that were adversely impacted by Sandy by strengthening coastal protection measures, as detailedin the two activities below. These efforts will also protect other publicly funded repair (including CDBG-DR and FEMA Public Assistance), restoration, and improvement efforts, which will ensure the long-term viability of those investments. The City has prioritized these coastal protection measures because of the large number of homes, businesses, and investments that will be protected; the City's ability to implement these measures quickly; and the availability of Federal dollars to fund these interventions.

Post-Sandy damage to emergency beach protection in low-lying vulnerable areas underscores the importance of feasibility analysis, design, and construction of bulkheads stone revetments. New bulkheads at prioritized areas supported by post Sandy mapping are an important intervention in the City's structured waterfront. At the same time, armored revetments are critical to the City's natural shoreline, specifically in Coney Island Creek where feasibility and design of a storm surge barrier will begin in 2015. In Staten Island, revetments can replace emergency berms damaged in heavy post-Sandy storms. Revetments are a necessary intervention against wave attenuation and potential inundation of coastal neighborhoods and protect against the loss of life and property.

In Red Hook, the City has a comprehensive coastal protection plan that includes projects such as an

Integrated Flood Protection System in Red Hook, Brooklyn.

Please note that all components of this program will comply with all applicable City, State, and Federal requirements including, but not limited to, the Davis-Bacon and Related Acts and Section 3 of the Housing and Urban Development Act of 1968. The City will also consider statistical analysis of the demographic makeup of the areas served and perform outreach as appropriate to ensure that there are no disparate impacts on certain communities and to maximize attention to areas with low- and moderate-income populations.

Raise Shorelines by Installing Armor Stone Revetments and Repairing, Installing, and Raising Bulkheads

Funding will be used to install armor stone shoreline revetments in areas where Sandy's water damage caused significant physical damage and left neighborhoods exposed to additional flooding.

The South Shore of Staten Island continues to be at risk for future erosion of its beaches and bluffs. Revetments on the South Shore of Staten Island will help stabilize bluffs that are exposed to erosion and damage as a result of Sandy. This project will protect the adjacent neighborhood and provide useful information about the effectiveness of such shoreline erosion control.

During Sandy, Coney Island Creek was the source of much of the "backdoor" flooding in Southern Brooklyn including neighborhoods with low- and moderate-income populations. Raising the Coney Island Creek's lowest edge elevations to a consistent grade in locations vulnerable to flooding and erosion will eliminate flooding at low spots bordering the Creek.

Funding will be used to raise bulkheads in low-lying neighborhoods throughout the City, including in a number of low- and moderate-income communities impacted by Hurricane Sandy, to minimize inland tidal flooding. The impact of daily and weekly tidal flooding during non-storm conditions on low-lying neighborhoods will further worsen neighborhoods in the floodplain. This will continue to threaten the economic viability and residential stability of these neighborhoods. Implementing a program to raise bulkheads and other shoreline structures to minimize the risk of regular flooding in targeted neighborhoods will help ensure New York City's coastal communities are not further exposed to flood damage.

Covered Projects

HUD's Federal Register notice for the second allocation of funds (78 FR 69104) included additional requirements for assessing major infrastructure projects. The goal of the additional requirements is to have the City provide information about the long-term rebuilding strategy for major infrastructure projects and ensure where feasible resiliency has been factored into the design. Executive Order 13632, published at 77 FR 74341, established the Hurricane Sandy Rebuilding Task Force, to ensure government-wide and region-wide coordination to help communities as they develop comprehensive rebuilding strategies. Section 5(b) of Executive Order 13632 requires that HUD, "as appropriate and to the extent permitted by law, align [the Department's] relevant programs" with the *Hurricane Sandy Rebuilding Strategy* which was released by the Task Force on August 19, 2013. Rebuild by Design, an initiative of the Task Force, addressed structural and environmental vulnerabilities that Hurricane Sandy exposed in communities throughout the region and developing fundable solutions to better protect residents from future disasters.

The Federal Register for the second allocation states the following, "an infrastructure project is defined as an activity, or a group of related activities, designed by the grantee to accomplish, in whole or in part, a

specific objective related to critical infrastructure sectors such as energy, communications, water and wastewater systems, and transportation, as well as other support measures such as flood control." HUD included additional requirements for assessing major infrastructure projects and set the threshold for the determining "Covered Projects." As stated on page 69107, major infrastructure projects are:
"defined as having a total cost of $50 million or more (including at least $10 million of CDBG-DR funds), or benefit multiple counties. Additionally, two or more related infrastructure projects that have a combined total cost of $50 million or more (including at least $10 million of CDBG-DR funds) must be designated as major infrastructure projects. Projects encompassed by this paragraph are herein referred to as "Covered Projects."

In December 2012, the Special Initiative for Rebuilding and Resiliency (SIRR) was convened to address the creation of a more resilient New York City in the wake of Hurricane Sandy, with a long-term focus on preparing for and protecting against the impacts of climate change. A final report, released in June 2013, presents actionable recommendations both for rebuilding the communities impacted by Sandy and increasing the resiliency of infrastructure and buildings citywide.

Each Covered Project must address five (5) different analysis criteria within the Action Plan. These criteria are:

- Project Identification/Description.
- Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis and the Rebuild by Design Collaborative Risk Analysis.
- Transparent and Inclusive Decision Processes.
- Long-Term Efficacy and Fiscal Sustainability.
- Environmentally Sustainable and Innovative Investments.

The City of New York has made it a priority to leverage other Federal funding sources in order to extend the number of CDBG-DR projects that the City can fund.

Covered Project:

Integrated Flood Protection System at Red Hook

1. Project Identification/Description

NYC has determined that the Integrated Flood Protection System at Red Hook is a Covered Project, per HUD's definition.

Damage from Hurricane Sandy

The neighborhood of Red Hook suffered particular damage from Hurricane Sandy's storm surge and flooding. Water flooded the neighborhood from all three of its coasts - from Upper Bay, Buttermilk Channel, and Gowanus Bay. This inundation impacted much of the neighborhood including NYCHA's Red Hook Houses, save for a small elevated section around Coffey Street and a few streets in northern Red Hook close to Hamilton Avenue. Properties along Columbia Street Waterfront District also experienced significant flooding. Consequently, the Red Hook Houses faced weeks without power, heat, and sometimes running water. This was particularly difficult for residents who were elderly and/or had disabilities. At the same time, NYCHA staff, dealing with similar challenges in multiple locations, worked night and day to make necessary repairs and secure generators and temporary boilers to get these buildings back online.

Red Hook's waterfront businesses were also impacted by the flooding, as floodwaters filled the ground floors and basements, damaging building systems and contents. In total, approximately 3,100 businesses employing approximately 34,600 people – along Red Hook's waterfront-- were impacted by Sandy. A number of retail businesses, both large and small, were also severely affected including stores and restaurants along Van Brunt Street. Nearby, Fairway Market, an important area anchor, had to gut its Red Hook store, though it reopened after four months. The integrated flood protection system is the first step in a series of mitigation initiatives designed to protect Red Hook residents and businesses from future flooding and wave impact.

Comprehensive Risk Assessment

The City's proposals for coastal protection measures, such as the Red Hook Integrated Flood Protection system, are based on a multi-faceted analysis. This analysis considered the following factors: the nature and likelihood of coastal hazards (such as destructive waves or flooding); possible impact of these hazards on the built environment and critical infrastructure; likely effectiveness of certain protective measures. The City also considered whether an area included high concentrations of particularly vulnerable populations, such as the elderly or those with disabilities that would be at greater risk during a storm event. Another important consideration was the underlying geomorphology of the regions examined, as well as the coastal features already in place.

To inform this larger evaluation, the City engaged Swiss Re, a reinsurance company, to complete a quantitative assessment looking at the frequency and severity of an event (such as a coastal storm) as well as the magnitude of loss likely to be suffered if such an event were to occur. The City applied Swiss Re's natural catastrophe models to New York City to help understand the potential impacts of wind and storm surge on the City (FEMA's FIRMs do not model the impacts of wind), assuming a world of rising sea levels and more intense storms. This analysis was used as one piece of the larger assessment and is described in further detail on pages 33-36 of *A Stronger, More Resilient New York*.

Consequently, the City has prioritized Red Hook and estimates that the integrated flood protection system would protect over 8,000 people, including many NYCHA residents, $14 billion in property value, and $12 billion in GDP value.

Project Description:

It is anticipated that the IFPS will consist of a combination of permanent and long-term components (e.g., multi-purpose berms, deployable flood walls, street elevations, and landscape and drainage improvements). The approach would maximize flood protection for vulnerable neighborhood areas and minimize disruption to the neighborhood fabric during non-storm conditions. IFPS elements may include elevation of portions of the Brooklyn Waterfront Greenway. Other elements could be positioned along the first mapped street inland of the waterfront throughout the neighborhood. New York State has committed to working with the City to construct a flood management system.

The City has a comprehensive costal protection plan that includes projects such as an Integrated Flood Protection system in Red Hook, Brooklyn. A portion of funds from IOCS Rehabilitation/Reconstruction of Public Facilities may be used towards program costs for the Red Hook Costal Protection project. The total estimated cost for this project is $200 million, with Phase 1 estimated to cost $100 million. The City's CDBG-DR contribution to Phase 1 of this project is $50 million, with the State contributing the remaining $50 million.

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Public Facilities (24 CFR 570.201(c));

Rehabilitation/Reconstruction of Other Non-residential Structures

NATIONAL OBJECTIVE: Low-and Moderate-Income Area Benefit (LMA); Urgent Need (UN)

2. Use of Impact and Unmet Needs Assessment, the Comprehensive Risk Analysis, and the Rebuild by Design Collaborative Risk Analysis

Red Hook faces a number of challenges from climate change: A low-lying typography; older, often attached buildings; a significant number of industrial businesses, with valuable ground floor equipment and inventory that are difficult to elevate; vulnerable commercial corridors; and a significant population that lacks the means to make resiliency investments. These conditions make site specific investments a challenge, likely leaving many businesses, residential, and infrastructure investments exposed.

Red Hook faces major risks in the future. FEMA's updated Preliminary Flood Insurance Rate Maps (FIRMS) show an expanded floodplain that encompasses much of Red Hook. Red Hook's waste water treatment plant is also within the 100-year floodplain.

Rebuild by Design's comprehensive risk analysis focuses on Red Hook's dense urban edge and the neighborhood's long-term history as a harbor district. Rebuild by Design's analysis of Red Hook's dense urban edge revealed that large commercial anchors produce large annual sales volume but many of the smaller businesses suffer from the lack of foot traffic. The risk analysis suggests "New regulations supporting innovative commercial development, including removable commercial uses or floodable ground floors, and management and financial support for collective action by Red Hook businesses."

3. Transparent and Inclusive Decision Processes

Following Hurricane Sandy, the City has been involved in extensive formal and informal conversations with the Red Hook community. Between January 2013 and June 2013, the City briefed the elected officials monthly and engaged approximately 20 City, State, and Federal elected officials. Additionally, the City briefed community-based organizations every four to six week, met with five community boards, and spoke with over 40 faith-based, business, and community organizations. Through these conversations, priorities for the community emerged including providing flood protection from inland water bodies; mitigated street and property flooding, and combined sewer overflow events; and addressing the major expense of repairs and resiliency for low-rise buildings. The integrated flood protection system will help the community address these challenges.

This project was also included in the City's Action Plan Amendment 5B, which included public outreach, including a public comment period on the amendment, three public hearings, and information posed on the City's CDBG-DR website. The City's Action Plan amendment process is further detailed in the Citizen Participation section of the Action Plan.

In addition to community engagement undertaken for the Special Initiative for Rebuilding and Resiliency and community engagement process, the City has been collaborating with the New York Rising community planning program in Red Hook and the Rebuild By Design Commercial Corridor project. The City will continue working with other CDBG-DR grantees and programs to develop a coordinated effort to reach out to residents and community stakeholders.

4. Long-Term Efficacy and Fiscal Sustainability

The Red Hook integrated flood protection system will be built to mitigate potential flooding and should incorporate protection that accommodates projected sea level rise while also being flexible and adaptable in order to preserve and strengthen the historic Red Hook working waterfront. The benefits of this approach to Red Hook are three-fold: the design and implementation of structural and non-structural interventions can be tailored to the diverse topographic and geomorphic conditions of the Red Hook Peninsula; it diversifies exposure to given technologies; the interventions are scalable to available funding from multiple resources, rather than requiring all resources to be secured before funding moves forward. This flexible and iterative approach will ensure the safety of residents and businesses. The housing stock in Red Hook is primarily composed of semi-attached row houses which are difficult to retrofit and this $200 million investment in the integrated flood protection system will mitigate the need for costly and difficult retrofit measures. The City will provide monitoring or assessment of the structures and equipment to see if they can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment. The purpose of the evaluation is to determine the Covered Project's efficacy level in addressing the community needs over a period of time. Components of the evaluation methodology may include the use of data to establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes.

The City's Coastal Protection Working Group is led by the Mayor's Office of Recovery and Resiliency - comprised of senior resiliency designees from the Department of Parks and Recreation, Department of Planning, Department of Environmental Protection, Department of Transportation, Economic Development Corporation and the City Law Department. This group will guide the design and implementation of the Red Hook Integrated Flood Protection System. The City anticipates that the Office of Recovery and Resiliency will lead the operation and maintenance plan in close coordination with the Economic Development Corporation and the Department of Design and Construction. This plan will include ongoing monitoring and evaluation of the system to ensure its effectiveness as it relates to climate and land use changes. The City will work closely with FEMA to implement the Operation and Maintenance Plan and other FEMA requirements. The Operation and Maintenance plan will also include metrics to monitor risk assessment and the funding mechanisms for the upkeep and expansion of the Red Hook Flood Protection System, as necessary. The City will notify HUD as these metrics are developed to ensure compliance with CDBG-DR regulations.

This approach is both sustainable and consistent with the Federally-approved New York State Coastal Management Plan (CMP) and the October 2013 update to the New York City Local Waterfront Revitalization Plan (LWRP).

5. Environmentally Sustainable and Innovative Investment

The integrated flood protection system measures were evaluated in light of important public considerations such as waterfront access, navigation impacts, recreational benefits, environmental impact, contribution to ecosystem restoration, social and environmental justice, and impact on neighborhood quality of life.

The proposed integrated flood protection system is consistent with the President's Climate Action Plan's principles to "Build Stronger and Safer Communities and Infrastructure" and "Protect Our Economy and Natural Resources." Pending the outcome of the feasibility study and available funding this project will consider principles from existing initiatives into its design and implementation including the draft

Brooklyn Greenway Strategic Plan and DEP's Green Infrastructure program. Although not yet public, the Brooklyn Greenway Initiative has proposed that the Greenway route be aligned with the Integrated Flood Protection system along elevated public right of way along Columbia Street. The City will keep HUD abreast of funding sources and scope as it becomes available for these two additional projects.

CDBG-DR ALLOCATION: $159,000,000

The total CDBG-DR allocation for Coastal Protection is $159 million, of which Reventments and Bulkheads make up $109 million and Red Hook IFPS makes up $50 million. Further estimates will be developed as each project moves into the design phase. NYCEDC, or an additional allowable agency, intends to draw upon its standard construction process, utilizing contracted construction managers or its typical procurement process to select engineers and architects that will generate further estimates when the project is at an appropriate point.

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Public Facilities; Rehabilitation/Reconstruction of Other Non-residential Structures; Rehabilitation/Reconstruction of a Public Improvement

NATIONAL OBJECTIVE: Urgent Need, Low- and Moderate-Income Area Benefit

PROJECTED ACCOMPLISHMENTS: For Revetments and Bulkheads, reduced risk of coastal wave action, erosion, and flooding in the neighborhoods adjacent to the South Shore of Staten Island and Coney Island Creek in Southern Brooklyn. Repair, install, and raise bulkheads and other shoreline structures to reduce risk of flooding in neighborhoods in the 100-year floodplain.

For Red Hook IFPS, the identification and implementation of an integrated flood protection system to reduce the risk of flooding in Red Hook, Brooklyn.

PROGRAM ADMINISTRATION: The City anticipates it will work through the ORR and NYCEDC. NYCEDC may serve as a subrecipient to the City and may be responsible for procuring and implementing the Coastal Protection activities. NYCEDC may also secure permitting from all appropriate agencies, including the USACE, as applicable, which will be consulted before any action is taken if such action would fall within the jurisdiction of the USACE. An additional allowable entity may be chosen to operate the program, such as a City agency or eligible nonprofit corporation through a subrecipient agreement.

ELIGIBILITY CRITERIAN/A

PROGRAM PRIORITIES: Sites subject to wave action, erosion, and flooding–particularly in areas with large low- and moderate-income populations. Additionally, as the target service areas will likely be the focus of other restoration efforts funded by CDBG-DR and FEMA, such as through housing and economic development programs and other infrastructure investments, the identification and implementation of coastal protection measures will seek to ensure long-term protection of such investments and of investments in low- to moderate- income communities.

Efficient and cost-effective flood protection that does not disrupt the urban environment.

GEOGRAPHIC AREA TO BE SERVED: For Revetments and Bulkheads, impacted communities within the 100-year floodplain and critical infrastructure assets affected by Sandy's impact.

For Red Hook IFPS, Red Hook, Brooklyn.

PROGRAM START AND END DATES: For Revetments and Bulkheads, design and site selection will begin in January 2015 with construction expected to be completed by Q4 2018.

For Red Hook IFPS, the contract for the feasibility study is currently in procurement (2015) and it is anticipated that the feasibility work will be completed in 2016 with design, environmental review and engineering in 2017 and construction is anticipated to begin in 2018.

OTHER FUNDING SOURCES: Both the State and the City have committed to funding this project, which will then be managed by New York City. The press release from the Governor Cuomo's Office can be accessed here: http://www.governor.ny.gov/press/01072013-cuomo-biden-future-recovery-efforts. New York State and New York City have together committed a combined $100 million (each with a $50 million contribution) –of CDBG-DR and FEMA HMGP funding to the design, development and construction of an integrated flood protection system in Red Hook. New York City has also submitted a Hazard Mitigation Grant Program (HMGP) Advanced Assistance Application to FEMA through New York State for up to $4.356 million in Advanced Assistance HMGP funds for planning, scoping, and feasibility studies to determine the location in Red Hook where an integrated flood protection system would provide the greatest level of benefit. FEMA has approved the HMGP Advanced Assistance funding for project scoping and HMGP application development including in-depth analysis of the study area and community and stakeholder engagement.

Building Impacts

Sandy's surge and flooding had a huge impact on New York City's building stock. The storm inundated an area that included 88,700 buildings, or 9 percent of the City's building stock. These buildings encompassed 662 million square feet of space that included more than 300,000 housing units and 23,400 businesses. Buildings in the inundation and blackout area may have been directly exposed to flooding and damage or may have experienced power loss or other storm impacts that in many cases resulted in the displacement of residents and business interruption.

Significantly, half of the buildings in the inundation area were outside the boundaries of the 100-year floodplain delineated on the 1983 FEMA flood maps in effect when Sandy hit. The owners of these buildings thus were likely not aware of their flood risks, nor had they likely taken steps to protect their buildings from flooding.

Direct building damage from Sandy was widespread and in many cases severe. Of the approximately 47,000 owner-occupied housing units that FEMA inspected, 49 percent sustained damage in excess of $10,000, with 12 percent sustaining damage in excess of $30,000. Of the approximately 22,000 rental units inspected, 26 percent sustained "substantial damage," the highest damage classification FEMA used, indicating that damage was 50 percent or more of the pre-flood market value of the building.

A Stronger, More Resilient New York's analysis of building damages, which drew on information collected by New York City's Department of Buildings (DOB), indicated that many factors affected the type and level of damage. For example, flood characteristics correlated strongly with the degree of damage that buildings suffered. Thus, shoreline areas that experienced the strong lateral forces of waves had many more damaged buildings than areas with stillwater flooding. In fact, "wave action" along the Atlantic Coast accounted for the majority of damaged buildings and for nearly all buildings with structural damage or damage to such an extent that they were deemed "destroyed."

The physical characteristics of the buildings themselves also came into play in determining the damages sustained. During Sandy, single-story buildings were particularly susceptible to severe damage. Although such buildings accounted for less than 25 percent of the buildings in the area inundated by Sandy, they represented roughly 75 percent of the buildings that sustained the most severe damage, according to a survey conducted in December 2012 by DOB. By contrast, high-rise buildings experiencing inundation generally did not sustain structural damage.

Construction materials, which are often associated with building height, were also determinative of a building's damage. For example, light-frame buildings (which also tended to be low-rise structures) suffered the greatest amount of damage, while buildings constructed of more robust materials such as steel, masonry, and concrete (as larger buildings tend to be) fared better.

However, much of the Sandy-related damage was non-structural in nature. Instead, it was largely due to the flooding of building systems and equipment (including electrical, sanitary, and life-safety systems) located on ground floors or in basements. Damage to these systems resulted in the displacement of residents and businesses that were likely also to be contending with extensive damage to building contents, including business inventory. These buildings also required significant and costly repairs—often including the removal and replacement of walls and floors in basements and ground-floor spaces.

Like larger buildings made of robust materials, buildings with elevated or otherwise flood-protected systems fared better overall. Owners were able to remain in their buildings or experience shorter periods of displacement. They were less likely to face costly repairs. And they generally were able to resume normal lives and business operations sooner.

Unmet Building Needs

The risk of storm surge combined with sea level rise is likely to present the greatest climate threat to New York City's building stock. This is demonstrated by FEMA's recently released Preliminary FIRMs, which expand New York City's 100-year floodplain so that it now includes nearly 71,500 buildings. These buildings, encompassing approximately 534 million square feet of space, are home to approximately 400,000 residents and 291,000 jobs.

As vulnerable as New York's building stock may be today, it is likely to become more vulnerable in the future. According to projections on sea level rise from the NPCC, the number of buildings in the floodplain could increase to 93,600 by the 2020s and 118,100 by the 2050s.

This expansion of the floodplain not only indicates that buildings will face greater risks of flooding, but it will also place significant financial pressure on tens of thousands of New Yorkers who own homes or businesses in the floodplain. Property owners whose buildings are in the floodplain and who have federally backed mortgages may face new requirements for the purchase of flood insurance. Owners in the floodplain may also be subject to new requirements to alter ground-level and below-grade spaces to comply with national flood-resistant construction standards.

Taken together, these requirements may cumulatively overwhelm property owners and ultimately have adverse impacts on coastal communities, including sizable low- and moderate-income populations. The owners of homes and businesses in the floodplain may find it prohibitively expensive—and ultimately untenable—to continue to live and do business in the floodplain. Spillover effects could include flight from impacted communities, leading to declining populations; a market-wide bias against new home purchases

in floodplain areas because of the recognition of the higher costs of living and doing business there; a general lack of investment in the City's coastal communities; and the failure of businesses that cannot absorb the added costs. The City's intention is to physically harden buildings and their systems so that they are able to better withstand—and recover more quickly from—climate events; it also seeks to restore the value of properties in impacted areas.

Based on Federal and City research about how Sandy impacted New York City's building stock and on the best available information on techniques that provide flood protection for buildings and their systems, the City proposes a Residential Building Mitigation Program, detailed in *A Stronger, More Resilient New York*. The City will also fund the Staten Island University Hospital, the island's largest employer, to implement its building mitigation strategy, which includes elevation of critical site infrastructure and stormwater resiliency measures.

Residential Building Mitigation Program

PROGRAM OBJECTIVE AND DESCRIPTION: The Residential Building Mitigation Program was developed as a subset of a $1.2 billion program to provide mitigation investments to all properties located in the 100-year floodplain. Given the current funding amount of $60 million, the program is prioritizing mitigation measures for those residential buildings damaged during Sandy and being rehabilitated under the Build it Back Multi-Family Rehabilitation Program. The Residential Building Mitigation Program will be administered by the New York City Department of Housing Preservation and Development (HPD) and will serve buildings that received damage from Hurricane Sandy and are participating in the Build it Back Multi-Family program. The RBMP offer loans to owners of residential flood-impacted and vulnerable properties for the incremental cost of resiliency measures such as structurally reinforcing wood-framed buildings, dry flood-proofing, elevating mechanical systems, protecting critical systems, and implementing other mitigation measures. These funds are not duplicative of Build it Back repairs to damaged properties already funded through other programs noted in the Action Plan, but may add resiliency measures to projects that are not otherwise covered. The goal is to protect buildings and building systems in flood-vulnerable areas that were impacted by Sandy from inundation, power loss from a local source, and other impacts that threaten the economic vitality of coastal neighborhoods. This program will support and strengthen these Sandy-impacted and vulnerable neighborhoods in two ways. Firstly, owners will be encouraged to undertake flood-proofing improvements to avert the catastrophic losses in building types that have proven most vulnerable during Sandy. Secondly, because this program focuses efforts on elevation or protection of critical building systems, it will enable the buildings to recover faster, and thus enable inhabitants to reoccupy their buildings—and resume normal lives—sooner.

Please note that all construction work funded under this program will comply with all applicable City, State, and Federal requirements including, but not limited to, the Davis-Bacon and Related Acts and Section 3 of the Housing and Urban Development Act of 1968. The City will also consider statistical analysis of the demographic makeup of the areas served and perform outreach as appropriate to ensure that there is sufficient disbursement of funds through impacted and vulnerable communities.

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Residential structures; Renovation of Structures (24 CFR 570.202(a)(b))

NATIONAL OBJECTIVE (UN), (LMH): Urgent Need; Low- and Moderate-Income Housing Benefit

CDBG-DR ALLOCATION: $60,000,000

This $60 million is allocated for affordable housing, as defined by Department of New York City Housing Preservation and Development (HPD) housing programs. It is anticipated that 80 percent of these funds will benefit low- and moderate-income persons. Funds will be targeted towards properties which do not meet the City's definition of substantial damage and for which resiliency improvements have not been budgeted elsewhere in the Action Plan. To avoid duplication of benefits, these $60 million dollars will fund resiliency programs created in tandem with Build it Back repair programs to ensure effective use of Federal dollars. It is anticipated that low-density residential will be prioritized in subsequent rounds of CDBG funding.

PROJECTED ACCOMPLISHMENTS: This allocation would fund resiliency measures across approximately 10 million square feet and benefit over 15,000 housing units.

ELIGIBLE APPLICANTS/PROPERTIES: Eligible applicants shall be the legal owners of privately owned multi-family (5 or more units) residential buildings impacted by Sandy. Cooperative and condominium properties will also be eligible. Applications will be accepted for all buildings in the 100-year floodplain (defined by the most current Federal flood map) with a portion of the allocation (to be determined) reserved for (1) property owners in census tracts located in the Sandy Inundation Area (the Sandy Inundation Area is defined by the extent of the DSLOSH Hindcast Surge Extent Model and used as a boundary for DCP's PLUTO lot data to determine which lots were at risk of inundation by Hurricane Sandy—a dataset created on 2/15/13), or (2) affordable housing multi-family buildings .

ELIGIBILITY CRITERIA: Eligible buildings must be located within the 100-year floodplain (based on the Preliminary Flood Insurance Rate Maps (FIRMS) or the best information available) or Sandy Inundation Area and demonstrate a need for flood-related improvements.

GRANT/LOAN SIZE LIMIT: The program may fund up to 100 percent of resiliency costs.

PROGRAM PRIORITIES: This $60 million allocated for affordable housing will be spent pursuant to the Program Priorities described for the Multifamily Rehabilitation Program in this Action Plan. These priorities are properties requiring loans to restore basic habitability; significantly damaged buildings with basic services restored but in need of major rehabilitation; and buildings serving the most at-risk demographic populations.

GEOGRAPHIC AREA TO BE SERVED: Areas in the 100-year floodplain or the Sandy Inundation Area throughout the five boroughs.

PROGRAM START AND END DATES: Funds will initially be disbursed in the winter of 2014 and continue through the fall of 2015 or until funds are exhausted.

OTHER FUNDING SOURCES: It is expected that funds will be leveraged by SBA Disaster Loans, private funds and contributions, insurance proceeds, etc. Please note that, in accordance with Federal duplication of benefits requirements, other assistance awarded to businesses for the purpose of providing compensation for economic losses arising from Sandy will be deducted from grants provided through this program.

Staten Island University Hospital

PROGRAM OBJECTIVE AND DESCRIPTION

Staten Island University Hospital (SIUH) is home to the largest emergency room in Staten Island and accounts for over one-third of the borough's in-patient beds and has two campuses – North and South – that are both located in areas that are vulnerable to flooding. During Hurricane Sandy and immediately after, SIUH provided critical healthcare services to Staten Islanders, including acute care services for high health-need, low-income residents.

Both the Staten Island University Hospital North and South Shore Campuses are on low-lying property located less than one mile away from the Shore line of Staten Island. Due to its location, the SIUH Campus has a history of experiencing damages due to inundation of water caused by extreme weather events. For example, a 2010 blizzard caused damages resulting in roughly $225,000 in costs, and in 2011, Hurricane Irene caused damages resulting in direct and indirect costs of over $3.1 million. In 2012, Hurricane Sandy caused damages resulting in direct and indirect costs of over $3.2 million, including direct costs related to storm preparation, including sandbag barrier set-up and having emergency electricians standby, and indirect costs including the temporary closure of key hospital services. A different storm surge and a different set of circumstances could have had a substantially worse impact to SIUH, with the potential loss of the single largest inpatient care provider on Staten Island, leaving Staten Island residents without the borough's largest level-one trauma center, and leaving the entire East and South Shore exposed in an emergency situation.

In response to Hurricane Sandy, SIUH has formulated a hazard mitigation strategy to move its central utility plant and related mechanical infrastructure above the flood plane for North and South campus. The mitigation work includes elevation of critical site infrastructure at both its North and South campuses, and stormwater and wind resiliency measures at its North campus.

Specifically, the SIUH Campus has the following significant hazard risks:

1. The Central Utility Plant in the SIUH South Campus (the "South Plant") houses the campus's main boilers, chillers, generators, and electrical gear. Such equipment in the South Plant is located at grade level and approximately 10 feet below grade. If water inundates the South Plant, the equipment may cease to function causing a catastrophic impact on the South Campus.

2. The Central Utility Plant in the SIUH North Campus (the "North Plant") houses the campus's main steam boilers, central chillers, emergency generators, electrical equipment (such as switch boards and automatic transfer switches), . Such equipment in the North Plant is located on the campus's lowest floor, which is well below the flood map elevation. If water inundates the North Plant, the equipment may cease to function causing a catastrophic impact on the North Campus.

3. The SIUH North Campus is vulnerable to high winds and water infiltration, which have previously caused damage to the roof and windows. In addition, the roofing ballast poses a risk of flying debris.

4. Storm sewer pipes on the SIUH North Campus are vulnerable to backing up and causing flooding during extreme rainfall or inundation of seawater or other water.

SIUH is one of two hospitals serving Staten Island, which has a total population of approximately 500,000 residents. SIUH provides approximately 59 percent of all inpatient care and 58 percent of all emergency department visits of Staten Island residents. SIUH also serves residents from Southwest Brooklyn.

Hurricane Sandy produced inundation water levels reaching over 4-9 feet above ground level on the East and South shores Staten Island (National Hurricane Center Feb. 2013 Report). SIUH North Campus generators were inches away from being flooded. With an eye towards resiliency, the North Campus

mitigation strategy comprises of the removal of the existing mechanical items located in the Central Utility Plant which is located at the lowest floor elevation on the North Campus.. The site for this area is less than 1 mile away from the East Shore of the Island and has low lying topography, which makes it vulnerable to weather events such as hurricanes/nor'easters. If no mitigation action is taken, the current Central Utility Plant (CUP) will be exposed to flooding from a storm with water levels 30 inches above those experienced in Hurricane Sandy, and also from a storm with water levels 30 inches above those experienced in a 100-year flood and from a 500-year storm.

The mechanical, electrical, and plumbing enclosure adjacent to the existing plant will be elevated to 18 feet. CDBG-DR funding at North Campus will also be used to support the installation of sanitary holding tanks and back flow prevention in the main sanitary lines. Funding will also be used to fortify the North Campus against high winds, including improved roofing and the hardening of the building envelope.

SIUH will use CDBG-DR funds at South Campus to elevate the existing mechanical items including: emergency generators, electrical switch gear, the boiler plant, chillers, medical gas systems, and all associated equipment located in the Central Utility Plant. The elevated plant will be constructed with the same equipment configuration and the Central Utility Plant will remain in operation during the construction and startup of the elevation equipment.

Funding for this project reduces the resiliency need by $28 million. There is no unmet resiliency need for healthcare facilities.

The City's allocation to SIUH reflects public comments in support of the project gathered during public hearings for previous action plans.

HUD ELIGIBILITY CATEGORY: Rehabilitation and reconstruction of public facility

NATIONAL OBJECTIVE: Urgent Need

CDBG-DR ALLOCATION: $28,000,000

PROJECTED ACCOMPLISHMENTS: Accomplish risk reduction against the four hazards described above.

PROGRAM ADMINISTRATION: The City of New York will work worth Staten Island University Hospital to ensure implementation of this project

ELIGIBILITY CRITERIA: N/A

PROGRAM PRIORITIES: N/A

GEOGRAPHIC AREA TO BE SERVED: Residents in Staten Island and Southwest Brooklyn

PROGRAM START AND END DATES: June 2015 with construction completed June 2017.

OTHER FUNDING SOURCES: SIUH has received $12 million in Hazard Mitigation Grant Program funding from New York State under FEMA's Section 404 Public Assistance program, which enables mitigation measures to be implemented during an awardee's immediate recovery from a disaster. The CDBG-DR award provides the local match to this $12 million award and will enable SIUH to complete resiliency work at North Campus up to the original HMGP application of $23 million. The remaining $17 million will enable

SIUH to harden the North campus envelop against wind damage and complete mitigation work at the South Campus (as described above).

Resiliency Funding Gap

Since the plan's release, the City has made progress on 240 initiatives (or 93 percent). Despite this significant progress and the Action Plan investments, the plan still faces a funding gap. The unmet need for Coastal Protection resiliency measures is $2.25 billion. The City will continue to seek a combination of Federal, State, and private financing to complete this plan.

This funding gap includes critical unmet needs in the areas of coastal protection, buildings, neighborhoods, and infrastructure, as detailed in *A Stronger, More Resilient New York.* For example, coastal protection priorities include integrated flood protection systems at East Harlem, East Side, Hunts Point, and Red Hook. Together, these investments would protect up to 200,000 residents, in excess of $200 billion in property value, and $300 billion in economic activity for an estimated cost of $933 million.

The social resiliency of New York City lives in our neighborhoods. In addition to the coastal protection and building mitigation measures mentioned above, the City will continue to pursue a robust community resiliency agenda that bolsters the structures and communal networks of neighborhoods that were affected by Sandy. Within the Sandy-affected neighborhoods, the City and HUD's Rebuild by Design program are collaborating on projects including protecting critical food markets in Hunts Point and protecting vulnerable neighborhoods in the East Side.

Investments in New York City's infrastructure, such as roads, hospitals, nursing homes, and adult care facilities, are another central component to the resiliency of the City and its residents and businesses. The City is working closely with the State and Federal Governments to leverage Federal resources and coordinate design and implementation of infrastructure investments.

Rebuild by Design: East Side Coastal Resiliency

Damage to Manhattan's East Side As A Result of Hurricane Sandy

The east side of Manhattan encompasses part of the neighborhoods of Chinatown, the East Side, and Stuyvesant Town. These neighborhoods, taken together with Lower Manhattan, Kips Bay, Tribeca, the West Village, Chelsea, and Hudson Yards comprise Southern Manhattan as defined in *A Stronger, More Resilient New York*, and are critical to the city and the region. Southern Manhattan contains the fourth largest business district in the U.S., and is home to nearly 200,000 people and approximately 300,000 workers, in addition to hosts of tourists every year.

Though Southern Manhattan's location within New York Harbor protected it from the destructive wave impacts felt in areas along the open Atlantic coast, Sandy's surge arrived in the area with great force and height. In fact, at the peak of Sandy's surge, the tide gauge at the Battery registered water heights of more than 14 feet above Mean Lower Low Water (MLLW), the average of the lower low water height of each tidal day, or 11 feet above North American Vertical Datum of 1988 (NAVD88)—eclipsing the previous high-water mark from Hurricane Donna in 1960 by nearly four feet.

The surge overtopped bulkheads all around Southern Manhattan, sending floodwaters racing inland. Across the area, flooding typically reached one to two blocks from the coastline at depths of two to three feet. In certain areas, though, the waters extended farther inland and to far greater depths. The areas that

generally experienced the worst inundation were those that were built on landfill along the coast, and, farther inland, where there had once been marshes and streams that had been built upon centuries ago.

In Southern Manhattan, the greatest extent of inland flooding was along the area's eastern edge. There, the surge from the East River breached the bulkhead running from Kips Bay to Chinatown. Floodwaters not only inundated the East River Park esplanade, ball fields, and plantings, they traversed the FDR Drive, covering streets and encompassing buildings. In parts of the East Side, much of which is built on landfill, the water traveled nearly 2,000 feet inland, almost reaching Avenue B, with floodwaters up to two feet deep along portions of Avenue C.

Most building damage in Southern Manhattan was to critical building systems, business inventory, and personal property. Since so many of these buildings' systems were located in basements or sub-basements, even in areas where floodwaters reached only one to two feet, elevators, water pumps, fire- and life-safety systems, heating and cooling systems, and lighting were compromised, making conditions for those in the floors above challenging or untenable.

Perhaps the most significant impact that Sandy had on the area resulted from power outages that occurred across most of Manhattan south of 34th Street. As a result of these outages, even the many residents of buildings that were not flooded or had minimal damage were left without light, heat, refrigeration, or water for drinking, cooking, flushing toilets, or bathing. In high-rise buildings, elevators also ceased to function. As a result, many older or infirm residents who lived on higher floors were trapped in their apartments—in some cases unable to communicate or gain access to information through television or the Internet.

The power of Sandy's impact on the Southern Manhattan electric system began before Sandy rolled in, when Con Edison shut down two of its electrical networks in the area preemptively to prevent severe damage and minimize potential downtime to underground distribution equipment (located in vaults beneath sidewalks), plunging over 6,500 hundred "customers" (and many more individuals) on the East Side of Lower Manhattan into darkness. Once the storm arrived, Sandy's surge caused damage to the substations at the East 13th Street complex and at the Seaport, shutting down 11 additional distribution networks and leaving another 225,000 customers without electricity—nearly all of Southern Manhattan south of 34th Street as well as certain areas north to 39th Street.

Sandy, meanwhile, had a huge impact on Southern Manhattan's transportation infrastructure. The power outage impacted the entire street network south of 34th Street as traffic signals and street lights were knocked out. The surge overwhelmed both of the major Manhattan highways encircling the coastline, inundating them with two to four feet of water which stayed several hours after the storm.

Though the subway system was shut down preemptively as the storm approached, it still was severely impacted by Sandy, experiencing the worst flooding in its history. Floodwaters entered subway stations and tunnels through numerous low-lying entry points. Seven East River subway tunnels flooded, two of which were immersed in seawater from floor to ceiling.

While some subway service was restored in Southern Manhattan and other areas of the city within two days of the storm, the cross river tunnels were out of service longer, with some closed for over a week. The South Ferry Station, which had only recently been completed and was the southern terminus of the 1 train, meanwhile, was damaged so badly that its predecessor had to be reopened while repairs were made, a process expected to take years.

Sandy also impacted Southern Manhattan's two Department of Environmental Protection wastewater facilities. Both experienced service outages due to flooding, with the Manhattan Pumping Station down for 25 hours, and the Canal Street Pumping Station down for 42 hours. Though the shutdowns caused seawater mixed with runoff and sewage to be released into surrounding drainage areas, subsequent testing by DEP showed no significant water quality impacts.

The storm also directly or indirectly affected businesses and nonprofits large and small. In hard-hit areas, such as the South Street Seaport district, ground-floor businesses were still closed months after the storm.

i) Project Description

New York City, in close collaboration with community stakeholders, will explore the best means to construct a coastal resiliency project along Manhattan's East Side that mitigates against expected future flooding from events like Hurricane Sandy. The site selected by HUD ("Compartment 1: East River Park") was called out as a priority site for integrated coastal protection interventions by the City, as outlined in *A Stronger, More Resilient New York*. New York City has been awarded $335 million to construct the first segment of the proposed project.

The Rebuild by Design proposal calls for a protective system of various measures that will also provide social and environmental benefits to the community and an improved public realm. The coastal resiliency measure is expected to include one or more of the following elements: 1) A landscaped berm or related methods of flood protection in East River Park and its adjacent areas; 2) Permanent and deployable walls and pavilions, where appropriate, to provide flood protection and connectivity with investments within East River Park and its adjacent areas; 3) New or improved bridges over the Franklin D. Roosevelt East River Drive connecting East River Park to the adjacent community; and 4) Related public amenities and infrastructure in support of the project.

The City estimates spending the full $335 million over the next five years. The majority of costs are associated with project delivery and are eligible under the HUD Rebuild By Design activity.

As detailed below, planning work includes technical survey and soundings work as well as feasibility analyses and pre-scoping activities, and associated personnel time for the site selected and potential adjacent areas; predevelopment work includes environmental review and design activities, and associated personnel time; and project construction includes construction and construction management activities, and associated personnel time. All budget allocations are estimates and will be amended as needed in order to implement the project.

	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	Total
Planning	$12,370,000					$12,370,000
Predevelopment	$3,730,000	$24,980,000	$120,000			$28,830,000
Project Construction		$6,820,000	$61,980,000	$122,000,000	$103,000,000	$293,800,000
Total	$16,100,000	$31,800,000	$62,100,000	$122,000,000	$103,000,000	$335,000,000

An additional $3 million will be used to advance planning and feasibility studies for Compartments 2 and 3 of the original Rebuild by Design proposal. The City will continue to seek out new resources to build out coastal defenses planned for the most vulnerable coastal communities; this includes a focus on the parts of

Lower Manhattan currently at-risk but not covered by the allocated funds through Rebuild by Design. One strategy will be to coordinate available planning resources for the affected area by leveraging State funds and City capital dollars for feasibility studies and environmental review, with the end goal of building phases of coastal protection of independent utility as implementation funds are secured over time. In the event that the allocated $338 million for the East Side Coastal Resiliency project is not enough to complete this project as designed, the City will undertake strategies to identify resources to cover any future unmet needs.

The conceptual design (see Appendix E) for this project is based on analysis from previous hazards and best available data for future projections.

The City's analysis conducted during the development of *A Stronger, More Resilient New York* found that flood water inundation was the largest cause of damage among buildings in this area. In total, over 950 residential buildings (containing 46 million square feet of space and more than 40,000 units) and over 700 commercial and non-residential buildings (containing 85 million square feet of space) in Southern Manhattan were affected by floodwaters. Of this total, 24 percent of the impacted floor area was in the neighborhoods of the East Side, 28 percent in the neighborhoods of the West Side, and 48 percent in Lower Manhattan. Perhaps most importantly, 58 percent of all impacted residential units were in the neighborhoods of the East Side. In Lower Manhattan, meanwhile, the surge also overtopped bulkheads, though here the waterfront edge conditions and inland topography played a significant role in determining the extent of flooding. The City will evaluate coastal resiliency techniques that reduce the risk of flooding while also preparing for future hazards.

New York City and the Rebuild by Design team used the NPCC projections in the conceptual development of this project. The conceptual design was oriented around the NPCC's projections for the 2050s for the 500-year floodplain (see Appendix E Figure 5), though the level of protection will be analyzed and designed in the next phase of work. For complete detail of NPCC projections, refer to the following: https://www.npcc.org/default.aspx

The Federal Register Notice for the second allocation of funds (78 FR 69104) includes guidelines for "Resilience Performance Standards" related to infrastructure projects. Section VI(2)(e) of the Notice states, "Using the guidelines in the Rebuilding Strategy, grantees are required to identify and implement resilience performance standards that can be applied to each infrastructure project."

The City is committed to developing and implementing a set of resilience performance standards for all infrastructure projects. The City will look to the best available science and promising practices in resiliency to inform the development of these performance standards. One such resource will be recommendations provided in the Hurricane Sandy Rebuilding Strategy. Specifically, the City will refer to the guidance provided in the "A Regional Approach to Resilience" and "Infrastructure Resilience Guidelines" sections of this document, and will aim to develop a regionally coordinated, resilient approach to infrastructure investment through continued coordination with New York State and organizations such as the U.S. Army Corps of Engineers and FEMA. The City has already engaged in conversations with the Regional Coordination Working Group to discuss these projects. In the development of these resilience performance standards, the City will incorporate the risk analysis and climate action plan laid out in *A Stronger, More Resilient New York*, which was the product of months of research and planning across City government and with our regional partners. The City stands behind this document but believes that developing and certifying "Resilience Performance Standards" requires additional study and coordination with other

Federally funded-disaster projects (including projects developed by Rebuild by Design, the United States Army Corps of Engineers, and FEMA).

Rooted in these resilience performance standards, the City will advance a plan to monitor and evaluate the coastal protection infrastructure developed through this Rebuild by Design initiative. The purpose of this plan is to convey how the City will monitor the planning, implementation, and achievement of key milestones in the delivery of the completed Covered Project. During implementation of the monitoring plan, the City will ensure that all the appropriate mitigation measures are put into place and meet government standards.

The plan will also include the evaluation methodology, which the City will implement after the projects are complete. The purpose of the evaluation methodology is to determine the Covered Project's efficacy level in addressing the community needs over a period of time. Components of the evaluation methodology may include the use of data to establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes. The City will be vigilant in doing immediate assessments after future storms events. The City will provide monitoring or assessment of the structures and equipment to see if they can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment. Additionally the City will explore standards for the replicability of this type of infrastructure.

The City will work with the Sandy Regional Infrastructure Resilience Coordination to coordinate permitting and construction of this project to align and integrate with other recovery projects in the area. Additionally, the City will work with the Sandy Regional Team for Federal Review and Permitting to expeditious processing.

- National Objective: Low-Moderate Income; Urgent Need.
- Eligible Activity: Rebuild by Design.

ii) Internal Implementation Partnership

The NYC Department of Design and Construction (DDC), in partnership with the Mayor's Office of Recovery and Resiliency (ORR) and the NYC Department of Parks & Recreation (DPR) – the "Project Team" – will oversee the implementation of the coastal resiliency project for the East Side of Manhattan.

DDC will call upon its experience in the timely implementation of critical and high profile projects, such as the various Trunk Water Main projects connecting to Water Tunnel Number 3, to realize the on-time activation of this much needed City infrastructure.

ORR and DDC executed a Memorandum of Understanding on October 7, 2014 to administer the funding for the project. To implement the project within the allocated CDBG-DR funds and the schedule set forth by the City (with a groundbreaking in 2017), DDC will make use of existing on-call consultant contracts whenever possible and innovative procurement methods as permitted by Law and under the Procurement Policy Board (PPB) rules.

This includes issuing a Task Order for Topographic Survey and Soundings of the project area, as well as a issuing a mini-RFP for additional technical services, conceptual design, community engagement, and environmental review. Future contracts will be issued to contract for additional design services and construction.

DDC will work in tandem with ORR and DPR to execute this project and will meet on a weekly basis to set strategy and timelines, share project updates, and work through any issues that may arise. DDC will serve as the implementing agency with other agencies advising and coordinating with the Project Team. DDC anticipates engaging many City agencies including, but not limited to, DCP, DOT, DEP, OMB, NYCHA, NYCEDC, and HPD.

DDC acts as the City's primary capital construction project manager. DDC provides communities with new or renovated structures such as firehouses, libraries, police precincts, courthouses, and senior centers. To successfully manage this portfolio, DDC partners with other City agencies, as well as with architects and consultants whose experience and creativity bring efficient, innovative, and environmentally-conscious design and construction strategies to projects. DDC also delivers well-built roadway, pedestrian plazas, sewer and water main construction projects in all five boroughs. Over the last decade, DDC has completed more than 745 miles of new roadway, 735 miles of water mains, 588 miles of storm and sanitary sewers, and installed more than 42,000 sidewalk pedestrian ramps.

ORR is currently undertaking successful projects with State and Federal agencies that have also have appropriations from Public Law 113-2. ORR is working with State agencies including the New York State Governor's Office of Storm Recovery, the New York State Division of Homeland Security and Emergency Services, and the New York State Department of Environmental Coordination, among others. ORR is working with Federal agencies on multibillion projects including HUD, FEMA, and the USACE. Moreover, the Office of the Mayor of New York City routinely executes complicated, large, Federal programs.

DPR is the steward of approximately 29,000 acres of land (14 percent of New York City), including nearly 1,000 playgrounds and 14 miles of beaches. DPR is working closely with ORR, DDC, and other sister agencies to ensure that DPR's resiliency efforts support overall City goals. Planning for the long-term resiliency of 148 miles of natural and built shoreline in DPR's jurisdiction, creating a comprehensive set of guidelines to develop and manage open spaces in the flood zone, and integrating resilient features to both protect and enhance communities, are primary objectives. In addition to approaching capital projects for individual parks with a goal of increasing resiliency, DPR oversees a number of ongoing initiatives to support citywide resiliency measures. Those projects range from leading the creation and implementation of the Rockaway Parks Conceptual Plan, which combines coastal protection and wetland restoration with neighborhood livability, to extensive coordination with the USACE to build protective berms and integrate community recreation along the East and South Shores of Staten Island.

iii) East Side Coastal Resiliency Citizen Participation Plan

ORR, DDC, and DPR will undertake a citizen participation plan that builds upon the CDBG-DR public participation process.

DDC has established a Project Management Plan (PMP) that outlines the project timeline and major milestones of the project. The PMP is divided into five phases of major milestones: Feasibility Study, Pre-Scoping, Conceptual Design; Preliminary Design Investigations (PDI); Final Design; Construction Procurement/Construction; and Close Out. Community engagement and outreach will take place during all five phases.

Although DDC is responsible for procuring and managing all contracts including the community engagement consultant, ORR and DPR will actively partner with the community engagement consultant to facilitate outreach and coordination. ORR will lead coordination of interagency press and communications.

ORR and DPR also will also take the lead role in coordinating community engagement and messaging with interested City, State, and Federal agencies throughout each of the five phases. Project implementation coordination with relevant City agencies will be considered part of DDC's project management responsibilities, with support from ORR and DPR.

The goals of the community outreach process will be aligned with that of the overall project, developed by the Project Team, and shaped by discussions with stakeholders and broader public workshops/feedback sessions. The overarching goals are to:

- Establish a clear structure for public feedback.
- Identify the needs and desires of stakeholders.
- Understand and manage issues, expectations, and challenges.
- Develop a body of community feedback data that supports project direction & decision making.
- Strengthen project design and implementation through public understanding and discussion.

Stakeholder engagement is intended to expand upon outreach conducted during the Rebuild by Design proposal phase and will emphasize the planning and design activities that advance implementation. This includes providing a platform to incorporate feedback from the various community stakeholders as the project moves from feasibility into design and then into construction.

The Project Team will:

- Compile a comprehensive list of stakeholder organizations and individuals with appropriate input from community leaders and elected representatives.
- Sufficiently advance site investigation and pre-design investigations ahead of community engagement to effectively guide and lead discussions with Stakeholders.
- Coordinate messaging and public presentations with other City initiatives and projects.
- Set up a series of meetings and briefings with major stakeholder groups.
- Establish one or more Community Advisory Groups.
- Establish a working partnership with community stakeholders, including but not limited to:
    - NYCHA residents and tenant associations;
    - Community Board leaders and members;
    - Community-based organizations;
    - Local businesses;
    - Local elected representatives.

As guided by the Project Team, a Consultant Team will engage community stakeholders to set priorities, and shape the project process. The City recognizes the unique knowledge, background and experience that local residents can bring to project planning and design. The City views partnerships with key constituencies as crucial to the success of the East Side Coastal Resiliency project. To facilitate productive interaction between the City and communities, the City will dedicate appropriate resources and attention to its engagement endeavors.

To that end, the City intends to host public planning and design workshops, with additional stakeholder consultations within specific and finite geographies in the project area. Meetings will include some or all of the following components:

- Discussion of technical aspects of project planning and design, including potential tradeoffs given budgetary and feasibility constraints;
- Direct interaction and feedback between the project team, design and feasibility consultants, and community stakeholders;
- A collaborative interaction, including explanations and assistance with technical processes, which seeks to align community design priorities with feasibility and design practicalities.

In general, the City seeks to empower local residents and stakeholders with broad input on the project's design and amenities, provided such input falls within the project's technical and budgetary boundaries. When necessary and practicable, the City will engage with residents who have limited English proficiency by communicating information in spoken and written formats in individuals' primary language.

iv) Project Timeline

- Survey Work, Feasibility Study and Pre-Scoping - October 2014 to December 2015.
- Design: Conceptual, Preliminary, Final - January 2015 to December 2016.
- Environmental Review and Permitting - January 2015 to December 2016.
- Site Development and Construction - June 2017 to June 2019.

Critical paths include:

- **Feasibility Study, Pre-Scoping and Conceptual Design**
    - Community collaboration
    - Technical feasibility analyses
    - Draft conceptual design development in collaboration with community stakeholders
    - Receipt of estimated construction cost and determining design trade-offs and adjustment of project limits
    - Public Design Commission (PDC) approval of conceptual design

- **Preliminary Design**
    - Community collaboration
    - PDC approval of preliminary submission.

- **Final Design**
    - Community collaboration
    - PDC approval of final submission

- **NEPA/EIS, ULURP and Permits**

v) Leveraged or Reasonably Anticipated Funds

Total CDBG-DR Allocation: $338,000,000

In addition to the $335 million allocated to this activity by HUD through the Rebuild by Design competition, the City has dedicated an additional $3 million in CDBG-DR funding to support this project.

$3 million of the City's CDBG-DR funds originally intended for an Integrated Flood Protection System Competition will be repurposed to advance planning and feasibility studies for Compartments 2 and 3 of the original Rebuild by Design proposal.

Any potential gaps in funding for the implementation of Compartment 1 and subsequent Compartments will be identified in the Feasibility Study, Pre-Scoping and Conceptual Design Phase of the project. Strategies to pursue additional funds will be identified at that time.

Rebuild by Design: Hunts Point Resiliency

i) Project Description

Hunts Point, the location of the City's largest food distribution center and a key distribution point for much of the fresh food that comes into the City, is vulnerable to the impacts of climate change and extreme weather events. The peninsula is located at the confluence of the Bronx River and the East River, which connects to the Long Island Sound to the east. Ninety-three acres of the 329-acre distribution center site lie within the 100-year floodplain, which is projected to grow in the 2050s due to sea level rise. While Hunts Point was spared the worst of Hurricane Sandy's impacts largely because the storm hit the City at low tide in the Long Island Sound, the storm highlighted the significant potential disruptions to the distribution center's operation that could have occurred, the results of which would have had devastating local and regional implications. If Sandy had taken a different path or arrived at a different time, the Hunts Point area might have flooded, lost power and significant inventory, and suffered from major operation interruptions. Hunts Point supplies as much as 60 percent of the produce consumed by the City and its customer base includes schools, food banks, soup kitchens, and pantries that serve New York's most vulnerable populations. None of the three wholesale markets has backup power sources to mitigate to risks of disruptions to the energy grid, and the food distribution center as a whole does not have a dedicated power source to meet long-term energy resiliency needs.

The Hunts Point peninsula was called out by the City as a priority site for integrated coastal protection interventions and other food supply-specific initiatives such as continuous power, as outlined in *A Stronger, More Resilient New York*. Building upon the City's plan, the "Hunts Point Lifelines" conceptual proposal calls for a strategic approach to resiliency that includes integrated coastal protection, workforce development, energy and stormwater resiliency, and an emergency maritime supply chain. Each of these proposal components is intended to support the long-term viability of the businesses located within this critical food distribution hub and would complement other efforts being undertaken by the City in Hunts Point to secure this vital City asset.

New York City has been awarded $20 million in CDBG-DR funding to advance this conceptual proposal, though the amount of funding allocated is not sufficient to fully fund the first phase. As such, the allocated funding will be used for continued study, analysis, planning, preliminary design, and stakeholder engagement to further evaluate the project components of the Hunts Point Lifelines proposal for financial and technical feasibility. Funds will also be used for design, engineering, and construction of a first phase pilot project that will improve the resiliency of the peninsula, which the City certifies that it will complete. The first phase pilot project has not yet been identified, and will be generated as a result of the continued study, analysis, planning, preliminary design, and stakeholder engagement mentioned above. In addition to the $20 million, an additional $25 million of CDBG-DR funds will be allocated to support this project.

The Federal Register Notice for the second allocation of funds (78 FR 69104) includes guidelines for "Resilience Performance Standards" related to infrastructure projects. Section VI(2)(e) of the Notice states,

"Using the guidelines in the Rebuilding Strategy, grantees are required to identify and implement resilience performance standards that can be applied to each infrastructure project."

The City is committed to developing and implementing a set of resiliency performance standards for all infrastructure projects. The City will look to the best available science and promising practices in resiliency to inform the development of these performance standards. One such resource will be recommendations provided in the Hurricane Sandy Rebuilding Strategy. Specifically, the City will refer to the guidance provided in the "A Regional Approach to Resilience" and "Infrastructure Resilience Guidelines" section of this document and will aim to develop a regionally coordinated, resilient approach to infrastructure investment through continued coordination with New York State and organizations such as the U.S. Army Corps of Engineers and FEMA. The City has already engaged in conversations with the Regional Coordination Working Group to discuss these projects. In the development of these resiliency performance standards, the City will incorporate the risk analysis and climate action plan laid out in *A Stronger, More Resilient New York,* which was the product of months of research and planning across City government and with our regional partners. The City stands behind this document but believes that developing and certifying, "Resilience Performance Standards" requires additional study and coordination with other Federally funded-disaster projects (including projects developed by Rebuild by Design, the United States Army Corps of Engineers, and FEMA).

Rooted in these resiliency performance standards, the City will advance a plan to monitor and evaluate the coastal protection infrastructure developed through this Rebuild by Design initiative. The purpose of this plan is to convey how the City will monitor the planning, implementation, and achievement of key milestones in the delivery of the completed Covered Project. During implementation of the monitoring plan, the City will ensure that all the appropriate mitigation measures are put into place and meet government standards. The plan will also include the evaluation methodology, which the City will implement after the projects are complete. The purpose of the evaluation methodology is to determine the Covered Project's efficacy level in addressing the community needs over a period of time. Components of the evaluation methodology may include the use of data to establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes. The City will be vigilant in doing immediate assessments after future storms events. The City will provide monitoring or assessment of the structures and equipment to see if they can withstand storm and hurricane conditions. This will be reported to the appropriate City departments to address any failures in structures and equipment. Additionally the City will explore standards for the replicability of this type of infrastructure.

The City will work with the Sandy Regional Infrastructure Resilience Coordination to coordinate permitting and construction of this project to align and integrate with other recovery projects in the area. Additionally, the City will work with the Sandy Regional Team for Federal Review and Permitting to expeditious processing.

- National Objective: Urgent Need; Low- and Moderate-Income Job Creation/Retention; Low- and Moderate-Income Area; Low- and Moderate-Income Limited Clientele – Microenterprise.
- Eligible Activity: Rebuild by Design.

ii) Internal Implementation Partnership

NYCEDC will be a subrecipient of the City of New York and will enter into a formal subrecipient agreement with ORR. NYCEDC anticipates engaging many City agencies including, but not limited to, DPR, DCP, DOT, DEP, and OMB. Working with ORR, NYCEDC will determine effective partnerships and contractual services

necessary to engage stakeholders and to construct a pilot project. These partnerships and contractual services will be described in greater detail in future amendments to this Action Plan.

iii) Hunts Point Citizen Participation Plan

Ongoing engagement with stakeholders will further explore resiliency goals and priorities for Hunts Point to advance the study of multiple project components and develop and implement a pilot project that can be completed with available funding. The stakeholders that will be engaged in this effort have largely been identified through the robust engagement efforts of the Rebuild by Design process to-date, including representation from government, community-based organizations, and the food manufacturing and distribution industry. Engagement with these stakeholders will occur through broad, inclusive meetings as well as targeted outreach with individual stakeholders. The City will facilitate these conversations, synthesize stakeholder input and feedback, and incorporate that input and feedback, along with financial and technical analyses, into a pilot project with independent utility to be completed within this funding allocation. Projects will be prioritized based on feedback gathered through the stakeholder engagement process, the City's ongoing strategic planning for resiliency and food distribution systems, and as determined financially and technically feasible given the amount of funding available.

The City recognizes the unique knowledge, background and experience that local residents, workers and business owners can bring to project planning and design. The City views partnerships with key constituencies as crucial to the success of the Hunts Point project. To facilitate productive interaction between the City and communities, the City will dedicate appropriate resources and attention to its engagement endeavors.

To that end, the City intends to host collaborative, participatory workshops with local stakeholders. Meetings will include some or all of the following components:

- Discussion of technical aspects of project planning and design, including potential tradeoffs given budgetary and feasibility constraints;
- Direct interaction and feedback between the project team, design and feasibility consultants, and community stakeholders;
- A collaborative interaction, including explanations and assistance with technical processes which seeks to align community design priorities with feasibility and design practicalities.

In general, the City seeks to empower local residents and stakeholders with broad input on the project's design and amenities, provided such input falls within the project's technical and budgetary boundaries. When necessary and practicable, the City will engage with residents who have limited English proficiency by communicating information in spoken and written formats in individuals' primary language.

iv) Project Timeline

Stakeholder engagement—2015, Initiation of a pilot project—2016

v) Leveraged or Reasonably Anticipated Funds

Total CDBG-DR Allocation: $45,000,000

In addition to the $20 million allocated to this activity by HUD through the Rebuild by Design competition, the City has dedicated an additional $25 million in CDBG-DR funding to support this project.

Planning & Administration Costs

Planning and Administration costs associated with Coastal Resiliency goals and objectives are described in Section XI of this document.

XI. PLANNING AND ADMINISTRATION

The City's total allocation of CDBG-DR funding is $85,740,000 to Planning and $161,080,000 to Administration. Only 5.9 percent of grant funding is going to Planning and Administration; this includes 3.8 percent of the total budget for Administration. The HUD requirements for this grant are that no more than 20 percent of funds go towards Planning and Administration, with no more than 5 percent going to Administration. The City is well within this requirement. A total of 94.2 percent of CDBG-DR funds is going directly to recovery and resiliency programs.

Planning

This section provides an overview of Planning costs for the implementation of CDBG-DR programs.

PROGRAM OBJECTIVE AND DESCRIPTION:

Planning activities will include activities related to the overall management of the grant, including the preparation and revision of the CDBG-DR Action Plan, ensuring the public is aware of and understands the Plan; the development of program policies and procedures; the creation of Subrecipient Agreements or Memorandums of Understanding; and the preparation and oversight of Environmental Reviews.

Furthermore, Planning funds will be used to cover other eligible costs associated with the planning of particular Program activities, such as Housing and Business recovery, and particularly Coastal Resiliency, as detailed here. These plans may also be used to guide long-term community development efforts comprising multiple activities funded by multiple sources.

Department of City Planning (DCP)
Immediately following Sandy, DCP staff worked overtime to perform data and GIS work for the Office of Emergency Management (OEM) and the Housing Recovery Office. This work focused on mitigating the immediate threat and risk to health, life, and safety citywide, with a greater emphasis on the communities most severely impacted by the storm. DCP will use CDBG-DR funds to recover previously incurred Sandy-related costs, consistent with the HUD CDBG-DR Allocation Rules published in the Federal Register March 5, 2013, and for long-term community planning and rebuilding efforts, including land-use studies. These funds are intended for use in the following categories: planning, community outreach, and implementation of neighborhood recovery strategies; citywide planning and zoning changes; urban design; geographic, demographic, legal, and other technical support; environmental review of zoning and land-use changes; and integration of coastal protections into local land-use and waterfront planning. CDBG-DR funds will be used to ensure DCP has adequate staff and capacity to support this work.

Mayor's Office of Recovery and Resiliency (ORR)
ORR was formed by Mayor de Blasio in March of 2014 to shepherd the City's recovery and resiliency efforts across city agencies in partnership with the community, regional partners, and other governmental authorities. The precursor to ORR, the Mayor's Office of Long-term Planning and Sustainability (OLTPS), played a critical role immediately following the storm, working closely with utilities and private customers to assist with energy system restoration efforts (power, gas, steam, and liquid fuel networks), and work on climate analysis and mapping as part of *A Stronger, More Resilient New York's* long-term resiliency efforts. ORR will use CDBG-DR money to execute a variety of long-term planning efforts in areas such as coastal protection and flood protection, in addition to overall coordination of implementation of resiliency efforts.

NYC Economic Development Corporation (NYCEDC)

NYCEDC has supported and expects to continue to support the work of *A Stronger, More Resilient New York* as described elsewhere herein. NYCEDC will use CDBG-DR funds, through a subrecipient agreement with ORR, for *A Stronger, More Resilient New York*-related and other long-term community planning and rebuilding efforts in close collaboration with DCP and other agencies. NYCEDC will undertake, jointly with ORR, a series of studies focused on repairing and flood-proofing the City's waterfront. The findings from these studies will inform a coordinated waterfront rebuilding effort and will aid the City in making strategic decisions about how to reduce the risk of living and building in the floodplain.

Department of Buildings (DOB)
Damages from Hurricane Sandy required building owners to obtain permits for construction work to restore buildings constructed under previous codes. Such alterations or renovations are governed by a complex mix of new and old codes and requirements. This complexity discourages upgrades that would improve resiliency, particularly during time-sensitive recovery periods. More often than not, the codes require replacement in-kind rather than improvement with regards to resiliency.

The City seeks to use CDBG-DR funds to develop and adopt an NYC Existing Building Code to simplify regulation of building upgrades and streamline permitting especially for resiliency improvements. The new code and/or other regulations would include specific provisions for post-disaster reconstruction. As with the otherNew York City Construction Codes, the Existing Building Code would be periodically updated and revised to ensure that it is always utilizing new technologies and relevant, up-to-date national standards. Adoption of the NYC Existing Building Code requires creation of a local law to be submitted to and approved by the City Council and signed by the Mayor.

Department of Information Technology and Telecommunications (DoITT)
During Sandy, DoITT played an integral role in assisting in executing the City's Hurricane Sandy response effort, communicating information to City residents and and assessing damage to wired and wireless networks in damaged and undamaged parts of the City. These outages threatened the health and safety of residents in these areas, inhibited City emergency response, and impaired economic activity. DoITT will use CDBG-DR funds to establish a new Telecommunications Planning and Resiliency Office (TPRO) that will serve two functions that would have assisted in the City in the Sandy response effort. The first function will be to determine how technology could have aided in the City's Hurricane Sandy response and build the necessary infrastructure for the City's response to future disasters. The second function will be to identify the causes of Sandy-related outages, ensure adequate repairs are made, identify changes to policies and procedures, and monitor and leverage franchise agreements to ensure continued operations during extreme weather events. The City believes that this is an eligible activity under 24 Part 570.205, Part (a): "Planning activities which consist of all costs of data gathering, studies, analysis and preparation of plans and the identification of actions that will implement such plans, including, but not limited to: (1) Comprehensive plans. . . (3) Functional plans, in areas such as: . . .(viii) Utilities."

The Mayor's Office of Environmental Remediation (OER)
OER works to ensure that brownfield sites are redeveloped in an environmentally safe manner, while encouraging new construction that can create economic opportunity. In the aftermath of Hurricane Sandy and Tropical Storm Irene, New York City residents used the Searchable Property Environmental Electronic Database (SPEED) to determine if flooding exposed residents to hazardous substances. SPEED continues to be a resource to individuals in the 100-year floodplain as defined by the Preliminary Flood Insurance Rate Maps. However, SPEED currently lacks the level of functionality necessary to provide accurate and up-to-date information. The City seeks to use CDBG-DR funding to expand the scope of SPEED to provide access to historical use information, resiliency-related content, and data layers relevant to storm protection and

climate change. By adding functionality, community planners to have direct access to government documents and information associated with recovery and resiliency.

HUD ELIGIBILITY CATEGORY: Planning and Administration(24 CFR 570.205 & 570.206)

NATIONAL OBJECTIVE: There is no HUD national objective for Planning activities.

CDBG-DR ALLOCATION: $85,740,000; this allocation is based on the best currently available data and has been adjusted since HUD's approval of the City's first approved Action Plan in May 2013 to meet the City's current anticipated needs.

PROJECTED ACCOMPLISHMENTS: N/A

PLANNING RESPONSIBILITIES: The Mayor's Office of Housing Recovery Operations; Department of Housing Preservation and Development; the New York City Housing Authority; the NYC Economic Development Corporation; Department of City Planning; Department of Parks and Recreation; Department of Information Technology and Telecommunications; Department of Buildings; Office of Environmental Remediation; Department of Design and Construction; the Mayor's Office of Recovery and Resiliency; Office of Management and Budget; the Mayor's Office and other central staff.

ELIGIBLE APPLICANTS/PROPERTIES: N/A

ELIGIBILITY CRITERIA: N/A

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: N/A

GEOGRAPHIC AREA TO BE SERVED: Citywide, with a particular emphasis on storm-impacted areas.

PROGRAM START AND END DATES: Duration of the CDBG-DR grant.

OTHER FUNDING SOURCES: TBD

Administration

This section provides an overview of Administration costs for the implementation of CDBG-DR programs.

PROGRAM OBJECTIVE AND DESCRIPTION: This function provides administrative and support services for the management and citizen participation necessary to formulate, implement, and evaluate the City's CDBG-DR Program. These activities have already included and will include in the future:

- Ensuring citizen participation (including publication of public notices).
- Preparation of the required CDBG-DR quarterly reports.
- Maintenance of the CDBG-DR website.
- Maintenance and development of portions of a Sandy funding reporting website covered under Local Law 140 of 2013.

- Monitoring of the expenditures for CDBG-DR programs.
- Monitoring of subrecipients, contractors, and City agencies.
- Delineation of population groups served by CDBG-DR programs.
- Liaison function with HUD, FEMA, and other Federal departments.
- Certification and maintenance of the necessary records that demonstrate that Federal requirements for environmental review, fair housing, relocation, labor standards, equal opportunity, and citizen participation are met.

Furthermore, Administration funds will be used to cover eligible costs associated with the administration of particular Program activities, such as Housing and Business recovery, and Coastal Resiliency.

HUD ELIGIBILITY CATEGORY: Administration (24 CFR 570.206)

NATIONAL OBJECTIVE: There is no HUD national objective for Administration activities.

CDBG-DR ALLOCATION: $161,080,000; this allocation is based on the best currently available data and has been adjusted since HUD's approval of the City's first approved Action Plan in May, 2013 to meet the City's current anticipated needs.

PROJECTED ACCOMPLISHMENTS: N/A

ADMINISTRATION RESPONSIBILITIES: The Mayor's Office of Housing Recovery Operations; Department of Housing Preservation and Development; the New York City Housing Authority; Department of Small Business Services; the NYC Economic Development Corporation; Department of City Planning; Department of Design and Construction; the Mayor's Office of Recovery and Resiliency; Office of Management and Budget; the Mayor's Office, and other central staff.

ELIGIBLE APPLICANTS/PROPERTIES: N/A

ELIGIBILITY CRITERIA: N/A

GRANT/LOAN SIZE LIMIT: N/A

PROGRAM PRIORITIES: N/A

GEOGRAPHIC AREA TO BE SERVED: N/A

PROGRAM START AND END DATES: Duration of the CDBG-DR grant

OTHER FUNDING SOURCES: TBD

XII. LONG-TERM RECOVERY PLANNING

Sound, Sustainable Long-Term Recovery Planning

The HUD regulations for the CDBG-DR funds requires New York City to describe how it will promote sound, sustainable, long-term planning that is informed by a post-disaster evaluation of hazard risk, especially land-use decisions that reflect responsible floodplain management and take into account possible sea level rise. The long-term recovery planning described herein supports the resiliency agenda detailed in the Resiliency section of the Action Plan. For an overview of how CDBG-DR funding will be used, please refer to the Resiliency Planning and Administration section.

New York City is coordinating with other local and regional planning efforts to address long-term recovery. The City of New York solicited feedback from governmental entities, individuals, and groups through meetings held across the affected areas. All feedback was considered during the preparation of this Action Plan.

The objective for long-term recovery planning is to conduct damage assessments, review hazard mitigation plans, prioritize revitalization strategies, create mitigation strategies, encourage revitalization of disaster-resistance communities and infrastructure, and strengthen the capacity to support business and economic stability.

Principles of Sustainability

New York City's programs and activities will make every attempt to protect people and property from harm and will encourage construction methods that emphasize high-quality, durable, energy-efficient, and water- and mold-resistant materials. The City will use code enforcement and hazard mitigation measures to accomplish its long-term recovery goals.

Hurricane Sandy highlighted the extent to which New York City's large, dense, and older building stock was not designed to account for the climate hazards the City faces today and into the future.

Prior to the storm, under PlaNYC, New York City's long-term sustainability plan, the City had identified the need to update flood hazard maps and construction standards in the flood zone. Following Hurricane Sandy, the City has worked with FEMA to release updated Advisory Base Flood Elevation maps for New York City, used emergency powers to expedite the enactment of code and zoning standards to promote construction that is resilient to coastal flooding, and is continuing to take action to implement regulations that enable the construction and retrofitting of flood-resilient buildings on an as-of-right basis. The City has also initiated extensive planning and analysis to identify and pursue further regulatory and programmatic measures to address the unique and unprecedented demands of adapting New York City's built environment to increasing coastal flood hazards.

FEMA recently released Preliminary Flood Insurance Rate Maps (FIRMs) for New York City, which contain the best currently available information about coastal flood risk and provide guidance on how to rebuild safely. A total of approximately 71,500 homes and commercial buildings, containing almost 600 million square feet of floor area, are now located within the City's flood zone and could be at risk in future storms. This vulnerability will increase as sea levels rise and coastal storms become more intense as a result of climate change.

The City will be in compliance with the provisions of Federal Register Notice FR 23578. The intent of this notice is to minimize harm related to actions within special flood hazard areas. It includes the requirement that, "In order to better ensure a sustainable long-term recovery, grantees must elevate (or may, for certain non-residential structures, floodproof), new construction and substantially improved structures one foot higher than the latest Federal Emergency Management Agency (FEMA) issued base flood elevation. Instead of elevating non-residential structures that are not critical actions as defined at 24 CFR 55.2(b)(2), grantees may design and construct the project such that below the flood level, the structure is floodproofed using the best available flood data plus one foot."

As part of PlaNYC, New York City is pursuing numerous initiatives to support sustainable development, including land use strategies that promote transit-oriented development and substantial reductions in the City's greenhouse gas emissions. In addition, as part of the New York-Connecticut Sustainable Communities consortium, funded through a HUD Sustainable Communities Regional Planning grant, New York City has been leading research on coastal adaptation options for dense urban environments, which pose unique and novel challenges for adaptation. Because much of the transit network serving the City and region is located in or near the coastal area, strategies to support the resiliency of existing communities and new transit-oriented development are critical to the City's and the region's economic future. By advancing strategies to make existing and new buildings more resilient in these dense, urban environments, the City will be supporting key regional planning priorities. Action Plan activities to rehabilitate and improve the resiliency of housing, support businesses, and improve transportation and other infrastructure serve the six livability principles of the Partnership for Sustainable Communities. The Department of City Planning's research on coastal resiliency strategies, initiated prior to the storm under the HUD grant, has guided rebuilding and long-term resiliency activities by providing information on measures that can be undertaken at the scale of individual buildings, sites, neighborhoods, and coastal reaches. Action Plan activities are further developing this research to inform program design and investments. The Sustainable Communities research is also serving as a critical tool for shaping the resiliency strategies that will be a subject of a future amendment to the Action Plan.

There is ample evidence showing that the coastal flood zones and elevations are not static and will continue to shift. Therefore, the City will implement a program to revise flood elevation standards based on observations of and updated projections for sea level rise, and on consideration of how elevation standards can be achieved within the City's characteristic building types while maintaining the vitality of neighborhoods.

In order to better inform efforts to address future coastal flood risks, the City is developing maps for planning purposes that reflect future coastal flood risks due to coastal surge and sea level rise. Maps will be developed that illustrate the future 100-year and 500-year floodplains for the 2020s and 2050s. These products will be used to inform planning and develop appropriate resiliency standards for various categories of buildings and critical infrastructure, such as power and liquid fuels infrastructure.

Department of City Planning

Prior to Hurricane Sandy, the Department of City Planning had initiated a climate resiliency work program to identify resiliency strategies at scales both large and small that can be effectively applied within New York City's dense, built-out environment. Following the storm, these activities are being expedited, expanded, and integrated within the City's coordinated recovery efforts to address the challenges of rebuilding and retrofitting to standards that will make the City more resilient to current and future climate hazards.

- Citywide planning: The construction of new flood-resilient building and the adaptation of existing buildings to increase their flood resiliency require changes to zoning regulations within areas that will be subject to coastal flooding. Approximately 68,000 buildings are situated within FEMA's Advisory 1% chance flood zone, an increase of 100 percent over the number of buildings within the 1% flood zone on the currently effective Flood Insurance Rate Maps. Emergency Executive Order 230 of 2013 (see "Construction Methods") relaxed certain zoning restrictions effective immediately, in order to enable the required elevation of buildings above Advisory Base Flood Elevations and the reconstruction of damaged or destroyed buildings provided they comply with the applicable requirements. In October 2013, DCP introduced amendments to the City's Zoning Resolution to make these and other critical near-term citywide changes to facilitate flood-resilient construction and adaptation of existing structures. Further subsequent zoning changes are also anticipated to address more complex regulatory issues with respect to flood protection, and to complement updates to the Building Code. These regulatory changes will incorporate urban design analysis to ensure that building-scale resiliency measures and coastal protections are suited to New York City's dense, urban fabric and support continued economic vitality and quality of life.
- Community planning: In neighborhoods affected by the storm and by shifts in coastal flood hazards, which necessitate changes to the form of buildings, local planning studies and community outreach will be required to identify and implement land use and zoning changes to facilitate rebuilding and increased resiliency. With more than 6,000 city blocks in the Operational Inundation Area, and more than 4,300 blocks within the five areas characterized as experiencing the most severe damage, planning studies will need to be conducted in multiple distinct neighborhoods within these geographies as well as in other vulnerable neighborhoods. Neighborhood studies will take into account current and projected future flood hazards, land use, housing, access to shopping, services, jobs, and transportation, built form and quality of the public realm, economic challenges of rebuilding and flood insurance costs, and other factors.
- Planning and technical support: DCP provides data analysis and technical support for land use and zoning studies as well as housing recovery and retrofitting initiatives, business assistance and economic recovery efforts. These support activities include mapping and GIS analysis and data support, updates to population estimates for affected areas, and legal, procedural, and other technical support for land use actions.

Enactment of land use and zoning changes will require analysis of the effects of these changes on the environment under the City Environmental Quality Review procedures.

In June 2013, the City released A Stronger, More Resilient New York. The report contains over 250 detailed initiatives addressing the vulnerabilities of the City's infrastructure, built environment, and coastal communities. Among the report's initiatives are the crucial programs included in this Action Plan to address important unmet needs that Sandy highlighted. The plan can be reviewed at: http://www.nyc.gov/html/sirr/html/report/report.shtml. The PlaNYC April 2014 update can be reviewed here: http://www.nyc.gov/html/planyc2030/downloads/pdf/140422_PlaNYCP-Report_FINAL_Web.pdf

Construction Methods

Since 1983, New York City's Building Code has contained flood-proofing requirements for buildings in FEMA-designated flood hazard areas. A key provision of these requirements is that new or substantially altered buildings must elevate their lowest finished floor, or flood-proof up to the 'Base Flood Elevation' indicated on the FEMA flood maps. During the storm, buildings constructed to meet code standards fared

significantly better than buildings that were built before the standards were in place, demonstrating the importance of these standards to protect property and other assets from flood risk. Still, Hurricane Sandy brought unprecedented flooding that was several feet higher – and extended over a larger area – than the base flood elevations estimated by FEMA prior to the storm.

On January 31, 2013, Mayor Bloomberg issued an emergency executive order (230) to suspend height and other restrictions to allow home and property owners rebuilding after Hurricane Sandy to meet updated flood standards without violating current zoning standards. The City also adopted a new rule to increase the required minimum flood-proofing elevation under the Building Code so that substantially damaged buildings and other new construction are built to withstand greater flood risk. The measures also should help New Yorkers limit the cost of future Federal flood insurance premiums by better protecting properties in flood-prone areas from risk and damage. The measures followed quickly upon the release of FEMA's Advisory Base Flood Elevation maps, which contain the best currently available information about coastal flood risk and provide guidance on how to rebuild safely. The Mayor first announced the City's intention to adjust construction requirements upon the availability of new flood data in an address in December 2013.

FEMA's Preliminary Flood Insurance Rate Maps (FIRMs) represent the best currently available information on flood hazards and the elevation buildings should meet to be protected from damage. Without the executive order, a number of existing and new buildings would not have been able to be built or elevated to comply with the FEMA-recommended elevations without creating conflicts with current zoning height limits and other requirements. The executive order suspends those limits so that those who need to build now can meet the new advisory elevations. The executive order also enables existing buildings to be reconstructed or retrofitted to meet the new advisory elevations, and new buildings can be built to adhere to these standards as well. The executive order also allows the reconstruction of many destroyed or severely damaged buildings that could not otherwise be rebuilt as they existed before the storm because of inconsistencies with current zoning requirements, provided that these buildings are flood-proofed to the new FEMA advisory elevations. This simultaneously promotes higher flood protection standards and swifter rebuilding and recovery in affected neighborhoods. The emergency suspension is necessary for property owners who need to make immediate rebuilding decisions, because the process of changing zoning limits takes many months. The City will proceed to introduce zoning text amendments through the land use review process in the coming months to extend these changes beyond the duration of the emergency period. By allowing large numbers of buildings to be elevated beyond ordinary zoning allowances on an as-of-right basis without the need for case-by-case review, the executive order and upcoming zoning text amendments represent an exceptionally progressive zoning approach to promoting coastal adaptation.

The emergency rule also promotes construction to better flood protection standards by increasing the minimum elevation requirements for buildings located in at-risk areas. New construction and repairs to substantially damaged buildings must protect the structures by building at least one or two feet above the flood elevation previously required in the building code. The added elevation will provide a further margin of safety from potential flood damage, serve to enhance life safety, and reduce property loss.

These measures will also help New Yorkers prepare for and potentially reduce Federal flood insurance premiums. This is particularly important for New Yorkers, because, following the July 2012 Congressional reauthorization of the National Flood Insurance Program, FEMA will be phasing out subsidized premiums, meaning that going forward premiums will be more reflective of the actual risks faced by insured buildings. Therefore, premiums will be lower for buildings that comply with recommended FEMA standards than for buildings that do not.

Over the course of the coming months, the City, working with the Federal government and others, will be seeking to put in place programs that may assist property owners with compliance with the new recommended elevations. While the executive order enables property owners who wish to rebuild now to do so, owners who elect to build at a later date may be able to utilize these additional resources.

The Mayor's executive order and rule are available on www.nyc.gov.

There are many planning efforts going on in the City in response to the impacts of Hurricane Sandy. These include:

- The Building Resiliency Task Force convened in December 2012 by the Mayor and then City Council Speaker Christine Quinn, charged to review current building codes and operational practices, and to make recommendations on how they could be amended to improve building resiliency and to facilitate recovery. The Task Force released its recommendations in June 2013.
- The Office of Housing Recovery Operations will conduct analyses of impacted buildings, scale of housing demand, characteristics of clients, and available supply for re-housing and promote best practices for retrofitting and rebuilding.
- NYC Construction Code Revision: Every three years, the New York City Construction Codes must be updated by the Department of Buildings, based upon the latest version of the International Code Council Codes (I-Codes). The City is in the process of amending the NYC Construction Codes utilizing the 2009 I-Codes. In June 2013, the Department of Buildings released "Rebuilding NYC After Hurricane Sandy: A Guide to New Code and Zoning Standards for Industry Professionals."

The Department of Buildings website also contains a page devoted to relevant information related to post-Sandy information, especially the *Guide to Rebuilding After Hurricane Sandy*, which outlines procedures and requirements for reconstruction and repair work.

All new building construction and alteration and/or repairs of existing buildings in New York City are regulated by the 2008 NYC Construction Codes (which include the Administrative, Building, Fuel Gas, Mechanical, and Plumbing Codes) or the 1968 Building Code, which emphasize high quality and durability of materials. The NYC Energy Conservation Code ensures that all new construction and alteration and repairs to existing buildings meet prescribed energy efficiency standards.

Construction activities on buildings located within Special Flood Hazard Areas are required to comply with the special provisions of Appendix G of the NYC Building Code (Appendix G). Construction on buildings located in the areas that have been substantially damaged or totally destroyed (as defined in Appendix G) by Hurricane Sandy must comply with Appendix G as if a new building. Repairs or alterations of existing buildings located in the Special Flood Hazard Areas but not substantially damaged are not required to retrofit and make the building comply fully with the requirements of Appendix G; however, such repairs or alterations may not increase the degree of non-compliance.

Appendix G requires that the lowest floor of a building be elevated above the Design Flood Elevation. Additionally all utilities and attended equipment must be elevated above the Design Flood Elevation. Pursuant to the emergency rule by the Commissioner of Buildings, the Design Flood Elevation has been increased to two feet above the Base Flood Elevation for one- and two-family dwellings and one foot for most other buildings. Spaces below the lowest floor are required to be constructed of flood resistant materials. These materials by definition can be submerged in water for limited duration without contributing to or promoting the growth of mold.

Future property damage will be minimized by mandatory elevation of structures that are substantially or totally damaged. The Department of Buildings strongly encourages applicants to design buildings to a higher standard than required. Besides decreasing the risk of damage in future storms, owners will also have significant savings on flood insurance premiums for each foot of freeboard (elevation height above the required Base Flood Elevation, or "BFE"). As mentioned previously, FEMA has already issued advisory maps with new, increased BFEs; it is anticipated that the new final Flood Insurance Rate Maps (FIRMS) with higher BFEs will be released in the next year.

Additionally, new building construction is required to completely comply with the New York City Energy Conservation Code (NYCECC) resulting in a new building stock that is energy efficient. It should be noted that alterations, additions, and renovations to an existing building, building system(s), or portion thereof must conform to the NYCECC as they relate to new construction without requiring the unaltered portion of the existing building or building system(s) to comply.

In accordance with the standard practice at the Department of Housing Preservation and Development, the City's residential programs will require that all rehabilitation, reconstruction, and new construction work adhere to the Enterprise Green Communities Standard or Energy Star Certified Homes. For rehabilitation work that cannot meet the Enterprise Green Communities Standard, the City will follow the guidelines specified in the HUD CPD Green Building Checklist.

XIII. OTHER PROGRAM CRITERIA

These program criteria are part of the certifications the City was required to make to HUD as outlined in the March 5, 2013 Federal Register Notice. The November 18, 2013 Federal Register Notice requires the City to identify any material changes in its processes or procedures that could potentially impact the prior certification. In Action Plan Amendment 5B, the City advises HUD that it will amend its certifications to reflect the City's processes and/or procedures and to provide any new certifications identified in the November 18, 2013 Federal Register Notice.

Compliance

Prior to CDBG-DR grant expenditures, New York City agencies and subrecipients that will operate programs detailed in this and future Action Plans, together with the City agencies that oversee them ("CDBG-DR agencies"), would be required to prepare (for new programs) or update (for expansions of existing programs) program-specific written policies and procedures manuals and/or standard operating procedures ("Procedures Manuals") (previously referred to as "Compliance Manuals") detailing procedures they will use to ensure compliance with programmatic and financial requirements of CDBG-DR. These would be reviewed for completeness by the CDBG-DR Unit within the New York City Office of Management and Budget ("OMB CDBG-DR") and, as appropriate, OMB CDBG-DR would confirm the manuals are complete or request modifications.

CDBG-DR agencies may propose alternate compliance methodologies to the OMB CDBG-DR Unit, where such alternate procedures are expected to be at least equally effective for ensuring compliance.

The steps for CDBG-DR agencies may use in developing Procedures Manuals for individual programs are:

1. Identify eligibility criteria and the point of initial evaluation or intake for each program.
2. Develop checklists/procedures for use in eligibility evaluation or intake, listing all criteria and documentation/certifications necessary to evidence compliance.
3. Determine and develop checklists/procedures for appropriate periodic monitoring procedures (certified status reports, site inspections, beneficiary eligibility recertification, measures to ensure the terms of affordability are being met, etc.).
4. Determine and develop checklists/procedures for appropriate close-out procedures.
5. Identify required record retention policies including what must be maintained (checklists, originals or copies of certifications and other documents, periodic reports), in what form (paper files, electronic files, etc.), short- and long-term storage location and the City's five year minimum record retention period for CDBG-DR funding.
6. Prepare written program Compliance Manuals, including required use of intake, periodic monitoring, and close-out checklists/procedures and record retention, for prior approval by OMB CDBG-DR, and for use in training and as reference materials for program staff.

The Procedures Manuals would be a part of the City's monitoring process, as discussed below.

The City is responsible for developing procedures and ensuring compliance with HUD regulations covering the CDBG-DR grant, including:

- Duplication of Benefits: establish a procedure for checking insurance, FEMA, SBA, and other funding sources, and documenting that no duplication of benefits has occurred.
- Income Certification: Establish a procedure to certify household size and income.
- Environmental Review: all projects must go through "reviews required by NEPA and related laws and authorities."
- Davis-Bacon Labor Standards and the Related Acts as well as other applicable Federal regulations.
- Section 3 of the Housing and Urban Development Act of 1968, 24 CFR 135, as applicable for projects and activities described within this Action Plan.

Monitoring

After the appropriation of CDBG-DR funds, as a means to continually mitigate and manage risk associated with using CDBG-DR funds, the City would utilize monitoring procedures following the mandates of applicable guidelines, which may include the Managing CDBG Guidebook for Grantees and Subrecipients and the CPD Monitoring Handbook 6509.2 REV-6. The goal is to ensure compliance with City, State, and Federal regulations and provide for a centralized review and accountability of the CDBG-DR funds.

The City's grant monitoring would be developed by each CDBG-DR agency and OMB CDBG-DR and included in policies and procedures documents. The monitoring process may use a risk-based approach that would take into consideration the complexity of projects, staff changes, past performances, the level of experience of program managers and administrators, a review of progress reports, and may be tied to the dollar thresholds.

The monitoring system would have multiple levels, which together will substantially mitigate the risk of non-compliance including the risks of fraud, waste, or abuse in CDBG-DR programs and grant expenditures.

1. CDBG-DR Agency-Based Monitoring:

As formulated to encompass all compliance requirements and specified in the program's Procedures Manual, CDBG-DR Agencies would utilize procedures, such as checklists, as an integral part of the monitoring process. Procedures would be used to carry out and document monitoring, such as quality assurance/quality control (QA/QC) processes or file reviews, as well as adherence to and fulfillment of the program requirements regarding:

- Initial eligibility assessments/intake procedures.
- Periodic monitoring procedures.
- Close-out procedures.

Additionally, CDBG-DR Agencies will provide programmatic and financial reports to OMB CDBG-DR as requested.

2. OMB CDBG-DR Monitoring and Quality Assurance:

The OMB CDBG-DR unit would carry out centralized programmatic and financial monitoring of all CDBG-DR programs. This Unit would, for a particular grant or grantee, decide the nature and frequency of the

activities by using a process such as a risk-based approach and einclude the process in a procedure document.

The OMB CDBG-DR Unit would establish periodic reporting requirements for CDBG-DR Agencies consistent with what is required by HUD, and perform desk reviews of submissions. A desk review of documents submitted would be used to identify omissions, anomalies, questionable activities and costs, including those cases where expenditures may not be necessary and reasonable. [24 CFR Part 225 states that "A cost is reasonable if, in its nature and amount, it does not exceed that which would be incurred by a prudent person under the circumstances prevailing at the time the decision was made."] The OMB CDBG-DR Unit would follow-up on any issues noted in the desk review to obtain adequate explanations and documentation from the CDBG-DR Agency, and where appropriate, may refer a specific program to Internal Audit (discussed below).

OMB CDBG-DR would also ensure that the City, State, and Federal program-related timelines and benchmarks are being achieved as projected.

Additionally, the OMB CDBG-DR Unit would prepare and submit all reports required by HUD on CDBG-DR programs such as the Quarterly Performance Reports, and/or coordinate with and review such reports prepared by CDBG-DR Agencies.

3. Internal Audit:

The City would hire staff or secure consultant services to be responsible for the development and execution of an internal audit program including desk and field audits of CDBG-DR-funded programs in all CDBG-DR Agencies, on a rotating basis. The internal audit program and all audit work would start and be conducted in accordance with accepted internal audit practices. Some or all of the staffing of internal audit may be contracted to one or more outside certified public accounting (CPA) firms with appropriate expertise and experience. Staff that are employed directly by the City of New York for internal audit functions would not report to the same Deputy Director that also oversees the OMB CDBG-DR unit, so as to maintain audit independence.

A desk audit is a review of documents requested of and submitted by the CDBG-DR Agency, similar to but more complete than, the desk review. All programs would be subjected to at least one desk audit each year as part of the audit plan.

A field audit involves auditors working at program locations and interviewing CDBG-DR Agency staff and reviewing documents for the purpose of documenting and testing internal controls, and for the examination of documentation supporting expenditures for eligibility, allowable expenditures, and compliance with Federal and City laws and regulations applicable to CDBG-DR-funded expenditures generally and the specific program. As part of this, auditors would judge if costs are necessary and reasonable. Programs would be selected on a rotating basis for field audit based on general risk assessments, results of desk audits, and other factors as appropriate.

4. External Financial Reporting and Independent Audit:

New York City's budgeting and its annual external financial reporting are both done in accordance with generally accepted accounting principles applicable to U.S. state and local governments ("GAAP"), meaning

that the City meets the highest standards of financial reporting and an extremely high – and rare – standard for budgeting.

The City's GAAP financial statements are audited by an independent CPA firm each year, and an annual Federal funds Single Audit of all Federal grant expenditures is also conducted by that firm in accordance with Federal OMB Circular A-133 (including subrecipient monitoring). Based on its size, the CDBG-DR grants are virtually certain to qualify as a "Major Program" within the Single Audit, meaning that they would be subject to extensive compliance and internal control testing by the independent auditors and that the auditors would report deficiencies noted, if any, in these programs.

Duplication of Benefits

The City of New York is creating several disaster recovery programs and must consider whether one program will duplicate assistance provided by another program. The following framework provides a possible structure for departments or other organizations implementing disaster recovery programs in determining the amount of CDBG-DR assistance that will not duplicate assistance from other resources. For purposes of this plan, the term "City" refers to the City of New York and its agencies responsible for delivering CDBG-DR assistance.

A. Assessment of need prior to assistance.
B. Total assistance available to the person or entity.
C. Non-duplicative assistance excluded from final benefit calculation.
    1. Funds for a different purpose.
    2. Funds for same purpose, different eligible use.
    3. Funds not available to the applicant.
    4. Private loans.
    5. Other assets or lines of credit.
D. Calculate CDBG-DR award.
E. Unmet need.
F. Use of CDBG-DR Funds
    1. Use of funds for explicit and eligible purposes.
    2. Treatment of SBA Loans.
G. Collecting a Duplication of Benefit.

Administrative Procedures for Identifying the Duplication of Benefits

1. For each CDBG-DR-funded program, the City would identify potential assistance from insurance, Federal and State government, City agencies, and private or non-profit charity organizations (covered assistance) that it reasonably expects to be in a project or to otherwise be received by a beneficiary of CDBG-DR assistance.
2. All applicants for assistance from the City's CDBG-DR allocation would be required to identify their other sources and amounts of covered assistance (sources and uses), and to certify that the CDBG-DR assistance requested does not duplicate other covered assistance that has been received or is reasonably expected to be received.

3. In any application for CDBG-DR assistance, the City would require beneficiaries to agree to repay any assistance later received for the same purpose as the CDBG-DR funds.
4. In conjunction with its actions to prevent fraud, waste, and abuse, the City would employ data systems and data sharing and data matching to identify duplication of benefits. The City would enter into data-sharing agreements with relevant Federal and State agencies, and other entities, as appropriate.
5. The City would include duplication of benefits among its review criteria in monitoring for compliance with applicable laws, regulations, and other authorities.

Applicable Laws and HUD Guidance

- Public Law 113-2: Disaster Relief Appropriations Act, 2013 (at HR152-34) Signed January 29, 2013.
- Section 312 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5155), as amended.
- 44 CFR 206.191 Duplication of Benefit.
- HUD *Federal Register* Notice, at 76 FR 71060, published November 16, 2011.
- HUD *Federal Register* Notice, at 78 FR 14329, effective March 11, 2013.
- HUD *Federal Register* Notice, at 78 FR 69104, effective November 25, 2013.
- Section 18 of the Small Business Act, as amended (14A U.S.C. 647).

Examples of Housing Duplication of Benefit Analysis

The Owner/Applicant would provide the program information related to funds received and spent as a result of Hurricane Sandy impacts.

The City would review all the funds received by the owner and determine which funds are for the same purpose as the assistance the owner is requesting. This is the amount for duplication of benefits calculation.

The owner would provide receipts and sign a statement of how the funds were spent. The statement of how the funds were spent will be divided into categories of (1) Rehabilitation/Reconstruction, (2) Allowed Activities, and (3) Not duplication of benefit expenditures. The statement of funds spent from category 1 is called the Certification of Work Already Completed. The statement of funds spent from category 2 is called the Allowed Activities. Category 3 is not subject to duplication of benefit calculation.

This information would be provided to the team conducting Home Evaluations for verification. The Home Evaluator would verify that the repair work documented by the owner is reasonable and completed; at the same time the Home Evaluator would estimate the cost of the work that needs to be completed in order to meet current code.

DOB Example, Not Displaced: Property owner is applying for home rehabilitation assistance from the Build it Back program. The owner was able to live in the home while repairing the impacts from Hurricane Sandy.

Initial Cost estimate:	$180,000
Funds received from FEMA, SBA, insurance & others for same purpose:	$150,000

City's verification of Owner Certification of Work Already Completed:	-$100,000
Funds that the owner will provide to complete work:	$50,000
CDBG-DR Build it Back Program Unmet Need, eligible for assistance	$30,000

DOB Example, Interim Housing: Property owner is applying for home rehabilitation assistance from the Build it Back program. The owner was not able live in the home for a couple months while repairing the impacts from Hurricane Sandy, but has since moved in the completed area.

Initial Cost estimate:	$180,000
Funds received from FEMA, SBA, insurance & others for same purpose:	$150,000
City's verification: Owner Certification of Work Already Completed:	-$100,000
City's verification: Owner Certification of Allowed Activities:	-$10,000
Funds that the owner will provide to complete work:	$40,000
CDBG-DR Build it Back Program Unmet Need, eligible for assistance	$40,000

DOB Example, Spent personal funds: Property owner is applying for home rehabilitation assistance from the Build it Back program. The owner was not able to live in the home for a couple months while repairing the impacts from Hurricane Sandy, but has since moved in the completed area. The owner spent more than what they received from FEMA, SBA, insurance and others for repair work.

Initial Cost estimate:	$230,000
Funds received from FEMA, SBA, insurance & others for same purpose:	$150,000
City's verification: Owner Certification of Work Already Completed:	-$160,000
City's verification: Owner Certification of Eligible Costs for Interim Housing:	-$10,000
Funds that the owner will provide to complete work:	$0
CDBG-DR Build it Back Program Unmet Need, eligible for assistance	$70,000

DOB Example, Received Additional funds after signing assistance agreement: Property owner is applying for home rehabilitation assistance from the Build it Back program. The owner was not able to live in the home for a couple months while repairing the impacts from Hurricane Sandy, but has since moved in the completed area. The owner spent more than what they received from FEMA, SBA, insurance and others for repair work. After signing the assistance agreement, the owner receives an adjusted insurance settlement that must be provided back to the program as reimbursement of assistance, not to exceed the amount of received by CDBG-DR.

Initial Cost estimate:	$280,000
Funds received from FEMA, SBA, insurance & others for same purpose:	$150,000
City's verification: Owner Certification of Work Already Completed:	-$200,000
City's verification: Owner Certification of Eligible Costs for Interim Housing:	-$10,000
Funds that the owner will provide to complete work:	$0
CDBG-DR Build it Back Program Unmet Need, eligible for assistance	$80,000

CDBG-DR Spent to complete work on home	$80,000
Owner receives an additional insurance settlement of $100,000, repays CDBG-DR	$80,000

Program Income

It is expected that certain CDBG-DR-funded programs will generate income. Any program income earned as a result of CDBG-DR-funded activities will be subject to the rules outlined in Federal Register notice 78 FR 14329. In the Notice, HUD provides grantees the option of transferring program income to their annual CDBG-DR entitlement grant (if applicable) or to be used as CDBG-DR funds until grant closeout. It is anticipated the City would apply program income received to the CDBG-DR program toward the funding of further disaster-related activities or other CDBG-eligible activities, with the final determination of end use made by the City's Office of Management and Budget. Accordingly, program income received before closeout of the CDBG-DR grant would be subject to CDBG-DR requirements and must be used in accordance with the City's CDBG-DR Action Plan. To the maximum extent feasible, HUD requires that program income shall be used or distributed before additional withdrawals from the U.S. Treasury are made.

Subrecipient Agreements

New York City may enter into subrecipient agreements to facilitate programs and activities described in the Action Plan. Subrecipients could be governmental agencies, private non-profits, and Community Based Development Organizations. The City would create monitoring procedures to ensure compliance with state and Federal regulations.

Subrecipient agreements would outline all reporting requirements. These would include, butnot be limited to Quarterly Performance Reports that include Performance Measures and Outcomes, annual audit reports, contractual obligations and Minority- and Women-Owned Business Enterprise reports, Section 3 reporting requirements, and Labor Standards, all as required.

Each subrecipient would be monitored at least once annually. Subrecipients may be subject to more frequent monitoring based on complexity of projects, staff changes, past performance, level of experience of the program managers and administrators, the level of expenditures, a review of progress reports, and in some cases, the dollar threshold.

Subrecipients may be responsible for ensuring that CDBG-DR funds do not duplicate other benefits. In order to do so, subrecipients would:

- Assess the full scope of the recovery need for each beneficiary.
- Calculate all benefits already received, including FEMA and SBA aid, other local, state, or Federal assistance, and charitable grants.
- Calculate all benefits likely to be received in the future.
- Collect a signed agreement to repay any assistance later received for the same purpose as the CDBG-DR funds. This agreement shall cover a period of three years, and the sub-grantee is responsible for monitoring beneficiaries during that period.
- Create a system to collect and maintain documentation from beneficiaries documenting use of benefits received, such as receipts for interim rental payments.

Subrecipient monitoring, including review of compliance with applicable HUD regulations, would be conducted by agency program staff, working in conjunction with agency audit liaisons, and the Office of Management and Budget, as applicable.

Capacity Building

The New York City Office of Management and Budget (OMB) as well as the various agencies that are administering CDBG-DR programs would provide technical and management assistance to other intergovernmental agencies, sub-grantees, and subrecipients when necessary. The assistance would be provided in the form of training sessions and/or individual meetings specific to the CDBG-DR requirements. Guidance for general requirements would also be covered for those individuals and entities that have no CDBG-DR experience.

OMB staff has extensive experience in successfully managing the CDBG Entitlement program. The City has been administering the CDBG Entitlement Program for 39 years and the OMB CD Unit collectively has 214 years of experience doing so. Given the depth of experience of the existing staff and the systems in place to track and measure CDBG-DR performance outcomes and compliance requirements, the City of New York staff can adequately ensure that the CDBG-DR program would be managed appropriately. In those areas where the City may need assistance, it would hire additional staff, seek the assistance of HUD's Technical Assistance Program, and may work with outside professional consultants and other capacity building organizations.

The City of New York would also use its monitoring program to assist grant recipients and provide additional technical assistance and capacity building around specific programmatic functions and activities. This would further strengthen the program and assure that guidelines are adhered to, program objectives are met, and overall community capacity is increased and sustained throughout the long term recovery process.

Agencies, in conjunction with the New York City Office of Management and Budget, would hold trainings for subrecipients and, as appropriate, other entities participating in loan/grant programs to ensure that they have the capacity to administer CDBG-DR. Agency staff would be available on an ongoing basis to answer questions and provide support to subrecipients. For example, the Department of Housing Preservation and Development would train all subrecipient groups on key CDBG-DR regulations, including, but not limited to:

- Determination of low- and moderate-income eligibility.
- Calculations of duplication of benefit.
- Identification of properties in the 100-year floodplain.
- Purchase and maintenance of flood insurance.
- Compliance with lead-based paint requirements.
- Mold remediation.
- Historic preservation review.

Citizen Participation Plan

a. Background

The City of New York is the recipient of a Community Development Block Grant-Disaster Recovery Grant (CDBG-DR) in accordance with the Disaster Relief Appropriations Act, 2013 (Public Law 113-2). These funds are being made available to assist disaster recovery efforts in response to Hurricane Sandy. A requirement of this program is the adoption of a Citizen Participation Plan. The Federal Register at 78 FR 14329 contains a list of waivers that permits changes to the City of New York's Consolidated Plan Citizen Participation Plan. The Federal Register assigning the second allocation of Hurricane Sandy funds (78 FR 69104) modified these requirements. The following section describes the citizen participation process in conformance with the regulations.

b. Public Hearing

For substantial amendments to the Action Plan, the City of New York will hold public hearing(s). Citizens and stakeholders will have reasonable and timely access to the public hearing(s).

In upcoming public hearings, the City will provide the opportunity for citizens to submit comments orally. The City treats written and oral comments equally and incorporates both in the Responses to Public Comment document submitted to HUD with substantial amendments.

c. Public Notice and Comment Period

In accordance with CDBG-DR requirements, the City of New York has developed and will maintain a comprehensive website regarding all disaster recovery activities assisted with these funds. The City will post all Action Plans and amendments on the City's CDBG-DR website (www.nyc.gov/cdbg) to give citizens an opportunity to read the plan and to submit comment(s). This website is featured prominently on, and is easily navigable from, the City's Recovery homepage (www.nyc.gov/recovery).

Paper copies of the Action Plan will be available in both English (including large, 18pt type) and the languages listed in the "Individuals with Limited English Proficiency (LEP)" section at the following address:

Office of Management and Budget
255 Greenwich Street, 8th Floor
New York, New York 10007

A comment period of at least thirty (30) days, as required by HUD, shall be provided for citizens, affected local governments, and other interested parties an opportunity to comment on substantial amendments to the Action Plan. An alternative requirement allows for a comment period of at least seven (7) days when proposing an adjustment of more than $1 million for a Covered Project. Notices advertising the public comment period will be placed in daily newspapers, non-English newspapers, and weekly community newspapers. Comments may be submitted as follows:

- Electronically on the City's CDBG-DR website at www.nyc.gov/cdbg.
- Written comments may be mailed to:
  Office of Management and Budget

255 Greenwich Street, 8th Floor
New York, NY 10007

- By telephone by contacting 311, New York City's main source of government information and non-emergency services. Dial 311 within New York City or (212)-NEW-YORK (212-639-9675) from outside New York City.

At the end of the comment period, all comments shall be reviewed and a City response will be incorporated into the City's Responses to Public Comments document. A summary of the comments and the City's responses will be submitted to HUD with the Action Plan. A revised Action Plan including the public comments and responses will be posted on the City's CDBG-DR website.

d. Individuals with Limited English Proficiency (LEP)

Based on LEP data within the impacted areas collected by the City, both the instructions for commenting on, and access to, the Plan will be translated into Spanish, Russian, and Chinese (simplified). Comments will be accepted through the online commenting form in English and the three previously mentioned languages. The City will make every possible effort to translate and consider comments submitted in any other language within the timeframe. Individuals with Limited English Proficiency also have the option of submitting their comment orally through 311. The City's 311 service has the capacity to accept comments in multiple languages, including the three specified here. This service is available throughout the entire comment period.

The Public Notices, announcing the public comment period dates and hearing locations, are published in eight newspapers, including El Diario (Spanish), Russkaya Reklama (Russian), Sing Tao Daily (Chinese).

The City provides translated copies of the Action Plan Amendments, including Amendment 8B, at public hearings in Spanish, Russian, and Chinese (simplified). Copies of these documents remain posted on the City's website and are available at the Office of Management and Budget during the comment period. At public hearings, the City offers in-person interpretation services in Spanish, Russian, Mandarin, and Cantonese. The interpreters are also available to translate citizen questions.

e. Persons with Disabilities

As noted above, hard copies of Action Plans will be available in large print format (18pt font size) at the location listed above. The online materials will also be accessible for the visually impaired. For more information on how people with disabilities can access and comment on the Action Plan, dial 311 or, using a TTY or Text Telephone, (212) 504-4115.

f. The Final HUD-Approved Action Plan

Following HUD approval of the Action Plan, it will be posted on the City's CDBG-DR website. Copies of the Final Action Plan will also be made available upon request.

g. Response to Citizen Complaints

The City of New York shall provide a written response to every complaint relative to the CDBG-DR grant within fifteen (15) working days of receipt if practicable.

h. Performance Review

The requirements for submission of a Performance Evaluation Report (PER) are waived for the CDBG-DR program. As an alternative, the City's Action Plan would be entered into HUD's Disaster Recovery Grant Reporting (DRGR) system. The City would submit a performance report in a form to be prescribed by HUD no later than thirty days following the end of each quarter, beginning after the first full calendar quarter after grants award and continuing until all funds have been expended. The quarterly reports shall use the DRGR system and be posted on the City's website within three days of submission.

i. Action Plan Amendments

In the case of amendments, the City of New York will follow two alternative citizen participation processes. In the cases of a substantial amendment, the procedures detailed above would be followed. A substantial amendment shall be defined as: a change in program benefit, beneficiary or eligibility criteria, the allocation or re-allocation of more than $1 million, or the addition or deletion of an activity.

For amendments considered to be non-substantial, the City shall notify HUD, but public comment is not required. Every amendment, substantial or not, shall be numbered sequentially and posted on the website.

j. Rebuild by Design

The City will be administering two Rebuild by Design projects. These projects were selected through a competitive process by HUD and involved in transparent and inclusive community outreach and public participation. The City will continue to engage community stakeholders through the planning, design, and development process. Descriptions of the citizen participation plans related to each Rebuild by Design project can be found in the Coastal Resiliency section of this Action Plan.

Resiliency Standards

The November 18, 2013, *Federal Register* Notice requires the City to certify that it would apply resiliency performance standards, using the guidelines in the Hurricane Sandy Rebuilding Strategy, to infrastructure projects identified in the Action Plan after November 25, 2013. The City would apply resiliency performance standards and further detail is provided in the IOCS section of the Action Plan.

Rebuild by Design Hunts Point Pilot Project

The October 16, 2014, *Federal Register* Notice requires the City to certify that it will complete the Hunts Point pilot project. The City would complete a Hunts Point pilot project with independent utility and further detail is provided in the Rebuild by Design section of the Coastal Resiliency chapter in this Action Plan.

XIV. APPENDICES

Appendix A: Damaged City-Owned and –Leased Facilities

Public Schools and DOE Facilities

Bronx

- Bronx Leadership Academy II High School - 730 Concourse Village West
- Herbert H. Lehman High School - 3000 East Tremont Avenue
- I.S. 117 - 1865 Morris Avenue
- I.S. 241 - 1595 Bathgate Avenue
- Morris Academy for Collaborative Studies - 1110 Boston Road
- P.S. 6 - 1000 East Tremont Avenue
- P.S. 31 – 425 Grand Concourse
- P.S. 56 - 341 East 207th Street
- P.S. 75 - 984 Faile Street
- P.S. 86 - 2756 Reservoir Avenue
- Peace & Diversity Academy - 3441 Steenwick Avenue

Brooklyn

- Abraham Lincoln High School - 2800 Ocean Parkway
- I.S. 98 - 1401 Emmons Avenue
- I.S. 211 - 1001 East 100th Street
- I.S. 239 - 2401 Neptune Avenue
- I.S. 303 - 501 West Avenue
- International High School - 2630 Benson Avenue
- John Dewey High School - 50 Avenue X
- Liberation Diploma Plus High School - 2865 West 19th Street
- P.S. 15 - 71 Sullivan Street
- P.S. 90 - 2840 West 12th Street
- P.S. 134 - 4001 18th Avenue
- P.S. 188 - 3314 Neptune Avenue
- P.S. 195 - 131 Irwin Street
- P.S. 253 - 601 Oceanview Avenue
- P.S. 254 - 1801 Avenue Y
- P.S. 276 - 1070 East 83rd Street
- P.S. 279 - 1070 East 104th Street

- P.S. 288 - 2950 West 25th Street
- P.S. 329 - 2929 West 30th Street
- William E. Grady Vocational High School - 25 Brighton 4th Road

Manhattan

- Bard High School Early College - 525 East Houston Street
- P.S. 61 - 610 East 12th Street
- P.S. 112 - 535 East 119th Street

Queens

- Academy of Medical Technology - 8-21 Bay 25th Street
- Beach Channel High School - 100-00 Beach Channel Drive
- Forest Hills High School - 67-01 110th Street
- Frederick Douglass Academy VI - 8-21 Bay 25th Street
- I.S. 53 - 10-45 Nameoke Street
- J.H.S. 180 - 320 Beach 104th Street
- Math, Science, Research & Technical High School - 207-01 116th Avenue
- P.S. 40 - 109-20 Union Hall Street
- P.S. 42 - 488 Beach 66th Street
- P.S. 43 - 160 Beach 29th Street/12 Marvin Street
- P.S. 47 - 9 Power Road
- P.S. 78 - 48-09 Center Boulevard
- P.S. 104 - 26-01 Mott Avenue
- P.S. 105 - 420 Beach 51st Street
- P.S. 106 - 180 Beach 35th Street
- P.S. 114 - 134-01 Cronston Avenue
- P.S. 146 - 98-01 159th Avenue
- P.S. 153 - 60-02 60th Lane
- P.S. 171 - 14-14 29th Avenue
- P.S. 182 - 153-27 88th Avenue
- P.S. 183 - 2-45 Beach 79th Street
- P.S. 195 - 253-50 149th Avenue
- P.S. 197 - 825 Hicksville Road
- P.S. 207 - 159-15 88th Street
- P.S. 215 - 535 Briar Place
- P.S. 253 - 1307 Central Avenue
- P.S. 317 - 190 Beach 110th Street
- P.S. 333 - 3-65 Beach 56th Street
- P.S. Q256 Special Education - 445 Beach 135th Street

- Queens Vocational High School - 37-02 47th Avenue
- Bureau of Supplies - 44-36 Vernon Boulevard
- DOE Division of School Buildings - 28-11 Queens Plaza North

Staten Island

- P.S. 38 - 421 Lincoln Avenue
- Curtis High School - 105 Hamilton Avenue
- I.S. 2 - 333 Midland Avenue
- P.S. 52 - 450 Buel Avenue

Water, Wastewater, and Other DEP Facilities

Bronx

- 233rd Street Pumping Station – Southbound Bronx River Parkway
- City Water Tunnel #1 – Shaft 7
- Conner Street Pumping Station – Foot of Conner Street at Eastchester Creek
- Hillview Reservoir
- Hunts Point Wastewater Treatment Plant - 1270 Ryawa Avenue
- Kensico Reservoir
- Orchard Beach Pumping Station
- Pelham Bay Landfill - 301 Shore Road
- Zerega Avenue Pumping Station – Zerega Avenue and Castle Hill Avenue

Brooklyn

- 26th Ward Wastewater Treatment Plant - 122-26 Flatlands Avenue
- 49th Street Pumping Station - 49th Street & 57th Avenue
- Bush Terminal Pumping Station - West of 2nd Avenue between 28th & 29th Street
- Coney Island Wastewater Treatment Plant - 2591 Knapp Street
- Fountain Avenue Landfill - 950 Fountain Avenue
- Gowanus Pumping Station - 201 Douglass Street
- Nevins Street Pumping Station - Nevins Street between Sackett & Degraw Street
- Newtown Creek Wastewater Treatment Plant - 329 Greenpoint Avenue
- Owls Head Wastewater Treatment Plant - 6700 Shore Road
- Pennsylvania Avenue Landfill - 1750 Pennsylvania Avenue
- Red Hook Wastewater Treatment Plant - 63 Flushing Avenue
- Second Avenue Pumping Station - Second Avenue & 5th Street
- Van Brunt Pumping Station - Foot of Van Brunt Street near Read Street

Manhattan

- City Water Tunnel #1 - Shaft 18

- City Water Tunnel #1 - Shaft 21
- Manhattan Pumping Station - 184 Avenue D
- Marble Hill Pumping Station – 58 West 225th Street
- North River Wastewater Treatment Plant - 725 West 135th Street
- Roosevelt Island North Pumping Station – Near Coler-Goldwater Hospital
- Roosevelt Island South Pumping Station – Near Coler-Goldwater Hospital
- Wards Island Wastewater Treatment Plant - 7 Wards Island

Queens

- 49th Street Pumping Station – Corner of 57th Avenue and 49th Street
- Bayswater Pumping Station - Norton Basin
- Bowery Bay Wastewater Treatment Plant - 43-01 Berrian Boulevard
- Broad Channel Pumping Station – 20th Avenue between 98th Street & Crossbay Boulevard
- Doug Bay Pumping Station - 41st Avenue & 233rd Street
- Howard Beach Pumping Station – Southeast Corner of 155th Avenue & 100th Street
- Jamaica Wastewater Treatment Plant - 150-20 134th Street
- Little Neck Pump Station – 40th Avenue west of 248th Street
- Nameoke Avenue Pumping Station – Southeast Corner of Nameoke & Central Avenue
- New Douglaston Pumping Station – Alley Pond Park – North of Long Island Expressway
- St. Albans Pumping Station – Intersection of 177th Street & 112th Avenue
- Rockaway Wastewater Treatment Plant - 106-21 Beach Channel Drive
- Roosevelt Island South Pumping Station - Near Goldwater Hospital, Roosevelt Island
- Rosedale Pumping Station - 149th Street & Brookville Boulevard
- Seagirt Pumping Station - Seagirt Avenue & 9th Street
- Tallman Island Wastewater Treatment Plant - 127-01 Powell Cove Boulevard
- Warnerville Pumping Station – Brookville Boulevard & Broadway

Staten Island

- Cannon Pumping Station - Cannon Avenue between Prices Lane & Glen Street
- Mason Avenue Pumping Station – South of Slater Boulevard
- Melvin Avenue Pumping Station – Brookville Boulevard & Broadway
- Nautilus Court Pumping Station - Cliff Street & Nautilus Court
- Oakwood Beach Wastewater Treatment Plant - 751 Mill Road
- Port Richmond Wastewater Treatment Plant - 1801 Richmond Terrace
- Richmond Chlorination Water Reservoir
- South Beach Pumping Station - Father Capodanno & South of Sand Lane

City-Owned Day Care Centers

Queens

- Blanche Day Care Center - 44-22 Beach Channel Drive, Queens

City-Owned Senior Centers

Bronx

- BronxWorks East Concourse Senior Center - 236 East Tremont Avenue

Manhattan

- Chinese-American Planning Council Project Open Door Senior Citizens Center - 168 Grand Street

Queens

- Catholic Charities Diocese of Brooklyn & Queens CCNS Bayside Senior Center - 211-15 Horace Harding Expressway

Staten Island

- Friendship/New Dorp - 128 Cedar Grove Avenue

City-Leased Senior Centers

Brooklyn

- JCC of Greater Coney Island, Surf Solomon Service Center – 3001 West 37th Street

City University of New York Facilities

Bronx

- Hostos Community College – 475 Grand Concourse
- Bronx Community College – West 181st Street and University Avenue

Brooklyn

- Kingsborough Community College – 2001 Oriental Boulevard

Manhattan

- Borough of Manhattan Community College – 199 Chambers Street
- New Community College – 50 West 40th Street

Queens

- LaGuardia Community College – 31-10 Thompson Avenue

Department of Parks and Recreation - Parks and Playgrounds

Bronx

- Barretto Point Park
- Bicentennial Veterans Park
- Bronx Park
- Burns Playground
- Cedar Playground
- Classon Point Park
- Crotona Park: Hylan Park
- Devoe Park
- Flynn Playground
- Fort 4 Playground
- Franz Sigel Park
- Hunts Point Riverside Park
- Jerome Park
- Mullaly Park North
- Old Fort Four Park: Washington's Walk
- Pelham Bay Park
- Poe Park
- Riverdale Park
- Rosewood Playground
- Saint James Park
- Saint Mary's Park
- Seton Park
- Soundview Park
- Star and Stripes Playground
- Strong Street Playground
- Van Cortlandt Park
- Waring Playground
- Williamsbridge Oval

Brooklyn

- Asser Levy Playground
- Avenue J Playground
- Bensonhurst Park
- Brighton 2nd Playground
- Carroll Park
- Coffey Park
- Commodore Barry Field
- Coney Island Creek (Six Diamonds)

- Cypress Hills Playground
- Dyker Park
- Fresh Creek
- Gerritsen Creek Ball Fields
- Kaiser Park
- Luna Park
- Marine Park
- McCarren Park
- McGuire Fields
- Nautilus Playground
- Nehemiah Playground
- North Fifth Street Pier
- Pat Perlatto Playground
- Poseidon Playground
- Prospect Park
- Remsen Playground
- Shore Parkway
- Surf Playground
- Taaffe Playground

Manhattan

- Albert Capsuoto Park
- Baruch Playground
- Battery Park
- Carl Schurz Playground
- Colonel Charles Young Playground
- Corlears Hook Park
- Dry Dock Playground
- East River Esplanade
- East River Park
- Fort Tryon Park
- Fort Washington Park
- Frederick Douglass Playground
- Happy Warrior Playground
- Harlem Lane Playground
- High Bridge Park
- Inwood Hill Park
- Isham Park

- Jackie Robinson Park
- James J. Walker Park
- John Jay Park
- Lillian Wald Playground
- M258 East River Playground
- Manhattan Park
- Marcus Garvey Park
- Martin Tanahey Playground
- Murphy's Brother's Playground
- P.S. 156 Holcombe Rucker Playground
- Playground 103
- Riverside Park
- Saint Nicholas Park
- Sakura Park
- Sherman Creek Park
- Stanley Isaacs Park
- Sunken Playground
- Theodore Roosevelt Park
- Union Square Park
- Washington Square Park

Queens

- 587 Memorial Park
- Alley Pond Park
- Almeda Playground
- American Ballfields
- Annadale Playground
- Arverne Playground
- Astoria Heights Playground
- Astoria Park
- Baisley Pond Park
- Bayswater Park/Playground
- Bowne Park
- Brant Point Wildlife Sanctuary
- Breininger Park
- Broad Channel American Park
- Brookville Park
- Buz O'Rourke Playground

- Conch Playground
- Crocheron Park: Joe Michael's Mile
- Cunningham Park
- Dubois Point Wildlife Sanctuary
- Evergreen Park
- Father Francis McGee Playground
- Flushing Meadows Corona Park
- Forest Park
- Fort Totten Park
- Gene Gray Playground
- Grassmere Playground
- Grover Cleveland Park
- Hallet's Cove Playground
- Hallet's Point Park
- Hammel Playground
- Hellgate Field
- Highland Park
- Hinton Park
- Hoover-Manton Playground
- Idlewild Park
- John Andrews Playground
- Judge Moses Weinstein Playground
- Juniper Valley Park
- Kissena Corridor Park
- Kissena Park
- LaGuardia Landing Lights
- Lefferts Playground
- Louis Armstrong Playground
- Macneil Park
- Martins Field Playground
- McLaughlin Playground
- Montbellier Park
- One Room School House Park
- Overlook Park
- P.S. 94 Admiral Playground
- P.S. 214 Colden Playground Patricia Barkley Park
- Patricia Brackley Park
- Phil Rizzuto Park

- Powell's Cove Park
- Ralph DeMarco Park
- Real Good Park
- Redfern Playground
- Rockaway Park
- Rosemary Playground
- Roy Wilkins Park
- Sandpiper Playground
- Socrates Sculpture Park
- Springfield Park
- Sunrise Playground
- Sy Seplowe Playground
- Tribute Park
- Upper Highland Park
- Wayanda Park
- Whitey Ford Field
- Windmuller Park

Staten Island

- Alice Austin House
- Arrochar Playground
- Bayview Terrace Park
- Blissenbach Marina
- Buono Beach
- Cedar Grove Park
- Clove Lakes Park
- Conference House Park
- Davis Playground
- DeMatti Playground
- Dongan Playground
- Faber Park and Pool
- Franklin D. Roosevelt South Beach
- Great Kills Park
- Last Chance Pond Park
- Lemon Creek Park
- Lyons Pool
- Mahoney Playground
- McDonald Playground

- Midland Field
- Midland Playground
- New Dorp Playground
- Ocean Breeze Park
- Seaside Wildlife Nature Park
- Schmul Park
- Silver Lake Park
- Tappen Park
- Tottenville Shore Park
- Veterans Park
- Walker Park
- Willowbrook Park
- Wolfe's Pond Park

Department of Parks and Recreation – Facilities

Bronx

- Aqueduct Walk – 183rd Street and Kingsbridge Road
- Hammond Cove Marina – 140 Reynolds Avenue
- Mosholu Parkway

Brooklyn

- Abe Stark Recreation Center – Coney Island Boardwalk and West 19th Street
- Coney Island Steeplechase Plaza
- Diamond Point Yacht Club
- Fresh Creek Preserve
- Greenpoint Kent Street Pier
- Hudson River Yacht Club
- Midget Squadron Marina
- Ocean Parkway Malls
- Paerdegat Athletic Center – 1510 Paerdegat Avenue North
- Paerdegat Squadron – 1350 Paerdegat Avenue North
- Red Hook Recreation Center – 155 Bay Street
- Sebago Canoe Club
- Sheepshead Bay Piers – 2010 Emmons Avenue

Manhattan

- 79th Street Boat Basin
- Al Smith Recreation Center – 80 Catherine Street

- Asser Levy Recreation Center – East 23rd Street and FDR Drive
- Inwood Hill Park: Nature Center
- Pier 42
- Stuyvesant Square
- The High Line
- Tony Dapolito Recreation Center – 3 Clarkson Street
- Veterans Plaza

Queens

- Bayside Marina – 28-05 Cross Island Parkway
- Clearview Golf Course – 202-12 Willets Point Boulevard
- McKenna Triangle
- Nassau Mall South
- Olmsted Center
- Queens Boulevard Mall
- Southside Burial Ground
- World's Fair Marina – 125-00 Northern Boulevard

Staten Island

- George M. Cromwell Recreation Center
- Greenbelt Nature Center – 700 Rockland Avenue
- Lemon Creek Fishing Pier: Parking Lot
- Lemon Creek Marina
- Lyons Pool
- New Springville Storehouse
- Stapleton Esplanade and Bikeway

Department of Parks and Recreation – Beaches

Brooklyn

- Coney Island Beach
- Manhattan Beach
- Shore Front Parkway Beach

Queens

- Howard Beach
- Rockaway Beach

Staten Island

- Buono Beach

- Cedar Grove Beach
- Crescent Beach
- Franklin D. Roosevelt South Beach
- New Dorp Beach
- Oakwood Beach
- Midland Beach
- South Beach

New York City Department of Sanitation Facilities

Bronx

- Bronx Borough Office – 800 East 176th Street
- Sanitation District Garage – 850 Zerega Avenue
- Sanitation District Garage – 1635 East 233rd Street

Brooklyn

- Greenpoint Warehouse – 447 North Henry Street
- Kent Avenue Salt Dome – 652 Kent Avenue
- Sanitation District Garage – 5602 19th Avenue
- Sanitation District Garage – 10502 Avenue D
- Sanitation District Garage – 5100 First Avenue
- Sanitation District Garage – 922 Georgia Avenue
- Sanitation District Garage – 465 Hamilton Avenue
- Sanitation District Garage – 525 Johnson Avenue
- Sanitation District Garage – 2501 Knapp Street
- Sanitation District Garage – 750 Milford Street
- Sanitation District Garage – 2012 Neptune Avenue
- Sanitation District Garage – 1755 Pacific Street
- Sanitation District Garage – 127 Second Avenue
- Sanitation District Garage – 1824 Shore Parkway
- Sanitation District Garage – 93 Van Brunt Street
- Sanitation District Garage – 161 Varick Avenue
- Sanitation Lot Cleaning Garage – 803 Forbell Street
- Sanitation Marine Transfer Station – 550 Hamilton Avenue

Manhattan

- 26th Street Borough Shop – 640 West 26th Street
- 44 Beaver – 44 Beaver Street
- Sanitation District Garage – 297 West Street

- Sanitation District Garage – 2 Bloomfield Street
- Sanitation District Garage – Pier 36, South Street
- Sanitation District Garage – 606 West 30th Street
- Sanitation District Garage – 343 East 99th Street
- Sanitation District Garage – 680 East 132nd Street
- Sanitation District Garage – 110 East 131st Street
- Sanitation District Garage – 301 West 215th Street
- Sanitation Marine Transfer Station – Pier 99, West 59th Street

Queens

- Queens Borough Repair Shop – 52-07 58th Street
- Salt Dome – 80-45 Winchester Boulevard
- Sanitation Vehicle Repair Shop – 52-35 58th Street
- Sanitation Marine Transfer Station – 120-15 31st Avenue
- Sanitation District Garage – 34-28 21st Street
- Sanitation District Garage – 48-01 58th Road
- Sanitation District Garage – 130-23 150th Avenue
- Sanitation District Garage – 51-10 Almeda Avenue
- Sanitation District Garage – 30-19 122nd Street
- Sanitation District Garage – 132-05 Atlantic Avenue
- Sanitation District Garage – 75-05 Douglaston Parkway
- Sanitation District Garage – 153-67 146th Avenue
- Sanitation District Garage – 58-73 53rd Avenue

Staten Island

- Fresh Kills Plant 1 – 2 Muldoon Avenue
- Sanitation District Garage – 2500 Richmond Avenue

New York City Fire Department Facilities

Brooklyn

- EMS Station 32 – 347 Bond Street
- EMS Station 43 – 2601 Ocean Parkway
- Engine Company 201 – 5113 Fourth Avenue
- Engine Company 202 – 31 Richards Street
- Engine Company 206 – 1201 Grand Street
- Engine Company 245 – 2929 West 8th Street
- Engine Company 246 – 2732 East 11th Street
- Engine Company 279 – 252 Lorraine Street

- Engine Company 309 – 1851 East 48th Street
- Engine Company 318 – 2510 Neptune Avenue
- Fleet Spare Rigs Firehouse – 57 Paidge Avenue
- Marine Company 3 – 2001 Oriental Avenue
- Marine Company 6

Manhattan

- EMS Station 4 – Pier 36
- EMS Station 7 – 512 West 23rd Street
- EMS Station 8 – 435 East 26th Street
- EMS Station 10 – 1918 First Avenue
- Engine Company 4 – 42 South Street
- Governors Island Firehouse – Governors Island
- Marine Company 1 – West 13th Street Pier

Queens

- Engine Company 265 – 48-06 Rockaway Beach Boulevard
- Engine Company 266 – 92-20 Rockaway Beach Boulevard
- Engine Company 268 – 257 Beach 116th Street
- Engine Company 329 – 402 Beach 169th Street
- Engine Company 331 – 158-57 Cross Bay Boulevard
- Fort Totten Firehouse

Staten Island

- Engine Company 153 – 74 Broad Street
- Marine Company 8 – 180 Mansion Avenue
- Marine Company 9 – 487 Front Street

New York City Police Department Facilities

Bronx

- Rodman's Neck Bomb Squad and Outdoor Range – 1 Rodman's Neck Road

Brooklyn

- 60th Precinct Stationhouse – 2951 West 8th Street
- Brooklyn North Tow Pound at the Brooklyn Navy Yard
- Coast Guard Hangar at Floyd Bennett Field
- Erie Basin Auto Pound – 700 Columbia Street
- Front Street Property Clerk Warehouse – 11 Front Street
- Harbor Charlie Boat Dock – 140 58th Street Pier 1

- Kingsland Property Clerk Warehouse – 540 Kingsland Avenue
- Mounted Troop E Stationhouse – 2815 Brighton 3rd Street
- Police Service Area 1 Stationhouse – 2860 West 23rd Street
- Transit District 34 Stationhouse – 2869 Stillwell Avenue

Manhattan

- 130 Cedar Street Stationhouse – 130 Cedar Street
- Harbor Launch Repair Shop – Randall's Island
- Police Service Area 4 Stationhouse – 130 Avenue C
- One Police Plaza Headquarters – 1 Police Plaza
- Pier 36 Manhattan South Command Stationhouse
- Pier 76 Mounted Unit Stationhouse/Tow Pound/Service Shop 8 – West 38th Street and 12th Avenue

Queens

- 100th Precinct Stationhouse – 92-24 Rockaway Beach Boulevard
- Harbor George Boat Dock – 14th Avenue
- Pearson Place Property Clerk – 47-15 Pearson Place
- Transit District 23 Stationhouse – 222 Beach 116th Street

Staten Island

- Traffic Division Facility Stationhouse – 1893 Richmond Terrace

Buildings for the General Conduct of Government

Bronx

- Bronx Family/Criminal Courthouse – 215 East 161st Street
- Bronx County Courthouse – 851 Grand Concourse
- Bronx Hall of Justice – 265 East 161st Street
- Housing Courthouse – 1118 Grand Concourse

Brooklyn

- Brooklyn Appellate Courthouse – 45 Monroe Place
- Brooklyn Borough Hall – 209 Joralemon Street
- Brooklyn Municipal Building – 210 Joralemon Street
- Brooklyn Supreme Courthouse – 360 Adams Street
- Building 50 – 334 Furman Street
- Bush Terminal Administration Building – 1 43rd Street
- DCAS Repair Shop – 390 Kent Avenue
- DEP Building – 99 Plymouth Street

Manhattan

- City Hall – City Hall Park
- City Planning – 22 Reade Street
- Civil Courthouse – 111 Centre Street
- Court Square Building – 2 Lafayette Street
- Criminal Courthouse – 100 Centre Street
- DOT Administrative Office – 55 Water Street
- HHC Corporate Offices – 160 Water Street
- Manhattan Municipal Building – 1 Centre Street
- Youth Court – 88 Visitation Place

Queens

- DCAS Central Storehouse – 66-26 Metropolitan Avenue
- Long Island City Courthouse – 25-10 Court Street
- Queens Borough Hall – 120-55 Queens Boulevard
- Queens Civil Courthouse – 89-17 Sutphin Avenue
- Queens Criminal Courthouse – 125-01 Queens Boulevard
- Queens Supreme Courthouse – 88-11 Sutphin Boulevard

Staten Island

- Staten Island Borough Hall – 10 Richmond Terrace
- Staten Island Family Court – 100 Richmond Terrace

Public Facilities

Bronx

- 1918 Arthur Avenue
- 355 Food Center Drive – 355 Food Center Drive
- 600 Food Center Drive – 600 Hunts Point Avenue
- Concourse Plaza – 198 East 161st Street
- Fulton Fish Market – 800 Food Center Drive
- Hunts Point Food Distribution Center – 410 Halleck Street
- Kingsbridge Armory – 27 West Kingsbridge Road
- Locusts Point Civil Association – 3300 Tierney Place
- New York City Terminal Market – 37 Terminal Market Street
- St. Francis de Chantal Shelter – 190 Hollywood Avenue
- Yankee Stadium Ferry Landing

Brooklyn

- 345 Adams Street
- Brooklyn Cruise Terminal – 2 Atlantic Basin

- Bush Terminal Building C – 102 41st Avenue
- Bush Terminal Building G – 5102 First Avenue
- Bush Terminal Building 39 – 5102 First Avenue
- Bush Terminal Building 45 – 5102 First Avenue
- Bush Terminal Building 57 – 5102 First Avenue
- Bush Terminal Building 58 – 5102 First Avenue
- Coney Island Amusement Park
- Ferry Landing – 9 Water Street
- Lowes King Theater – 1027 Flatbush Avenue
- Mill Basin Waterfront Marine Facility
- Moore McCormick Building – 740 3rd Avenue
- South Brooklyn Marine Terminal
- Theater for a New Audience – 19 Lafayette Avenue

Manhattan

- 109 South Street
- 110 Williams Street
- Battery Maritime Building
- Clock Tower Building – 346 Broadway
- Downtown Manhattan Heliport
- East 34th Street Ferry Landing
- East 34th Street Heliport – 499 East 34th Street
- East 90th Street Ferry Landing – 97 East End Avenue
- East River Ferry Landing – 2850 East River Drive
- Essex Street Building C – 116 Delancey Street
- Excelsior Building – 137 Centre Street
- Harlem Community Justice Center – 170 East 121st Street
- Health Building – 125 Worth Street
- Highline – 820 Washington Street
- Home Life Building – 253 Broadway
- Manhattan Cruise Terminal
- New Market Building – 95 Marginal Street
- New York City Police Museum – 100 Old Slip
- Pier 11 Ferry Landing – Pier 11 South Street
- Pier 15 East River
- Pier 16 Museum
- Pier 35 East River Park and Marine Facility – 270 South Street
- Pier 42 East River

- Pier 79 Ferry Landing
- Sky Port Marine Terminal and Airport – 2430 FDR Drive East Service Road
- Stuyvesant Cove Park
- Sun Building – 280 Broadway
- Tin Building – 16 Fulton Street
- Water Club Restaurant – 2850 East River Drive

Staten Island

- 130 Stuyvesant Place
- Homeport Building 2 and Pier – 455 Front Street
- Pier 1 at Lighthouse Plaza – 15 Bay Street
- Staten Island Cultural Center Building 11 – 5 Bay Street
- Staten Island Minor League Stadium – 75 Richmond Terrace
- Staten Island September 11th Memorial – 75 Richmond Terrace

Homeless Shelters

Bronx

- Powers Residence – 346 Powers Avenue
- Prevention Assistance and Temporary Housing – 151 East 151st Street

Brooklyn

- Auburn Residence – 39 Auburn Place
- Barbra Kleiman Residence – 300 Skillman Avenue
- Kingsboro Homeless Shelter – 681 Clarkson Avenue
- Pamoja House – 357 Marcus Garvey Boulevard

Manhattan

- Bellevue Shelter – 500 First Avenue
- George Daly House – 269 East 4th Street
- LIFE Family Residence – 78 Catherine Street
- Regent Family Residence – 2720 Broadway
- Shwartz Residence – 1 Wards Island
- Urban Family Center – 130 Baruch Place

Queens

- Borden Avenue Veterans Residence – 2110 Borden Avenue
- Flatlands Homeless Shelter – 108-75 Avenue D
- Jamaica Family Residence – 175-10 88th Avenue

Department of Correction Facilities

Bronx

- Vernon C. Bain Center, 1 Halleck Street

Queens

- Anna M. Kross Center – 1818 Hazen Street
- Rikers Island, north shoreline

Industrial Sites

Brooklyn

- Brooklyn Army Terminal
- Brooklyn Navy Yard

Health and Hospitals Facilities

Bronx

- Jacobi Medical Center – 1401 Pelham Parkway South

Brooklyn

- Coney Island Hospital – 2602 Ocean Parkway
- Ida G. Israel Community Health Center – 2201 Neptune Avenue
- Kings County Hospital – 451 Clarkson Avenue

Manhattan

- Bellevue Hospital – 464 First Avenue
- Coler Hospital – 901 Main Street
- Gouverneur Roberto Clemente Center – 540 East 13th Street
- Harlem Hospital – 506 Lenox Avenue
- Metropolitan Hospital – 1902 First Avenue

Queens

- Elmhurst Hospital – 209 Beach 125th Street
- Queens Hospital – 82-68 164th Street

Department of Transportation Facilities

Bronx

- 3200 Conner Street

Brooklyn

- Asphalt Plant – 448 Hamilton Avenue

- Pulaski Yard – 130 Clay Street
- Warehouse – 75 South Street
- Workshop – 352 Kent Avenue
- Workshop – 372 Kent Avenue
- 140 58th Street
- 75 20th Street

Manhattan

- Sherman Yard – 301 West 203rd Street
- Whitehall Ferry Terminal – 4 South Street
- Workshop – 300 West 206th Street
- Workshop and Yard – 301 West 205th Street

Queens

- Depot North – 32-11 Harper Street

Staten Island

- St. George Ferry Terminal – 1 Bay Street
- Warehouse – 34 Wave Street
- 3551 Richmond Terrace

Department of Transportation - Bridges

Bronx

- Eastern Boulevard Bridge
- Hutchinson River Bridge
- Pelham Bay Bridge
- Third Avenue Bridge
- Unionport Bridge
- Willis Avenue Bridge

Brooklyn

- Belt Parkway Bridge
- Carroll Street Bridge
- Grand Street Bridge
- Greenpoint Avenue Bridge
- Metropolitan Avenue Bridge
- Ninth Street Bridge
- Third Street Bridge
- Union Street Bridge

Manhattan

- 145th Street Bridge
- 207th Street Bridge
- Battery and West Street Underpass
- Broadway Bridge
- Macombs Dam Bridge
- Madison Avenue Bridge

Queens

- Pulaski Bridge

Cultural Facilities

Brooklyn

- Coney Island USA - 1208 Surf Avenue
- New York Aquarium - 602 Surf Avenue
- Smack Mellon - 92 Plymouth Street

Manhattan

- Eyebeam Atelier - 540 West 21st Street
- New York City Police Museum - 100 Old Slip

Staten Island

- Snug Harbor Cultural Center and Botanical Gardens - 914 Richmond Terrace
- Staten Island Historical Society - 441 Clarke Avenue

Libraries

Brooklyn Public Library

- Brighton Beach - 16 Brighton First Road
- Coney Island - 1901 Mermaid Avenue
- Gerritsen Beach - 2808 Gerritsen Avenue
- Gravesend - 303 Avenue X
- Red Hook - 7 Wolcott Street
- Sheepshead Bay - 2636 East 14th Street

New York Public Library:

- Stapleton - 132 Canal Street, Staten Island

Queens Public Library

- Arverne - 312 Beach 54th Street

- Broad Channel - 16-26 Cross Bay Boulevard
- Far Rockaway - 1637 Central Avenue
- Howard Beach - 92-06 156th Avenue
- Peninsula - 92-25 Rockaway Beach Boulevard
- Seaside - 116-15 Rockaway Beach Boulevard

Streets and Sidewalks

Please note that the list of damaged streets and sidewalks consists of several hundred sites.

Appendix B: Damaged New York City Housing Authority (NYCHA) Properties

New York City Housing Authority Developments

Brooklyn

- Carey Gardens – 2946 West 23rd Street
- Coney Island – 3025 West 32nd Street
- Gowanus – 175 Hoyt Street
- Gravesend – 3225 Neptune Avenue
- Haber – 3058 West 24th Street
- Ingersoll – 102 Monument Walk
- Marlboro – 29 Avenue W
- Nostrand – 2241 Batchelder Street
- O'Dwyer Gardens – 2975 West 33rd Street
- Red Hook East – 604 Clinton Street
- Red Hook West – 6 Wolcott Street
- Surfside Gardens – 2960 West 31st Street

Manhattan

- 335 East 111th Street
- Baruch – 605 Franklin D. Roosevelt Drive
- Campos Plaza I – 635 East 12th Street
- Campos Plaza II – 643 East 13th Street
- Clinton – 1505 Park Avenue
- Dyckman – 177 Nagel Avenue
- East 120th Street
- East River – 410 East 105th Street
- Elliott – 288 10th Avenue
- Harlem River – 225 West 152nd Street
- Harlem River II – 2850 Frederick Douglass Boulevard
- Holmes Towers – 405 East 92nd Street
- Isaacs – 419 East 93rd Street
- Jefferson – 310 East 115th Street
- La Guardia – 45 Rutgers Street
- Lavanburg Homes – 126 Baruch Place
- Lincoln – 60 East 135th Street
- Lower East Side I – 175 Eldridge Street
- Lower East Side II – 637 East 5th Street
- Lower East Side III – 373 East 8th Street

- Metro North Plaza – 307 East 101st Street
- Polo Grounds Towers – 2931 Frederick Douglass Boulevard
- Rangel – 159-14 Harlem River Drive
- Riis – 152 Avenue D
- Riis II – 765 Franklin D. Roosevelt Drive
- Smith – 20 Catherine Slip
- Two Bridges – 286 South Street
- Wagner – 90 Paladino Avenue
- Wald – 10 Avenue D
- Washington – 1761 Third Avenue
- White – 2029 Second Avenue
- Wilson – 405 East 105th Street

Queens

- Astoria – 4-21 Astoria Boulevard
- Beach 41st Street – 40-20 Beach Channel Drive
- Carleton Manor – 71-15 Beach Channel Drive
- Hammel – 85-02 Rockaway Beach Boulevard
- Ocean Bay Apartments (Bayside) – 54-81 Almeda Avenue
- Ocean Bay Apartments (Oceanside) – 306 Beach 56th Street
- Queensbridge South – 41-01 12th Street
- Redfern – 14-60 Beach Channel Drive

Staten Island

- New Lane Area – 70 New Lane

New York City Housing Authority Single- and Multi-Family Houses

Bronx

- 444 Torry Avenue

Queens

- 143-03 105th Avenue
- 109-40 176th Street
- 104-06 Farmers Boulevard
- 187-24 Keeseville Avenue
- 202-06 116th Avenue
- 213-24 Nashville Boulevard
- 150-36 116th Road

- 118-03 204th Street
- 137-22 Westgate Street
- 100-40 202nd Street
- 104-33 203rd Street
- 110-26 216th Street
- 114-69 145th Street
- 148-13 Sutter Avenue
- 133-17 149th Street
- 132-33 218th Street
- 132-19 Bennett Court
- 194-17 114th Drive
- 115-21 200th Street
- 114-11 130th Street
- 138-11 Linden Boulevard
- 114-18 Inwood Street
- 130-34 147th Street
- 114-22 166th Street
- 117-22 133rd Street
- 218-34 119th Avenue
- 178-14 Baisley Boulevard
- 1502 Beach 12th Street
- 1504 Beach 12th Street
- 126-01 116th Avenue
- 110-16 207th Street
- 133-11 148th Street
- 105-11 171st Place
- 111-33 207th Street
- 113-14 196th Street
- 215-32 112th Avenue
- 171-28 111th Avenue
- 114-42 139th Street
- 223-20 Francis Lewis Boulevard
- 129-04 142nd Street
- 174-16 111th Avenue
- 217-09 110th Avenue
- 111-37 144th Street
- 119-55 177th Street
- 188-56 120th Road

- 121-28 Benton Street
- 191-18 120th Avenue
- 104-10 212th Street
- 112-22 198th Street
- 214-15 Hollis Avenue
- 131-27 135th Place
- 114-54 Inwood Street
- 114-34 146th Street
- 111-46 156th Street
- 117-17 204th Street
- 136-15 221st Street
- 145-12 229th Street
- 231 Fernside Place
- 142-21 129th Avenue
- 94-29 211th Street
- 193-10 Woodhull Avenue
- 109-16 210th Street
- 110-05 – 225th Street
- 239 Fernside Place
- 138-20 102nd Avenue
- 111-27 207th Street
- 153 Beach 59th Street

Appendix C: Borough Inundation Area Charts

Demographic and Housing Profile
Hurricane Sandy Operational Inundation Area*
Bronx, 2010 Census

	Bronx			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Population	40,992	100.0	1,385,108	100.0
Under 5 years	1,783	4.3	103,144	7.4
5 to 17 years	5,059	12.3	265,052	19.1
18 to 34 years	12,855	31.4	364,864	26.3
35 to 44 years	5,862	14.3	187,089	13.5
45 to 54 years	5,788	14.1	185,598	13.4
55 to 64 years	4,035	9.8	133,479	9.6
65 years and over	5,610	13.7	145,882	10.5
In Households	27,912	68.1	1,338,398	96.6
In Group Quarters	13,080	31.9	46,710	3.4
In Group Quarters	13,080	100.0	46,710	100.0
Institutionalized	11,190	85.6	25,437	54.5
Correctional Facilities for Adults	9,482	72.5	12,076	25.9
Juvenile Facilities	0	0.0	442	0.9
Nursing Facilities	1,038	7.9	11,734	25.1
Other Institutionalized	670	5.1	1,185	2.5
Non-institutionalized	1,890	14.4	21,273	45.5
College/University Housing	1,221	9.3	6,418	13.7
Military Quarters	0	0.0	0	0.0
Other Non-institutionalized	669	5.1	14,855	31.8
Housing Units	12,460	100.0	511,896	100.0
Occupied Housing Units	11,398	91.5	483,449	94.4
Occupied Housing Units	11,398	100.0	483,449	100.0
Renter Occupied	6,194	54.3	390,348	80.7
Owner Occupied	5,204	45.7	93,101	19.3
Average Household Size		2.45		2.77

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Ratio of Income to Poverty Level in the Past 12 Months for Persons for Whom Poverty Status is Determined
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Inundation Area in Bronx*

	Bronx			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
Persons for whom poverty status is determined	39,530	100.0	1,346,239	100.0
Under 1.00 (Below poverty threshold)	7,382	18.7	382,026	28.4
Under .50 (Extreme poverty)	3,784	9.6	170,169	12.6
.50 to .99	3,598	9.1	211,857	15.7
1.00 to 1.24 (Near poor)	1,938	4.9	90,285	6.7
1.25 to 1.49	1,818	4.6	81,624	6.1
1.50 to 1.84	2,263	5.7	102,725	7.6
1.85 to 1.99	751	1.9	40,287	3.0
2.00 and over	25,379	64.2	649,292	48.2

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Note: While population data were available for the Hurricane Operational Inundation Area, poverty data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the poverty data were applied to the population for whom poverty was determined (the poverty universe) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. It should also be noted that the poverty universe for each borough was determined by taking the ratio of the poverty universe to the overall population, according to the 2006-2010 American Community Survey, and applying it to the overall population according to the 2010 Census. For consistency of comparison, the same process was used to produce overall City and borough estimates.

	Bronx Inundation Area									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	5463	100.0%	56,801,959	100.0%	18,888,026	100.0%	23,599	100.0%	5,622	100.0%
One & Two Family Buildings	3325	60.9%	6,440,675	11.3%	6,440,675	34.1%	5,449	23.1%	4,825	85.8%
Multi - Family Walk- Up Buildings	338	6.2%	2,117,207	3.7%	2,110,217	11.2%	2,172	9.2%	531	9.4%
Multi - Family Elevator Buildings	18	0.3%	8,035,615	14.1%	7,872,262	41.7%	6,616	28.0%	52	0.9%
Mixed Residential and Commercial Buildings	98	1.8%	2,866,530	5.0%	2,419,966	12.8%	9,353	39.6%	197	3.5%
Commercial and Office Buildings	139	2.5%	6,061,173	10.7%	1,430	0.0%	-	0.0%	-	0.0%
Industrial and Manufacturing	313	5.7%	12,306,165	21.7%	4,427	0.0%	3	0.0%	5	0.1%
Transportation and Utility	191	3.5%	2,041,868	3.6%	4,750	0.0%	2	0.0%	6	0.1%
Public Facilities and Institutions	67	1.2%	12,275,301	21.6%	29,719	0.2%	1	0.0%	2	0.0%
Open Space and Outdoor Recreation	176	3.2%	1,370,426	2.4%	4,580	0.0%	2	0.0%	3	0.1%
Parking Facilities	137	2.5%	1,312,886	2.3%	-	0.0%	-	0.0%	-	0.0%
Vacant Land	473	8.7%	-	0.0%	-	0.0%	-	0.0%	-	0.0%
No Data	188	3.4%	1,974,113	3.5%	-	0.0%	1	0.0%	1	0.0%

	Bronx Borough									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	89,808	100.0%	703,917,768	100.0%	512,464,486	100.0%	557,556	100.0%	87,891	100.0%
One & Two Family Buildings	51,556	57.4%	108,598,531	15.4%	108,597,123	21.2%	82,067	14.7%	59,604	67.8%
Multi - Family Walk- Up Buildings	17,399	19.4%	126,294,280	17.9%	126,066,279	24.6%	136,423	24.5%	20,519	23.3%
Multi - Family Elevator Buildings	2,023	2.3%	200,495,364	28.5%	197,293,123	38.5%	233,963	42.0%	2,806	3.2%
Mixed Residential and Commercial Buildings	3,720	4.1%	89,650,340	12.7%	78,618,788	15.3%	99,416	17.8%	4,624	5.3%
Commercial and Office Buildings	3,093	3.4%	38,863,971	5.5%	212,688	0.0%	161	0.0%	92	0.1%
Industrial and Manufacturing	1,393	1.6%	30,108,827	4.3%	28,434	0.0%	25	0.0%	26	0.0%
Transportation and Utility	1,093	1.2%	5,867,880	0.8%	26,704	0.0%	35	0.0%	27	0.0%
Public Facilities and Institutions	1,860	2.1%	87,681,225	12.5%	1,356,280	0.3%	5,384	1.0%	177	0.2%
Open Space and Outdoor Recreation	678	0.8%	5,800,423	0.8%	208,130	0.0%	3	0.0%	4	0.0%
Parking Facilities	2,207	2.5%	8,383,945	1.2%	41,302	0.0%	76	0.0%	7	0.0%
Vacant Land	4,153	4.6%	11,019	0.0%	11,019	0.0%	-	0.0%	-	0.0%
No Data	633	0.7%	2,161,963	0.3%	4,616	0.0%	3	0.0%	5	0.0%

*Inundation areas are derived from a surge hindcast created by FEMA MOTF using surge modeling and observed data. The hindcast uses a 3 ft. elevation model.

For this analysis, a lot is included if any part of the lot is in the inundation area, except for *Total Residential Buildings*. For *Total Residential Buildings*, all lots that were wholly in the Operational Inundation Area, or had the majority of their housing in the Operational Inundation Area, were included.

Selected Housing Characteristics
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Impact Area in Bronx*

	Bronx			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
UNITS IN STRUCTURE (PLUTO distribution applied to 2010 Census control)				
Total housing units	12,460	100.0	511,896	100.0
One & Two Family Buildings	5,493	44.1	75,346	14.7
Multi - Family Walk- Up Buildings	2,023	16.2	125,251	24.5
Multi - Family Elevator Buildings	2,381	19.1	214,803	42.0
Mixed Residential and Commercial Buildings	2,555	20.5	91,275	17.8
Other	8	0.1	5,221	1.0
YEAR STRUCTURE BUILT (PLUTO distribution applied to 2010 Census control)				
Total housing units	12,460	100.0	511,896	100.0
Built 2000 or later	1,419	11.4	31,008	6.1
Built 1990 to 1999	547	4.4	11,954	2.3
Built 1980 to 1989	743	6.0	7,699	1.5
Built 1970 to 1979	2,151	17.3	26,667	5.2
Built 1960 to 1969	2,223	17.8	67,409	13.2
Built 1950 to 1959	1,076	8.6	74,944	14.6
Built 1940 to 1949	460	3.7	41,624	8.1
Built 1930 to 1939	747	6.0	55,298	10.8
Built 1920 to 1929	2,342	18.8	137,995	27.0
Built 1910 to 1919	343	2.8	36,000	7.0
Built 1900 to 1909	227	1.8	16,238	3.2
Built Before 1900	79	0.6	2,895	0.6
Unknown	103	0.8	2,166	0.4
ROOMS (ACS distribution applied to 2010 Census control)				
Total housing units	12,460	100.0	511,896	100.0
1 room	423	3.4	21,146	4.1
2 rooms	463	3.7	17,869	3.5
3 rooms	2,333	18.7	152,849	29.9
4 rooms	3,074	24.7	151,916	29.7
5 rooms	2,691	21.6	92,684	18.1
6 rooms	1,774	14.2	42,507	8.3
7 rooms	835	6.7	13,357	2.6
8 rooms	302	2.4	7,983	1.6
9 rooms or more	565	4.5	11,584	2.3
VEHICLES AVAILABLE (ACS distribution applied to 2010 Census control)				
Occupied housing units	11,398	100.0	483,449	100.0
No vehicles available	3,776	33.1	284,422	58.8
1 vehicle available	4,497	39.5	147,423	30.5
2 vehicles available	2,356	20.7	41,503	8.6
3 or more vehicles available	769	6.7	10,102	2.1
TELEPHONE SERVICE (ACS distribution applied to 2010 Census control)				
No telephone service available (excluding cell phones)	304	2.7	28,599	5.9

	Bronx			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
HOUSE HEATING FUEL (ACS distribution applied to 2010 Census control)				
Occupied housing units	11,398	100.0	483,449	100.0
Utility gas	6,424	56.4	149,133	30.8
Bottled, tank, or LP gas	201	1.8	5,574	1.2
Electricity	1,107	9.7	35,634	7.4
Fuel oil, kerosene, etc.	3,541	31.1	283,040	58.5
Coal or coke	1	0.0	652	0.1
Wood	37	0.3	235	0.0
Solar energy	2	0.0	101	0.0
Other fuel	49	0.4	4,619	1.0
No fuel used	36	0.3	4,461	0.9
VALUE (ACS distribution applied to 2010 Census control)				
Owner-occupied units	5,204	100.0	93,101	100.0
Less than $50,000	111	2.1	7,038	7.6
$50,000 to $99,999	129	2.5	5,952	6.4
$100,000 to $149,999	150	2.9	4,982	5.4
$150,000 to $199,999	114	2.2	4,314	4.6
$200,000 to $299,999	554	10.6	9,212	9.9
$300,000 to $499,999	2,145	41.2	38,592	41.5
$500,000 to $999,999	1,782	34.2	21,445	23.0
$1,000,000 or more	220	4.2	1,566	1.7
GROSS RENT (ACS distribution applied to 2010 Census control)				
Occupied units paying rent	6,047	100.0	382,135	100.0
Less than $200	140	2.3	10,329	2.7
$200 to $299	285	4.7	25,990	6.8
$300 to $499	546	9.0	32,142	8.4
$500 to $749	778	12.9	55,576	14.5
$750 to $999	1,081	17.9	101,213	26.5
$1,000 to $1,499	2,029	33.6	124,125	32.5
$1,500 or more	1,188	19.7	32,760	8.6
No rent paid	147		8,213	
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) (ACS distribution applied to 2010 Census control)				
Occupied units paying rent (excluding units where GRAPI cannot be computed)	5,961	100.0	375,282	100.0
Less than 15.0 percent	873	14.6	42,594	11.3
15.0 to 19.9 percent	595	10.0	40,297	10.7
20.0 to 24.9 percent	752	12.6	42,898	11.4
25.0 to 29.9 percent	623	10.5	42,403	11.3
30.0 to 34.9 percent	444	7.5	33,009	8.8
35.0 percent or more	2,673	44.8	174,081	46.4
Not computed	233		15,066	

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.
Note: While general housing data were available for the Hurricane Operational Inundation Area, more detailed housing data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the detailed housing data were applied to the general housing data (housing units, occupied housing units, owner occupied housing units, and renter occupied housing units) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. For consistency of comparison, the same process was used to produce overall City and borough estimates.

Demographic and Housing Profile
Hurricane Sandy Operational Inundation Area*
Brooklyn, 2010 Census

	Brooklyn			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Population	310,227	100.0	2,504,700	100.0
Under 5 years	17,305	5.6	177,198	7.1
5 to 17 years	44,654	14.4	417,180	16.7
18 to 34 years	72,525	23.4	690,955	27.6
35 to 44 years	40,077	12.9	341,545	13.6
45 to 54 years	43,230	13.9	324,177	12.9
55 to 64 years	41,512	13.4	266,012	10.6
65 years and over	50,924	16.4	287,633	11.5
In Households	304,209	98.1	2,469,091	98.6
In Group Quarters	6,018	1.9	35,609	1.4
In Group Quarters	6,018	100.0	35,609	100.0
Institutionalized	4,720	78.4	13,297	37.3
Correctional Facilities for Adults	2,089	34.7	2,353	6.6
Juvenile Facilities	12	0.2	372	1.0
Nursing Facilities	2,611	43.4	9,461	26.6
Other Institutionalized	8	0.1	1,111	3.1
Non-institutionalized	1,298	21.6	22,312	62.7
College/University Housing	0	0.0	4,527	12.7
Military Quarters	0	0.0	13	0.0
Other Non-institutionalized	1,298	21.6	17,772	49.9
Housing Units	134,267	100.0	1,000,293	100.0
Occupied Housing Units	122,587	91.3	916,856	91.7
Occupied Housing Units	122,587	100.0	916,856	100.0
Renter Occupied	76,595	62.5	662,615	72.3
Owner Occupied	45,992	37.5	254,241	27.7
Average Household Size		2.48		2.69

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Ratio of Income to Poverty Level in the Past 12 Months for Persons for Whom Poverty Status is Determined
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Inundation Area in Brooklyn*

	Brooklyn			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
Persons for whom poverty status is determined	308,721	100.0	2,482,660	100.0
Under 1.00 (Below poverty threshold)	52,913	17.1	546,712	22.0
Under .50 (Extreme poverty)	20,329	6.6	250,025	10.1
.50 to .99	32,585	10.6	296,686	12.0
1.00 to 1.24 (Near poor)	14,223	4.6	137,586	5.5
1.25 to 1.49	16,189	5.2	138,041	5.6
1.50 to 1.84	19,088	6.2	174,877	7.0
1.85 to 1.99	8,441	2.7	69,704	2.8
2.00 and over	197,867	64.1	1,415,741	57.0

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Note: While population data were available for the Hurricane Operational Inundation Area, poverty data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the poverty data were applied to the population for whom poverty was determined (the poverty universe) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. It should also be noted that the poverty universe for each borough was determined by taking the ratio of the poverty universe to the overall population, according to the 2006-2010 American Community Survey, and applying it to the overall population according to the 2010 Census. For consistency of comparison, the same process was used to produce overall City and borough estimates.

	Brooklyn Inundation Area									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	39,440	100.0%	254,545,914	100.0%	136,607,108	100.0%	129,930	100.0%	38,123	100.0%
One & Two Family Buildings	26,229	66.5%	51,509,476	20.2%	51,507,280	37.7%	40,582	31.2%	29,001	76.1%
Multi - Family Walk- Up Buildings	5,321	13.5%	22,050,471	8.7%	21,944,484	16.1%	23,820	18.3%	6,514	17.1%
Multi - Family Elevator Buildings	342	0.9%	49,316,923	19.4%	48,925,042	35.8%	50,807	39.1%	608	1.6%
Mixed Residential and Commercial Buildings	1,466	3.7%	17,286,653	6.8%	13,560,971	9.9%	13,828	10.6%	1,859	4.9%
Commercial and Office Buildings	970	2.5%	13,409,847	5.3%	219,991	0.2%	420	0.3%	85	0.2%
Industrial and Manufacturing	1,103	2.8%	32,424,462	12.7%	48,005	0.0%	128	0.1%	37	0.1%
Transportation and Utility	392	1.0%	23,338,307	9.2%	27,999	0.0%	6	0.0%	7	0.0%
Public Facilities and Institutions	379	1.0%	39,629,874	15.6%	368,336	0.3%	330	0.3%	10	0.0%
Open Space and Outdoor Recreation	276	0.7%	3,045,129	1.2%	-	0.0%	8	0.0%	1	0.0%
Parking Facilities	713	1.8%	1,621,173	0.6%	-	0.0%	-	0.0%	-	0.0%
Vacant Land	1,805	4.6%	8,520	0.0%	-	0.0%	-	0.0%	-	0.0%
No Data	444	1.1%	905,079	0.4%	5,000	0.0%	1	0.0%	1	0.0%

	Brooklyn Borough									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	277,998	100.0%	1,417,804,978	100.0%	1,018,023,744	100.0%	992,121	100.0%	291,706	100.0%
One & Two Family Buildings	156,789	56.4%	341,275,443	24.1%	341,248,225	33.5%	252,591	25.5%	188,823	64.7%
Multi - Family Walk- Up Buildings	63,714	22.9%	309,220,223	21.8%	307,542,671	30.2%	333,512	33.6%	72,716	24.9%
Multi - Family Elevator Buildings	2,952	1.1%	255,779,519	18.0%	252,346,387	24.8%	279,757	28.2%	4,010	1.4%
Mixed Residential and Commercial Buildings	21,909	7.9%	148,097,043	10.4%	109,259,931	10.7%	117,968	11.9%	24,911	8.5%
Commercial and Office Buildings	6,927	2.5%	77,379,417	5.5%	1,346,574	0.1%	1,761	0.2%	615	0.2%
Industrial and Manufacturing	5,075	1.8%	89,963,717	6.3%	666,539	0.1%	616	0.1%	189	0.1%
Transportation and Utility	2,009	0.7%	30,105,011	2.1%	112,915	0.0%	62	0.0%	64	0.0%
Public Facilities and Institutions	4,167	1.5%	150,675,569	10.6%	4,807,329	0.5%	5,824	0.6%	372	0.1%
Open Space and Outdoor Recreation	863	0.3%	5,369,289	0.4%	569,541	0.1%	17	0.0%	2	0.0%
Parking Facilities	4,054	1.5%	8,559,711	0.6%	17,528	0.0%	11	0.0%	2	0.0%
Vacant Land	7,828	2.8%	122,316	0.0%	73,743	0.0%	-	0.0%	-	0.0%
No Data	1,711	0.6%	1,257,720	0.1%	32,361	0.0%	2	0.0%	2	0.0%

*Inundation areas are derived from a surge hindcast created by FEMA MOTF using surge modeling and observed data. The hindcast uses a 3 ft. elevation model.

For this analysis, a lot is included if any part of the lot is in the inundation area, except for *Total Residential Buildings*. For *Total Residential Buildings*, all lots that were wholly in the Operational Inundation Area, or had the majority of their housing in the Operational Inundation Area, were included.

Selected Housing Characteristics
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Impact Area in Brooklyn*

	Brooklyn			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
UNITS IN STRUCTURE (PLUTO distribution applied to 2010 Census control)				
Total housing units	134,267	100.0	1,000,293	100.0
One & Two Family Buildings	43,740	32.6	254,672	25.5
Multi - Family Walk- Up Buildings	24,998	18.6	336,259	33.6
Multi - Family Elevator Buildings	50,373	37.5	282,061	28.2
Mixed Residential and Commercial Buildings	14,318	10.7	118,940	11.9
Other	839	0.6	8,361	0.8
YEAR STRUCTURE BUILT (PLUTO distribution applied to 2010 Census control)				
Total housing units	134,267	100.0	1,000,293	100.0
Built 2000 or later	9,155	6.8	67,280	6.7
Built 1990 to 1999	1,414	1.1	17,190	1.7
Built 1980 to 1989	3,482	2.6	16,073	1.6
Built 1970 to 1979	6,635	4.9	35,494	3.5
Built 1960 to 1969	38,465	28.6	92,739	9.3
Built 1950 to 1959	23,762	17.7	78,507	7.8
Built 1940 to 1949	8,041	6.0	42,592	4.3
Built 1930 to 1939	19,716	14.7	212,324	21.2
Built 1920 to 1929	16,628	12.4	216,396	21.6
Built 1910 to 1919	2,199	1.6	93,876	9.4
Built 1900 to 1909	2,078	1.5	73,900	7.4
Built Before 1900	1,782	1.3	46,917	4.7
Unknown	910	0.7	7,006	0.7
ROOMS (ACS distribution applied to 2010 Census control)				
Total housing units	134,267	100.0	1,000,293	100.0
1 room	5,440	4.1	48,036	4.8
2 rooms	11,342	8.4	57,380	5.7
3 rooms	27,725	20.6	229,555	22.9
4 rooms	37,657	28.0	271,735	27.2
5 rooms	23,440	17.5	182,110	18.2
6 rooms	14,124	10.5	97,216	9.7
7 rooms	5,902	4.4	41,111	4.1
8 rooms	3,326	2.5	24,694	2.5
9 rooms or more	5,311	4.0	48,455	4.8
VEHICLES AVAILABLE (ACS distribution applied to 2010 Census control)				
Occupied housing units	122,587	100.0	916,856	100.0
No vehicles available	58,256	47.5	517,601	56.5
1 vehicle available	46,252	37.7	302,126	33.0
2 vehicles available	14,416	11.8	79,706	8.7
3 or more vehicles available	3,664	3.0	17,422	1.9
TELEPHONE SERVICE (ACS distribution applied to 2010 Census control)				
No telephone service available (excluding cell phones)	4,268	3.5	41,734	4.6

	Brooklyn			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
HOUSE HEATING FUEL (ACS distribution applied to 2010 Census control)				
Occupied housing units	122,587	100.0	916,856	100.0
Utility gas	90,297	73.7	643,878	70.2
Bottled, tank, or LP gas	1,717	1.4	15,249	1.7
Electricity	6,868	5.6	44,580	4.9
Fuel oil, kerosene, etc.	21,290	17.4	198,511	21.7
Coal or coke	83	0.1	649	0.1
Wood	89	0.1	789	0.1
Solar energy	97	0.1	305	0.0
Other fuel	1,163	0.9	6,601	0.7
No fuel used	982	0.8	6,294	0.7
VALUE (ACS distribution applied to 2010 Census control)				
Owner-occupied units	45,992	100.0	254,241	100.0
Less than $50,000	1,221	2.7	4,322	1.7
$50,000 to $99,999	805	1.8	5,819	2.3
$100,000 to $149,999	1,431	3.1	4,711	1.9
$150,000 to $199,999	2,243	4.9	7,169	2.8
$200,000 to $299,999	4,351	9.5	17,569	6.9
$300,000 to $499,999	12,471	27.1	64,688	25.4
$500,000 to $999,999	20,896	45.4	126,331	49.7
$1,000,000 or more	2,574	5.6	23,632	9.3
GROSS RENT (ACS distribution applied to 2010 Census control)				
Occupied units paying rent	74,292	100.0	644,974	100.0
Less than $200	1,934	2.6	12,978	2.0
$200 to $299	5,290	7.1	31,805	4.9
$300 to $499	6,877	9.3	43,692	6.8
$500 to $749	12,836	17.3	85,629	13.3
$750 to $999	13,756	18.5	136,442	21.2
$1,000 to $1,499	23,710	31.9	228,861	35.5
$1,500 or more	9,888	13.3	105,568	16.4
No rent paid	2,303		17,641	
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) (ACS distribution applied to 2010 Census control)				
Occupied units paying rent (excluding units where GRAPI cannot be computed)	72,659	100.0	629,252	100.0
Less than 15.0 percent	10,330	14.2	81,481	12.9
15.0 to 19.9 percent	7,900	10.9	70,405	11.2
20.0 to 24.9 percent	8,651	11.9	71,319	11.3
25.0 to 29.9 percent	8,559	11.8	68,884	10.9
30.0 to 34.9 percent	7,623	10.5	58,670	9.3
35.0 percent or more	29,596	40.7	278,494	44.3
Not computed	3,936		33,363	

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.
Note: While general housing data were available for the Hurricane Operational Inundation Area, more detailed housing data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the detailed housing data were applied to the general housing data (housing units, occupied housing units, owner occupied housing units, and renter occupied housing units) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. For consistency of comparison, the same process was used to produce overall City and borough estimates.

Demographic and Housing Profile
Hurricane Sandy Operational Inundation Area*
Manhattan, 2010 Census

	Manhattan			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Population	230,742	100.0	1,585,873	100.0
Under 5 years	11,924	5.2	76,579	4.8
5 to 17 years	26,868	11.6	157,856	10.0
18 to 34 years	72,397	31.4	521,950	32.9
35 to 44 years	33,229	14.4	234,144	14.8
45 to 54 years	29,787	12.9	202,969	12.8
55 to 64 years	25,451	11.0	178,222	11.2
65 years and over	31,086	13.5	214,153	13.5
In Households	220,977	95.8	1,518,500	95.8
In Group Quarters	9,765	4.2	67,373	4.2
In Group Quarters	9,765	100.0	67,373	100.0
Institutionalized	3,213	32.9	12,081	17.9
Correctional Facilities for Adults	165	1.7	2,038	3.0
Juvenile Facilities	0	0.0	743	1.1
Nursing Facilities	2,265	23.2	8,214	12.2
Other Institutionalized	783	8.0	1,086	1.6
Non-institutionalized	6,552	67.1	55,292	82.1
College/University Housing	2,264	23.2	35,333	52.4
Military Quarters	0	0.0	0	0.0
Other Non-institutionalized	4,288	43.9	19,959	29.6
Housing Units	117,455	100.0	847,090	100.0
Occupied Housing Units	105,877	90.1	763,846	90.2
Occupied Housing Units	105,877	100.0	763,846	100.0
Renter Occupied	89,632	84.7	589,885	77.2
Owner Occupied	16,245	15.3	173,961	22.8
Average Household Size		2.09		1.99

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Ratio of Income to Poverty Level in the Past 12 Months for Persons for Whom Poverty Status is Determined
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Inundation Area in Manhattan*

	Manhattan			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
Persons for whom poverty status is determined	226,087	100.0	1,543,736	100.0
Under 1.00 (Below poverty threshold)	48,878	21.6	274,138	17.8
Under .50 (Extreme poverty)	20,027	8.9	119,711	7.8
.50 to .99	28,851	12.8	154,427	10.0
1.00 to 1.24 (Near poor)	12,196	5.4	65,922	4.3
1.25 to 1.49	11,992	5.3	63,186	4.1
1.50 to 1.84	12,168	5.4	74,220	4.8
1.85 to 1.99	4,752	2.1	31,331	2.0
2.00 and over	136,101	60.2	1,034,939	67.0

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Note: While population data were available for the Hurricane Operational Inundation Area, poverty data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the poverty data were applied to the population for whom poverty was determined (the poverty universe) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. It should also be noted that the poverty universe for each borough was determined by taking the ratio of the poverty universe to the overall population, according to the 2006-2010 American Community Survey, and applying it to the overall population according to the 2010 Census. For consistency of comparison, the same process was used to produce overall City and borough estimates.

	Manhattan Inundation Area									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	4,285	100.0%	278,250,620	100.0%	134,830,038	100.0%	140,811	100.0%	3,072	100.0%
One & Two Family Buildings	166	3.9%	596,100	0.2%	596,100	0.4%	262	0.2%	171	5.6%
Multi - Family Walk- Up Buildings	945	22.1%	10,225,747	3.7%	10,045,189	7.5%	13,474	9.6%	1,058	34.4%
Multi - Family Elevator Buildings	386	9.0%	65,316,993	23.5%	62,482,493	46.3%	65,443	46.5%	644	21.0%
Mixed Residential and Commercial Buildings	839	19.6%	65,162,300	23.4%	57,068,994	42.3%	59,808	42.5%	1,067	34.7%
Commercial and Office Buildings	562	13.1%	76,546,086	27.5%	183,728	0.1%	212	0.2%	64	2.1%
Industrial and Manufacturing	237	5.5%	13,692,518	4.9%	114,907	0.1%	140	0.1%	35	1.1%
Transportation and Utility	231	5.4%	8,428,150	3.0%	-	0.0%	1	0.0%	1	0.0%
Public Facilities and Institutions	238	5.6%	33,094,264	11.9%	4,322,137	3.2%	1,277	0.9%	29	0.9%
Open Space and Outdoor Recreation	138	3.2%	1,623,910	0.6%	16,490	0.0%	-	0.0%	-	0.0%
Parking Facilities	178	4.2%	2,595,163	0.9%	-	0.0%	-	0.0%	-	0.0%
Vacant Land	284	6.6%	-	0.0%	-	0.0%	-	0.0%	-	0.0%
No Data	81	1.9%	969,389	0.3%	-	0.0%	194	0.1%	3	0.1%

	Manhattan Borough									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	43,252	100.0%	1,743,435,572	100.0%	850,862,144	100.0%	889,785	100.0%	35,590	100.0%
One & Two Family Buildings	3,741	8.6%	15,741,408	0.9%	15,734,997	1.8%	5,545	0.6%	3,847	10.8%
Multi - Family Walk- Up Buildings	12,154	28.1%	109,780,098	6.3%	107,760,502	12.7%	154,787	17.4%	13,190	37.1%
Multi - Family Elevator Buildings	4,872	11.3%	420,865,146	24.1%	399,271,221	46.9%	376,857	42.4%	5,694	16.0%
Mixed Residential and Commercial Buildings	10,172	23.5%	393,478,570	22.6%	314,238,648	36.9%	338,097	38.0%	11,570	32.5%
Commercial and Office Buildings	5,226	12.1%	542,371,041	31.1%	2,042,682	0.2%	3,786	0.4%	649	1.8%
Industrial and Manufacturing	1,480	3.4%	59,835,402	3.4%	1,159,897	0.1%	1,285	0.1%	320	0.9%
Transportation and Utility	457	1.1%	12,221,379	0.7%	-	0.0%	1	0.0%	1	0.0%
Public Facilities and Institutions	2,478	5.7%	175,678,085	10.1%	10,620,978	1.2%	9,198	1.0%	310	0.9%
Open Space and Outdoor Recreation	375	0.9%	2,537,365	0.1%	16,490	0.0%	3	0.0%	2	0.0%
Parking Facilities	775	1.8%	9,569,813	0.5%	1,875	0.0%	-	0.0%	-	0.0%
Vacant Land	1,291	3.0%	32,903	0.0%	7,420	0.0%	14	0.0%	-	0.0%
No Data	231	0.5%	1,324,362	0.1%	7,434	0.0%	212	0.0%	7	0.0%

*Inundation areas are derived from a surge hindcast created by FEMA MOTF using surge modeling and observed data. The hindcast uses a 3 ft. elevation model.

For this analysis, a lot is included if any part of the lot is in the inundation area, except for *Total Residential Buildings*. For *Total Residential Buildings*, all lots that were wholly in the Operational Inundation Area, or had the majority of their housing in the Operational Inundation Area, were included.

Selected Housing Characteristics
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Impact Area in Manhattan*

	Manhattan			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
UNITS IN STRUCTURE (PLUTO distribution applied to 2010 Census control)				
Total housing units	117,455	100.0	847,090	100.0
One & Two Family Buildings	254	0.2	5,279	0.6
Multi - Family Walk- Up Buildings	13,346	11.4	147,360	17.4
Multi - Family Elevator Buildings	53,555	45.6	358,774	42.4
Mixed Residential and Commercial Buildings	48,759	41.5	321,874	38.0
Other	1,541	1.3	13,803	1.6
YEAR STRUCTURE BUILT (PLUTO distribution applied to 2010 Census control)				
Total housing units	117,455	100.0	847,090	100.0
Built 2000 or later	14,178	12.1	59,886	7.1
Built 1990 to 1999	5,845	5.0	19,935	2.4
Built 1980 to 1989	9,430	8.0	49,797	5.9
Built 1970 to 1979	12,154	10.3	59,603	7.0
Built 1960 to 1969	14,770	12.6	99,685	11.8
Built 1950 to 1959	15,945	13.6	64,264	7.6
Built 1940 to 1949	12,436	10.6	38,016	4.5
Built 1930 to 1939	7,287	6.2	51,732	6.1
Built 1920 to 1929	9,306	7.9	164,789	19.5
Built 1910 to 1919	6,270	5.3	118,337	14.0
Built 1900 to 1909	8,586	7.3	105,839	12.5
Built Before 1900	608	0.5	8,541	1.0
Unknown	641	0.5	6,666	0.8
ROOMS (ACS distribution applied to 2010 Census control)				
Total housing units	117,455	100.0	847,090	100.0
1 room	12,492	10.6	103,110	12.2
2 rooms	13,920	11.9	114,779	13.5
3 rooms	37,050	31.5	262,212	31.0
4 rooms	34,854	29.7	203,380	24.0
5 rooms	13,863	11.8	91,345	10.8
6 rooms	3,082	2.6	36,280	4.3
7 rooms	823	0.7	14,640	1.7
8 rooms	617	0.5	8,068	1.0
9 rooms or more	753	0.6	13,276	1.6
VEHICLES AVAILABLE (ACS distribution applied to 2010 Census control)				
Occupied housing units	105,877	100.0	763,846	100.0
No vehicles available	81,500	77.0	593,406	77.7
1 vehicle available	21,495	20.3	151,391	19.8
2 vehicles available	2,378	2.2	16,509	2.2
3 or more vehicles available	504	0.5	2,540	0.3
TELEPHONE SERVICE (ACS distribution applied to 2010 Census control)				
No telephone service available (excluding cell phones)	6,610	6.2	47,269	6.2

	Manhattan			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
HOUSE HEATING FUEL (ACS distribution applied to 2010 Census control)				
Occupied housing units	105,877	100.0	763,846	100.0
Utility gas	36,119	34.1	244,899	32.1
Bottled, tank, or LP gas	1,098	1.0	10,571	1.4
Electricity	25,574	24.2	131,451	17.2
Fuel oil, kerosene, etc.	36,086	34.1	339,895	44.5
Coal or coke	129	0.1	887	0.1
Wood	52	0.0	197	0.0
Solar energy	179	0.2	289	0.0
Other fuel	3,589	3.4	19,768	2.6
No fuel used	3,052	2.9	15,889	2.1
VALUE (ACS distribution applied to 2010 Census control)				
Owner-occupied units	16,245	100.0	173,961	100.0
Less than $50,000	984	6.1	4,600	2.6
$50,000 to $99,999	342	2.1	2,232	1.3
$100,000 to $149,999	201	1.2	1,651	0.9
$150,000 to $199,999	161	1.0	1,809	1.0
$200,000 to $299,999	677	4.2	6,289	3.6
$300,000 to $499,999	2,152	13.2	26,643	15.3
$500,000 to $999,999	5,968	36.7	61,036	35.1
$1,000,000 or more	5,762	35.5	69,701	40.1
GROSS RENT (ACS distribution applied to 2010 Census control)				
Occupied units paying rent	88,445	100.0	576,602	100.0
Less than $200	2,730	3.1	10,926	1.9
$200 to $299	7,655	8.7	29,524	5.1
$300 to $499	7,991	9.0	38,425	6.7
$500 to $749	13,569	15.3	74,899	13.0
$750 to $999	10,932	12.4	75,474	13.1
$1,000 to $1,499	13,163	14.9	111,815	19.4
$1,500 or more	32,405	36.6	235,539	40.8
No rent paid	1,187		13,283	
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) (ACS distribution applied to 2010 Census control)				
Occupied units paying rent (excluding units where GRAPI cannot be computed)	86,787	100.0	565,775	100.0
Less than 15.0 percent	17,000	19.6	111,216	19.7
15.0 to 19.9 percent	11,133	12.8	70,666	12.5
20.0 to 24.9 percent	10,876	12.5	67,375	11.9
25.0 to 29.9 percent	10,501	12.1	61,957	11.0
30.0 to 34.9 percent	8,708	10.0	49,466	8.7
35.0 percent or more	28,569	32.9	205,095	36.3
Not computed	2,845		24,110	

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.
Note: While general housing data were available for the Hurricane Operational Inundation Area, more detailed housing data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the detailed housing data were applied to the general housing data (housing units, occupied housing units, owner occupied housing units, and renter occupied housing units) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. For consistency of comparison, the same process was used to produce overall City and borough estimates.

Demographic and Housing Profile
Hurricane Sandy Operational Inundation Area*
Queens, 2010 Census

	Queens			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Population	188,444	100.0	2,230,722	100.0
Under 5 years	12,450	6.6	132,464	5.9
5 to 17 years	31,915	16.9	329,437	14.8
18 to 34 years	44,267	23.5	579,836	26.0
35 to 44 years	25,423	13.5	326,279	14.6
45 to 54 years	26,640	14.1	322,884	14.5
55 to 64 years	21,659	11.5	253,676	11.4
65 years and over	26,090	13.8	286,146	12.8
In Households	182,100	96.6	2,202,722	98.7
In Group Quarters	6,344	3.4	28,000	1.3
In Group Quarters	6,344	100.0	28,000	100.0
Institutionalized	3,873	61.0	15,364	54.9
Correctional Facilities for Adults	234	3.7	665	2.4
Juvenile Facilities	72	1.1	317	1.1
Nursing Facilities	3,567	56.2	13,402	47.9
Other Institutionalized	0	0.0	980	3.5
Non-institutionalized	2,471	39.0	12,636	45.1
College/University Housing	139	2.2	3,366	12.0
Military Quarters	0	0.0	0	0.0
Other Non-institutionalized	2,332	36.8	9,270	33.1
Housing Units	77,164	100.0	835,127	100.0
Occupied Housing Units	68,853	89.2	780,117	93.4
Occupied Housing Units	68,853	100.0	780,117	100.0
Renter Occupied	38,076	55.3	444,663	57.0
Owner Occupied	30,777	44.7	335,454	43.0
Average Household Size		2.64		2.82

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Ratio of Income to Poverty Level in the Past 12 Months for Persons for Whom Poverty Status is Determined
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Inundation Area in Queens*

	Queens			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
Persons for whom poverty status is determined	183,944	100.0	2,209,005	100.0
Under 1.00 (Below poverty threshold)	28,170	15.3	286,843	13.0
Under .50 (Extreme poverty)	13,960	7.6	117,426	5.3
.50 to .99	14,209	7.7	169,417	7.7
1.00 to 1.24 (Near poor)	7,576	4.1	103,625	4.7
1.25 to 1.49	7,041	3.8	105,983	4.8
1.50 to 1.84	9,962	5.4	151,501	6.9
1.85 to 1.99	4,036	2.2	62,274	2.8
2.00 and over	127,160	69.1	1,498,779	67.8

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Note: While population data were available for the Hurricane Operational Inundation Area, poverty data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the poverty data were applied to the population for whom poverty was determined (the poverty universe) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. It should also be noted that the poverty universe for each borough was determined by taking the ratio of the poverty universe to the overall population, according to the 2006-2010 American Community Survey, and applying it to the overall population according to the 2010 Census. For consistency of comparison, the same process was used to produce overall City and borough estimates.

	Queens Inundation Area									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	30,491	100.0%	166,139,812	100.0%	84,735,319	100.0%	79,607	100.0%	33,103	100.0%
One & Two Family Buildings	22,123	72.6%	44,759,407	26.9%	44,756,732	52.8%	34,360	43.2%	29,058	87.8%
Multi - Family Walk- Up Buildings	1,925	6.3%	9,323,492	5.6%	9,284,426	11.0%	10,528	13.2%	3,083	9.3%
Multi - Family Elevator Buildings	132	0.4%	25,535,755	15.4%	24,849,050	29.3%	28,803	36.2%	323	1.0%
Mixed Residential and Commercial Buildings	399	1.3%	6,076,749	3.7%	4,916,409	5.8%	5,730	7.2%	557	1.7%
Commercial and Office Buildings	439	1.4%	7,533,301	4.5%	101,386	0.1%	39	0.0%	33	0.1%
Industrial and Manufacturing	790	2.6%	23,847,410	14.4%	29,675	0.0%	16	0.0%	8	0.0%
Transportation and Utility	414	1.4%	18,124,754	10.9%	11,419	0.0%	13	0.0%	14	0.0%
Public Facilities and Institutions	238	0.8%	9,042,155	5.4%	760,614	0.9%	111	0.1%	16	0.0%
Open Space and Outdoor Recreation	548	1.8%	20,001,648	12.0%	13,281	0.0%	4	0.0%	6	0.0%
Parking Facilities	501	1.6%	1,514,180	0.9%	-	0.0%	-	0.0%		0.0%
Vacant Land	2,591	8.5%	4,587	0.0%	4,587	0.0%	-	0.0%		0.0%
No Data	391	1.3%	376,374	0.2%	7,740	0.0%	3	0.0%	5	0.0%

	Queens Borough									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	324,430	100.0%	1,198,626,249	100.0%	865,177,217	100.0%	813,692	100.0%	374,187	100.0%
One & Two Family Buildings	246,582	76.0%	443,988,231	37.0%	443,980,067	51.3%	340,832	41.9%	308,036	82.3%
Multi - Family Walk- Up Buildings	34,687	10.7%	169,430,869	14.1%	169,004,334	19.5%	195,030	24.0%	48,756	13.0%
Multi - Family Elevator Buildings	1,726	0.5%	195,330,407	16.3%	190,319,061	22.0%	204,558	25.1%	2,680	0.7%
Mixed Residential and Commercial Buildings	11,239	3.5%	79,540,267	6.6%	57,696,240	6.7%	69,198	8.5%	13,489	3.6%
Commercial and Office Buildings	6,910	2.1%	84,994,528	7.1%	1,152,058	0.1%	1,218	0.1%	648	0.2%
Industrial and Manufacturing	3,787	1.2%	76,255,544	6.4%	267,027	0.0%	187	0.0%	158	0.0%
Transportation and Utility	2,283	0.7%	23,668,782	2.0%	93,754	0.0%	86	0.0%	100	0.0%
Public Facilities and Institutions	2,782	0.9%	93,928,571	7.8%	2,532,563	0.3%	2,568	0.3%	299	0.1%
Open Space and Outdoor Recreation	1,101	0.3%	22,823,742	1.9%	100,866	0.0%	5	0.0%	7	0.0%
Parking Facilities	3,693	1.1%	7,869,766	0.7%	5,262	0.0%	2	0.0%	1	0.0%
Vacant Land	8,517	2.6%	181,074	0.0%	12,355	0.0%	-	0.0%		0.0%
No Data	1,123	0.3%	614,468	0.1%	13,630	0.0%	8	0.0%	13	0.0%

*Inundation areas are derived from a surge hindcast created by FEMA MOTF using surge modeling and observed data. The hindcast uses a 3 ft. elevation model.

For this analysis, a lot is included if any part of the lot is in the inundation area, except for *Total Residential Buildings*. For *Total Residential Buildings*, all lots that were wholly in the Operational Inundation Area, or had the majority of their housing in the Operational Inundation Area, were included.

	Queens			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
UNITS IN STRUCTURE (PLUTO distribution applied to 2010 Census control)				
Total housing units	77,164	100.0	835,127	100.0
One & Two Family Buildings	35,271	45.7	349,811	41.9
Multi - Family Walk- Up Buildings	10,190	13.2	200,168	24.0
Multi - Family Elevator Buildings	25,642	33.2	209,947	25.1
Mixed Residential and Commercial Buildings	5,886	7.6	71,021	8.5
Other	174	0.2	4,181	0.5
YEAR STRUCTURE BUILT (PLUTO distribution applied to 2010 Census control)				
Total housing units	77,164	100.0	835,127	100.0
Built 2000 or later	10,725	13.9	51,699	6.2
Built 1990 to 1999	1,997	2.6	13,348	1.6
Built 1980 to 1989	2,539	3.3	20,321	2.4
Built 1970 to 1979	6,593	8.5	31,955	3.8
Built 1960 to 1969	18,677	24.2	116,564	14.0
Built 1950 to 1959	13,480	17.5	151,232	18.1
Built 1940 to 1949	3,073	4.0	88,583	10.6
Built 1930 to 1939	9,068	11.8	146,061	17.5
Built 1920 to 1929	6,797	8.8	167,678	20.1
Built 1910 to 1919	2,073	2.7	33,286	4.0
Built 1900 to 1909	894	1.2	10,511	1.3
Built Before 1900	184	0.2	1,323	0.2
Unknown	1,064	1.4	2,567	0.3
ROOMS (ACS distribution applied to 2010 Census control)				
Total housing units	77,164	100.0	835,127	100.0
1 room	3,754	4.9	29,996	3.6
2 rooms	3,661	4.7	38,955	4.7
3 rooms	13,689	17.7	169,728	20.3
4 rooms	16,866	21.9	188,596	22.6
5 rooms	15,623	20.2	166,575	19.9
6 rooms	10,077	13.1	118,917	14.2
7 rooms	4,939	6.4	51,928	6.2
8 rooms	3,271	4.2	29,044	3.5
9 rooms or more	5,285	6.8	41,387	5.0
VEHICLES AVAILABLE (ACS distribution applied to 2010 Census control)				
Occupied housing units	68,853	100.0	780,117	100.0
No vehicles available	23,011	33.4	283,528	36.3
1 vehicle available	26,458	38.4	313,872	40.2
2 vehicles available	14,907	21.7	141,282	18.1
3 or more vehicles available	4,478	6.5	41,434	5.3
TELEPHONE SERVICE (ACS distribution applied to 2010 Census control)				
No telephone service available (excluding cell phones)	3,997	5.8	37,094	4.8

	Queens			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
HOUSE HEATING FUEL (ACS distribution applied to 2010 Census control)				
Occupied housing units	68,853	100.0	780,117	100.0
Utility gas	45,785	66.5	503,962	64.6
Bottled, tank, or LP gas	908	1.3	11,685	1.5
Electricity	5,323	7.7	42,215	5.4
Fuel oil, kerosene, etc.	15,402	22.4	211,386	27.1
Coal or coke	66	0.1	400	0.1
Wood	42	0.1	542	0.1
Solar energy	24	0.0	83	0.0
Other fuel	555	0.8	5,672	0.7
No fuel used	749	1.1	4,172	0.5
VALUE (ACS distribution applied to 2010 Census control)				
Owner-occupied units	30,777	100.0	335,454	100.0
Less than $50,000	1,242	4.0	6,503	1.9
$50,000 to $99,999	501	1.6	7,924	2.4
$100,000 to $149,999	596	1.9	9,864	2.9
$150,000 to $199,999	1,298	4.2	17,776	5.3
$200,000 to $299,999	2,596	8.4	36,601	10.9
$300,000 to $499,999	9,449	30.7	101,434	30.2
$500,000 to $999,999	13,684	44.5	146,144	43.6
$1,000,000 or more	1,410	4.6	9,209	2.7
GROSS RENT (ACS distribution applied to 2010 Census control)				
Occupied units paying rent	37,084	100.0	431,887	100.0
Less than $200	830	2.2	3,654	0.8
$200 to $299	2,557	6.9	8,634	2.0
$300 to $499	2,883	7.8	13,880	3.2
$500 to $749	5,192	14.0	38,802	9.0
$750 to $999	6,364	17.2	76,456	17.7
$1,000 to $1,499	9,823	26.5	188,354	43.6
$1,500 or more	9,435	25.4	102,107	23.6
No rent paid	992		12,776	
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) (ACS distribution applied to 2010 Census control)				
Occupied units paying rent (excluding units where GRAPI cannot be computed)	36,325	100.0	424,346	100.0
Less than 15.0 percent	5,549	15.3	53,037	12.5
15.0 to 19.9 percent	4,531	12.5	50,177	11.8
20.0 to 24.9 percent	3,735	10.3	50,998	12.0
25.0 to 29.9 percent	4,706	13.0	46,510	11.0
30.0 to 34.9 percent	3,763	10.4	37,689	8.9
35.0 percent or more	14,042	38.7	185,934	43.8
Not computed	1,751		20,317	

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Note: While general housing data were available for the Hurricane Operational Inundation Area, more detailed housing data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the detailed housing data were applied to the general housing data (housing units, occupied housing units, owner occupied housing units, and renter occupied housing units) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. For consistency of comparison, the same process was used to produce overall City and borough estimates.

Demographic and Housing Profile
Hurricane Sandy Operational Inundation Area*
Staten Island, 2010 Census

	Staten Island			
	Inundation Area		Total	
	Number	Percent	Number	Percent
Population	75,651	100.0	468,730	100.0
Under 5 years	4,600	6.1	28,339	6.0
5 to 17 years	12,456	16.5	80,862	17.3
18 to 34 years	17,205	22.7	104,184	22.2
35 to 44 years	11,008	14.6	65,630	14.0
45 to 54 years	12,066	15.9	71,748	15.3
55 to 64 years	9,394	12.4	58,623	12.5
65 years and over	8,922	11.8	59,344	12.7
In Households	74,051	97.9	460,892	98.3
In Group Quarters	1,600	2.1	7,838	1.7
In Group Quarters	1,600	100.0	7,838	100.0
Institutionalized	918	57.4	3,862	49.3
Correctional Facilities for Adults	918	57.4	924	11.8
Juvenile Facilities	0	0.0	233	3.0
Nursing Facilities	0	0.0	2,705	34.5
Other Institutionalized	0	0.0	0	0.0
Non-institutionalized	682	42.6	3,976	50.7
College/University Housing	0	0.0	1,457	18.6
Military Quarters	0	0.0	47	0.6
Other Non-institutionalized	682	42.6	2,472	31.5
Housing Units	28,561	100.0	176,656	100.0
Occupied Housing Units	26,612	93.2	165,516	93.7
Occupied Housing Units	26,612	100.0	165,516	100.0
Renter Occupied	9,638	36.2	59,381	35.9
Owner Occupied	16,974	63.8	106,135	64.1
Average Household Size		2.78		2.78

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Ratio of Income to Poverty Level in the Past 12 Months for Persons for Whom Poverty Status is Determined
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Inundation Area in Staten Island*

	Staten Island			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
Persons for whom poverty status is determined	74,452	100.0	459,940	100.0
Under 1.00 (Below poverty threshold)	6,693	9.0	47,570	10.3
Under .50 (Extreme poverty)	2,969	4.0	22,549	4.9
.50 to .99	3,723	5.0	25,021	5.4
1.00 to 1.24 (Near poor)	3,343	4.5	15,543	3.4
1.25 to 1.49	2,317	3.1	13,979	3.0
1.50 to 1.84	3,250	4.4	19,037	4.1
1.85 to 1.99	1,671	2.2	8,501	1.8
2.00 and over	57,178	76.8	355,309	77.3

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.

Note: While population data were available for the Hurricane Operational Inundation Area, poverty data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the poverty data were applied to the population for whom poverty was determined (the poverty universe) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. It should also be noted that the poverty universe for each borough was determined by taking the ratio of the poverty universe to the overall population, according to the 2006-2010 American Community Survey, and applying it to the overall population according to the 2010 Census. For consistency of comparison, the same process was used to produce overall City and borough estimates.

	Staten Island Inundation Area									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	23,111	100.0%	57,156,535	100.0%	35,545,559	100.0%	27,493	100.0%	21,074	100.0%
One & Two Family Buildings	17,438	75.5%	29,726,021	52.0%	29,721,433	83.6%	21,316	77.5%	19,209	91.2%
Multi - Family Walk- Up Buildings	296	1.3%	2,553,875	4.5%	2,552,235	7.2%	2,631	9.6%	1,364	6.5%
Multi - Family Elevator Buildings	15	0.1%	2,559,606	4.5%	2,559,606	7.2%	2,647	9.6%	23	0.1%
Mixed Residential and Commercial Buildings	287	1.2%	1,071,066	1.9%	628,573	1.8%	650	2.4%	385	1.8%
Commercial and Office Buildings	599	2.6%	7,058,161	12.3%	31,223	0.1%	36	0.1%	31	0.1%
Industrial and Manufacturing	242	1.0%	4,950,250	8.7%	7,170	0.0%	6	0.0%	15	0.1%
Transportation and Utility	359	1.6%	2,691,780	4.7%	7,899	0.0%	9	0.0%	14	0.1%
Public Facilities and Institutions	124	0.5%	5,133,283	9.0%	23,841	0.1%	195	0.7%	26	0.1%
Open Space and Outdoor Recreation	415	1.8%	936,507	1.6%	13,579	0.0%	3	0.0%	7	0.0%
Parking Facilities	246	1.1%	419,220	0.7%	-	0.0%	-	0.0%	-	0.0%
Vacant Land	2,896	12.5%	-	0.0%	-	0.0%	-	0.0%	-	0.0%
No Data	194	0.8%	56,766	0.1%	-	0.0%	-	0.0%	-	0.0%

	Staten Island Borough									
	Total Lots (BBL)		Total Building Area (sq. ft.)		Total Residential Area (sq. ft.)		Total Residential Units		Total Residential Buildings	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Land Use	123,480	100.0%	320,280,272	100.0%	234,905,774	100.0%	171,682	100.0%	128,542	100.0%
One & Two Family Buildings	105,120	85.1%	198,339,138	61.9%	198,326,424	84.4%	133,735	77.9%	117,007	91.0%
Multi - Family Walk- Up Buildings	1,853	1.5%	18,346,277	5.7%	18,296,850	7.8%	19,130	11.1%	8,960	7.0%
Multi - Family Elevator Buildings	85	0.1%	13,467,194	4.2%	13,425,290	5.7%	14,415	8.4%	193	0.2%
Mixed Residential and Commercial Buildings	1,439	1.2%	5,601,405	1.7%	3,551,680	1.5%	3,624	2.1%	1,955	1.5%
Commercial and Office Buildings	2,182	1.8%	19,839,928	6.2%	341,357	0.1%	196	0.1%	195	0.2%
Industrial and Manufacturing	418	0.3%	6,924,708	2.2%	17,768	0.0%	16	0.0%	27	0.0%
Transportation and Utility	775	0.6%	3,579,642	1.1%	19,306	0.0%	19	0.0%	30	0.0%
Public Facilities and Institutions	672	0.5%	51,635,422	16.1%	866,600	0.4%	529	0.3%	154	0.1%
Open Space and Outdoor Recreation	1,880	1.5%	1,476,326	0.5%	40,937	0.0%	13	0.0%	17	0.0%
Parking Facilities	770	0.6%	990,310	0.3%	2,500	0.0%	5	0.0%	4	0.0%
Vacant Land	7,839	6.3%	17,062	0.0%	17,062	0.0%	-	0.0%	-	0.0%
No Data	447	0.4%	62,860	0.0%	-	0.0%	-	0.0%	-	0.0%

*Inundation areas are derived from a surge hindcast created by FEMA MOTF using surge modeling and observed data. The hindcast uses a 3 ft. elevation model.

For this analysis, a lot is included if any part of the lot is in the inundation area, except for *Total Residential Buildings*. For *Total Residential Buildings*, all lots that were wholly in the Operational Inundation Area, or had the majority of their housing in the Operational Inundation Area, were included.

Selected Housing Characteristics
Census 2010 Summary Files and American Community Survey 2006-2010 Estimates
Hurricane Operational Impact Area in Staten Island*

	Staten Island			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
UNITS IN STRUCTURE (PLUTO distribution applied to 2010 Census control)				
Total housing units	28,561	100.0	176,656	100.0
One & Two Family Buildings	22,375	78.3	137,610	77.9
Multi - Family Walk- Up Buildings	2,516	8.8	19,684	11.1
Multi - Family Elevator Buildings	2,732	9.6	14,833	8.4
Mixed Residential and Commercial Buildings	678	2.4	3,729	2.1
Other	260	0.9	801	0.5
YEAR STRUCTURE BUILT (PLUTO distribution applied to 2010 Census control)				
Total housing units	28,561	100.0	176,656	100.0
Built 2000 or later	4,239	14.8	17,993	10.2
Built 1990 to 1999	2,987	10.5	18,682	10.6
Built 1980 to 1989	4,996	17.5	28,958	16.4
Built 1970 to 1979	3,835	13.4	31,042	17.6
Built 1960 to 1969	3,735	13.1	23,977	13.6
Built 1950 to 1959	1,282	4.5	12,915	7.3
Built 1940 to 1949	813	2.8	5,330	3.0
Built 1930 to 1939	2,288	8.0	11,317	6.4
Built 1920 to 1929	2,044	7.2	13,732	7.8
Built 1910 to 1919	938	3.3	5,758	3.3
Built 1900 to 1909	672	2.4	3,674	2.1
Built Before 1900	580	2.0	3,153	1.8
Unknown	152	0.5	126	0.1
ROOMS (ACS distribution applied to 2010 Census control)				
Total housing units	28,561	100.0	176,656	100.0
1 room	524	1.8	2,668	1.5
2 rooms	398	1.4	3,092	1.8
3 rooms	3,276	11.5	19,180	10.9
4 rooms	4,340	15.2	24,638	13.9
5 rooms	6,345	22.2	32,483	18.4
6 rooms	6,108	21.4	38,528	21.8
7 rooms	3,460	12.1	24,963	14.1
8 rooms	1,793	6.3	13,684	7.7
9 rooms or more	2,317	8.1	17,419	9.9
VEHICLES AVAILABLE (ACS distribution applied to 2010 Census control)				
Occupied housing units	26,612	100.0	165,516	100.0
No vehicles available	4,159	15.6	26,032	15.7
1 vehicle available	10,702	40.2	61,161	37.0
2 vehicles available	8,478	31.9	56,914	34.4
3 or more vehicles available	3,273	12.3	21,409	12.9
TELEPHONE SERVICE (ACS distribution applied to 2010 Census control)				
No telephone service available (excluding cell phones)	404	1.5	3,026	1.8

	Staten Island			
	Inundation Area		Total	
	Estimate	Percent	Estimate	Percent
HOUSE HEATING FUEL (ACS distribution applied to 2010 Census control)				
Occupied housing units	26,612	100.0	165,516	100.0
Utility gas	23,021	86.5	141,947	85.8
Bottled, tank, or LP gas	307	1.2	1,895	1.1
Electricity	819	3.1	5,010	3.0
Fuel oil, kerosene, etc.	2,331	8.8	15,785	9.5
Coal or coke	4	0.0	42	0.0
Wood	19	0.1	57	0.0
Solar energy	1	0.0	12	0.0
Other fuel	64	0.2	333	0.2
No fuel used	46	0.2	433	0.3
VALUE (ACS distribution applied to 2010 Census control)				
Owner-occupied units	16,974	100.0	106,135	100.0
Less than $50,000	206	1.2	1,130	1.1
$50,000 to $99,999	257	1.5	926	0.9
$100,000 to $149,999	163	1.0	977	0.9
$150,000 to $199,999	403	2.4	2,057	1.9
$200,000 to $299,999	1,437	8.5	8,244	7.8
$300,000 to $499,999	9,107	53.7	50,691	47.8
$500,000 to $999,999	5,084	30.0	38,955	36.7
$1,000,000 or more	316	1.9	3,156	3.0
GROSS RENT (ACS distribution applied to 2010 Census control)				
Occupied units paying rent	8,873	100.0	55,577	100.0
Less than $200	187	2.1	1,225	2.2
$200 to $299	289	3.3	2,794	5.0
$300 to $499	488	5.5	4,050	7.3
$500 to $749	610	6.9	5,158	9.3
$750 to $999	1,636	18.4	9,172	16.5
$1,000 to $1,499	3,459	39.0	21,687	39.0
$1,500 or more	2,204	24.8	11,491	20.7
No rent paid	765		3,804	
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) (ACS distribution applied to 2010 Census control)				
Occupied units paying rent (excluding units where GRAPI cannot be computed)	8,771	100.0	54,297	100.0
Less than 15.0 percent	1,016	11.6	6,496	12.0
15.0 to 19.9 percent	976	11.1	6,375	11.7
20.0 to 24.9 percent	1,028	11.7	5,900	10.9
25.0 to 29.9 percent	931	10.6	5,743	10.6
30.0 to 34.9 percent	878	10.0	5,180	9.5
35.0 percent or more	3,943	45.0	24,603	45.3
Not computed	867		5,084	

*The Operational Inundation Area consists of areas in New York City that FEMA determined were inundated with flood waters.
Note: While general housing data were available for the Hurricane Operational Inundation Area, more detailed housing data were only available for a larger area that included all census tracts intersecting the Hurricane Operational Inundation Area. The percent distributions for the detailed housing data were applied to the general housing data (housing units, occupied housing units, owner occupied housing units, and renter occupied housing units) in the Operational Inundation Area for each respective census tract to produce a set of estimates. Census tract estimates were summed up to the borough level. These borough estimates were then summed to produce a set of citywide values. For consistency of comparison, the same process was used to produce overall City and borough estimates.

APPENDIX D: PROJECTED EXPENDITURES AND OUTCOMES

The projected expenditures and outcomes, including text, have been updated as part of Amendment 9 and reflect the City's third allocation of CDBG-DR funding. Per the Federal Register Notices associated with the CDBG-DR Sandy allocations, projected expenditures and outcomes are to be updated within 90 days of an Action Plan Amendment being approved by HUD.

The March 5, 2013, Federal Register Notice requires each grantee to amend its Action Plan to project expenditures and outcomes within 90 days of the initial Action Plan approval by HUD. In Amendment 2 of the City's Action Plan, the City included projected expenditures and outcomes in its Action Plan. The projected expenditures and outcomes have been or will be amended if there have been changes to program funding or the addition of activities. The November 18, 2013 Federal Register Notice states that "the March 5, 2013 Notice is amended, as necessary, to require each grantee to amend its Action Plan to update its projection of expenditures and outcomes within 90 days of its Action Plan Amendment approval."

The projections in Amendment 9 have been updated to reflect the re-allocation of funds and the third allocation from HUD identified in Action Plan Amendment 8A and B. The projections shows current program totals within Housing, Business, Infrastructure, and Resiliency.

Program expenditures are defined as disbursements to the City from the HUD grant for expenses incurred. In previous Action Plan documents (Amendments 1 – 5B), the financial and performance projections had been based on expenditures defined as when the City issued payment. The shift in the definition of expenditures, from the date of City payment to the date of drawdown, was made in accordance with federal regulations. Expenditures reflect the payment to the City in compensation for approved work and services. The projections in this document do not directly reflect estimates for work completion. Instead, these charts are meant to illustrate when the City will be reimbursed by CDBG-DR funds for work and services already rendered. Due to the process of these reimbursements, the projected dates of expenditures are later than the dates of service deliveries.

Housing

The City's CDBG-DR Action Plan includes $2.459 billion of CDBG-DR funding for housing programs.

The New York City Build it Back program will cover the rehabilitation, reconstruction and reimbursement of residential structures damaged by Hurricane Sandy. Build it Back consists of four programs: (1) Single Family Rehabilitation, Reconstruction, and Reimbursement (2) Multi-Family Rehabilitation and Reimbursement (3) Temporary Disaster Assistance Program (TDAP) and (4) Workforce Development. As stated in the Action Plan, the City has allocated $1.716 million for single-family homes (1-4 units), $416 million for multi-family buildings (5 or more units) $19 million for TDAP and $3 million for workforce development.

As of March 31, 2015 the Build it Back program has presented nearly 9,000 participants with award pathways, with over 1,500 of those offers made during Q1 2015. Nearly 6,400 participants have accepted offerings and are moving through the first stages of their award paths. As of March 31, 2015 nearly 1,000 rehab, elevation, and rebuild projects were started with over 500 projects completed. Additionally, nearly 3,000 reimbursement checks were sent out to participants who spent their own funds to repair their homes.

As of March 31, 2015 the Multi-Family program is working with 586 active registrants. The multi-family program has closed repair loans/grants with 10 buildings and 128 individual condo/co-op unit owners. Reimbursement checks have been issued to 21 buildings and 111 individual condo/co-op unit owners. More than 6,300 households in multi-family developments have benefited through the loans and grants of this program.

The City will also invest $3 million for a workforce development program to boost long-term recovery by supplying residents of impacted communities with the necessary skills to increase household income. This program will also focus on making sure residents have access to training and job opportunities related to Build it Back and other recovery work.

Additionally, $19 million has been allocated to a rental assistance program for low-income households. The first vouchers were handed out in the third quarter of 2013. As indicated in the Action Plan, this program is expected to serve approximately 478 households.

Action Plan Amendment 5A updated the eligibility criteria for TDAP to include eligible households at or below 50% of Area Median Income (AMI) which relocated following Sandy and which now pay more than 40% of their income in rent. This amendment, approved on April 18, 2014, updated eligibility criteria allowing the program to meet the recently emerging needs of renters who had originally found housing right after Sandy but are now experiencing a significant rent hardship. HPD was able to identify 936 applicants who would be potentially eligible under this expanded criterion and has completed outreach to them and has been able to allow an additional 193 households to apply for assistance.

The New York City Housing Authority has received a separate allocation of $308 million for its Sandy recovery programs. With this, NYCHA will perform permanent repairs to building systems damaged by Hurricane Sandy.

NYCHA has identified 35 coastal zone housing developments with major damages targeted to benefit from permanent repairs, flood hazard mitigation, and resiliency measures that include the provision of standby power generators. NYCHA's recovery efforts are currently projected to benefit 20,178 residential units.

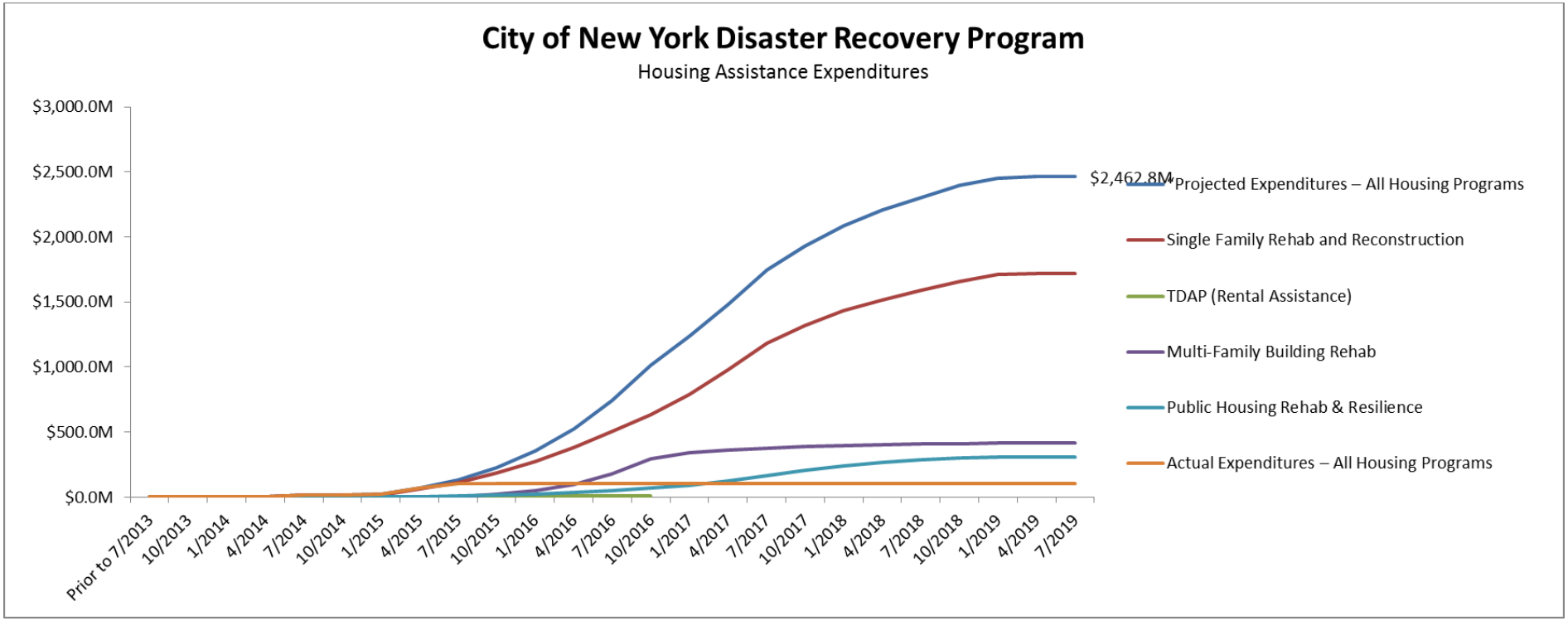
Construction contractor procurement commenced in mid-2014 and an award for one development is in progress. Construction work is scheduled to begin during the third quarter.

Housing Financial Projections

Housing	Prior to 7/2013	10/2013	1/2014	4/2014	7/2014	10/2014	1/2015	4/2015	7/2015	10/2015	1/2016	4/2016	7/2016
Projected Cumulative Disbursements	$0.0M	$0.0M	$0.3M	$0.4M	$13.8M	$18.6M	$20.7M	$69.5M	$132.0M	$229.0M	$354.7M	$521.5M	$741.6M
Single Family Rehab and Reconstruction	$0.0M	$0.0M	$0.0M	$0.0M	$12.8M	$17.6M	$19.0M	$64.8M	$113.6M	$183.9M	$273.8M	$379.9M	$503.7M
Multi-Family Building Rehab	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.9M	$3.8M	$22.2M	$47.7M	$96.1M	$176.3M
TDAP (Rental Assistance)	$0.0M	$0.0M	$0.3M	$0.4M	$1.0M	$1.0M	$1.8M	$3.8M	$5.1M	$6.4M	$7.6M	$8.8M	$9.9M
Public Housing Rehab & Resilience	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$9.5M	$16.6M	$25.0M	$35.8M	$50.5M
BiB Workforce Development	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.5M	$0.9M	$1.3M
Projected Disbursements by Quarter	$0.0M	$0.0M	$0.3M	$0.2M	$13.3M	$4.8M	$2.2M	$48.8M	$62.5M	$97.0M	$125.7M	$166.8M	$220.1M
Single Family Rehab and Reconstruction	$0.0M	$0.0M	$0.0M	$0.0M	$12.8M	$4.8M	$1.4M	$45.9M	$48.8M	$70.3M	$89.9M	$106.1M	$123.8M
HRO									$48.0M	$52.9M	$80.3M	$95.6M	$109.6M
HPD									$0.7M	$17.4M	$9.5M	$10.5M	$14.2M
Multi-Family Building Rehab	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.9M	$2.9M	$18.4M	$25.6M	$48.4M	$80.1M
TDAP (Rental Assistance)	$0.0M	$0.0M	$0.3M	$0.2M	$0.5M	$0.0M	$0.8M	$2.0M	$1.3M	$1.2M	$1.3M	$1.2M	$1.1M
Public Housing Rehab & Resilience	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$9.5M	$7.1M	$8.5M	$10.7M	$14.8M
BiB Workforce Development	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.5M	$0.4M	$0.4M
Actual Cumulative Disbursements	$0.0M	$0.0M	$0.3M	$0.4M	$13.8M	$18.6M	$20.7M	$69.5M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M
Single Family Rehab and Reconstruction	$0.0M	$0.0M	$0.0M	$0.0M	$12.8M	$17.6M	$19.0M	$64.8M	$98.9M				
Multi-Family Building Rehab	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.9M	$0.9M				
TDAP (Rental Assistance)	$0.0M	$0.0M	$0.3M	$0.4M	$1.0M	$1.0M	$1.8M	$3.8M	$4.0M				
Public Housing Rehab & Resilience	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
BiB Workforce Development	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
Actual Quarterly Disbursements (from QPRs)	$0.0M	$0.0M	$0.3M	$0.2M	$13.3M	$4.8M	$2.2M	$48.8M	$34.4M	$0.0M	$0.0M	$0.0M	$0.0M
Single Family Rehab and Reconstruction	$0.0M	$0.0M	$0.0M	$0.0M	$12.8M	$4.8M	$1.4M	$45.9M	$34.1M				
Multi-Family Building Rehab	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.9M	$0.0M				
TDAP (Rental Assistance)	$0.0M	$0.0M	$0.3M	$0.2M	$0.5M	$0.0M	$0.8M	$2.0M	$0.2M				
Public Housing Rehab & Resilience	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
BiB Workforce Development	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				

Housing	10/2016	1/2017	4/2017	7/2017	10/2017	1/2018	4/2018	7/2018	10/2018	1/2019	4/2019	7/2019	10/2019
Projected Cumulative Disbursements	$1,013.1M	$1,236.1M	$1,479.3M	$1,743.7M	$1,929.1M	$2,086.9M	$2,205.7M	$2,305.1M	$2,397.1M	$2,454.6M	$2,462.4M	$2,462.8M	$2,462.8M
Single Family Rehab and Reconstruction	$636.3M	$786.6M	$977.6M	$1,183.3M	$1,315.7M	$1,431.5M	$1,514.8M	$1,590.5M	$1,661.5M	$1,711.0M	$1,716.1M	$1,716.1M	$1,716.1M
Multi-Family Building Rehab	$293.1M	$344.0M	$363.0M	$378.4M	$388.9M	$398.3M	$404.2M	$408.5M	$411.6M	$413.7M	$415.6M	$416.0M	$416.0M
TDAP (Rental Assistance)	$10.9M	$12.0M	$13.1M	$13.9M	$14.7M	$15.5M	$16.3M	$17.2M	$18.0M	$18.9M	$19.7M	$19.7M	$19.7M
Public Housing Rehab & Resilience	$71.0M	$91.4M	$123.4M	$165.6M	$207.1M	$238.6M	$267.5M	$286.0M	$303.0M	$308.0M	$308.0M	$308.0M	$308.0M
BiB Workforce Development	$1.6M	$2.0M	$2.2M	$2.5M	$2.7M	$3.0M	$3.0M	$3.0M	$3.0M	$3.0M	$3.0M	$3.0M	$3.0M
Projected Disbursements by Quarter	$271.4M	$223.0M	$243.2M	$264.4M	$185.5M	$157.7M	$118.8M	$99.4M	$91.9M	$57.5M	$7.9M	$0.4M	$0.0M
Single Family Rehab and Reconstruction	$132.6M	$150.3M	$191.0M	$205.7M	$132.4M	$115.8M	$83.3M	$75.8M	$71.0M	$49.5M	$5.1M	$0.0M	$0.0M
HRO	$113.6M	$125.5M	$160.2M	$189.0M	$123.5M	$115.6M	$83.1M	$75.8M	$71.0M	$49.5M	$5.1M		
HPD	$19.0M	$24.8M	$30.8M	$16.7M	$8.9M	$0.2M	$0.2M						
Multi-Family Building Rehab	$116.9M	$50.9M	$18.9M	$15.5M	$10.5M	$9.4M	$5.9M	$4.3M	$3.1M	$2.1M	$1.9M	$0.4M	$0.0M
TDAP (Rental Assistance)	$1.1M	$1.1M	$1.1M	$0.8M	$0.8M	$0.8M	$0.8M	$0.9M	$0.9M	$0.8M	$0.8M	$0.0M	$0.0M
Public Housing Rehab & Resilience	$20.5M	$20.4M	$32.0M	$42.2M	$41.5M	$31.5M	$28.9M	$18.5M	$17.0M	$5.0M	$0.0M	$0.0M	$0.0M
BiB Workforce Development	$0.4M	$0.4M	$0.2M	$0.2M	$0.2M	$0.2M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Actual Cumulative Disbursements	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M	$103.9M
Single Family Rehab and Reconstruction													
Multi-Family Building Rehab													
TDAP (Rental Assistance)													
Public Housing Rehab & Resilience													
BiB Workforce Development													
Actual Quarterly Disbursements (from QPRs)	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Single Family Rehab and Reconstruction													
Multi-Family Building Rehab													
TDAP (Rental Assistance)													
Public Housing Rehab & Resilience													
BiB Workforce Development													

Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these charts.

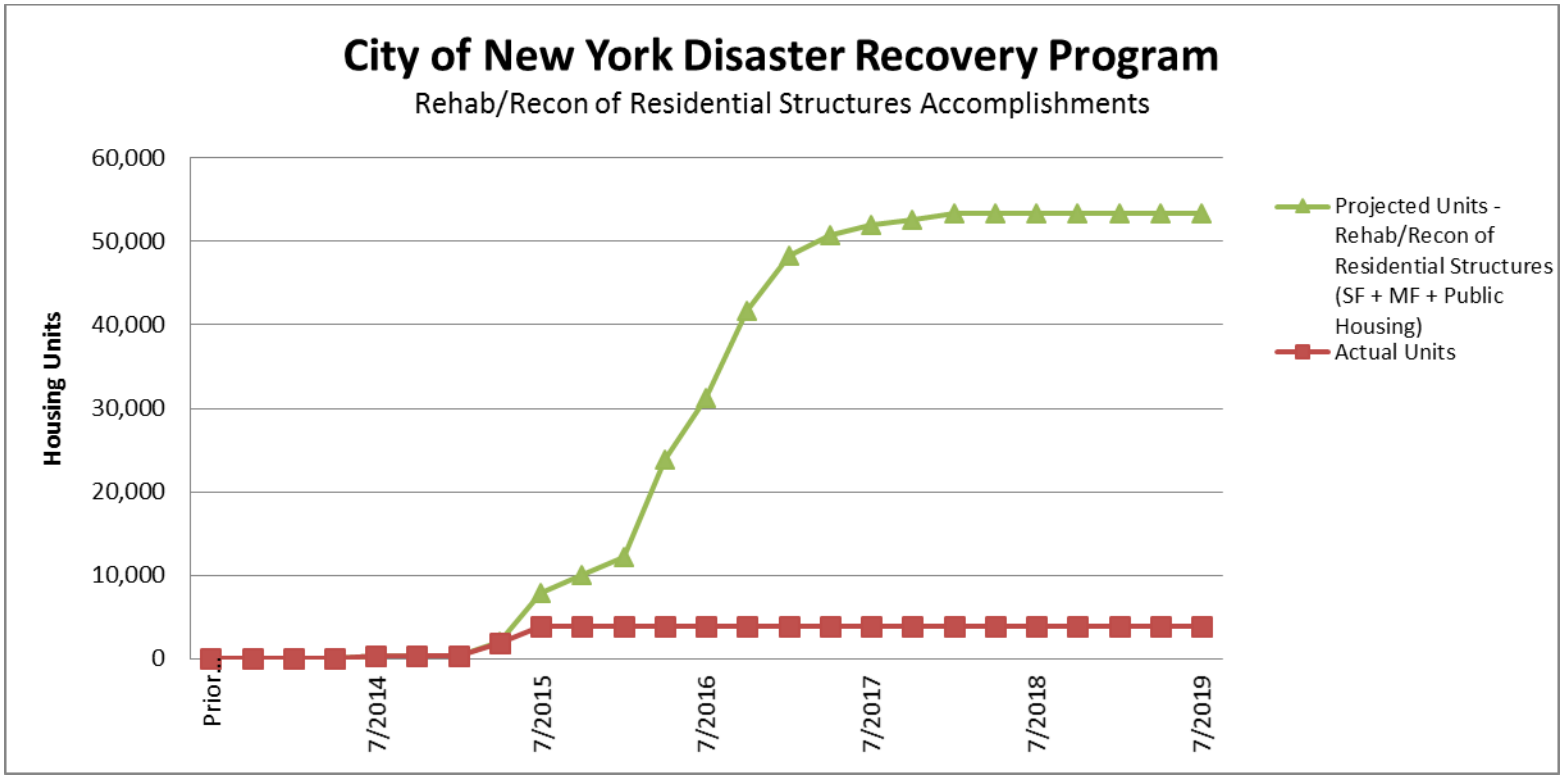


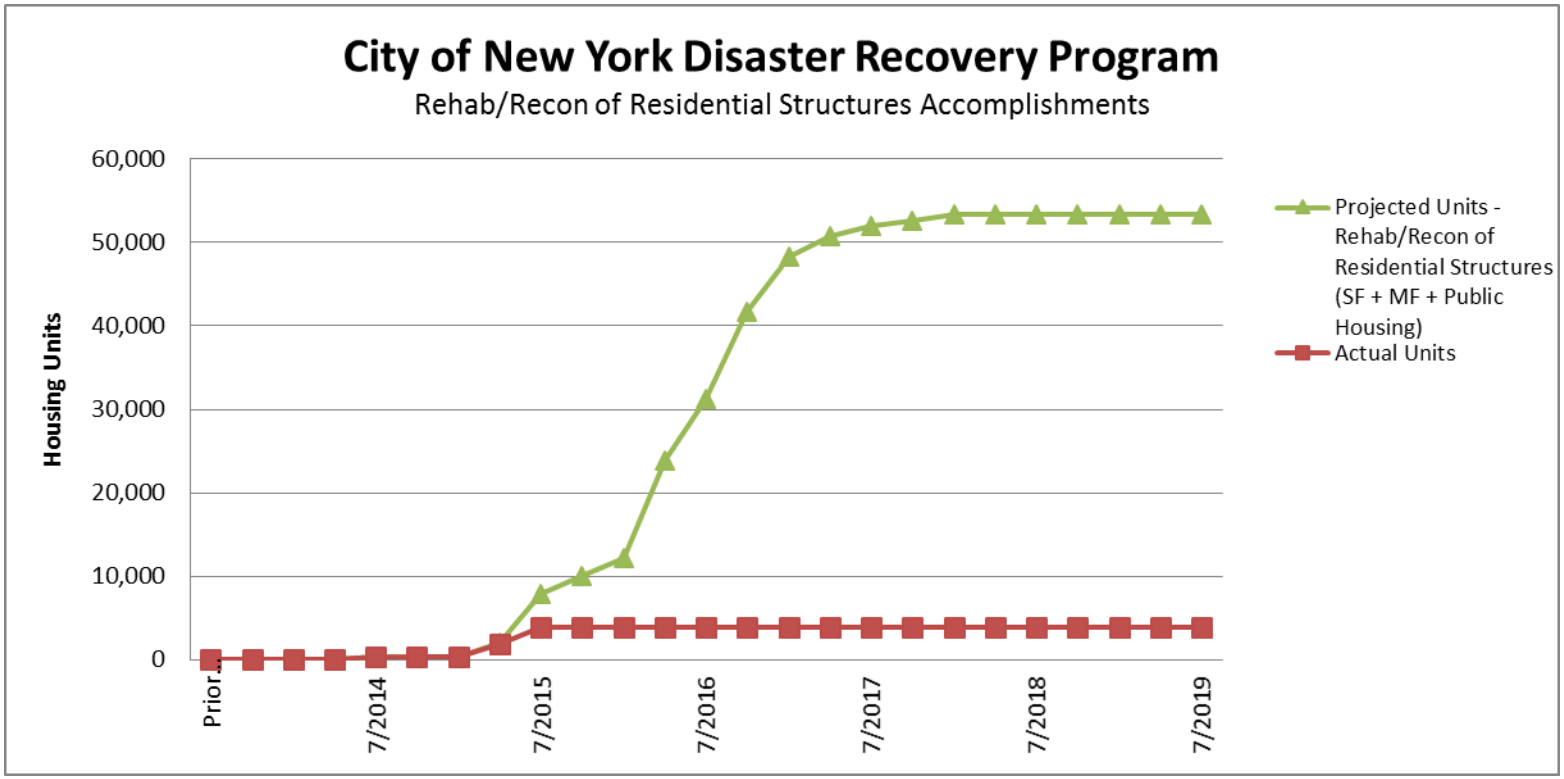
Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these charts.

Housing Performance Projections

Housing	r to 7/2013	10/2013	1/2014	4/2014	7/2014	10/2014	1/2015	4/2015	7/2015	10/2015	1/2016	4/2016	7/2016
Projected Units Total By Activity	0	0	15	15	328	396	462	2252	8129	10256	12434	24182	31499
Projected Units - Rehab/Recon of Residential Structures (SF + MF + Public Housing)	0	0	0	0	263	331	331	2076	7913	10010	12134	23882	31199
# of Housing Units (Quarterly Projection)	0	0	0	0	263	68	0	1,745	5,837	2,097	2,124	11,748	7,317
Actual Units	0	0	0	0	263	331	331	1860	3879	3879	3879	3879	3879
# of Housing Units (Populated from QPR Reporting)	0	0	0	0	263	68	0	1529	2019	0	0	0	0
Projected Units - Public Services (TDAP)	0	0	15	15	65	65	131	176	216	246	300	300	300
# of Units (Quarterly Projection)	0	0	15	0	50	0	66	45	40	30	54	0	0
Actual Units	0	0	15	15	65	65	131	176	176	176	176	176	176
# of Units (Populated from QPR Reporting)	0	0	15	0	50	0	66	45	0	0	0	0	0
By Program													
Single Family (Rehab/Recon)													
Projected Units Single Family Rehab and Reconstruction (Cumulative)	0	0	0	0	264	344	363	1895	3925	5104	6201	7612	9102
# of Housing Units Rehab & Reconstruction	0	0	0	0	264	80	19	1532	2030	1179	1097	1411	1490
Rehab	0	0	0	0	263	68	0	1529	2019	1160	1074	1384	1441
Reconstruction	0	0	0	0	1	12	19	3	11	19	23	27	49
Actual Units (Cumulative)	0	0	0	0	263	331	331	1860	3879				
# of Housing Units (Populated from QPR Reporting)	0	0	0	0	263	68	0	1529	2019				
Multi-Family Building Rehabilitation(Rehab/Recon)													
Projected Units Single Family Rehab and Reconstruction (Cumulative)	0	0	0	0	0	0	0	0	1030	1694	1694	1910	5728
# of Housing Units (Projected by Quarter)	0	0	0	0	0	0	0	0	1030	664	0	216	3818
Actual Units (Cumulative)	0	0	0	0	0	0	0	0	0				
# of Housing Units (Populated from QPR Reporting)	0	0	0	0	0	0	0	0	0				
Public Housing Rehabilitation and Resilience(Rehab/Recon)													
Projected Units Single Family Rehab and Reconstruction (Cumulative)	0	0	0	0	0	0	0	0	0	0	0	7778	12228
# of Housing Units (Projected by Quarter)	0	0	0	0	0	0	0	0	0	0	0	7778	4450
Actual Units (Cumulative)	0	0	0	0	0	0	0	0	0				
# of Housing Units (Populated from QPR Reporting)	0	0	0	0	0	0	0	0	0				
TDAP (Public Services)													
Projected Units Single Family Rehab and Reconstruction (Cumulative)	0	0	15	15	65	65	131	176	216	246	300	300	300
# of Housing Units (Projected by Quarter)	0	0	15	0	50	0	66	45	40	30	54	0	0
Actual Units (Cumulative)	0	0	15	15	65	65	131	176	176				
# of Housing Units (Populated from QPR Reporting)	0	0	15	0	50	0	66	45	0				
Build it Back Workforce Development													
Projected Residents (Cumulative)	0	0	0	0	0	0	0	0	0	65	228	368	478
# of Residents (Projected by Quarter)	0	0	0	0	0	0	0	0	0	65	163	140	110
Actual Residents (Cumulative)	0	0	0	0	0	0	0	0	0	65	130	195	260
# Residents (Populated from QPR Reporting)	0	0	0	0	0	0	0	0	0	65	65	65	65

Housing	10/2016	1/2017	4/2017	7/2017	10/2017	1/2018	4/2018	7/2018	10/2018	1/2019	4/2019	7/2019
Projected Units Total By Activity	41959	48553	51115	52355	52862	53619	53619	53619	53619	53619	53619	53619
Projected Units - Rehab/Recon of Residential Structures (SF + MF + Public Housing)	41659	48253	50815	52055	52562	53319	53319	53319	53319	53319	53319	53319
# of Housing Units (Quarterly Projection)	10,460	6,594	2,562	1,240	507	757	0	0	0	0	0	0
Actual Units	3879	3879	3879	3879	3879	3879	3879	3879	3879	3879	3879	3879
# of Housing Units (Populated from QPR Reporting)	0	0	0	0	0	0	0	0	0	0	0	0
Projected Units - Public Services (TDAP)	300	300	300	300	300	300	300	300	300	300	300	300
# of Units (Quarterly Projection)	0	0	0	0	0	0	0	0	0	0	0	0
Actual Units	176	176	176	176	176	176	176	176	176	176	176	176
# of Units (Populated from QPR Reporting)	0	0	0	0	0	0	0	0	0	0	0	0
By Program												
Single Family (Rehab/Recon)												
Projected Units Single Family Rehab and Reconstruction (Cumulative)	10510	12180	13745	14985	15492	16249	16249	16249	16249	16249	16249	16249
# of Housing Units Rehab & Reconstruction	1408	1670	1565	1240	507	757	0	0	0	0	0	0
Rehab	1353	1611	1565	1240	507	757	0	0	0	0	0	0
Reconstruction	55	59	0	0	0	0	0	0	0	0	0	0
Actual Units (Cumulative)												
# of Housing Units (Populated from QPR Reporting)												
Multi-Family Building Rehabilitation(Rehab/Recon)												
Projected Units Single Family Rehab and Reconstruction (Cumulative)	6665	7715	10301	11727	16189	17867	18864	18864	18864	18864	18864	18864
# of Housing Units (Projected by Quarter)	937	1050	2586	1426	4462	1678	997	0	0	0	0	0
Actual Units (Cumulative)												
# of Housing Units (Populated from QPR Reporting)												
Public Housing Rehabilitation and Resilience(Rehab/Recon)												
Projected Units Single Family Rehab and Reconstruction (Cumulative)	16873	20178	20178	20178	20178	20178	20178	20178	20178	20178	20178	20178
# of Housing Units (Projected by Quarter)	4645	3305	0	0	0	0	0	0	0	0	0	0
Actual Units (Cumulative)												
# of Housing Units (Populated from QPR Reporting)												
TDAP (Public Services)												
Projected Units Single Family Rehab and Reconstruction (Cumulative)	300	300	300	300	300	300	300	300	300	300	300	300
# of Housing Units (Projected by Quarter)	0	0	0	0								
Actual Units (Cumulative)												
# of Housing Units (Populated from QPR Reporting)												
Build it Back Workforce Development												
Projected Residents (Cumulative)	478	478	478	478	478	478	478	478	478	478	478	478
# of Residents (Projected by Quarter)												
Actual Residents (Cumulative)	325	390	455	520	520	520	520	520	520	520	520	520
# Residents (Populated from QPR Reporting)	65	65	65	65								


City of New York Disaster Recovery Program
Rehab/Recon of Residential Structures Accomplishments
Housing Units
60,000
50,000
40,000
30,000
20,000
10,000
0
Prior...
7/2014
7/2015
7/2016
7/2017
7/2018
7/2019
Projected Units - Rehab/Recon of Residential Structures (SF + MF + Public Housing)
Actual Units


City of New York Disaster Recovery Program
Rehab/Recon of Residential Structures Accomplishments
Housing Units
60,000
50,000
40,000
30,000
20,000
10,000
0
Prior...
7/2014
7/2015
7/2016
7/2017
7/2018
7/2019
Projected Units - Rehab/Recon of Residential Structures (SF + MF + Public Housing)
Actual Units

Business

Business programs have been allocated $123 million to assist in New York City's economic recovery from the storm. The Business recovery will run through the following programs:

Hurricane Sandy Business Loan and Grant Program

$48 million to provide loans and grants to at least 150 businesses impacted by Hurricane Sandy. This program will provide expedited grants of up to $100,000 and will provide up to $1 million in 1:1 matching loans and grants for unmet needs above the $100,000. The City may, at its discretion, provide grants of up to $1.1 million and 1:1 matching loans and grants above $1.1 million to businesses that can demonstrate significant additional unmet need. Businesses that can demonstrate extreme hardship may be eligible to receive, at the City's discretion, higher loan and grant amounts.

The Hurricane Sandy Business Loan and Grant Program is successfully serving eligible applicants with unmet needs. The program will expire when funds are exhausted. Nearly all loan and grant funds are projected to be disbursed by the fourth quarter of 2018 with additional smaller expenses for loan servicing and monitoring through the third quarter of 2019. So far, 337 applications have been completed with 236 decisions made and communicated to applicants. Over $4 million in loans have been approved.

Resiliency Innovations for a Stronger Economy (RISE:NYC)

Proposals in response to the program's RFP were due in March 2014. NYCEDC received over 200 applications, including technologies from over 20 different countries and submissions from small businesses across all five boroughs of New York City. The most promising technologies were invited to move forward, with 27 finalists submitting detailed proposals in August 2014 for the competition's final stage.

Winning proposals were selected in Q1 2015.

Business PREP: (Preparedness & Resiliency for Emergencies Program)

$3 million to assist businesses implement operational and physical resiliency measures, through one or more of the following activities: (1) provide one-on-one site visits and assessment, (2) develop a business resiliency assessment tool, (3) hold targeted workshops featuring technical experts, (4) if unable to secure private funding, potentially offer micro-grants to help businesses implement low-cost resiliency improvements.

Detailed program design is currently in development. It is anticipated the program will launch late-2015 and will continue through 2017.

Saw Mill Creek Marsh Restoration:

$12 million for the restoration of Saw Mill Creek marsh, a component of the Mitigation and Restoration Strategies for Habitat and Ecological Sustainability (MARSHES) Initiative, to restore approximately 68 acres of severely degraded City-owned wetlands and uplands in northwestern Staten Island in an area heavily inundated during Hurricane Sandy. Reestablishing the previously degraded wetland ecosystem will serve to protect against the harmful impacts of storm related flooding for hundreds of businesses adjacent to the marsh and starts NYC's first mitigation bank to catalyze further wetland restoration.

Restoration work on the site is currently anticipated to begin in Q4 2015 and be completed by Q1 2017.

Coney Island Green Infrastructure Improvements

$15 million to enhance ongoing Department of Environmental Protection infrastructure work with installation of right-of-way bioswales along business corridors throughout the Coney Island peninsula. The new infrastructure will improve stormwater retention, filter and maintain water quality in local waterways and enhance business/retail areas through beautification.

Design will begin in Q4 2015. Installation of bioswales will begin in 2017 and be completed by 2019 to coincide with existing sewer and streetscape improvements planned for the district.

Rockaways Commercial Corridor Resiliency:

$15 million for streetscape and stormwater management upgrades and open space creation throughout the Rockaways, in key commercial corridors such as Beach 108th street, Mott Avenue, and surrounding business districts

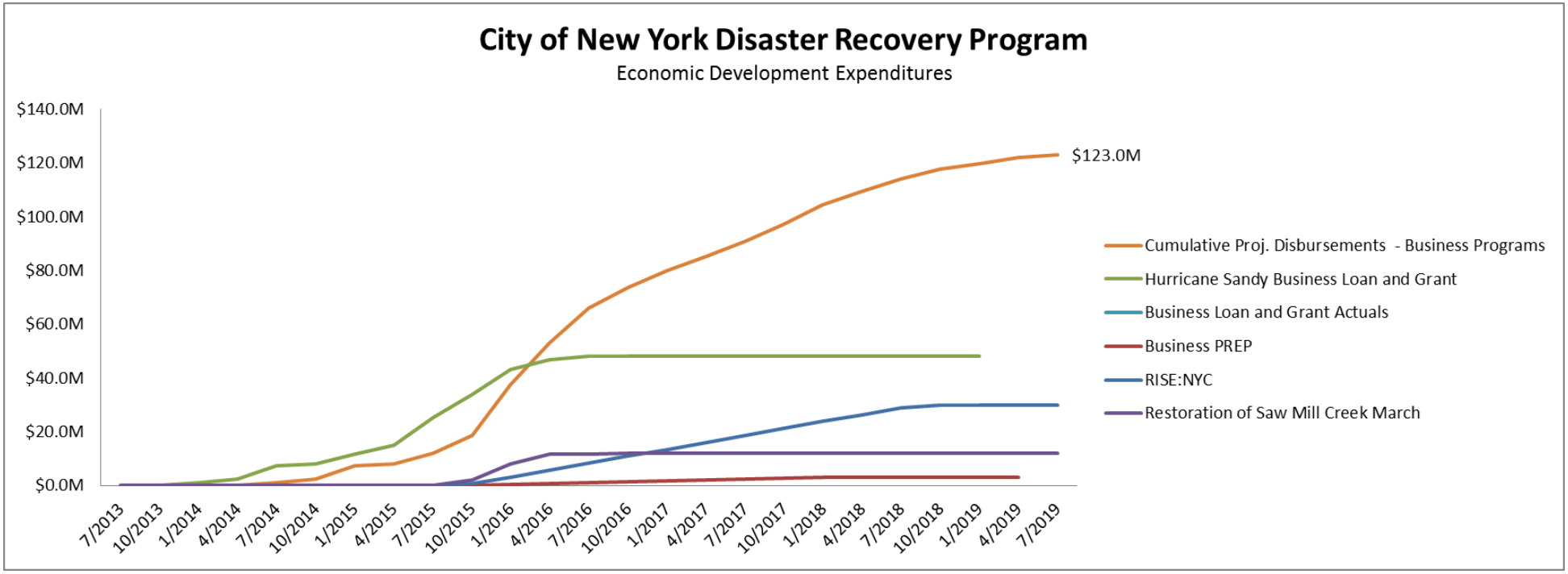
Planning, design, and engineering for projects is anticipated to begin in Q4 2015 and construction to begin in 2017..

Business Financial Projections

Business	7/2013	10/2013	1/2014	4/2014	7/2014	10/2014	1/2015	4/2015	7/2015	10/2015	1/2016	4/2016	7/2016
Cumulative Proj. Disbursements - Business Programs	$0.0M	$0.0M	$0.0M	$0.1M	$1.1M	$2.2M	$7.2M	$7.9M	$12.1M	$18.6M	$37.6M	$53.0M	$66.1M
Hurricane Sandy Business Loan and Grant	$0.0M	$0.0M	$0.0M	$0.1M	$1.1M	$2.2M	$7.2M	$7.9M	$11.7M	$15.1M	$25.3M	$33.8M	$43.2M
Business PREP	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.3M	$0.7M	$1.0M
RISE:NYC	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.9M	$3.1M	$5.7M	$8.3M
Restoration of Saw Mill Creek March	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$2.1M	$8.1M	$11.6M	$11.8M
Coney Island Green Infrastructure Improvements	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.4M	$0.6M	$0.9M	$1.4M	$1.9M
Rockaways Commercial Corridor Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Quarterly Projected Disbursements	$0.0M	$0.0M	$0.0M	$0.1M	$0.9M	$1.2M	$5.0M	$0.7M	$4.2M	$6.6M	$19.0M	$15.4M	$13.0M
Hurricane Sandy Business Loan and Grant	$0.0M	$0.0M	$0.0M	$0.1M	$0.9M	$1.2M	$5.0M	$0.7M	$3.8M	$3.4M	$10.2M	$8.5M	$9.4M
Business PREP	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.3M	$0.3M	$0.3M
RISE:NYC	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.9M	$2.2M	$2.6M	$2.6M
Restoration of Saw Mill Creek March	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$2.0M	$6.0M	$3.5M	$0.2M
Coney Island Green Infrastructure Improvements	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.4M	$0.3M	$0.3M	$0.5M	$0.5M
Rockaways Commercial Corridor Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Actual Cumulative Disbursements	$0.0M	$0.0M	$0.0M	$0.1M	$1.1M	$2.2M	$7.2M	$7.9M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M
Hurricane Sandy Business Loan and Grant	$0.0M	$0.0M	$0.0M	$0.1M	$1.1M	$2.2M	$7.2M	$7.9M	$11.7M				
Business PREP	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
RISE:NYC	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
Restoration of Saw Mill Creek March	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
Coney Island Green Infrastructure Improvements	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
Rockaways Commercial Corridor Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
Actual Quarterly Disbursements (from QPRs)	$0.0M	$0.0M	$0.0M	$0.1M	$0.9M	$1.2M	$5.0M	$0.7M	$3.8M	$0.0M	$0.0M	$0.0M	$0.0M
Hurricane Sandy Business Loan and Grant	$0.0M	$0.0M	$0.0M	$0.1M	$0.9M	$1.2M	$5.0M	$0.7M	$3.8M				
Business PREP	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
RISE:NYC	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
Restoration of Saw Mill Creek March	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
Coney Island Green Infrastructure Improvements	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				
Rockaways Commercial Corridor Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M				

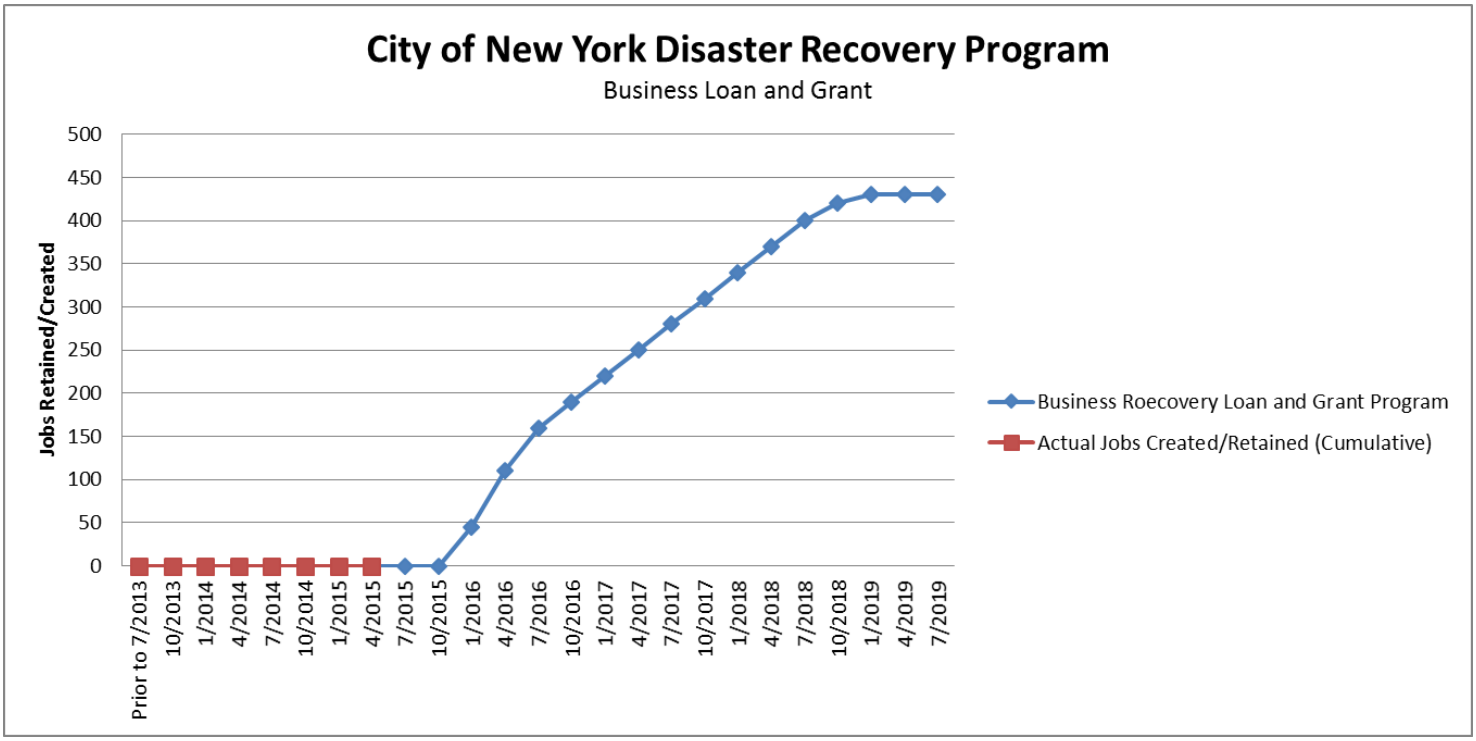
Business	10/2016	1/2017	4/2017	7/2017	10/2017	1/2018	4/2018	7/2018	10/2018	1/2019	4/2019	7/2019	10/2019
Cumulative Proj. Disbursements - Business Programs	$73.6M	$79.9M	$85.3M	$90.9M	$97.2M	$104.5M	$109.4M	$114.1M	$117.6M	$119.8M	$122.1M	$123.0M	$123.0M
Hurricane Sandy Business Loan and Grant	$46.7M	$48.0M	$48.0M	$48.0M	$48.0M	$48.0M	$48.0M	$48.0M	$48.0M	$48.0M	$48.0M	$48.0M	$48.0M
Business PREP	$1.3M	$1.6M	$2.0M	$2.3M	$2.6M	$2.9M	$3.0M	$3.0M	$3.0M	$3.0M	$3.0M	$3.0M	$3.0M
RISE:NYC	$10.9M	$13.5M	$16.0M	$18.6M	$21.2M	$23.8M	$26.3M	$28.8M	$30.0M	$30.0M	$30.0M	$30.0M	$30.0M
Restoration of Saw Mill Creek March	$11.9M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M
Coney Island Green Infrastructure Improvements	$2.9M	$4.9M	$7.4M	$10.0M	$12.5M	$15.0M	$15.0M	$15.0M	$15.0M	$15.0M	$15.0M	$15.0M	$15.0M
Rockaways Commercial Corridor Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.9M	$2.8M	$5.0M	$7.3M	$9.5M	$11.8M	$14.0M	$15.0M	$15.0M
Quarterly Projected Disbursements	$7.5M	$6.3M	$5.5M	$5.6M	$6.3M	$7.3M	$4.9M	$4.7M	$3.5M	$2.3M	$2.3M	$0.9M	$0.0M
Hurricane Sandy Business Loan and Grant	$3.5M	$1.3M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Business PREP	$0.3M	$0.3M	$0.3M	$0.3M	$0.3M	$0.3M	$0.1M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
RISE:NYC	$2.6M	$2.6M	$2.6M	$2.6M	$2.6M	$2.6M	$2.5M	$2.5M	$1.2M	$0.0M	$0.0M	$0.0M	$0.0M
Restoration of Saw Mill Creek March	$0.1M	$0.1M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Coney Island Green Infrastructure Improvements	$1.0M	$2.0M	$2.5M	$2.7M	$2.5M	$2.5M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Rockaways Commercial Corridor Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.9M	$1.9M	$2.3M	$2.3M	$2.3M	$2.3M	$2.3M	$0.9M	$0.0M
Actual Cumulative Disbursements	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M	$11.7M
Hurricane Sandy Business Loan and Grant													
Business PREP													
RISE:NYC													
Restoration of Saw Mill Creek March													
Coney Island Green Infrastructure Improvements													
Rockaways Commercial Corridor Resiliency													
Actual Quarterly Disbursements (from QPRs)	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Hurricane Sandy Business Loan and Grant													
Business PREP													
RISE:NYC													
Restoration of Saw Mill Creek March													
Coney Island Green Infrastructure Improvements													
Rockaways Commercial Corridor Resiliency													

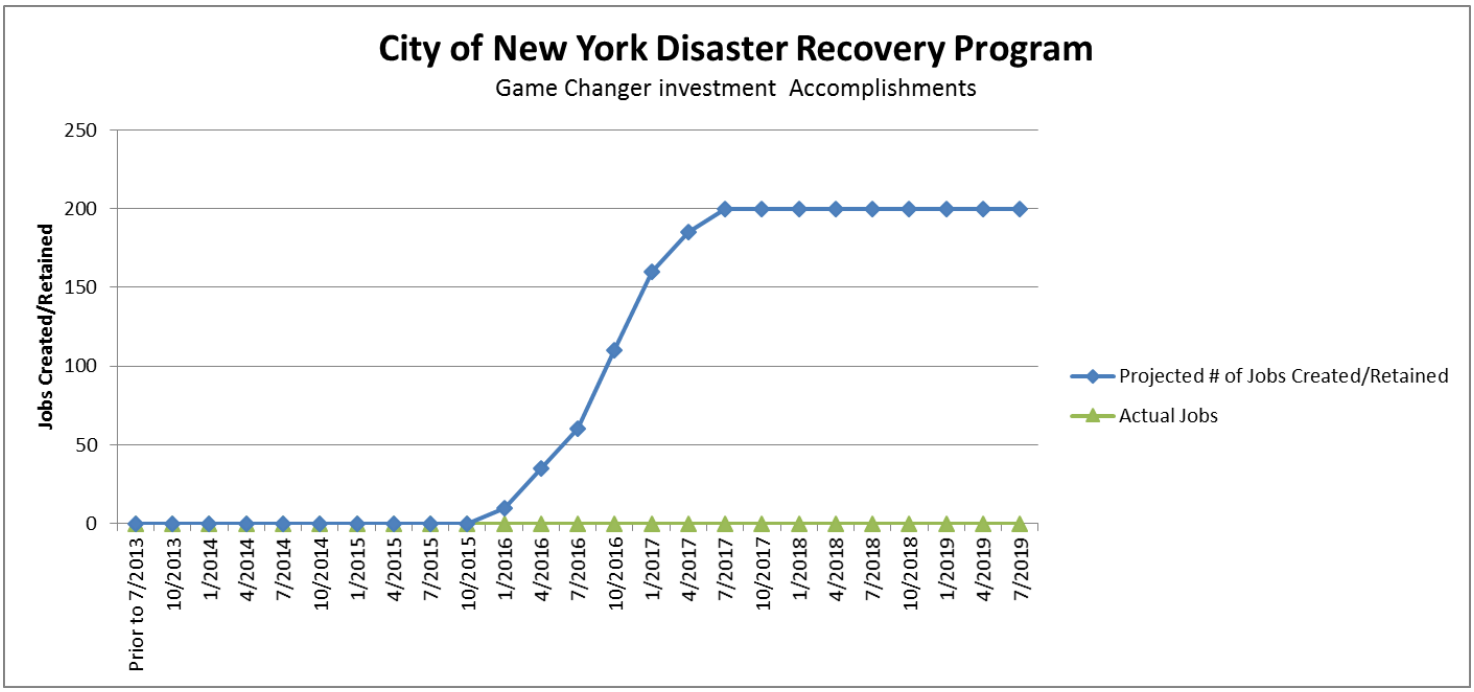
Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these charts.

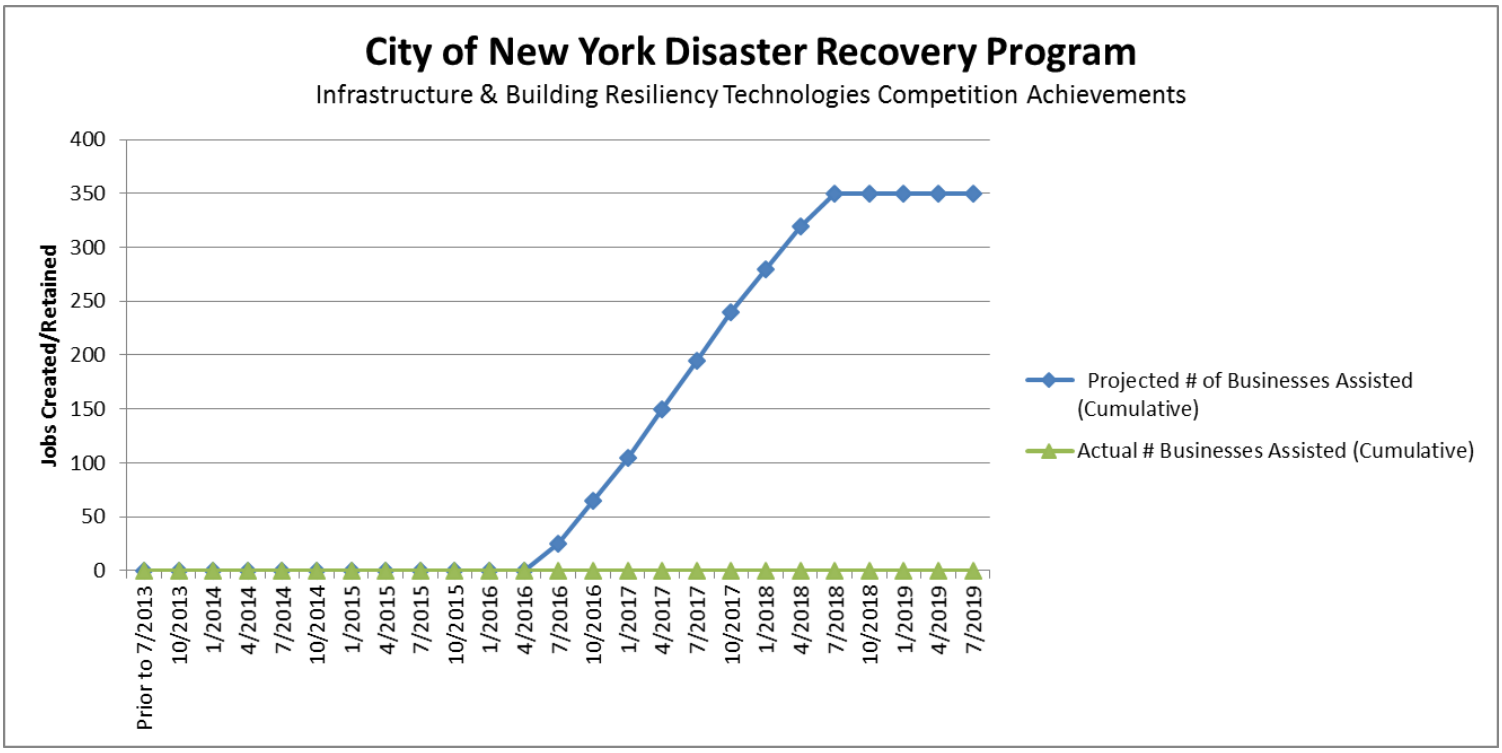


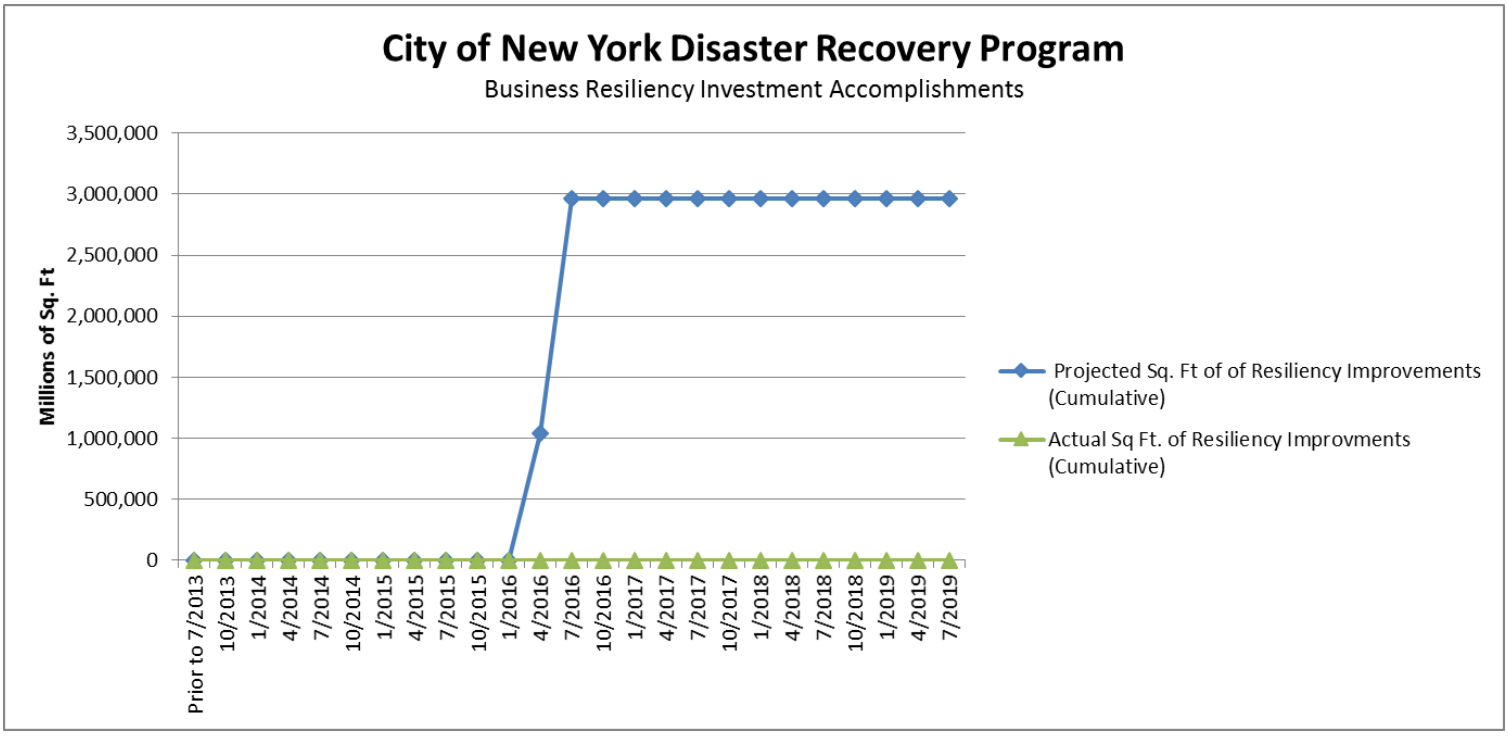
Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these charts.

Business Performance Projections






City of New York Disaster Recovery Program
Infrastructure & Building Resiliency Technologies Competition Achievements
Jobs Created/Retained
400
350
300
250
200
150
100
50
0
Prior to 7/2013
10/2013
1/2014
4/2014
7/2014
10/2014
1/2015
4/2015
7/2015
10/2015
1/2016
4/2016
7/2016
10/2016
1/2017
4/2017
7/2017
10/2017
1/2018
4/2018
7/2018
10/2018
1/2019
4/2019
7/2019
Projected # of Businesses Assisted (Cumulative)
Actual # Businesses Assisted (Cumulative)


City of New York Disaster Recovery Program
Business Resiliency Investment Accomplishments
Millions of Sq. Ft
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Prior to 7/2013
10/2013
1/2014
4/2014
7/2014
10/2014
1/2015
4/2015
7/2015
10/2015
1/2016
4/2016
7/2016
10/2016
1/2017
4/2017
7/2017
10/2017
1/2018
4/2018
7/2018
10/2018
1/2019
4/2019
7/2019
Projected Sq. Ft of of Resiliency Improvements (Cumulative)
Actual Sq Ft. of Resiliency Improvments (Cumulative)

Infrastructure and Other City Services

For the purposes of this Action Plan, Other City Services is comprised of the Public Services, Emergency Demolition, Debris Removal/Clearance, Code Enforcement, and Interim Assistance and Infrastructure is comprised of Rehabilitation/Reconstruction of Public Facilities. The program allocation is $755 million. An initial expenditure of $183 million went towards eligible costs incurred by the Health and Hospitals Corporation for reopening Bellevue and Coney Island Hospitals. This expenditure was made during the fourth quarter of 2013 and was on track with estimated projections. As the process of linking CDBG-DR funding to spending and completing necessary documentation continues, the remaining allocation will be reimbursed to other agencies that incurred costs. A large portion of what is reimbursable will be Public Service and Rehabilitation/Reconstruction of Public Facilities. Public Service activities were conducted by various agencies to protect communities and provide for the health, safety, and welfare of residents. Public Facilities will cover non-residential structures that were impacted because of the storm.

The City is in ongoing conversation with HUD and FEMA about how best to address Federal coordination issues. The City will continue preparing for upcoming draws related to CDBG-DR eligible activities and cost-share match for expenses incurred from the City's Public Services, Emergency Demolition, Debris Removal/Clearance, Code Enforcement, Rehabilitation/ Reconstruction of Public Facilities, and Interim Assistance activities. The projection chart has been updated to reflect upcoming estimates for cost-share and other CDBG-DR eligible expenditures.

The performance numbers come directly from the Action Plan amendment and accomplishments reference the work done immediately after the impact of the storm. Accomplishments refer to the services delivered by the City in its attempt to limit further damage by the storm and to maintain the provision of essential services to the City. Thus, in the chart, numbers are shown in the period before July 2013.

For Rehabilitation/Reconstruction of Public Facilities, the City has been estimating that the projected accomplishments are for roughly 96 structures to be rehabilitated or reconstructed. As CDBG-DR funds are solidified for projects, the City will be able to give more accurate accomplishments for the various activities. For Code Enforcement, 80,000 buildings have been inspected, of which 400 buildings posed a threat to surrounding communities and therefore had to

be demolished. For Interim Assistance, NYC Rapid Repairs assisted over 11,500 buildings, comprising nearly 20,000 residential units, in the five boroughs. Lastly, for Public Services and Debris Removal, the working assumption is that 8.2 million New York City residents were assisted by these two citywide activities. Stemming from information given in various FEMA PWs and the nature of the City's response to the storm, the aggregation of all debris removal activities has

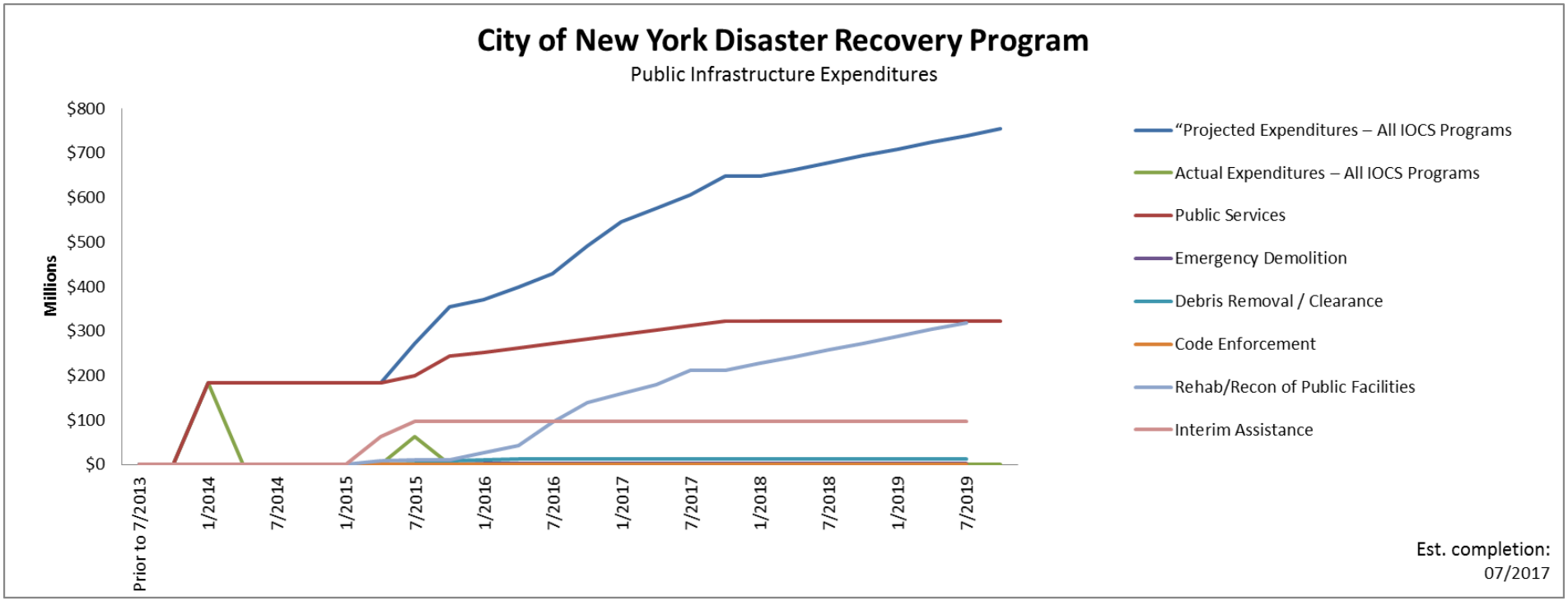
benefitted the entire city. As the City reimburses each individual debris removal PW, the accomplishments will be refined. The activities under Public Services vary in terms of how they benefit the city. For example, NYPD overtime is stated to be citywide activity, but not all public services will be citywide. The best information the City has is that activities under this category may benefit one or more of the City's boroughs..

Infrastructure and Other City Services Financial Projections

IOCS (Infrastructure and Other City Services)	Prior to 7/2013	10/2013	1/2014	4/2014	7/2014	10/2014	1/2015	4/2015	7/2015	10/2015	1/2016	4/2016	7/2016
Cumulative Projected Disbursements	$ M	$ M	$183 M	$183 M	$183 M	$183 M	$183 M	$183 M	$272 M	$355 M	$371 M	$400 M	$429 M
Public Services	$ M	$ M	$183 M	$183 M	$183 M	$183 M	$183 M	$183 M	$200 M	$243 M	$253 M	$263 M	$273 M
Emergency Demolition	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$1 M	$2 M	$2 M
Debris Removal / Clearance	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$3 M	$8 M	$10 M	$13 M
Code Enforcement	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$1 M	$1 M	$1 M	$1 M
Rehab/Recon of Public Facilities	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$8 M	$11 M	$11 M	$27 M	$42 M
Interim Assistance	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$64 M	$98 M	$98 M	$98 M	$98 M
Quarterly Projected Disbursements	$ M	$ M	$183 M	$ M	$ M	$ M	$ M	$ M	$89 M	$84 M	$16 M	$29 M	$29 M
Public Services	$ M	$ M	$183 M	$ M	$ M	$ M	$ M	$ M	$17 M	$43 M	$10 M	$10 M	$10 M
Emergency Demolition	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$1 M	$1 M	$ M
Debris Removal / Clearance	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$3 M	$5 M	$2 M	$3 M
Code Enforcement	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$1 M	$ M	$ M	$ M
Rehab/Recon of Public Facilities	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$8 M	$3 M	$ M	$16 M	$16 M
Interim Assistance	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$64 M	$34 M	$ M	$ M	$ M
Actual Disbursements	$ M	$ M	$183 M	$ M	$ M	$ M	$ M	$ M	$63 M	$ M	$ M	$ M	$ M
Public Services	$ M	$ M	$183 M	$ M	$ M	$ M	$ M	$ M	$17 M				
Emergency Demolition	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M				
Debris Removal / Clearance	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M				
Code Enforcement	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M				
Rehab/Recon of Public Facilities	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$8 M				
Interim Assistance	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$38 M				
Actual Quarterly Disbursements (Cumulative)	$ M	$ M	$183 M	$183 M	$183 M	$183 M	$183 M	$183 M	$246 M	$ M	$ M	$ M	$ M

IOCS (Infrastructure and Other City Services)	10/2016	1/2017	4/2017	7/2017	10/2017	1/2018	4/2018	7/2018	10/2018	1/2019	4/2019	7/2019	10/2019
Cumulative Projected Disbursements	$491 M	$545 M	$576 M	$606 M	$648 M	$648 M	$663 M	$678 M	$694 M	$709 M	$724 M	$740 M	$755 M
Public Services	$283 M	$293 M	$303 M	$313 M	$323 M	$323 M	$323 M	$323 M	$323 M	$323 M	$323 M	$323 M	$323 M
Emergency Demolition	$2 M	$2 M	$2 M	$2 M	$2 M	$2 M	$2 M	$2 M	$2 M	$2 M	$2 M	$2 M	$2 M
Debris Removal / Clearance	$13 M	$13 M	$13 M	$13 M	$13 M	$13 M	$13 M	$13 M	$13 M	$13 M	$13 M	$13 M	$13 M
Code Enforcement	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M	$1 M
Rehab/Recon of Public Facilities	$95 M	$139 M	$160 M	$180 M	$212 M	$212 M	$227 M	$242 M	$258 M	$273 M	$288 M	$304 M	$319 M
Interim Assistance	$98 M	$98 M	$98 M	$98 M	$98 M	$98 M	$98 M	$98 M	$98 M	$98 M	$98 M	$98 M	$98 M
Quarterly Projected Disbursements	$62 M	$54 M	$31 M	$31 M	$41 M	$ M	$15 M	$15 M	$15 M	$15 M	$15 M	$15 M	$15 M
Public Services	$10 M	$10 M	$10 M	$10 M	$10 M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M
Emergency Demolition	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M
Debris Removal / Clearance	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M
Code Enforcement	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M
Rehab/Recon of Public Facilities	$52 M	$44 M	$21 M	$21 M	$31 M	$ M	$15 M	$15 M	$15 M	$15 M	$15 M	$15 M	$15 M
Interim Assistance	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M
Actual Disbursements	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M
Public Services													
Emergency Demolition													
Debris Removal / Clearance													
Code Enforcement													
Rehab/Recon of Public Facilities													
Interim Assistance													
Actual Quarterly Disbursements (Cumulative)	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M	$ M

Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these charts.



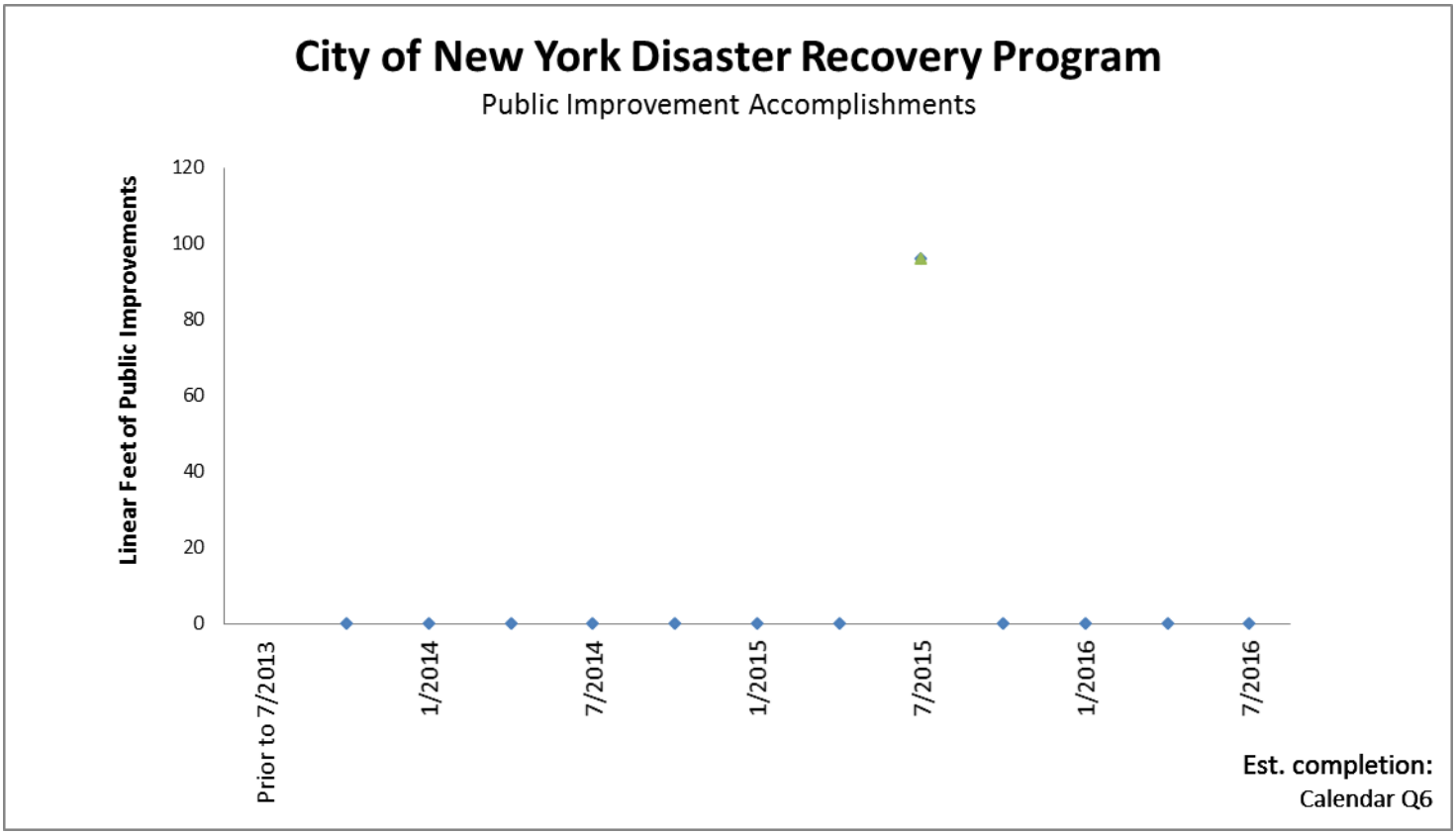
Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these charts.

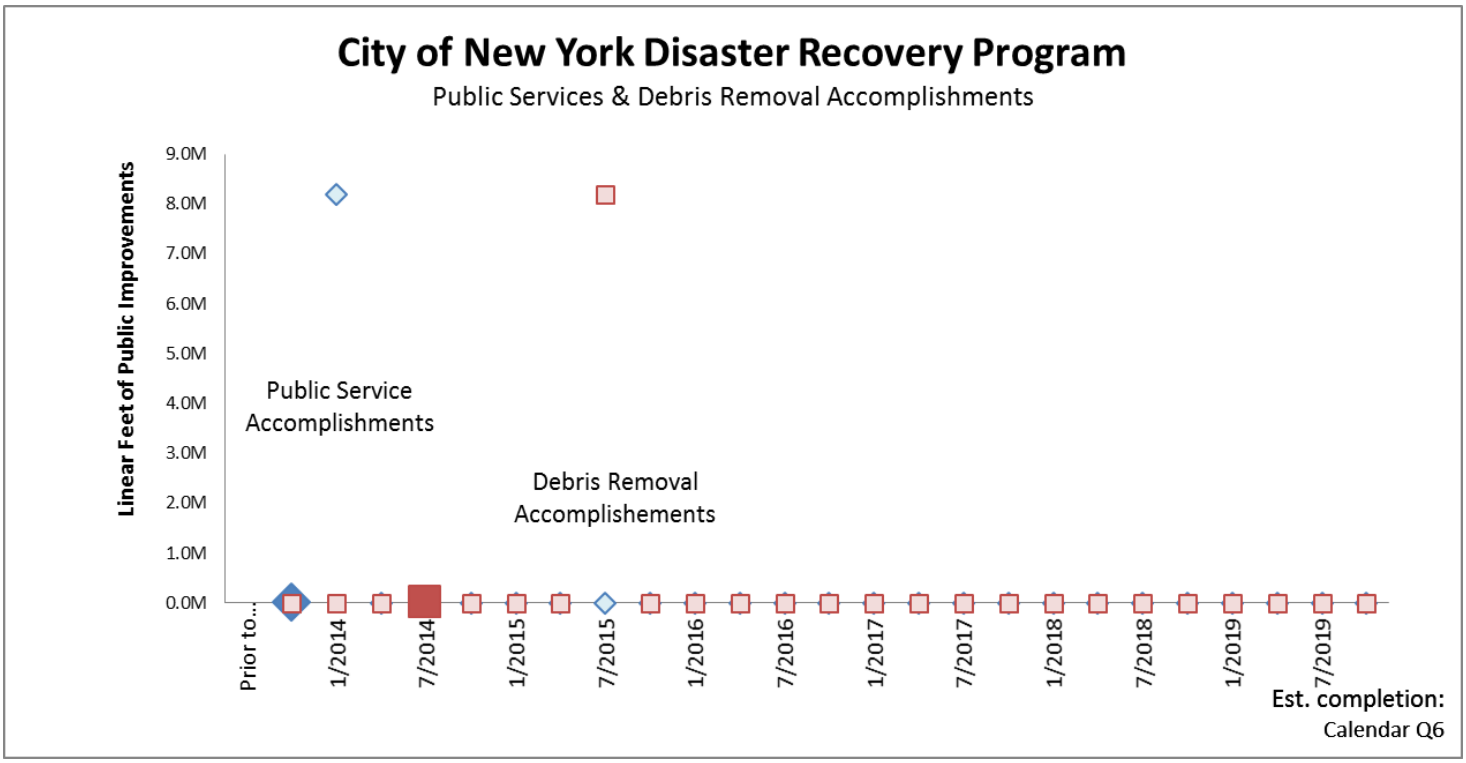
Infrastructure and Other City Services Performance Projections

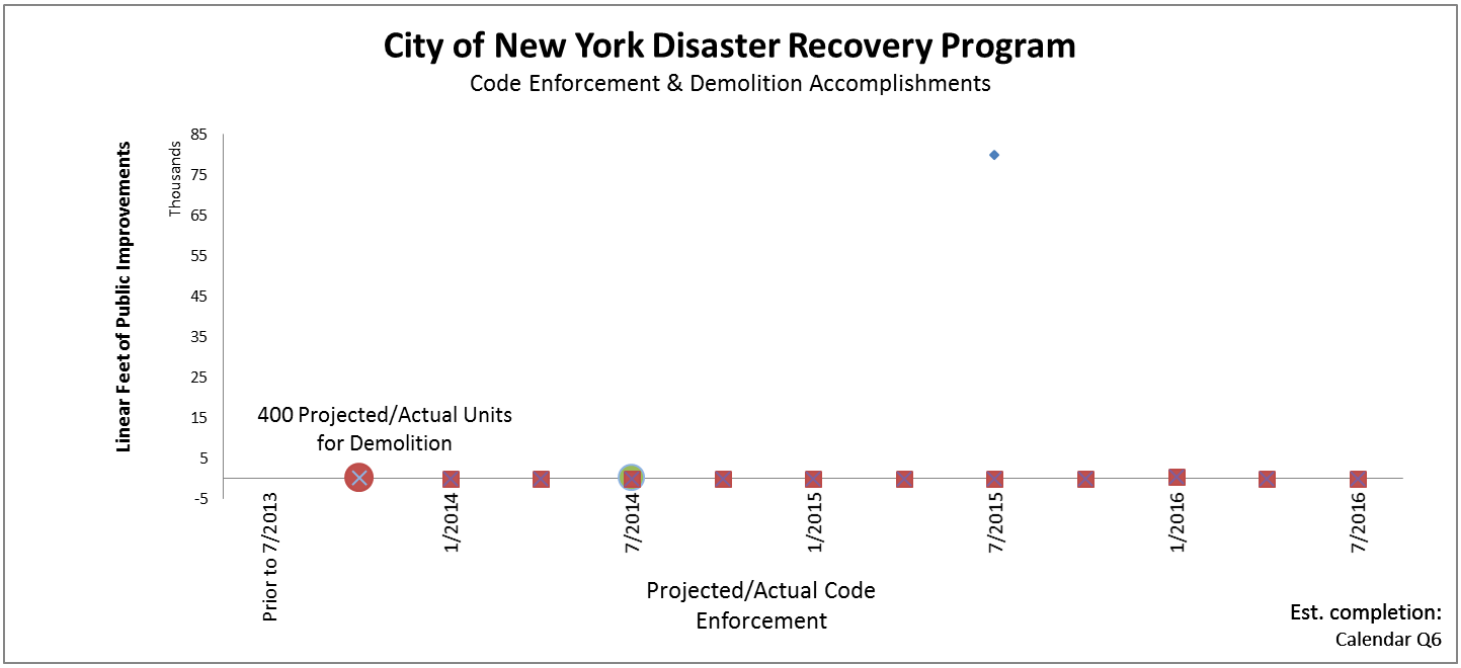
IOCS (Infrastructure and Other City Services)	r to 7/2013	10/2013	1/2014	4/2014	7/2014	10/2014	1/2015	4/2015	7/2015	10/2015	1/2016	4/2016	7/2016
Rehab/Recon of Public Improvement													
Projected # of Public Facilities -***(96 total)***		0	0	0	0	0	0	0	96	0	0	0	0
# of Public Facilities (Quarterly Projection)		0	0	0	0	0	0	0	96	0	0	0	0
Actual # of Public Facilities									96				
# of Public Facilities (Populated from QPR Reporting)													
Public Services													
Projected # of People Served - HHC - ***Citywide 8.2M***		0.00	8.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
# of People Served (Quarterly Projection)		0.00	8.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Actual # of People Served		0.00	8.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
# of People Served (Populated from QPR Reporting)													
Code Enforcement													
Projected # Buildings Inspected ***(80,000 total)***		0	0	0	0	0	0	0	80,000	0	0	0	0
# of Buildings Inspected (Quarterly Projection)		0	0	0	0	0	0	0	80,000	0	0	0	0
Actual # of Buildings Inspected													
# of Buildings Inspected (Populated from QPR Reporting)													
Debris Removal													
Projected # of People Served - ***Citywide 8.2M***		0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.20	0.00	0.00	0.00	0.00
# of People Served (Quarterly Projection)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.20	0.00	0.00	0.00	0.00
Actual # of People Served													
# of People Served (Populated from QPR Reporting)													
Emergency Demolition													
Projected # of Properties ***(400 total)***		0	0	0	0	0	0	0	0	0	400	0	0
# of Properties (Quarterly Projection)		0	0	0	0	0	0	0	0	0	400	0	0
Actual # of Properties													
# of Properties (Populated from QPR Reporting)													
Interim Assitance (Rapid Repairs)													
Projected # of Units - (***20,000 residential units)***		0.00	0.00	0.00	0.00	0	0.00	0.00	20,000.00	0.00	0.00	0.00	0.00
# of People Served (Quarterly Projection)		0.00	0.00	0.00	0.00	0	0.00	0.00	20,000.00	0.00	0.00	0.00	0.00
Actual # of Units Assisted									20,000.00				
# of Units Assisted (Populated from QPR Reporting)													

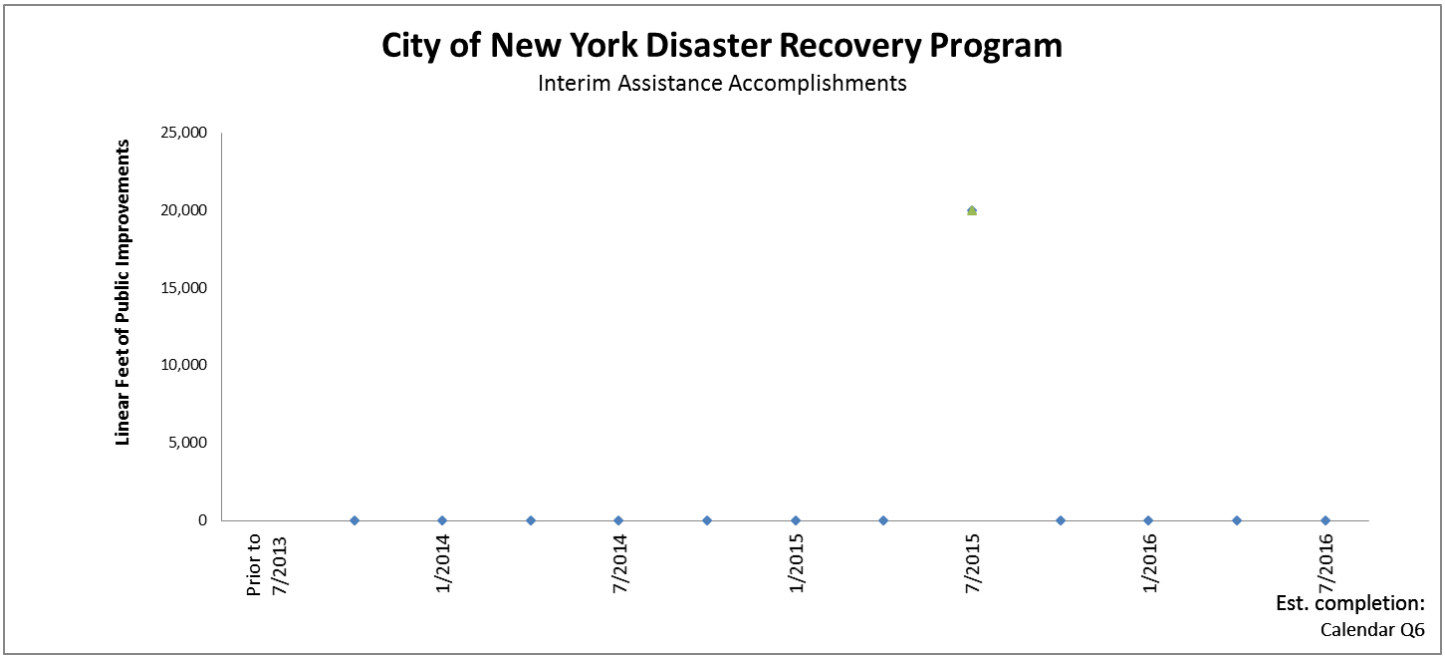
Quarterly Projections by Activity Type
Rehab Recon of Public Improved
Projected # of Public Facilities
Public Services
Projected # of People Served
Code Enforcement
Projected # Buildings Inspected
Debris Removal
Projected # of People Served
Emergency Demolition
Projected # of Properties
Interim Assitance (Rapid Repairs)
Projected # of Properties

IOCS (Infrastructure and Other City Services)	10/2016	1/2017	4/2017	7/2017	10/2017	1/2018	4/2018	7/2018	10/2018	1/2019	4/2019	7/2019	10/2019
Rehab/Recon of Public Improvement													
Projected # of Public Facilities - ***(96 total)***	0	0	0	0	0	0	0	0	0	0	0	0	0
# of Public Facilities (Quarterly Projection)	0	0	0	0	0	0	0	0	0	0	0	0	0
Actual # of Public Facilities													
# of Public Facilities (Populated from QPR Reporting)													
Public Services													
Projected # of People Served - HHC - ***Citywide 8.2M***	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
# of People Served (Quarterly Projection)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Actual # of People Served	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
# of People Served (Populated from QPR Reporting)													
Code Enforcement													
Projected # Buildings Inspected ***(80,000 total)***	0	0	0	0	0	0	0	0	0	0	0	0	0
# of Buildings Inspected (Quarterly Projection)	0	0	0	0	0	0	0	0	0	0	0	0	0
Actual # of Buildings Inspected													
# of Buildings Inspected (Populated from QPR Reporting)													
Debris Removal													
Projected # of People Served - ***Citywide 8.2M***	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
# of People Served (Quarterly Projection)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Actual # of People Served													
# of People Served (Populated from QPR Reporting)													
Emergency Demolition													
Projected # of Properties ***(400 total)***	0	0	0	0	0	0	0	0	0	0	0	0	0
# of Properties (Quarterly Projection)	0	0	0	0	0	0	0	0	0	0	0	0	0
Actual # of Properties													
# of Properties (Populated from QPR Reporting)													
Interim Assitance (Rapid Repairs)													
Projected # of Units - (***20,000 residential units)***	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
# of People Served (Quarterly Projection)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Actual # of Units Assisted													
# of Units Assisted (Populated from QPR Reporting)													
Quarterly Projections by Activity Type													
Rehab Recon of Public Improved													
Projected # of Public Facilities													
Public Services													
Projected # of People Served													
Code Enforcement													
Projected # Buildings Inspected													
Debris Removal													
Projected # of People Served													
Emergency Demolition													
Projected # of Properties													
Interim Assitance (Rapid Repairs)													
Projected # of Properties													


City of New York Disaster Recovery Program
Public Improvement Accomplishments
Linear Feet of Public Improvements
120
100
80
60
40
20
0
Prior to 7/2013
1/2014
7/2014
1/2015
7/2015
1/2016
7/2016
Est. completion:
Calendar Q6


City of New York Disaster Recovery Program
Public Services & Debris Removal Accomplishments
Linear Feet of Public Improvements
9.0M
8.0M
7.0M
6.0M
5.0M
4.0M
3.0M
2.0M
1.0M
0.0M
Public Service Accomplishments
Debris Removal Accomplishements
Prior to...
1/2014
7/2014
1/2015
7/2015
1/2016
7/2016
1/2017
7/2017
1/2018
7/2018
1/2019
7/2019
Est. completion:
Calendar Q6


City of New York Disaster Recovery Program
Code Enforcement & Demolition Accomplishments
Linear Feet of Public Improvements
Thousands
85
75
65
55
45
35
25
15
5
-5
400 Projected/Actual Units for Demolition
Prior to 7/2013
1/2014
7/2014
1/2015
7/2015
1/2016
7/2016
Projected/Actual Code Enforcement
Est. completion:
Calendar Q6


City of New York Disaster Recovery Program
Interim Assistance Accomplishments
Linear Feet of Public Improvements
25,000
20,000
15,000
10,000
5,000
0
Prior to 7/2013
1/2014
7/2014
1/2015
7/2015
1/2016
7/2016
Est. completion:
Calendar Q6

Resiliency

The Resiliency Program allocation totals $630 million. This funding will be divided into the Coastal Protection Program, the Residential Building Mitigation Program., Staten Island University Hospital, East Side Coastal Resiliency, Hunts Point Resiliency. These Resiliency measures have been further outlined in the Action Plan amendment, which are based on the Mayor's Special Initiative for Rebuilding and Resiliency's (SIRR) A Stronger, More Resilient New York report.

The Coastal Protection program allocation is currently proposed at $159 million to be distributed among installing armor stone revetments; repairing, installing, and raising bulkheads; and designing (through a Global Design Competition) and installing an Integrated Flood Protection System at Hospital Row.

Likewise, the current proposed allocation towards Building Impacts is $60 million, and will be used towards the Residential Building Mitigation Program, as described in the Action Plan. These funds are allocated for affordable housing, as defined by the Department of New York City Housing Preservation and Development (HPD). The goal is to protect buildings and building systems in flood-vulnerable areas that were impacted by Sandy. Buildings are eligible within the 100-year floodplain or the Sandy Inundation Area. Projected outcomes are based off the expected number of housing units served over individual quarters and given an approximate range of sq. ft., which reflects the Action Plan's amendment of estimated 10 million square feet.

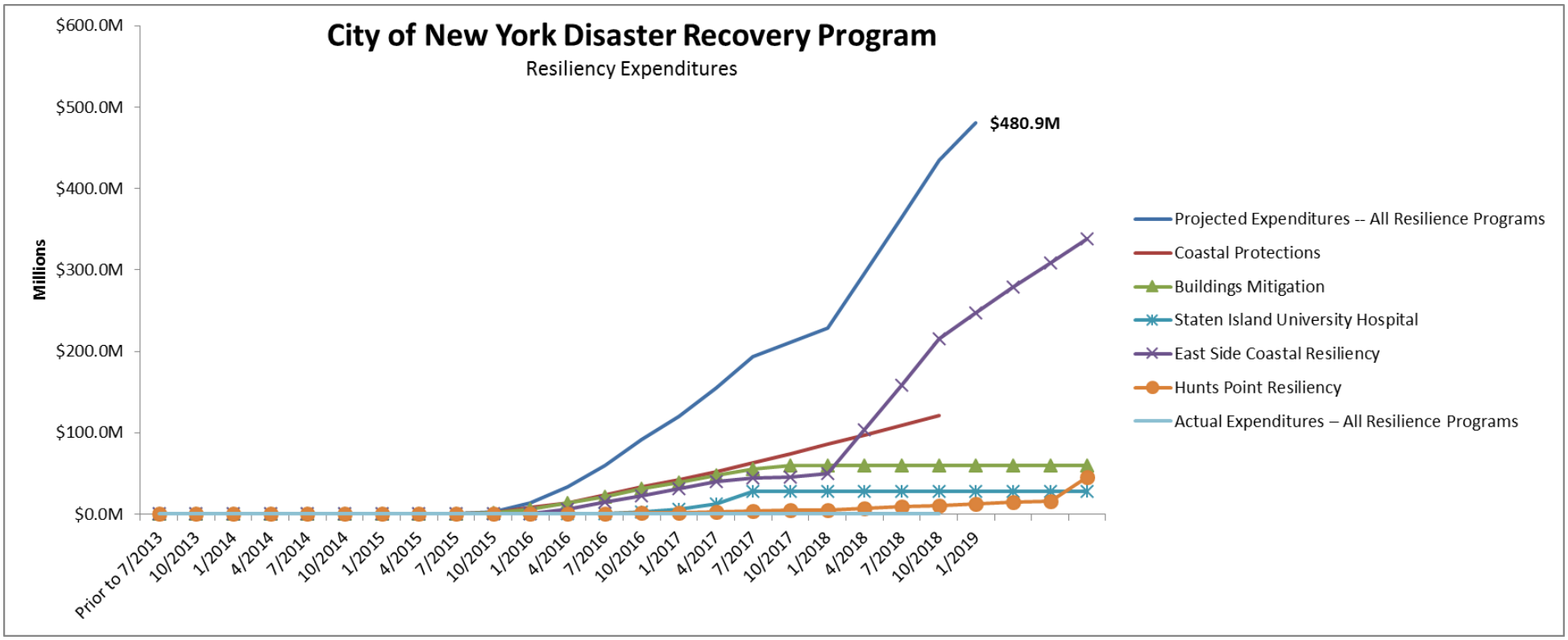
During Q4 2014, the Mayor's Office of Recovery and Resiliency (ORR) and the New York City Economic Development Corporation (NYCEDC) approved procurements related to coastal protection: 1) Coney Island Creek Feasibility Study, 2) Consumer Education Flood Risk and Insurance Study, 3) Single Family Insurance Affordability Study, and 4) Gowanus Canal and Newtown Creek Storm Surge Barrier Study.

Resiliency Financial Projections

Resiliency	Prior to 7/2013	10/2013	1/2014	4/2014	7/2014	10/2014	1/2015	4/2015	7/2015	10/2015	1/2016	4/2016	7/2016
Projected Cumulative Disbursements	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$3.1M	$14.2M	$33.7M	$59.9M
Coastal Protections	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$1.9M	$8.0M	$14.0M	$23.5M
Buildings Mitigation	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$1.2M	$6.2M	$13.7M	$21.2M
Staten Island University Hospital	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
East Side Coastal Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$5.6M	$14.3M
Hunts Point Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.5M	$0.9M
Projected Disbursements by Quarter	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$3.1M	$11.1M	$19.5M	$26.1M
Coastal Protections	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$1.9M	$6.1M	$6.0M	$9.5M
Buildings Mitigation	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$1.2M	$5.0M	$7.5M	$7.5M
Staten Island University Hospital													
East Side Coastal Resiliency												$5.6M	$8.7M
Hunts Point Resiliency	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.5M	$0.5M
Actual Cumulative Disbursements	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Actual Disbursements by Quarter	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M

Resiliency	10/2016	1/2017	4/2017	7/2017	10/2017	1/2018	4/2018	7/2018	10/2018	1/2019	4/2019	7/2019	10/2019
Projected Cumulative Disbursements	$91.0M	$119.7M	$155.1M	$193.1M	$211.4M	$228.3M	$295.7M	$364.6M	$434.8M	$480.9M	$526.0M	$570.1M	$630.0M
Coastal Protections	$33.0M	$42.5M	$52.0M	$62.5M	$74.0M	$85.5M	$97.0M	$109.0M	$121.0M	$133.0M	$145.0M	$157.0M	$159.0M
Buildings Mitigation	$31.2M	$38.7M	$47.7M	$54.8M	$59.6M	$60.0M	$60.0M	$60.0M	$60.0M	$60.0M	$60.0M	$60.0M	$60.0M
Staten Island University Hospital	$2.8M	$5.6M	$13.1M	$28.0M	$28.0M	$28.0M	$28.0M	$28.0M	$28.0M	$28.0M	$28.0M	$28.0M	$28.0M
East Side Coastal Resiliency	$22.6M	$31.1M	$39.6M	$44.2M	$45.3M	$49.4M	$103.5M	$158.6M	$215.0M	$247.3M	$278.6M	$308.9M	$338.0M
Hunts Point Resiliency	$1.4M	$1.8M	$2.7M	$3.6M	$4.5M	$5.4M	$7.2M	$9.0M	$10.8M	$12.6M	$14.4M	$16.2M	$45.0M
Projected Disbursements by Quarter	$31.1M	$28.7M	$35.4M	$38.0M	$18.3M	$16.9M	$67.4M	$68.9M	$70.1M	$46.1M	$45.1M	$44.1M	$59.9M
Coastal Protections	$9.5M	$9.5M	$9.5M	$10.5M	$11.5M	$11.5M	$11.5M	$12.0M	$12.0M	$12.0M	$12.0M	$12.0M	$2.0M
Buildings Mitigation	$10.0M	$7.5M	$9.0M	$7.1M	$4.8M	$0.4M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Staten Island University Hospital	$2.8M	$2.8M	$7.5M	$14.9M									
East Side Coastal Resiliency	$8.4M	$8.5M	$8.5M	$4.6M	$1.1M	$4.1M	$54.1M	$55.1M	$56.3M	$32.3M	$31.3M	$30.3M	$29.1M
Hunts Point Resiliency	$0.5M	$0.5M	$0.9M	$0.9M	$0.9M	$0.9M	$1.8M	$1.8M	$1.8M	$1.8M	$1.8M	$1.8M	$28.8M
Actual Cumulative Disbursements	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Actual Disbursements by Quarter	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M

Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these charts.

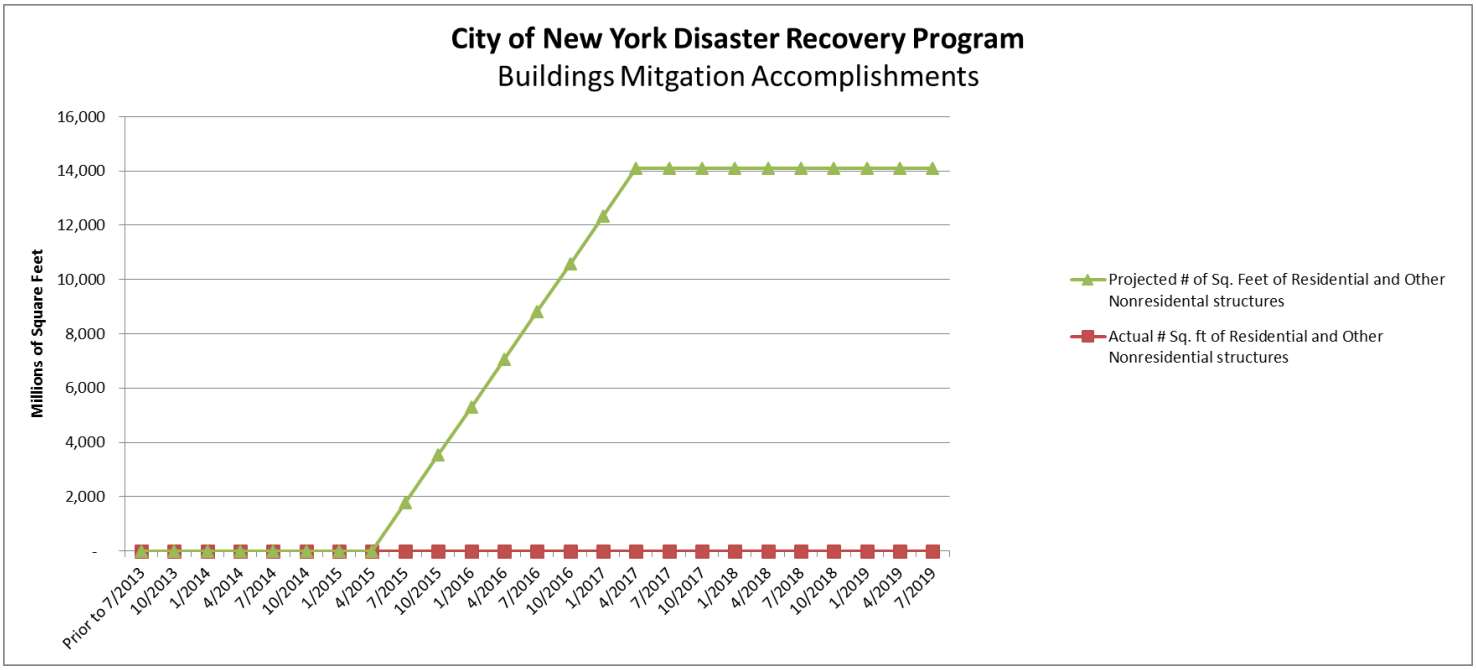


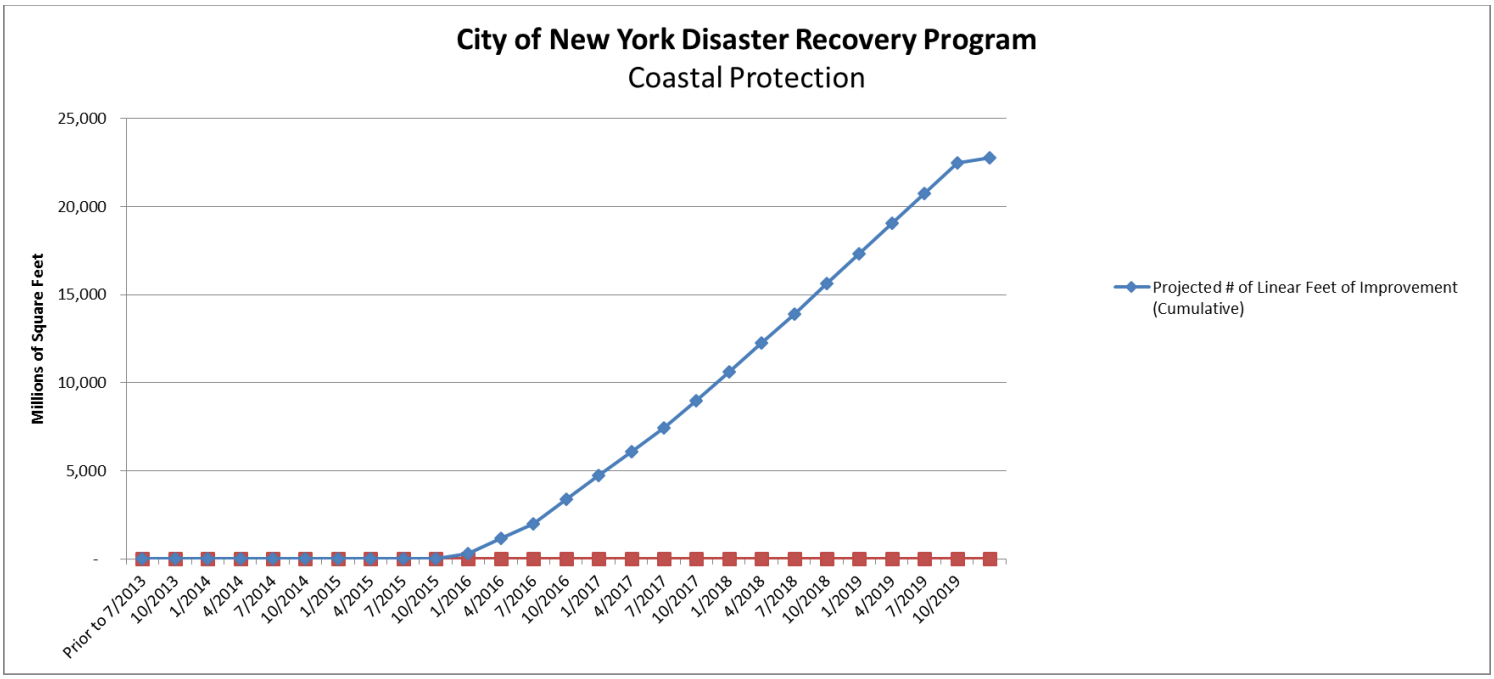
Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these charts.

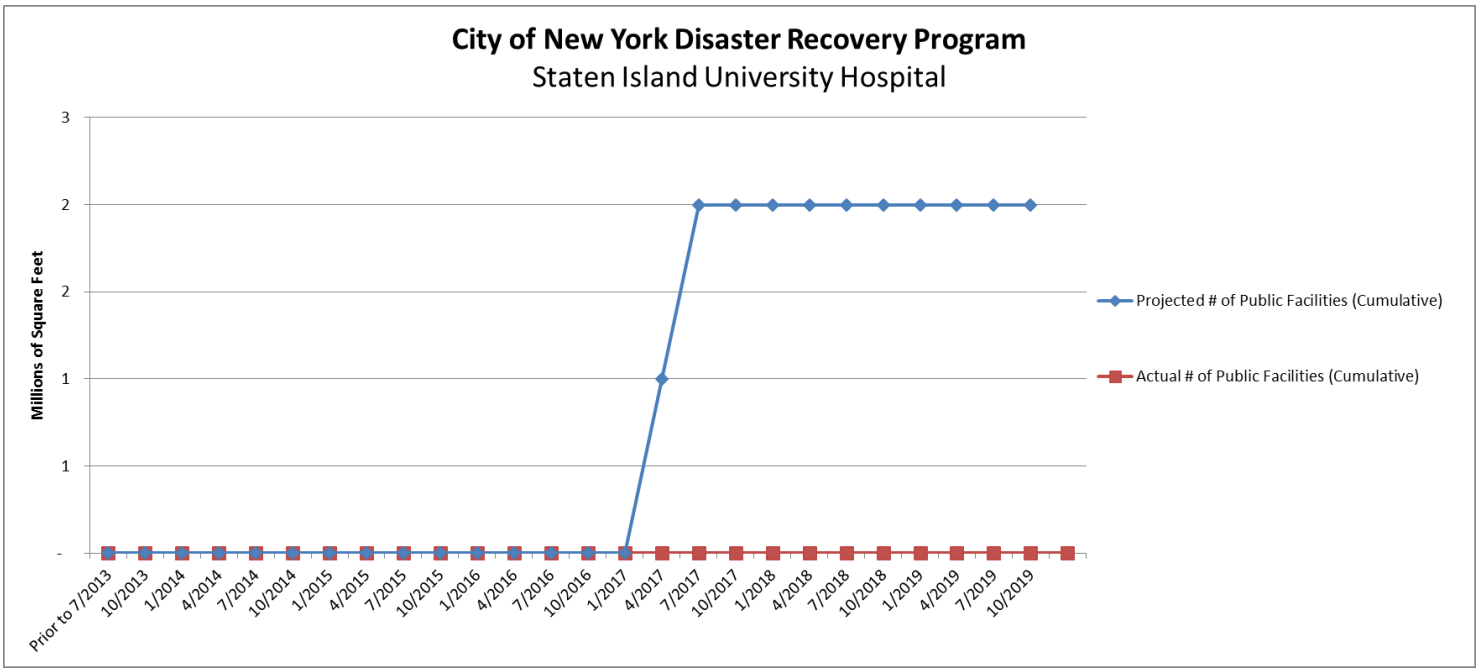
Resiliency Performance Projections

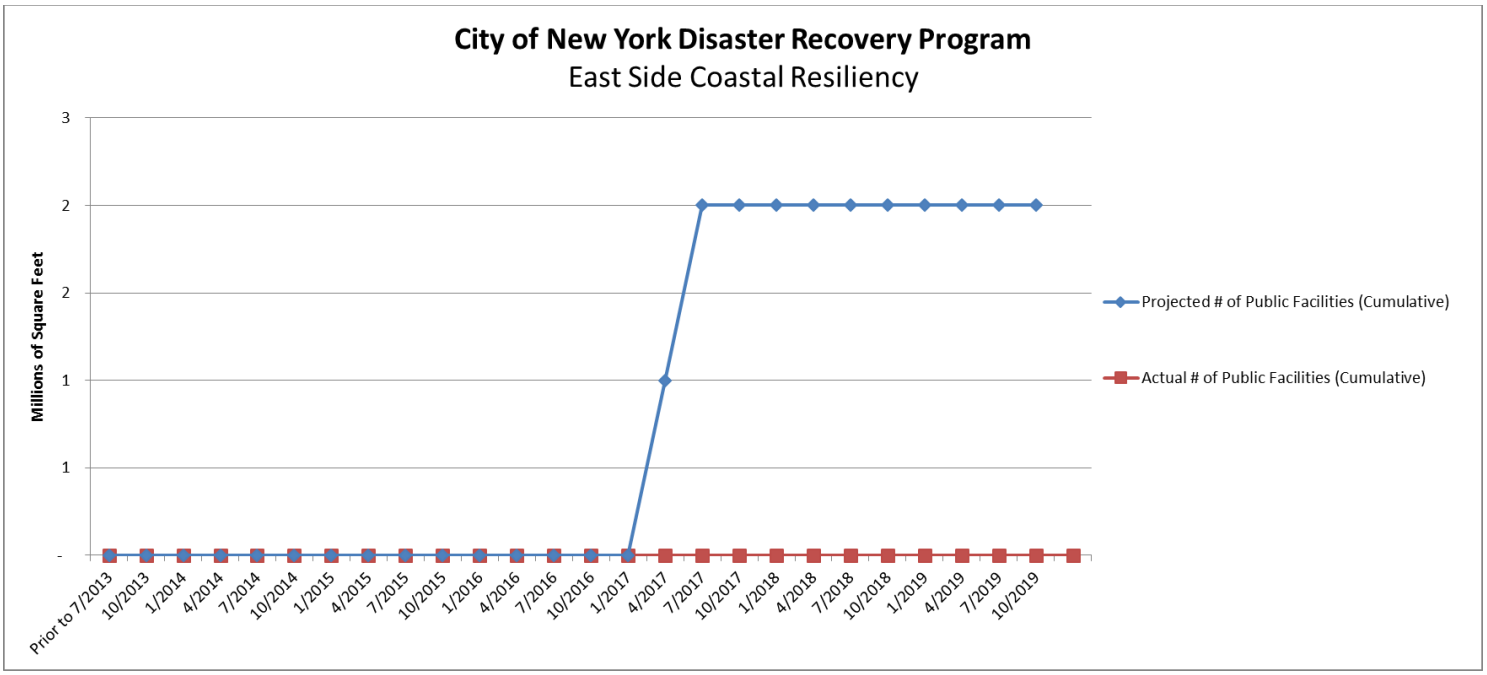
Resiliency	r to 7/2013	10/2013	1/2014	4/2014	7/2014	10/2014	1/2015	4/2015	7/2015	10/2015	1/2016	4/2016	7/2016
Buildings Mitigation													
Projected # of Sq. Feet of Residential and Other Nonresidental structures	-	-	-	-	-	-	-	-	1,764	3,527	5,290	7,053	8,816
# of Sq. Feet of Residential and Other Nonresidential structures (Quarterly Projection)									1,764	1,763	1,763	1,763	1,763
Actual # Sq. ft of Residential and Other Nonresidential structures	-	-	-	-	-	-	-	-	-	-	-	-	-
# of Sq. Feet of Residential and Other Nonresidential structures (From QPR Reporting)													
Coastal Protection	-												
Projected # of Linear Feet of Improvement (Cumulative)		-	-	-	-	-	-	-	-	272	1,146	2,006	3,367
Projected # of Linear Feet of Improvement (by Quarter)	-	-	-	-	-	-	-	-	-	272	874	860	1,361
Actual # Linear Feet of Improvement (Cumulative)													
Actual # of Linear Feet of Improvement (From QPR Reporting)													
Staten Island University Hospital													
Projected # of Public Facilities (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-
Projected # of Public Facilities (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # of Public Facilities (Cumulative)													
Actual # of Public Facilities (From QPR Reporting)													
East Side Coastal Resiliency													
Projected # of Linear Feet of Improvement (Cumulative)		-	-	-	-	-	-	-	-	-	-	192	488
Projected # of Linear Feet of Improvement (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	192	296
Actual # Linear Feet of Improvement (Cumulative)													
Actual # of Linear Feet of Improvement (From QPR Reporting)													
Quarterly Projections by Activity Type													
Building Mitigation													
Projected # of Sq. Ft of Residential and Other Nonresidential structures													
Projected # of housing units													

Resiliency	10/2016	1/2017	4/2017	7/2017	10/2017	1/2018	4/2018	7/2018	10/2018	1/2019	4/2019	7/2019	10/2019
Buildings Mitigation													
Projected # of Sq. Feet of Residential and Other Nonresidental structures	10,579	12,342	14,105	14,105	14,105	14,105	14,105	14,105	14,105	14,105	14,105	14,105	14,105
# of Sq. Feet of Residential and Other Nonresidential structures (Quarterly Projection)	1,763	1,763	1,763										
Actual # Sq. ft of Residential and Other Nonresidential structures	-	-	-	-	-	-	-	-	-	-	-	-	-
# of Sq. Feet of Residential and Other Nonresidential structures (From QPR Reporting)													
Coastal Protection													
Projected # of Linear Feet of Improvement (Cumulative)	4,728	6,089	7,449	8,954	10,601	12,249	13,896	15,615	17,334	19,053	20,772	22,491	22,778
Projected # of Linear Feet of Improvement (by Quarter)	1,361	1,361	1,361	1,504	1,647	1,647	1,647	1,719	1,718	1,719	1,719	1,719	287
Actual # Linear Feet of Improvement (Cumulative)													
Actual # of Linear Feet of Improvement (From QPR Reporting)													
Staten Island University Hospital													
Projected # of Public Facilities (Cumulative)	-	-	1	2	2	2	2	2	2	2	2	2	2
Projected # of Public Facilities (by Quarter)	-	-	1	1	-	-	-	-	-	-	-	-	-
Actual # of Public Facilities (Cumulative)													
Actual # of Public Facilities (From QPR Reporting)													
East Side Coastal Resiliency													
Projected # of Linear Feet of Improvement (Cumulative)	774	1,064	1,355	1,511	1,549	1,689	3,540	5,426	7,354	8,460	9,532	10,569	11,563
Projected # of Linear Feet of Improvement (by Quarter)	286	290	290	156	39	139	1,852	1,886	1,928	1,107	1,071	1,037	995
Actual # Linear Feet of Improvement (Cumulative)													
Actual # of Linear Feet of Improvement (From QPR Reporting)													
Quarterly Projections by Activity Type													
Building Mitigation													
Projected # of Sq. Ft of Residential and Other Nonresidential structures													
Projected # of housing units													


City of New York Disaster Recovery Program
Buildings Mitgation Accomplishments
Millions of Square Feet
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
-
Prior to 7/2013
10/2013
1/2014
4/2014
7/2014
10/2014
1/2015
4/2015
7/2015
10/2015
1/2016
4/2016
7/2016
10/2016
1/2017
4/2017
7/2017
10/2017
1/2018
4/2018
7/2018
10/2018
1/2019
4/2019
7/2019
Projected # of Sq. Feet of Residential and Other Nonresidental structures
Actual # Sq. ft of Residential and Other Nonresidential structures


City of New York Disaster Recovery Program
Coastal Protection
Millions of Square Feet
25,000
20,000
15,000
10,000
5,000
-
Prior to 7/2013
10/2013
1/2014
4/2014
7/2014
10/2014
1/2015
4/2015
7/2015
10/2015
1/2016
4/2016
7/2016
10/2016
1/2017
4/2017
7/2017
10/2017
1/2018
4/2018
7/2018
10/2018
1/2019
4/2019
7/2019
10/2019
Projected # of Linear Feet of Improvement (Cumulative)

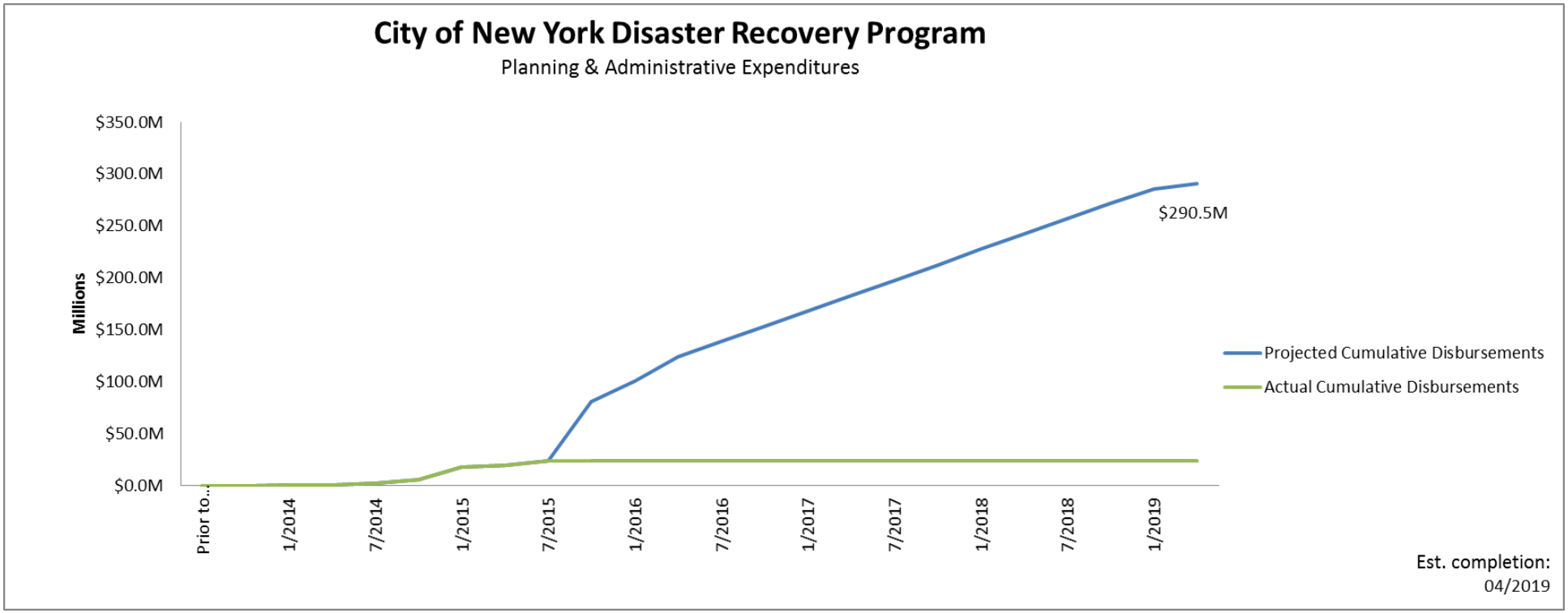

City of New York Disaster Recovery Program
Staten Island University Hospital
Millions of Square Feet
3
2
2
1
1
-
Prior to 7/2013
10/2013
1/2014
4/2014
7/2014
10/2014
1/2015
4/2015
7/2015
10/2015
1/2016
4/2016
7/2016
10/2016
1/2017
4/2017
7/2017
10/2017
1/2018
4/2018
7/2018
10/2018
1/2019
4/2019
7/2019
10/2019
Projected # of Public Facilities (Cumulative)
Actual # of Public Facilities (Cumulative)


City of New York Disaster Recovery Program
East Side Coastal Resiliency
Millions of Square Feet
3
2
2
1
1
-
Prior to 7/2013
10/2013
1/2014
4/2014
7/2014
10/2014
1/2015
4/2015
7/2015
10/2015
1/2016
4/2016
7/2016
10/2016
1/2017
4/2017
7/2017
10/2017
1/2018
4/2018
7/2018
10/2018
1/2019
4/2019
7/2019
10/2019
Projected # of Public Facilities (Cumulative)
Actual # of Public Facilities (Cumulative)

Citywide Administrative and Planning Financial Projections

Planning & Admin	Prior to 7/2013	10/2013	1/2014	4/2014	7/2014	10/2014	1/2015	4/2015	7/2015	10/2015	1/2016	4/2016	7/2016
Projected Cumulative Disbursements	$0.0M	$0.0M	$0.8M	$0.8M	$2.7M	$5.9M	$18.0M	$19.8M	$24.0M	$81.3M	$101.1M	$123.9M	$138.7M
Planning	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$7.8M	$7.9M	$9.3M	$12.3M	$19.3M	$31.3M	$36.3M
Administration	$0.0M	$0.0M	$0.8M	$0.8M	$2.7M	$5.9M	$10.2M	$11.9M	$14.7M	$21.0M	$33.8M	$44.6M	$54.4M
Projected Disbursements by Quarter	$0.0M	$0.0M	$0.8M	$0.8M	$2.7M	$5.9M	$18.0M	$19.8M	$24.0M	$9.3M	$19.8M	$22.8M	$14.8M
Planning	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$7.8M	$0.1M	$1.4M	$3.0M	$7.0M	$12.0M	$5.0M
Administration	$0.0M	$0.0M	$0.7M	$0.0M	$1.9M	$3.2M	$4.3M	$1.7M	$3.0M	$6.3M	$12.8M	$10.8M	$9.8M
Actual Cumulative Disbursements	$0.0M	$0.0M	$0.8M	$0.8M	$2.7M	$5.9M	$18.0M	$19.8M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M
Planning	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$7.8M	$7.9M	$9.3M	$0.0M	$0.0M	$0.0M	$0.0M
Administration	$0.0M	$0.0M	$0.8M	$0.8M	$2.7M	$5.9M	$10.2M	$11.9M	$14.7M	$0.0M	$0.0M	$0.0M	$0.0M
Actual Disbursements by Quarter (from QPRs)	$0.0M	$0.0M	$0.7M	$0.0M	$1.9M	$3.2M	$12.1M	$1.8M	$4.2M	$0.0M	$0.0M	$0.0M	$0.0M
Planning	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$7.8M	$0.1M	$1.4M				
Administration	$0.0M	$0.0M	$0.7M	$0.0M	$1.9M	$3.2M	$4.3M	$1.7M	$2.8M				

Planning & Admin	10/2016	1/2017	4/2017	7/2017	10/2017	1/2018	4/2018	7/2018	10/2018	1/2019	4/2019	7/2019	10/2019
Projected Cumulative Disbursements	$153.4M	$168.2M	$183.0M	$197.7M	$212.5M	$227.3M	$242.0M	$256.8M	$271.6M	$285.4M	$290.5M	$293.5M	$295.5M
Planning	$41.3M	$46.3M	$51.3M	$56.3M	$61.3M	$66.3M	$71.3M	$76.3M	$81.3M	$85.3M	$85.7M	$85.7M	$85.7M
Administration	$64.2M	$73.9M	$83.7M	$93.5M	$103.2M	$113.0M	$122.8M	$132.5M	$142.3M	$152.1M	$156.8M	$159.8M	$161.8M
Projected Disbursements by Quarter	$14.8M	$14.8M	$14.8M	$14.8M	$14.8M	$14.8M	$14.8M	$14.8M	$14.8M	$13.8M	$5.2M	$3.0M	$2.0M
Planning	$5.0M	$5.0M	$5.0M	$5.0M	$5.0M	$5.0M	$5.0M	$5.0M	$5.0M	$4.0M	$0.4M	$0.0M	$0.0M
Administration	$9.8M	$9.8M	$9.8M	$9.8M	$9.8M	$9.8M	$9.8M	$9.8M	$9.8M	$9.8M	$4.8M	$3.0M	$2.0M
Actual Cumulative Disbursements	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M	$24.0M
Planning	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Administration	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Actual Disbursements by Quarter (from QPRs)	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M	$0.0M
Planning													
Administration													

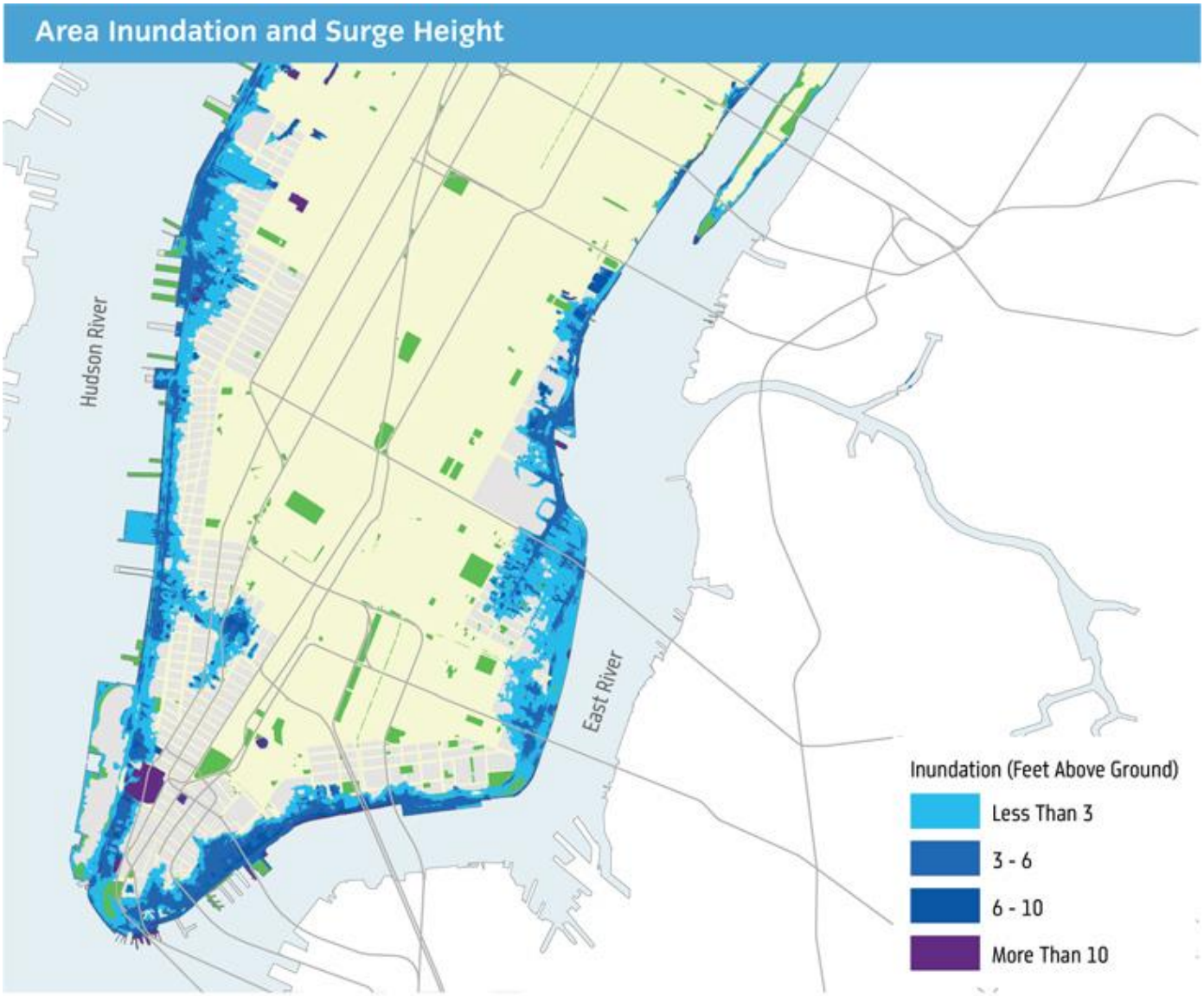


Please note that this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement from CDBG-DR funds, not the date of service delivery. Thus, service deliveries may occur much earlier than the dates associated with the projected expenditures in these chart

APPENDIX E: EAST SIDE COASTAL RESILIENCY

Figure 1

Figure 2



Note: Inundation more than 10 feet includes below grade areas.

Source: FEMA (MOTF 11/6 Hindcast surge extent)

Figure 3

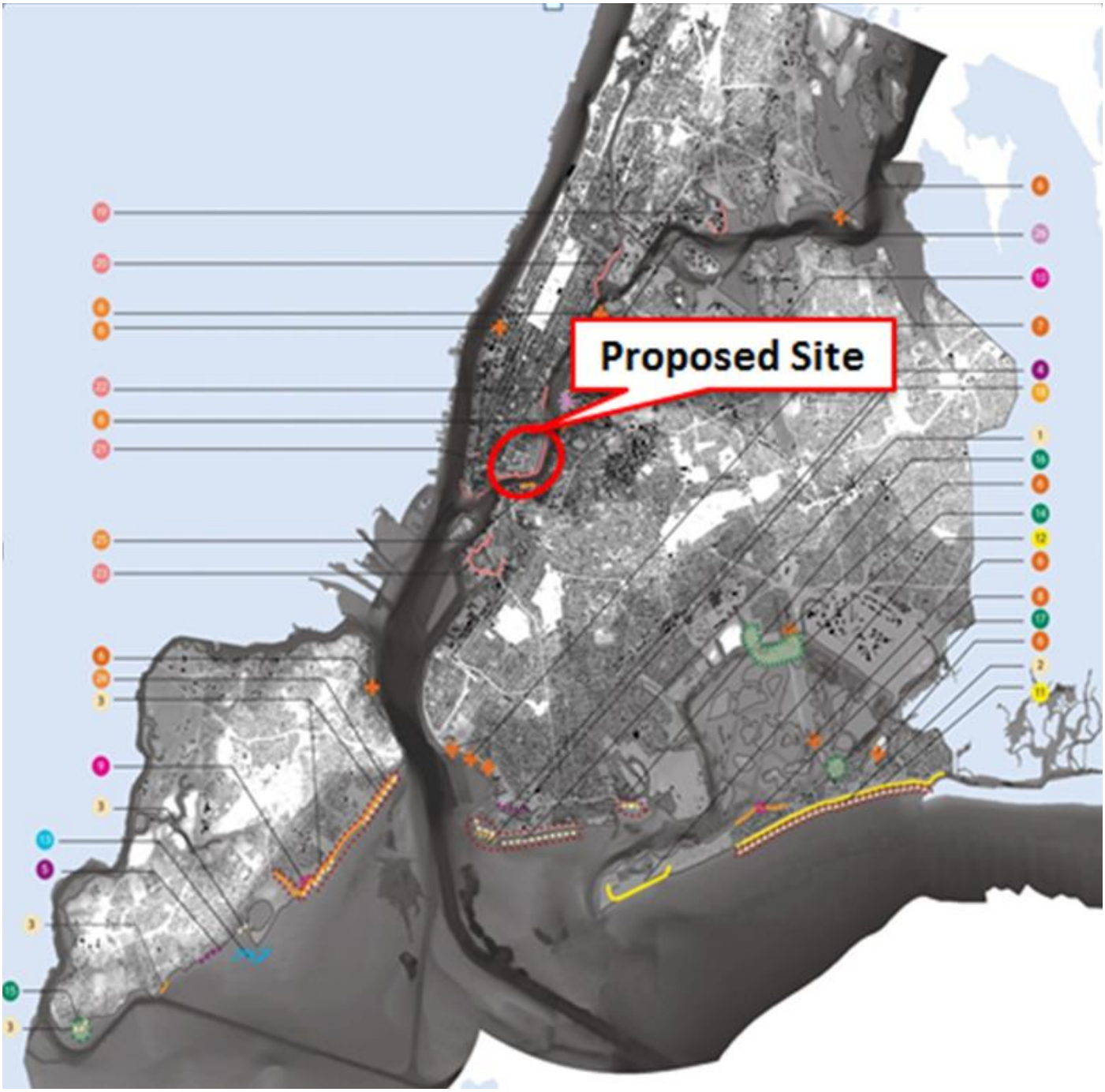


Figure 4

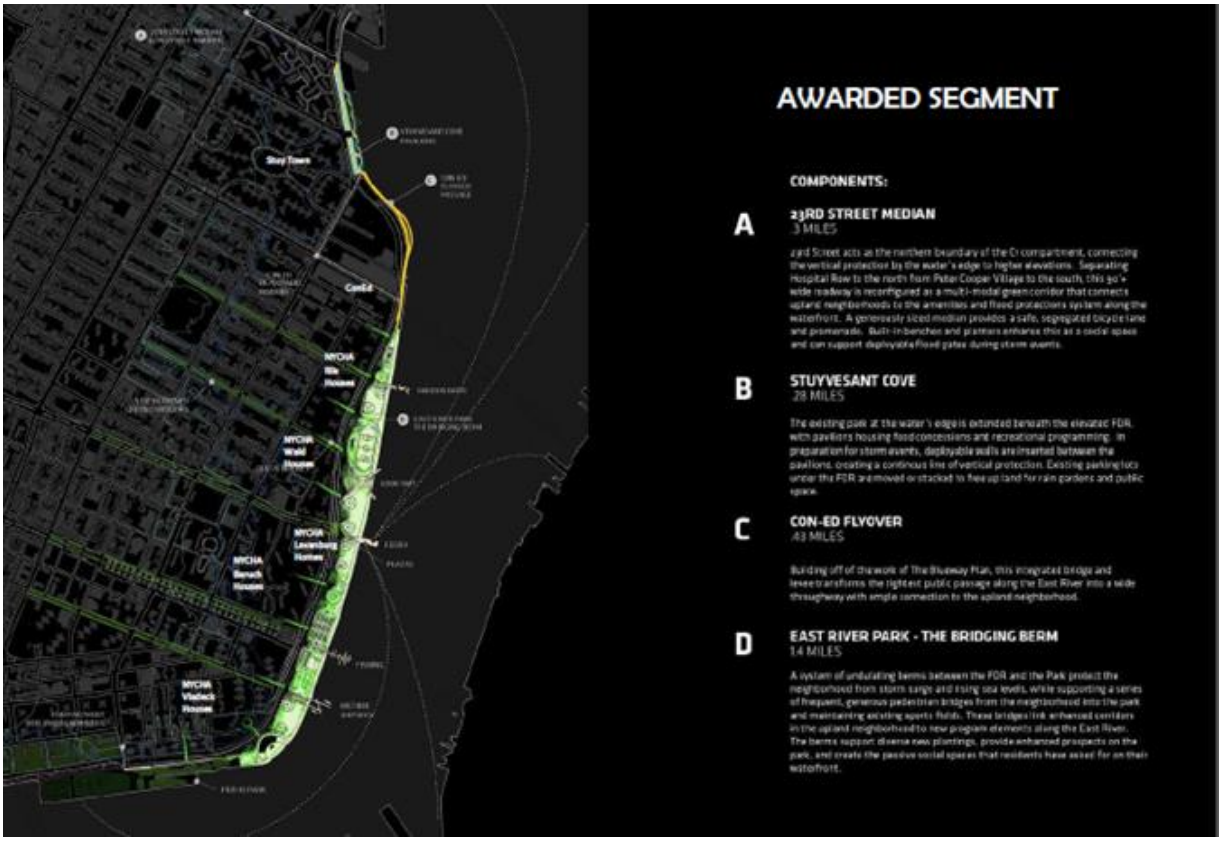
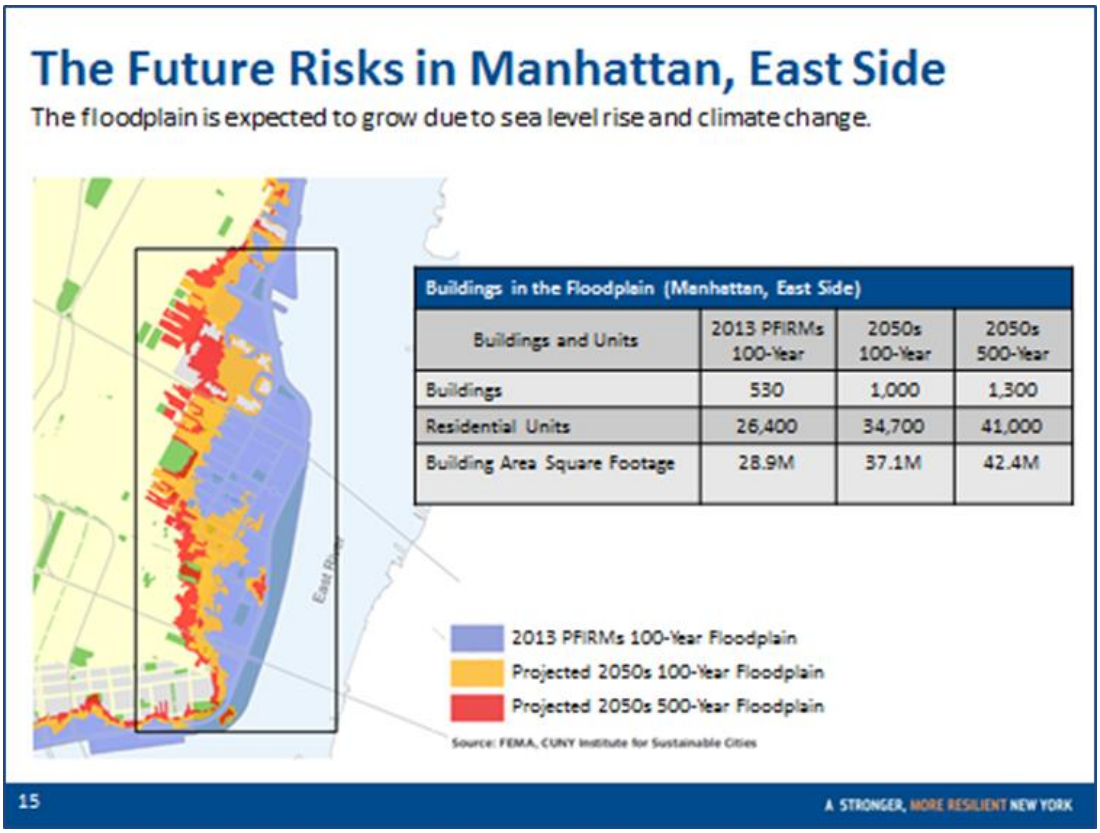


Figure 5

Figure 6a – Rendering of Current Conditions

Figure 6b – Rendering of Concept for Future Conditions

Figure 7



Buildings in the Floodplain (Manhattan, East Side)			
Buildings and Units	2013 PFIRMs 100-Year	2050s 100-Year	2050s 500-Year
Buildings	530	1,000	1,300
Residential Units	26,400	34,700	41,000
Building Area Square Footage	28.9M	37.1M	42.4M

Appendix F: CDBG-DR Reallocations and 3rd Allocation FundingTable: Summary of programs and allocations in the New York City CDBG-DR Action Plan

Program Name ($s in thousands)	Approved 1st and 2nd Allocations (as of Amendment 8A)	Reallocation of 1st and 2nd Allocations	3rd Allocation	Total
Housing	**1,695,000**	**200,000**	**564,056**	**2,459,056**
Build it Back Rehab and Reconstruction (1-4 Unit Homes)	1,019,000	200,000	494,056	1,713,056
Build it Back Multi-Family Building Rehabilitation (5+ Units)	346,000		70,000	416,000
Build it Back Temporary Disaster Rental Assistance Program (TDAP)	19,000			19,000
Build it Back Workforce Development	3,000			3,000
Public Housing Rehabilitation and Resilience	308,000			308,000
Business	**266,000**	**(143,000)**	**-**	**123,000**
Hurricane Sandy Business Loan and Grant Program	42,000	6,000		48,000
Business Resiliency Investment Program	110,000	(110,000)		-
Neighborhood Game Changer Investment Competition	84,000	(84,000)		-
Resiliency Innovations for a Stronger Economy (RISE:NYC)	30,000			30,000
Business PREP		3,000		3,000
Saw Mill Creek Wetland Restoration		12,000		12,000
Coney Island Green Infrastructure		15,000		15,000
Rockaways Streetscape Improvements		15,000		15,000
Infrastructure and Other City Services	**805,000**	**(50,000)**	**-**	**755,000**
Public Services	367,000	(44,500)		322,500
Emergency Demolition	2,000			2,000
Debris Removal/Clearance	12,500			12,500
Code Enforcement	1,000			1,000
Rehabilitation/Reconstruction of Public Facilities	324,500	(5,500)		319,000
Interim Assistance	98,000			98,000
Coastal Resiliency	**284,000**	**(9,000)**	**355,000**	**630,000**
Coastal Protection	224,000	(65,000)		159,000
Residential Building Mitigation Program	60,000			60,000
Staten Island University Hospital		28,000		28,000
Rebuild by Design				
East Side Coastal Resiliency		3,000	335,000	338,000
Hunts Point Lifelines		25,000	20,000	45,000
TOTAL	**3,050,000**	**(2,000)**	**919,056**	**3,967,056**
Planning and Administration	**169,820**	**2,000**	**75,000**	**246,820**
Planning	74,463	(13,723)	25,000	85,740
Administration	95,357	15,723	50,000	161,080
GRAND TOTAL	**3,219,820**	**-**	**994,056**	**4,213,876**