
**City of New York
Community Development Block Grant – Disaster Recovery (CDBG-DR)
Proposed Amendments to Action Plan**

Overview

The City of New York (NYC) is the recipient of a \$1.773 billion federal grant from the United States Department of Housing and Urban Development (HUD) to assist in disaster recovery and rebuilding efforts resulting from Hurricane Sandy. The initial Action Plan submitted by the City, which was approved by HUD on May 10, 2013, allocates the entire grant award into five general categories:

1. \$648 million allocated to individual programs related to housing rehabilitation, reconstruction remembrance, rebuilding, resilience, and rental assistance
2. \$293 million allocated to individual programs providing direct financial assistance to businesses and competitions to spur economic development in affected areas and promote creative and cost-effective technology solutions to resiliency needs
3. \$360 million allocated to infrastructure and public service costs
4. \$177.8 million allocated to administrative, planning, and oversight activities related to the grant, and
5. \$294 million allocated to resiliency investment activities that were not initially broken into activities and programs and are addressed by this amendment.

The proposed amendments will:

- I. Reallocate \$10 million in funding from the Housing Programs multi-family building rehabilitation allocation to the Housing Programs rental assistance allocation, and clarify the definition of buildings in the Housing Programs multi-family category
- II. Identify programs to be funded with the \$294 million allocated to resiliency investment activities that were not defined in the initial Action Plan. Resiliency investments are intended to strengthen the City's infrastructure and built environment to make them more resilient to the impacts of climate change.

All Action Plans and related amendments are viewable on NYC's Hurricane Sandy disaster recovery website at: <http://www.nyc.gov/cdbg>.

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.

Public Comment

The proposed amendments are substantial amendments that are open to public comment, as required by HUD to extend for seven calendar days from the date of publication of the proposed amendments. Comments must be received no later than Thursday, July 18 at 11:59 PM (EST). The proposed CDBG-DR Action Amendment 1 and the public commenting forms are available on <http://www.nyc.gov/cdbg>. Individuals will be able to read the amendment and the currently approved Action Plan and comment on

the amendment in English, Spanish, Russian and Chinese (simplified). The online materials will also be accessible for the visually impaired.

Paper copies of the Action Plan Amendment 1, including in large print format (18pt font size), are available at the following address in English as well as the languages listed above:

The Office of Management and Budget
255 Greenwich Street, 8th Floor Reception Area
New York, New York 10007

Written comments may be mailed to the Mayor's Office of Operations, 253 Broadway, 10th Floor, New York, NY 10007. Comments may be provided 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. For more information on how people with disabilities can access and comment on Action Plan Amendment 1, dial 311 or, using a TTY or Text Telephone, (212) 504-4115.

I. Housing Programs

On June 3, 2013 Mayor Bloomberg announced the opening of registration for the NYC Build it Back program (previously described in the approved Action Plan as NYC Houses), New York City's program to assist homeowners, landlords, and tenants in the five boroughs whose homes and properties were damaged by Hurricane Sandy. NYC Build it Back includes all housing recovery programs described in the approved Action Plan.

Rental Assistance

The approved Action Plan includes a \$9 million allocation for a rental subsidy program to serve households displaced by Hurricane Sandy for up to 24 months. Through the program, 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.).

Multi-Family Housing

The approved plan also allocates \$225 million for forgivable loans for multi-family housing to rehabilitate/reconstruct and fortify properties damaged by Hurricane Sandy. These 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.

The proposed amendment will reallocate \$10 million from the multi-family building rehabilitation program to the rental assistance program to serve low-income households displaced by Hurricane Sandy.

This change is only within the existing provision for housing programs and will not change the overall allocation of CDBG-DR funding to housing activities in aggregate.

In addition, the City does not anticipate that these changes will affect the number of households served by either program, but will instead fully fund the rental subsidy program to the 600 recipients anticipated in the City’s original HUD approved plan. The Multi-Family Rehab Program will also support the 13,000 households contemplated in the HUD approved plan.

The proposed amendment will also clarify the definition of buildings in the multi-family category to include all small multi-family buildings containing three and four units. The City makes this distinction for operational efficiency and program clarity purposes. All small multi-family (three- to four- unit) buildings will follow program guidelines for the NYC Houses Rehabilitation and Reconstruction Programs. The City anticipates serving the same number of applicants through the single- and multi-family programs described in the Action Plan under this definition and will ensure that federal compliance issues will be addressed as appropriate for different building categories.

Program Name	Previous Allocations	Proposed Changes	Proposed Allocations
Housing Programs			
NYC Houses Rehabilitation and Reconstruction	\$306,000,000	-	\$306,000,000
Rental Assistance	\$9,000,000	\$10,000,000	\$19,000,000
Multi-Family Building Rehabilitation	\$225,000,000	(\$10,000,000)	\$215,000,000
Public Housing	\$108,000,000	-	\$108,000,000

II. Resilience

Hurricane Sandy had a devastating impact on New York City. The storm took the lives of 44 individuals. It also damaged over 23,000 residential structures containing more than 69,000 housing units, forced 6,500 patients to be evacuated from hospitals and nursing homes, knocked out power to over 800,000 customers, compromised 23,400 businesses, and barred 1.1 million New York City children from attending school for a week.

Sandy's biggest impacts were the result of its massive storm surge and the flooding that the surge caused. A staggering 50.6 square miles of New York City flooded—17 percent of the city's total land mass—and in many areas the depth of floodwaters was unprecedented.

Different parts of the city experienced the storm differently, with different consequences. For example, the coastline in the southern half of the city felt the full force of the surge, with powerful waves inflicting horrific damage on buildings, infrastructure, and communities while also causing extensive flooding. Meanwhile, other coastal areas experienced flooding only, though the damage from that flooding was serious and long-lasting.

The different types of flooding, in turn, caused different types of building damage. And the structural characteristics of the buildings themselves—which vary widely across the five boroughs of New York City—also affected the level and type of damage the buildings sustained.

Sandy underscored New York City's long-standing vulnerabilities as a large, diverse city with 520 miles of coastline. The storm also revealed additional vulnerabilities that had previously been unrecognized. Based on recently released flood maps from the Federal Emergency Management Agency (FEMA) and climate projections from the New York City Panel on Climate Change (NPCC), these vulnerabilities are likely to grow over time.

According to FEMA's Preliminary Work Maps (PWMs), 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 15 square miles or 45 percent. The PWMs 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 67,700 buildings in the floodplain (an increase of 90 percent over the 1983 FEMA Flood Insurance Rate Maps) encompassing over 534 million square feet of floor area (up 42 percent). The number of residential units in the floodplain has increased to 196,700 (a jump of over 61 percent), with the majority of those residences in Brooklyn, Manhattan, and Queens. Almost 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 23 percent from the PWMs), encompassing 88,800 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 114,000 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.

Because of all these factors—the size and diversity of New York City and its coastline, the different

ways Sandy affected different parts of the city, and the effects that climate change is expected to have—there is no one-size-fits-all solution to the vulnerabilities various parts of New York face today and will continue to face in the future. Instead, a range of varied and nuanced solutions are needed to help vulnerable areas continue to recover from the storm and better withstand climate events in the future. These solutions include measures to protect the city’s coastline and its building stock. The City is seeking to address some of these unmet needs through this CDBG-DR funding allocation. The programs outlined in this Action Plan complement other efforts the City will be undertaking and represent essential investments targeted at vulnerable areas of the city that suffered from Sandy and that are likely to face further damage from future climate events.

New York City’s Sustainability and Resiliency Planning Pre- and Post-Sandy

The programs identified in this Action Plan are the result of careful, thorough, well-documented research and analysis that began long before Sandy’s arrival on October 29, 2012. In 2007 Mayor Michael R. 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 (OLTPS). 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 launched the Special Initiative for Rebuilding and Resiliency (SIRR) and charged it with 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, SIRR collaborated with OLTPS, building on the resiliency efforts begun under *PlaNYC*. SIRR 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 SIRR’s 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 plan can be reviewed at: <http://www.nyc.gov/html/sirr/html/report/report.shtml>

Needs Assessment

The Impact of Coastal Flooding

To understand the unmet needs that this Action Plan seeks to address, it is important to understand what happened during Sandy. According to the analysis presented in *A Stronger, More Resilient New York*, the storm surge and flooding that affected different parts of the city generally occurred in three ways.

- First, floodwaters came directly from the ocean, with water surging over beaches and bulkheads. Crashing waves brought destruction to ocean-facing areas of southern Brooklyn, the southernmost part of Queens, and the East and South Shores of Staten Island.
- Second, Sandy’s floodwaters also came via a less direct channel: The storm surge from the ocean pushed into many bays, creeks, and inlets, and these “backdoor” channels overflowed onto land. For example, most of the floodwaters in Southern Brooklyn came not over the Atlantic beaches but instead via Coney Island Creek and Sheepshead Bay. Likewise while ocean waves crashed into the Rockaway Peninsula from the south, the surge also elevated water levels in Jamaica Bay, which flooded the Peninsula from the north side.
- Finally, a third source of flooding along the coast was the city’s extensive array of shoreline drainage infrastructure. Although this piping network normally drains water from land and into the area’s waterways, Sandy’s surge overwhelmed this infrastructure, reversing water direction in these pipes, and channeling floodwaters into neighborhoods. (While the initiatives discussed herein do not address this third source of flooding, *Chapter 12: Water and Wastewater in A Stronger, More Resilient New York* details the City’s plan to strengthen shoreline drainage infrastructure.)

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 SIRR considered during its analysis of measures that might be implemented in New York City to protect vulnerable areas from damage in the future.

Unmet Coastal Protection Need

The need for the coastal protection measures outlined in this Action Plan was demonstrated by the damage caused to specific coastal communities and to critical healthcare facilities. According to federal

flood maps and climate projections, these areas and facilities will be at increasing risk from future climate events if protective measures are not taken. Therefore, it is essential to invest in neighborhoods that have been damaged by Sandy before severe flooding happens again.

South Shore of Staten Island

The South Shore is separated from the ocean in places by red clay bluffs, and even before Hurricane Sandy, ocean waves had eroded these bluffs over time, threatening homes and businesses in some locations. During the storm, powerful wind-driven waves running almost parallel to the coast carved away at the area's bluffs, completely shattering houses near the shoreline and in some cases leaving behind only their foundations.

Coney Island Creek in Southern Brooklyn

During Sandy, powerful waves from the ocean inflicted damage on buildings along the Atlantic coast of Southern Brooklyn, but much of the flooding damage in Southern Brooklyn came from Coney Island Creek. The Creek's low edges were overtopped early in the storm (in fact, there was flooding along Neptune Avenue, adjacent to Coney Island Creek, a full 12 hours before the surge's peak). Even in the ocean-facing neighborhoods of Coney Island, Brighton Beach, and Manhattan Beach, floodwaters came primarily from their "backdoors" until the peak of the storm when, in many areas, waters from the ocean met waters from the north on land. This flooding damaged residential ground-floor and basement spaces, destroyed electrical equipment and other building systems, and disrupted power service. Additionally, thousands of commercial spaces were inundated, resulting in the loss of inventory and valuable equipment that was not elevated, as well as the destruction of interior finishes.

Based on extensive analysis done during the SIRR 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, SIRR 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 done during the SIRR research and planning process, and 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, SIRR pursued the same rigorous level of research and method of evaluation, as discussed above, to determine bulkheads were the right coastal protection intervention.

Hospital Row in Southern Manhattan

As Sandy's surge flowed from the ocean into the Upper Bay, it elevated water levels on the East River, which rose up over the bulkheads on the east side of Southern Manhattan. Floodwaters not only damaged homes and businesses, they inundated three hospitals located on what is known as "Hospital Row," along First Avenue, between East 23rd and 34th Streets. These hospitals are Bellevue Hospital, a public hospital managed by the Health and Hospitals Corporation with the only State-designated regional trauma center south of 68th Street, and neighboring facilities operated by the Veterans Administration and New York University. Although Bellevue remained open during Sandy, it was forced to evacuate directly after the storm due to flooding in the lower levels of its buildings. All three hospitals remained partially or fully closed for months following the storm, reducing Manhattan's capacity by 2,100 beds or nearly 65 percent of the bed capacity below 42nd Street.

Based on extensive analysis done during the SIRR research and planning process, and as described in *A Stronger, More Resilient New York*, the City believes that installing an integrated flood protection system at Hospital Row would have averted flooding of these critical healthcare facilities during Sandy and will help avert similar impacts in the future. Integrated flood protection systems have been demonstrated around the world—including in the Netherlands, the United Kingdom, and parts of the United States Midwest—to be effective at reducing flood risk. These systems may be composed of a variety of elements that can be combined and customized in areas where critical infrastructure requires a high level of flood protection. These systems could include passive floodwalls (that float into place in response to rising waters), permanent floodwalls, temporary features like deployable floodwalls (which can be erected in advance of a storm event and removed thereafter), and other localized measures where appropriate to integrate the system. The City would use such a system to provide protection to Bellevue Hospital, integrating it with protection provided by neighboring institutions.

The Impact of Coastal Protection Measures on New York City

When completed, the combined effects of revetments, bulkheads, and an integrated flood protection system would provide enhanced protection for approximately 30,650 buildings representing roughly 92,700 housing units.

Additionally, these coastal protection measures would help safeguard homeowners and business owners who have received loans and grants 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 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 \$2.9 billion. The unmet need for the full build-out of coastal protection measures would be tens of billions of dollars. These coastal protection initiatives discussed herein set out to place revetments, floodwalls, and bulkheads in strategic areas that protect neighborhoods impacted by Sandy from further flood-related damages. The United States Army Corps of Engineers (USACE) is funding additional coastal protection measures, while another set of coastal protection measures not financed with CDBG funding will be funded out of New York City’s capital budget (see *A Stronger More Resilient New York* for detail). The coastal interventions identified in this Action Plan are attainable first steps that the City estimates can be completed within the allowable CDBG-DR timeframe.

Coastal Protection

Program Objective and Description

This program aims to protect neighborhoods and hospitals that were adversely impacted by Sandy by strengthening coastal protection measures, as detailed below. These efforts will also protect other publicly funded repair (including CDBG-DR and FEMA Public Assistance), restoration, and improvement efforts, which will ensure the long-term viability of those investments. The City has prioritized these coastal protection measures because of the large number of homes, businesses, and investments that will be protected; the City’s ability to implement these measures quickly; and the availability of federal dollars to fund these interventions.

Please note that all components of this program will comply with all applicable City, State, and Federal requirements including, but not limited to, the Davis-Bacon and Related Acts and Section 3 of the Housing and Urban Development Act of 1968. The City will also consider statistical analysis of the demographic makeup of the areas served and perform outreach as appropriate to ensure that there are no disparate impacts on certain communities and to maximize attention to areas with low- and moderate-income populations.

CDBG-DR Allocation: \$180 Million

Further estimates will be developed as each project moves into the design phase. NYCEDC, or an additional allowable agency, intends to draw upon its standard construction process, utilizing contracted construction managers or its typical procurement process to select engineers and architects that will generate further estimates when the project is at an appropriate point.

Install Armor Stone Revetments

Funding will be used to install armor stone shoreline revetments in areas where Sandy’s water damage caused significant physical damage and left neighborhoods exposed to additional flooding.

The South Shore of Staten Island continues to be at risk for future erosion of its beaches and bluffs. Revetments on the South Shore of Staten Island will help stabilize bluffs that are exposed to erosion and damage as a result of Sandy. This project will protect the adjacent neighborhood and provide useful information about the effectiveness of such shoreline erosion control.

During Sandy, Coney Island Creek was the source of much of the “backdoor” flooding in Southern Brooklyn including neighborhoods with low- and moderate-income populations. Raising the Coney Island Creek’s lowest edge elevations to a consistent grade in locations vulnerable to flooding and erosion will eliminate flooding at low spots bordering the Creek.

HUD Eligibility Criteria: Rehabilitation/Reconstruction of Public Facilities;
Rehabilitation/Reconstruction of Other Non-residential Structures; Rehabilitation/Reconstruction of a Public Improvement

National Objective: Urgent Need, Low- and Moderate-Income Area Benefit

Projected Accomplishments: Reduced risk of coastal wave action, erosion, and flooding in the neighborhoods adjacent to the South Shore of Staten Island and Coney Island Creek in Southern Brooklyn.

Program Administration: The City anticipates it will work through the OLTPS and NYCEDC. NYCEDC may serve as a sub-recipient from the City and may be responsible for procuring and implementing the installation of the revetments. NYCEDC may also secure permitting from all appropriate agencies, including the USACE, which will be consulted before any action is taken if such action would fall within the jurisdiction of the USACE. An additional allowable entity may be chosen to operate the program, such as a City agency or eligible nonprofit corporation through a sub-recipient agreement.

Eligibility Criteria: Neighborhoods adjacent to the South Shore of Staten Island and Coney Island Creek in Southern Brooklyn and that were adversely impacted by flooding as a result of Sandy and are located within the 100-year floodplain may be eligible.

Program Priorities: Sites subject to wave action, erosion, and flooding—particularly in areas with large low- and moderate-income populations. Additionally, as the target service areas will likely be the focus of other restoration efforts funded by CDBG-DR and FEMA, such as through housing and economic development programs and other infrastructure investments, the identification and implementation of coastal protection measures will seek to ensure long-term protection of such investments and of investments in low- to moderate- income communities.

Geographic Area to Be Served: South Shore of Staten Island and Southern Brooklyn.

Program Start and End Dates: Revetment construction will begin in 2014 and will be completed by 2016.

Other Funding Sources: None

Repair, Install, and Raise Bulkheads

Funding will be used to raise bulkheads in low-lying neighborhoods throughout the city, including in a number of low- and moderate-income communities impacted by Hurricane Sandy, to minimize inland tidal flooding. The impact of daily and weekly tidal flooding during non-storm conditions on low-lying neighborhoods will further worsen neighborhoods in the floodplain. This will continue to threaten the economic viability and residential stability of these neighborhoods. Implementing a program to raise bulkheads and other shoreline structures to minimize the risk of regular flooding in targeted neighborhoods will help ensure New York City's coastal communities are not further exposed to flood damage.

National Objective: Urgent Need, Low- and Moderate-Income Area Benefit

Projected Accomplishments: Repair, install, and raise bulkheads and other shoreline structures to reduce risk of flooding in neighborhoods in the 100-year floodplain.

Program Administration: The City anticipates working through OLTPS and NYCEDC through a sub-recipient agreement with the New York City Office of Management and Budget (OMB). An additional allowable entity may be chosen to operate the program. If selected, NYCEDC would be responsible for securing appropriate permitting and the USACE will be consulted before any work begins, to the degree such work requires consultation with the USACE.

Eligibility Criteria: Neighborhoods within the 100-year floodplain affected by Sandy's impact.

Program Priorities: Vulnerable areas, with initial priority given to areas that suffered direct physical impacts from Sandy, and to areas with significant low- and moderate-income populations. Additionally, as the target service areas will likely be the focus of other restoration efforts funded by CDBG-DR and FEMA, such as through housing and economic development programs and other infrastructure investments, the identification and implementation of innovative coastal protection measures will seek to ensure long-term protection of such investments.

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: Bulkhead design and site selection will begin and end in 2013.

Installation: Phase I bulkhead installation will begin in 2014 and end in 2016. Phase II bulkhead installation will begin in 2015 and end in 2017.

Other Funding Sources: None

Install an Integrated Flood Protection System at Hospital Row

Funding will be used to install an integrated flood protection system at "Hospital Row," which includes Bellevue Hospital, the Veterans Affairs New York Harbor Hospital (VA), and New York University's Langone Medical Center (NYU). (Note: the floodwall will result from an international design competition discussed below.) The City intends to protect Bellevue Hospital and will work with the VA

and NYU to coordinate investments and maximize the effectiveness of the floodwall. Utilizing passive floodwalls, other permanent features such as floodwalls, temporary features like deployable floodwalls, and other localized measures where appropriate to integrate the system will ensure that hospitals will have the protections necessary to serve New York City, including significant low- and moderate-income populations.

HUD Eligibility Criteria: Rehabilitation/Reconstruction of Public Facilities

National Objective: Urgent Need, Low- and Moderate-Income Clientele

Projected Accomplishments: To repair and strengthen Bellevue Hospital, in cooperation with the VA and NYU, to protect critical life-saving facilities.

Program Administration: The City will work with the VA and NYU to coordinate an integrated flood protection system that leverages resources to reduce the risk of flooding in this area. An additional allowable entity may be chosen to operate the program. The City will work through OLTPS and NYCEDC. NYCEDC will serve as a sub-recipient from OMB. An additional allowable entity may be chosen to operate the program, such as a City agency or eligible nonprofit corporation through a sub-recipient agreement.

Eligibility Criteria: Critical life-support facilities that were adversely impacted by flooding as a result of Sandy, are located within the 100-year floodplain, or are otherwise vulnerable to future storms.

Program Priorities: Preserving and protecting critical facilities. Additionally, as these hospitals will likely receive other restoration work funded by CDBG-DR and FEMA, the use of funds for these coastal protection measures will ensure long-term protection of such investments.

Geographic Area to Be Served: East side of Manhattan

Program Start and End Dates:

Phase I: In 2014, the City will program 10 percent of the total project funds for design at the conclusion of the global competition (see below for program details).

Phase II: Between 2016 and 2018, the City will finish project construction.

Other Funding Sources: None

Conduct a Global Design Competition for Integrated Flood Protection Systems

To address the high risk of flooding along Manhattan's east side, the City proposes installing a flood protection system that is integrated with the urban environment. A global design competition will be held to build integrated floodwall systems. A competition is the best means to solicit proposals for floodwalls that minimize the impact to the built environment of the neighborhood, while providing enhanced protection during storm conditions. These systems can be deployed as needed and do not interrupt community life during non-storm conditions. Subject to available funding, the competition will launch in 2014, and upon designation of winning ideas, can proceed into design and construction in 2014. This measure will ensure Bellevue Hospital and other impacted and vulnerable neighborhoods in the 100-year floodplain have reduced risk from future flood inundation.

Through a Request for Proposals, NYCEDC will harness the best ideas from public and private organizations and individuals to look at floodwall protection systems. The score and content requirement in the Request for Proposals will specify that proposals must provide detailed and specific information demonstrating that the proposed activities and outcomes will not have adverse impacts on protected classes.

HUD Eligibility Criteria: Rehabilitation/Reconstruction of Public Facilities;
Rehabilitation/Reconstruction of Other Non-residential Structures; Rehabilitation/Reconstruction of a Public Improvement

National Objective: Urgent Need, Low- and Moderate-Income Area Benefit

Projected Accomplishments: Identification and implementation of significant design technology intended to reduce the risk of flooding along Manhattan's east side.

Program Administration: The City will work through NYCEDC and OLTPS.

Eligible Applicants/Properties: NYCEDC, which may be a sub-recipient of the City or OLTPS, will administer the RFP release and selection process, by the City, consistent with HUD rules and regulations, with administration of winning proposals to be determined.

Eligibility Criteria: Proposals should demonstrate innovative flood protection measures in complicated urban environments.

Program Priorities: Efficient and cost-effective flood protection that does not disrupt the urban environment. As the target service areas will likely be the focus of other restoration efforts funded by CDBG-DR and FEMA, such as through housing and economic development programs and other infrastructure investments, the identification and implementation of innovative coastal protection measures will seek to ensure long-term protection of such investments.

Geographic Area to Be Served: Impacted communities within the 100-year floodplain and critical infrastructure assets along Manhattan's east side

Program Start and End Dates: The design competition will begin and end in 2014.

Other Funding Sources: None

Building Impacts

Sandy's surge and flooding had a huge impact on New York City's building stock. The storm inundated an area that included 88,700 buildings, or 9 percent of the city's building stock. These buildings encompassed 662 million square feet of space that included more than 300,000 housing units and 23,400 businesses. Buildings in the inundation and blackout area may have been directly exposed to flooding

and damage or may have experienced power loss or other storm impacts that in many cases resulted in the displacement of residents and business interruption.

Significantly, half of the buildings in the inundation area were outside the boundaries of the 100-year floodplain delineated on the 1983 FEMA flood maps in effect when Sandy hit. The owners of these buildings thus were likely not aware of their flood risks, nor had they likely taken steps to protect their buildings from flooding.

Direct building damage from Sandy was widespread and in many cases severe. Of the approximately 47,000 owner-occupied housing units that FEMA inspected, 49 percent sustained damage in excess of \$10,000, with 12 percent sustaining damage in excess of \$30,000. Of the approximately 22,000 rental units inspected, 26 percent sustained “substantial damage,” the highest damage classification FEMA used, indicating that damage was 50 percent or more of the pre-flood market value of the building.

SIRR’s analysis of building damages, which drew on information collected by New York City’s Department of Buildings (DOB), indicated that many factors affected the type and level of damage. For example, flood characteristics correlated strongly with the degree of damage that buildings suffered. Thus, shoreline areas that experienced the strong lateral forces of waves had many more damaged buildings than areas with stillwater flooding. In fact, “wave action” along the Atlantic Coast accounted for the majority of damaged buildings and for nearly all buildings with structural damage or damage to such an extent that they were deemed “destroyed.”

The physical characteristics of the buildings themselves also came into play in determining the damages sustained. During Sandy, single-story buildings were particularly susceptible to severe damage. Although such buildings accounted for less than 25 percent of the buildings in the area inundated by Sandy, they represented roughly 75 percent of the buildings that sustained the most severe damage, according to a survey conducted in December 2012 by DOB. By contrast, high-rise buildings experiencing inundation generally did not sustain structural damage.

Construction materials, which are often associated with building height, were also determinative of a building’s damage. For example, light-frame buildings (which also tended to be low-rise structures) suffered the greatest amount of damage, while buildings constructed of more robust materials such as steel, masonry, and concrete (as larger buildings tend to be) fared better.

However, much of the Sandy-related damage was non-structural in nature. Instead, it was largely due to the flooding of building systems and equipment (including electrical, sanitary, and life-safety systems) located on ground floors or in basements. Damage to these systems resulted in the displacement of residents and businesses that were likely also to be contending with extensive damage to building contents, including business inventory. These buildings also required significant and costly repairs—often including the removal and replacement of walls and floors in basements and ground-floor spaces.

Like larger buildings made of robust materials, buildings with elevated or otherwise flood-protected systems fared better overall. Owners were able to remain in their buildings or experience shorter periods of displacement. They were less likely to face costly repairs. And they generally were able to resume normal lives and business operations sooner.

Unmet Building Needs

The risk of storm surge combined with sea level rise is likely to present the greatest climate threat to New York City's building stock. This is demonstrated by FEMA's recently released PWMs, which expand New York City's 100-year floodplain so that it now includes nearly 67,700 buildings. These buildings, encompassing approximately 534 million square feet of space, are home to approximately 398,000 residents and 271,000 jobs.

As vulnerable as New York's building stock may be today, it is likely to become more vulnerable in the future. According to projections on sea level rise from the NPCC, the number of buildings in the floodplain could increase to 88,800 by the 2020s and 114,000 by the 2050s.

This expansion of the floodplain not only indicates that buildings will face greater risks of flooding, but it will also place significant financial pressure on hundreds of thousands of New Yorkers who own homes or businesses in the floodplain. Property owners whose buildings are in the floodplain and who have federally backed mortgages may face new requirements for the purchase of flood insurance. And just at the time when they may be required to purchase flood insurance, premiums on flood policies will be increasing as a result of the Biggert-Waters Act of 2012, which is phasing out subsidized insurance rates. Owners in the floodplain may also be subject to new requirements to alter ground-level and below-grade spaces to comply with national flood-resistant construction standards.

Taken together, these requirements may cumulatively overwhelm property owners and ultimately have adverse impacts on coastal communities, including sizable low- and moderate-income populations. The owners of homes and businesses in the floodplain may find it prohibitively expensive—and ultimately untenable—to continue to live and do business in the floodplain. Spillover effects could include flight from impacted communities, leading to declining populations; a market-wide bias against new home purchases in floodplain areas because of the recognition of the higher costs of living and doing business there; a general lack of investment in the City's coastal communities; and the failure of businesses that cannot absorb the added costs. The City's intention is to physically harden buildings and their systems so that they are able to better withstand—and recover more quickly from—climate events; it also seeks to restore the value of properties in impacted areas.

Based on Federal and City research about how Sandy impacted New York City's building stock and on the best available information on techniques that provide flood protection for buildings and their systems, the City proposes a Building Mitigation Incentive Program, detailed in *A Stronger, More Resilient New York*. This program, which will cost approximately \$1.2 billion, aims to rebuild and fortify buildings and building systems in vulnerable neighborhoods. The program discussed herein is 10 percent of the total need. The City plans to pursue additional federal assistance to fulfill the remaining need.

Building Mitigation Incentive Program

Program Objective and Description

The Building Mitigation Incentive program will offer loans and/or grants to owners of flood-impacted and vulnerable properties for the incremental cost of structurally reinforcing wood-framed buildings, dry

flood-proofing, elevating mechanical systems, protecting critical systems, and implementing other mitigation measures. (The program will not fund repairs of damaged properties already eligible through other programs noted in the Action Plan.) The goal is to protect buildings and building systems in flood-vulnerable areas that were impacted by Sandy from inundation, power loss from a local source, and other impacts that threaten the economic vitality of coastal neighborhoods. This program will support and strengthen these Sandy-impacted and vulnerable neighborhoods in two ways. Firstly, owners will be encouraged to undertake flood-proofing improvements to avert the catastrophic losses in building types that have proven most vulnerable during Sandy. Secondly, because this incentive focuses efforts on elevation or protection of critical building systems, it will enable the buildings to recover faster, and thus enable inhabitants to reoccupy their buildings—and resume normal lives—sooner.

Please note that all construction work funded under this program will comply with all applicable City, State, and Federal requirements including, but not limited to, the Davis-Bacon and Related Acts and Section 3 of the Housing and Urban Development Act of 1968. The City will also consider statistical analysis of the demographic makeup of the areas served and perform outreach as appropriate to ensure that there is sufficient disbursement of funds through impacted and vulnerable communities.

HUD Eligibility Category: Rehabilitation/Reconstruction of Residential structures; Renovation of Structures; Rehabilitation/Reconstruction of Other Non-residential Structures.

National Objective: Low- and Moderate-Income Area Benefit; Urgent Need.

CDBG-DR Allocation: \$120,000,000.

Of this amount \$60 million is allocated for affordable housing, as defined by Department of New York City Housing Preservation and Development (HPD) housing programs. It is anticipated that 80 percent of these funds will benefit low- and moderate-income persons. Funds will be targeted towards properties which do not meet the City's definition of substantial damage and for which resiliency improvements have not been budgeted elsewhere in the Action Plan. To avoid duplication of benefits, these \$60 million dollars will fund resiliency programs created in tandem with HPD/HRO repair programs to ensure effective use of federal dollars.

The remaining \$60 million is allocated for high-density residential and commercial buildings that are facing financial hardship and are economically vulnerable due to rising insurance costs and loss of property value as a result of Hurricane Sandy. Low-density residential will be prioritized in subsequent rounds of CDBG funding.

Projected Accomplishments: This allocation would fund resiliency measures across approximately 20 million square feet.

Program Administration: This program is expected to be administered by HPD for residential buildings and by NYCEDC for commercial buildings through a sub-recipient agreement with the City. Staff will be available to assist applicants in multiple languages. The agencies will oversee the program, but one or more Community Development Financial Institutions (CDFI) or other allowable entities may be chosen to operate the program as well as a sub-recipient.

Eligible Applicants/Properties: Eligible applicants shall be the legal owners of privately owned buildings impacted by Sandy. Cooperative and condominium properties will also be eligible. Applications will be accepted for all buildings in the 100-year floodplain (defined by the most current federal flood map) with a portion of the allocation (to be determined) reserved for (1) property owners in census tracts located in the Sandy Inundation Area (the Sandy Inundation Area is defined by the extent of the DSLOSH Hindcast Surge Extent Model and used as a boundary for DCP's PLUTO lot data to determine which lots were at risk of inundation by Hurricane Sandy—a dataset created on 2/15/13), (2) buildings where owners or tenants are low- or moderate-income and demonstrate a need for financial assistance to lessen property vulnerability, or (3) census tracts that experienced economic loss, damage, or business interruption as a result of the storm.

Eligibility Criteria: Eligible buildings must be located within the 100-year floodplain (based on the Preliminary Work Maps or the best information available) and demonstrate a need for flood-related improvements.

Grant/Loan Size Limit: The program will fund up to 95 percent of eligible costs of mitigation improvements in the form of loans or grants of up to \$2 million per building. Projects above that cap may be approved based on demonstration of need after a full underwriting of the proposed project. The maximum subsidized share of eligible costs is scaled to the project assessed value with higher value property receiving a lower percentage of eligible costs than lower value properties. In the case of affordable housing properties, the program may fund up to 100 percent of resiliency costs based on an analysis of financial need.

Program Priorities: The \$60 million allocated for affordable housing will be spent pursuant to the Program Priorities described for the Multifamily Rehabilitation Program in Action Plan A. These priorities are properties requiring loans to restore basic habitability; significantly damaged buildings with basic services restored but in need of major rehabilitation; and buildings serving the most at-risk demographic populations. It is anticipated that the remainder of this program will provide funds to eligible recipients that demonstrate a need for flood-proofing on a first-come, first-served basis, subject to the reservation of certain funding amounts for classes of high-density property to be specified and funds allocated pro rata to the boroughs based on the number of buildings located in the 100-year floodplain.

In subsequent allocations, funds will be utilized to assist single-family homes.

Geographic Area to be Served: Areas in the 100-year floodplain throughout the five boroughs.

Program Start and End Dates: Funds will initially be disbursed in the fall of 2013 and continue through the fall of 2015 or until funds are exhausted.

Other Funding Sources: It is expected that funds will be leveraged by SBA Disaster Loans, private funds and contributions, insurance proceeds, etc. Please note that, in accordance with federal duplication of benefits requirements, other assistance awarded to businesses for the purpose of providing compensation for economic losses arising from Sandy will be deducted from grants provided through this program. If the application period for an SBA Disaster Loan is open, businesses will be required to apply for an SBA Loan before receiving CDBG-DR assistance.

Planning

The City anticipates funds will be allocated to agencies as detailed below. However, the City reserves the right to change these allocations if Planning activities warrants such. If a change in funding is greater than \$1 million, it constitutes a substantial amendment and such amendment will be available for public review and approval by HUD.

Department of City Planning (DCP): \$8.4 million

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 Long-Term Planning and Sustainability (OLTPS): \$1.5 million

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 Special Initiative for Rebuilding and Resiliency's (SIRR) long-term resilience efforts. OLTPS will use CDBG-DR money to execute a variety of long-term planning efforts in areas such as coastal protection and flood protection, in addition to overall coordination of implementation of resiliency efforts.

NYC Economic Development Corporation (NYCEDC): \$1 million

NYCEDC has supported and expects to continue to support the work of SIRR as described elsewhere herein. NYCEDC will use CDBG-DR funds, through a sub-recipient agreement with the New York City Office of Management and Budget, for SIRR-related and other long-term community planning and rebuilding efforts in close collaboration with DCP and other agencies. NYCEDC will undertake, jointly with OLTPS, 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): \$1 million

In response to the damage caused by Sandy to privately owned buildings, DOB sent inspectors into the impacted areas to protect the health and safety of the population by assessing the structural integrity of residential and commercial buildings. DOB will use CDBG-DR funds to hire staff to revise the Building Code to better protect buildings as a result of Sandy.

Other: \$1.3 million

HUD Eligibility Category: Planning

National Objective: There is no HUD national objective for planning activities.

CDBG-DR Allocation: \$13.1 million. The City may repurpose funds that are not used for planning for program activities. If a change in funding is greater than \$1 million, it constitutes a substantial amendment and such amendment will be available for public review and approval by HUD.

Projected Accomplishments: N/A

Program Administration: Department of City Planning; Office of Long-Term Planning & Sustainability; New York City Economic Development Corporation; Department of Buildings

Eligible Applicants/Properties: N/A

Eligibility Criteria: N/A

Grant/Loan Size Limit: N/A

Program Priorities: N/A

Geographic Area to be Served: Citywide, with a particular emphasis on storm-impacted areas.

Program Start and End Dates: Duration of the CDBG-DR grant

Other Funding Sources: TBD

Administration

The City anticipates funds will be allocated to agencies as detailed below. However, the City reserves the right to change these allocations if Administration activities warrants such. If a change in funding is greater than \$1 million, it constitutes a substantial amendment and such amendment will be available for public review and approval by HUD.

Office of Long-Term Planning and Sustainability: \$5 million

New York City Economic Development Corporation: \$1 million

Department of Information Technology and Telecommunications (DoITT): \$1.2 million

During Sandy, DoITT played an integral role in communicating information to city residents. As a result of the storm, significant portions of the city—including areas that sustained inundation and areas that did not—suffered from wired and wireless communications outages. 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 that will identify the causes of Sandy-related outages, ensure adequate repairs are

made, identify changes to operational policies and procedures, and monitor and enforce franchise agreements to ensure continued operations during extreme weather events.

Department of Housing Preservation and Development (HPD): \$0.5 million
HPD will assist in executing the Building Mitigation Incentive Program

The Mayor's Office of Environmental Remediation (OER): \$0.443 million
OER works to ensure that brownfield sites are redeveloped in an environmentally safe manner, while encouraging new construction that can create economic opportunity. OER will use CDBG-DR funds to develop a methodology to ensure that brownfields in flood-vulnerable areas do not overflow into the city during a storm, as consistent with EPA rules and regulations. OER will ensure brownfields are contained by exploring measures including cost-effective ways to enclose exposed substances in the 100-year floodplain and developing best practices for storing enclosed hazardous substances in the 100-year floodplain.

Other: \$4.4 Million

HUD Eligibility Category: Administration

National Objective: There is no HUD national objective for Administration activities.

CDBG-DR Allocation: \$13.1 million. The City may repurpose funds that are not used for administration for program activities. If a change in funding is greater than \$1 million, it constitutes a substantial amendment and such amendment will be available for public review and approval by HUD.

Projected Accomplishments: N/A

Program Administration: Office of Long-Term Planning and Sustainability; New York City Economic Development Corporation; Department of Information and Technology; Department of Housing, Preservation, & Development; Office of Environmental Remediation

Eligible Applicants/Properties: N/A

Eligibility Criteria: N/A

Grant/Loan Size Limit: N/A

Program Priorities: N/A

Geographic Area to be Served: Citywide, with a particular emphasis on storm-impacted areas.

Program Start and End Dates: Duration of the CDBG-DR grant

Other Funding Sources: TBD