NYC Recovery | Community Development Block Grant Disaster Recovery

THE CITY OF NEW YORK

ACTION PLAN INCORPORATING AMENDMENTS 1-20

Effective January 8, 2020

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, coastal resiliency, and 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/cdbgdr. The City's amendments to its Action Plan are listed below.

- 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
- Amendment 10 (non-substantial amendment) – acknowledged by HUD on September 23, 2015
- Amendment 11 (non-substantial amendment) – acknowledged by HUD on January 26, 2016
- Amendment 12 (substantial amendment) – approved by HUD on December 30, 2016
- Amendment 13 (substantial amendment) – approved by HUD July 14, 2017
- Amendment 14 (substantial amendment) – approved by HUD August 22, 2017
- Amendment 15 (non-substantial amendment) – acknowledged by HUD on August 1, 2017
- Amendment 16 (substantial amendment) – approved by HUD December 19, 2017
- Amendment 17 (non-substantial amendment) – acknowledged by HUD May 18, 2018
- Amendment 18 (substantial amendment) – approved by HUD December 14, 2018
- Amendment 19 (substantial amendment) – approved by HUD December 21, 2018
- Amendment 20 (substantial amendment) – approved by HUD January 8, 2020

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 ($ in '000s)

Program Name	CDBG-DR Allocation
Housing	**$ 2,967,173,230**
Build it Back Single Family	2,213,056,000
Build it Back Multi-Family	426,000,000
Build it Back Temporary Disaster Assistance Program (TDAP)	8,581,270
Build it Back Workforce Development	2,535,960
Public Housing Rehabilitation and Resilience (NYCHA)	317,000,000
Business	**$ 91,000,000**
Hurricane Sandy Business Loan and Grant Program	58,000,000
Business PREP	3,000,000
Resiliency Innovations for a Stronger Economy (RISE:NYC)	30,000,000
Infrastructure and Other City Services Total	**$ 417,820,586**
Public Services	223,107,101
Debris Removal/Clearance	6,654,089
Interim Assistance	97,129,396
Rehabilitation/Reconstruction of Public Facilities	90,930,000
Resiliency	**$ 473,237,000**
Raise Shorelines	7,700,000
Coney Island Resiliency Improvements	15,000,000
Staten Island University Hospital	28,000,000
East Side Coastal Resiliency	338,000,000
Hunts Point Resiliency	45,000,000
Breezy Point Risk Mitigation	14,537,000
Sheepshead Bay Courts Infrastructure	20,000,000
Resiliency Property Purchase Program	5,000,000
Planning and Administration	**$ 264,645,184**
Planning	78,017,325
Administration	186,627,859
Planning and Administration Total	**$ 4,213,876,000**

Note: Funding levels shown above represent full allocations budgeted to the dollar. Subsequent tables show dollars budgeted to the thousands for readability.

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 areimplemented; however, neither planning nor administrative expenses will surpass their statutory caps.

The City anticipates that only 6.2 percent of grant funding will go to Planning and Administration; this includes 4.4 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 93.7 percent of CDBG-DR funds are going directly to recovery and resiliency programs.

II. INTRODUCTION

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 put the 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.

CDBG Disaster Recovery Program

On October 28, 2012, President Obama signed an emergency declaration for the States of New York and New Jersey, which made the City eligible for 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 a recovery plan to address disaster needs.

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 the expansion of economic opportunities.

The City's Action Plan details how the City intends to use its CDBG-DR allocation 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. 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 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.

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. A progress report for *One City Rebuilding Together* was released on October 22, 2015. The Mayor's Office of Recovery and Resiliency is now known as the Mayor's Office of Resiliency (MOR). References throughout this document may be to either version of the name.

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

Additional Stakeholder Consultation

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 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)
- Regional Plan Association (RPA)

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
- 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 the 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 a description of the Inundation Area on a citywide basis.

The following additional information can be found in Appendix B:

- A description of each borough's inundation area and accompanying maps.
- Citywide and borough-specific charts depicting additional data, including: "Selected Housing Characteristics," "Land Use," and "Demographics and Housing Profile."

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. 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).

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.

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).1 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.

[1] 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.

IV. FUNDING JUSTIFICATIONS

Introduction

New York City plans to spend its allocation of $4.2 billion of CDBG-DR funding to address the most urgent housing, business, infrastructure, and resiliency needs in the neighborhoods hardest hit by Hurricane Sandy. The City intends to implement programs that will address the greatest needs in each of these four categories. The unmet needs assessment described in this Action Plan shows that the current CDBG-DR allocation is not sufficient to cover the entirety of the City's overall recovery, rebuilding, and coastal protection needs, requiring the City to prioritize the most effective use of available funding sources. Certain examples of these remaining needs are indicated through the Action Plan.

The City has prioritized housing recovery and the fulfillment of the HUD requirement to use at least 50 percent of its CDBG-DR allocation to benefit low- and moderate- income populations. Programs were chosen and designed based on original unmet needs assessments and have been modified based on updated needs assessments. Unmet needs assessments are as of December 2018, when the proposed Action Plan Amendment 19 was approved.

The City submitted various timeline extension requests to HUD and has received approval the following extension of funds: $355 million in Rebuild By Design funds on February 13th, 2017, $510 million on May 17th, 2017, an additional $200 million on October 23rd, 2017, and $235.5 million on December 4, 2018. These extensions allow the City to receive funding from HUD in the amount approved through September 2022.

The following tables provide additional detail on the breakout of the extensions received.

RBD Project	**Amount Allocated**
Big U/East Side Coastal Resiliency Project	$335,000,000
Hunts Point Resiliency	$20,000,000
Total Amount	**$355,000,000**

Program Category	***Maximum Amount Extended**
Coastal Resilience/Infrastructure	$145,499,613
Housing	$691,090,858
Economic Revitalization	$21,171,077
Grant Administration	$88,257,2589
Total	**$946,018,807**

*Note: While HUD has approved timeline extensions through September 2022, the City remains committed to delivering its recovery programs at the most aggressive timeline possible. As such, the timelines provided by the City for programs that received extensions are not necessarily reflective of the City's full extension authority.

The funding levels below reflect the City's current program allocations with summary information for each of the four categories of recovery activity.

Housing – $3 billion

The City will use CDBG-DR to fund the following Housing programs:

Build It Back: $2.65 billion to fully complete the permanent housing recovery program that will address the identified remaining unmet need for single-family and multi-family applicants. Within this program, the City has further broken down funding into the following categories:

- $2.2 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.
- $426 million to provide for the rehabilitation and resiliency of multi-family buildings (five or more units).
- $8.6 million for the Temporary Disaster Assistance Program (TDAP) rental subsidy program to serve low-income households displaced by Hurricane Sandy, and
- $2.5 million for a workforce development program as part of Build It Back.

For further details on these funds in regards to updated unmet needs, please see the Needs Assessment within Chapter VII (Housing) of this Action Plan below.

Public Housing: $317 million
The City has allocated $317 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 may fund projects with CDBG-DR that are not funded by FEMA, including the NYCHA Workforce Development Program.

Business – $91 million

The City will use CDBG-DR to fund the following Business programs:

Hurricane Sandy Business Loan and Grant Program (HSBLGP): $58 million to provide loans and grants to 350 businesses impacted by Hurricane Sandy.

Business PREP (Preparedness and Resiliency Program): $3 million to assist businesses to implement operational and physical resiliency measures through one-on-one site visits and assessments, grants to help businesses implement low-cost resiliency improvements, business resiliency online resources, and emergency preparedness workshops.

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 energy infrastructure, telecom networks, and building systems.

Infrastructure and Other City Services (IOCS) – $419.5 million

As permitted in the March 5, 2013 Federal Register, much of the CDBG-DR funds for IOCS will be used to fund the required non-federal share ("local match") of FEMA Public Assistance disaster grants and other federal grants. The City is allocating $417.8 million to direct City agency costs associated with local cost shares on other federal recovery funds. The City will use CDBG-DR to fund the following Infrastructure and Other City Services programs:

- $223.1 million for public service activities that assisted the public during and after the storm, which is a reduction from $224.7 million to reflect surpluses associated with completed activities,
- $6.7 million has been allocated for debris removal and clearance,
- $97.1 million has been allocated for interim assistance, and
- $90.9 million has been allocated for the rehabilitation and reconstruction of public facilities.

The category of public facilities is associated with Infrastructure projects and the other categories are associated with Other City Services. Action Plan Amendment 19 reallocated $1.6 million in public services activities to Administration to reflect a surplus in Public Services and address a need in Administration. Activities in the Public Services activity have been completed, and funded at $224.7 million and drawn down at the 99% level at $222.7 million.. The allocation reflects actual expenditures.. The $1.6 million reallocation is reflected in adjustments to the amounts made available for the following public services activities: H+H Operational Readiness, DPR Emergency Protective Measures, FDNY Emergency Protective Measures, HRA Disaster Assistance Services Centers, and NYPD Overtime.

Resiliency – $473.2 million

The City will use CDBG-DR to fund the following Coastal Resiliency programs:

Raise Shorelines: $7.7 million for feasibility assessments, preliminary design, technical studies, and planning for installing armor stone revetments and repairing, installing, and raising bulkheads, and developing integrated flood protection systems at various locations throughout the city.

Staten Island University Hospital Resiliency: $28 million to protect and elevate mechanical systems at 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 25th 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. In addition to the $335 million HUD awarded to this program through the Rebuild by Design competition, the City has dedicated an additional $3 million in CDBG-DR funding to support this project.

In addition to the Rebuild by Design award, "Compartment 2" is covered by a $176 million National Disaster Resilience Competition award from HUD through the CDBG-NDR program, which along with local leveraged funds, will be allocated to "Compartment 2" as defined in the Rebuild by Design proposal. "Compartment 2" covers the Two Bridges neighborhood from Montgomery Street south to the Brooklyn Bridge. "Compartment 3," covering the Manhattan Tip, is funded by $108 million in City capital funds, and currently carries a remaining unmet need to ensure full protection from the Brooklyn Bridge, to the Battery, and again north through Battery Park City.

***Rebuild by Design: Hunts Point Resiliency*:** $71 million for continued study, analysis, planning, and stakeholder engagement related to the flood risk reduction and energy resiliency goals of the Rebuild by Design Hunts Point Lifelines proposal and the design and construction of a resulting energy resiliency project. The project started as a $20 million CDBG-DR investment as part of Rebuild by Design, and an additional $25 million of CDBG-DR funds reallocated from existing business programs. In 2018, the City added $26 million in City capital to the project, bringing the total to $71 million.

Coney Island Resiliency Improvements: $15 million to advance resiliency measures throughout the Coney Island peninsula. The resiliency improvements will help protect hundreds of local businesses along the main commercial corridors between Coney Island Creek and the ocean, and throughout Coney Island, as well as thousands of residents in the community.

Breezy Point Risk Mitigation: $14.5 million to cover the 25 percent local match contribution to a FEMA Hazard Mitigation Grant Program Section 404 award to provide coastal protection in the Breezy Point community of the Rockaways. This project was previously funded in the IOCS section of the Action Plan and is now being described under Coastal Resiliency.

Sheepshead Bay Courts Sewer and Water Infrastructure Program: $20 million to repair and replace damaged sewer and water infrastructure in the Sheepshead Bay Courts. This investment will make the courts more resilient to future severe weather events.

Resiliency Property Purchase Program: $5 million for a pilot program to purchase property to facilitate the implementation of resilient infrastructure projects in Sandy-impacted areas that will be funded through a variety of federal, State and local sources.

Planning and Administration – $263.0 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; zoning and land use changes; and integration of coastal protections into local land use and waterfront planning.

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 preparing 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; and creating reporting functionality on

Recovery websites, etc. Planning and Administration also includes program-specific planning and administration costs.

Please note 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 the HUD-mandated statutory caps (20 percent for Planning and Administration combined 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.

The City's recovery programs will address the greatest need across four main areas:(1) Housing, (2) Business for small businesses and economic revitalization, (3) Infrastructure and Other City Services for disaster relief and restoration of infrastructure, and (4) Coastal Resiliency for long-term recovery and resiliency.

Proportionality of CDBG-DR Allocation to Unmet Needs

To receive CDBG-DR funds, HUD requires an unmet needs assessment that enables the City to design recovery programs responsive and proportionate to the type and location of actual needs on the ground. At a minimum, the needs assessment must evaluate three core aspects of recovery—housing, infrastructure, and the economy (*e.g.,* estimated job losses). The City has expanded this needs assessment guidance to cover other city services and coastal resiliency as separate categories. The assessment must also take into account the various forms of assistance available to, or likely to be available to, affected communities and individuals (including estimated insurance and eligible FEMA, SBA, or other Federal assistance, as well as direct City funding the City is able to secure from its own resources) to identify disaster recovery needs that are not likely to be addressed by other sources of funds.

Additionally, HUD notes in its federal guidance that data is in a constant state of improvement after a disaster, moving from estimated to actual. It is further expected that as the damage estimates

become increasingly more accurate, continued evaluations will validate the accuracy of initial assumptions and may require adjustments in priorities and the proportionality of funding allocations.

The table below reflects the distribution of the City's CDBG-DR resources relative to the overall updated assessment of unmet needs as well as the prioritization of the most effective funding options across the unmet needs categories.

Table: CDBG-DR Allocations in Relation to Unmet Need ($ in '000s)

Category	Unmet Need Before CDBG-DR	Of which, associated with Resiliency	% of Total	CDBG-DR Funding*	Need Covered by CDBG-DR
Housing	$ 5,300,000	$ 1,000,000	39%	$ 2,967,173	56%
Business	$ 2,400,000	$ 200,000	18%	$ 91,000	4%
Infrastructure*	$ 4,900,000	$ 3,600,000	36%	$ 564,167	12%
Other City Services	$ 900,000	$ 50,000	7%	$ 328,531	37%
Total	**$ 13,500,000**	**$ 4,850,000**		**$ 3,950,872**	**29%**
			Planning/Admin	263,004	
				4,213,876	

Notes: 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.
*For purposes of unmet need calculations, CDBG-DR funding for Resiliency is associated with Infrastructure
*Housing resiliency includes elevation of single-family homes, multi-family buildings and NYCHA

The City had previously identified its unmet need as $13.5 billion in its Action Plan incorporating Amendments 1-17. For Amendments 18 and 19, the unmet need calculation has not changed. Any changes in overall need are offset by changes in additional funding, resulting in no change to unmet need, or the changes made in the most recent amendments are changes merely within one of these categories, not between categories of unmet need. The City is still prioritizing the use of CDBG-DR funding for existing activities where low- to moderate-income beneficiaries can still be served.

V. Sources of Funding to Be Leveraged

Housing

The CDBG-DR housing allocation is leveraged against numerous other sources of Federal, State, City, and private funding, including awards from FEMA (Individual Assistance, Hazard Mitigation Grant Program, and Public Assistance), SBA Disaster Loans, National Flood Insurance Program (NFIP) structural loss payments, private insurance structural loss claim payments, and other Disaster Relief Appropriation funds. In compliance with program guidelines and regulations, CDBG-DR housing funding has been allocated to 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 nonprofit 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 played a critical role in relief and recovery efforts by facilitating privately-funded programs that leverage flexible capital to address unmet housing needs while the CDBG-DR programs were put in place. Additionally, NYC Service, a City agency that leads targeted volunteer opportunities and initiatives, worked with the FEMA Volunteerism staff and 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 selection of the housing-related programs that have been implemented 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.
- 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).
- Partnerships with Non-Profit Rebuilding Efforts: The City also works 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 LISC.
- 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.

- Build It Back forged a strong partnership with the Disaster Case Management Program. Through cross-training, information exchange and regular case conferencing, Build It Back applicants had access to a wide range of social services to meet their post-disaster needs. Moreover, applicants,

with help of their Disaster Case Managers, were able to access over $5 million in financial aid through the Unmet Needs Roundtable that was used to meet needs that could not be met using CDBG-DR funds. .

- Sandy Temporary Rental Program: Since June 2015, Build It Back, the Mayor's Fund to Advance NYC, and New York Disaster Interfaith Services (NYDIS) have assisted vulnerable and under-resourced homeowners through the privately-funded Sandy Temporary Rental Program. Administered by NYDIS and funded by the American Red Cross, Robin Hood Foundation, the Building Trade Employers' Association, the Salvation Army, and the United Methodist Committee on Relief, the Sandy Temporary Rental Program operates in conjunction with Build It Back's Temporary Relocation Assistance program, which provides rental reimbursement for homeowners relocated for at least a month due to construction. This model was used in developing Build It Back's Temporary Housing Services' contract, which is designed to provide direct assistance to applicants that may not have the financial ability to relocate in advance of construction.

- The Department of Housing Preservation and Development's (HPD) loan programs will leverage CDBG-DR funds, beginning with programs launched immediately after the storm: Neighborhood Housing Services (NHS), through its Emergency Loan Program, provided owner-occupants of one- to four-unit homes with loans and grants to conduct emergency repair work. 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.

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 ($ in '000s)

Program Allocations	CDBG-DR Allocations (Excluding Admin and Planning)	% of Funds Projected to Benefit Low/ Mod Persons	Total Funds Expected to Benefit Low/ Mod Persons
Housing Programs	**$ 2,967,173**	**48%**	**$ 1,430,492**
Build it Back Single Family	2,213,056	45%	995,875
Build it Back Multi-Family	426,000	25%	106,500
Build it Back Temporary Disaster Assistance Program (TDAP)	8,581	100%	8,581
Build it Back Workforce Development	2,536	100%	2,536
Public Housing Rehabilitation and Resilience (NYCHA)	317,000	100%	317,000
Business Programs	**$ 91,000**	**45%**	**$ 40,970**
Hurricane Sandy Business Loan and Grant Program	58,000	56%	32,480
Business PREP	3,000	33%	990
Resiliency Innovations for a Stronger Economy (RISE:NYC)	30,000	25%	7,500
Infrastructure and Other City Services	**$ 417,821**	**78%**	**$ 324,116**
Public Services	223,107	99%	220,876
Debris Removal/Clearance	6,654	35%	2,329
Interim Assistance	97,129	29%	28,168
Rehabilitation/Reconstruction of Public Facilities	90,930	80%	72,744
Resiliency Programs	**$ 473,237**	**78%**	**$ 368,450**
Raise Shorelines	7,700	0%	-
Coney Island Resiliency Improvements	15,000	50%	7,500
Staten Island University Hospital	28,000	0%	-
East Side Coastal Resiliency	338,000	100%	338,000
Hunts Point Resiliency	45,000	51%	22,950
Breezy Point Risk Mitigation	14,537	0%	-
Sheepshead Bay Courts Infrastructure	20,000	0%	-
Resiliency Property Purchase Program	5,000	0%	-
GRAND TOTAL	**$ 3,949,231**	**55%**	**$ 2,164,029**

($ in '000s)

**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.*

VII. HOUSING

Needs Assessment

Non-public housing (Build It Back)

To estimate the number and severity of damaged buildings, the City analyzed field inspections and data sources that included 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 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. The New York City Housing Recovery Portal, in addition to registration data collected through the City's 311 system, provided 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.

As of September 2016, the City's original 2013 estimates of housing damage align with the applicants that are anticipated beneficiaries of federal, State, and City programs, including Build It Back.

Homeless Population Needs Assessment

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.

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, the Department of Homeless Services (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.

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, 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.

Several DHS facilities suffered damage as a result of the storm. 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. Additional information can be found in the Infrastructure and Other City Services section.

Post-Storm Homeless

The City-managed hotel program ended in the fall of 2013, serving 3,132 households. DHS provided these households with case management services with the goal of relocating evacuees home or to other permanent housing as quickly as possible through referrals to City agencies. Some 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.

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 for more information.) In addition, DHS provided households with the same services that more traditionally homeless household receive, including assistance relocating to permanent housing.

Remaining Unmet Housing Needs

Assessing the Demand

Build It Back is the City's program to assist homeowners, landlords, and tenants in the five boroughs whose homes and properties were damaged by the storm. For NYC Build It Back, the assessment of demand was further refined by registrations for the program. Registration for the City's Build It Back program was

announced on June 3, 2013. As of the closing date for registration (October 31, 2013), the program received registrations for more than 20,000 buildings, encompassing 60,000 residential units.

Of the initial 20,725 applicants in 2013, 4,771 did not complete an initial eligibility review.

The 15,954 applicants that completed the initial eligibility review aligns with the numbers of single family homes damaged and the current projected numbers of single family homes with major and moderate damage that are anticipated beneficiaries of federal, State, and City programs, including Build It Back.

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. Prior to the registration opening, over one thousand residents attended these informational events. Additional sessions were held in August and September while registration was open. 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 other 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.

Outreach efforts also relied on input and help from community partners, long-term recovery groups, and elected officials. An interagency team, led by HPD, Housing Development Corporation (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 the 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.

To serve Program registrants, Build It Back collaborated with community leaders to open intake Centers in the heart of impacted communities. In addition to four full-service intake Centers in Brooklyn, Queens, and Staten Island, the Program opened a dozen Build It Back satellite centers in Mill Basin and Howard Beach and staff conducted 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). In total, Build It Back conducted more than 450 sessions.

In 2014, Build It Back staffed its intake Centers with experienced City managers and recruited new homeowner representatives to process applications through completion.

In addition to the walk-in Centers, the Program also operates a centralized Customer Call Center, which fielded over 800 calls a week from applicants, and launched a web portal for applicants to review their status and upload documents.

To help remove obstacles to applicant participation in the Program, Build It Back contracted with the Center for New York City Neighborhoods (CNYCN), a non-profit agency that partners with local community-based organizations to provide housing, counseling, and legal services to homeowners. Counselors were out-stationed in the Build It Back Centers and to date, have served more than 4,000 applicants. The most utilized types of counseling are related to

- Transfer Amounts and Coordination of Benefits (30 percent),
- SBA disaster loan cancellation (18 percent),
- Temporary Relocation Assistance and Tenant Advisory Services (17 percent),
- Mortgage, Foreclosure and Ownership issues (13 percent), and
- Pathway and Benefit Selection (10 percent).

In summer 2015, when application processing was nearly complete, Build It Back identified 4,000 unresponsive applicants who had not completed intake or were found eligible but had not selected a Program pathway. As part of the outreach campaign, senior citizens, disabled individuals, and low- and moderate-income households were targeted for specialized outreach. Build It Back engaged local community groups, Disaster Case Managers, and volunteers in going door to door to reach the harder-to-serve applicants.

To learn about and to 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.

Cost to Rehabilitate, Reconstruct, or Reimburse Damaged Buildings

After review of eligible applicants, funding from other sources, financial needs of applicants, costs to reconstruct or rehabilitate properties based on design details, regulatory requirements, and community input, the City has concluded that the likely overall cost to complete the programs to serve all substantially damaged or non-substantially damaged buildings registered for the Build It Back Program is approximately $2.65 billion:

- Approximately $2.213 billion is needed to reconstruct, acquire, rehabilitate, elevate or reimburse single family homes.
- Approximately $426 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 $8.6 million is needed for temporary rental assistance to address tenant population not served through the Build It Back Single or Multi-Family Programs

Housing (excluding public housing) Unmet Need

To understand the unmet need to be addressed by City programs, the City built upon the 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, acquisition, and mitigation measures. The demand model has been adjusted to align with eligible applicant pathway information; actual data on available funding; final designs based on site surveys and borings, regulatory requirements, and community input; and additional new needs to ensure all eligible applicants are served. The current total unmet need for all New York City Sandy-impacted housing, including NYCHA, is estimated at $5.3 billion.

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.

In Action Plan Amendment 16, the Build It Back Multi-Family program allocation is reduced by $50 million dollars. Post-disaster estimates are constantly refined as data moves from estimates to actuals. HUD encourages grantees to evaluate changes to confirm initial assumptions remain accurate. The following table, encapsulating the evolution of the Multi-Family allocation, is a representation of this process.

Action Plan Amendment #	Original Action Plan	Amendment 1	Amendment 5B	Amendment 8B	Amendment 11	Amendment 16
Date of HUD approval	May 10 2013	Aug 15 2013	Nov 25 2013	Apr 13 2015	Feb 1 2016	Proposed Sept 22 2017
HPD Multifamily Program Budget	$ 225,000,000	$ 215,000,000	$ 346,000,000	$ 416,000,000	$ 476,000,000	$ 426,000,000
Residential Building Mitigation Program*	$ -	$ 60,000,000	$ 60,000,000	$ 60,000,000	$ -	$ -
Total	**$ 225,000,000**	**$ 275,000,000**	**$ 406,000,000**	**$ 476,000,000**	**$ 476,000,000**	**$ 426,000,000**

* The Residential Building Mitigation Program was originally categorized as a Resiliency program. Amendment 11 merged the program with the BIB Multi-Family program.

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 the 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.

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

Residential Antidisplacement and Relocation

To find information regarding the City's Residential Antidisplacement and Relocation Assistance Plan (RARAP) please refer to the City's Consolidated Plan. Additionally, a Build It Back Single Family-specific RARAP can be found in the Program's Policy Manual, which is published on the City's Build It Back website at http://www.nyc.gov/html/recovery/html/home/home.shtml.

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 $2.21 billion overall in providing assistance to all homeowners whose primary residences or rental properties with year-round tenants were destroyed or experienced damage.
- **Multi-Family Buildings**: The City will invest $426 million overall in its multi-family housing stock – both affordable and market rate.
- **Temporary Rental Assistance**: The City will invest $8.6 million for the TDAP rental subsidy program to serve low-income households displaced by Hurricane Sandy.
- **Workforce Development:** The City will invest $2.5 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).

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

- **Coordinated outreach and branding:** The program has a single branding (NYC Build It Back) that will be leveraged in all its communication and outreach activities. The housing recovery program has a common outreach strategy, executed by the various participating City housing agencies that is supported by the Mayor's Office and coordinates with the State outreach when appropriate. The City will also leverage the broad network of community service and volunteer organizations with well-established ties to our communities.
- **Common intake and processing staff and procedures:** A single City program management entity, the Mayor's Office of Housing Recovery Operations (HRO), oversees intake and processing of all applications before applicants are connected directly with a specific program path and oversight agency. Program path options are based on building type and an assessment of damage and financial need during 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:** Build It Back leverages the expertise of 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 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 to leverage the expertise and capabilities of private non-profits, community-based organizations, Community Development Financial Institutions, and contractor and consultant support.

Updated Contracting Efficiencies: HRO has been undertaking a process to improve the efficiency of its operations by directly taking on the responsibility of overseeing contracts related to Build It Back, as many of these contracts had previously been held by other City agencies. Six contracts related to pre-construction services and hazard mitigation services are currently held by the NYC Economic Development Corporation (EDC), a subrecipient and quasi-City agency. As part of the aforementioned process, HRO, on behalf of the City, will conduct new non-competitive procurements with the current vendors under the EDC contracts and enter into replacement contracts that contain the same substantive provisions, and the same pricing, as the current EDC contracts. These six new contracts will replace the current contracts for preconstruction services (Dewberry Engineers, Inc.), architectural scoping services (IBTS), construction inspection services (CDM Smith; IBTS), and hazard testing (KAM Consultants Corp.; Omega Laboratories, Inc.).

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. Following the storm, 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. This information can be found in Appendix F.

Build It Back Single Family

PROGRAM OPTIONS:

The City offers different assistance types to the owners of Sandy damaged homes providing flexibility to homeowners to meet their needs. Assistance types offered are based on an analysis of the damage to the applicant's home and other factors such as location, site constraints, and building type. Assistance will fall into one of the following categories:

1. **Reconstruction (Rebuild) Pathway:** The complete reconstruction of a home which was destroyed or is determined by the Program to be more feasible to reconstruct than to repair. Homes will be rebuilt so that they are in compliance with New York City's latest elevation requirements.
2. **Rehabilitation with Elevation Pathway:** The repair and elevation of a home that was damaged by Sandy. Elevation will be offered to homes where required by New York City's Building Code and where elevation is requested by the applicant and the Program determines that it is reasonable to elevate. Elevation includes the repair of a damaged home so that the residential portion of the home is located above the base flood elevation. This activity may involve the physical lifting of a home or the abandonment of the portion of the home that is below the minimum elevation height.
3. **Rehabilitation Pathway**: The repair of a home that experienced moderate damage from Sandy. Rehabilitation may also include mitigation against future loss through the use of appropriate alternative mitigation measures such as the elevation of critical utilities or filling in subgrade space.
4. **Optional Relocation Assistance:** Temporary housing and other related assistance provided to homeowners who are receiving reconstruction, elevation, or repair assistance that requires relocation during construction.
5. **Reimbursement:** Direct payment to applicants for eligible out of pocket repair, elevation, or rebuild construction expenses that were incurred prior to HUD-mandated deadlines.
6. **New York City Acquisition for Redevelopment Pathway:** The purchase of a storm-damaged property by the program for redevelopment in the future.
7. **New York City Buyout Pathway:** The purchase of a storm-damaged property by program so that future development on the site can be restricted.
8. **Breezy Point and Edgewater Park Cooperative Relocation:** A resettlement grant provided to the owners of storm-damaged homes in certain cooperative communities so that they may relocate to a new home located outside of the cooperative.
9. **NY Rising Acquisition for Redevelopment or Buyout:** The purchase of a storm-damaged property through the State of New York's NY Rising program.
10. **Resettlement Incentives**: Resettlement incentives will include, but are not limited to, funding provided to eligible homeowners to relocate to a new primary residence.

PROGRAM OBJECTIVE AND DESCRIPTION: The City defines "homes" as single-family properties containing one to four residential units and/or individually owned condominium or cooperative units that are either owner-occupied or occupied by a year-round tenant. Pursuant to the federal requirements, second homes and vacation homes are not eligible for assistance. As a condition of receiving assistance, property owners must agree to 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. The City will incorporate mechanisms in its programs to prevent fraud, waste, and abuse and to allow for scale.

If assistance is provided to fund the repair or reconstruction of a home, the Program will require that the work be performed in compliance with the Green Building Standard specified in the March 5th, 2013 *Federal Register* Notice, as applicable. The Program has distinct policies that specify the application of the Green Building Standard for repair and reconstruction projects.

APPLICANT UNMET NEEDS ANALYSIS: 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 or provide other assistance 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 by an applicant from other sources for repair, reconstruction or for other purposes that may potentially duplicate Build It Back assistance.
- Funds spent by an applicant to repair or reconstruct their home.
- Funds spent by an applicant on other allowable expenses.
- Funds that were received by applicants but which were not yet spent on eligible construction or non-construction activities are considered "unspent" funds. Unspent funds include amounts received by an applicant for repair or reconstruction which were spent on ineligible items or services. The Program also anticipates that it will collect a number of Increased Cost of Compliance (ICC) grant payments for certain elevation projects that will also reduce an applicant's unmet need after assistance has been provided.

Unspent funds are pooled with the assistance provided by the Program to meet an applicant's total need. Such funds are called "transfer amounts" because the applicant must transfer the funds to the Program in order for a construction project to proceed. Applicants that cannot fully fund their transfer amount may be eligible for a reduction in a construction scope of work to reduce their transfer amount, consistent with federal duplication of benefits requirements. In cases where the Program is not performing construction, but is instead providing a cash award to an applicant, an applicant's transfer amount will reduce their award.

2016 UPDATED PROGRAM UNMET NEEDS ANALYSIS: The Build It Back Single Family Program is designed to meet the unmet needs of applicants according to the analysis outlined above. In September of 2016, the Build It Back Program performed an analysis of its population served to date and the remaining unmet needs within its applicant population. In its prior Action Plan (incorporating Amendments 1-11), the Program anticipated that it would require $1,713,056,000 to serve its total applicant population. Based upon the revised September 2016 analysis, the Program has determined that it will require $2,213,056,000 to serve its total eligible population so that it may meet all of the unmet, eligible disaster recovery needs of impacted New Yorkers. In order to meet this total need, the City of New York is increasing the Build It Back Program's CDBG-DR allocation to $2,213,056,000.

Adjustments to unmet need identified in this Action Plan include the following:

Design and Construction Requirements: The City has identified many design and construction requirements that were not included in its post-Sandy housing reconstruction analysis or the cost model including:

- Addressing complex and neighborhood-specific regulatory requirements including residential sprinklers, septic systems and compliance with updated 2014 New York City Building Code requirements for life-safety.
- Requests for access to elevated homes through the use of vertical platforms and stair lifts and the implementation of Fair Housing accessibility requirements for some attached and semi-detached homes.
- Enhanced structural requirements due to soil conditions, site constraints, high water table, flood zones, location adjacent to major bodies of water that require the use of enhanced helical piles, dewatering and drainage.
- Increased construction complexity to address issues such as lead based paint, asbestos and the poor-quality and age of existing housing stock.
- The inability of the Program to reuse existing foundations and the need for complete foundation demolition and the installation of multiple, deep helical piles for new foundations due to soil conditions.
- Design adaptations required to address community and homeowner input including providing a second means of egress, enclosed foundations, and over-elevation.
- The need for additional, complex construction in certain housing types such as split level-homes, homes with masonry first floors, slabs on grade, attached homes and semi-attached homes that was not anticipated when the Program prepared its initial damage assessments.
- The City's use of additional contract capacity to ensure a construction schedules that could assist all homeowners in their recovery in a timeframe to meet HUD-mandated obligation and expenditure deadlines.
- Strengthening market conditions throughout the Tri-State area have led to increased construction costs through competition for materials, skilled labor and professional services.
- Expanded insurance requirements and the use of Contractor Controlled Insurance Policies that were purchased to expand contractor and skilled labor capacity to reduce overall program schedule.

Increased Homeowner Assistance: The City provided new and expanded assistance to homeowners with financial needs to ensure homeowners do not forego elevation or reconstruction due to financial hardship including:

- Optional relocation assistance and additional services and costs for homeowners through the Temporary Housing Services contract
- Allowance by the City for homeowners to decrease transfer amount payments to the City by expanding allowable expenses to include, temporary repairs, design costs, temporary housing, and other disaster related expenses not related to permanent repairs where appropriate
- Additional reimbursement to SBA loan population: Based on community input, the City performed an analysis of its population and discovered that many applicants that were reimbursement eligible had also received Small Business Administration disaster loans that had requirements that were not clearly understood and created significant financial hardships for many borrowers. The risk of financial hardship was particularly evident when the Program considered that the average age of applicants who had both received SBA loans and were reimbursement eligible was 59. In order to address this situation, Build It Back determined that it was fair and equitable to maximize the reimbursement provided to the recipients of SBA loans to address issues associated with the SBA

loan application process and to help ensure that the recipients of SBA loans were not placed in financial risk due to disaster-related debt.

Duplication of Benefits: Reevaluation of actual applicant "transfer amounts" calculated from funds that were received by applicants, but which were not yet spent on eligible construction or non-construction activities.

Expanded and Adaptive Pathways: The City developed new Program flexibility and new Program options including City-administered acquisition or buyout programs and limited new intake to ensure all eligible applicants can be served including:

- Homes that cannot be offered construction assistance: The City, based upon feedback provided by HUD, initiated a site and design review process in 2015 to review individual projects using objective criteria to detect homes that would not be offered construction assistance for rehabilitation with elevation or reconstruction due to site conditions, regulatory constraints, and cost reasonableness. These eligible applicants are offered the option of participating in the City-administered acquisition and buyout program.
- Attached homes or homes with shared infrastructure where construction or acquisition options are dependent on one or more neighbors: The City expanded intake on a limited basis to allow homes dependent on neighbor participation to proceed with elevation or reconstruction focusing on LMI neighborhoods. The City's acquisition program was also developed to purchase properties in this category.

Long-Term Planning: The City believes that all of its design, site evaluation and construction efforts will positively impact the City's long-term planning efforts by providing templates for identifying hazardous and vulnerable areas in the future, limiting and restricting development in certain areas that pose a risk to life or property, and planning the City's longer-term resiliency efforts. One prime example of the benefit of the Program's efforts in this area has been the development of elevation strategies for attached and semi-attached homes that are new and unique and the use of alternative mitigation measures in impacted structures that cannot be elevated.

Cost reasonableness requirements: The City developed a robust system to ensure that costs for the program are necessary and reasonable. This analysis considers multiple factors related to market conditions, labor availability, site constraints, housing density, and New York City construction industry requirements including insurance requirements and regulatory 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. The Program may, however, offer increased benefits to LMI households as defined herein.

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 potentially eligible. Second homes as defined by IRS Publication 936 are not eligible for construction, reimbursement or relocation assistance. Second homes may be eligible for acquisition or buyout assistance.

Homes that are deemed to be either substantially damaged or substantially improved will be elevated as required by New York City Building Code to mitigate against future losses. The City's intention is to use

Preliminary Flood Insurance Rate Maps (P-FIRMs) and to require that CDBG-DR-funded projects meet P-FIRM elevation, plus freeboard, where required as 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.

PROGRAM PRIORITIES: Previously, due to funding limitations, the Program employed a prioritization schedule to assist New Yorkers with the greatest need based on level of damage and Area Median Income (AMI). Subsequently, the Program determined that all applications will be processed regardless of level of damage or level of income. Although the Program will no longer classify applications using the priority system, the Program will continue to classify all applications as meeting either the Low to Moderate Income Household, Low to Moderate Income Area, Urgent Need or Slum and Blight 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:

Reconstruction (Rebuild)

The Program offers assistance to all eligible homeowners whose projects meet the Low to Moderate Income Household 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-DR funded portion of the design and budget of all rebuild projects.

Homeowners managing their own construction projects must make a commitment to achieve construction completion within a reasonable timeframe. The City will conduct a damage assessment, compliance review, and environmental review in accordance with HUD guidelines. The homeowner must adhere to standards determined by the City, and agree to City construction inspections to ensure timeliness and quality.

Rehabilitation with Elevation and Rehabilitation: The Program offers assistance to all eligible homeowners whose projects meet the Low- to Moderate-Income Household or Urgent Need National Objectives to repair or repair and elevate their Sandy damaged residential property. Rehabilitation (repair) assistance will be provided through city-administered construction contracts, owner-managed contracts, and direct grants, as further described below.

Eligible homeowners may choose to utilize a city-approved contractor or they may choose to manage their own construction project using a construction contractor of their choice. The City will inspect the completed work and will make payments directly to the contractor. The Program must review and approve the CDBG-DR funded portion of the design and budget of all repair and repair and elevation projects.

The Program also offers direct grant assistance to all eligible homeowners whose projects meet the Low to Moderate Income Household 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 repair projects (those projects not requiring elevation), homeowners will receive up to two payments with the final payment being issued upon the passing a final inspection. Under the Direct Grant option, 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 grants or managing their own construction projects must make a commitment to achieve construction completion within a reasonable timeframe. 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.

Optional Relocation Assistance

The City has determined that certain homeowners could be exposed to potentially dangerous conditions in their homes prior to completion, unless it is able to provide temporary relocation assistance to homeowners who are voluntarily displaced. Many of these homeowners face the burden of incurring significant rental or mortgage expenses that may prevent them from participating in Build It Back's rehabilitation, rehabilitation with elevation, and reconstruction options or vacating their damaged homes prior to the start of construction. Accordingly, the City provides relocation assistance to homeowners who are eligible to receive Build It Back construction assistance to repair or replace their owner-occupied properties.

Relocation assistance may include apartment rental, hotel stays, required deposits, fees paid to rental brokers, and other necessary, reasonable, and eligible costs associated with relocating from a home during construction such as moving and storage assistance.

Relocation assistance will be made available to all homeowners whose projects meet the Low to Moderate Income Household or Urgent Need National Objectives when Build It Back determines that an applicant must vacate his or her home. This determination is made as a part of Build It Back's standard process and assistance will be made available to all existing Build It Back homeowners that meet the Program's eligibility criteria for construction assistance.

Eligible Build It Back homeowners will not be required to apply to the Program for this benefit. Relocation assistance will be made in the form of reimbursements to the homeowner for expenses incurred or in the form of direct placement into suitable housing. 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.

Reimbursement

The Program offers reimbursement assistance to all eligible homeowners that have completed Sandy-related construction work with personal resources whose projects meet the Low to Moderate Income Household 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 or costs associated with contracts signed before the earlier of a) the homeowner's application to the Program or b) October 29, 2013 will be eligible for reimbursement.

The City's reimbursement program provides a grant amount that covers all or a portion of eligible reimbursable expenses and includes reviews to ensure that reimbursable expenses meet applicable program requirements. Most homeowners are eligible to receive up to 60 percent reimbursement for eligible

expenses. Homeowners who received SBA disaster loan payments and landlords who were originally eligible to receive reconstruction or elevation, but whose pathways were changed to repair and/or reimbursement and whose tenants moved out of their rental unit as directed by Build it Back, are eligible to receive up to 100% of reimbursable expenses. The program will review the applications of potentially eligible homeowners and landlords who previously received reimbursement prior to the modification to determine if an additional reimbursement amount up of to 100 percent of eligible expenses will be paid. The program provides additional reimbursement to these homeowners and landlords because of additional expenses that they incurred as a result of Hurricane Sandy.

New York City Acquisition for Redevelopment

Under the Build It Back program, the City will provide a program path to acquire properties for the repair or reconstruction of a home or cluster of homes in ways that mitigates future risks in limited and targeted cases.

The City will offer an Acquisition Program as an alternative 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 Household, Low to Moderate Income Service Area, Urgent Need or Slum and Blight National Objectives. Properties that are purchased under the Acquisition Program will be redeveloped for residential 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 conditions, development restrictions or other conditions that currently prevent the feasible reconstruction or repair of the residential units located on the property. In these cases, the conditions are not permanent in nature and they do not justify purchasing the property under the Program's buyout option.
- The purchase of the property is necessary to accomplish another Program goal such as elevating or reconstructing an attached or neighboring home, achieving Program cost savings or serving a neighborhood-level goal such as improving privately owned sewer or water infrastructure. The Program will make determinations under this category on a case by case basis.
- The property is subject to zoning, construction feasibility, 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 may identify properties that meet the above criteria. In such cases, the owner, including bank-owned properties obtained through foreclosure or similar means, may be invited to participate in this specific program activity even if they had not previously applied to the Program.

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 resiliency to future storms, the transfer of undevelopable land to adjacent owners of developed land, 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. In such cases, owners of these strategic properties, including bank-owned properties obtained through foreclosure or similar means, may be invited to participate in this specific program activity even if they had not previously applied to the Program.

The City will acquire identified properties for post-storm fair market value as determined by an independent appraisal.

After purchase, the City may demolish residential and commercial structures on the property and clear the property of hazards or other improvements requiring clearance. The City may also require that the new owner of the property perform these activities after disposition. If required, the City or the new owner will also undertake the remediation of known or suspected environmental contamination, where feasible.

Upon acquisition of an eligible property, the City may demolish residential and commercial structures on the property and clear the property of hazards or other improvements requiring clearance. The City may also undertake the remediation of known or suspected environmental contamination, where feasible. Alternatively, the City may repair or rebuild the existing structure(s) to allow for future use. The City may also require that the new owner of the property perform demolition, clearance and remediation activities after disposition.

The primary goal of the Acquisition Program is to purchase properties that will be redeveloped for residential use. Properties that cannot immediately be redeveloped, but which can be redeveloped in the future, may be sold to a new owner who will hold the property for an identified public purpose until the property can be redeveloped. The Program employs this strategy in cases where the property cannot be redeveloped currently, but classification of the property as a Buyout is inappropriate because the City does not wish to permanently restrict the redevelopment of the property.

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 transfer of developable properties to new owners who will be required to redevelop individual properties or groups of properties for residential housing in a manner that ensures greater resiliency to future storms,
- The transfer of currently undevelopable properties to new owners to hold the land for a public purpose until the land becomes developable in the future,
- The transfer of properties to new owners in order to facilitate the correction of hazardous conditions upon the property or in the area of the property, such as the installation of private sewer or water infrastructure or in order to establish a safe means of ingress and egress from an impacted neighborhood or area.

The City will dispose of acquired properties by sale, lease or donation. The Program may dispose of properties to residential developers, non-profits or other private owners, including the owners of neighboring properties. The method of disposition will be established by the Program according to the ultimate end-use of the property that will be mandated by the City. All proceeds obtained from the sale or lease of the property, if any, shall be program income.

New York City Buyout

The City believes that buyouts may 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. Under the Build It Back program, the City will provide a program path to acquire properties for use as open space in ways that mitigate future risks in limited and targeted cases.

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 and ensure that no residential development is permitted to be built in such locations. 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 Household, Low to Moderate Income Area, Urgent Need, or Slum and Blight National Objectives.

Properties that are purchased under the Buyout Program will be converted to open space, returned to nature, or integrated into the City's flood protection measures. 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 may identify properties that meet the above criteria. In such cases, the owner, including bank-owned properties obtained through foreclosure or similar means, may be invited to participate in this specific program activity even if they had not previously applied to the Program.

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 the New York City Acquisition section above, such as resettlement incentives.

Upon purchase of a property under the Buyout Program, the City or the ultimate recipient of the property will demolish residential and commercial structures on the property and will clear the property of hazards or other improvements requiring clearance. The City or the ultimate recipient of the property 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.

Breezy Point and Edgewater Park Cooperative Relocation

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 Household 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, resettlement 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 floodplain, in accordance with HUD requirements. The resettlement incentive is based upon the pre-storm value of the structure that was or will be demolished and, if feasible, necessary, and cost-reasonable, the City will offer some or all of the alternative benefits listed in the Resettlement Incentive section below. The resettlement incentive may also not include the value of the land itself, which is tied to the condominium or cooperative shares, if the owner agrees to surrender their shares to the cooperative and the cooperative enters into an agreement with the City governing the resale of the shares and the redevelopment of the property.. The homeowner may also opt to sell their ownership interest in the propertyon the open market 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. A primary goal of this program option is to ensure that any residential structures that are rebuilt on the property in the future are fully code-compliant and that they meet floodplain management requirements.

NY Rising Acquisition for Redevelopment and Buyout

The City has partnered with New York State's NY Rising program to provide a separate acquisition and buyout benefit to certain Sandy-impacted homeowners living in New York City. Homeowners interested in acquisition were processed through the Build It Back registration, intake, and eligibility process. All eligible Build It Back homeowners that met the acquisition criteria defined by NY Rising were referred to the State until the State's deadline to accept new applicants expired. Applications that were determined to be eligible for acquisition after the State ceased accepting new referrals are provided the opportunity to be acquired by the New York City program. The City, at its option, may facilitate the transfer of properties acquired by the State to the City program. Once this transfer is completed, the City will be responsible for activities related to the property transaction.

The City is also 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 may be referred to the State program. The City will pursue targeted buyouts where appropriate should program options, including State buyouts, become unavailable or infeasible.

Resettlement Incentives

In order to facilitate the purchase of properties by the City and in order to enable the long-term recovery of property owners who are impacted by participation in the City's Acquisition, Buyout or Cooperative Relocation options, the City will combine its purchase or cooperative relocation offers with resettlement incentive payments, which are described as "Housing incentives to resettle in disaster-affected communities" in section VI(A)(29) of the HUD March 5, 2013 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. The City is offering resettlement incentives to eligible applicants in order to address the high cost of purchasing replacement housing in New York City, particularly for low to moderate income homeowners whose homes have low pre-storm values, and to incentivize resettlement outside of the floodplain. The City is also providing resettlement incentives as an alternative to the construction options outlined above because of the unique challenges that exist with elevating and reconstructing homes in New York City's impacted communities, including factors such as difficult site conditions and the high cost of complex construction projects. Accordingly, the incentives are also sized in a manner to encourage applicants to participate in the Program's acquisition, buyout or cooperative relocation options as an alternative to participating in one of the Program's construction pathways.

The City will provide housing incentives under the Low to Moderate Income Household and Urgent Need National Objectives.

Resettlement incentives will be sized as follows:

Base Resettlement Incentive: Owner-occupied homes that are purchased by the Program through its Acquisition option are purchased at the post-storm value of the land and the Sandy-damaged structure. The Program has determined that the post-storm value is insufficient to allow owner-occupants to purchase replacement housing that is comparable to their storm-damaged property. This incentive is provided to all eligible applicants who sell their owner-occupied properties to the Program in order to encourage them to participate in the acquisition pathway and to assist such applicants in locating and acquiring replacement housing. The amount of the Basic Resettlement Incentive is established by the Program for each applicant and it is the Program's reasonable estimate of the amount of funding that the applicant must receive so that they can purchase replacement housing that is similar to their pre-storm housing.

Supplemental Resettlement Incentives: In order to defray the high cost of purchasing replacement housing in New York City and in order to encourage resettlement within the City, the Program may offer one or more of the following supplemental resettlement incentives for projects currently in a construction pathway and which meet objective cost-effectiveness criteria, including, but not limited to, projects with complex designs, unusual site conditions, etc. Supplemental Resettlement Incentives are only made available to applicants who were in a construction pathway as of September 23, 2016, and who purchase a new home for resettlement. The amount of all supplemental resettlement incentives, together with property purchase or cooperative relocation costs, cannot exceed the purchase price of the applicant's new home.

The specific incentives are outlined below:

- *NYC Residency Resettlement:* The Program intends to offer a resettlement incentive in the amount of $50,000 to owner-occupants who sell their property to the Program, resettle within New York City, and agree to maintain ownership of their new home for a period of five (5) years. This resettlement incentive may be combined with an additional incentive in the amount of $50,000 provided to homeowners who also agree to a new home located in New York City that is located outside of the 100-year floodplain. The Program may provide an incentive in the amount of $50,000 to homeowners whose households meet the Program's low to moderate income criteria.

- *Outside of NYC Residency Resettlement:* The Program may offer resettlement incentives to owner-occupants who sell their property to the Program, resettle within the United States, and agree to maintain ownership of their new home for a period of five (5) years. There are two potential incentives which may be combined. The first resettlement incentive in the amount of $50,000 may be provided to homeowners who relocate to a new home located in the United States that is located outside of the 100-year floodplain. The second resettlement incentive in the amount of $50,000 is to homeowners who relocate to a new home in the United States and whose households meet the Program's low to moderate income criteria.

- *Rebuild Relocation:* Where repair or reconstruction is infeasible or unavailable to an applicant, the Program will evaluate the option of providing the construction or repair 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. Applicants receiving Rebuild Relocation are not eligible to receive any acquisition or relocation funds from the Program. The Program ceased offering the Rebuild Relocation option on September 23, 2016, when it began offering supplemental housing incentives.

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. The City will further provide program funding for eligible costs associated with moving expenses to replacement housing in a manner that is consistent with 49 CFR 24.302, which allows for the payment of a fixed amount based upon the number of rooms of furniture that must be removed from the home.

CDBG-DR ALLOCATION: $2,213,056,000

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 Properties) (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) and Public Services (24 CFR 570.201(e)).

NATIONAL OBJECTIVE: The program will serve populations that meet the National Objectives: Low to Moderate Income Household, Low to Moderate Income Area, Low to Moderate Buyout, Urgent Need or Slum and Blight. All beneficiaries demonstrate an urgent need, as they live within a Presidentially-declared disaster zone. The City expects that approximately 45 percent of funding for Build It Back will be directed to low- and moderate-income households.

PROJECTED ACCOMPLISHMENTS: Through the total funding for Build It Back, the City plans to serve approximately 8,500 single-family homes including 12,500 units.

PERFORMANCE SCHEDULE: The City's schedule is as follows:

- Outreach – Spring 2013
- Registration – Summer to Fall 2013
- Intake, eligibility review, and case management – Summer 2013 to Winter 2015
- Reimbursement – March 2014 to December 2014
- Design, Construction, and Warranty – 2014 to 2018
- Acquisition, Buyout, and Resettlement Incentives – 2015 to 2018

Build It Back - Multi-Family Building Rehabilitation

PROGRAM OBJECTIVE AND DESCRIPTION: The City has allocated $426 million for rehabilitation, resiliency and reimbursement grants and loans 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.

HPD also plans to spend program funds to rehabilitate and retrofit existing affordable housing developments. The portfolio of existing affordable housing includes, but is not limited to 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 have/had federal mortgage subsidies).

This program includes reimbursements for storm-related costs that were previously incurred by owners. Costs incurred after (or costs associated with contracts signed after) October 29, 2013, will not be eligible for reimbursement. The types of eligible costs include permanent repairs and temporary or emergency repairs such as those to stabilize damage and prevent future loss. Applicants seeking reimbursement must comply with all program procedures.

The CDBG-DR funds will be conveyed as no-interest or low-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 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 Federal statutory requirements. Any structures deemed to be substantially damaged or improved must meet all requirements for flood protection under Appendix G of the New York City building code.

As part of its assistance, the Multi-family Program will conduct resiliency improvements on some properties receiving assistance through the Program. The Program will also determine resiliency measures according to the damage suffered from Sandy and potential risks from future flood events to building residents and systems. Potential resiliency measures may include, but will not be limited to elevating utilities, back-up power generation, implementing energy-efficient measures such as solar, combined heat and power or new boilers, implementing dry flood proofing measures such as flood doors or barriers, and wet flood proofing measures such as flood resistant materials and improved storm water management systems. Mitigation measures will help the City avoid catastrophic losses in building types that have proven most vulnerable during Sandy, enable buildings to recover more quickly, and allow residents to reoccupy buildings sooner in the event of future flooding.

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 Multi-family Housing Rehabilitation Program (HRP) and the Participation Loan Program (PLP) – to meet the needs of buildings damaged during Sandy. For most properties, the program will closely resemble the HRP Program that uses public money to repair buildings without capacity to absorb additional debt.

2. Partner lending: The City will enter into a subrecipient agreement with two 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.
3. HDC lending: 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:

The Program will prioritize assistance for the following types of projects:

- Properties requiring loans to restore basic habitability.
- Significantly damaged buildings with basic services restored but in need of major rehabilitation.
- Properties that can benefit from comprehensive resiliency measures to prevent future loss
- 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 meet the Low- and Moderate-Income Housing (LMI) and Urgent Need National Objectives.

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: $426,000,000

Note: As of Amendment 11, this allocation now includes $60 million of resiliency improvements that was originally described separately in the Resiliency section as the "Residential Building Mitigation Program."

PROJECTED ACCOMPLISHMENTS:
Approximately 19,700 households being served, 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). HPD intends to obligate funding for entire multifamily pipeline before the fall of 2018, and aims to disburse all funding by Q3 2020.

In the course of construction, HPD typically holds back retainage (a portion of the agreed upon contract price deliberately withheld until the work is substantially complete to assure that contractor or subcontractor will satisfy its obligations and complete a construction project or to ensure that programmatic and regulatory compliance requirements are met, such as Davis-Bacon, Fair Housing, or any other programmatic and regulatory compliance requirements, unless otherwise specificed by HPD). As a result, expenditures may lag construction.

Build It Back - 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.

Since 2013, the New York City Department of Housing Preservation and Development (HPD) assisted 225 households through TDAP. In June 2015, when Section 8 vouchers became available, all potentially eligible TDAP participants were provided the opportunity to apply for long-term Section 8 voucher assistance. For some families, there were delays in their application for Section 8 assistance which led to rental arrears. Delays can be attributed to applicants' uncertainty as to whether they would like to remain in their TDAP assisted apartment or to their confusion regarding changing application processes due to the change in source of subsidy.

A limited number of households experienced a gap in subsidy. Section 8 assistance could not begin before a tenant submitted a complete Section 8 application, an owner formally accepted the tenant under the Section 8 program, and a unit passed inspection. Although participants continued to pay their share of the rent, the landlord could no longer receive the subsidy to close the gap between the tenant share and the actual rent for the unit under TDAP.

The City will use a portion of the current CDBG-DR TDAP allocation to make one-time payments of arrears directly to landlords to prevent eviction and possible homelessness during affected households' transition to Section 8.

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: Low- to Moderate-Income Housing

CDBG-DR ALLOCATION: $8,581,000

PROJECTED ACCOMPLISHMENTS: 242 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

a) Sandy Impact Area Workforce1 Center

PROGRAM OBJECTIVE AND DESCRIPTION: The destruction and impact of Hurricane Sandy continues 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: Low-Moderate Income Area Benefit

CDBG-DR ALLOCATION: $1,401,000

PROJECTED ACCOMPLISHMENTS: 9,520 unique New Yorkers served

PERFORMANCE SCHEDULE: The City will begin outreach to eligible persons in early 2015. The provision of services to eligible participants commenced in March 2015 and ended in March 2017.

OTHER FUNDING SOURCES: None

b) 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[2] 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: Low- and Moderate-Income Limited Clientele

CDBG-DR ALLOCATION: $1,135,000

PROJECTED ACCOMPLISHMENTS: 175 persons

PERFORMANCE SCHEDULE: The City will begin outreach to eligible persons in early 2015. Processing of participant vouchers commenced in March 2015 and ended in March 2017.

OTHER FUNDING SOURCES: None

[2] 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.

Public Housing

Needs Assessment

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 added resiliency. These assessments as well as additional documentation provided by FEMA site visits and the insurance adjusters' reports helped NYCHA and FEMA come to agreements on the damaged scope of work as well as costs, 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 - Damaged Buildings

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

Beyond those immediate costs, approximately $1.4 billion in funding has been secured from FEMA for permanent repairs or replacement of damaged infrastructure, including replacement of mechanical and electrical systems where needed. This funding is part of the 428 FEMA Public Assistance Alternative Procedures (PAAP) Pilot Program and carries a requirement of 10% local match.

Resiliency and Rehabilitation of Damaged Buildings

NYCHA has also obtained approximately $1.4 billion in additional FEMA funding for mitigation and resiliency measures to be incorporated into the above mandatory rehabilitation repairs. This 406 mitigation funding

will also be implemented as part of the overall 428 permanent repair grant program and carries a 10% local match requirement. Funded mitigation work will vary between developments and buildings based on the damage assessments but in general, the scope of the mitigation program includes:

- Dry Flood Proofing above the Design Flood Elevation (DFE) to protect the envelope of damaged buildings. This includes the use of watertight doors, flood panels, etc.
- Installation of backflow preventers as required per code.
- Construction of new elevated boiler annexes with boilers equipped to run on dual fuel (oil & gas fired), as a mitigation measure in the event oil and/or gas is not available during a similar disaster.
- Construction of new elevated electrical annexes to house elevated electrical distribution equipment.

Installation of permanent stand-by generators to provide power to the residential buildings in the event that a future storm disables power to the development. This solution supports the power requirements of the sump pump system, which will mitigate damage to the building, in addition to providing vital life and safety benefits to the residents.

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 appliances 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.

NYCHA has received Phase I approval and Phase II approval, totaling $49.5 million to implement mitigation measures through FEMA's Hazard Mitigation Grant Program (HMGP). The initial scope of work proposed in the HMGP application was for the "hardening" of ten community centers. However, NYCHA has determined that the initial scope of work would not result in a cost-effective/feasible project. Therefore, NYCHA has proposed a modification to this scope of work to include implementing other mitigation projects with a similar mitigation scope as the FEMA-funded 406 mitigation activities in the Special Flood Hazard Area (SFHA) for unfunded buildings.

It is anticipated that CDBG-DR will fund the 25% cost share associated with this HMGP award. NYCHA's approved HMGP scopes of work include but are not limited to floodwalls, relocation and elevation of critical infrastructure, dry flood proofing at developments Baruch, Isaacs, and Wald.

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 for permanent repairs and mitigation at both major and lesser-damaged facilities.

- NYCHA's insurance coverage is capped at approximately $440 million. To date, NYCHA has not yet received a full payment from its NFIP and commercial policies.
- FEMA Public Assistance funds should cover a percentage of the remaining costs associated with repairs, rehabilitations, replacements, and mitigation associated with damaged buildings.
- 404 Hazard Mitigation Grant Program (HMGP) funding has not yet been finalized. NYCHA is currently working with FEMA to determine which projects will have a positive benefit cost analysis and meet grant 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 to cover portions of projects that will not be funded by FEMA.

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 20,600 NYCHA residential units. Improvements include flood mitigation measures that reduce the risk of repetitive damages to these buildings in the future. Moreover, they include resiliency 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 local match of FEMA funded recovery work

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 floodwalls, 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 have been funded by FEMA 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 insurance reimbursement but might be eligible for FEMA funding. CDBG-DR allocations under this element of the program will be assigned to cover the required local match associated with FEMA funding, as well as resiliency measures not funded by FEMA.

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

- Installation and monthly rental costs for temporary mobile boilers at seven (7) of NYCHA's developments located throughout Coney Island. As a result of Hurricane Sandy, multiple developments were left without electricity, heat, and hot water due to flooding. In order to provide the essential services to its residents, the Authority secured emergency contracts for the developments affected by Hurricane Sandy. CDBG-DR will be used to fund a portion of costs associated with the provision of these services. 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 floodgates and panels to otherwise flood proof critical building systems.
- Façade Improvements: More than 400 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.
- Restoration of grounds within the development campus that are disturbed either as a result of the storm or construction associated with storm repairs or implementation of mitigation measures. These restoration efforts include replacement of trees, bushes, plantings and other landscaping.

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. Despite FEMA's designation of damaged buildings, 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.

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: 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.

CDBG-DR ALLOCATION: $317,000,000

Note: This amount includes the NYCHA Workforce Development program described below.

PROJECTED ACCOMPLISHMENTS: The program is expected to directly benefit approximately 20,600 housing units and 47,000 low income residents of NYCHA public housing, dependent upon the availability of funds.

PERFORMANCE SCHEDULE:

NYCHA continues to move forward with design, environmental review, and procurement associated with its FEMA 428 program. As of March 2018, only one (1) development remains in the design phase.

Thirty of NYCHA's developments in the 428 program have released a Request for Quotation for construction work, of which 25 have been awarded contracts. Construction has started at these 25 developments.

Lower East Side V permanent repair and mitigation rehabilitation is substantially complete and entering the closeout phase. The scope of work associated with additional buildings in NYCHA's portfolio that have been deemed "lesser damaged" and are not part of the 428 program is still in development.

The majority of NYCHA's emergency response work has been completed; however, some activities such as maintenance of temporary boilers as well as emergency, electrical, and mechanical repairs are ongoing.

As of March 2018, NYCHA has received Phase I & Phase II approval of HMGP funding totaling $49.5M; of which CDBG-DR will be providing the 25% local cost share totaling $12.4M.

The NYCHA SPU Workforce Development program began in fall 2017, with three classes completed as of March 2018; two (2) by Pathways to Apprenticeship and one (1) by Rebuilding Together. The third provider, Nontraditional Employment for Women, is expected to begin their first class in spring 2018.

HUD has extended the deadline for reimbursement of $39.3 million of the $317 million grant until September 20th, 2022.

NYCHA Workforce Development

PROGRAM OBJECTIVE AND DESCRIPTION:

Over the course of the next several years, 33 NYCHA developments damaged by Hurricane Sandy will undergo major rehabilitation and mitigation construction projects. All of NYCHA's Sandy contracts are subject to HUD's Section 3 goal that 30 percent of all new hires are Section 3 employees. Additionally, all of

Sandy's contracts are subject to NYCHA's Resident Employment Program goal that 15 percent of all labor dollars go towards NYCHA residents.

While an unprecedented opportunity exists for NYCHA residents to enter into a career in the building and construction trades, the overwhelming majority of the new hire Sandy construction positions fall under NYCHA's Project Labor Agreement (PLA), which requires contractors to hire from union halls. Therefore, it is imperative that NYCHA has a trained, qualified workforce to refer out for union membership. To this end, NYCHA proposes to implement a pre-apprenticeship program in order to better prepare NYCHA residents to enter the workforce and construction industry. The program will not only provide robust training, it will also feature providers that have direct entry capabilities into a construction union apprenticeship, putting these individuals on a path to the middle class. The goal is to facilitate entry into the unions that will potentially lead to job opportunities in NYCHA's Sandy construction projects.

NYCHA will use CDBG-DR funds to create a program to provide subsidies for participation in pre-apprenticeship job training programs. The subsidies will be primarily for NYCHA residents at Sandy-impacted developments but may be offered to residents of non-impacted developments and nonresidents alike, depending upon availability. NYCHA will assist participants in finding a suitable pre-apprenticeship program through the use of a pre-qualified list created through a Request for Proposal procurement process. Programs must meet certain minimum requirements in order to be pre-qualified. On behalf of each program participant, NYCHA will be responsible for paying a fixed amount to the participant's selected program. NYCHA may offer additional incentives to the participant for completion of the training program.

ELIGIBILITY CRITERIA: Eligibility for the job-training program will be prioritized for NYCHA residents that reside in Sandy-impacted developments, following NYCHA residents throughout their portfolio. After the program's initial launch, NYCHA may open eligibility to include non-NYCHA residents

PROGRAM PRIORITIES: To boost long-term recovery by providing participants with the necessary skills and potential job opportunities to increase household income.

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

NATIONAL OBJECTIVE: Low- and Moderate-Income Limited Clientele; Urgent Need

CDBG-DR ALLOCATION: $1,400,000

Note: Funding for the Workforce Development program is included as part of NYCHA's overall $317M program allocation.

PROJECTED ACCOMPLISHMENTS: 165 persons

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.

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			

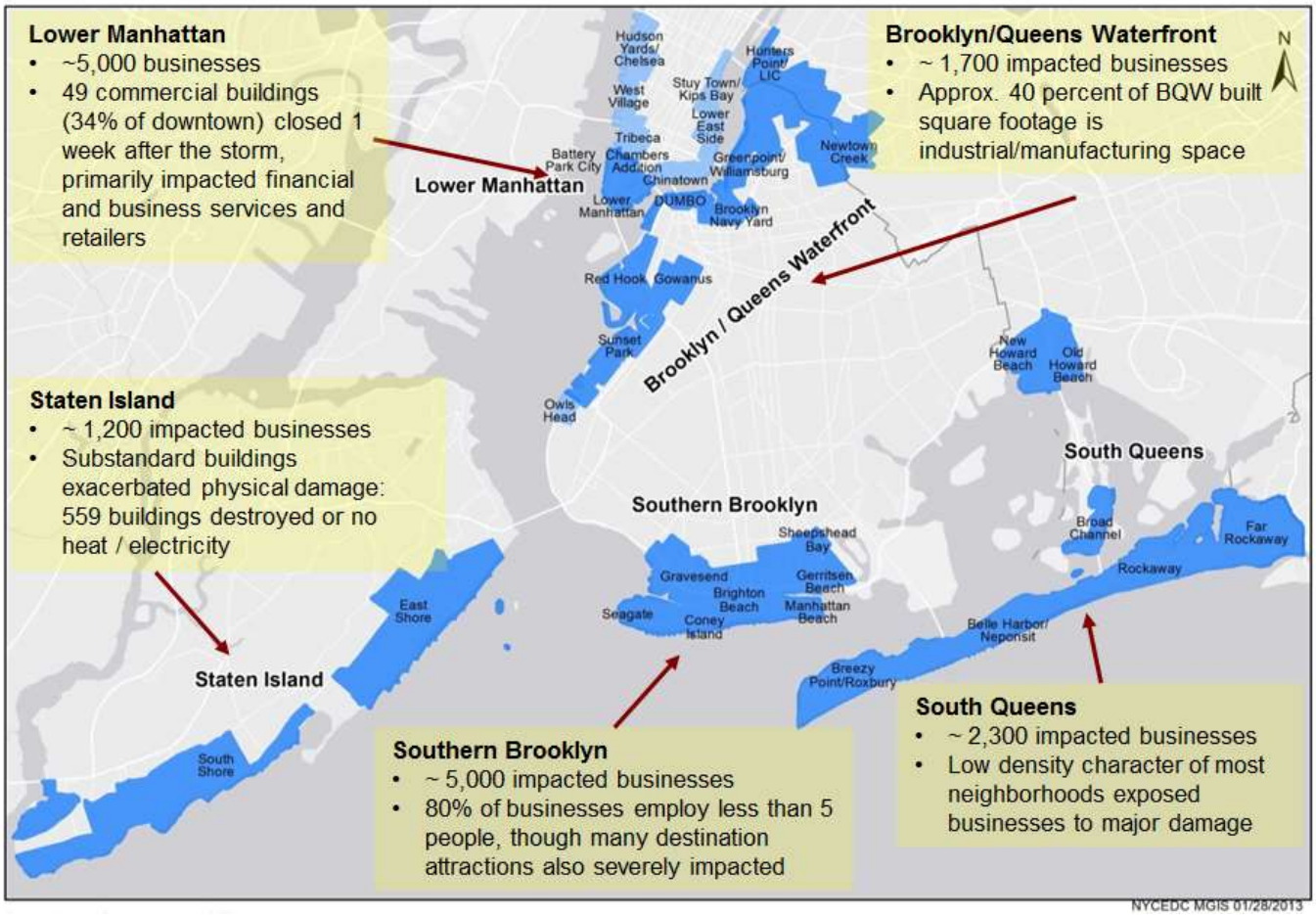
The economic losses initially estimated by NYC OMB derived from Moody's analysis resulted in a preliminary estimate that tax revenue would decline by approximately $250 million. However, recent tax collections data suggest that this estimate should be revised downward to approximately $160 million as 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.

Remaining Unmet Economic Needs

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.

Through the City's continued outreach to community partners, business recovery groups, and elected officials including the Action Plan public hearings, 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:

- **Hurricane Sandy Business Loan and Grant Program (HSBLGP)*:*** $58 million to provide loans and grants to more than 350 businesses impacted by Hurricane Sandy.
- **Business PREP (Preparedness and Resiliency Program)*:*** $3 million to assist businesses implement operational and physical resiliency measures, through one-on-one site visits and assessments, grants to help businesses implement low-cost resiliency improvements, business resiliency online resources, and emergency preparedness workshops.
- **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 energy infrastructure, telecom networks, and building systems.

Although the unmet needs assessment for small businesses throughout the City remains unchanged at this time, the City has re-evaluated the needs of the CDBG-DR funded programs. Through the Hurricane Sandy Business Loan and Grant Program, SBS has provided funding for working capital, inventory, and equipment needs for more than 350 small businesses that were impacted by the storm. When Action Plan Amendment 8B was submitted in early 2015, the City anticipated that $48 million would fully fund the program. After the application period for the program closed on January 31, 2015, SBS worked with all eligible applicants to determine their remaining unmet need. As a result, an additional need beyond the $48 million was determined and funds were realocated to the project.

Hurricane Sandy impacted businesses in a variety of ways, including business losses, cancelled tourist visits, wages not paid to workers who could not commute into the affected region, and physical damage to buildings and public infrastructure. CDBG-DR funding cannot directly address all of these economic impacts, so the City has allocated funding to programs which will help Sandy-impacted businesses better prepare for future disasters. By participating in Business PREP, small businesses will learn how to better protect themselves both physically and financially. The RISE: NYC program provides participating businesses with technology that upgrades their energy system, flood protection, or communication networks. Although the programs cannot fully address the business losses from the storm, the City has made every effort to address the needs of the eligible small businesses that have elected to participate in these programs.

As part of Action Plan Amendment 12, the City updated the scope of the Coney Island Resiliency project and decided to move the project to the Coastal Resiliency chapter of this document. The CDBG-DR allocation for the Coney Island project remains $15 million.

The City will still pursue the implementation of the Saw Mill Creek Restoration and the Rockaways Commercial Corridor Resiliency projects that were previously included in the Action Plan. These projects will move forward with the full commitment of the City, now using other resources, specifically City capital funds reflected as of the Fiscal Year 2017 Adopted Capital Commitment Plan. Both projects presented particular challenges for moving forward with CDBG-DR funding, such as federal regulations triggered by revenue generation (Saw Mill Creek) and the complexities of combining two federal funding sources (Rockaway Commercial Corridor). Additional information about these projects can be found at the end of this chapter under "Projects to be Funded from Other Sources."

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) expanded on the emergency loan and grant program. Businesses that demonstrated 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. New York Business Development Corporation-Local Development Corporation (NYLDC) has assisted in operating the program as a Subrecipient.

Funds for this program have been awardeed for working capital, moveable equipment, and inventory. For circumstances in which 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 as 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: 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: $58,000,000

PROJECTED ACCOMPLISHMENTS: More than 350 businesses assisted and approximately 328 jobs created or retained.

PROGRAM ADMINISTRATION: This program is administered by the City's Department of Small Business Services (SBS). NYC Business Solutions Centers are managed by SBS and conducted activities related to this

program such as application intake and packaging. Staff is available to assist applicants in multiple languages. The operator of the emergency program, NYLDC, may continue to operate the program as a subrecipient.

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.

GRANT/LOAN SIZE LIMIT: The program has been structured 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

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: The program has provided funds to eligible borrowers that demonstrated 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 were eligible to apply.

PROGRAM START AND END DATES: Initial funds were disbursed in the autumn of 2013. The program will close 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 and Resiliency 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 the following activities:

- One-on-one site visits to businesses for resiliency assessments. Qualified consultants will assess the physical infrastructure, business operations, and insurance coverage of participating small businesses and provide a report outlining the businesses' risks, detailed recommendations for risk mitigation and resiliency measures, and recommended items or equipment eligible for purchase under the terms of the associated grant program.
- SBS will provide a grant to eligible small businesses to complement the on-site risk assessments. The grants must be used to purchase specific resiliency-related items or equipment based on recommendations from the resiliency assessment.
- SBS will design and develop online resiliency resources for disaster preparedness and business continuity planning.
- SBS will provide neighborhood-based workshops and webinars on operational resiliency and emergency preparedness. For information about upcoming workshops, please visit: nyc.gov/businessprep.

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

NATIONAL OBJECTIVE: Urgent Need; Low to Moderate - Income Area; and Low- and Moderate Income Limited Clientele (Microenterprise)

CDBG-DR ALLOCATION: $3,000,000

PROJECTED ACCOMPLISHMENTS: The City expects to directly assist approximatey 800 businesses through workshops and an additional 520 businesses through the assessment and grant component.

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.

ELIGIBLE APPLICANTS/PROPERTIES: Workshops/webinars and online resources are available to small businesses operating within the City. Eligible businesses that can demonstrate impact as a result of Hurricane Sandy will be eligible for one-on-one assessments and grants.

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: Eligible small businesses that participate in the on-site assessments may qualify for grants up to $3,000 to implement specific preparedness-related recommendations.

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: Key program milestones and timing:

- Announced program launch (Q4 2015)
- Launched business continuity planning workshop series (Q4 2015)
- Launch assessment and grant program (Q4 2016)
- Award first grants (Q3 2017)
- Procure vendor to conduct research for design of online resources (Q4 2017)
- Procure vendor to develop online resources based on research (Q2 2019)
- Complete online resources (Q1 2019)

- Complete assessment and grant program (Q4 2018)

OTHER FUNDING SOURCES: The Governor's Office of Storm Recovery will provide an additional $4.1 million of CDBG-DR funding to enable the City to serve more businesses. The subrecipient agreement between the State and City was executed in April 2016. The total program funding is $7.1 million.

Resiliency Innovations for a Stronger Economy (RISE:NYC)

PROGRAM OBJECTIVE AND DESCRIPTION:

Hurricane Sandy exposed significant vulnerabilities to business-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 the building and infrastructure resiliency of Sandy-impacted small businesses through a program to identify and deploy the most promising and cost-effective resiliency 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 program seeks to address this through a competition to identify innovative and effective resiliency solutions and competitively allocate funds to deploy the most promising technologies at Sandy-impacted small businesses to improve the resiliency of the business community's buildings and critical infrastructure networks.

Over the course of the multi-stage competition, the City received nearly 200 applications from technology providers in more than 20 different countries around the world. The most promising technologies were invited to move forward, with 27 finalists submitting detailed proposals in August 2014. In April 2015, the City selected 11 winning technology solutions for deployment across three categories that address business-critical infrastructure:

- Energy: Energy technologies include systems that provide clean, resilient power to small businesses, keeping them up and running even during grid failures
- Telecommunications: Telecom technologies include devices and networks that help small businesses stay connected and operating when traditional communication networks are down

- Building systems: Building system technologies include solutions that improve the resiliency of critical building components and functions before, during, and after a storm.

The selected projects will receive CDBG-DR funding to install their resiliency technologies at Sandy-impacted small businesses throughout the City.

HUD ELIGIBILITY CATEGORY: Special Economic Development Activities (24 CFR 570.203)

NATIONAL OBJECTIVE: The City will qualify program beneficiaries under two National Objectives: Urgent Need and Low- and Moderate-Income Area (LMA). RISE: NYC will procure technology firms and use CDBG-DR funds to provide resiliency technologies to eligible businesses. Through the deployment of these resiliency solutions, the City is providing direct assistance to eligible businesses that address serious and immediate threats to the welfare of the small business, as well as the local economies, residents, and employees that depend on them. Investment that decreases the vulnerability of infrastructure and buildings through resiliency measures address the urgent need that exists in these areas. Certain program beneficiaries may qualify under the LMA National Objective when the business served provides goods and services that are available and accessible to residents in a service area in which a majority are of low and moderate income. In making an LMA National Objective determination, consideration is given to the nature of the goods or services provided by beneficiary businesses, as well as the accessibility to the residential population in the business's service area.

CDBG-DR ALLOCATION: $30,000,000

PROJECTED ACCOMPLISHMENTS: Approximately 275 small businesses will benefit from these technologies.

PROGRAM ADMINISTRATION: NYCEDC is a subrecipient of the City of New York and administers the program in coordination with the Mayor's Office of Recovery and Resiliency. NYCEDC procured a partner to provide technical expertise and project support for the design and implementation of the competition to identify innovative technologies and solutions that improve the resiliency of critical infrastructure systems at Sandy-impacted small businesses.

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:

- Release solicitation and procure a technical consultant (Q2 2013)
- Launch competition and solicit proposals (Q1 2014)
- Select proposals (Q1 2015)
- Award grants (Q3 2016-Q1 2017)
- First technology installation (Q2 2017)
- Project Completion (Q2 2022)

Projects to be Funded from Other Sources

The following section describes projects that will no longer be financed with CDBG-DR funding (as of Amendment 12) but will move forward with City Capital funding identified in the City's Fiscal Year 2017 Adopted Capital Commitment Plan.

Restoration of Saw Mill Creek Marsh

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 area 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 its pre-Sandy absorptive capacity and has largely been filled at-grade with nearby water systems, putting local businesses and residents at-risk during significant storm events.

City capital 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 the 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.

To fund this project, approximately $12 million is allocated in the City's Fiscal Year 2017 Adopted Capital Commitment Plan.

For more information about the Saw Mill Creek Restoration, please visit EDC's website at www.nycedc.com/project/marshes-initiative.

Rockaways Commercial Corridor Resiliency

The Rockaways experienced extensive flooding and long-term power outages as a result of Hurricane Sandy that led to prolonged economic loss impacting residents and businesses. In addition to its direct physical impact, the storm 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 that recurs as a result of heavy rainfall events or tidal activity is also a year-round concern. 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 is planning to invest in resiliency measures and economic revitalization in the Rockaways, including the Downtown Far Rockaway main commercial corridor and surrounding business areas. The City will be investing in 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 Avenue and Cornaga Avenue, to improve access to business districts from the area's transit hub and to revitalize a central commercial corridor. The project will also be utilizing innovative green infrastructure practices including permeable pavement and bioswales to increase stormwater capture, which will supplement existing plans by the City to upgrade and install a sewer system in the area. This project will leverage planned investments from existing federal and City funding for improvements in the area to increase resiliency and promote economic

revitalization by creating an accessible, vibrant, and thriving commercial/transit corridor for residents and businesses, many of which employ low-income workers.

To fund this project, $7.5 million will be committed in the City's Fiscal Year 2017 Adopted Capital Commitment Plan. In addition, the following funding sources have also been identified: $7.5M from other federal sources; $5.3 million in City Capital; $4.5 million in NY Rising funds from the Governor's Office of Storm Recovery; $1.472 million from Congressman Gregory W. Meeks; and $436,060 from Councilman Donovan Richards. There has been no overall reduction in funding commitment for this project.

For more information about this project and other initiatives in the area, please visit: http://www.nycedc.com/project/downtown-far-rockaway.

IX. INFRASTRUCTURE AND OTHER CITY SERVICES (IOCS)

For the purposes of this Action Plan, IOCS is broken into two sections: 1) **Other City Services** is comprised of Public Services, Debris Removal/Clearance, and Interim Assistance activities; and 2) **Infrastructure** is comprised of Rehabilitation/Reconstruction of Public Facilities. Please note that previously planned IOCS projects no longer being funded by CDBG-DR (as of Amendment 12) are listed in Appendix H.

Needs Assessment

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 were 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 hierarchy and appropriateness for application of funds. In addition, the different environmental review processes for each federal 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 to 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

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.

NYC Health and Hospitals (H+H) had ten large hospitals damaged, including extensive damage to Bellevue Hospital Center, Coney Island Hospital, and Coler-Goldwater Memorial Hospital. H+H also experienced damage to five smaller healthcare facilities as well as to four of its administrative office spaces. Two hospitals (Bellevue and Coney Island Hospitals) and several community healthcare facilities were evacuated and displaced, and Coler Hospital was left without electricity, heat, or hot water. 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's Department of Parks and Recreation had damage to approximately 400 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, including 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 have been 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, is being 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 fourteen (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 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 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 resiliency (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 the recovery process.

The City's survey of the damage inflicted on infrastructure and the restoration thereof is ongoing and involves many City agencies. 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.

Analysis of Unmet City Infrastructure and Other City Services Needs

For both Other City Services and Infrastructure projects, the City is using CDBG-DR funds as a match to other federal funding and for reimbursement of expenditures not covered by other federal agencies but determined eligible under HUD regulations. The City is allocating $419.5 million to direct City agency costs: $328.5 million will fund other city services and $90.93 million will fund the rehabilitation and reconstruction of public facilities.

Other City Services

The City's emergency response costs included the provision of public services, protecting health and safety and assistance to special needs populations, debris removal, in-home sheltering through the Rapid Repair program, and other early recovery activities.

Significant portions of these costs are covered by FEMA through the Public Assistance program, which covers 90 percent of eligible costs. The remaining 10 percent local contribution to FEMA grants, as well as activities performed by the City not funded by FEMA or other grant programs, constitutes an unmet need for City services estimated at $900 million. For Other City Services programs, the City is using CDBG-DR funds as a match to other federal funding and non-match activities.

The City had previously identified its unmet need for Other City Services at $2.1 billion. As of Amendment 12, the City estimates its unmet need at $900 million. The reduction is attributable to revisions in estimates of costs and additional FEMA Public Assistance secured or recognized. Based on projected amounts from other sources of federal funding, the CDBG-DR contribution towards covering the unmet need is $328.5 million. As a result of prior year financial plan revenue adjustments through the end of City Fiscal Year 2016, the City of New York will not pursue CDBG-DR funding as the source for all of its remaining costs.

Infrastructure

The City had previously identified its unmet need for infrastructure at $5.3 billion. As of Amendment 12, the City estimates its unmet need at $2.5 billion. The reduction is attributable to revisions in estimates of costs, additional FEMA Public Assistance secured or recognized, and additional explicit City funding commitments reflected as part of the Fiscal Year 2017 Adopted Capital Commitment Plan. The City is currently dedicating $90.93 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 CDBG-DR 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. CDBG-DR funds are used as a match to other federal funding or to cover complete projects or portions of projects only eligible under CDBG-DR program.

Funding decisions for IOCS have largely occurred in two stages.

First, by covering costs incurred during the relief phase of Sandy, the City used CDBG-DR funds to benefit the public more quickly. By initially funding costs already incurred, federal dollars were able to quickly reach the most impacted communities because these emergency services were contracted for, executed, and expensed within months of the storm's impact. The City prioritized projects that served vulnerable populations and communities hit hardest by the disaster. For example, the City immediately funded $183 million to reimburse Coney Island and Bellevue Hospitals for operations costs incurred to remain open immediately following the storm, while the capital projects related to the repair of the two hospitals were still under development. As part of Action Plan Amendment 12, the remaining Other City Services allocation reflects those projects for which the City had already received CDBG-DR reimbursement towards local match for FEMA and/or additional funds have been explicitly committed to fulfill the project. Funds not yet committed to additional Other City Services projects previously indentified in the Action Plan have been reallocated for the completion of the Build it Back program.

Second, for remaining IOCS funding, the focus has been on large scale infrastructure projects with significant local match needs. These needs included funding for critical healthcare facilities, such as public hospitals and nursing homes, and important public spaces, such as Rockaway Boardwalk. The City continues to face a significant local-share commitment for a variety of projects critical to the future of New York City. Because of the size, scale, and timing of these commitments, the City recognizes that CDBG-DR is not always the best fit. Given the magnitude of recovery and resiliency projects, the City has needs beyond what HUD has allocated.

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. Removing and disposing of all storm-related debris that impacted a community's public health, safety, and threaten life and property.

2. Ensuring that public facilities such as fire, police, and other critical infrastructure damaged in the impacted areas are restored.
3. Restoring parks and recreational facilities in order for impacted communities to resume recreational activities.
4. Rebuilding, repairing, and replacing health and hospital facilities damaged in the impacted areas enabling the affected communities' access to medical attention.
5. Assisting residential communities impacted by Sandy with emergency repairs to properties to the extent necessary to alleviate the emergency conditions caused by the storm.
6. 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, the City began a long-term planning and rebuilding effort across all five boroughs. A taskforce assembled to analyze 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. This effort culminated in the release of *A Stronger, More Resilient New York* in June 2013. The report is the first 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 looks to the best available science and promising practices in resiliency to inform the development of these performance standards,considering how requirements related to flood-proofing, wind-resistance and other mitigation efforts associated with rebuilding more resilient structures and communities can be achieved. . Specifically, the City uses guidance provided in the "A Regional Approach to Resiliency" and "Infrastructure Resiliency Guidelines" sections of in the *Hurricane Sandy Rebuilding Strategy* report and aims 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.

When developing Resilience Performance Standards, the City relies on 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 also utilizes the mitigation principles and strategies developed in the City's *2014 Hazard Mitigation Plan* and subsequent updates, adopted by FEMA in the identification and refinement of these Resilience 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, also inform the development of the City's Resilience Performance Standards.

Given the degree of variability in the City's CDBG-DR funded infrastructure and RBD projects, the City beilieves it is important to develop a specific set of Resilience Performance Standards during project design. However, the City will generally rely on the following performance standards to measure resiliency within a project:

- **Robustness**: ability to absorb and withstand stressors and shocks
- **Redundancy**: additional channels to enable maintenance of the core functionality in an event of disturbance or system failure
- **Resourcefulness**: ability to adapt and respond in a flexible manner during stressors and shocks
- **Response**: ability to mobilize quickly in the face of stressors and shocks
- **Recovery**: ability to regain functionality after stressors and shocks

The City hereby certifies it will apply these standards to each of its applicable infrastructure projects, as required in the November 13, 2013 Federal Register Notice.

Other City Services Programs

Other City Services programs include all programs that meet the following HUD Eligible Activities: Public Services (funded at $224.75 million), Debris Removal/Clearance ($6.65 million), and Interim Assistance ($97.13 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 seeking reimbursement from HUD once the costs have been properly validated against pre-award guidance and other applicable regulations.

Other City Services - Public Services

PROGRAM OBJECTIVE AND DESCRIPTION: Public Services activity includes: H+H Operational Readiness, DPR Emergency Protective Measures, FDNY Emergency Protective Measures, HRA Disaster Assistance Services Centers, and NYPD Overtime.

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.

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:

Public Services - NYC Health + Hospitals (H+H) [formerly Health and Hospitals Corporation (HHC)]:

H+H is a public benefit not-for-profit corporation controlled by the City of New York that primarily serves low-income residents. H+H provided healthcare services to the public during and after the storm and incurred expenses in three areas: (1) the provision of new services to alleviate emergency conditions in impacted communities, (2) restoring facilities serving low- to moderate-income patients to their full operational capacity, and (3) hastening service readiness to more quickly serve vulnerable populations. A total of $204 million of currently available CDBG-DR funds is allocated towards the Public Services provided by H+H. Of this $204 million, $202 million of CDBG-DR funds have been reimbursed to the City for this activity.

Public Services - Department of Parks and Recreation (DPR): "Safe Up, Clean Up": The City's beaches, including Rockaway Beach in Queens, Coney Island in Brooklyn, and the beaches of Staten Island, suffered heavy damage from Hurricane Sandy. Sand washed from the beach and was deposited across parks, playgrounds, into buildings and onto roads and other public right of ways. Water and floating debris washed away portions of the boardwalk, features of parks and buildings, sidewalks and asphalt areas, leaving behind debris and creating hazardous and unsafe conditions. The City drew down for emergency "Safe Up, Clean Up" work perfomed by DPR.

A total of $0.9 million of currently available CDBG-DR funds is allocated towards the Public Services activity provided by DPR.

Public Services - Fire Department of New York (FDNY): 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.

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.

A total of $1.4 million of currently available CDBG-DR funds is allocated towards the Public Services activity provided by FDNY.

Public Services - Human Resources Administration (HRA): In response to the Hurricane, New York City opened Disaster Assistance Service Centers (DASCs), later converted to Restoration Centers, in the areas most affected by Hurricane Sandy. The multiservice DASCs/Restoration Centers were established to administer critical information and resources to individuals, families, and businesses devastated by Sandy.

HRA oversaw several Disaster Assistance Centers, which provided a mix of services to impacted New Yorkers, including the distribution of food and emergency commodities, and information. Additional Emergency Protective Measures conducted by HRA include the management of emergency/mass feeding

program, emergency supplies and materials, security services for HRA personnel and locations, janitorial services, and fuel tank rental for temporary generators.

A total of $1 million of currently available CDBG-DR funds is allocated towards the Public Services activity provided by HRA.

Public Services - 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. A total of $17.4 million of currently available CDBG-DR funds is allocated towards the Public Services activity provided by NYPD.

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

NATIONAL OBJECTIVE: Low- and Moderate-Income Area; and Urgent Need

CDBG-DR ALLOCATION: $223,107,000

PROJECTED ACCOMPLISHMENTS:: 8.2 million persons served with various service areas throughout the City benefited.

PROGRAM ADMINISTRATION: NYC Health and Hospitals, Department of Citywide Administrative Services, Department of Parks and Recreation, Fire Department, Human Resources Administration, New York City Police Department, NYC Economic Development Corporation

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

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 29, 2012 – June 30, 2016

OTHER FUNDING SOURCES: FEMA Public Assistance

15 PERCENT PUBLIC SERVICES CAP: With the reallocations proposed in this Amendment, the estimated Public Services IOCS activity of $223.1 million, the Housing program activities of Build It Back Workforce Development activity of $2.5 million, the workforce development activities of NYCHA of $2.3 million under Housing, and a maximum $3 million for Business PREP under Business will account for 5.5 percent of the total $4.2 billion in grant funds, well under the 15 percent cap.

Other City Services - Debris Removal/Clearance

PROGRAM OBJECTIVE AND DESCRIPTION: The City will use CDBG-DR funding to meet the local match share of FEMA Public Assistance 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 funded through the CDBG-DR program include the following activities:

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: Low- and Moderate-Income Area; Urgent Need

CDBG-DR ALLOCATION: $6,654,000

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.

PROGRAM ADMINISTRATION: Department of Parks and Recreation; New York City Fire Department.

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, 2014

OTHER FUNDING SOURCES: SBS worked with DPR to hire temporary workers to assist with cleanup efforts, using Federal National Emergency Grant funds. FEMA Public Assistance awarded $243 million in Category A Project Worksheets for debris removal.

Other City Services - Interim Assistance (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 over 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.

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: Low- and Moderate-Income Area; Urgent Need

CDBG-DR ALLOCATION: $97,129,000

PROJECTED ACCOMPLISHMENTS: 20,740 units (approximately 54,000 Persons) served.

PROGRAM ADMINISTRATION: Department of Environmental Protection, Mayor's Office of Housing Recovery.

ELIGIBLE APPLICANTS/PROPERTIES: Residential properties sustaining damage from Hurricane Sandy.

ELIGIBILITY CRITERIA:

- Residential property owners within the five boroughs of NYC.
- 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 Public Assistance

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 throughout all five boroughs. For some projects, 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 percent of the total project cost and HUD funds will provide the remaining 10 percent share. Previously, the City intended to use CDBG-DR funds as match for more projects, but has instead decided to fulfill that need with City Capital funds.

Listed below are potential projects that are being considered for these funds. 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;
- Project with timelines that have the best chance of complying with HUD's two-year timeframe 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.

Infrastructure - Rehabilitation/Reconstruction of Public Facilities

PROGRAM OBJECTIVE AND DESCRIPTION: Hurricane Sandy impacted a variety of City facilities throughout the five boroughs of New York City which are operated by many City agencies. 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. Following HUD's guidance, the City will adopt FEMA and other federal agency environmental reviews when feasible.

For a more comprehensive list of sites that were damaged, please see Appendix C. Narratives are provided below for the projects being considered for CDBG-DR funding.

428 Public Assistance Alternative Procedures (PAAP) Pilot Program

Three infrastructure projects described in further detail belows are using CDBG-DR as a match for FEMA PAAP:

1. NYC Health + Hospitals hospital repair and replacement
2. Department of Parks and Recreation's Rockaway Boardwalk
3. The Trust for Governors Island

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.

Rehabilitation/Reconstruction of Public Facilities - NYC Health and Hospitals (H+H)

H+H had ten large hospitals damaged, including extensive damage to three facilities. H+H 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. H+H patients who were impacted had to seek services elsewhere or delay services until H+H's facilities were fully operational.

H+H received a commitment from FEMA of $1.72 billion in Section 428 Public Assistance Alternative Procedures (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. Specifically, at Coney Island Hospital, funds will be used to reimburse H+H 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 flood wall. Bellevue Hospital, H+H's flagship Manhattan hospital, will receive funding towards repair or replacement and relocation of much of its storm-damaged equipment as well as flood protection measures. Metropolitan Hospital will use funds for electrical repairs and flood protection measures. Coler Hospital will replace a generator that was destroyed, complete electrical repairs, and flood protection measures. The City anticipates providing a portion of the 10 percent match in CDBG-DR funds for the 428 PAAP grant.

This project is a 428 Public Assistance Alternative Procedures (PAAP) Pilot 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. CDBG-DR funds in an amount up to $35 million will cover some design portions of the local match on this FEMA award. Remaining match needs are covered by funding committed as part of the City's Fiscal Year 2017 Adopted Capital Commitment Plan.

Rehabilitation/Reconstruction of Public Facilities - 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). The new facilities and boardwalk are 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. Rockaway Beach Boardwalk is considered a HUD Covered Project and is further discussed in the "Covered Project" section. This project is a 428 Public Assistance Alternative Procedures (PAAP) Pilot 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. The estimated HUD CDBG-DR share for the Rockaway Boardwalk project is $48 million.

See the "Covered Projects" section for a detailed description of DPR's major infrastructure project.

Rehabilitation/Reconstruction of Public Facilities – Trust for Governors Island (TGI)

In October 2012, heavy rain, high winds, storm surge, and waves generated by Hurricane Sandy caused flooding in the low-lying areas of Governors Island, indundating some electrical conduit. TGI is seeking a designer to assess the current conditions of the conduits, manholes, cables, and duct banks impacted by the storm in order to provide engineered drawings and specifications for TGI to procure a contractor to perform the necessary work. In order to provide this assessment, shutdowns of power and supervision by the island's operating engineers and constructions will be necessary.

Construction activity will, by necessity, include pulling all potentially inundated cable and scoping the conduit. Construction activity may also include pulling and replacing conduit if found to have been damaged. The estimated CDBG-DR share will be $1 million.

406 Public Assistance Program

Rehabilitation/Reconstruction of Public Facilities - 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 intended for FDNY-related projects is $2.5 million.

The separate Emergency Communication System & Firehouse Conduit project for FDNY, funded 90% by FEMA through the Section 428 Public Assistance Alternative Procedures (PAAP) Pilot Program, and previously contemplated to have CDBG-DR funds cover the 10% local share, will instead have the local share covered with City funds reflected as part of the Fiscal Year 2017 Adopted Capital Commitment Plan. That project is fully funded.

404 Hazard Mitigation Grant 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.

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 severely damaged by storm surge, flooding, and wave action from Hurricane Sandy. These projects will protect infrastructure, public facilities, and/or homes that were damaged by the storm.

Resiliency and Mitigation Measures for Nursing Homes and Adult Care Facilities

During Hurricane Sandy, the electrical systems at various nursing homes and adult care facilities went down or failed to function, putting the lives of some of the City's most vulnerable residents at risk. In response, The City is proposing mitigation solutions that ensure continuation of power at several of the most vulnerable Nursing Home and Adult Care facilities through the protection of new or existing backup power generators and electrical systems. This project will install new emergency generators, elevate existing emergency generators, and/or install common switch-gears and transfer stations in several nursing homes and adult care facilities. This project is intended to both ensure stable backup power and to decrease susceptibility to electrical system flood damage by meeting the FEMA 500-year flood elevation.

The City has allocated $4.8 million in CDBG-DR funds for this HMGP project.

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 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." Per HUD, 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.

In December 2012, the City's 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.

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.

Covered Project: Rehabilitation/Reconstruction of Public Facilities - Department of Parks and Recreation (DPR) – Rockaway Boardwalk

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.

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 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 $480,373,535. The City has allocated $48 million for the FEMA local match portion of this project to HUD eligible activities.

This project will 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.

HUD ELIGIBILITY CATEGORY: 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 *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 relates 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. Transparent and Inclusive Decision Processes

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. 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, "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.

HUD ELIGIBILITY CATEGORY: Rehabilitation/Reconstruction of Public Facilities and/or Improvements (24 CFR 570.201(c));

NATIONAL OBJECTIVE: Low- and Moderate-Income Limited Clientele; Low- and Moderate-Income Area; Urgent Need

CDBG-DR ALLOCATION: $90,930,000

PROJECTED ACCOMPLISHMENTS: CDBG-DR funding will provide local match to projects that will result in the following accomplishments:

- Reconstruction of the 5.5 mile Rockaway Boardwalk between Beach 9th and Beach 126th Street;
- Construction of infrastructure and resiliency improvements to Coney Island Hospital;
- Replacement of two custom New York City Fire Department vehicles;
- Repair or replacement of 615 FDNY Alarm Boxes throughout the City;
- Repairs to 8 FDNY facilities and firehouses throughout the City;

PROGRAM ADMINISTRATION: NYC Health and Hospitals; Department of Education; Department of Parks and Recreation; City Council; Department of Design and Construction; Department of Environmental Protection; Economic Development Corporation; Fire Department of New York; Mayor's Office; Office of Emergency Management; and the Office of Recovery and Resiliency; Housing Recovery Office

PROGRAM PRIORITIES: Public facilities and infrastructure projects 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

PROGRAM START AND END DATES: October 31, 2012–September 20th, 2022.

OTHER FUNDING SOURCES: FEMA Public Assistance, FEMA 404 HMGP, 428 Public Assistance Alternative Procedures (PAAP), USACE (some beach replenishment)

Rehabilitation/Reconstruction of Public Facilities - Department of Parks and Recreation (DPR) - Beach Open Up

The Beach Open-Up series of projects implemented by the Department of Parks and Recreation, described in part as a Covered Project in the Action Plan incorporating Amendments 1-11, has been reconsidered such that its various components do not constitute a Covered Project. The description of the project in Action Plan Amendment 12 is revised to remove descriptions associated with Covered Project requirements. This assessment was based off of the Beach Open-Up projects not meeting the definition of infrastructure and based off of the timing by which the project was substantially completed. The City of New York is still in discussions with FEMA and the State Department of Homeland Security and Emergency Services regarding the amount of FEMA funding for this project. The resolution of those discussions will potentially impact any CDBG-DR funding for this series of projects. Other relevant pieces of information regarding the Parks Beach Open-Up activity will remain as currently described in the apendices.

X. 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 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 tremendous 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 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. Some activities the City is undertaking outside of the CDBG-DR funded activities listed below include:

Red Hook Integrated Flood Protection

The Mayor's Office of Resiliency (MOR), with support from NYCEDC, is working with local stakeholders to advance resiliency in Red Hook. The Integrated Flood Protection System (IFPS) Project is a federally funded coastal protection initiative aimed at reducing flood risk in Red Hook, Brooklyn. The goal of the IFPS is to maximize resiliency to severe coastal flood events while taking projected sea level rise into consideration. For more information visit: https://www.nycedc.com/project/red-hook-integrated-flood-protection-system

Resilient Edgemere

The Department of Housing Preservation and Development, in partnership with 12 City agencies, released the Resilient Edgemere Community Plan, a long-term vision for Edgemere that seeks to rebuild from Hurricane Sandy and preserve the character of the community, while protecting residents from future floods. The Community Plan includes over $481 million in planned investment in Edgemere in 60 projects to be implemented over the next 10 years, including investment in coastal protection, parks improvements, and affordable housing. Community input was central to the creation of the plan, through 18 months of community engagement, residents and stakeholders were able to share knowledge about community risks and concerns. The plan demonstrates how inclusive climate action is so important for creating communities that are able to withstand the threats of climate change, while also creating stronger, more vibrant neighborhoods that serve residents' needs. For more information visit: www.nyc.gov/edgemere

Downtown Far Rockaway

The New York City Economic Development Corporation, in partnership with City agencies and local stakeholders, have invested in a $90 million program to increase development and address transportation infrastructure in Downtown Far Rockaway, Queens. The Downtown Far Rockaway Roadmap for Action that emerged from the community engagement process outlines strategies for housing, economic development, community services, and transportation and land use issues that address, among other items, upgrades to stormwater infrastructure, including new storm sewers and catch basins, that reduce street flooding. For more information, please visit: https://www.nycedc.com/project/downtown-far-rockaway

Lower Manhattan Coastal Resiliency

The Lower Manhattan Coastal Resiliency (LMCR) Project is an integrated coastal protection initiative aimed at reducing flood risk due to coastal storms and sea level rise in Lower Manhattan. The LMCR Project spans the Lower Manhattan coast from Montgomery Street to the northern end of Battery Park City and seeks to improve access to the waterfront and enhance public spaces in the community. The LMCR Project builds upon several years of community planning efforts to improve the waterfront and additional support for the LMCR Project came from the U.S. Department of Housing and Urban Development (HUD) National Disaster Resilience Competition to address sea level rise, storm surge, and other impacts of climate change. For more information visit: www.nyc.gov/lmcr

Broad Channel Street Elevation and Substructure Work

A total investment of $106 million has been made to construct bulkheads and drainage infrastructure, and reconstruct streets to facilitate the flow of water to new storm sewers. Options are also being explored to further protect and harden the street against the effects of climate change and remediate flooding in the Broad Channel neighborhood by decreasing the frequency and the amount of time that the streets are flooded.

Beach 108th Street in Rockaway Beach

A total investment of $20.4 million ($13 million from NY Rising Community Reconstruction Program funding) has been made in this project to mitigate the damages caused by Sandy. The Beach 108th streetscape improvements capital project was first identified in the Rockaway West–NY Rising Community Reconstruction Plan as a means to improve the urban environment, local economy and attract quality retail to the area. In keeping with this goal, the project provides opportunities to improve street safety and address the high number of traffic accidents at the intersection of Rockaway Beach Boulevard. This project will reconstruct 108th Street, realign the roadway geometry, and add elements such as benches, distinctive lighting, and wayfinding signs.

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 PlaNYC 2014 Progress Report detailed the progress made for each initiative in the year following the initial plan release.

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. A progress update for One City, Rebuilding Together was released on October 22, 2015 and can be reviewed at: http://www1.nyc.gov/assets/home/downloads/pdf/reports/2015/One-City-Progress-Report.pdf.

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.

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 selecting 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 storm surge 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.

Resilience Performance Standards

Per the November 18th, 2013 Federal Register Notice, required infrastructure projects in this chapter will follow the Resilience Performance Standards outlined in the IOCS section of the Action Plan. Further mention of these standards may be found in the Rebuild by Design project sections.

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 – 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.

Since the release of *A Stronger, More Resilient New York*, 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. While *A Stronger, More Resilient New York* identifies a Resiliency unmet need of $4.5 billion dollars, the City is identifying an unmet for Coastal Protection resiliency measures of $2.4 billion so as not to "double-count" Resiliency needs already accounted for within the Housing, Business, Infrastructure, and Other City Services categories. 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 in East Harlem, the East Side of Manhattan, 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 of Manhattan.

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.

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.

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.

Resiliency Programs

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 shoreline 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 plain for North and South campuses. 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/Reconstruction of Public Facilities and/or Improvements (24 CFR 570.201(c));

NATIONAL OBJECTIVE: Urgent Need

CDBG-DR ALLOCATION: $28,000,000

PROJECTED ACCOMPLISHMENTS: Accomplish risk reduction against the four hazards described above to two of SIUH's campuses.

PROGRAM ADMINISTRATION: The City of New York will work with SIUH to ensure implementation of this project.

GEOGRAPHIC AREA TO BE SERVED: Residents in Staten Island and Southwest Brooklyn, the primary service area for SIUH patitents.

PROGRAM START AND END DATES: June 2015 with construction completed June 2019. Current timeline under review. Updates anticipated soon.

OTHER FUNDING SOURCES: SIUH has awarded a $23.2 million Hazard Mitigation Grant Program (HGMP) grant 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. Of this $23.2 million HMGP award, FEMA is providing $12 million and CDBG-DR is providing $11.2 million of local match. CDBG-DR funds will enable SIUH to relocate and elevate the North Campus Power Plant, harden the North campus envelop against wind damage, and complete mitigation work at the South Campus.

Rebuild by Design: East Side Coastal Resiliency

INTRODUCTION

The east side of Manhattan encompasses part of the neighborhoods of Chinatown, the Lower 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* (2013), and are critical to New York City (City) and the region and contains one of the largest business districts in the U.S.

The storm surge caused by Hurricane Sandy arrived in the area with great force and height. 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), eclipsing the previous high-water mark from Hurricane Donna in 1960 by nearly four feet.

The surge overtopped bulkheads around Southern Manhattan, sending floodwaters inland (See **Appendix G: Figure 1**). The extent of the flooding generally reached one to two blocks from the coastline at depths of two to three feet, though the waters did extend farther inland and to greater depths at several locations. The areas that generally experienced the most severe inundation were along the coast where there had once been marshes and streams, which have since been filled in by development.

The greatest extent of inland flooding was along the eastern edge of Southern Manhattan. The surge from the East River breached the bulkhead running from Kips Bay to Chinatown. Floodwaters inundated the East River Park esplanade, ball fields, and plantings, before traversing the FDR Drive and covering streets and surrounding buildings. The floodwaters traveled nearly 2,000 feet inland, with depths of up to several feet along portions of Avenue C. In East River Park and Stuyvesant Cove Park, dozens of trees were knocked down during the storm and nearly 260 were removed following the storm due to saltwater intrusion. Strong winds, storm surge, localized flooding and fallen tree branches damaged recreational fields and surfaces, fences, buildings, and supporting plumbing, electrical, and mechanical systems.

Most building damage in Southern Manhattan was to critical building systems, business inventory, and personal property. 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 as many of these buildings' systems were located in basements or sub-basements. As a result, conditions for individuals in the floors above floodwaters were challenging or untenable.

One of Sandy's most significant impacts on the area resulted from power outages across most of Manhattan south of 34th Street. Residents were left without light, heat, refrigeration, or water for drinking, cooking, flushing toilets, or bathing, even though their buildings had not flooded. In high-rise buildings, elevators stopped working. Many older or infirm residents were trapped in their apartments on higher floors, unable to communicate or gain access to emergency information through television or the Internet. This was further exacerbated by the fact that a portion of the population is limited English proficient.

As Hurricane Sandy approached New York City, Con Edison preemptively shut down two electrical networks in Lower Manhattan (the area south of the Brooklyn Bridge) to minimize the damage to their facilities and critical infrastructure. Nonetheless, the surge damaged substation facilities located at both East 13th Street and the South Street Seaport, shutting down electrical service to much of Manhattan below 34th Street for nearly four days after the storm.

Sandy also affected Southern Manhattan's transportation infrastructure. The power outage knocked out traffic signals and streetlights across the street network south of 34th Street. The surge inundated both major Manhattan coastline highways – the West Side Highway and the FDR Drive – with two to four feet of water.

Despite being preemptively shut down, the subway system sustained 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.

Southern Manhattan's two wastewater facilities were also affected by the storm. Both of these facilities experienced service outages due to flooding. The Manhattan Pumping Station at 13th Street was out of service for 25 hours, while the Canal Street Pumping Station was down for 42 hours. Subsequent testing by the New York City Department of Environmental Protection (DEP) showed no significant water quality impacts despite the shutdowns, which caused seawater mixed with stormwater and sewage to be released into surrounding drainage areas.

The storm also affected businesses and nonprofits. In areas that sustained greater impacts, such as the South Street Seaport district, ground-floor businesses were still closed months after the storm.

The City of New York is proposing to implement the East Side Coastal Resiliency (ESCR) Project (the proposed project) as a component of its overall plan to address vulnerability to major coastal flooding events. This project involves the construction of a coastal flood protection system along a portion of the east side of Manhattan and includes related improvements to City infrastructure. The ESCR project area begins at Montgomery Street on the Lower East Side and extends north along the waterfront to East 25th Street, encompassing portions of several Southern Manhattan neighborhoods that were severely impacted by Hurricane Sandy.

PROJECT DESCRIPTION

Project Identification

The ESCR Project evolved from a winning Rebuild by Design (RBD) proposal known as the BIG U, which called for a flood protection system, including berms, floodwalls, and closure structures, that would provide social

and environmental benefits to the community and an improved public realm. The proposal included coordinated plans for three contiguous, but separate waterfront regions called "compartments":

- Compartment 1—East River Park
- Compartment 2—Two Bridges and Chinatown
- Compartment 3—Brooklyn Bridge to the Battery

While each compartment would be equipped with a variety of design features that respond to the particular need and wishes of that particular community, they were envisioned to work together to demonstrate a comprehensive resiliency vision for lower Manhattan, protecting residents, business, infrastructure, and economic activity from the risks of a changing climate and extreme weather events while improving connectivity between the social, natural, and built environments. The Lower East Side North compartment (site of the ESCR Project), identified as a priority for integrated coastal protection interventions by the City in *A Stronger, More Resilient New York* (2013) and reiterated in *OneNYC* (2015),was selected in June 2014 by the United States Department of Housing and Urban Development (HUD) as the first phase of the winning RBD proposal.

The BIG U concept for Compartment 1 focused on combinations of berms, and closure structures (i.e., a floodgate across a street or sidewalk that is deployed during a storm event) to provide flood reduction. The design also proposed improving the connectivity of the adjacent residential neighborhood to the waterfront. Key design objectives included providing access to East River Park through bridges with gentle ramps (i.e., bridging berms); enhancing park access through improved landscaping; providing a new shared and meandering multi-purpose path at the toe of the berms; addressing safety concerns by improving lighting; providing new signage; and reprogramming the land beneath the elevated sections of the FDR Drive.

As a result of the grant award to the City, the RBD proposal was further developed through feasibility analyses and conceptual design, in close coordination with the public as well as City, State, and federal agencies. During the planning and preliminary design phase, site constraints, stakeholder feedback, and the need for integration with existing and planned projects were identified that resulted in modifications to the RBD concept. Further analysis of the constructability, as well as climate risk faced by New York City Department of Parks and Recreation (NYC Parks) assets, resulted in the proposed reconstruction of East River Park above the current 100-year floodplain. Shifting the flood protection system away from FDR Drive addresses constructability challenges associated with work directly adjacent to the roadway, reducing construction time and associated risks to worker safety, and minimizing disruption for nearby residents during construction. Further, this modification would provide flood protection for inland communities as well as protect the valuable park resource from the future risk of tidal inundation resulting from sea level rise. Access to the East River waterfront would be enhanced through increasing the deck elevation of the East River Esplanade to match the raised park, reconstruction of pedestrian bridges and entryways, construction of foundations for a new shared-use flyover bridge, and relocation of two embayments that align more directly with park entrances to connect the community to the water as they arrive. Based on feedback from the community and urban design concerns, as well as site constraints, interference with critical Con Edison infrastructure, and New York City Department of Transportation (NYCDOT) and New York State Department of Transportation (NYSDOT) operations and maintenance requirements for the FDR Drive, the reprogramming elements under the elevated sections of the FDR Drive were eliminated. Instead, flood protection along the waterfront north of East 13th Street is provided by a combination of closure structures, floodwalls. Additionally, instead of tying inland at East 23rd Street, the flood protection alignment was extended to protect the Asser Levy Recreation Center while still tying into the existing VA Medical Center proposed floodwall that continues along East 25th Street. Additional investigations revealed conflicts with critical power transmission lines, and hydraulic modeling highlighted the need for drainage management. As

a result, the overall design was modified to include carbon fiber wrapping to protect the transmission lines in East River and Stuyvesant Cove Parks, and to provide additional drainage management components.

The ESCR project area begins at Montgomery Street on the south and extends north approximately 2.4 miles along the waterfront to East 25th Street. The flood protection system is designed to reduce the risk of damage from coastal storms in the protected area through the installation of floodwalls, closure structures, and supporting drainage improvements. The protected area includes the United States Federal Emergency Management Agency (FEMA)-designated flood hazard area for the 100-year flood event, taking into consideration the 90th percentile projections of sea level rise to the 2050s located landward of the ESCR Project alignment (sea level rise estimate represents the 90th percentile value for the 2050s as presented by the New York City Panel on Climate Change [NPCC 2013 Sea Level Rise Projections]).

Project Objectives

The principal objectives of the ESCR Project are as follows:

- Provide a reliable coastal flood protection system against the design storm event for the protected area (See **Appendix G: Figure 2**);
- Improve access to and enhance open space resources along the waterfront, including East River Park and Stuyvesant Cove Park;
- Respond quickly to the urgent need for increased flood protection and resiliency, particularly for communities that have a large concentration of residents in affordable and public housing units along the ESCR project area; and
- Achieve implementation milestones and comply with conditions attached to funding allocations as established by HUD, including scheduling milestones.

Additionally, design considerations for the ESCR Project include the following:

- Reliability of the proposed coastal flood protection system;
- Urban design compatibility and enhancements;
- Improving the ecology and long-term resiliency of East River Park;
- Constructability;
- Operational and maintenance needs;
- Minimizing use of pre-storm event deployable structures;

The ESCR Project meets these objectives by providing a reliable coastal flood protection system using a combination of floodwalls, closure structures (i.e., swing and roller floodgates), and supporting drainage improvements that together would reduce risk of damage from coastal storms in the protected area. The ESCR Project would elevate and reconstruct East River Park to make it more resilient to coastal storms and inundation from sea level rise, and enhance its value as a recreational resource, in addition to providing flood protection to the inland communities. Further, the project would include enhanced neighborhood connectivity and integration, including improved bikeways and walkways, redesign of several pedestrian bridges to provide enhanced access to the waterfront, and construction of a shared-use flyover bridge linking East River Park and Captain Patrick J. Brown Walk to address the narrow and substandard waterfront public access near the Con Edison facility (on the east side of the FDR Drive between East 13th and East 15th Streets) known as the "pinch point" (The ESCR Project includes construction of the foundations for the shared-use flyover bridge which would be completed in 2023. Subsequently, the superstructure of the shared-use flyover bridge would be completed in 2025). The ESCR project will meet all implementation milestones and conditions to comply with funding allocations as described in further detail below.

Description of Project Areas and Project Elements

The ESCR Project is composed of two project areas: Project Area One and Project Area Two (See **Appendix G: Figure 2)**. Project Area One extends along Montgomery Street from Cherry Street to Pier 42, and continues north along the waterfront to East 13th Street. Project Area One is approximately 61 acres and consists primarily of the FDR Drive right-of-way, a portion of Pier 42 and Corlears Hook Park, and East River Park. Project Area Two extends north along the waterfront from East 13th Street to East 25th Street and west across Asser Levy Place to the Veterans Affairs (VA) Medical Center. Project Area Two is approximately 21 acres and consists primarily of the FDR Drive right-of-way, the Con Edison East River Complex, Captain Patrick J. Brown Walk, Murphy Brothers Playground, Stuyvesant Cove Park, and Asser Levy Playground.

Coastal Flood Protection Components of the ESCR Project

The flood protection system includes a combination of coastal flood protection components, which taken together would act as one continuous barrier to coastal flooding along the East River waterfront from Montgomery Street to East 25th Street. These components are described in further detail below:

- **Floodwall** (see **Appendix G: Figure 3**) - Floodwalls are narrow, vertical structures with a below-grade foundation that are designed to withstand both tidal storm surge and waves. They are typically constructed of steel, reinforced concrete, or a combination of materials with a reinforced concrete cap. Floodwalls can be used where there are horizontal space limitations and where there is a design objective to have a narrow footprint of the flood protection system. Typical floodwall designs include I-walls (partially embedded in the ground) and L-walls (foundation base slab supported by a pile foundation), each providing differing degrees of structural protection to withstand tidal surge and wave forces. Floodwalls can be above-ground or below-ground structures, as is proposed for the majority of East River Park.
- **Closure Structure** - In many flood protection systems it is necessary to provide openings to accommodate day-to-day vehicular, bicycle, or pedestrian circulation along a street or sidewalk. In these instances, closure structures are installed to close the openings prior to the expected arrival of a design storm event and require active deployment. There are two types of closure structures that have been considered as part of the proposed project, each of which is made of steel and structurally reinforced. These closure structures include the following deployable gates:
    - **Swing Floodgates.** Swing floodgates operate like hinged doors and are moved to the closed position prior to the anticipated arrival of a design storm event. The span limit for these systems is generally around 40 feet (see **Appendix G: Figure 4** for a cross section of a typical swing floodgate). This type of floodgate is a site fixture, meaning it remains on-site and is kept in the open position when not in use.
    - **Roller Floodgates.** Roller floodgates are closure structures that can be used in openings with spans up to 72 feet. They are stabilized with a single or double line of wheels and are slid into their protection position prior to the anticipated arrival of a design storm event (see **Appendix G: Figure 5** for a cross section of a typical roller floodgate). This type of floodgate is kept in the open position when not in use.

The flood protection components described above would prevent coastal flooding from entering the protected area. The protected area lies within a large sewershed served by a combined sewer system that conveys a combination of sanitary sewage and stormwater through a network of pipes to the Manhattan Pump Station where it is then pumped to the Newtown Creek Wastewater Treatment Plant (WWTP) for treatment and discharge to the East River. Additional improvements are required to modify the existing combined sewer infrastructure to hydraulically isolate the protected area (drainage isolation) as well as to

protect against inland flooding during the simultaneous occurrence of a rain event with a storm surge event (drainage management) (see **Appendix G: Figure 6** for an overview of infrastructure improvements).

- **Drainage Isolation.** Modifications to existing sewer infrastructure would ensure that this infrastructure would not act as a conduit through which tidal surge water from the East River can enter the protected area. These modifications include installing gates on the existing large-diameter sewer pipe (interceptor) that collects and conveys flow through the system and flood-proofing components of the existing sewer infrastructure (such as catch basins and manholes) on the unprotected side of the proposed flood protection system.
- **Drainage Management.** During a design storm event, depending on the nature of coincident rainfall, and with the tide gates closed, the sewer system conveyance pipes can reach capacity, potentially resulting in backups that cause inland flooding. Measures to address the potential flooding include the installation of additional parallel conveyance pipes and other improvements to enhance the existing conveyance capacity of the sewer system.
- **Infrastructure Reconstruction within East River Park.** The infrastructure within East River Park—including outfalls, regulators, and other infrastructure, as well as the park's drainage collection system and water supply system—is proposed to be reconstructed.

Con Edison high-voltage transmission lines within the project area present a variety of challenges to the design and construction of flood protection measures. These lines are currently buried at a depth that allows effective heat dissipation, which is critical to the efficient functioning of electrical transmission in Lower Manhattan. During construction of the proposed project, Con Edison would undertake the wrapping of their existing live transmission lines located belowground in a protective carbon fiber material. The carbon fiber wrapping approach would protect the transmission lines during construction and ensure long-term viability and access.

The description below and **Appendix G: Figure 7** summarizes flood protection alignment and design for the ESCR Project.

Project Area One

The flood protection system in Project Area One would be largely integrated within an elevated East River Park, providing the opportunity for a holistic reconstruction, reimagining, and expansion of the types of user experiences in the park, while also enhancing neighborhood connectivity and resiliency. This flood protection system in East River Park would protect both the community and the park from design storm events, as well as from increased tidal inundation resulting from sea level rise. In addition, raising the park to integrate with the flood protection system provides universal accessibility to enhanced park programming.

The proposed flood protection alignment begins at its southerly tieback along Montgomery Street, about 130 feet west of South Street; at South Street the system turns north for a distance of about 50 feet and then east, crossing under the FDR Drive to the east side of the highway with a pair of swing floodgates. Once on the east side of the highway, the flood protection system turns north and runs adjacent to the FDR Drive, continuing north into East River Park. Once in East River Park, the proposed flood protection alignment starts to turn east towards the East River, near the amphitheater. From here, the alignment continues north and the system parallels the East River Park bulkhead.

Within East River Park, the proposed project includes the following key design elements:

- A below-grade flood protection structure (i.e., floodwall) running parallel to the existing East River Park bulkhead coupled with the elevation of a majority of East River Park (with the exception of the Fireboat House), generally beginning at the existing amphitheater and continuing northward to the northern end of the park near East 13th Street, thereby protecting park facilities and recreational spaces from coastal flooding during design storm events and sea level rise inundation;
- Installing the floodwall structure below-grade to soften the visual effects of the flood protection system;
- Raising the majority of the park grade with an increase in elevation from west (the FDR Drive) to east (the East River bulkhead) to attain the flood protection system design elevation, accompanied by the reconstruction of the park open space including all fields and passive spaces, reconstruction of paths and walkways to provide universal access to these improved spaces, and incorporating resilient landscaping and substantial tree replanting that envisions a more diverse, resilient, and ecologically robust habitat;
- Reconstructing park facilities such as the Tennis House, Track and Field House, and comfort stations;
- Reconstructing the East River Esplanade to increase the deck elevation to match the raised park and protect the esplanade from design storms and sea level rise;
- Improving north/south access along the waterfront by constructing a new universally accessible shared-use flyover bridge connecting the north end of East River Park with Captain Patrick J. Brown Walk;
- Improving access to the waterfront by reconstructing the Corlears Hook Bridge over the FDR Drive and replacing the existing Delancey Street and East 10th Street Bridges to be universally accessible;
- Creating an expanded and reconfigured park-side East Houston Street landing and universally accessible entryway to the waterfront;
- Relocating the two existing embayments in the park and filling the existing embayments to maximize the community connections to the water and effectively site all recreational programming. Creating two new replacement embayments to provide a net gain in water area and enhanced ecological habitat;
- Reconstructing the amphitheater as an outdoor theater space;
- Reconstructing all water and sewer infrastructure in the park, some of which is reaching the end of the serviceable life, including the outfalls and associated pipes that cross the park to the East River bulkhead.

It is an objective of the design to improve the ecology of East River Park, which is susceptible to the effects of sea level rise, storm surge, and heavy rainfall events. Storm surge from severe events like Hurricane Sandy can overwhelm the park. Moreover, the threat from gradually increasing sea level rise adds to the risk of more frequent flooding from everyday storms or high tides. This flooding not only interrupts the ability for parks visitors to enjoy and utilize the amenities within East River Park, but also affects its ecology. In 2014, NYC Parks removed 258 trees from East River Park due to saltwater damage from Hurricane Sandy.

The existing landscaping and planting plan in East River Park is reflective of the popular styles of the late 1930s, when the Park was first designed and completed. The planting design is formal, with a focus on tree geometry and placement that maximizes open spaces for active recreation. Species diversity and ecology were not priorities of the original landscape design: over half of the current tree canopy is comprised of just two species. In the original design, plant selection relied heavily on canopy trees, such as London plane, a non-native species, and oaks. London plane trees, in particular, were significantly affected by salt water inundation post Hurricane Sandy. Many succumbed to the inundation-related stress and required removal, while others continue to show significant signs of declining health.

In contrast to the lack of species diversity of prior park designs, the proposed landscaping plan incorporates park resiliency through a design that can withstand a changing climate and consideration of species diversity, habitat, salt spray, wind, maintenance, and care. The landscape plan includes over 50 different species, reflecting research around the benefits of diversifying species to increase resiliency and adaptive capacity in

a plant ecosystem. The design also focuses on creating a more layered planting approach, allowing for informal planting areas that have flexibility and plant communities that together improve ecological richness. By elevating the majority of the park and its landscape, and diversifying plant species, the landscape in the park will be more resistant to salt spray exposure and improve resiliency and post-storm functionality over the long term.

Project Area Two

North of East River Park, the proposed flood protection system includes a closure structure across the FDR Drive. Two swing floodgates that, when deployed, would close this segment of the flood protection system across the highway, but in non-storm conditions would be recessed to the sides of the highway to allow for vehicular circulation. From there, the floodwall continues northward and aligns along the west (southbound) side of the FDR Drive, connecting into the flood protection system at the Con Edison East River Generating Station (between East 14th and East 15th Streets). A closure structure adjacent to East 14th Street near the FDR Drive would also be installed to allow Con Edison operational access. North of the East River Generating Station, a closure structure is proposed across the FDR Drive East 15th Street ramp, and the floodwall continues northward along the FDR Drive to Murphy Brothers Playground.

At Murphy Brothers Playground the proposed floodwall is aligned along the east side of the park, which would also be reconstructed with new ballfields, active recreational spaces, grading and landscaping.

Beginning at the northeast corner of Murphy Brothers Playground, the proposed flood protection system turns east along Avenue C, heading towards the East River, crossing the FDR Drive ramps (two swing gate closure structures are proposed here) and under the FDR Drive into Stuyvesant Cove Park. Within Stuyvesant Cove Park, the proposed flood protection system turns northward, where it is comprised of a combination of floodwalls with closure structures (roller gates) at the southerly entrance (from Avenue C) and at the East 20th Street entrance to allow public access into the park to the waterfront esplanade during non-storm conditions. Design of this segment is also being coordinated with the new design for Solar One Environmental Education Center and existing Citywide Ferry Service ferry landing.

North of Stuyvesant Cove Park, the system again turns west and back under the elevated FDR Drive at East 23rd Street. In this segment, a combination of floodwalls and closure structures (a combination of roller and swing gates) are needed to maintain vehicular and pedestrian circulation through this intersection during non-storm conditions, including: vehicle access to the FDR Drive ramps and service roads; pedestrian and cyclist access to and along the East River shared-use path; and, vehicle and pedestrian access to Waterside Plaza (including the U.N. School and the British International School of New York), the Skyport Marina and parking garage, and a BP service station. These closure structures are to be recessed except under storm conditions when they would be deployed to provide the proposed flood protection.

North of East 23rd Street and west of the FDR Drive, the proposed flood protection system continues northward along the sidewalk of the southbound FDR Drive service road. The proposed system then turns westward into and across the Asser Levy Park Playground (between the Asser Levy Recreation Center and the outdoor recreational space). Similar to Murphy Brothers Playground, the outdoor recreational space at Asser Levy Playground would be redesigned and reconstructed and a roller floodgate is proposed to connect to the VA Medical Center floodwall. The flood gate would maintain the connection between the playground and the Asser Levy Recreation Center and during a storm condition it would be deployed. The VA Medical Center flood protection system extends north and then west along East 25th Street to complete the northern tieback at First Avenue.

Project Feasibility and Effectiveness

The benefits achieved through implementation of the ESCR Project as proposed in design include providing increased coastal flood protection and enhancing waterfront access and open space resources along Manhattan's East River waterfront. The final design will meet all appropriate codes and industry design and construction standards. Upon completion of the final design for the ESCR Project, anticipated in late 2019, a registered Professional Engineer will certify that the design meets all appropriate codes and industry design and construction standards. Once constructed, the City will own, operate and maintain the flood protection system in accordance with an operations and maintenance protocol. Specifically, the City's Departments of Parks & Recreation, Transportation, and Environmental Protection will oversee the project's operation and maintenance together with Con Edison and the VA Medical Center for connections to their respective resiliency efforts that will meet FEMA standards and achieve FEMA accreditation.

The City of New York hereby certifies that funding will be made available to cover the long-term operating and maintenance costs associated with the ESCR Project. Specific costs will be identified as the design is finalized. The City's Financial Plan reflects five years of City-wide projected revenues and expenditures, currently FY17-FY21. Given that the construction timeline currently extends into 2023, these maintenance and operating costs fall outside of the scope of the current Financial Plan. Funding will be provided in the appropriate fiscal years once the City has the ability to do so.

The City is committed to developing and implementing a set of Resiliency Performance Standards for all infrastructure projects. The City looks to the best available science and promising practices in resiliency to inform the development of these performance standards. Specifically, the City will refer to the guidance provided in the "Resilience Performance Standards" section of the Infrastructure and Other City Services Chapter of the currently approved Action Plan incorporating Amendments 1-19. The City will generally rely on the following performance standards to measure resiliency within a project:

- Robustness: ability to absorb and withstand stressors and shocks
- Redundancy: additional channels to enable maintenance of the core functionality in an event of disturbance or system failure
- Resourcefulness: ability to adapt and respond in a flexible manner during stressors and shocks
- Response: ability to mobilize quickly in the face of stressors and shocks
- Recovery: ability to regain functionality after stressors and shocks

Rooted in these resiliency performance standards, the City will advance a plan to monitor and evaluate the coastal protection infrastructure developed through this RBD initiative, as required by the October 16, 2014 Federal Register Notice (79 FR 62189; VI.6.a.i.). 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 ESCR 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 project is complete. The purpose of the evaluation methodology is to determine the ESCR Project's efficacy level in addressing the community needs over a period of time through a robust inspection and data collection program. Inspection data will be captured in a report that documents findings that establish a baseline, monitor progress over a designated period of time, and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes to support long-term operation of the flood protection system.

An operations and maintenance manual for the ESCR Project will be developed by the City for effective deployment of the proposed flood protection system. The manual will address each flood protection system component and the agency responsible for the components deployment during a flood event, along with a pre-storm timeline for its deployment.

Resilience Performance Standards

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Project Funding

To implement the proposed project, the City and its federal partners have committed approximately $1.45 billion in funding. The City has entered into a grant agreement with the U.S. Department of Housing and Urban Development (HUD) to disburse $335 million of Community Development Block Grant-Disaster Recovery (CDBG-DR) funds for the design and construction of the proposed project. The City is the grantee of CDBG-DR funds related to Hurricane Sandy for the development of a coastal flood protection system, which would be provided to the City through the New York City Office of Management and Budget (OMB), acting under HUD's authority. In addition, the City committed $3 million from its overall Hurricane Sandy CDBG-DR allocation, bringing total CDBG-DR ESCR Project funds applied to $338 million. These funds are eligible for reimbursement under HUD's RBD program, and will be used for planning, predevelopment, and project construction.

Currently, the $338 million is broken into planning, predevelopment work, project construction, and administrative duties. Planning, which includes technical survey and feasibility analyses, totals $13.7 million. Predevelopment work for environmental review and design activities totals $52 million. Administrative costs sum to $13.4 million. Lastly, construction and construction management activities total $258.9 million. These budget allocations are estimates and will be amended as necessary.

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To note, an updated Benefit Cost Analysis (BCA) was conducted and the finding was that the benefits of this project outweigh the cost. **The full text of the BCA is included as an attachment to this document (Attachment 1).**

IMPLEMENTATION PARTNERSHIP

The NYC Department of Design and Construction (DDC), in partnership with NYC Parks, NYCDOT, DEP, Mayor's Office of Resiliency (MOR), NYC Office of Management and Budget (OMB), and NYC Department of Small Business Services – the "Project Team" – is overseeing the implementation of the ESCR Project. DDC and its partner agencies meet on a regular basis to set strategy and timelines, share project updates, and work through any issues.

MOR and DDC executed a Memorandum of Understanding on October 7, 2014, to administer the funding for the project. To implement the project per the requirements associated with the CDBG-DR funds and the schedule set forth by the City (with a groundbreaking in 2020 and spending all CDBG-DR dollars by June 2022), DDC utilizes existing on-call consultant contracts whenever possible and innovative procurement methods as permitted by law and under the Procurement Policy Board (PPB) rules. This included Topographic Survey and Soundings of the project area, conceptual/preliminary/final design services, community engagement, environmental review, and permitting. Future contracts will be issued for construction and construction management.

Partner Agencies

NYC Department of Design and Construction

DDC serves as the implementing agency and is working with other agencies to coordinate plans, designs, and the environmental review of the ESCR Project. DDC acts as the City's primary implementation agency and capital construction project manager, utilizing its experience in the timely implementation of critical and high-profile infrastructure and buildings projects, such as the Trunk Water Main Connections to Water Tunnel Number 3. In addition, DDC provides communities with new or renovated structures such as firehouses, libraries, police precincts, courthouses, and senior centers. 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. 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.

Mayor's Office of Resiliency

MOR, formerly the Mayor's Office of Recovery and Resiliency (ORR), serves as an advisory office for activities and projects proposed to increase resiliency, including strengthening coastal defense, upgrading buildings, adapting infrastructure and critical services, and strengthening neighborhoods. MOR leads the effort to build a stronger and more resilient New York through the implementation of recommendations described in resiliency planning policies, building on a foundation of public collaboration and analysis. MOR routinely executes complex programs and successful projects with a wide array of State and federal agencies, including the New York State Governor's Office of Storm Recovery (GOSR), the New York State Division of Homeland Security and Emergency Services, the New York State Department of Environmental Conservation, HUD, FEMA, and the USACE, among others. MOR's multi-billion-dollar portfolio includes appropriations from Public Law 113-2 and requires careful coordination with State and federal agencies.

Mayor's Office of Management and Budget

OMB is the Responsible Entity (RE) for the disbursement of CDBG-DR funds for Hurricane Sandy from HUD to City agencies. As the project is funded and would receive approval from a federal government agency (i.e., HUD) and has the potential to result in significant impacts, it is subject to an environmental review under the National Environmental Policy Act (NEPA). As such, OMB is the NEPA Lead Agency for the Environmental Impact Statement (EIS) for the ESCR Project. As the City government's chief financial agency, OMB assembles and oversees both the expense budget and capital budget. The agency has extensive experience with managing funding activities, overseeing approximately 70 agencies with more than 300,000 full-time and full-time equivalent employees, and coordinating with State and federal agencies. In addition, the agency is charged with evaluating the efficiency and cost-effectiveness of City services and proposals and regularly provides vital information to government officials on the local, national, and world economies.

NYC Department of Parks & Recreation

NYC Parks is the steward of approximately 30,000 acres of land (14 percent of New York City), including nearly 1,000 playgrounds and 14 miles of beaches. As the ESCR Project would be located in large part within City parkland, NYC Parks is the State Environmental Quality Review Act (SEQRA) / City Environmental Quality Review (CEQR) Lead Agency for the EIS. NYC Parks works closely with MOR, DDC, and other City agencies to ensure that NYC Parks' resiliency efforts support overall City goals. NYC Parks' primary objectives are to plan for the long-term resiliency of 148 miles of natural and built shoreline in NYC Parks' jurisdiction, create a comprehensive set of guidelines to develop and manage open spaces in the floodplain, and integrate resilient features that both protect and enhance communities. In addition to approaching capital projects for individual parks with a goal of increasing resiliency, NYC Parks oversees a number of ongoing initiatives to support citywide resiliency measures. Those projects range from extensive coordination with the USACE to build protective berms and integrate community recreation along the east and south shores of Staten Island, as well as coordinating with GOSR on the Living Breakwaters RBD Project also located on Staten Island.

NYC Department of Transportation

NYCDOT ensures the safe, efficient, and environmentally responsible movement of people and goods in the City. A crucial part of this mission is to maintain and enhance the transportation infrastructure crucial to the City's economic vitality and quality of life. The agency oversees one of the most complex urban transportation networks in the world, including over 6,000 miles of streets and highways, 12,000 miles of sidewalk, and 789 bridges and tunnels, including the Williamsburg Bridge. As part of these goals to manage the City's transportation network, NYCDOT is working to identify resiliency and mitigation goals and strategies for the agency's infrastructure and regularly coordinates with MOR on critical Citywide coastal protection projects. NYCDOT also has extensive experience working with local, State and federal agencies, including the management and administration of emergency relief grant programs for Hurricane Sandy and other natural disasters. For the ESCR Project, NYCDOT serves as the lead reviewer of flood protection design and permits

related to activities along, adjacent to, and within the FDR Drive and Williamsburg Bridge footings, and the local street network.

NYC Department of Environmental Protection

DEP protects public health and the environment by supplying clean drinking water, collecting and treating wastewater, and reducing air, noise, and hazardous materials pollution. In addition to providing clean drinking water to the City, DEP collects wastewater through a vast underground network of pipes, regulators, and pumping stations, and also treats 1.3 billion gallons of wastewater each day in a way that protects the quality of New York Harbor. As part of this mission, DEP oversees one of the largest capital construction programs in the region and serves as the lead reviewer of design and as an advisory agency for activities related to stormwater management, water and sewer infrastructure, and natural resources. DEP is committed to investing in water and sewer infrastructure to ensure the continuity of critical services into the future. By implementing resilient strategies to improve energy reliability, improve and expand drainage infrastructure, and promote redundancy and flexibility of the water supply, DEP continues to be a leader in proactive planning for climate change to ensure the resiliency of the City's water resources.

NYC Department of Small Business Services

SBS works to create economic security in the City by connecting New Yorkers to jobs, strengthening businesses, and building a fairer economy in neighborhoods across the five boroughs. In addition to helping businesses form and grow, SBS has jurisdiction over maritime and non-maritime construction for all City-owned waterfront properties. As such, SBS is tasked with issuing permits for all construction related to improvement or maintenance on Waterfront Properties under SBS jurisdiction, including portions of the ESCR Project Areas, including Stuyvesant Cove Park.

Federal, State, and Local Coordination

Implementation of the ESCR Project will require federal, State, and local permits and authorizations. The City is in the process of preparing and submitting applications for various Federal, State, City, local, and other Partner Agency permits and approvals, including a Joint Permit Application to USACE and the New York State Department of Environmental Conservation (NYSDEC). A Joint Permit Application is anticipated to be submitted in summer 2019. As development of detailed design and construction drawings is currently ongoing and anticipated to be completed in summer 2019, permits have not yet been issued. The City has closely coordinated with Federal, State, City, local, and other organizations to ensure all required permit issuances and approvals for the ESCR project are anticipated by the end of 2019.

Agencies, organizations, and other partners that are involved in the environmental review and regulatory permitting and approval processes are as follows:

Federal

- U.S. Department of Housing and Urban Development (HUD) – Disbursement of funds; administration of CDBG-DR grant to the City of New York; review of Action Plan Amendments.
- U.S. Army Corps of Engineers (USACE) – Permits or authorizations for activities in Waters of the United States (Section 404 of the Clean Water Act) or structures within navigable waters (Section 10 of the Rivers and Harbors Act).
- U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) – Advisory agencies to the environmental review process focusing on activities that affect wetlands, water quality, protected plant and wildlife species, and essential fish habitat.
- U.S. Coast Guard (USCG) – Coordination and authorization regarding placement of construction barges and underwater work.

- Federal Emergency Management Agency (FEMA) – Review of flood protection design and potential changes to Flood Insurance Rate Maps (FIRM).
- Advisory Council on Historic Preservation (ACHP) – Advisory role in federal review process pursuant to Section 106 of the National Historic Preservation Act (NHPA).
- U.S. Department of Veterans Affairs (VA) – Approval for activities on VA property and coordination for emergency preparedness and operations under storm conditions.

State of New York

- Department of Environmental Conservation (NYSDEC) – Permits related to activities in tidal wetlands or adjacent areas (Article 25) or protection of waters (Article 15), Water Quality Certification (Section 401); endangered species protection if an incidental take is determined; permits related to the State Pollutant Discharge Elimination System (SPDES) program; approvals related to the handling and transport of hazardous materials and soils.
- Department of State (NYSDOS) – Review of Coastal Zone Consistency.
- Office of General Services (NYSOGS) – Permits related to State Owned Land under Water.
- Office of Parks, Recreation and Historic Preservation (OPRHP) – Advisory role as the State Historic Preservation Office (SHPO) in federal review process pursuant to Section 106 of the National Historic Preservation Act (NHPA) with respect to designated and protected properties on the State and National Registers of Historic Places and properties determined eligible for such listing.
- Department of Transportation (NYSDOT) – Review of flood protection design and approvals related to construction activities along and adjacent to segments of FDR Drive under NYSDOT jurisdiction.

City of New York

- Department of City Planning (DCP) – Planning and waterfront area zoning text compliance and decision-making, Coastal Zone Consistency decision-making, and approval of actions subject to Uniform Land Use Review Procedure (ULURP).
- New York City Economic Development Corporation (NYCEDC) – Coordination and approval for activities on EDC-leased property, including Stuyvesant Cove Park and Solar One.
- New York City Emergency Management (NYCEM) – Coordination for emergency preparedness, response, and operations under storm conditions.
- Public Design Commission (PDC) – Review and approval of art, architecture, and landscape features proposed for City-owned property and capital projects.
- Landmarks Preservation Commission (LPC) – Advisory agency for activities on or near sites of historic or archaeological value.
- Department of Buildings (DOB) – Review of design and permits related to buildings including compliance with the City's Building, Electrical, and Zoning Codes and construction activities in the FEMA-designated flood hazard area.
- Department of Housing Preservation & Development (HPD) – Review and approval for the disposition of NYCHA property (easement).
- Office of the Deputy Mayor for Operations – Advisory agency in CEQR review and for activities and projects proposed to advance long-term plans for sustainable growth.
- New York City Fire Department (FDNY) – Design approval for emergency access.

Other Partners

- New York City Housing Authority (NYCHA) – Approval for activities on NYCHA property.
- New York Power Authority (NYPA) – Approval for design elements related to NYPA easements.
- Public Service Commission – Approval of dispositions involving public utility properties (Con Edison).

- Consolidated Edison Company of New York (Con Edison) – Coordination for emergency preparedness and operations under storm conditions.
- Gouvernuer Gardens Housing Corporation – Approval for activities on property.
- Community Boards 3 and 6 (CB3 / CB6) – Approval for activities within community district.

The City will continue to work with the Federal Sandy Regional Infrastructure Resilience Coordination (SRIRC) group to coordinate design, permitting, construction, and operation of the ESCR Project to align and integrate it with other recovery projects in the area. Additionally, the City will continue to work with the Sandy Regional Federal Review and Permitting (FRP) Team.

Per Section 101(c) of the Housing and Community Development Act (HCDA) of 1974, as amended, a CDBG-assisted activity must meet one of three national objectives: (1) benefiting low- and moderate-income persons; (2) preventing or eliminating slums or blight; and (3) meeting urgent needs. In addition, Section 105(a) of the HCDA requires that only certain eligible activities may be assisted with CDBG funds. The National Objective and Eligible Activity for the ESCR Project are listed below:

- National Objective: Low-Moderate Income; Urgent Need.
- Eligible Activity: Rebuild by Design.

Additional information for the ESCR Project can be found on the City's website: http://www.nyc.gov/escr.

EAST SIDE COASTAL RESILIENCY OUTREACH PLAN

DDC, in close coordination with the rest of the Project Team, has developed an outreach plan that builds upon the CDBG-DR public participation process. Community engagement and outreach is ongoing, and will continue throughout the project planning, design, construction, and close-out phases. 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.

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 ESCR Project. To date, the project has conducted numerous outreach events tailored specifically to the interested public, residents, elected officials, and community groups. This approach informed and involved these groups at appropriate points in the project lifecycle by presenting timely information and obtaining feedback.

To facilitate productive interaction between the City and communities, the City will continue to dedicate appropriate resources and attention to its engagement endeavors.

When necessary and practicable, the City engages with residents who have limited English proficiency by communicating information in spoken and written formats in individuals' primary language. Based on community needs, spoken format interpretive services will be provided in Mandarin, Cantonese, and Spanish. Similarly, print translations will be provided in Simplified Chinese and Spanish.

DDC takes the lead role in coordinating community engagement and communicating with interested City, State, and federal agencies throughout project execution, as well as leading coordination of interagency press and communications. Project implementation coordination is considered part of DDC's project management responsibilities, with support from the Partner Agencies.

The goals of the community outreach process, developed by the Project Team, are shaped and realized by discussions with stakeholders and broader public workshops/feedback sessions. The overarching goals are to:

- Enable and facilitate input from stakeholders;
- Explore and communicate opportunities and trade-offs; and
- Strengthen project design and implementation through collaborative discussion.

Stakeholder engagement is intended to expand upon outreach conducted during the RBD competition phase, and emphasizes 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. In order to support ongoing public outreach in partnership with community stakeholders, the Project Team will continue to:

- Compile a comprehensive list of stakeholder organizations and individuals, with input from community leaders and elected representatives;
- Sufficiently advance site investigation and design ahead of community engagement to guide and lead discussions with stakeholders;
- Coordinate messaging and public presentations with other City initiatives and projects;
- Arrange meetings and briefings with major stakeholder groups; and
- Work in partnership with community stakeholders, including, but not limited to: NYCHA residents and tenant associations; Community Board leaders and members; community-based organizations; local businesses; elected representatives.

The following community engagement meetings that have taken place to date are listed below in **Table 1**:

Table 1
Community Engagement Meetings to Date

Date	Meeting Type	Primary Meeting Subject(s)
January 5, 2015	CB3/CB6 Joint Waterfront Task Force	Project Update and Community Engagement Preview
March 19, 2015	Community Engagement	How do you use the waterfront?
March 23, 2015	Community Engagement	How do you use the waterfront?
April 7, 2015	CB3/CB6 Joint Waterfront Task Force	Project Update and Community Engagement Meeting Results and Preview of Next Community Engagement Meetings
May 19, 2015	Community Engagement	What are the flood protection, urban design, and upland connection options for Project Area Two?
May 20, 2015	Community Engagement	What are the flood protection, urban design, and upland connection options for Project Area One?
May 28, 2015	Community Engagement	What are the flood protection, urban design, and upland connection options for Project Area One?
July 9, 2015	CB3/CB6 Joint Waterfront Task Force	Project Update and Community Engagement Meeting Results and Preview of Next Community Engagement Meetings

Table 1
Community Engagement Meetings to Date

Date	Meeting Type	Primary Meeting Subject(s)
July 28, 2015	Community Engagement	How do we combine the options to make alternatives for Project Area Two?
July 29, 2015	Community Engagement	How do we combine the options to make alternatives for Project Area One?
July 30, 2015	Community Engagement	How do we combine the options to make alternatives for Project Area One?
September 10, 2015	Community Engagement	How do we combine the options to make alternatives for Project Area One?
September 30, 2015	CB3/CB6 Joint Waterfront Task Force	Project Update and Community Engagement Meeting Results and Preview of Next Community Engagement Meetings
October 6, 2015	Community Engagement	Overall Initial Design Direction: Input and Feedback
October 8, 2015	Community Engagement	Overall Initial Design Direction: Input and Feedback
May 23, 2016	CB3/CB6 Joint Waterfront Task Force	Review project goals and Preliminary Preferred Alternative
September 20, 2016	CB3/CB6 Joint Waterfront Task Force	Update on project status
November 14, 2016	Asser Levy and Murphy Brothers Playgrounds Community Meeting	Project overview and review site considerations and design options for Murphy Brothers Playground and Asser Levy Recreation Center + Playground
November 28, 2016	Project Area Two Community Outreach	Design considerations and approach for Project Area Two
December 1, 2016	Project Area One South Community Engagement	Design considerations and approach for Project Area One – South
December 7, 2016	Project Area One North Community Outreach	Design considerations and approach for Project Area One – North
January 31, 2017	CB3/CB6 Joint Waterfront Task Force	Update on project status
February 16, 2017	Asser Levy and Murphy Brothers Playgrounds Community Meeting	Review site considerations and design options for Murphy Brothers Playground and Asser Levy Recreation Center + Playground

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Community Engagement Meetings to Date

Date	Meeting Type	Primary Meeting Subject(s)
June 20, 2017	CB3/CB6 Joint Waterfront Task Force	Project updates including Stakeholder Meetings, Substantial Action Plan Amendment, interior drainage analysis, 24th/25th Street alignment, and field work
November 9, 2017	CB3/CB6 Joint Waterfront Task Force	Update on project status
March 15, 2018	CB3 Parks, Recreation, Waterfront, and Resiliency Committee	Overall Project Design update
March 26, 2018	CB6 Land Use and Waterfront Committee	Overall Project Design update
March 27, 2018	CB3/CB6 Joint Waterfront Task Force	Overall Project Design update
April 11, 2018	CB6 Full Board Meeting	Overall Project Design update
October 11, 2018	CB3 Parks, Recreation, Waterfront, and Resiliency Committee	Project Design Update (Raised East River Park)
November 8, 2018	CB6 Land Use and Waterfront Committee	Project Design Update (Raised East River Park)
December 10, 2018	Interactive Community Engagement Meeting	Project Status and Design Update (Raised East River Park)
December 11, 2018	Interactive Community Engagement Meeting	Project Status and Design Update (Raised East River Park)
January 10, 2019	CB3 Parks, Recreation, Waterfront and Resiliency Committee	Project Design Update
January 17, 2019	LESReady!	Project Design Update
January 23, 2019	New York City Council, Jointly held Public Hearing of the Parks and Recreation Committee and the Committee on Environmental Protection	Project Design Update
January 28, 2019	CB6 Land Use and Waterfront Committee	Project Design Update
February 4, 2019	NYCHA Tenant Associations Leadership	Project Design Update
February 14, 2019	CB3 Parks, Recreation, Waterfront, and Resiliency Committee	Project Design Update
February 19, 2019	Lower East Side Power Partnership	Project Design Update
February 28, 2019	NYCHA, Jacob Riis Houses Residents	Project Update

Table 1
Community Engagement Meetings to Date

Date	Meeting Type	Primary Meeting Subject(s)
March 6, 2019	Amphitheater Working Group	Project design discussion related to reconstruction of amphitheater
March 12, 2019	NYHCA, LES II/Bracetti Plaza and LES V Residents	Project Overview
March 13, 2019	East River Alliance	Project Design Update and responding to specific design and construction questions raised
March 14, 2019	CB3 Parks, Recreation, Waterfront, and Resiliency Committee	Project Design Update
March 25, 2019	CB6 Land Use and Waterfront Committee	Project Design Update (Project Schedule, Pinch Point Bridge, Project Area 2 [14th to 25th Street] Park designs; location of 20th Street flood gate and gate houses, drainage issues)
March 26, 2019	Stuyvesant Town-Peter Cooper Village Tenants Association/Tenants	Project Design Update (Project Schedule, Pinch Point Bridge, Project Area 2 [14th to 25th Street] Park designs; location of 20th Street flood gate and gate houses, drainage issues)
March 28, 2019	NYCHA, Bernard M. Baruch Houses Residents	Project Overview
April 9, 2019	NYCHA Riis Residents Meeting	Project Overview
April 11, 2019	CB3 Parks Committee Meeting	Project Update
April 22, 2019	CB6 Land Use Committee Meeting	Project Design Update
April 29, 2019	NYCHA Wald Residents Meeting	Project Design Update
May 14, 2019	Open House	Project Design Update and Soliciting Community Feedback

Table 1
Community Engagement Meetings to Date

Date	Meeting Type	Primary Meeting Subject(s)
May 15, 2019	Open House	Project Design Update and Soliciting Community Feedback
May 16, 2019	CB3 Parks Committee Meeting	Project Update (Open House debrief, Neighborhood Park Improvements)
May 28, 2019	CB6 Land Use and Waterfront Committee ULURP Public Hearing	ULURP Hearing
June 3, 2019	Grand St. Town Hall	Project Design Update and Soliciting Community Feedback
June 5, 2019	Open House	Project Design Update and Soliciting Community Feedback
June 6, 2019	Open House	Project Design Update and Soliciting Community Feedback
June 11, 2019	CB3 Parks Committee ULURP Public Hearing	ULURP Hearing
June 12, 2019	CB6 Full Board Meeting	ULURP Hearing
June 13, 2019	CB3 Parks Committee Meeting	ULURP Hearing
June 25, 2019	CB3 Full Board Meeting	ULURP Hearing
July 17, 2019	Borough President ULURP Hearing	ULURP Hearing

In addition, agency coordination and public involvement is also being conducted as part of the project's environmental review process to inform interested parties of the progress of the project and to encourage continuous agency and community involvement in the decision-making process. The environmental review process, with OMB and NYC Parks as lead agencies, provides a means for decision-makers to systematically consider environmental effects along with other aspects of project planning and design to evaluate and compare reasonable alternatives and to identify and mitigate, where practicable, any significant adverse environmental impacts. As the project has the potential to result in significant adverse environmental impacts, it was determined that an EIS would be required as discussed above. Therefore, at OMB's request, the HUD issued a Notice of Intent to Prepare an EIS in accordance with 24 CFR Part 1502. In addition, OMB and NYC Parks prepared a Draft Scope of Work to describe the proposed content of the DEIS to explain the methodologies to be used in the impact analyses, and to allow for public and stakeholder participation in accordance with 24 CFR Part 58, 40 CFR Parts 1500-15087, and 6 NYCRR Part 617.

A Draft Scope of Work for the DEIS was published on October 30, 2015, and a public scoping meeting was held on December 3, 2015, with a public input and review period that remained open until December 21, 2015. A Final Scope of Work, which reflected public comments made on the Draft Scope, was issued on April

5, 2019. The DEIS is based upon the Final Scope of Work, and it, along with the subsequent Final EIS (FEIS) will serve to fulfill the statutory obligations of NEPA, SEQRA, and CEQR.

A Notice of Availability (pursuant to NEPA) and a Notice of Completion (pursuant to CEQR) for the DEIS was issued on April 5, 2019. Publication of the DEIS and Notices initiated the public review period, which remained open through August 30, 2019. During this period, the public had the opportunity to comment on the DEIS in writing, or at a public hearing on July 31, 2019. After the DEIS public comment period closed, a Final EIS (FEIS) was prepared, which includes a summary of the comments received on the DEIS, responses to all substantive comments, and any necessary revisions to the DEIS to address those comments. No sooner than 30 days after publishing the FEIS, OMB will prepare a Record of Decision and Statement of Findings that will describe the Preferred Alternative (the ESCR Project), its environmental impacts, and any required mitigation. Similarly, NYC Parks will prepare a Statement of Findings demonstrating that it has reviewed the impacts, mitigation measures, and alternatives in the FEIS prior to adopting its findings. OMB can proceed with the federal action of requesting release of CDBG-DR grant funds from HUD once the environmental review process is concluded.

HUD ELIGIBILITY CATEGORY: Rebuild by Design

NATIONAL OBJECTIVE: Low- and Moderate-Income Area Benefit; Urgent Need

CDBG-DR ALLOCATION: $338,000,000

PROJECTED ACCOMPLISHMENTS: Coastal protection for approximately 2.4 miles of Manhattan's shoreline from Montgomery Street on the south to East 23rd Street to the north.

PROJECT TIMELINE

The draft project timeline is provided in additional detail below. Dates and task durations shown below are subject to change based on ongoing design and coordination with local, State, and federal stakeholders.

- Survey Work, Feasibility Study and Pre-Scoping: June 2014 to December 2014
- Conceptual Design: January 2015 to August 2016
- Preliminary Design: September 2016 to July 2019
- Final Design: August 2019 to December 2019
- Environmental Impact Statement (EIS): December 2015 to December 2019
    - Public Scoping Meeting: December 3, 2015
    - Draft EIS (DEIS) Release: April 5, 2019
    - DEIS Public Hearing: July 31, 2019
    - Public Review of DEIS: April 5, 2019 to August 30, 2019
    - Final EIS (FEIS) Release: September 13, 2019
    - Record of Decision (ROD) / Findings: December 6, 2019
    - Request for Release of Funds (RROF): January 7, 2020
    - Authority to Use Grant Funds (AUGF): January 2020 (anticipated)
- Uniform Land Use Review Procedure (ULURP): April 2019 to November 2019
    - ULURP Certification: April 22, 2019
    - Community Board Public Hearings: May 28, 2019; June 11–13, 2019; June 25, 2019

    - Borough President Public Hearing: July 17, 2019
    - City Planning Commission Public Hearing: July 31, 2019
    - City Planning Commission Vote: September 23, 2019
    - City Council Public Hearing: October 3, 2019
    - City Council Vote: November 14, 2019
- Permitting: July 2017 to March 2020
    - USACE Jurisdictional Determination: July 21, 2017
    - Joint Permit Application Submittal to USACE / NYSDEC: May 24, 2019
    - Revised Joint Permit Application Submittal to USACE / NYSDEC: November 25, 2019
    - Permit Issuance: March 2020 (anticipated)
- Procurement and Construction: August 2019 to December 2023
    - Procurement and Registration: Summer 2019 through Spring 2020 through a phased contract approach
    - Groundbreaking: March 2020 (anticipated)
    - Completion of Flood Protection System and Raised East River Park: June 2023 (anticipated)
    - Project Completion: December 2023 (anticipated)

Rebuild by Design: Hunts Point Resiliency

INTRODUCTION

When Hurricane Sandy hit New York City on October 29, 2012, it brought the vulnerabilities of coastal communities to climate change into stark relief. Following the storm, the Mayor of the City of New York established the "NYC Special Initiative for Rebuilding and Resiliency," which released a report in June 2013 describing the damages and hardships experienced as well as strategies moving forward to build back stronger. With regard to Hunts Point, the report stated damage was minimal due to the timing of the storm's arrival coinciding with low tide in the Long Island Sound. However:

> "According to modeling undertaken by the storm surge research team at the Stevens Institute of Technology, if Sandy had arrived earlier – near high tide in western Long Island Sound, rather than in the New York Harbor and along the Atlantic Ocean – the peak water level in the western Sound, measured at the King's Point gauge, which hit more than 14 feet above Mean Lower Low Water, or MLLW (over 10 feet above datum NAVD88) during Sandy, instead could have reached almost 18 feet above MLLW (almost 14 feet above NAVD88).
>
> The result would have been devastating for infrastructure providing critical services to the rest of the City. Flooding could have overwhelmed parts of the Hunts Point Food Distribution Center (FDC) in the Bronx, thereby threatening facilities that are responsible for handling as much as 60 percent of the City's produce."

Hurricane Sandy highlighted the potential flooding vulnerability of the peninsula's critical facilities, other businesses, and the residential community to the effects of climate change including sea level rise, storm surge, extreme precipitation events, extreme heat events, system-wide infrastructure outages, and building or sub-area level infrastructure outages.

Many areas in the City were significantly impacted by power outages caused by flooding. As a result of these outages, even the 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 original Hunts Point Lifelines Rebuild by Design proposal addressed resiliency through four Lifelines: Integrated Flood Protection, Livelihood and Community Resilience, Cleanways, and Maritime Supply Chain. Through a year-long community engagement process, the City of New York worked with stakeholders from community groups, elected offices, and local businesses to identify resilient energy as the priority for the pilot project. The revised project description in this Action Plan Amendment reflects the Hunts Point Lifelines "Cleanways" proposal to develop a tri-generation microgrid system to ensure that the Hunts Point residential community and the Food Distribution Center is resilient to power outages from flooding and other emergency events.

In June 2014, U.S. Department of Housing and Urban Development (HUD) announced Community Development Block Grant-Disaster Relief (CDBG-DR) funding awards for the implementation of selected Rebuild by Design (RBD) proposals. HUD granted the City a $20 million award for the Hunts Point Lifelines RBD proposal to advance "continued robust planning and study related to the future of the food market and a small pilot/demonstration project (to be selected by the City)." In an April 2015 amendment to the City's CDBG-DR Action Plan, the City supplemented the original RBD award with the allocation of an additional $25 million of CDBG-DR funds, bringing the total investment towards the first stage of resiliency improvements in Hunts Point to $45 million to address the flooding vulnerability identified post-Sandy. In the May 2018, the City added an additional $26 million in City capital funds, bringing the total project funding to $71 million.

In consultation with local elected officials, community and civic groups and business interests, the New York City Economic Development Corporation (NYCEDC), and Mayor's Office of Resiliency (MOR) formed the Advisory Working Group (AWG) to further develop resiliency priorities and recommendations that build upon the ideas presented in the RBD proposal and other ongoing resiliency and planning initiatives in Hunts Point. From June to September 2015, the AWG convened for seven meetings (including two meetings with the general public), worked through exercises to better understand Hunts Point's vulnerabilities to flooding, developed selection criteria for identifying priority resiliency categories, and recommended principles to be pursued in the implementation of any resiliency projects (see Appendix A for the *Advisory Working Group Implementation Principles*).

Understanding that only one pilot project would be advanced through implementation with the total available $71 million in funding, but that additional resiliency categories could be concurrently advanced through the feasibility study phase, the AWG reached consensus on two priority categories – both to be advanced with further planning and feasibility analysis, and one to be advanced through implementation of a pilot project[3]. The two resiliency categories identified for further study by the AWG were "Power/Energy" and "Coastal Protection," referred to herein as "Energy Resiliency" and "Flood Risk Reduction." Based on these AWG recommendations, as well as *OneNYC: The Plan for a Strong and Just City* goals, HUD requirements and City resiliency priorities, the City identified the "Energy Resiliency" category for implementation through a pilot project.

[3]https://www.nycedc.com/sites/default/files/filemanager/Hunts_Point_Resiliency_Working_Group_Recommendations_FINAL.pdf

PROJECT DESCRIPTION

The Hunts Point Resiliency pilot project outlined in detail below will provide reliable and sustainable power in the event of an emergency, such as a power outage caused by flood, by allowing identified critical facilities to continue operations. The Hunts Point Resiliency pilot project will reduce the vulnerability of the Hunts Point peninsula to impacts of coastal flooding by providing at least three days of reliable, resilient, and dispatchable power to critical local and citywide facilities during emergency events like Hurricane Sandy, power outages, and other threats.

Project Context

The Hunts Point Peninsula is an area of regional and local significance in the southeast of the Bronx borough of New York City, New York (see Appendix H, Figures 1 and 2). The peninsula is surrounded by the Bronx River and the East River, an estuary of the Atlantic Ocean. The area is home to an active and engaged community of 12,300 residents as well as the Food Distribution Center (FDC), one of the largest wholesale food distribution centers in the United States, numerous light manufacturing and other businesses, and one of the City's largest wastewater treatment plants. The peninsula is divided by north-south oriented Halleck Street with the FDC to the east and a residential community and industrial zone to the west.

The recommendations from *A Stronger More Resilient New York*, *OneNYC, Hunts Point Vision Plan*, RBD, and other community-based and government efforts highlighted the vulnerability of the peninsula with respect to sea level rise, storm surge, extreme precipitation events, extreme heat events, system-wide infrastructure outages, and building or sub-area level infrastructure outages based on the experiences and lessons learned across the region since Hurricane Sandy.

The resiliency of the Hunts Point Peninsula is critical from both a local and citywide perspective. First, Hunts Point is an environmental justice community, which means that residents face disproportionate environmental burdens. Hunts Point is a low-income community of color, with a poverty rate of 40.5%—more than double the citywide poverty rate—and population that is 98% Hispanic and African American.[4] Like all of New York City, Hunts Point is classified as a moderate non-attainment area for 8-hour ozone.[5] Due to significant air quality emissions from trucking and other industrial sources, Hunts Point residents face asthma rates twice as high as New York City as a whole. Respiratory illness has led to 2.8 times more emergency room visits attributable to asthma from poor air quality in Hunts Point compared to the rest of the City. As outlined in the Section IV (Stakeholder Engagement Plan) and Appendix A (Advisory Working Group Implementation Principles), the City has prioritized meaningful involvement of the Hunts Point community with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The development of the pilot project for Hunts Point Resiliency aims for the Lowest Achievable Emission Rate that goes above and beyond mandated mitigation controls to address local air quality and sustainability concerns of the low- and moderate-income populations affected by the project.

The resiliency of Hunts Point also directly affects the resiliency of the citywide food supply. Hunts Point is the largest geographic hub for food distribution by volume in New York City. The 329-acre FDC campus houses a significant cluster of food distribution and manufacturing facilities, including large Produce, Meat, and Fish Markets. Together, these facilities distribute 4.5 billion pounds of food annually to New York City and the broader metropolitan area and provide 8,500 direct jobs. The Hunts Point Resiliency pilot project

[4] American Community Survey – 5 Year Estimates, 2014.
[5] https://www3.epa.gov/airquality/greenbook/ancl.html.

will help protect and ensure access to food for millions of New Yorkers. The FDC land is owned by the NYC Department of Small Business Services (SBS) and managed by the NYCEDC.

Given the overall project objectives (described below under Project Objectives), evaluation criteria applied to select the Energy Resiliency pilot project to be funded by HUD (described in more detail below under Project Identification), and the *AWG's Implementation Principles* (in Appendix A), clean and renewable technologies were identified, assessed and selected as part of the Hunts Point Resiliency Project for implementation as part of or in parallel to the preferred pilot project.

Project Identification

In June 2016 the City completed a risk and vulnerability assessment of the Hunts Point peninsula and feasibility studies for energy resiliency and flood risk reduction project options to reduce those vulnerabilities. The scope of work also included the conceptual design and environmental review for the Hunts Point Resiliency project and a robust stakeholder and community engagement process to inform the study and pilot project.

The methodology used for the risk and vulnerability assessment was adapted from procedures established by the Federal Emergency Management Agency (FEMA) for identifying the likelihood and potential consequences of threats. For Hunts Point Resiliency, existing conditions data was overlaid with the latest projections from the New York City Panel on Climate Change (NPCC), FEMA Preliminary Flood Insurance Rate Map (PFIRM) data including potential inundation depths with sea level rise (see Appendix H, Figure 3), historic data reflecting actual storms and outage events, and newly collected data from stakeholders (utility system providers, businesses and residents) about critical facilities within the Hunts Point Peninsula. The study assessed facilities important to the continued provision of critical citywide and community services, such as emergency services, housing, mobility, power and water delivery, and social services, employment, and food distribution.

Each critical facility's vulnerability was assessed by identifying threats facing the facility, then multiplying the likelihood by the consequence of each relevant threat. Threats assessed included flooding as a result of sea level rise, coastal storm surge, and extreme precipitation events, as well as extreme heat events, system-wide infrastructure outages, and building-level infrastructure outages. A composite vulnerability score for each critical facility was then developed by adding the different threat-specific vulnerability scores together in order to compare and rank the vulnerability of each critical facility to another. See Appendix H, Figure 4 for the results of this vulnerability assessment.

Based on the risk and vulnerability assessment findings, building-level power outages were determined to be a significant and shared threat to residents and businesses in Hunts Point. In addition, the low-lying areas of the peninsula face significant threats from coastal flooding while the upland residential area does not due to considerable elevation change throughout the peninsula. Based on the composite vulnerability scores, the most vulnerable critical facilities include FDC facilities—a key economic and food distribution center—that is vulnerable to building-level energy outages, system-wide outages, storm surge, and extreme heat events (see Figure 4). Food Center Drive, the main thoroughfare within the FDC, would be flooded in a 100-year storm tide that accounts for sea level rise in the 2050s. Community facilities, specifically two local schools, PS 48 and MS 424 are vulnerable to energy outages and extreme heat. The Hunts Point Resiliency project reduces the vulnerability of Hunts Point to power outages caused by emergency events, such as a major flood, through the lens of resilient energy provisions.

The risk and vulnerability assessment results identified the critical facilities in greatest need and potential opportunities for resiliency projects. For energy resiliency, dozens of power generation, distribution and

storage technologies were first screened to determine if technically feasible and those retained were further assessed based upon a set of criteria including:

- Resiliency: applicability to vulnerable, critical facilities, dispatchable, reliable for minimum of three days, independent utility
- Sustainability: emissions, efficiency, fuel sources
- Community benefits: workforce opportunity, scalability, potential to leverage other funds
- Constructability: suitable space, required infrastructure, permitting
- Implementability: schedule, cost to construct, cost/MWh

It is important to note that no single project meets all of the criteria above for all of the vulnerable facilities in the peninsula. These criteria identified technologies for detailed assessment that were then packaged into project options. The identified technologies included: solar photovoltaic (PV) plus energy storage, tri-generation microgrid, and mobile generators. For this reason, "project packages" were formed to ensure resiliency, constructability and implementation, while at the same time maximizing sustainability and community benefits.

Upon further vetting of multiple project packages which included a Sustainable Return on Investment analysis (described further in the Benefit Cost Analysis section) and a financial analysis, a *tri-generation microgrid with solar plus energy storage* with a cumulative generating capacity of approximately 6.8 MW was selected as the energy resiliency pilot project. This pilot project, further described below, will advance to conceptual design and environmental review.

Project Objectives

The principal objectives of Hunts Point Resiliency Project are to:

- Address critical vulnerabilities for both community and industry
- Protect important citywide infrastructure during emergencies such as a major flood
- Protect existing and future industrial businesses and jobs
- Support the community's social, economic, and environmental assets
- Use sustainable, ecologically sensitive infrastructure

Description of Preferred Pilot Project

The Hunts Point Resiliency project will provide reliable, dispatchable, and sustainable power to identified critical facilities on the Hunts Point Peninsula for three days in the event of an emergency, such as a power outage caused by flood. In total, the project provides 6.9 megawatts (MW) of new resilient energy generation capacity for the peninsula. Each component of the pilot project has independent utility. These separate components do not rely on each other to provide resiliency to the intended facilities. At the same time, they are conceived as a suite of projects to provide resiliency to the most vulnerable and critical facilities within Hunts Point.

- Microgrid with Tri-Generation to support the Produce Market and Meat Market in the Food Distribution Center (FDC) – This component of the project involves a microgrid powered by a tri-generation system. The tri-generation system will supply full electrical power to the Produce Market, as well as re-capture and convert the waste heat to provide hot water for boilers at the Meat Market and chilled water for cooling at the Produce Market. The tri-generation system will consist of two 2.6 MW reciprocating internal combustion natural gas engine generators with heat recovery hot water generators, two 400-ton two-stage absorption chillers, and two 300-ton single stage absorption chillers. The microgrid will use Con Edison's existing infrastructure and will be completely separable from the larger grid so that the microgrid can operate independently in the

event of an emergency. In the event of an emergency when the electrical grid is not available, a section of the Con Edison distribution system in the Hunts Pont area will be isolated from the grid via sectionalizing switches to form a microgrid.

The tri-generation system will utilize natural gas. This technology was determined as the best approach to achieve the resiliency criteria while also maximizing efficiency and sustainability goals. In order to meet the stated project objectives, principles and criteria, emissions will be controlled to well below the allowable maximum emissions rates to ensure participation within the Con Edison Standby Rate Pilot, which requires more rigorous air quality criteria. The Standby Rate Pilot requires lower maximum nitrogen oxide (NOx) emission rates for new or expanded distributed generation projects in specific neighborhoods of New York City, including Hunts Point. To achieve lower emission rates, emissions controls including Selective Catalytic Reduction (SCR) systems for control of NOx emissions as well as the installation of oxidation catalysts for control of carbon monoxide (CO) and volatile organic compounds (VOC) exiting the generating units are included as part of pilot project design. In addition to standby rate requirements, emissions rates will be a condition of the unit operating permit and will be enforced by both NYSDEC and NYCDEP. These emissions rates will be formally defined through the permitting process, specified to equipment suppliers and/or contractors, and will be guaranteed by the equipment suppliers as a condition of the facility installation. Ongoing compliance with these emissions rates will be a condition of unit operation.

In addition to its primary resiliency capabilities, the tri-generation system will provide significant air quality co-benefits because it is designed to operate during both emergency and blue sky conditions. As a significantly more efficient mode of energy production, the tri-generation system will reduce the Produce Market electrical load by an average of approximately 1.3 MW. The 1.3 MW of offset electrical capacity will be used to power truck trailer refrigeration units at the Produce Market that will be converted from diesel operation to electric operations. On the heating side, the exported hot water will replace the hot water generated by the existing gas boilers at the Meat Market. Both the electrification of the refrigerator trucks and the replacement of the gas boilers will enable this project to improve local air quality in the peninsula. Additional details on air quality are described below in Section III.

- Community Facility Solar/Storage Installations – To provide sustainable and resilient power supply to two primary community facilities, the project will involve the installation of rooftop solar photovoltaic (PV) generation and battery energy storage for both Middle School (MS) 424 and Primary School (PS) 48. The total supported installation is approximately 0.5 MW of solar capacity that will provide electricity to the schools during normal and emergency conditions. Battery energy storage systems will also be installed at the schools to provide electrical resiliency for critical loads during emergency conditions. This will enable the schools to provide shelter, refuge, or gathering spaces for the public in emergency situations. The solar and storage systems are also intended for use during blue sky days. The two rooftop solar sites are located at: MS 424, 730 Bryant Avenue, Bronx, NY 10474 on Block 2763, Lot 279; and at PS 48, 1290 Spofford Avenue, Bronx, NY 10474 on Block 2766, Lot 1.

- Emergency Backup Generation – To provide resilient power supply to other important citywide food distributors and employers in the Food Distribution Center, the project includes the purchase of four 275 kilowatt (kW) mobile diesel generators, with the installation of provisions to allow the connection of these generators to the electrical systems of the facilities during emergency periods. This fleet of mobile generators provides a total of 1.1 MW of electrical generation for emergency conditions only, and enables immediate energy resiliency with minimal capital construction and costs for facilities that are critical to the city's food supply chain. Generating units will be provided with low emissions combustion systems. Emissions rates will be a condition of the unit operating permit and will be enforced by both NYSDEC and NYCDEP. These emissions rates will be formally defined through the permitting process, specified to equipment suppliers and/or contractors, and will be guaranteed by the equipment suppliers as a condition of the facility installation. Ongoing compliance with these emissions rates will be a condition of unit operation. The proposed mobile generators would be located throughout the FDC.

Meeting the Purpose and Need

The Hunts Point Resiliency project will reduce the vulnerability of the Hunts Point peninsula to impacts of coastal flooding by providing at least three days of reliable, resilient, and dispatchable power to critical local and citywide facilities during emergency events like Hurricane Sandy, power outages, and other threats.

The Hunts Point Resiliency project addresses the critical facilities most vulnerable to climate change and has independent utility to protect important local and citywide infrastructure under future conditions. The analysis accounts for baseline data of historic outage frequencies and durations, as well as anticipated outage frequencies and durations in the future due to an expected increase in flood-related events.

Due to the critical nature of facilities within the Hunts Point peninsula and based upon policy guidelines and precedents, the City of New York has defined resiliency as the ability to provide a reliable source of power for a given facility's critical load for a minimum of three days in the event of a major flood or other emergency. The overall project incorporates a combination of solar PV solutions with battery energy storage, a tri-generation-powered microgrid, and mobile and back-up generation. The configuration of these technology packages means that each protected facility will have dispatchable energy resiliency for at least three days in the event of an emergency.

The Hunts Point Resiliency project will be designed to incorporate flood protection measures and will be able to withstand impacts from flood events. The Hunts Point Resiliency project will protect food-related inventory and enable citywide food distribution for facilities within the FDC, as well as allow the schools in the Hunts Point residential neighborhood to serve as shelters, refuge, or gathering spaces during floods, outages, heat waves, or other emergency situations.

The pilot project will address air quality and environmental justice concerns in recognition of the importance of emissions and air quality in Hunts Point. Hunts Point (like all of New York City) is considered to be a moderate non-attainment area for 8-hour ozone. This classification mandates emission control technologies to meet the Lowest Achievable Emission Rate. Due to the air quality and environmental justice concerns in the neighborhood, the pilot project will employ emission control technologies for the fossil-fueled generation technologies that reduce emissions above and beyond the required emission rates. In addition, it is important that the mobile generators would be utilized only in the event of an emergency, such as a major flood or storm event.

Resilience Performance Standards

The City of New York is committed to developing and implementing resilience performance standards for all infrastructure projects, including the Hunts Point Resiliency pilot project, and looks to the best available science and promising practices in resiliency to inform the development of these standards.

The City utilizes the following performance standards to measure resiliency within a project:

- Robustness: ability to absorb and withstand stressors and shocks
- Redundancy: additional channels to enable maintenance of the core functionality in an event of disturbance or system failure
- Resourcefulness: ability to adapt and respond in a flexible manner during stressors and shocks.
- Response: ability to mobilize quickly in the face of stressors and shocks
- Recovery: ability to regain functionality after stressors and shocks

As design progresses, the specific application of these standards to the Hunts Point Resiliency project will continue to be further developed and refined to accurately capture the effectiveness and efficiencies of the resilient technologies once installed.

To ensure that the energy infrastructure is itself resilient to flooding and to ensure compliance with the City's resilience performance standards, all of the energy systems will be flood-protected, elevated, or located outside identified flood hazard areas. The tri-generation microgrid infrastructure, which will be situated at Site D in the 100-year floodplain, will be elevated out of the floodplain to 19 feet NAVD88. Conduits that are at risk of flooding will be hardened. Each component of the Hunts Point Resiliency project provides an added level of energy redundancy to the facility it is designed to protect. As a result of the Hunts Point Resiliency project, critical facilities will have the redundancy to obtain energy supply even if there is a broader power outage in the larger grid network. The capital components of the project that provide resiliency and redundancy benefits will be paired with an operations plan for the City and Food Distribution Center tenants. The project enables the schools and Food Distribution Center facilities to be responsive to and recover from shocks and stresses because the project components will be equipped with black start capabilities, which refers to the ability to restoring power from a total or partial shut-down.

Rooted in these resiliency performance standards, the City will advance a plan to monitor and evaluate the energy resiliency 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. The plan will include inspection requirements for the resilient energy infrastructure based upon manufacturer specifications around inspection frequency and process. The specific inspection requirements will be finalized once equipment specifications are determined during final design.

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 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.

Project Feasibility and Effectiveness

The feasibility assessment conducted as part of the Hunts Point Resiliency Project was a key part of the process to identify the pilot project for energy resiliency. The packaging of different technologies into the Hunts Point Resiliency project optimizes the resiliency goals set forth in this project with community's sustainability goals and environmental justice concerns. The Hunts Point Resiliency project includes latest emission control technologies and flood protection measures in capital costs and designs. To ensure that the energy infrastructure is itself resilient to flooding and to ensure compliance with the City's resilience performance standards, all of the energy systems will be flood-protected, elevated, or located outside identified flood hazard areas.

Feasibility assessments considered the appropriate code and industrial design and construction standards to implement packages of energy resiliency technologies. These codes and standards will be adhered to during final design of the pilot project, and a registered professional engineer will certify that the final design meets all applicable codes and standards prior to the obligation of HUD funds by the City for construction.

Con Edison is a key partner for the design and construction of the Hunts Point Resiliency project. A series of meetings with Con Edison's regional engineering team were held to review the specifications to the Hunts Point Resiliency project. In particular, Con Edison has specific requirements for the microgrid component. Con Edison's draft Technical Requirements for Microgrid Systems Interconnected with the Con Edison Distribution System (Specification EO-2161 dated November 15, 2016) states that "the MicroGrid should not rely exclusively on renewable energy resources as it may not provide electric power during grid outages with the level of reliability required for emergency loads." This requirement is satisfied by the pilot project via the inclusion of the tri-generation source. The City will also establish an agreement with Con Edison regarding the terms and conditions of equipment utilization and system control, including the conditions under which Con Edison will depower its lines—for example, during a tidal surge when generation might be needed. The City and Con Edison are continuing to coordinate regularly to ensure successful implementation of the pilot project.

Once the Hunts Point Resiliency project is constructed, the City will operate and maintain the energy systems. The NYC Economic Development Corporation, which manages the FDC on behalf of the City, will oversee the operations and maintenance of the energy systems. This will include regular inspections in accordance with appropriate industry codes and regulations. The City of New York hereby certifies that funding will be made available to cover the long-term operations and maintenance costs associated with the Hunts Point Resiliency pilot project.

Project Funding

A total investment of $71 million in Federal CDBG-DR and City funds ($20 million via the Rebuild by Design program, $25 million contribution from New York City's CDBG-DR allocation, and $26 million from New York City capital funds) is dedicated to the "continued robust planning and study related to the future of the food market and a small pilot/demonstration project (to be selected by the City)." These funds will be used for planning, design, and project construction of the Hunts Point Resiliency project, and are eligible for reimbursement under HUD's RBD program. Planning work includes feasibility analyses, conceptual design and environmental review; design includes contracting, permitting and full design; and project construction includes procurement, construction and construction management activities. If the project generates program income, the City would make sure to coordinate with HUD that the program income

would flow back to the appropriate Entitlement community or its subrecipients. All budget allocations in Table 2 are estimates and will be amended as needed to implement the project.

Table 2: Proposed Project Funding Schedule

	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022	Total
Planning	$570,000	$2,480,000	$750,000					3,800,000
Design				$1,800,000	$1,500,000			$3,300,000
Project Construction				$2,300,000	$12,600,000	$44,700,000	$4,300,000	$63,900,000
Total	570,000	2,480,000	$750,000	$4,100,000	$14,100,000	$44,700,000	$4,300,000	$71,000,000

Table 3 below provides a cross-walk of the funding by project component.

Table 3: Funding by Project Component

Item			**Portion of Cost Funded by HUD ($ million)**	**Portion of Cost Funded by Other Sources ($ million)**	**Total Cost ($ million)**
Planning Study			$3.8		$3.8
Project Location	**Generation Type**	**Capacity (MW)**	**Cost ($ million)**		
Site D with connections to Produce and Meat Markets	Reciprocating Internal Combustion Natural Gas Engine Generators with Microgrid	5.2	$35	$26	$61
MS 424	Rooftop Solar PV	0.45	$3.0	$0	$3.0
	Battery Storage	0.09			
PS 48	Rooftop Solar PV	0.04	$1.6	$0	$1.6
	Battery Storage	0.06			
Businesses	Mobile Diesel Generators	1.1	$1.6	$0	$1.6
Total		**6.94**	**$45**	**$26**	**$71**

Federal, State, and Local Coordination

Implementation of the Hunts Point Resiliency Project will involve federal, state, and local permits and authorizations. As described above (under Project Identification), the scope of work for the Hunts Point Resiliency Project included multiple assessments and evaluations to identify the energy resiliency pilot project. The pilot project has been identified, and the project is advancing to conceptual design and environmental review.

With this Substantial Action Plan Amendment, the pilot project is identified and described as well as the permits and authorizations that will be obtained as design begins and the awarded contractors prepare for construction. If any changes to the pilot project described in this Substantial Action Plan Amendment result from coordination or approvals by permitting agencies, NYCEDC and MOR will submit a subsequent Substantial Action Plan Amendment to HUD describing these changes and the modified pilot project.

The agencies to be involved in the environmental review, permitting and approvals for the pilot project and the timing of these processes are described below in Table 4. The process mapped below is based on the identification of the energy resiliency pilot project and HUD funding schedule (described in the Project Funding section above). Additional design and construction schedule information for the pilot project is provided below in Section V. Project Timeline.

The City is currently working with the Sandy Regional Infrastructure Resilience Coordination (SRIRC) to coordinate design, permitting, construction and operation of this project to align and integrate with other recovery projects in the area. Additionally, the City will continue to work with the SRIRC's Technical Coordination Team (TCT) and the Federal Review and Permitting (FRP) Team as the project is further defined during the design and environmental review process.

Table 4: Permits/Approvals and Related Schedule Information

Agency/Authority	Permit/Approval	Timing
Federal		
U.S. Department of Housing and Urban Development (HUD)	Federal funding agency; Approval of this Substantial Action Plan Amendment; and final issuance of Authority to Use Grant Funds (AUGF) for the CDBG-DR funds.	Substantial Action Plan Amendment Approval: Fall 2018
U.S. Fish and Wildlife Service	Advisory agency for Section 7 of the Endangered Species Act	Fall 2018 to Winter 2018
State		
NY State Energy Research and Development Authority (NYSERDA)	Issuance of a combined building and electrical permit for a grid-tied solar electric system.	Fall 2018 to Fall 2019
Office of Parks, Recreation and Historic Preservation (OPRHP)	Section 106 consultation required per the National Historic Preservation Act (NHPA) with respect to eligible and listed properties on the State &	Fall 2018 to Spring 2019

	National Registers of Historic Places.	
New York State Public Service Commission (NYSPSC): Article VII	Certificate of Environmental Compatibility and Public Need (for projects generating 10 MW or <)	Fall 2018 to Fall 2019
NY Independent System Operator (NYISO)	Performance of Interconnection Process and Study.	Fall 2018 to Fall 2019
Department of Environmental Conservation (NYSDEC)	State Facility Air Permit (Subpart 201-5)/ Subpart 201-4: Registration of Minor Facility	State Facility Air Permit: Fall 2018 to Fall 2019 (by Contractor)
	Petroleum Bulk Storage Program Registrations Issuance of permits related to the State Pollutant Discharge Elimination System (SPDES) General Permit for	Petroleum Bulk Storage Program Registrations: Spring 2021 to Fall 2021 (by Contractor)
	Stormwater Discharges from Construction Activity	SPDES GP: Fall 2018 to Winter 2019 (by Contractor)
	Advisory agency on State-listed plant or animal species or significant natural communities	Fall 2018 to Winter 2018
Department of State (NYSDOS)	NYS Coastal Zone Consistency Determination	Fall 2018 to Winter 2018
Department of Transportation (NYSDOT)	Issuance of Highway Work Permit, Special Hauling Permit/Divisible Load Overweight Permit and Evocable Consent.	Fall 2020 to Winter 2021 (by Contractor)
City		
Department of City Planning (DCP)	NYC Waterfront Revitalization Program (WRP) Consistency Determination,	WRP Consistency: Fall 2018 to Winter 2018
Department of Environmental Protection (DEP)	Air Pollution Registration (Engines, Generators, Turbines) Asbestos Abatement Compliance through the Asbestos Reporting and Tracking System (ARTS)	Air Pollution Registration: Fall 2020 to Winter 2021 (by Contractor)
	Approval of City sewer and water connections for new connections	ARTS Compliance: Fall 2020 to Winter 2021 (by Contractor)

	or modifications of existing connections.	Water and Sewer Connections/ Modifications: Fall 2020 to Winter 2021 (by Contractor)
Department of Buildings (DOB)	Review of design and issuance of Certification of Occupany (CO) permits related to buildings including compliance with the City's Building, Electrical, and Zoning Codes. Construction related permits for cranes, scaffolding, and other temporary works.	CO Permit(s): Winter 2021 to Spring 2022 (by Contractor) Construction Permits: Fall 2020 to Spring 2021 (by Contractor)
Department of Transportation (NYCDOT)	Approval of Maintenance and Protection of Traffic Plan (MPT).	Fall 2020 to Winter 2021 (by Contractor)
Public Design Commission (PDC)	Review of project design	Initial coordination begins with concept design in Spring 2017; final approvals would be required for final design completion in Summer 2019
Landmarks Preservation Commission (LPC)	Advisory agency for activities on or near sites of historic or archaeological value.	Summer 2018 to Fall 2018
New York City Fire Department (FDNY)	Design Approval of high pressure gas permit; review according to fire code; review of battery storage plans by FDNY Technology Unit.	Fall 2017 to Spring 2018
Office of Management and Budget (OMB)	Responsible Entity (RE) for the disbursement of CDBG-DR funds for Hurricane Sandy from HUD to City agencies and NEPA Lead Agency.	NEPA Review: Summer 2018 to Spring 2019
Mayor's Office of Resiliency (MOR)	Design review of activities and projects proposed to increase resiliency, including strengthening neighborhoods, upgrading buildings, adapting infrastructure and critical services, and strengthening coastal defenses.	Summer 2017 to Spring 2018
New York City Emergency Management (NYCEM)	Review of plans related to emergency preparedness,	Summer 2017 to Spring 2018

	response, and operations under storm conditions.	
Small Business Services(SBS)	CEQR lead agency; help City agencies fulfill their environmental review responsibilities.	Summer 2017 to Spring 2018 (CEQR/SEQRA review period)
	Issuance of Waterfront Permit for developments within the NYC waterfront, and review of resiliency related design coordinated with the DOB's permit(s).	Fall 2018 to Spring 2019 (by Contractor, as applicable)
Other		
Natural Gas Companies Approvals (Iroquois)	Issuance of permission to cross right of way.	Fall 2018 to Spring 2019 (by Contractor, as applicable)
Railroad Companies Approvals (CSX)	Issuance of permission to cross right of way.	Fall 2018 to Spring 2019 (by Contractor, as applicable)
Utility Companies Approvals (Con Edison)	Issuance of permission to cross existing utilities.	Fall 2018 to Spring 2019 (by Contractor, as applicable)

NATIONAL OBJECTIVE

Per Section 101(c) of the Housing and Community Development Act (HCDA) of 1974, as amended, a CDBG-assisted activity must meet one of three national objectives: (1) benefiting low- and moderate-income persons; (2) preventing or eliminating slums or blight; and (3) meeting urgent needs. In addition, Section 105(a) of the HCDA requires that only certain eligible activities may be assisted with CDBG funds. The National Objective and Eligible Activity for the Hunts Point Resiliency Project are listed below:

- National Objective: Low-Moderate Income Area Benefit
- Eligible Activity: Rebuild by Design

Hunts Point is a low-moderate income community. The median household income is $24,780, less than half of the median household income of New York City ($58,820). Hunts Point contains a high proportion of very low income households: the largest share of Hunts Point households earn less than $15,000, which more than double the share of NYC households with the same level of income. Hunts Point's poverty rate is twice that of New York City's and 50% higher than in the Bronx overall.[6] Additional information for the Hunts Point Resiliency Project can be found on the City's website: www.huntspointresiliency.nyc.

[6] American Community Survey – 5 Year Estimates, 2014

Raise Shorelines

PROGRAM OBJECTIVE AND DESCRIPTION: After citywide damage due to Hurricane Sandy, the NYC Special Initiative for Rebuilding and Resiliency released "A Stronger, More Resilient New York" plan (SIRR Report), which contains actionable recommendations both for rebuilding the communities impacted by Sandy and increasing the resilience of infrastructure and buildings citywide.

Based on the SIRR Report, the Raise Shorelines program aims to protect neighborhoods and infrastructure that were adversely impacted by Sandy by strengthening coastal protection measures. The baseline goal of this project is to study, design, and construct infrastructure and shoreline improvements to prevent the effects of sea level rise at the 2050 water level at select locations across the city. These measures include, but are not limited to, the construction or reconstruction of revetments, bulkheads, crown walls, sea walls, tide gates, berms, elevating roadways, modification of roadway drainage, and stormwater retention areas. 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.

Approximately $7.7 million in CDBG-DR funding will be used to facilitate the implementation of coastal protection measures in low-lying neighborhoods throughout the City, including a number of low- and moderate-income communities impacted by Hurricane Sandy, to minimize inland tidal flooding. City capital funding of $102 million provided as part of the Fiscal Year 2017 Adopted Capital Commitment Plan will be used to install coastal protection measures in areas where Sandy's water damage caused significant physical damage and left neighborhoods exposed to additional flooding.

CDBG-DR ALLOCATION: $7,700,000

HUD ELIGIBILITY CATEGORY: Planning and Administration (24 CFR 570.205 & 570.206)

NATIONAL OBJECTIVE: Urgent Need, Low- and Moderate-Income Area Benefit, Low-Moderate Income Buyout

PROJECTED ACCOMPLISHMENTS: Reduced risk of coastal wave action, erosion, and flooding in targeted neighborhoods – anticipated to benefit more than 11,000 linear feet of coastline throughout the City.

PROGRAM ADMINISTRATION: Mayor's Office of Recovery and Resiliency, New York City Economic Development Corporation

PROGRAM PRIORITIES: Sites subject to wave action, erosion, and flooding–particularly in areas with large low- and moderate-income populations. Efficient and cost-effective flood protection that does not disrupt the urban environment.

GEOGRAPHIC AREA TO BE SERVED: Impacted communities within the 100-year floodplain and critical infrastructure assets affected by Sandy's impact.

PROGRAM START AND END DATES: Design anticipated to be complete by Q4 2018.

Coney Island Resiliency Improvements

Coney Island Resiliency Improvements

PROGRAM OBJECTIVE AND DESCRIPTION: The bustling neighborhood of Coney Island was devastated by Hurricane Sandy. Coney Island residents and businesses suffered storm inundation and stillwater flooding as a result of the storm. In the days following the storm, many residents on the peninsula lost their homes due to displacement. Businesses that managed to reopen found themselves with fewer customers, while others were unable to reopen at all. As a result, the City will utilize CDBG-DR funding to advance resiliency measures in Coney Island Creek to benefit thousands of residents and hundreds of businesses in Coney Island.

Sandy's primary impacts to 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 more prepared for climate change. The City will use CDBG-DR funds to facilitate the implementation of shoreline protection measures along a portion of Coney Island Creek. These investments will help protect residents in the community as well as local businesses along the main commercial corridors between Coney Island Creek and the ocean.

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

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

CDBG-DR ALLOCATION: $15,000,000

PROJECTED ACCOMPLISHMENTS: This project will advance resiliency measures at approximately 2,000 linear feet of coastline along Coney Island Creek by reinforcing and raising coastal edges vulnerable to sea level rise and high recurrence coastal floods. These resiliency measures will protect low-lying neighborhoods adjacent to the Creek and protect vulnerable facilities such as the MTA Coney Island Yards, the Coney Island Hospital, public schools, community clinics, area evacuation routes, and several low-income and senior housing developments. Repairing and elevating shorelines along the Coney Island Creek will mitigate damage to these critical facilities due to future coastal storms and climate change.

PROGRAM ADMINISTRATION: Mayor's Office of Recovery and Resiliency, New York City Economic Development Corporation.

PROGRAM PRIORITIES: Sites subject to wave action, erosion, and flooding–particularly in areas with large low- and moderate-income populations. Efficient and cost-effective flood protection that does not disrupt

the urban environment.

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

PROGRAM START AND END DATES: Detailed scoping and design will begin in 2018 with construction expected to be completed by 2022.

OTHER FUNDING SOURCES: NYC Capital funding

Resiliency Property Purchase Program

PROGRAM OBJECTIVE AND DESCRIPTION:

The Resiliency Property Purchase Program will purchase properties in order to facilitate planned flood mitigation and resiliency activities, including the development of berms, levees, raised shorelines, wetlands restoration and other potential measures developed by the City to mitigate existing or future flood risks from storm or other events in neighborhoods or communities directly impacted by Sandy. This program will be run as a pilot and if determined to be successful could be expanded with additional CDBG-DR funds or other resources. Unlike the Build It Back Program's existing Buyout and Acquisition Program, the Resiliency Property Purchase Program is focused on facilitating the strategic purchase of residential properties and vacant land for use by the City in creating a network of flood mitigation projects that will be funded through a variety of federal, state and local sources. Accordingly, all properties purchased through the Resiliency Property Purchase Program will be used to support another mitigation or resiliency project.

The Resiliency Property Purchase Program will include the purchase of real property, including, for example, air rights, water rights, rights-of-way, easements, or other interests held by eligible property owners. The City will purchase properties under this program using the Urgent Need or Slum and Blight National Objectives. The Program will only be offered to property owners in cases where the City makes a determination that the purchase of a property is necessary to support or facilitate another flood mitigation or resiliency project in the City's portfolio. Property owners may not apply for participation in the Program. The City will not exercise eminent domain authority under this Program.

The Resiliency Property Purchase Program may purchase properties as "Buyouts" as contemplated in HUD's May 29, 2013, Federal Register Notice (78 FR 32262), or it may purchase properties as standard acquisitions as contemplated by 49 CFR part 24, subpart B.

Buyout properties will be purchased for pre-storm fair market value as determined by an appraisal. This amount may be combined with a prompt sale incentive equal to 10% of the fair market value property. Property owners may receive the prompt sale incentive if they agree to sell the property within the timeframe outlined by the City in the purchase offer. Properties purchased as buyouts may only receive the pre-storm fair market value plus the 10% prompt sale incentive.

Acquired properties, easements, air rights, water rights, rights-of-way and other interests will be purchased for current, post-storm fair market value as determined by an appraisal. This amount may also be combined with the 10% prompt sale incentive. For properties purchased as acquisitions, the City reserves the right to negotiate the purchase price with property owners in a manner that is consistent with HUD requirements. If such negotiations fail to result in agreement and the property is vital for the completion of a resiliency project, the City reserves the right to negotiate an administrative settlement that exceeds the just compensation offer amount if the City determines that the purchase price is reasonable, prudent and in the public interest.

The City is offering the prompt sale incentive in an effort to receive early and timely commitments from property owners so that the planning, design and construction of mitigation and resiliency projects can be accelerated. This incentive may not be combined with any other incentives, including the Resettlement Incentives offered by the Build It Back Program.

Upon purchase of a property under the Resiliency Property Purchase Program, the City or the ultimate recipient will demolish any residential or commercial structures on the property and will clear the property of hazards or other improvements. The City or the ultimate recipient of the property will also undertake the remediation of known or suspected environmental contamination, where feasible. The City will dispose of the property to the agency or entity that will ultimately be responsible for the flood mitigation or resiliency project. In no case will the property be utilized for the redevelopment of residential or commercial spaces.

Properties acquired for current, post-storm value may be redeveloped in a manner that supports a resiliency project. Properties purchased as buyouts for pre-storm value will be subject to HUD's rules regarding Buyout properties, which require that all future residential and commercial redevelopment of the property be restricted in a manner that is consistent with the requirements stated in HUD's May 29, 2013, Federal Register Notice (78 FR 32262), which provides that:

> *(1) Any property acquired, accepted, or from which a structure will be removed pursuant to the project will be dedicated and maintained in perpetuity for a use that is compatible with open space, recreational, or wetlands management practices;*
>
> *(2) No new structure will be erected on property acquired, accepted or from which a structure was removed under the acquisition or relocation program other than*
>
> > *(a) a public facility that is open on all sides and functionally related to a designated open space (e.g., a park, campground, or outdoor recreation area);*
> >
> > *(b) a rest room;*
> >
> > *(c) a flood control structure that the local floodplain manager approves in writing before the commencement of the construction of the structure…"*

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.

CDBG-DR ALLOCATION: $5,000,000

HUD ELIGIBILITY CATEGORY: Clearance and Remediation Activities (24 CFR 570.201(d)) and Acquisition of Real Property (Buyout of Residential Properties or Redevelopment of Acquired Properties) (3/5/13 HUD CPD Notice, 78 FR 14345, 31 and 78 FR 32262).

NATIONAL OBJECTIVE: The City will purchase properties under the Urgent Need, Low/Moderate Income Buyout, or Slum and Blight National Objectives. The properties that will be purchased demonstrate an urgent need as they are located within a Presidentially-declared disaster zone and properties that are being purchased will be utilized to mitigate flood risks and increase the resiliency of the City of New York to future flood events consistent with the requirements stated in 78 FR 32262.

PROJECTED ACCOMPLISHMENTS: The City plans to purchase up to 40 properties to support mitigation and resiliency projects throughout the City.

PERFORMANCE SCHEDULE: The City's schedule is as follows:

- Initiation of the Resiliency Property Purchase Program: Winter 2018
- Preliminary Identification of Properties: Winter 2018
- Initiation of Offers: Spring 2018
- Completion of Purchases: Spring 2020

- Completion of Disposition: Spring 2021

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 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." Per HUD, 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.

In December 2012, the City's 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.

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.

Covered Project: HMGP – Breezy Point Risk Mitigation System

1. Project Identification/Description

The Breezy Point Risk Mitigation System is one of the City's HMGP applications approved by the State of New York. FEMA can fund up to 75 percent of the eligible costs of each project. The State or grantee must provide a 25 percent match. The City expects to provide the 25 percent match for this project through CDBG-DR.

The City has determined that the Breezy Point Risk Mitigation System is a Covered Project, per HUD's definition. On August 25, 2015, HUD issued a waiver of 24 CFR 570.202(a)(1) to the extent necessary to permit new construction of a flood mitigation system at Breezy Point, a privately held cooperative in Queens, by classifying the entire system as an improvement for residential purposes. 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 (Sandy damages amounted to over $400 million). More specific cost estimates on ocean and bay side investments will be available after the completion of Phase 1B (anticipated 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. One would consist of Technical Review and Design and the second phase will consist of construction.

FEMA approved $1.2 million for Phase 1 and $3.86 million for Phase 1B. Phase 1 and Phase 1B both carry a 25% local match requirement, which the City intends to cover with CDBG-DR.

Phase 2 of this project is estimated to be $53.1 million and carries a 25% local match requirement, which the City intends to cover with CDBG-DR. FEMA approval of Phase 2 is anticipated in 2018.

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.

CDBG-DR ALLOCATION: $14,537,000

HUD ELIGIBILITY CATEGORY: Housing Rehabilitation and Preservation, per waiver in August 25, 2015 Federal Register Notice (80 FR 51589)

PROJECTED ACCOMPLISHMENTS: Coastal protection features anticipated to span an estimated 16,650 linear feet around the Breezy Point community.

NATIONAL OBJECTIVE: Urgent Need, Low to Moderate Income Buyout.

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 the award of $930 million to the winning ideas. The City will use the collaborative risk analysis developed by the winners for the New 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.

2. 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.

3. 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 an estimated 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 1/1B 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.

4. 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.

Sheepshead Bay Courts Sewer and Water Infrastructure

INTRODUCTION:

The Sheepshead Bay Courts were originally constructed in the 1920s as densely packed residential neighborhoods that included street-facing homes (currently along public, mapped streets) and interior-facing homes along shared walkways (currently along private, unmapped streets). Sewer and water lines in the Courts are privately owned and pass through individually owned properties with no easements or rights-of-way governing installation or maintenance.

After the Courts were constructed, the City of New York raised the level of the surrounding streets in the area several times, including in the 1970s. This resulted in many of the Courts being transformed into below-grade "bathtubs" that have a strong propensity for flooding during heavy rain events and storms. In addition, with the tightly-clustered homes and predominance of paved area in the Courts, there is poor drainage due to lack of permeable space. The creation of these low-lying, impermeable areas, combined with a lack of regular and coordinated maintenance of sanitary and storm sewer systems in the Courts has strained the aging sewer systems.

Hurricane Sandy significantly exacerbated the conditions in the Courts by damaging and blocking the sanitary and storm sewer system, most significantly in Stanton Road. The Build It Back Program determined that the damaged sewer system(s) in the courts at Stanton Road, Losee Terrace and Gunnison Court were in need of replacement because of the age and condition of the sewer lines. In addition, Build It Back has determined that the privately-owned water mains in these areas should be replaced with larger diameter mains in order to support the installation of residential fire control sprinklers in Sandy-damaged homes that are being reconstructed by the Build It Back Program.

PROGRAM OBJECTIVE AND DESCRIPTION:

The City's core objective is to replace damaged sanitary sewer, storm sewer, and water infrastructure (privately owned utilities) in the Sheepshead Bay Courts in Brooklyn, in locations as determined by the need for repairs documented by the Program and where feasible through timely participation by property owners. Target locations for the work include, but are not limited to Stanton Road, Losee Terrace, Mesereau Court and Gunnison Court, depending on homeowner participation. If the need can be sufficiently established by the Program and homeowner interest and cooperation can be timely achieved, the areas of Lincoln Terrace and Lake Avenue may also be included. The City will also pursue additional infrastructure and storm resiliency measures that address a documented need where logistically feasible and where cost-reasonable engineering approaches are attainable given the limited funding available. Activities will include(contingent on the creation of Homeowners' Association):

- Working with private property owners in the Courts areas to create homeowners' associations that will be responsible for authorizing the replacement of infrastructure and maintaining that infrastructure in perpetuity. The creation of these homeowners' associations for the purpose of maintaining sewer and water infrastructure has been mandated by the City of New York as a condition of issuing permits for the work. Build It Back applicants receiving elevation or reconstruction assistance in applicable Courts areas will be required to join the homeowners' association and consent to applicable infrastructure work.
- Obtaining temporary and permanent easements from private property owners in the Courts that will allow for the replacement and maintenance of infrastructure. In some cases, these easements will be purchased from private owners using CDBG-DR funds for the benefit of the homeowners' association. In other cases, providing temporary and permanent easements will be condition of receiving construction

assistance through the City's Build It Back Housing Program or as a condition of being connected to the new sewer and water infrastructure.

- Renting land owned by private owners in the Courts using CDBG-DR funds to facilitate the staging of materials and equipment, access to the Courts and for field offices/trailers during construction.
- The acquisition of properties located within the Courts to facilitate the replacement of sanitary sewers, storm sewers and water mains.
- The excavation, demolition, and replacement of sanitary sewers, storm sewers and water mains throughout the courts, including connecting this private infrastructure to City-owned infrastructure and reconnecting homes to the new sewer and water infrastructure , and the replacement of walkways and other associated improvements to facilitate the completion of the work.
- The excavation, demolition, and replacement of gas lines, electric lines, and other utilities as necessary to create space for new subgrade pipework.

CDBG-DR ALLOCATION: $20,000,000

HUD ELIGIBILITY CATEGORY: Privately Owned Utilities (24 CFR 570.201(l)), Clearance and Remediation Activities (24 CFR 570.201(d)), and Acquisition of Real Property (Buyout of Residential Properties or Redevelopment of Acquired Properties) (3/5/13 HUD CPD Notice, 78 FR 14345, 31.).

NATIONAL OBJECTIVE: The program will serve populations that meet the National Objectives: Low to Moderate Income Household, Low to Moderate Income Area, Low to Moderate Income Buyout, Urgent Need or Slum and Blight. All beneficiaries demonstrate an urgent need, as they live within a Presidentially-declared disaster zone and the private infrastructure being replaced was damaged by Hurricane Sandy and/or should be upgraded to facilitate the construction of decent, safe and sanitary housing by the Build It Back Single Family Program.

PROJECTED ACCOMPLISHMENTS: The City plans to provide approximately 866 linear feet of upgraded sanitary sewer, storm sewer and water services for up to 20 residential properties within Sheepshead Bay Courts.

PERFORMANCE SCHEDULE: The City's schedule is as follows:

- Completion of the Infrastructure Studies in Sheepshead Bay Courts: April 2016
- Completion of Preliminary Design Work: July 2017
- Creation of Homeowners' Association(s): April 2018
- Completion of the Environmental Assessment: March 2018
- Completion of Final Designs: Spring 2018
- Excavation and Demolition of old sewer and water infrastructure: Spring 2018
- Installation of replacement sewer and water infrastructure: Spring 2018
- Project Completion: Summer 2018

Projects to be Funded from Other Sources

The following section describes projects that will no longer be funded with CDBG-DR (as of Amendment 12) but will be moving forward with City Capital funding identified in the City's Fiscal Year 2017 Adopted Capital Commitment Plan.

Red Hook Integrated Flood Protection System

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 disabled. 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 (many of which are industrial) 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 a critical step toward ensuring a more resilient Red Hook community.

Citywide 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; and 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 AND OBJECTIVE:

It is anticipated that the IFPS will consist of a combination of permanent and long-term components (e.g., multi-purpose berms, deployable floodwalls, street elevations, structural improvements, 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.

An initial project cost based on very preliminary information was estimated at $200 million. The project received $100 million in funding. The City contributed $50 million from City capital funds, and the State contributed $50 million in FEMA HMGP funds.

XI. PLANNING AND ADMINISTRATION

The City's total allocation of CDBG-DR funding is $78,017,325 to Planning and $186,627,859 to Administration.

The HUD requirements for the overall $4.2 billion block 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 changes from Action Plan Amendment 19 result in 4.4 percent of total funds for Administration and 93.7 percent for direct programs. The City is well within its overall Planning and Administration cap and is below 5.0 percent of the grant for Administration. As long as the City continues to administer Sandy recovery programs, there continues to be an administrative unmet need.

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.

Action Plan Amendment 16 reallocates an additional $12 million dollars to Planning to fund a variety of new planning studies and to provide additional resources for work already underway. This reallocation will support a new City-wide flash-flood mapping effort, which is a necessary first step to address stormwater concerns and prioritize areas at risk from urban flooding. Additionally, funding will be used to create and test Climate Change Resiliency Design Guidelines. These guidelines will be used as a tool to create more resilient infrastructure citywide.

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 Resiliency (MOR)

The Mayor's Office of Resiliency and Recovery 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. This Mayor's Office is now known as the Mayor's Office of Resiiency, or MOR.

MOR 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 (EDC)
EDC has supported and expects to continue to support the work of *A Stronger, More Resilient New York* as described elsewhere herein. EDC will use CDBG-DR funds, through a subrecipient agreement with MOR, 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. EDC will undertake, jointly with MOR, 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 other New 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.

Additionally, the City will use CDBG-DR funds to assess the effects of wind on existing buildings and buildings under construction, potential changes in frequency, intensity, and path of future storm events, the impact of climate change on wind speeds, and recommendations regarding changes needed to City codes and regulations.

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 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: $78,017,325

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 Resiliency; Office of Management and Budget; the Mayor's Office and other central staff.

GEOGRAPHIC AREA TO BE SERVED: Citywide, with a particular emphasis on storm-impacted areas.

PROGRAM START AND END DATES: Funding will be available through January 2019. HUD currently does not have a mechanism to extend planning dollars beyond this date.

Administration

This section provides an overview of Administration costs for the implementation of CDBG-DR programs. The City received funding extensions from HUD through September 2022. Accordingly, the City has reallocated funding to this category to cover the costs associated with administering the corresponding programs that received the timeline extension, particularly associated with the Rebuild by Design projects of Hunts Point and Eastside Coastal Resiliency. Without this reallocation, the City would be responsible for funding these administrative costs.

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: $186,627,859; this allocation is based on the best currently available data and has been adjusted and is as of HUD's approval of the Action Plan Amendment 19 in December 2018

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.

PROGRAM START AND END DATES: The total Administration funding will be for the duration of the entire CDBG-DR grant.

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. Recent events, such as Hurricanes Harvey and Irma, underscore the necessity of further planning activities accounting for climate change. The long-term recovery planning described herein supports the resiliency agenda detailed in the Resiliency section of the Action Plan.

The 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.

In June 2013, the City released A Stronger, More Resilient New York. The report outlined the first-ever comprehensive coastal protection plan for the city, and contains over 250 detailed initiatives addressing the vulnerabilities of the city's infrastructure, built environment, and coastal communities, and serves as the City's guide to long-term recovery and resiliency planning.

In April 2015, One New York: The Plan for a Strong and Just City (OneNYC) laid out a sweeping vision for inclusive growth and climate action by advancing equity with the City's visions for sustainability and resiliency. OneNYC sets forth a comprehensive strategy for the City's long-term recovery and resiliency to ensure that the city's neighborhoods, economy, and public services will be ready to withstand and emerge stronger from the impacts of climate change and other 21st century threats. On Earth Day 2019, OneNYC 2050: New York City's Strategic Plan was released.

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-resistant communities and infrastructure, and strengthen the capacity to support business and economic stability. As part of the multi-layered resiliency program detailed in OneNYC, the City has developed programs to buy-down risk in vulnerable coastal communities that were devastated by Hurricane Sandy. These strategies include home buyouts, community planning, land use planning, and updates to zoning code in areas vulnerable to flooding. The City has also established systems and programs to be prepared for a timely and cost-efficient recovery process from the next disaster, including establishing emergency contracts and post-disaster sheltering programs. Finally, the City is incorporating lessons learned from Hurricane Sandy and significant weather events since to enhance its emergency preparedness planning processes, the management of disaster recovery resources, promoting flood insurance, and exploring innovative financing mechanisms for resiliency initiatives.

Below are examples of particular endeavors:

Coastal Community Resiliency Planning

Coordination of Buyout Programs:
The Mayor's Office of Resiliency (MOR) is working closely with coastal communities across the city to find solutions to the risks posed by sea level rise and climate change that meet residents' needs. Recognizing that there is no "one size fits all" approach to community resiliency, the way that risks are addressed will not be the same in every neighborhood and have/will come out of deep and ongoing engagement with community members. In certain high-risk neighborhoods, as part of MOR's multi-pronged approach to making New York City more resilient, the Governor's Office of Storm Recovery (GOSR), the United States Department of

Agriculture Natural Resources Conservation Service (USDA NRCS), and the City are working in concert on the following buyout programs:

The USDA program (Staten Island): USDA NRCS provided $23.3 million under the Emergency Watershed Protection Program (EWP): $17.4 million in funding to buy nine acres of floodplain easements on property that is flood prone in Midland Beach and $5.9 million in funding to buy 3.25 acres of floodplain easements on property that is flood prone in New Dorp, all subject to voluntary homeowner acceptance of the offers. The easements are intended to restore the area to natural conditions, and to enhance fish and wildlife habitat, water quality, flood water retention, and ground water recharge. 40 properties are currently active in this program.

NYS Enhanced Buyout Area (Oakwood Beach, Graham Beach, Ocean Breeze in Staten Island): NYS buys properties located in the floodplain that are determined to be most at risk in future disasters based on a history of flooding or other damage related to extreme weather. HUD requires that once a buyout is completed, all structures must be removed and the land can only be used for environmental purposes, including wetlands restoration and coastal buffer zones. Approximately 500 properties are active in this program.

City Buyout Program (Neighborhoods in Staten Island, Brooklyn, and Queens outside of NYS Buyout Area): Sale of Storm-affected homes by eligible 1-4 family homeowners to entities affiliated with the State and City respectively who are responsible for interim management before the properties can be further sold. The City will control any sites deemed unfit for subsequent redevelopment. These buyout sites will eventually be transferred to an entity subject to restrictive covenants prohibiting subsequent development in perpetuity.

Specifically, around 53 City Buyout program properties are active in Ramblersville, Broad Channel, Arverne, and Edgemere, Queens; South Beach, Midland Beach, Oakwood Beach, Great Kills, and Annadale, Staten Island; and Seagate, Brooklyn.

Resilient Edgemere Community Planning Initiative:

Edgemere is a vulnerable, low-lying, waterfront community in the Rockaways. Edgemere experienced significant damage from Hurricane Sandy and also experiences regular tidal flooding. The combination of a high water table and flat topography ensures that Edgemere experiences significant flooding from heavy rain events during high tides. In addition, sea level rise predictions for this community demonstrate significant risk for this community's future. Edgemere is a primarily low- to moderate-income community with large tracts of publicly-owned vacant land and is also an active Urban Renewal Area.

Since October 2015, the City's Department of Housing Preservation and Development, in coordination with other City agencies, has spearheaded the Resilient Edgemere Community Planning Initiative, working also with City agencies, community members, elected officials, local organizations, and residents. In facilitating this process, HPD set out to accomplish the following objectives:

- Learn, verify, and organize the important issues from community stakeholders in order to influence City agencies' planning processes
- Brainstorm, develop, and test preliminary strategies that address key neighborhood concerns and could lead to viable policies and projects
- Build a base of engaged residents ready to advocate collectively for community goals and priorities
- Provide a model for other coastal communities and neighborhood planning efforts with similar threats

Amongst the goals of the Planning Initiative, are:

- Strengthening the Resiliency of Existing Homes
- Limiting new coastal development
- Improving streets, transportation, and local/regional access
- Connecting jobseekers to resources and training
- Protecting the community from flood risk and improving drainage

As a result of HPD's Resilient Edgemere Community Planning Initiative, HPD is recommending that (1) the City explore the feasibility of transferring land along the Bayfront to NYC Parks and implementation of the Rockaways Parks Conceptual Plan, (2) identify funding and resources for a long-term buyout program to locate current homeowners away from areas that have the highest risk of flood and coastal storm hazards, and (3) explore ways to limit new development on privately-owned land north of Norton Avenue. In addition, this work will both help facilitate and support the Edgemere "Raise Shoreline" project.

The Edgemere plan will demonstrate that empowering local residents can result in thoughtful solutions to the complex challenges posed by adaptation to climate change and historic disinvestment. The plan can serve as a model for the how the City of New York may engage with other vulnerable communities and coastal neighborhoods to build collaboratively a shared vision for a resilient future.

Land Use Planning for Resiliency:

Following Sandy, the NYC Department of City Planning (DCP) advanced a temporary, emergency citywide text amendment to promote rebuilding to higher standards by addressing the most urgent zoning barriers. In 2013, DCP launched the *Resilient Neighborhoods* initiative to work directly with floodplain communities to look at specific local issues in certain hard-hit areas and reexamine questions of land use, zoning, and development in light of a new understanding of coastal flood risks. DCP also released the *Retrofitting for Flood Risk* manual, which details resilient retrofit strategies for a range of building types that are unique to New York City. In addition, DCP launched the *Resilient Retail* and *Resilient Industry* studies to identify zoning issues and strategies beyond zoning to promote resiliency of retail corridors and industrial areas in the floodplain. DCP has also been working closely with other agencies, including the Housing Recovery Office and Mayor's Office of Recovery and Resiliency on programs to assist community recovery and build coastal resiliency.

The results of these studies, as well as lessons learned from the rebuilding process, will feed into a future update to the 2013 citywide text amendment, as well as potential locally specific neighborhood zoning changes. By making the 2013 text permanent, and addressing additional issues throughout the city, zoning will allow property owners to build in ways that both limit damage from floods and reduce insurance costs, and also ensure that development is responsive to neighborhood character and aligns with the need for long-term adaptation.

Zoning strategies to be explored fall along a spectrum based on the risks and needs of each neighborhood:

- **Limit:** In some areas of the floodplain where flood risks are exceptional in their magnitude and frequency, such as where sea level rise is projected to lead to future daily tidal flooding or where basic infrastructure is lacking, zoning and other tools may be used to limit exposure to damage and disruption by limiting future development. For example, DCP has been working with certain communities to develop appropriate zoning regulations to limit new development while also enabling property owners to make investments to protect existing homes.

- **Accommodate:** In many areas of the floodplain, zoning could better accommodate adaptation to flood risk if regulations that impede investment in flood resistant buildings, both new and retrofitting, are modified. While the 2013 Citywide Flood Resiliency Text Amendment removed many of the most direct and urgent barriers to resiliency, additional issues continue to be identified through the recovery process and the experience of individual owners. For example, throughout the floodplain current zoning requirements on small lots with high flood elevations lead to tall, narrow out-of-character homes. DCP has been exploring whether new zoning envelopes could better suit these constrained sites, enabling buildings that are both more resilient and provide higher quality housing than would otherwise be possible.

- **Encourage:** In other areas where there is a risk of flooding during extreme events but infrastructure and context would support opportunities for growth, zoning can be part of a strategy to encourage the construction of new buildings that provide a higher standard of flood protection, or provide incentives for pursuing more costly strategies, such as dry floodproofing, that promote both resiliency and high quality streetscape design. Exploration of such strategies in any area would need to include outreach and coordination with the community, and attention to the full range of local planning issues.

Additional outreach is necessary in order to understand the full range of issues and concerns and will inform a comprehensive strategy for buildings in the floodplain. DCP's goal throughout the outreach process will be to understand what components would shape an update to the citywide flood text that is responsive to risk, unique neighborhood conditions, and community input.

Citywide Disaster Preparedness Planning

In the winter of 2016, the City of New York, through the Department of Design and Construction (DDC) issued a Request for Proposals for on-call emergency-response construction and construction-related services in response to natural and/or man-made disasters impacting New York City. Work under these contracts will be generally consistent with conducting emergency operations and, while not limited to declared Federal disasters, will be utilized under State or locally declared emergencies. The categories of work that were solicited are:

- Category 1 - Critical Public Facility Restoration;
- Category 2 - Temporary Restoration of Housing;
- Category 3 - Construction Support for Urban Search and Rescue;
- Category 4 - Debris Removal;
- Category 5 - Debris Removal – Marine Transportation;
- Category 6 - Provision of Medical Space and/or Shelters;
- Category 7 - Communications/IT Services Restoration;
- Category 8 - Provision of Environmental Testing Services; and
- Category 9 - Supervision, Management and Administrative Services

The Request for Proposal did not result in contracts for Categories 1, 6, and 7. The City is evaluating next steps to obtain contracts for these services. DDC is committed to providing opportunities for Minority and Women owned Business Enterprises, ("M/WBEs"), and Contractors are strongly encouraged to utilize M/WBEs for services required pursuant to this Contract.

These contracts are not funded with CDBG-DR funds.

Following recent events such as Hurricane Harvey and Irma, the City is engaged in national dialogue surrounding how to best apply lessons learned from Sandy to ongoing disaster recovery efforts. These conversations focus on nationwide policy concerns such as preparedness and emergency management.

The City is also currently working to develop a team of recovery experts available to assist other jurisdictions immediately following a disaster. For example, DOB has made available a team of damage estimating experts to assist other jurisdictions assess damages made to both commercial and residential buildings.

Disaster Cost Recovery Plan:

Surrounding a disaster, federal assistance may be available through a number of grant programs, often initiated by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C §5121-5207 (Stafford Act). The Stafford Act is the system by which a Presidential Disaster Declaration triggers financial and physical assistance. The provision is designed to supplement response efforts when the magnitude of the disaster is beyond the ability of local and State resources. The Federal Emergency Management Agency's (FEMA) Public Assistance (PA) Program is the specific grant program authorized by the Stafford Act making funding available to eligible state and local governments and certain PNP entities, for costs that they incurred as a result of a Presidentially Declared Disaster. Additional disaster grant programs, such as the Federal Highway Administration's Emergency Relief (FHWA-ER) and the Federal Transportation Administration's Emergency Relief (FTA ER) programs may also be available to eligible applicants as the result of a Presidential Disaster Declaration. If activated, these programs allocate funding for eligible costs or damages sustained to transportation systems, and may contribute to a reduction of the City's overall cost share following a declaration.

In the last 10 years, New York City has received 28 Presidential Disaster Declarations, justifying the release of more than $11.5 billion from FEMA's PA Program. Following Hurricane Sandy, FTA and FHWA allocated $300 million collectively, while FEMA allocated $8.4 billion via the PA Program to the City for recovery. While Hurricane Sandy was a particularly devastating event, the City may be eligible for millions of dollars to help fund its recovery any time a Presidential Disaster Declaration is made.

The City of New York's Disaster Cost Recovery Plan, establishes the procedures and outlines the roles of participating City agencies responsible for coordinating efforts related to administering federal disaster relief grant funding to local governmental agencies, and to the extent possible, affected private nonprofit agencies, following a Presidential Disaster Declaration. The function of the Disaster Cost Recovery Plan is to outline the processes the City and those responsible for taking such actions must complete in order to obtain the federal disaster-relief aid to which the City is entitled. This Plan's intent is to increase the City's capability to manage the process effectively, efficiently, and in a manner consistent with state and federal guidelines.

Post-Disaster Sheltering Plan:

Based on experience from Hurricane Sandy and an updated Hurricane Evacuation Study (HES), NYC Emergency Management (NYCEM) is working to improve its Hurricane Shelter Program.

NYCEM bases shelter planning assumptions, and its corresponding stockpile, on the Army Corps of Engineers HES Behavioral Survey. In 2015, the HES was updated to revise estimates published in 2006, prompting a need for the City to revise shelter capacity assumptions. Additionally the City conducted several after-action reviews post-Hurricane Sandy, including a review of its shelter plan. These reviews helped identify ways NYCEM can strengthen its planning efforts and better prepare the City for future emergencies.

Since June 2016, NYC Emergency Management (NYCEM), in coordination with OMB and Hagerty Consulting, has been engaged in assessing the entire NYC Coastal Storm shelter system for accurate capacity figures including an assessment of the capacity of shelters and Evacuation Centers for General and Disability Access and Functional Needs (DAFN) populations. This assessment will help NYCEM prepare for, manage, and recover from future disasters or emergencies.

Lessons Learned and Development of Disaster Recovery Management Tools

Case Management System: The Mayor's Office of Housing Recovery Operations has developed a Case Management System (CMS) that is the data management system for the Build It Back program. This system integrates data from city, state and federal sources including disaster benefit and insurance information (e.g. SBA, NFIP, FEMA) and NYC Department of Buildings tax lot and building data (BIN/BBL). The system includes functionality adaptable for future use related to application processing, grant management, and includes a two way interface with FISA for reimbursement, payment and collection processes. The system contains many compliance and data validation checkpoints to help facilitate audit reviews. HRO is dedicating planning efforts towards using CMS as a framework and database structure to manage future emergency recovery situations.

Grant Management System: The Office of Management & Budget, in coordination with its consulting resources, has developed an information technology platform to manage CDBG-DR and FEMA expenditures and reimbursement requests. This system could form a model for future grant management systems tracking and providing records for other funding streams, related to disaster recovery and more.

Scenario Planning Through Hurricane Joaquin and Hurricane Hermine Experiences: Through efforts led by New York City Emergency Management and City Hall staff, the City of New York engaged in various levels of hurricane preparedness scenarios, both real and simulation, when Hurricane Joaquin and Hurricane Hermine occurred. The City's preparation and simulated responses during these storms help inform future response and recovery efforts.

Flood Insurance, Disaster Bonds, and Innovative Finance Considerations: Staff from various City of New York agencies have participated in workshops, seminars, and other knowledge-sharing opportunities to gather information about potential innovative funding mechanisms to help prepare for and response to natural and manmade disasters.

In addition to these ongoing efforts, the City also intends to utilize a portion of its CDBG-DR allocation to perform a comprehensive review of Build It Back and all recovery efforts to develop an effective and strategic storm recovery plan for use in the future.

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.

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 advised 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 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
- Section 3 of the Housing and Urban Development Act of 1968, 24 CFR 135
- And other applicable federal regulations

Monitoring

The City is utilizing 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 has 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 include 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.

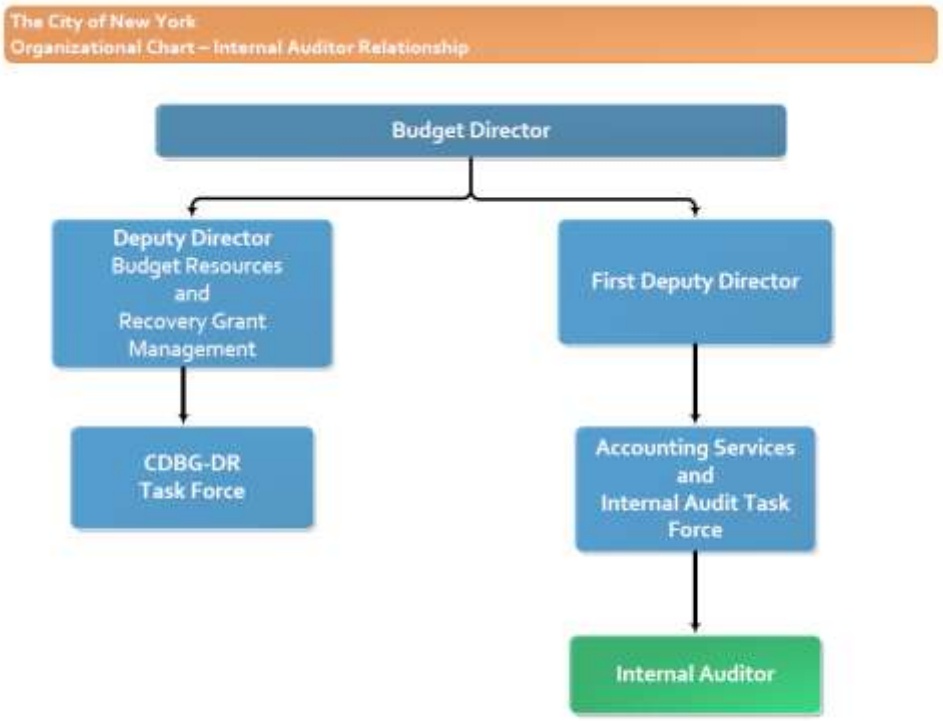
3. Internal Audit:

The Director of Internal Audit at OMB may 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 do 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.

The following organizational chart represents where the internal audit function is performed, demonstrating independence from the New York City OMB division that oversees the CDBG-DR grant.



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.

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

The City may enter into subrecipient agreements to facilitate programs. Subrecipients could be governmental agencies, private non-profits, and Community Based Development Organizations. Subrecipient agreements would outline all reporting requirements. These would include, but not 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.

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. 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.

Fair Housing

HUD requires the City to Affirmatively Further Fair Housing through its distribution of CDBG-DR funds. This process includes conducting an analysis of impediments to fair housing choice and taking actions to overcome the identified impediments.

The City of New York's Affirmatively Furthering Fair Housing Statement, including a Supplement for CDBG-DR funded activities, can be found in the City's Consolidated Plan Annual Performance Report (APR) Volume 2 on the Department of City's Planning Consolidated Plan-related webpage: http://www.nyc.gov/html/dcp/html/pub/conpln2014apr.shtml

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/cdbgdr) to give citizens an opportunity to read the Plan and amendments to the Action Plan, as well as to submit comment(s). This website is featured prominently on, and is easily navigable from, the City's Recovery homepage (www.nyc.gov/recovery).

Comments on substantial amendments to the Action Plan, as well as other comments or citizen complaints, may be submitted as follows:

- Electronically on the City's CDBG-DR website at www.nyc.gov/cdbgdr.
- 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 in their preferred language. 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 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.

East Side Coastal Resiliency – Citizen Participation Plan

Approved on December 30, 2016, New York City's Action Plan incorporating Amendments 1-12 includes information on the Citizen Participation Plan (Pg. 150) and the ESCR Citizen Participation Plan (Pg.113) in conformance with the regulations at 78 CFR 14329 and 69104, respectively. The following section augments the ESCR Citizen Participation Plan to include elements of the overall Citizen Participation Plan, and to add specific details to address community needs of the ESCR project area.

a) Public Hearing

For substantial amendments to the Action Plan, the City of New York will hold public hearing(s) in the ESCR project area. Citizens and stakeholders will have reasonable and timely access to the public hearing(s).

In the upcoming public hearing(s), the City will provide the opportunity for citizens to submit comments orally. The City treats written and oral comments equally, and will incorporate both in the Responses to Public Comment document submitted to HUD with substantial amendments.

b) Public Notice and Comment Period

In accordance with CDBG-DR requirements, the City of New York has developed and will maintain a comprehensive website describing the ESCR project assisted with these funds. The City will post all Rebuild by Design/ ESCR Action Plan Amendment(s) on the City's CDBG-DR website (www.nyc.gov/cdbgdr) 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 any of the East Side Coastal Resiliecy-related substantial Action Plan amendments 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. 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/cdbgdr.
- 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.

c) Individuals with Limited English Proficiency (LEP)

As indicated in the ESCR outreach plan above, based on community needs and LEP data within the ESCR project area, both the instructions for commenting on, and access to, the Action Plan, when it relates specifically to the East Side Coastal Resiliency RBD project only, will be updated beginning after Action Plan Amendment 13.

The Action Plan will be translated into Spanish and Chinese (simplified). Comments will be accepted through the online commenting form in English and the two aforementioned languages. The City will make every possible effort to translate and consider comments submitted in any other language within the timeframe**. In addition to the English language publications Daily News and the Post, the Public Notices, announcing the public comment period dates and hearing location, will be published in the following newspapers: El Diario (Spanish) and Sing Tao Daily (Chinese).**

The City will provide translated copies of the Action Plan Amendments at public hearings in Spanish, 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, Mandarin, and Cantonese. The interpreters are also available to translate citizen questions.

d) Persons with Disabilities

As noted above, hard copies of Action Plan(s) 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.

e) The Final HUD Approved Action Plan

Following HUD approval, the Action Plan will be posted on the City's CDBG-DR website. Copies of the Final Action Plan will also be made available upon request.

f) 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.

g) Action Plan Amendments

If the final EIS or other project plan development result in material changes to the project (as outlined in the August 15, 2016, Federal Register notice [81 FR 54114]), after the submission or approval of the Action Plan, then a subsequent substantial Action Plan amendment will be prepared for the ESCR project in order to describe the final project as permitted and as approved through the environmental review process. If no material changes occur to the project design and scope submitted to or approved by HUD, then no additional amendment would be necessary.

In the case of a subsequent substantial Action Plan amendment, the City of New York will follow the citizen participation processes outlined above.

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. 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.

a) Public Hearing

For substantial amendments to the Action Plan, the City of New York will hold public hearing(s) in the Hunts Point project area. Citizens and stakeholders will have reasonable and timely access to the public hearing(s).

In the upcoming public hearing(s), the City will provide the opportunity for citizens to submit comments orally. The City treats written and oral comments equally, and will incorporate both in the Responses to Public Comment document submitted to HUD with substantial amendments.

b) Public Notice and Comment Period

In accordance with CDBG-DR requirements, the City of New York has developed and will maintain a comprehensive website describing the Hunts Point project assisted with these funds. The City will post all Rebuild by Design/ Hunts Point Action Plan Amendment(s) on the City's CDBG-DR website (www.nyc.gov/cdbgdr) 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 any of the Hunts Point-related substantial Action Plan amendments 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. 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/cdbgdr.
- 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.

c) Individuals with Limited English Proficiency (LEP)

As indicated in the Hunts Point outreach plan above, based on community needs and LEP data within the Hunts Point project area, both the instructions for commenting on, and access to, the Action Plan, when it relates specifically to the Hunts Point RBD project will be made accessible to community stakeholders.

The Action Plan will be translated into Spanish. Comments will be accepted through the online commenting form in English and Spanish. The City will make every possible effort to translate and consider comments submitted in any other language within the timeframe. In addition to the English language publications Daily News and the Post, the Public Notices, announcing the public comment period dates and hearing location, will be published in the following newspapers: El Diario (Spanish) and Bronx Times-Reporter.

The City will provide translated copies of the Action Plan Amendments at public hearings in Spanish,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.The interpreters are also available to translate citizen questions.

d) Persons with Disabilities

As noted above, hard copies of Action Plan(s) 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.

e) The Final HUD Approved Action Plan

Following HUD approval, the Action Plan will be posted on the City's CDBG-DR website. Copies of the Final Action Plan will also be made available upon request.

f) 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.

g) Action Plan Amendments

If the final EIS or other project plan development result in material changes to the project (as outlined in the August 15, 2016, Federal Register notice [81 FR 54114]), after the submission or approval of the Action Plan, then a subsequent substantial Action Plan amendment will be prepared for theHunts Point project in order to describe the final project as permitted and as approved through the environmental review process. If no material changes occur to the project design and scope submitted to or approved by HUD, then no additional amendment would be necessary.

In the case of a subsequent substantial Action Plan amendment, the City of New York will follow the citizen participation processes outlined above.

XIV. APPENDICES

Appendix A: List of Acronyms

New York City Participating Agencies and Acronyms

DCAS Department of Citywide Administrative Services

DCLA Department of Cultural Affairs

DEP Department of Environmental Protection

DFTA Department for the Aging

DHS Department of Homeless Services

DOB Department of Buildings

DOC Department of Correction

DOE Department of Education

DoITT Department of Information Technology and Telecommunications

DOT Department of Transportation

DPR Department of Parks and Recreation

DSNY Department of Sanitation

FDNY Fire Department of New York

H+H NYC Health and Hospitals

HPD Department of Housing Preservation & Development

HRA Human Resources Administration

HRO Housing Recovery Operations

LPC Landmarks Preservation Commission

MOPD Mayor's Office for People with Disabilities

NYCHA New York City Housing Authority

NYPD New York City Police Department

OEM Office of Emergency Management

OER Mayor's Office of Environmental Remediation

OMB Office of Management and Budget

SBS Department of Small Business Services

Other

ADA Americans with Disabilities Act

AMKC The Anna M. Kross Center on Rikers Island

AMI Area Median Income

BIB New York City's Build It Back Program

Business PREP Preparedness & Resiliency for Emergencies Program

BRZs Business Recovery Zones

CDBG Community Development Block Grant

CDBG-DR Community Development Block Grant - Disaster Recovery

CFR Code of Federal Regulations

CHPC Citizens Housing and Planning Council

CMP Coastal Management Plan

CNYCN Center for NYC Neighborhoods

CPD Office of Community Planning and Development, US Department of Housing and Community Development

CSOs Combines Sewer Outflows

DASCs Disaster Assistance Service Centers

DEC New York State Department of Environmental Conservation

DMATs Disaster Medical Assistance Teams

DRGR Disaster Recovery Grant Reporting System

DRTF Debris Removal Task Force

EDC NYC Economic Development Corporation

EIFS Exterior Insulation and Finish System

EIS Environment Impact Statement

EOC Emergency Operations Center

ERD Emergency Response Division

ESCR East Side Coastal Resiliency

ESS Emergency Supply Stockpile

FEMA Federal Emergency Management Agency, of the U.S. Department of Homeland Security

FHEO Fair Housing and Equal Opportunity

FHWA Federal Highway Administration

FIRM Flood Insurance Rate Map

GAAP Generally Accepted Accounting Principles

GBVMPO Greater Bridgeport/Valley Metropolitan Planning Organization (Connecticut)

HEC Healthcare Evacuation Center

HHS U.S. Department of Health and Human Services

HSBLGP Hurricane Sandy Business Loan and Grant Program

HUD United States Department of Housing and Urban Development

ICS Incident Command System

IDA New York City Industrial Development Authority

IOCS Infrastructure and Other City Services Program

IMT Incident Management Team

JIS Joint Information System

LC Logistics Center

LEP Limited English Proficiency

LISC Local Initiatives Support Corporation

LIPA Long Island Power Authority

LIRPC Long Island Regional Planning Council

LMA Low- and Moderate-Income Area

LMC Low- and Moderate-Income Limited Clientele

LMH Low- and Moderate-Income Housing

LMI Low- and Moderate-Income Persons

LMJ Low- and Moderate-Income Jobs

LTCPs Long-Term Control Plans

MARSHES Mitigation and Restoration Strategies for Habitat and Ecological Sustainabilities Initiative

MHANY Mutual Housing Association of New York

MTA Metropolitan Transit Authority

MOU Memorandum of Understanding

MWBE Minority- and Women-owned Business Enterprises

NAICS North American Industry Classification System

NEG Federal National Emergency Grant

NEPA National Environmental Policy Act

NFIP National Flood Insurance Program

NHS Neighborhood Housing Services

NPCC New York City Panel on Climate Change

NWS National Weather Service

NYCWiN New York City Wireless Network

NYLDC New York Business Development Corporation – Local Development Corporation

NYSHCR New York State Homes and Community Renewal

PA FEMA's Public Assistance Program

PAAP Public Assistance Alternative Procedures

PDA Preliminary Damage Assessment

P-FIRMS Preliminary Flood Insurance Rate Maps

PLP Participation Loan Program

PRWORA Personal Responsibility and Work Opportunity Reconciliation Act of 1996

PW FEMA Public Assistance Grant Project Worksheet

QPR Quarterly Performance Report

RISE NYC: Resiliency Innovations for a Stronger Economy

RNDC Robert N. Davoren Center on Rikers Island

RPA Regional Plan Association

SCRCOG South Central Regional Council of Governments (Connecticut)

SIRR Special Initiative for Rebuilding and Resiliency

SMEs Small-and Medium- Enterprises

SMNS Special Medical Needs Shelters

SNAP Supplemental Nutrition Assistance Program

SPEED Searchable Property Environmental Electronic Database

STEP Sheltering and Temporary Essential Power

SWRMPO South Western Regional Metropolitan Planning Organization (Connecticut)

TA Technical Assistance

TDAP Temporary Disaster Assistance Program

UFAS Uniform Federal Accessibility Standards

UORC Unified Operations and Resource Center

UN Urgent Need

USACE United States Army Corps of Engineers

USDA U.S. Department of Agriculture

VOIP Voice Over Internet Protocol

WPCPs New York City's Water Pollution Control Plants

WRP New York City's Waterfront Revitalization Plan

Appendix B: Inundation Area Descriptions, Charts, Data

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. This information has been and will continue to be used to inform planning decisions for the City's long-term recovery.

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 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).

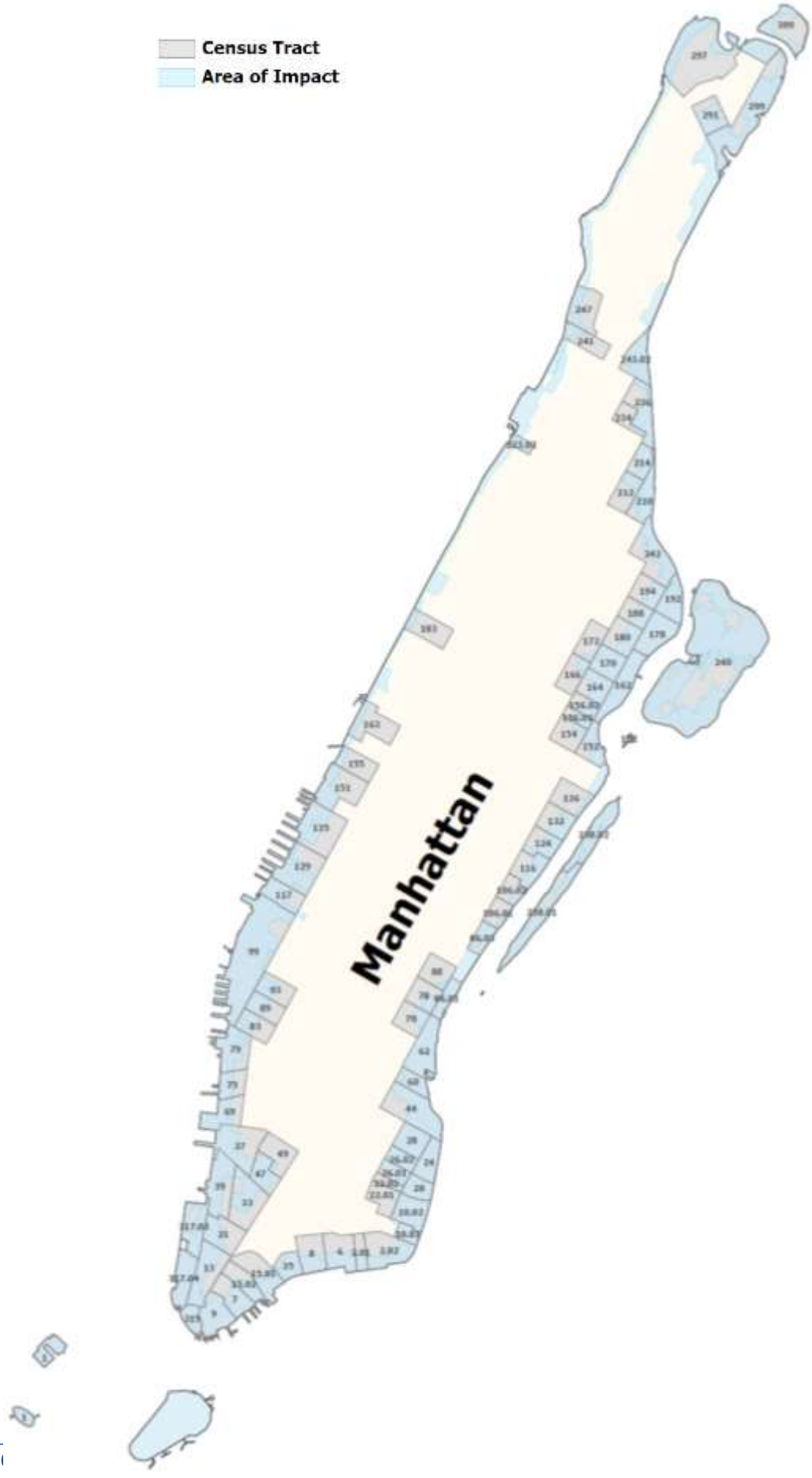
Regarding the units located in the borough's Inundation Area, the percentage of units within a particular type of structure reflected Staten Island's overall housing profile. Slightly more than 78 percent of the impacted units are in one- and two-family buildings (22,375 units). Multi-family elevator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

Bronx
309
293.01
293.02
279
283
269
53
456
504
302
276
284
516
516
361
60
123
54
274.02
96
194
160
90
90
144
138
130
132
118
65
51
24
2
4
93
19
1

Census Tract
Area of Impact
Census Tract
Area of Impact
Brooklyn


Census Tract
Area of Impact
Manhattan

Queens
Census Tract
Area of Impact

Census Tract
Area of Impact
Staten Island

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.

Appendix C: 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
- H+H 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 D: 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 Stre

Appendix E: Storm Response

Note: This section includes text which was originally included in the main sections of the Action Plan document to describe the City's immediate storm response efforts. This information was collected in the months following the storm. This text will remain as an appendix for background information and will not be updated going forward.

Initial Storm Response

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 NYC Health and Hospitals (H+H), 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[7] 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 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

[7] 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.

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.

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 and Response for the City's Homeless Population

Single Adults and Childless Families

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

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.

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.

Infrastructure and Other City Services: 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 NYC Health and Hospitals (H+H) and the H+H 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 8:00$_{A.M.}$ 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[8] at 11:00$_{A.M.}$ Residents were ordered to evacuate to shelters by

[8] 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

7:00P.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[9] 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.

The FDNY also increased its operations in Zone A[10], 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, H+H 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

[9] Ibid
[10] Ibid

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 H+H facilities and other hospitals. EMS also assisted with the evacuation of NYU Langone Medical Center.

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[11]. 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[12] 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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[11] 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

[12] 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[13] 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:

- Visiting shelters and evacuation centers to determine accessibility and informing shelter staff how to work with people with disabilities.

[13] Ibid.

- 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.

Appendix F: Housing Demographics Charts

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 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%

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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.

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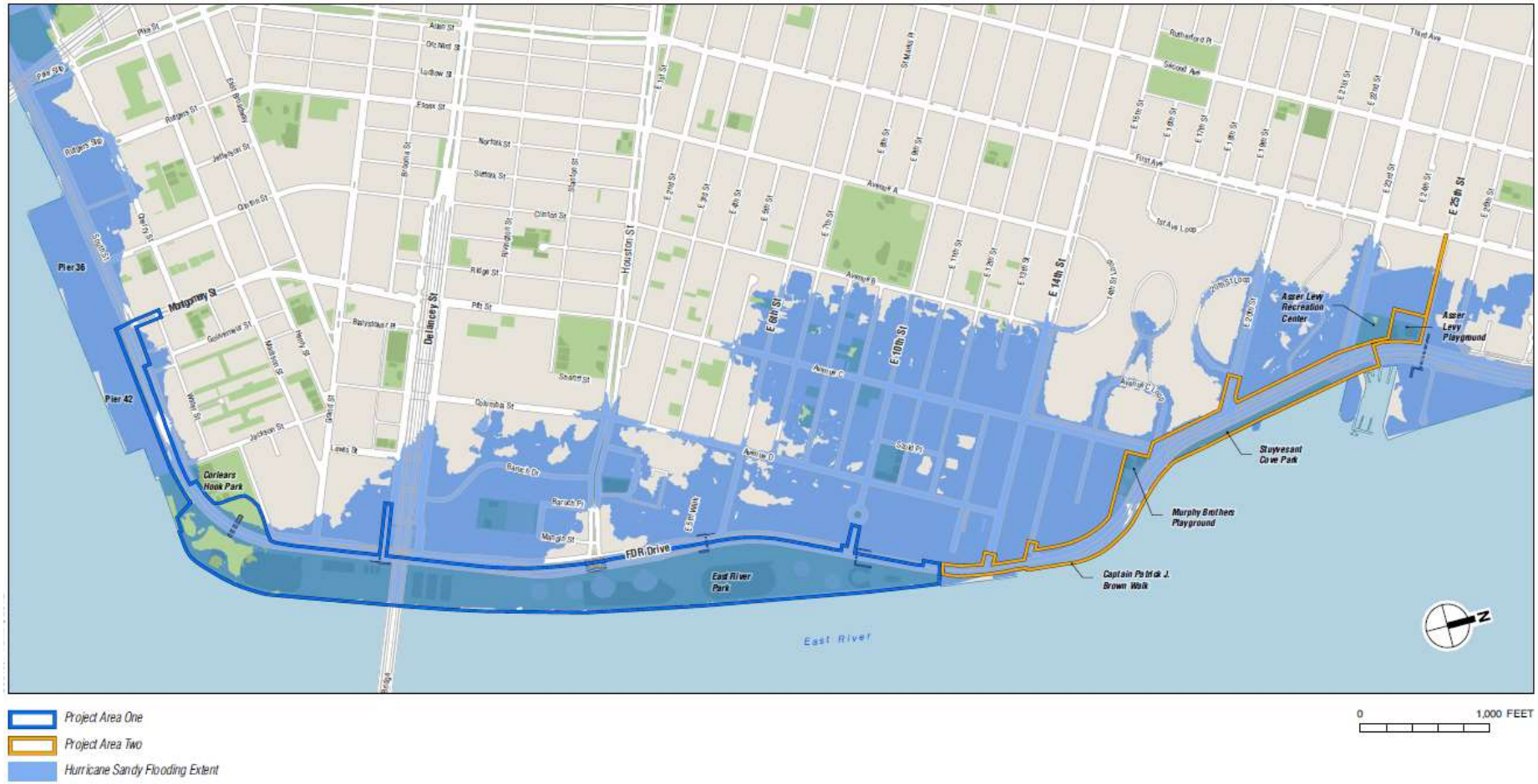
2. Buildings with 3 or more units
3. Note that % are of each column sub-section and are summed vertically, not horizontally.

Appendix G: East Side Coastal Resiliency

Figure 1—Extent of Hurricane Sandy Flooding

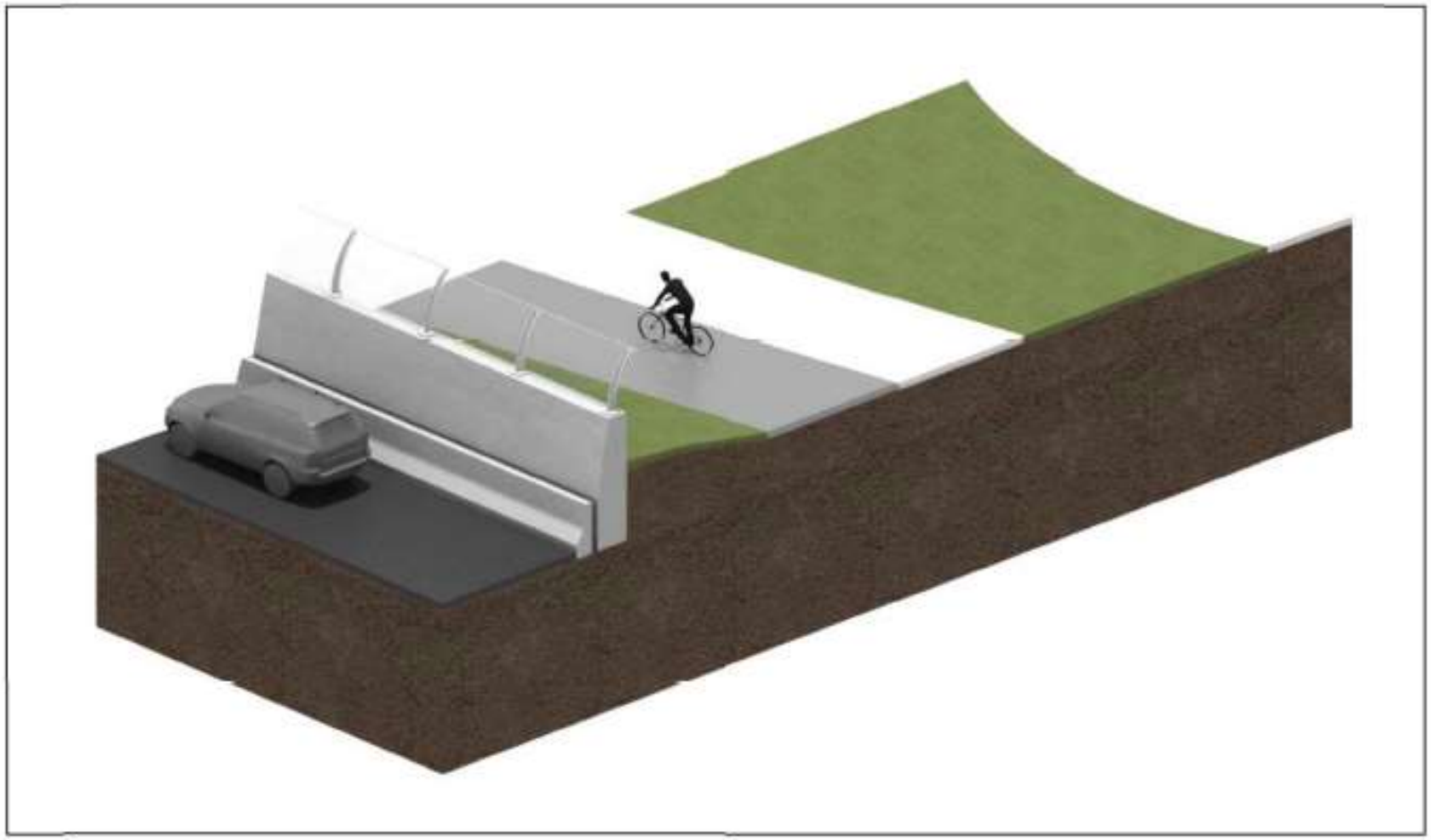


Capital Project: SANDRESM1
EAST SIDE COASTAL RESILIENCY PROJECT

Figure 2—Protected Area Aerial Map

Capital Project: SANDRESM1
EAST SIDE COASTAL RESILIENCY PROJECT

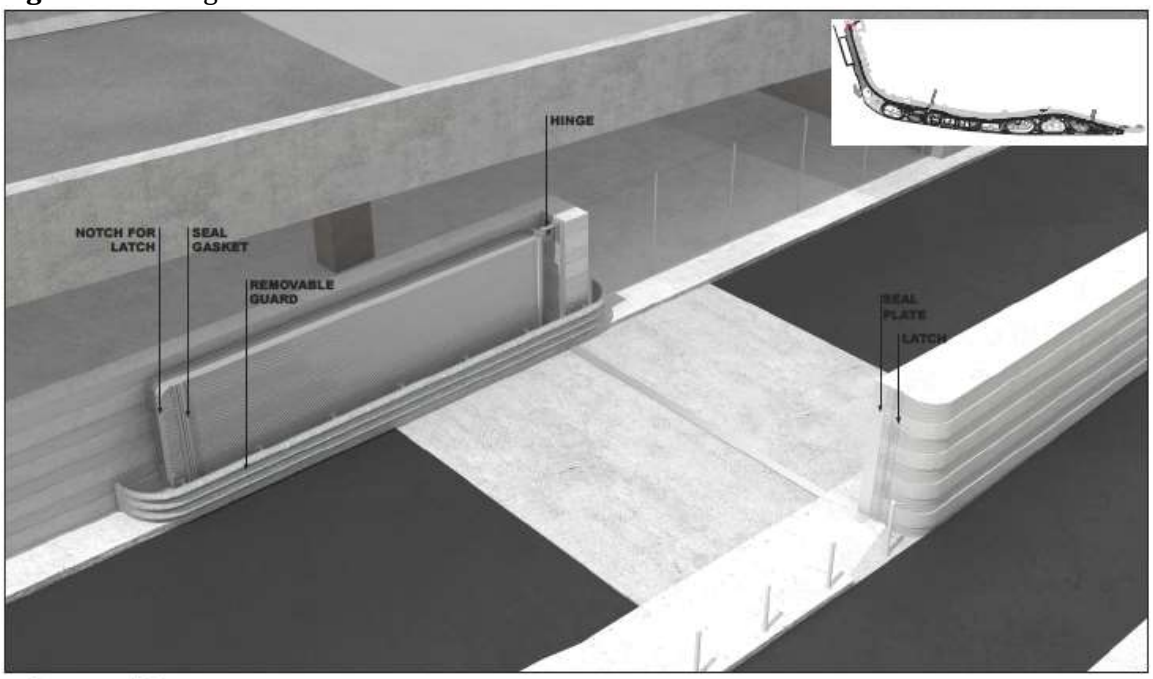
Figure 3—Typical Floodwall (Illustrative)



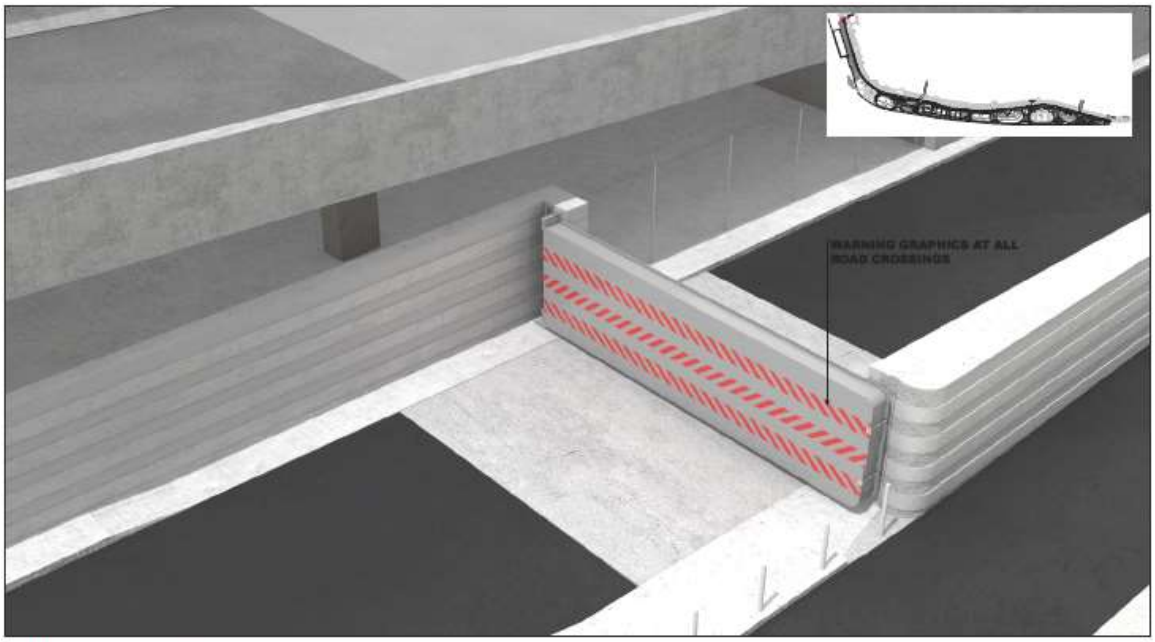
NOTE: Preliminary Illustrative Design Concept

Capital Project: SANDRESM1
EAST SIDE COASTAL RESILIENCY PROJECT

Figure 4—Swing Gate



Open position

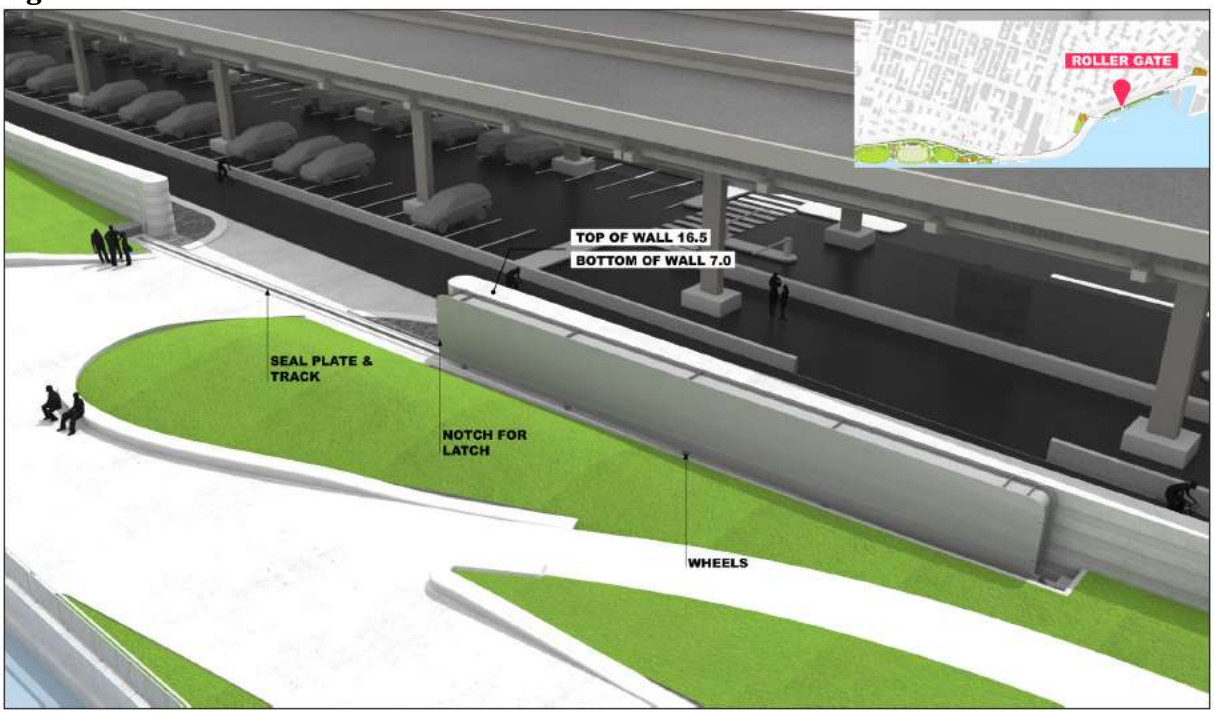


Closed position

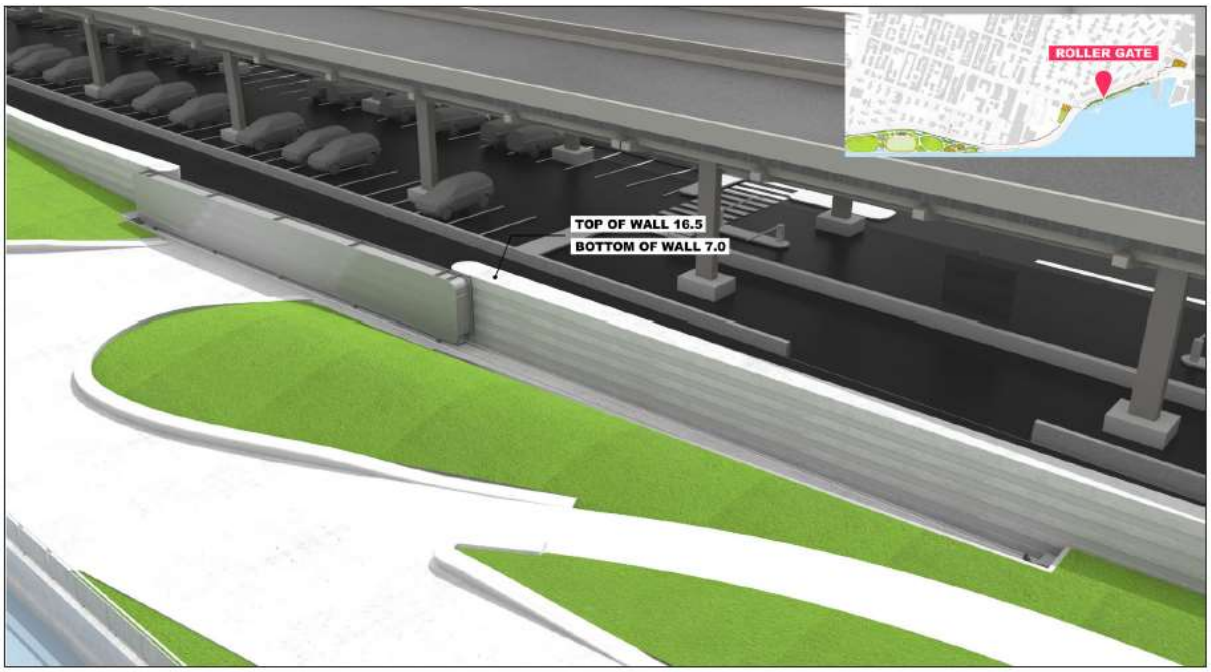
NOTE: Preliminary Illustrative Design Concept

Capital Project: SANDRESM1
EAST SIDE COASTAL RESILIENCY PROJECT

Figure 5—Roller Gate



Open position



Closed position

NOTE: Preliminary Illustrative Design Concept

Capital Project: SANDRESM1
EAST SIDE COASTAL RESILIENCY PROJECT

Figure 6—Drainage Isolation and Management Components

Capital Project: SANDRESM1
EAST SIDE COASTAL RESILIENCY PROJECT

Figure 7—Schematic of Preferred Alternative: Flood Protection System with a Raised East River Park

Project Elements

Proposed Floodwall

Redesigned Open Spaces

NOTE: Based on Preliminary Draft Design Concept. See Appendix C3 for additional design details on this alternative. Design includes flyover bridge.

Capital Project: SANDRESM1
EAST SIDE COASTAL RESILIENCY PROJECT

Appendix H: Hunts Point Resiliency

Figure 1—Hunts Point Resiliency Project Study Area and Context

Figure 2—Hunts Point Resiliency Project Study Area and Context

Figure 3—FEMA Preliminary Flood Hazard Area with 2050s Sea Level Rise

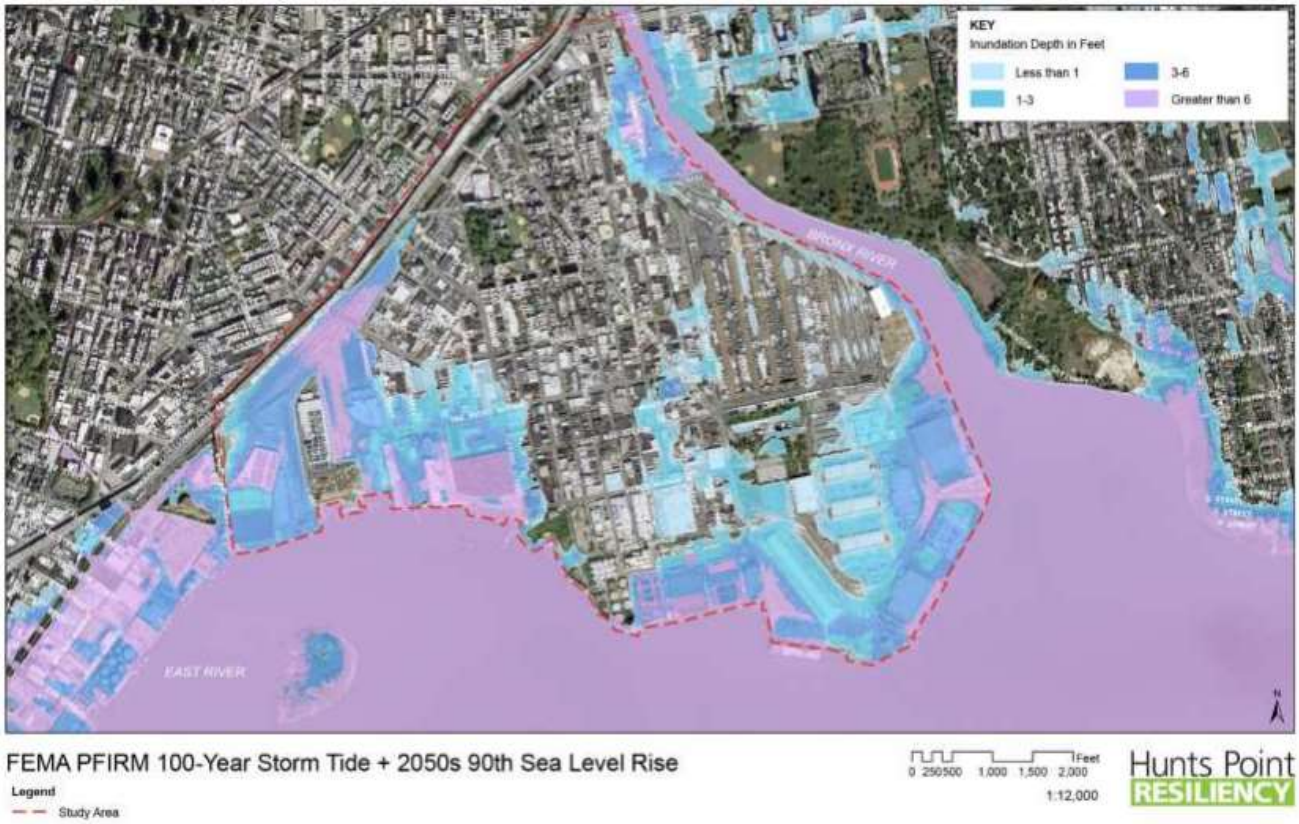
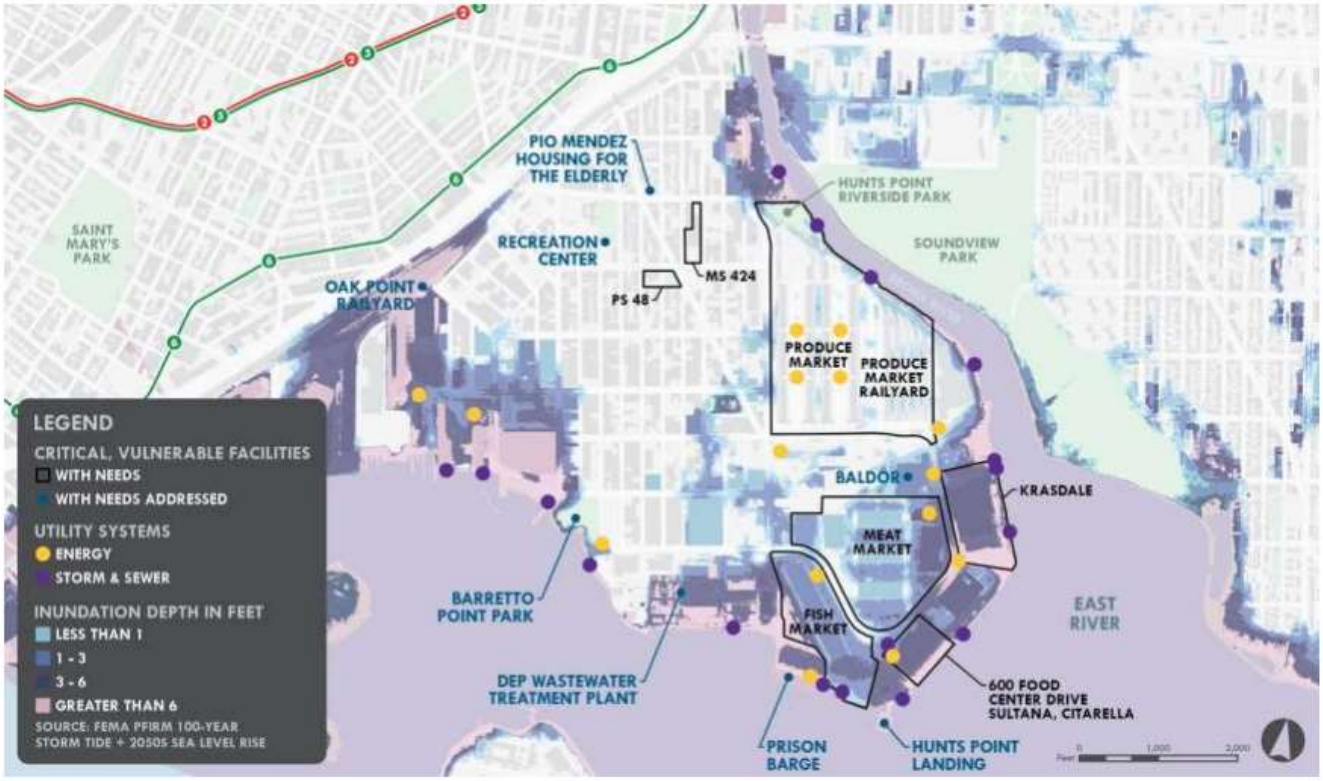


Figure 4— Critical, Vulnerable Facilities within Flood Hazard Area



Appendix I: Previously Planned IOCS Projects No Longer Being Funded By CDBG-DR

This appendix includes all projects that were previously listed as being funded under IOCS in the City's Action Plan Incorporating Amendments 1-11. First is a table that was provided in Amendment 12, which summarizes all previously-allocated IOCS projects. This is followed by a detailed list of projects by City agencies previously thought to be funded by CDBG-DR, including all previously-approved Covered Projects.

The following table "Infrastructure: Rehabilitation of Public Facilities" reflects the reallocation of funding across IOCS activities as well as figures for remaining needs and respective funding sources. This chart is intended to depict projects that were identified for possible CDBG-DR funding in Action Plan Incorporating Amendments 1-11. This chart does not show the entirety of the City's unmet infrastructure need.

Agency	Project	Previous IOCS Allocation	Revised IOCS Allocation	Remaining Need	Funding Source for Remaining Need
H+H	4 Hospitals 428	172,270,535	35,270,535	137,000,000	City Capital
DPR	Rockaway Boardwalk	48,037,354	48,037,354	-	N/A
DDC	Breezy Point HMGP	14,537,000	-	14,537,000	CDBG-DR Coastal Resiliency
DEP	Electrical Conduit and Fittings 428	12,813,107	-	12,813,107	City Capital
DPR	Beach Open Up: Modulars & Entry Islands	119,000,000	-	119,000,000	CDBG-DR IOCS or City Capital
DPR	Beach Open Up: Steeplechase Pier	9,200,000	-	9,200,000	CDBG-DR IOCS or City Capital
NYPD	Damaged Facilities	5,000,000	-	5,000,000	City Capital
DSNY	Damaged Facilities	600,000	-	600,000	City Capital
DOC	Rikers & Hart Island Damaged Facilities	6,500,000	-	6,500,000	City Capital
DDC	Construction/ Reconstruction of Streets	1,500,000	-	1,500,000	City Capital
NYCEDC	Conduit & Facilities at Homeport	11,570,000	-	11,570,000	City Capital
DOT	Underpasses	10,500,000	-	10,500,000	City Capital
FDNY	Emerg. Comm. System & Firehouse Conduit	17,000,000	-	16,445,555	City Capital
DDC	DDC Nursing Homes HMGP	-	4,100,000	-	N/A
TGI	Conduit PAAP	-	1,027,978	-	N/A
FDNY	Damaged Facilities	-	2,494,133	-	N/A
	Total:	**428,527,996**	**90,930,000**	**344,665,662**	

Previously Planned Public Services Projects

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.

Rehabilitation/Reconstruction of Public Facilities

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.

Currently no projects have been identified for HUD funding associated with these damages.

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 H+H. 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.

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.

Currently no projects have been identified for HUD funding associated with 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):

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. Currently no projects have been identified for HUD funding under these damages.

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.

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.

Movable Bridges

There are 13 movable bridges that sustained damage that have required some level of permanent restoration. These bridges were subject to surge tides, flooding and high winds. 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) 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 water borne vessels.

The movable bridges will have their capital repairs and rehabilitation funded by FHWA or FEMA. 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 13 movable bridges is $92.9 million (including construction, design, Resident Engineering Inspection, and Construction Support Services).

All of these facilities are funded by the USDOT Federal Highways Administration Emergency Relief (FHWA ER) 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.

Currently no projects have been identified for HUD funding associated with these damages.

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.

Covered Projects

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. The City has identified that repairs to the Battery Park and West Street underpasses trigger the Covered Projects requirements because the total project cost $50 million with at least $10 million identified for CDBG-DR funding.

Repairs to the two underpasses will be considered one project and entail the replacement-in-kind electrical, mechanical and ventilation equipment. The tunnel infrastructure is 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.

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 contribution.

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 resiliency 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 - Underpasses

Project Identification/Description

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. Emergency repairs were completed immediately on the facilities to restore essential traffic, to minimize the extent of damages, and to protect the facility itself. The emergency repairs were 100 percent funded by FHWA.

Permanent restoration measures will be funded at 80 percent by the Federal Highways Administration's Emergency Relief program. For the purposes of federal funding, the City will consider the permanent restoration of the two underpasses as one project. The City intends to utilize the coordinated match methodology to combine the total cost for the project and determine the required 20% local match. The City will evaluate the activities in the project to identify which portions are HUD eligible and apply HUD CDBG-DR funds to only that portion. The current total project cost is anticipated to be $52.5 million and is therefore considered a Covered Project.

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 has been completed.

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 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 Guard, the New York State Department of Environmental Conservation, and the State Historic Preservation Office, among others. In addition, the projects will need to coordinate with other coastal protection projects in Lower Manhattan.

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.

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, storm waters 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 13 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 resiliency of infrastructure and buildings citywide.

The Transportation chapter in A Stronger, More Resilient New York 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 4 in A Stronger, More Resilient New York describes the need to "Protect NYCDOT tunnels in Lower Manhattan from flooding" in order to address the damage incurred during Sandy: The two tunnels owned by NYCDOT in Lower Manhattan – The Battery Park Underpass and the West Street Underpass – are vulnerable to flooding from both storm surge and heavy downpours, which would significantly disrupt Lower Manhattan's transportation network. NYCDOT, therefore, has evaluated a series of potential flood protection strategies, including installing flood gates and raising tunnel entrances and ventilation structures above flood elevations to provide specific protection for sensitive mechanical and electrical equipment, including ventilation, lighting, and safety systems. Subject to available funding, the City, through NYCDOT, will implement the most promising and cost effective strategies to provide this protection from water infiltration and damage. The goal is to complete work within five years.

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 the award of $930 million to the winning ideas. The City will use the collaborative risk analysis developed by the winners of the New 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.

Transparent and Inclusive Decision Processes

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 this project. In a press release on February 15, 2013, FHWA announced $287 million in emergency relief to New York State, with $250 million specifically for Hurricane Sandy recovery projects. 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.

For the underpass project, DOT will engage a community liaison who will coordinate outreach prior to the construction start and during the construction activity. 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.

Long-Term Efficacy and Fiscal Sustainability

OMB and DOT will collaborate in the development of a plan to monitor and evaluate the underpasses Covered Project. 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://www1.nyc.gov/office-of-the-mayor/news/122-15/mayor-de-blasio-releases-npcc-2015-report-providing-climate-projections-2100-the-first). 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.

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 Resiliency 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 underpasses will be strengthened to be 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.

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 accessibility 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.

HUD ELIGIBILITY CATEGORY: 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 resiliency 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 Resiliency (MOR) 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 substantially 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.

HUD ELIGIBILITY CATEGORY: 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 resiliency 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. Long-Term Efficacy and Fiscal Sustainability

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 by New 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.

HUD ELIGIBILITY CATEGORY: 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

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 resiliency 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. 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 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 Resiliency 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.

Appendix J: Projected Expenditures and Outcomes

The projected expenditures and outcomes, including text, have been updated as part of Amendment 16 to correspond with changes to program allocations. The projections show current program totals within Housing, Business, Infrastructure and Other City Services, Coastal Resiliency, and Planning and Administration.

As required by the March 5, 2013, Federal Register Notice [Vol. 78, No. 43], the City included projected expenditures and outcomes in its CDBG-DR Action Plan beginning with Amendment 2 and updated with Amendments 3, 6, 9, 12, and 15. The current projections have been updated to reflect reallocations made as part of Amendment 16. The projected expenditures and outcomes will continue to be updated if there are future changes to program funding or creation of new CDBG-DR-funded programs.

In order to speed the pace of recovery spending, the City has elected to spend City funding in advance of Federal CDBG-DR reimbursement. Program expenditures in the projections that follow are defined as reimbursements to the City from the Federal treasury for expenses that the City has already incurred. Therefore, the expenditures and accomplishments that follow include a buffer period for the passage of time between the date when the City incurs an expense and the date when the Federal government reimburses the City for that expense. Real-world recovery activity occurs before the dates indicated in these charts.

Housing

The City's CDBG-DR Action Plan includes approximately $3 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 $2.213 billion for single-family homes (1-4 units), $426 million for multi-family buildings (5 or more units), $8.6 million for TDAP, and $2.5 million for workforce development. Within Housing but outside of the Build It Back umbrella, the New York City Housing Authority has received an allocation of $317 million for its Sandy recovery programs. With this, NYCHA will perform permanent repairs to building systems damaged by Hurricane Sandy and improve the resiliency of facilities across the City.

Build It Back Single Family

The Build It Back Single Family Program is expected to serve approximately 8,500 applicants whose homes include approximately 12,500 units. As of June 30, 2017, more than 96 percent of participating homeowners have received some form of construction or reimbursement assistance. Construction has started on more than 4,833 homes and was completed for more than 4.023 homes. Build It Back has distributed over 6,027 reimbursement checks.

Build It Back Multi-Family

The Build It Back Multi-Family is expected to serve approximately 19,600 units. As of June 30, 2017, the Multifamily Program has provided reimbursement checks to 108 developments or individual condo/coop unit owners; 38 developments and individual condo/coop unit owners have closed on repairs.

Build It Back Temporary Disaster Assistance Program

TDAP provides rental assistance to Sandy-impacted tenants. The first rental assistance vouchers were handed out in the third quarter of 2013. The program has served a total of 242 households.

Build It Back Workforce Development

The workforce development program was created to boost long-term recovery by supplying residents of impacted communities with the necessary skills to increase household income. The program is expected to serve approximately 9,000 residents with career services via CDBG-DR funded Workforce1 centers. In addition, the program also features pre-apprenticeship training vouchers that are expected to serve 175 persons. As of June 30, 2017, more than 9,500 New Yorkers have received assistance through the program.

Public Housing Rehabilitation and Resilience (NYCHA)

CDBG-DR funding will also be used as the local cost share for the 33 developments in NYCHA's FEMA 428 Public Assistance Alternative Procedures (PAAP) Program as well as its FEMA Hazard Mitigation Grant Program (HMGP). Design and construction are underway and the program is expected to benefit approximately 20,600 housing units across the 33 developments, 31 of which will be assisted with CDBG-DR funding.

Housing Financial Projections

Projections of CDBG-DR Expenditures and Actual CDBG-DR Expenditures to Date for Housing Programs

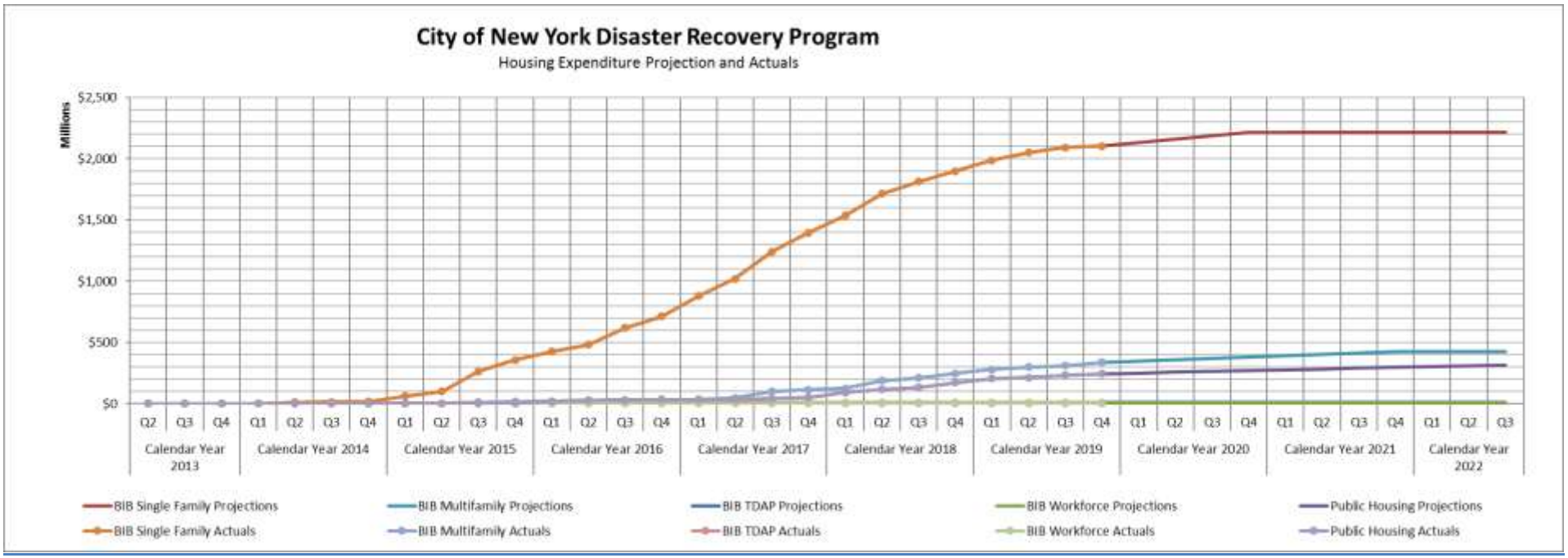
Updated January 2020

	Calendar Year 2013			Calendar Year 2014				Calendar Year 2015				Calendar Year 2016				Calendar Year 2017			
Housing Programs	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Projected Disbursements by Quarter	-	-	0.25	0.61	12.90	2.72	2.18	48.77	40.25	172.56	98.16	92.81	65.88	144.20	107.50	170.77	155.54	279.93	176.73
Build it Back Single Family	-	-	-	0.22	12.58	2.72	1.35	45.87	37.06	162.72	94.35	68.43	57.06	137.04	93.81	165.79	142.56	220.19	153.43
Build it Back Multi-Family	-	-	-	-	-	-	-	0.89	2.95	9.33	3.81	3.55	0.38	1.58	11.88	1.11	12.90	51.46	14.39
Build it Back TDAP (Rental Assistance)	-	-	0.25	0.39	0.32	-	0.82	2.01	0.24	0.51	-	1.00	-	0.83	-	2.07	0.02	-	0.01
Build it Back Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.20	0.03	0.89	0.05	1.30	-
NYCHA Rehab & Resilience	-	-	-	-	-	-	-	-	-	-	-	19.82	8.38	4.55	1.77	0.91	-	6.98	8.89
Projected Cumulative Disbursements	-	-	0.25	0.86	13.77	16.49	18.66	67.43	107.68	280.25	378.40	471.21	537.09	681.29	788.79	959.56	1,115.09	1,395.02	1,571.75
Build it Back Single Family	-	-	-	0.22	12.81	15.52	16.88	62.75	99.81	262.53	356.88	425.30	482.36	619.40	713.21	879.00	1,021.56	1,241.75	1,395.19
Build it Back Multi-Family	-	-	-	-	-	-	-	0.89	3.84	13.17	16.98	20.53	20.91	22.49	34.37	35.49	48.39	99.85	114.24
Build it Back TDAP (Rental Assistance)	-	-	0.25	0.64	0.96	0.96	1.79	3.79	4.04	4.55	4.55	5.55	5.55	6.38	6.38	8.45	8.47	8.47	8.48
Build it Back Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.26	0.29	1.18	1.24	2.53	2.53
NYCHA Rehab & Resilience	-	-	-	-	-	-	-	-	-	-	-	19.82	28.20	32.75	34.53	35.43	35.43	42.41	51.31
Actual Quarterly Disbursements (from QPRs)	-	-	0.25	0.61	12.90	2.72	2.18	48.77	40.25	172.56	98.16	92.81	65.88	144.20	107.50	170.77	155.54	279.93	176.73
Build it Back Single Family	-	-	-	0.22	12.58	2.72	1.35	45.87	37.06	162.72	94.35	68.43	57.06	137.04	93.81	165.79	142.56	220.19	153.43
Build it Back Multi-Family	-	-	-	-	-	-	-	0.89	2.95	9.33	3.81	3.55	0.38	1.58	11.88	1.11	12.90	51.46	14.39
Build it Back TDAP (Rental Assistance)	-	-	0.25	0.39	0.32	-	0.82	2.01	0.24	0.51	-	1.00	-	0.83	-	2.07	0.02	-	0.01
Build it Back Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.20	0.03	0.89	0.05	1.30	-
NYCHA Rehab & Resilience	-	-	-	-	-	-	-	-	-			19.82	8.38	4.55	1.77	0.91	-	6.98	8.89
Actual Cumulative Disbursements	-	-	0.25	0.86	13.77	16.49	18.66	67.43	107.68	280.25	378.40	471.21	537.09	681.29	788.79	959.56	1,115.09	1,395.02	1,571.75
Build it Back Single Family	-	-	-	0.22	12.81	15.52	16.88	62.75	99.81	262.53	356.88	425.30	482.36	619.40	713.21	879.00	1,021.56	1,241.75	1,395.19
Build it Back Multi-Family	-	-	-	-	-	-	-	0.89	3.84	13.17	16.98	20.53	20.91	22.49	34.37	35.49	48.39	99.85	114.24
Build it Back TDAP (Rental Assistance)	-	-	0.25	0.64	0.96	0.96	1.79	3.79	4.04	4.55	4.55	5.55	5.55	6.38	6.38	8.45	8.47	8.47	8.48
Build it Back Workforce Development	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.26	0.29	1.18	1.24	2.53	2.53
NYCHA Rehab & Resilience	-	-	-	-	-	-	-	-	-	-	-	19.82	28.20	32.75	34.53	35.43	35.43	42.41	51.31

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
Housing Programs	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Projected Disbursements by Quarter	193.68	264.60	138.73	159.26	156.67	91.22	71.41	45.95	45.66	45.66	45.66	45.66	17.80	17.80	17.80	17.80	6.67	6.67	6.67
Build it Back Single Family	140.83	176.94	99.46	85.10	90.58	63.10	40.57	9.84	27.86	27.86	27.86	27.86	-	-	-	-	-	-	-
Build it Back Multi-Family	12.07	61.66	22.39	35.96	34.95	18.46	11.18	26.04	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	-	-	-
Build it Back TDAP (Rental Assistance)	0.02	0.00	0.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Build it Back Workforce Development	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NYCHA Rehab & Resilience	40.77	26.01	16.81	38.20	31.14	9.66	19.66	10.07	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67	6.67
Projected Cumulative Disbursements	1,765.43	2,030.03	2,168.76	2,328.02	2,484.70	2,575.92	2,647.33	2,693.28	2,738.94	2,784.60	2,830.27	2,875.93	2,893.73	2,911.54	2,929.34	2,947.14	2,953.82	2,960.49	2,967.16
Build it Back Single Family	1,536.02	1,712.96	1,812.42	1,897.52	1,988.11	2,051.21	2,091.79	2,101.63	2,129.49	2,157.34	2,185.20	2,213.06	2,213.06	2,213.06	2,213.06	2,213.06	2,213.06	2,213.06	2,213.06
Build it Back Multi-Family	126.31	187.96	210.35	246.31	281.26	299.72	310.90	336.94	348.07	359.20	370.33	381.47	392.60	403.73	414.87	426.00	426.00	426.00	426.00
Build it Back TDAP (Rental Assistance)	8.50	8.50	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57	8.57
Build it Back Workforce Development	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53
NYCHA Rehab & Resilience	92.07	118.08	134.89	173.08	204.22	213.89	233.54	243.61	250.28	256.96	263.63	270.30	276.97	283.64	290.31	296.99	303.66	310.33	317.00
Actual Quarterly Disbursements (from QPRs)	193.76	264.60	138.73	159.26	156.67	91.22	71.41	45.95	-	-	-	-	-	-	-	-	-	-	-
Build it Back Single Family	140.83	176.94	99.46	85.10	90.58	63.10	40.57	9.84											
Build it Back Multi-Family	12.15	61.66	22.39	35.96	34.95	18.46	11.18	26.04											
Build it Back TDAP (Rental Assistance)	0.02	0.00	0.07	-	-	-	-	-											
Build it Back Workforce Development	0.00	-	-	-	-	-	-	-											
NYCHA Rehab & Resilience	40.77	26.01	16.81	38.20	31.14	9.66	19.66	10.07											
Actual Cumulative Disbursements	1,765.51	2,030.11	2,168.84	2,328.10	2,484.77	2,576.00	2,647.41	2,693.36	-	-	-	-	-	-	-	-	-	-	-
Build it Back Single Family	1,536.02	1,712.96	1,812.42	1,897.52	1,988.11	2,051.21	2,091.79	2,101.63											
Build it Back Multi-Family	126.39	188.04	210.43	246.39	281.34	299.79	310.98	337.01											
Build it Back TDAP (Rental Assistance)	8.50	8.50	8.57	8.57	8.57	8.57	8.57	8.57											
Build it Back Workforce Development	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53											
NYCHA Rehab & Resilience	92.07	118.08	134.89	173.08	204.22	213.89	233.54	243.61											

(All $ amounts in Millions)

Note: this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement of 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.


City of New York Disaster Recovery Program
Housing Expenditure Projection and Actuals
Millions
$2,500
$2,000
$1,500
$1,000
$500
$0
Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
Calendar Year 2013
Calendar Year 2014
Calendar Year 2015
Calendar Year 2016
Calendar Year 2017
Calendar Year 2018
Calendar Year 2019
Calendar Year 2020
Calendar Year 2021
Calendar Year 2022
BIB Single Family Projections
BIB Multifamily Projections
BIB TDAP Projections
BIB Workforce Projections
Public Housing Projections
BIB Single Family Actuals
BIB Multifamily Actuals
BIB TDAP Actuals
BIB Workforce Actuals
Public Housing Actuals

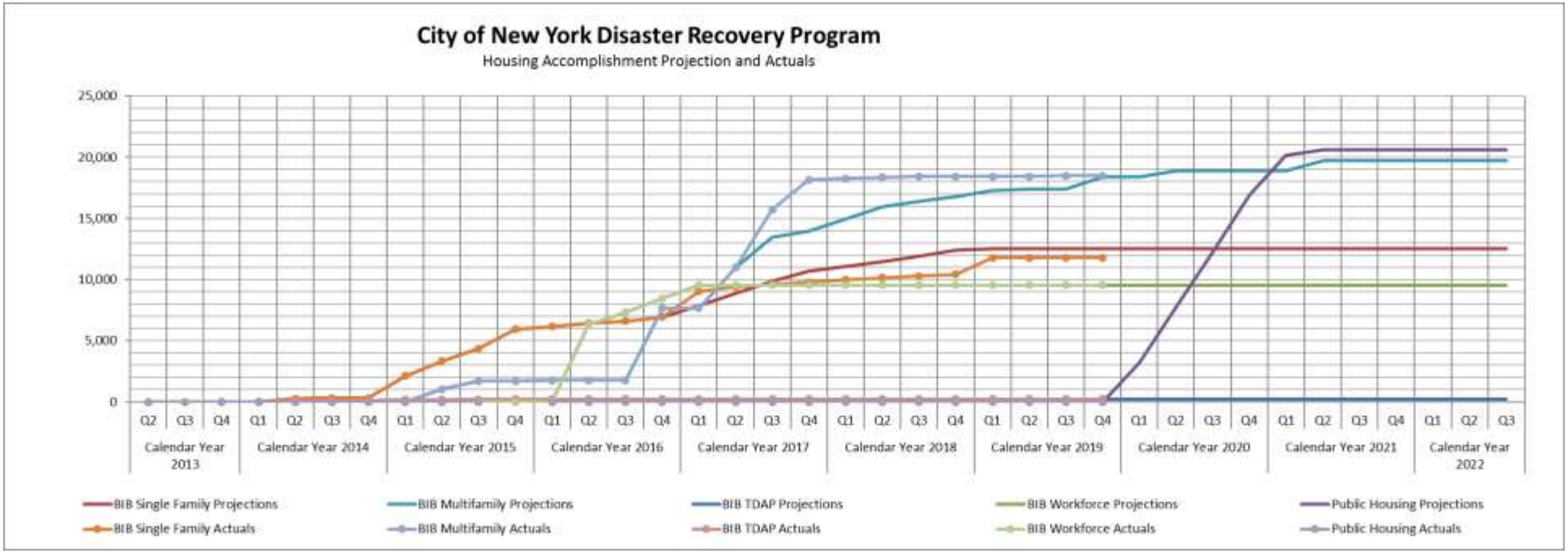
Housing Performance Projections

Projections of CDBG-DR Outcomes and Actual CDBG-DR Outcomes to Date for Housing Programs

Updated January 2020

	Calendar Year 2013			Calendar Year 2014				Calendar Year 2015				Calendar Year 2016				Calendar Year 2017			
Housing Programs	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Build it Back Single Family																			
Projected # of Units (Cumulative)	-	-	-	-	263	331	331	2,126	3,349	4,365	5,929	6,175	6,441	6,591	6,939	7,882	8,882	9,882	10,682
Projected # of Units (by Quarter)	-	-	-	-	263	68	-	1,795	1,223	1,016	1,564	246	266	150	348	943	1,000	1,000	800
Actual # of Units (Cumulative)	-	-	-	-	263	331	331	2,126	3,349	4,365	5,929	6,175	6,441	6,591	6,939	9,039	9,390	9,603	9,798
Actual # of Units (from QPRs)	-	-	-	-	263	68	-	1,795	1,223	1,016	1,564	246	266	150	348	2,100	351	213	195
Build it Back Multi-Family																			
Projected # of Units (Cumulative)	-	-	-	-	-	-	-	-	1,030	1,702	1,702	1,752	1,754	1,771	7,645	7,645	10,974	13,474	13,974
Projected # of Units (by Quarter)	-	-	-	-	-	-	-	-	1,030	672	-	50	2	17	5,874	-	3,329	2,500	500
Actual # of Units (Cumulative)	-	-	-	-	-	-	-	-	1,030	1,702	1,702	1,752	1,754	1,771	7,645	7,645	10,991	15,703	18,149
Actual # of Units (from QPRs)	-	-	-	-	-	-	-	-	1,030	672	-	50	2	17	5,874	-	3,346	4,712	2,446
Build it Back TDAP (Rental Assistance)																			
Projected # of Households (Cumulative)	-	-	15	15	65	65	131	176	176	219	225	225	225	225	242	242	242	242	242
Projected # of Households (by Quarter)	-	-	15	-	50	-	66	45	-	43	6	-	-	-	17	-	-		
Actual # of Households (Cumulative)	-	-	15	15	65	65	131	176	176	219	225	225	225	225	242	242	242	242	242
Actual # of Households (from QPRs)	-	-	15	-	50	-	66	45	-	43	6	-	-	-	17	-	-		
Build it Back Workforce Development																			
Projected # Cases Opened (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	6,332	7,316	8,464	9,520	9,520	9,520	9,520
Projected # Cases Opened (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	6,332	984	1,148	1,056		-	-
Actual # Cases Opened (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	6,332	7,316	8,464	9,550	9,550	9,550	9,550
Actual # Cases Opened (from QPRs)	-	-	-	-	-	-	-	-	-	-	-	-	6,332	984	1,148	1,086			
NYCHA Rehab and Resilience																			
Projected # of Units (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Projected # of Units (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # of Units (Cumulative)	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-
Actual # of Units (from QPRs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
Housing Programs	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Build it Back Single Family																			
Projected # of Units (Cumulative)	11,082	11,482	11,932	12,432	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500	12,500
Projected # of Units (by Quarter)	400	400	450	500	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # of Units (Cumulative)	9,988	10,142	10,291	10,439	11,771	11,771	11,773	11,774											
Actual # of Units (from QPRs)	190	154	149	148	1,332	-	2	1											
Build it Back Multi-Family																			
Projected # of Units (Cumulative)	14,974	15,974	16,374	16,774	17,274	17,374	17,374	18,374	18,374	18,874	18,874	18,874	18,874	19,700	19,700	19,700	19,700	19,700	19,700
Projected # of Units (by Quarter)	1,000	1,000	400	400	500	100	-	1,000	-	500	-	-	-	826	-	-	-	-	-
Actual # of Units (Cumulative)	18,259	18,352	18,439	18,439	18,439	18,439	18,488	18,488											
Actual # of Units (from QPRs)	110	93	87	-	-	-	49	-											
Build it Back TDAP (Rental Assistance)																			
Projected # of Households (Cumulative)	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242	242
Projected # of Households (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # of Households (Cumulative)	242	242	242	242	242	242	242	242											
Actual # of Households (from QPRs)	-	-	-	-	-	-	-	-											
Build it Back Workforce Development																			
Projected # Cases Opened (Cumulative)	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520	9,520
Projected # Cases Opened (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Cases Opened (Cumulative)	9,550	9,550	9,550	9,550	9,550	9,550	9,550	9,550											
Actual # Cases Opened (from QPRs)	-	-	-	-	-	-	-	-											
NYCHA Rehab and Resilience																			
Projected # of Units (Cumulative)	-	-	-	-	-	-	-	-	3,200	7,778	12,228	16,873	20,178	20,600	20,600	20,600	20,600	20,600	20,600
Projected # of Units (by Quarter)	-	-	-	-	-	-			3,200	4,578	4,450	4,645	3,305	422	-	-	-	-	-
Actual # of Units (Cumulative)	-	-	-	-	-	-	-	-											
Actual # of Units (from QPRs)	-	-	-	-	-	-	-	-											


City of New York Disaster Recovery Program
Housing Accomplishment Projection and Actuals
25,000
20,000
15,000
10,000
5,000
0
Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
Calendar Year 2013
Calendar Year 2014
Calendar Year 2015
Calendar Year 2016
Calendar Year 2017
Calendar Year 2018
Calendar Year 2019
Calendar Year 2020
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Calendar Year 2022
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Public Housing Actuals

Business

Business programs have been allocated $91 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

The Hurricane Sandy Business Loan and Grant Program (HSBLGP) has been allocated $58 million in CDBG-DR funding to award grants and loans to for-profit small businesses that currently operate in the five boroughs and experienced loss, damage, and/or interruption as a result of Hurricane Sandy.
→ The program has served a total of 352 business and is expected to create or retain approximately 270 jobs.

Business PREP: (Preparedness & Resiliency for Emergencies Program)

Through its $3 million CDBG-DR allocation, the Business Preparedness and Resiliency Program (PREP) aims to help small businesses better prepare for emergencies and enhance the resiliency of their operations, assets, and physical space. Assistance includes resiliency workshops, on-site resiliency assessments and complementary grants to implement specific recommendations, and online resiliency resources for businesses across the City to learn more about how to prepare their business for future disasters.

Resiliency Innovations for a Stronger Economy (RISE:NYC)

The New York City Economic Development Corporation (EDC) launched RISE: NYC in January 2014, seeking to identify and deploy technologies that would improve a business' ability to adapt to, withstand, or bounce-back from potential disruptions. Over the course of the multi-stage competition, EDC received nearly 200 applications from technology providers in more than 20 different countries around the world. In April 2015, EDC selected 11 winning technologies across three categories: energy, telecommunications, and building systems. The selected projects will receive CDBG-DR funding to install their resiliency technologies at Sandy-impacted small businesses throughout the City. The City anticipates serving approximately 272 small business through this program. The first technology installations were completed in Q2 2017.

Business Financial Projections

Projections of CDBG-DR Expenditures and Actual CDBG-DR Expenditures to Date for Business Programs

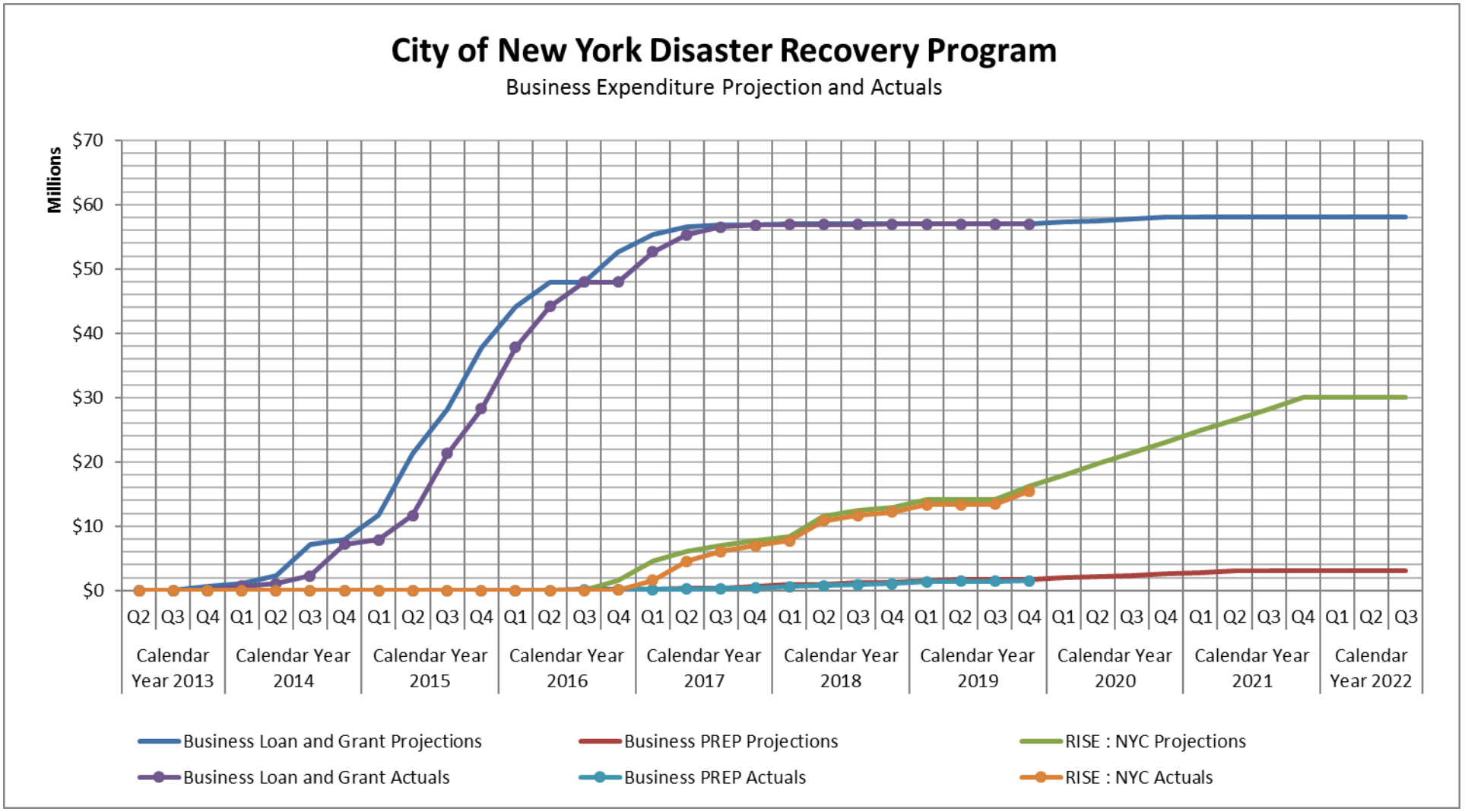
Updated January 2020

	Calendar Year 2013			Calendar Year 2014				Calendar Year 2015				Calendar Year 2016				Calendar Year 2017			
Business Programs	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Projected Disbursements by Quarter	-	0.01	0.66	0.38	1.19	4.99	0.66	3.76	9.60	6.97	9.56	6.40	3.83	0.17	6.21	5.68	2.84	1.26	1.05
Hurricane Sandy Business Loan and Grant	-	0.01	0.66	0.38	1.19	4.99	0.66	3.76	9.60	6.97	9.56	6.40	3.78	0.04	4.65	2.63	1.26	0.30	0.05
Business PREP	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.08	0.03	0.09	0.02	0.12	0.24
RISE:NYC	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	1.53	2.95	1.55	0.84	0.75
Projected Cumulative Disbursements	-	0.01	0.67	1.05	2.24	7.23	7.89	11.65	21.25	28.22	37.78	44.18	48.01	48.18	54.40	60.07	62.91	64.17	65.22
Hurricane Sandy Business Loan and Grant	-	0.01	0.67	1.05	2.24	7.23	7.89	11.65	21.25	28.22	37.78	44.18	47.95	47.99	52.64	55.27	56.53	56.83	56.88
Business PREP	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.14	0.17	0.26	0.28	0.40	0.64
RISE:NYC	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	1.59	4.54	6.10	6.94	7.69
Actual Quarterly Disbursements (from QPRs)	-	-	0.01	0.66	0.38	1.19	4.99	0.66	3.76	9.60	6.97	9.56	6.40	3.83	0.17	6.21	5.68	2.84	1.26
Hurricane Sandy Business Loan and Grant	-	-	0.01	0.66	0.38	1.19	4.99	0.66	3.76	9.60	6.97	9.56	6.40	3.78	0.04	4.65	2.63	1.26	0.30
Business PREP	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.08	0.03	0.09	0.02	0.12
RISE:NYC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	1.53	2.95	1.55	0.84
Actual Cumulative Disbursements	-	-	0.01	0.67	1.05	2.24	7.23	7.89	11.65	21.25	28.22	37.78	44.18	48.01	48.18	54.40	60.07	62.91	64.17
Hurricane Sandy Business Loan and Grant	-	-	0.01	0.67	1.05	2.24	7.23	7.89	11.65	21.25	28.22	37.78	44.18	47.95	47.99	52.64	55.27	56.53	56.83
Business PREP	-	-	-	-	-	-	-	-	-	-	-	-	-	0.06	0.14	0.17	0.26	0.28	0.40
RISE:NYC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.05	1.59	4.54	6.10	6.94

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
Business Programs	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Projected Disbursements by Quarter	1.05	3.24	1.05	0.70	1.48	0.11	0.05	2.12	2.17	2.17	2.17	2.17	1.93	1.93	1.72	1.72	-	-	-
Hurricane Sandy Business Loan and Grant	0.05	0.03	-	0.06	-	0.01	-	-	0.24	0.24	0.24	0.24	-	-	-	-	-	-	-
Business PREP	0.24	0.10	0.21	0.12	0.28	0.10	0.01	0.05	0.21	0.21	0.21	0.21	0.21	0.21	-	-	-	-	-
RISE:NYC	0.75	3.11	0.85	0.52	1.19	-	0.05	2.07	1.72	1.72	1.72	1.72	1.72	1.72	1.72	1.72	-	-	-
Projected Cumulative Disbursements	66.26	69.50	70.55	71.25	72.73	72.84	72.89	75.01	77.18	79.35	81.52	83.70	85.63	87.56	89.28	91.00	91.00	91.00	91.00
Hurricane Sandy Business Loan and Grant	56.93	56.96	56.96	57.02	57.02	57.03	57.03	57.03	57.28	57.52	57.76	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00
Business PREP	0.88	0.98	1.19	1.31	1.59	1.68	1.69	1.74	1.95	2.16	2.37	2.58	2.79	3.00	3.00	3.00	3.00	3.00	3.00
RISE:NYC	8.45	11.55	12.40	12.92	14.12	14.12	14.17	16.23	17.95	19.68	21.40	23.12	24.84	26.56	28.28	30.00	30.00	30.00	30.00
Actual Quarterly Disbursements (from QPRs)	1.05	3.24	1.05	0.70	1.48	0.11	0.05	2.12	-	-	-	-	-	-	-	-	-	-	-
Hurricane Sandy Business Loan and Grant	0.05	0.03	-	0.06	-	0.01	-	-											
Business PREP	0.24	0.10	0.21	0.12	0.28	0.10	0.01	0.05											
RISE:NYC	0.75	3.11	0.85	0.52	1.19	-	0.05	2.07											
Actual Cumulative Disbursements	65.22	68.45	69.50	70.21	71.68	71.79	71.84	73.96	-	-	-	-	-	-	-	-	-	-	-
Hurricane Sandy Business Loan and Grant	56.88	56.91	56.91	56.97	56.97	56.98	56.98	56.98											
Business PREP	0.64	0.74	0.95	1.07	1.35	1.45	1.45	1.50											
RISE:NYC	7.69	10.80	11.65	12.17	13.36	13.36	13.41	15.48											

(All $ amounts in Millions)

Note: this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement of 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.


City of New York Disaster Recovery Program
Business Expenditure Projection and Actuals
Millions
$70
$60
$50
$40
$30
$20
$10
$0
Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
Calendar Year 2013
Calendar Year 2014
Calendar Year 2015
Calendar Year 2016
Calendar Year 2017
Calendar Year 2018
Calendar Year 2019
Calendar Year 2020
Calendar Year 2021
Calendar Year 2022
Business Loan and Grant Projections
Business PREP Projections
RISE : NYC Projections
Business Loan and Grant Actuals
Business PREP Actuals
RISE : NYC Actuals

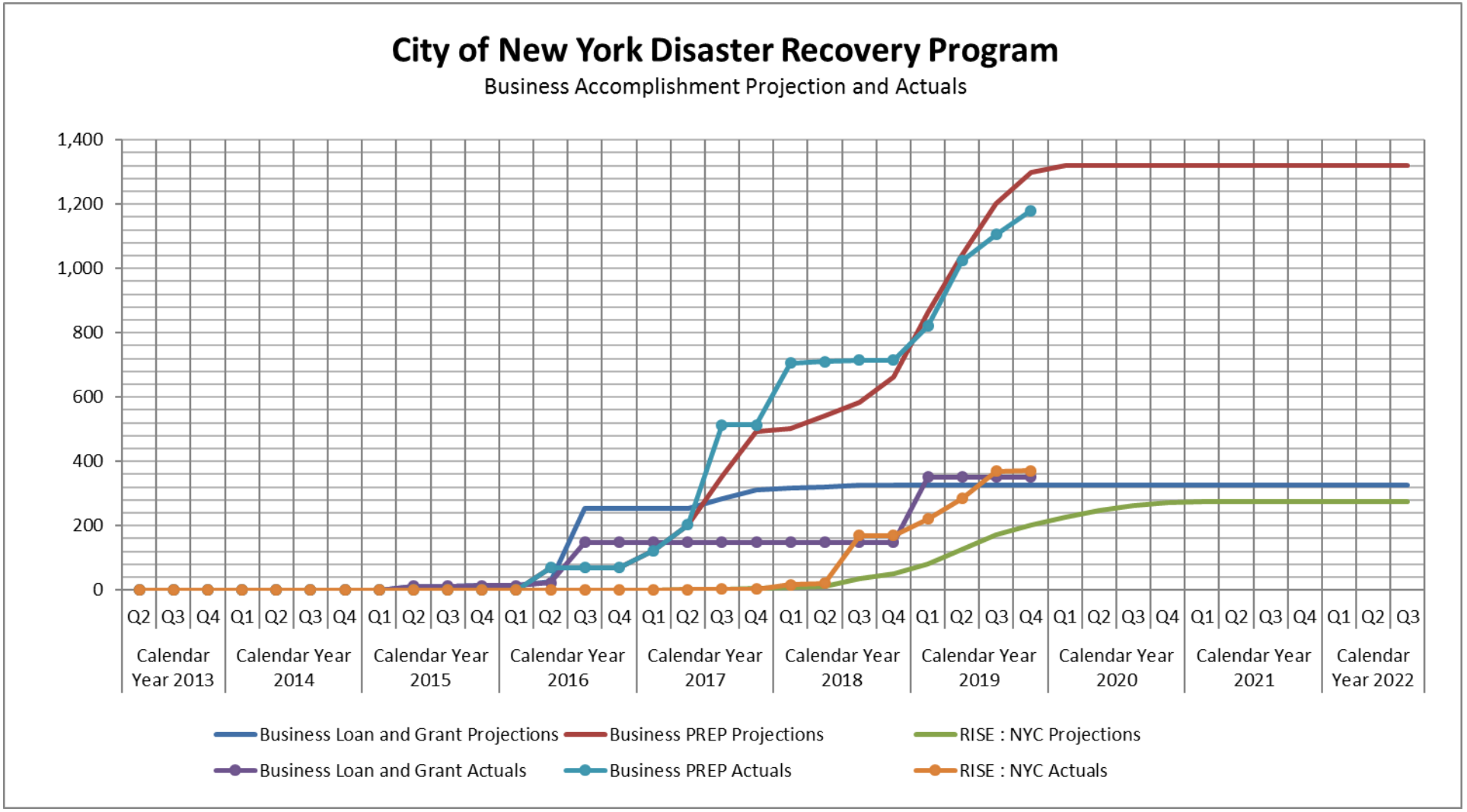
Business Performance Projections

Projections of CDBG-DR Outcomes and Actual CDBG-DR Outcomes to Date for Business Programs

Updated January 2020

	Calendar Year 2013			Calendar Year 2014				Calendar Year 2015				Calendar Year 2016				Calendar Year 2017			
Business Programs	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Hurricane Sandy Business Loan and Grant																			
Projected # Jobs Created/Retained (Cumulative)	-	-	-	-	-	-	-	-	12	12	14	14	27	253	253	253	253	283	311
Projected # Jobs Created/Retained (by Quarter)	-	-	-	-	-	-	-	-	12	-	2	-	13	226	-	-	-	30	28
Actual # Jobs Created/Retained (Cumulative)	-	-	-	-	-	-	-	-	12	12	14	14	23	148	148	148	148	148	148
Actual # Jobs Created/Retained (from QPRs)	-	-	-	-	-	-	-	-	12	-	2	-	9	125	-	-	-		
Business PREP																			
Projected # Businesses Assisted (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	70	70	70	123	203	353	493
Projected # Businesses Assisted (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	53	80	150	140
Actual # of Businesses Assisted (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	70	70	70	123	203	514	514
Actual # of Businesses Assisted (from QPRs)	-	-	-	-	-	-	-	-	-	-	-	-	70	-	-	53	80	311	-
RISE:NYC																			
Projected # Businesses Assisted (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	4
Projected # Businesses Assisted (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1
Actual # of Businesses Assisted (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	3
Actual # of Businesses Assisted (from QPRs)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	-

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
Business Programs	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Hurricane Sandy Business Loan and Grant																			
Projected # Jobs Created/Retained (Cumulative)	316	321	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328	328
Projected # Jobs Created/Retained (by Quarter)	5	5	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Jobs Created/Retained (Cumulative)	148	148	148	148	352	352	352	352											
Actual # Jobs Created/Retained (from QPRs)	-	-	-	-	204	-	-	-											
Business PREP																			
Projected # Businesses Assisted (Cumulative)	503	543	583	663	863	1,043	1,203	1,298	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320	1,320
Projected # Businesses Assisted (by Quarter)	10	40	40	80	200	180	160	95	22	-	-	-	-	-	-	-	-	-	-
Actual # of Businesses Assisted (Cumulative)	706	711	715	715	821	1,024	1,106	1,180											
Actual # of Businesses Assisted (from QPRs)	192	5	4	-	106	203	82	74											
RISE:NYC																			
Projected # Businesses Assisted (Cumulative)	7	12	37	52	82	127	172	202	227	247	262	272	275	275	275	275	275	275	275
Projected # Businesses Assisted (by Quarter)	3	5	25	15	30	45	45	30	25	20	15	10	3	-	-	-	-		
Actual # of Businesses Assisted (Cumulative)	17	21	170	170	221	285	370	371											
Actual # of Businesses Assisted (from QPRs)	14	4	149	-	51	64	85	1											


City of New York Disaster Recovery Program
Business Accomplishment Projection and Actuals
1,400
1,200
1,000
800
600
400
200
0
Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
Calendar Year 2013
Calendar Year 2014
Calendar Year 2015
Calendar Year 2016
Calendar Year 2017
Calendar Year 2018
Calendar Year 2019
Calendar Year 2020
Calendar Year 2021
Calendar Year 2022
Business Loan and Grant Projections
Business PREP Projections
RISE : NYC Projections
Business Loan and Grant Actuals
Business PREP Actuals
RISE : NYC Actuals

Infrastructure and Other City Services

For the purposes of this Action Plan, Other City Services is comprised of the Public Services, Debris Removal/Clearance, and Interim Assistance. Infrastructure is comprised of Rehabilitation/Reconstruction of Public Facilities. The program allocation is $419 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 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 7 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 Interim Assistance, NYC Rapid Repairs assisted over 11,500 buildings, comprising nearly 25,000 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. 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.

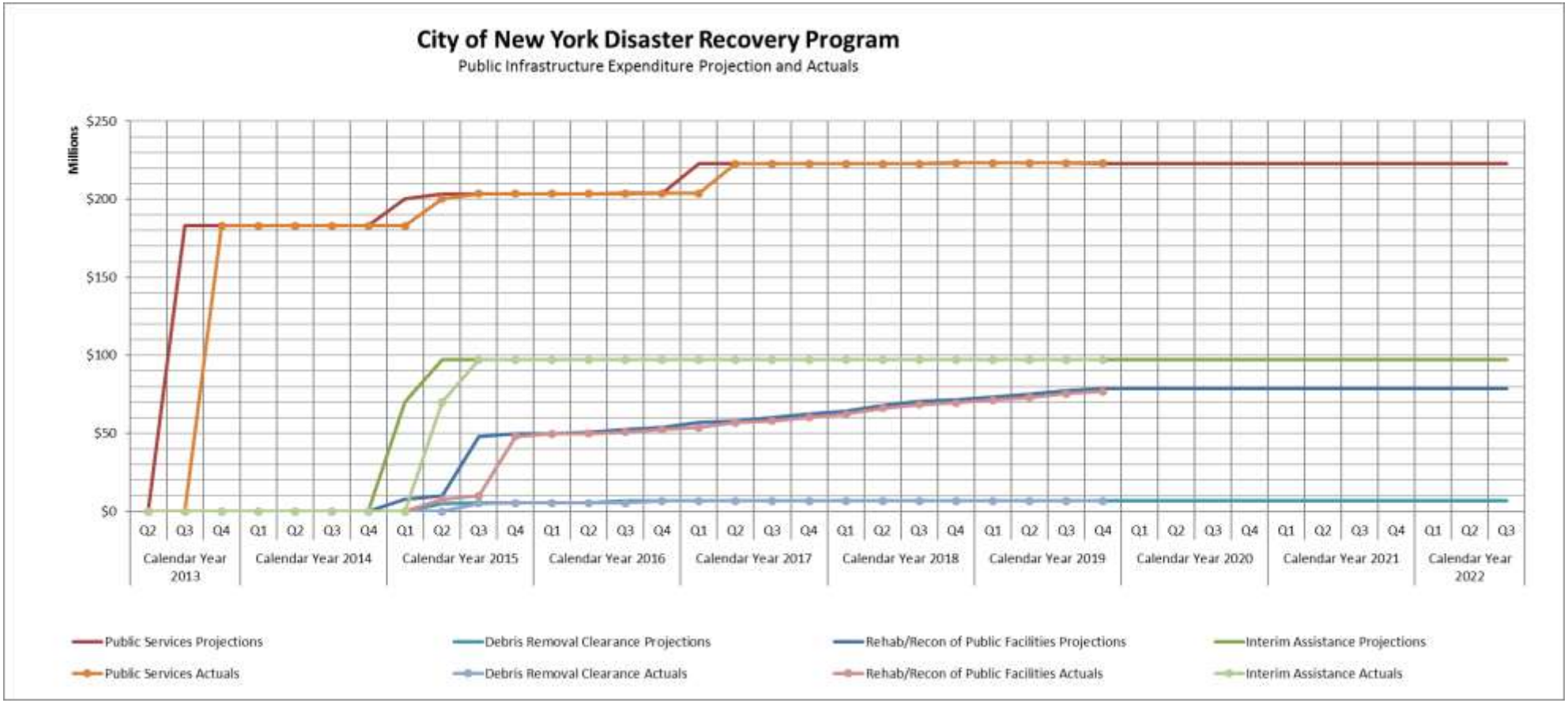
Infrastructure and Other City Services Financial Projections

	Calendar Year 2013			Calendar Year 2014				Calendar Year 2015				Calendar Year 2016				Calendar Year 2017			
IOCS Programs	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Projected Disbursements by Quarter	-	183	-	-	-	-	-	95	38	38	2	0	1	3	1	22	1	2	2
Public Services	-	183.00	-	-	-	-	-	17.43	3.22	-	-	-	-	0.10	-	18.95	-	-	-
Debris Removal / Clearance	-	-	-	-	-	-	-	-	5.14	0.29	-	-	-	1.23	-	-	-	-	-
Rehab/Recon of Public Facilities	-	-	-	-	-	-	-	7.68	2.18	38.17	1.53	0.37	0.73	1.60	1.46	3.10	1.24	2.25	1.93
Interim Assistance	-	-	-	-	-	-	-	69.89	27.24	-	-	-	-	-	-	-	-	-	-
Projected Cumulative Disbursements	-	183.00	183.00	183.00	183.00	183.00	183.00	278.00	315.78	354.24	355.77	356.14	356.87	359.80	361.26	383.31	384.54	386.79	388.73
Public Services	-	183.00	183.00	183.00	183.00	183.00	183.00	200.43	203.65	203.65	203.65	203.65	203.65	203.75	203.75	222.69	222.69	222.69	222.69
Debris Removal / Clearance	-	-	-	-	-	-	-	-	5.14	5.43	5.43	5.43	5.43	6.65	6.65	6.65	6.65	6.65	6.65
Rehab/Recon of Public Facilities	-	-	-	-	-	-	-	7.68	9.86	48.04	49.57	49.94	50.67	52.27	53.73	56.83	58.07	60.31	62.25
Interim Assistance	-	-	-	-	-	-	-	69.89	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13
Actual Quarterly Disbursements (from QPRs)	-	-	183.00	-	-	-	-	-	95.00	37.78	38.46	1.53	0.37	0.73	2.93	1.46	22.05	1.24	2.25
Public Services	-	-	183.00	-	-	-	-	-	17.43	3.22	-	-	-	-	0.10	-	18.95	-	-
Debris Removal / Clearance	-	-	-	-	-	-	-	-	-	5.14	0.29	-	-	-	1.23	-	-	-	-
Rehab/Recon of Public Facilities	-	-	-	-	-	-	-	-	7.68	2.18	38.17	1.53	0.37	0.73	1.60	1.46	3.10	1.24	2.25
Interim Assistance	-	-	-	-	-	-	-	-	69.89	27.24	-	-	-	-	-	-	-	-	-
Actual Cumulative Disbursements	-	-	183.00	183.00	183.00	183.00	183.00	183.00	278.00	315.78	354.24	355.77	356.14	356.87	359.80	361.26	383.31	384.54	386.79
Public Services	-	-	183.00	183.00	183.00	183.00	183.00	183.00	200.43	203.65	203.65	203.65	203.65	203.65	203.75	203.75	222.69	222.69	222.69
Debris Removal / Clearance	-	-	-	-	-	-	-	-	-	5.14	5.43	5.43	5.43	5.43	6.65	6.65	6.65	6.65	6.65
Rehab/Recon of Public Facilities	-	-	-	-	-	-	-	-	7.68	9.86	48.04	49.57	49.94	50.67	52.27	53.73	56.83	58.07	60.31
Interim Assistance	-	-	-	-	-	-	-	-	69.89	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
IOCS Programs	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Projected Disbursements by Quarter	1.93	3.82	2.34	1.57	1.88	1.47	2.56	1.12	-	-	-	-	-	-	-	-	-	-	-
Public Services	-	-	-	0.41	-	-	-	(0.27)	-	-	-	-	-	-	-	-	-	-	-
Debris Removal / Clearance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rehab/Recon of Public Facilities	1.93	3.82	2.34	1.15	1.88	1.47	2.56	1.38	-	-	-	-	-	-	-	-	-	-	-
Interim Assistance	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Projected Cumulative Disbursements	390.66	394.48	396.82	398.38	400.27	401.73	404.30	405.42	405.42	405.42	405.42	405.42	405.42	405.42	405.42	405.42	405.42	405.42	405.42
Public Services	222.69	222.69	222.69	223.11	223.11	223.11	223.11	222.84	222.84	222.84	222.84	222.84	222.84	222.84	222.84	222.84	222.84	222.84	222.84
Debris Removal / Clearance	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65
Rehab/Recon of Public Facilities	64.18	68.00	70.34	71.49	73.37	74.84	77.41	78.79	78.79	78.79	78.79	78.79	78.79	78.79	78.79	78.79	78.79	78.79	78.79
Interim Assistance	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13
Actual Quarterly Disbursements (from QPRs)	1.93	3.82	2.34	1.57	1.88	1.47	2.56	1.38	-	-	-	-	-	-	-	-	-	-	-
Public Services	-	-	-	0.41	-	-	-	-											
Debris Removal / Clearance	-	-	-	-	-	-	-	-											
Rehab/Recon of Public Facilities	1.93	3.82	2.34	1.15	1.88	1.47	2.56	1.38											
Interim Assistance	-	-	-	-	-	-	-	-											
Actual Cumulative Disbursements	1.93	392.54	394.89	396.45	398.33	399.80	402.36	403.75	-	-	-	-	-	-	-	-	-	-	-
Public Services	222.69	222.69	222.69	223.11	223.11	223.11	223.11	223.11											
Debris Removal / Clearance	6.65	6.65	6.65	6.65	6.65	6.65	6.65	6.65											
Rehab/Recon of Public Facilities	62.25	66.07	68.41	69.56	71.44	72.91	75.47	76.86											
Interim Assistance	97.13	97.13	97.13	97.13	97.13	97.13	97.13	97.13											

(All $ amounts in Millions)

Note: this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement of 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.


City of New York Disaster Recovery Program
Public Infrastructure Expenditure Projection and Actuals
Millions
$250
$200
$150
$100
$50
$0
Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
Calendar Year 2013
Calendar Year 2014
Calendar Year 2015
Calendar Year 2016
Calendar Year 2017
Calendar Year 2018
Calendar Year 2019
Calendar Year 2020
Calendar Year 2021
Calendar Year 2022
Public Services Projections
Debris Removal Clearance Projections
Rehab/Recon of Public Facilities Projections
Interim Assistance Projections
Public Services Actuals
Debris Removal Clearance Actuals
Rehab/Recon of Public Facilities Actuals
Interim Assistance Actuals

Projections of CDBG-DR Outcomes and Actual CDBG-DR Outcomes to Date for IOCS Programs

Updated January 2020

	Calendar Year 2013			Calendar Year 2014				Calendar Year 2015				Calendar Year 2016				Calendar Year 2017			
IOCS Programs	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Public Services																			
Projected # People Served (Cumulative)	-	-	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M
Projected # People Served (by Quarter)	-	-	8.2M	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # of People Served (Cumulative)	-	-	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M
Actual # ofPeople Served (from QPRs)	-	-	8.2M	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Debris Removal / Clearance																			
Projected # People Served (Cumulative)	-	-	-	-	-	-	-	-	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M
Projected # People Served (by Quarter)	-	-	-	-	-	-	-	-	8.2M	-	-	-	-	-	-	-	-	-	-
Actual # of People Served (Cumulative)	-	-	-	-	-	-	-	-	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M
Actual # ofPeople Served (from QPRs)	-	-	-	-	-	-	-	-	8.2M	-	-	-	-	-	-	-	-		
Rehab/Recon of Public Facilities																			
Projected # Public Facilities (Cumulative)	-	-	-	-	-	-	-	-	-	1	1	3	3	3	3	3	3	3	3
Projected # Public Facilities (by Quarter)	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-
Actual # Public Facilities (Cumulative)	-	-	-	-	-	-	-	-	-	1	1	3	3	3	3	3	3	3	3
Actual # Public Facilities (from QPRs)	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-		
Interim Assistance																			
Projected # of Units (Cumulative)	-	-	-	-	-	-	-	-	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740
Projected # of Units (by Quarter)	-	-	-	-	-	-	-	-	20,740	-	-	-	-	-	-	-	-	-	-
Actual # of Units (Cumulative)	-	-	-	-	-	-	-	-	20,000	24,997	24,997	24,997	24,997	24,997	24,997	24,997	24,997	24,997	24,997
Actual # of Units (from QPRs)	-	-	-	-	-	-	-	-	20,000	4,997	-	-	-	-	-	-	-		

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
IOCS Programs	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Public Services																			
Projected # People Served (Cumulative)	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M
Projected # People Served (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # of People Served (Cumulative)	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M											
Actual # ofPeople Served (from QPRs)	-	-	-	-	-	-	-	-											
Debris Removal / Clearance																			
Projected # People Served (Cumulative)	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M
Projected # People Served (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # of People Served (Cumulative)	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M	8.2M											
Actual # ofPeople Served (from QPRs)	-	-	-	-	-	-	-	-											
Rehab/Recon of Public Facilities																			
Projected # Public Facilities (Cumulative)	3	3	3	3	3	4	5	5	5	5	5	5	7	7	7	7	7	7	7
Projected # Public Facilities (by Quarter)	-	-	-	-	-	1	1	-	-	-	-	-	2	-	-	-	-	-	-
Actual # Public Facilities (Cumulative)	3	3	3	3	3	3	3	3											
Actual # Public Facilities (from QPRs)	-	-	-	-	-	-	-	-											
Interim Assistance																			
Projected # of Units (Cumulative)	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740	20,740
Projected # of Units (by Quarter)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # of Units (Cumulative)	24,997	24,997	24,997	24,997	24,997	24,997	24,997	24,997											
Actual # of Units (from QPRs)	-	-	-	-	-	-	-	-											

Resiliency

The Resiliency Program allocation totals $473 million. This funding will be allocated among the following programs.

Raise Shorelines

Under the Raise Shorelines program, approximately $7.7 million in CDBG-DR funding will be used for design and permitting for coastal protection measures in low-lying neighborhoods throughout the City, including a number of low- and moderate-income communities impacted by Hurricane Sandy, to minimize inland tidal flooding. The projected accomplishments comprise approximately 22,778 linear feet of shoreline improvements. CDBG-DR funding will be used for design and permitting only. The City will report accomplishments once the first shoreline improvements are completed. The first completions are anticipated to occur in the third quarter of 2019.

Staten Island University Hospital

The City has allocated $28 million of CDBG-DR funding towards Staten Island University Hospital. This allocation will fund hazard mitigation measures at the hospital's North and South Campuses, and therefore the projected accomplishments are two public facilities. Construction is expected to begin in fall 2017.

Rebuild by Design: East Side Coastal Resiliency

The Rebuild by Design: East Side Coastal Resiliency project will receive $338 million in CDBG-DR funding. The project consists of an integrated flood protection system to reduce coastal flooding and improve coastal and social resiliency along an approximately 2.4-mile stretch of Manhattan's East River waterfront. As reflected in the projected accomplishments, the project area will encompass approximately 11,563 linear feet of coastal improvements. Design is underway for this project and construction is anticipated to begin in 2019.

Rebuild by Design: Hunts Point Resiliency

The Rebuild by Design: Hunts Point Resiliency project will receive $45 million in CDBG-DR funding. This funding is being used for the continued the study, analysis, planning, and stakeholder engagement related to the flood risk reduction and energy resiliency goals of the Rebuild by Design Hunts Point Lifelines proposal, and the design and construction of a resulting pilot project. A Resilient Energy pilot project will be identified in the first quarter of 2017, after which the project will proceed to final design and construction. As reflected in the accomplishments, this project is currently anticipated to protect 8 non-residential buildings.

Coney Island Resiliency Improvements

The City has allocated $15 million in CDBG-DR funding for Coney Island Resiliency Improvements. This project will advance resiliency measures at Coney Island Creek by reinforcing and raising coastal edges vulnerable to sea level rise and high recurrence coastal floods. As indicated in the accomplishments, this project is anticipated to improve approximately 950 linear feet of shoreline. Detailed scoping and design will begin in 2017.

Breezy Point Mitigation System

The City will provide $14.5 million in CDBG-DR funds to fund the 25 percent local match required for the FEMA HMGP Breezy Point Mitigation System. 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. As reflected in the accomplishments, this project is anticipated to improve approximately 20,000 linear feet of shoreline. Design of this project will begin in 2017.

Sheepshead Bay Courts Infrastructure

The City has allocated $20 million to replace damaged sanitary sewer, storm sewer, and water infrastructure (privately owned utilities) in the Sheepshead Bay Courts in Brooklyn. Hurricane Sandy significantly exacerbated the conditions in the Courts by damaging and blocking the sanitary and storm sewer system, most significantly in Stanton Road. The Build It Back Program determined that the damaged sewer system(s) in the courts at Stanton Road, Losee Terrace and Gunnison Court were in need of replacement because of the age and condition of the sewer lines. Construction is anticipated to begin in 2018.

Resiliency Property Purchase Program

The City has allocated $5 million to purchase properties in order to facilitate planned flood mitigation and resiliency activities, including the development of berms, levees, raised shorelines, wetlands restoration and other potential measures developed by the City to mitigate existing or future flood risks from storm or other events in neighborhoods or communities directly impacted by Sandy. Initial offers are anticipated in spring 2018.

Resiliency Financial Projections

Projections of CDBG-DR Expenditures and Actual CDBG-DR Expenditures to Date for Coastal Resiliency Programs

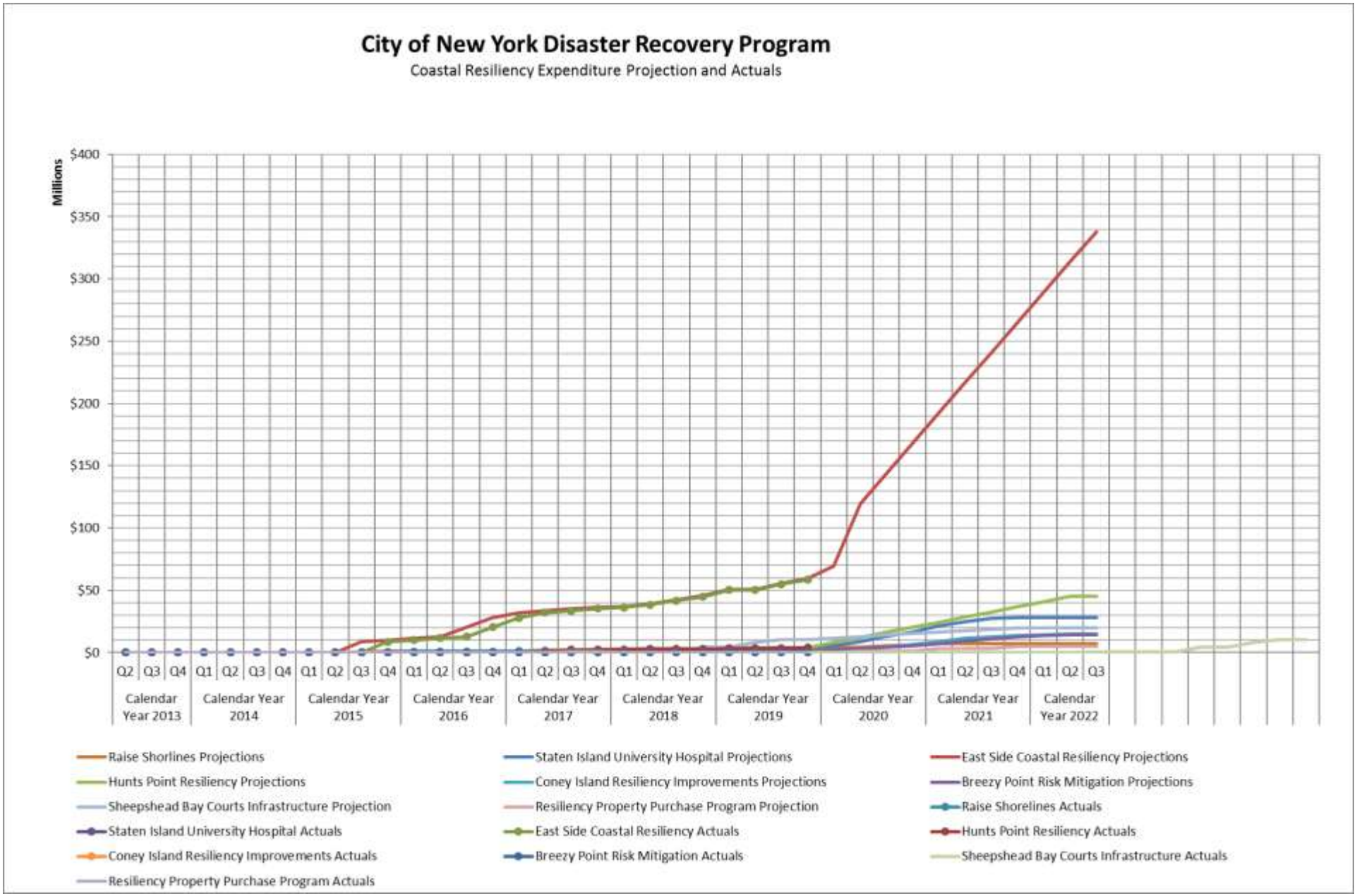
Updated January 2020

	Calendar Year 2013			Calendar Year 2014				Calendar Year 2015				Calendar Year 2016				Calendar Year 2017			
Coastal Resiliency Programs	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Projected Disbursements by Quarter	-	-	-	-	-	-	-	-	-	9.10	1.75	1.81	1.08	7.61	7.69	5.67	2.51	2.37	1.06
Raise Shorelines	-	-	-	-	-	-	-	-	-	0.38	0.49	-	-	-	0.24	0.13	0.05	-	-
Staten Island University Hospital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East Side Coastal Resiliency	-	-	-	-	-	-	-	-	-	8.72	1.26	1.81	1.08	7.61	7.45	4.24	1.22	2.14	0.78
Hunts Point Resiliency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.30	1.10	-	0.28
Coney Island Resiliency Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Breezy Point Risk Mitigation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheepshead Bay Courts Infrastructure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15	0.23	0.01
Resiliency Property Purchase Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Projected Cumulative Disbursements	-	-	-	-	-	-	-	-	-	9.10	10.84	12.65	13.74	21.34	29.03	34.70	37.21	39.59	40.65
Raise Shorelines	-	-	-	-	-	-	-	-	-	0.38	0.87	0.87	0.87	0.87	1.11	1.24	1.29	1.29	1.29
Staten Island University Hospital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East Side Coastal Resiliency	-	-	-	-	-	-	-	-	-	8.72	9.98	11.79	12.87	20.48	27.92	32.16	33.38	35.52	36.30
Hunts Point Resiliency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.30	2.40	2.40	2.68
Coney Island Resiliency Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Breezy Point Risk Mitigation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheepshead Bay Courts Infrastructure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15	0.38	0.39
Resiliency Property Purchase Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual Quarterly Disbursements (from QPRs)	-	-	-	-	-	-	-	-	-	-	9.10	1.75	1.81	1.08	7.61	7.69	5.67	2.51	2.37
Raise Shorelines	-	-	-	-	-	-	-	-	-	-	0.38	0.49	-	-	-	0.24	0.13	0.05	-
Staten Island University Hospital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East Side Coastal Resiliency	-	-	-	-	-	-	-	-	-	-	8.72	1.26	1.81	1.08	7.61	7.45	4.24	1.22	2.14
Hunts Point Resiliency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.30	1.10	-
Coney Island Resiliency Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Breezy Point Risk Mitigation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheepshead Bay Courts Infrastructure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15	0.23
Resiliency Property Purchase Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual Cumulative Disbursements	-	-	-	-	-	-	-	-	-	-	9.10	10.84	12.65	13.74	21.34	29.03	34.70	37.07	39.21
Raise Shorelines	-	-	-	-	-	-	-	-	-	-	0.38	0.87	0.87	0.87	0.87	1.11	1.24	1.29	1.29
Staten Island University Hospital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East Side Coastal Resiliency	-	-	-	-	-	-	-	-	-	-	8.72	9.98	11.79	12.87	20.48	27.92	32.16	33.38	35.52
Hunts Point Resiliency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.30	2.40	2.40
Coney Island Resiliency Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Breezy Point Risk Mitigation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheepshead Bay Courts Infrastructure	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.15	0.38
Resiliency Property Purchase Program	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
Coastal Resiliency Programs	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Projected Disbursements by Quarter	1.06	2.45	4.17	7.15	6.14	5.30	7.15	6.99	19.88	63.56	37.61	37.84	41.38	37.15	35.61	34.04	30.27	29.25	24.79
Raise Shorelines	-	0.06	1.00	-	0.06	-	-	0.45	0.81	0.81	0.81	0.81	0.81	-	-	-	-	-	-
Staten Island University Hospital	-	-	-	-	-	1.20	-	2.90	1.21	3.36	4.46	3.65	4.79	3.21	2.70	0.35	0.17	-	-
East Side Coastal Resiliency	0.78	2.23	3.16	3.15	5.29	-	4.86	3.64	10.00	50.00	24.29	24.29	24.29	24.29	24.29	24.29	24.29	24.29	24.29
Hunts Point Resiliency	0.28	0.16	-	-	0.50	-	0.30	-	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	4.11	-
Coney Island Resiliency Improvements	-	-	-	-	-	-	-	-	0.75	1.90	1.50	2.50	2.30	2.35	1.50	1.00	0.75	0.45	-
Breezy Point Risk Mitigation	-	-	-	-	0.29	-	-	0.01	1.81	1.00	1.25	1.30	1.70	2.00	1.83	1.50	0.95	0.40	0.50
Sheepshead Bay Courts Infrastructure	0.01	-	-	3.99	-	4.10	1.98	-	1.19	1.19	1.19	1.19	1.19	1.19	1.19	1.19	-	-	-
Resiliency Property Purchase Program				-		-		-	-	1.20	-	-	2.20	-	-	1.60	-	-	-
Projected Cumulative Disbursements	41.71	44.16	48.33	55.47	61.61	66.92	74.06	81.06	#####	164.50	202.11	239.95	281.33	318.48	354.09	388.13	418.40	447.64	472.43
Raise Shorelines	1.29	1.34	2.35	2.35	2.41	2.41	2.41	2.86	3.66	4.47	5.28	6.09	6.89	6.89	6.89	6.89	6.89	6.89	6.89
Staten Island University Hospital	-	-	-	-	-	1.20	1.20	4.10	5.32	8.67	13.13	16.78	21.57	24.78	27.48	27.83	28.00	28.00	28.00
East Side Coastal Resiliency	37.07	39.30	42.46	45.62	50.91	50.91	55.77	59.41	69.41	119.41	143.70	167.98	192.27	216.56	240.85	265.14	289.42	313.71	338.00
Hunts Point Resiliency	2.95	3.12	3.12	3.12	3.62	3.62	3.92	3.92	8.03	12.14	16.24	20.35	24.46	28.57	32.68	36.78	40.89	45.00	45.00
Coney Island Resiliency Improvements	-	-	-	-	-	-	-	-	0.75	2.65	4.15	6.65	8.95	11.30	12.80	13.80	14.55	15.00	15.00
Breezy Point Risk Mitigation	-	-	-	-	0.29	0.29	0.29	0.30	2.11	3.11	4.36	5.66	7.36	9.36	11.19	12.69	13.64	14.04	14.54
Sheepshead Bay Courts Infrastructure	0.40	0.40	0.40	4.39	4.39	8.49	10.47	10.47	11.66	12.85	14.04	15.23	16.43	17.62	18.81	20.00	20.00	20.00	20.00
Resiliency Property Purchase Program	-	-	-	-	-	-	-	-	-	1.20	1.20	1.20	3.40	3.40	3.40	5.00	5.00	5.00	5.00
Actual Quarterly Disbursements (from QPRs)	1.05	2.45	4.17	3.15	6.14	-	6.37	6.89											
Raise Shorelines	-	0.06	1.00	-	0.06	-	-	0.45											
Staten Island University Hospital	-	-	-	-	-	-	1.20	2.80											
East Side Coastal Resiliency	0.78	2.23	3.16	3.15	5.29	-	4.86	3.64											
Hunts Point Resiliency	0.28	0.16	-	-	0.50	-	0.30	-											
Coney Island Resiliency Improvements	-	-	-	-	-	-	-	-											
Breezy Point Risk Mitigation	-	-	-	-	0.29	-	-	0.01											
Sheepshead Bay Courts Infrastructure	0.01	-	-	3.99	-	4.10	1.98	-											
Resiliency Property Purchase Program	-	-	-	-	-	-	-	-											
Actual Cumulative Disbursements	40.26	42.71	46.88	50.03	56.17	56.17	62.54	69.43											
Raise Shorelines	1.29	1.34	2.35	2.35	2.41	2.41	2.41	2.86											
Staten Island University Hospital	-	-	-	-	-	-	1.20	4.00											
East Side Coastal Resiliency	36.30	38.52	41.69	44.84	50.13	50.13	55.00	58.63											
Hunts Point Resiliency	2.68	2.84	2.84	2.84	3.34	3.34	3.64	3.64											
Coney Island Resiliency Improvements	-	-	-	-	-	-	-	-											
Breezy Point Risk Mitigation	-	-	-	-	0.29	0.29	0.29	0.30											
Sheepshead Bay Courts Infrastructure	0.39	0.39	0.39	4.38	4.38	8.48	10.46	10.46											
Resiliency Property Purchase Program	-	-	-	-	-	-	-	-											

(All $ amounts in Millions)

Note: this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement of 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.


City of New York Disaster Recovery Program
Coastal Resiliency Expenditure Projection and Actuals
Millions
$400
$350
$300
$250
$200
$150
$100
$50
$0
Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
Calendar Year 2013
Calendar Year 2014
Calendar Year 2015
Calendar Year 2016
Calendar Year 2017
Calendar Year 2018
Calendar Year 2019
Calendar Year 2020
Calendar Year 2021
Calendar Year 2022
Raise Shorlines Projections
Staten Island University Hospital Projections
East Side Coastal Resiliency Projections
Hunts Point Resiliency Projections
Coney Island Resiliency Improvements Projections
Breezy Point Risk Mitigation Projections
Sheepshead Bay Courts Infrastructure Projection
Resiliency Property Purchase Program Projection
Raise Shorelines Actuals
Staten Island University Hospital Actuals
East Side Coastal Resiliency Actuals
Hunts Point Resiliency Actuals
Coney Island Resiliency Improvements Actuals
Breezy Point Risk Mitigation Actuals
Sheepshead Bay Courts Infrastructure Actuals
Resiliency Property Purchase Program Actuals

Resiliency Performance Projections

Projections of CDBG-DR Outcomes and Actual CDBG-DR Outcomes to Date for Coastal Resiliency Programs

Updated January 2020

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
Coastal Resiliency Programs	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Raise Shorelines																			
Projected # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	272	1,146	2,006	3,367	4,728	6,089	7,449	8,954	10,601	12,249	18,749	22,778	22,778
Projected # Linear Feet Improved (by Quarter)	-	-	-	-	-	-	272	874	860	1,361	1,361	1,361	1,361	1,504	1,647	1,647	6,500	4,029	-
Actual # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Linear Feet Improved (from QPRs)	-	-	-	-	-	-	-	-											
Staten Island University Hospital																			
Projected # Public Facilities (Cumulative)	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	2	2	2	2
Projected # Public Facilities (by Quarter)	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-
Actual # Public Facilities (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Public Facilities (from QPRs)	-	-	-	-	-	-	-	-											
East Side Coastal Resiliency																			
Projected # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	-	50	150	350	750	1,550	3,150	6,350	9,550	11,550	11,563	11,563	11,563
Projected # Linear Feet Improved (by Quarter)	-	-	-	-	-	-	-	50	100	200	400	800	1,600	3,200	3,200	2,000	13	-	-
Actual # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Linear Feet Improved (from QPRs)	-	-	-	-	-	-	-	-											
Hunts Point Resiliency																			
Projected # Non-Residential Buildings (Cumulative)	-	-	-	-	-	1	1	2	2	2	3	3	3	3	5	6	8	8	8
Projected # Non-Residential Buildings (by Quarter)						1		1			1				2	1	2		
Actual # Non-Residential Buildings (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Non-Residential Buildings (from QPRs)	-	-	-	-	-	-	-	-											
Coney Island Resiliency Improvements																			
Projected # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	-	-	-	-	50	150	350	550	800	900	950	950	950
Projected # Linear Feet Improved (by Quarter)	-	-	-	-	-	-	-	-	-	-	50	100	200	200	250	100	50	-	-
Actual # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Linear Feet Improved (from QPRs)	-	-	-	-	-	-	-	-											
Breezy Point Risk Mitigation																			
Projected # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	-	-	-	500	1,000	3,000	5,500	8,000	11,500	16,000	18,500	19,500	20,000
Projected # Linear Feet Improved (by Quarter)										500	500	2,000	2,500	2,500	3,500	4,500	2,500	1,000	500
Actual # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Linear Feet Improved (from QPRs)	-	-	-	-	-	-	-	-											
Sheepshead Bay Courts Infrastructure																			
Projected # Linear Feet Improved (Cumulative)	-	-	-	400	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Projected # Linear Feet Improved (by Quarter)	-	-	-	400	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Linear Feet Improved (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Linear Feet Improved (from QPRs)	-	-	-	-	-	-	-	-											
Resiliency Property Purchase Program																			
Projected # Buildings (Cumulative)	-	-	-	1	1	1	6	6	11	11	16	21	26	31	36	39	40	40	40
Projected # Buildings (by Quarter)	-	-	-	1	-	-	5	-	5	-	5	5	5	5	5	3	1	-	-
Actual # Buildings (Cumulative)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Actual # Buildings (from QPRs)	-	-	-	-	-	-	-	-											

Citywide Administrative and Planning Financial Projections

Projections of CDBG-DR Expenditures and Actual CDBG-DR Expenditures to Date for Planning and Administration

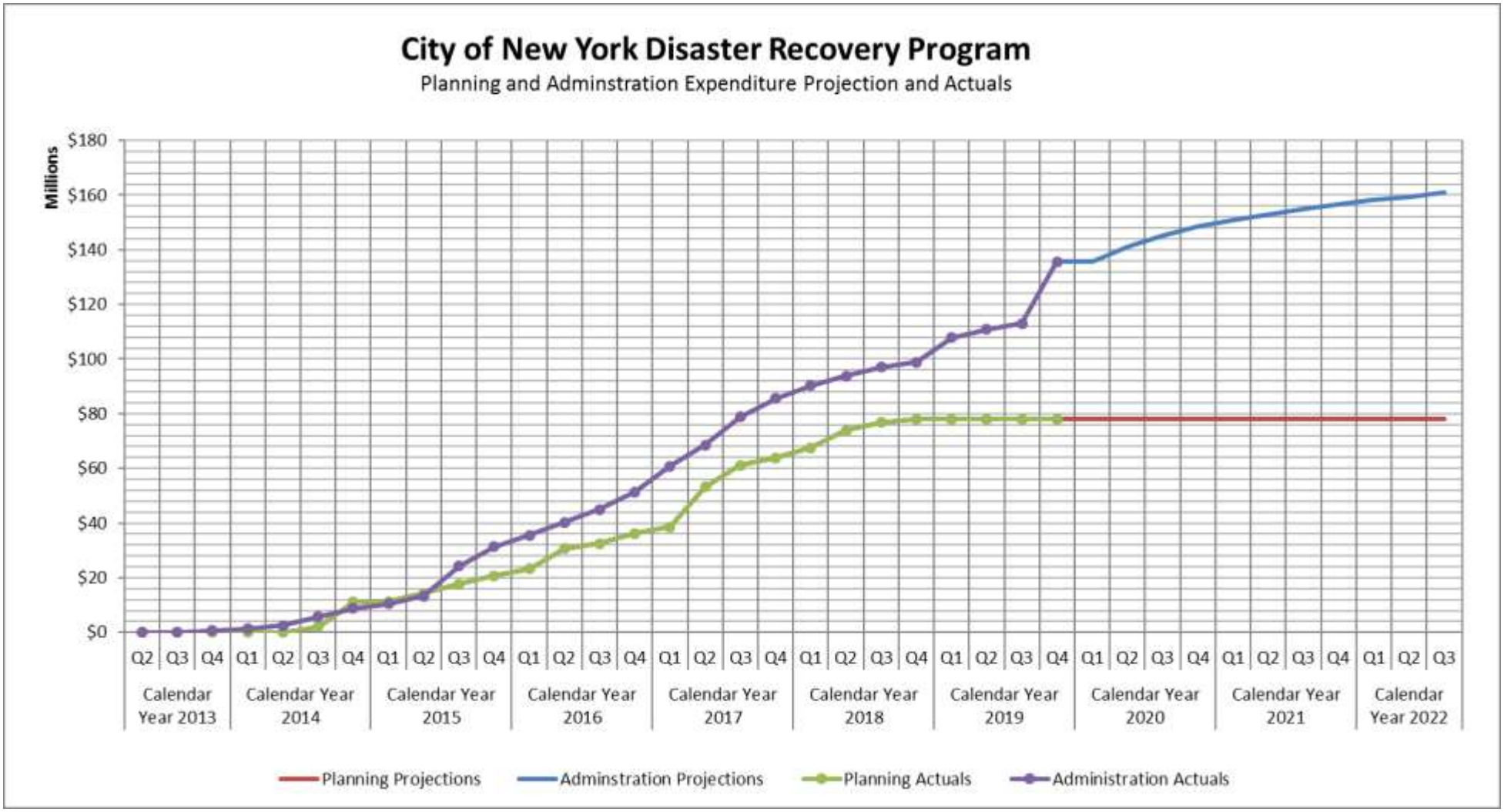
Updated January 2020

	Calendar Year 2013			Calendar Year 2014				Calendar Year 2015				Calendar Year 2016				Calendar Year 2017			
Planning and Administration	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Projected Disbursements by Quarter	-	0.02	0.75	0.66	1.24	5.28	12.01	1.82	5.89	14.21	10.26	6.60	12.35	6.45	10.20	11.68	22.31	18.27	9.40
Planning	-	-	-	0.04	-	2.08	9.02	0.12	3.12	3.28	3.11	2.44	7.51	1.83	3.76	2.27	14.63	7.92	2.67
Administration	-	0.02	0.75	0.62	1.24	3.20	2.99	1.70	2.76	10.93	7.15	4.16	4.84	4.62	6.44	9.41	7.68	10.35	6.73
Projected Cumulative Disbursements	-	0.02	0.76	1.42	2.66	7.94	19.96	21.78	27.66	41.87	52.13	58.73	71.08	77.54	87.74	99.42	121.73	140.00	149.40
Planning	-	-	-	0.04	0.04	2.13	11.15	11.27	14.39	17.67	20.78	23.22	30.73	32.56	36.32	38.59	53.22	61.14	63.81
Administration	-	0.02	0.76	1.38	2.62	5.82	8.81	10.51	13.27	24.20	31.36	35.51	40.35	44.97	51.42	60.83	68.50	78.86	85.59
Actual Quarterly Disbursements (from QPRs)	-	0.02	0.75	0.66	1.24	5.28	12.01	1.82	5.89	14.21	10.26	6.60	12.35	6.45	10.20	11.68	22.31	18.27	9.40
Planning	-	-	-	0.04	-	2.08	9.02	0.12	3.12	3.28	3.11	2.44	7.51	1.83	3.76	2.27	14.63	7.92	2.67
Administration	-	0.02	0.75	0.62	1.24	3.20	2.99	1.70	2.76	10.93	7.15	4.16	4.84	4.62	6.44	9.41	7.68	10.35	6.73
Actual Cumulative Disbursements	-	0.02	0.76	1.42	2.66	7.94	19.96	21.78	27.66	41.87	52.13	58.73	71.08	77.54	87.74	99.42	121.73	140.00	149.40
Planning	-	-	-	0.04	0.04	2.13	11.15	11.27	14.39	17.67	20.78	23.22	30.73	32.56	36.32	38.59	53.22	61.14	63.81
Administration	-	0.02	0.76	1.38	2.62	5.82	8.81	10.51	13.27	24.20	31.36	35.51	40.35	44.97	51.42	60.83	68.50	78.86	85.59

	Calendar Year 2018				Calendar Year 2019				Calendar Year 2020				Calendar Year 2021				Calendar Year 2022		
Planning and Administration	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**
Projected Disbursements by Quarter	8.47	10.08	5.87	3.02	9.07	2.98	2.23	22.57	-	5.50	4.00	3.19	2.50	2.00	2.00	1.90	1.50	1.00	1.88
Planning	3.79	6.41	2.80	1.20	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Administration	4.67	3.67	3.08	1.82	9.06	2.98	2.23	22.57	-	5.50	4.00	3.19	2.50	2.00	2.00	1.90	1.50	1.00	1.88
Projected Cumulative Disbursements	157.86	167.94	173.81	176.83	185.90	188.88	191.11	213.68	213.68	219.18	223.18	226.37	228.87	230.87	232.87	234.77	236.27	237.27	239.15
Planning	67.61	74.02	76.81	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02	78.02
Administration	90.26	93.92	97.00	98.82	107.88	110.86	113.09	135.66	135.66	141.16	145.16	148.35	150.85	152.85	154.85	156.75	158.25	159.25	161.14
Actual Quarterly Disbursements (from QPRs)	8.47	10.08	5.87	3.02	9.07	2.98	2.23	22.57	-	-	-	-	-	-	-	-	-	-	-
Planning	3.79	6.41	2.80	1.20	0.00	-	-	-											
Administration	4.67	3.67	3.08	1.82	9.06	2.98	2.23	22.57											
Actual Cumulative Disbursements	157.86	167.94	173.81	176.83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Planning	67.61	74.02	76.81	78.02	78.02	78.02	78.02	78.02											
Administration	90.26	93.92	97.00	98.82	107.88	110.86	113.09	135.66											

(All $ amounts in Millions)

Note: this chart reflects expenditures as defined by HUD. Projections show the estimated date of City reimbursement of 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.


City of New York Disaster Recovery Program
Planning and Adminstration Expenditure Projection and Actuals
Millions
$180
$160
$140
$120
$100
$80
$60
$40
$20
$0
Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3 Q4 Q1 Q2 Q3
Calendar Year 2013
Calendar Year 2014
Calendar Year 2015
Calendar Year 2016
Calendar Year 2017
Calendar Year 2018
Calendar Year 2019
Calendar Year 2020
Calendar Year 2021
Calendar Year 2022
Planning Projections
Adminstration Projections
Planning Actuals
Administration Actuals