STATE OF NEW YORK APPROVED ACTION PLAN INCORPORATING AMENDMENTS 8 – 26 FOR COMMUNITY DEVELOPMENT BLOCK GRANT – DISASTER RECOVERY

(Amendment 8 consolidated and superseded the Action Plan and Amendments 1-7)

Utilizing Supplemental CDBG Disaster Recovery Funding from the Allocation, Common Application, Waivers, and Alternative Requirements for Community Development Block Grant Disaster Recovery Grantees under the Department of Housing and Urban Development Appropriations Act, 2013

(Public Law 113-2)

Public Law 113-2: January 29, 2013
FR-5696-N-01: March 5, 2013
FR-5696-N-06: November 18, 2013
FR-5696-N-11: October 16, 2014

Governor's Office of Storm Recovery

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Executive Summary

On October 16, 2014, the U.S. Department of Housing and Urban Development (HUD) published a Federal Register Notice outlining the third allocation of $420,922,000 to support New York State's continued recovery efforts from Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy and $185,000,000 to fund two Rebuild by Design (RBD) projects. This follows an initial allocation of $1,713,960,000 in federal Community Development Block Grant Disaster Recovery (CDBG-DR) funds in March 2013 and second allocation of $2,097,000,000 in November 2013, bringing the total allocation to the State to $4,416,882,000.

The Appropriation Act (Public Law 113-2) requires that prior to the obligation of CDBG-DR funds, a grantee must submit a plan detailing the proposed use of funds, including criteria for eligibility and how the use of these funds will address disaster relief, long-term recovery, restoration of infrastructure and housing, and economic revitalization in the most impacted and distressed areas.

The State's initial Action Plan was approved by HUD on April 25, 2013. The Action Plan and all Amendments are available on the State's website at http://stormrecovery.ny.gov. The State's amendments to its Action Plan are listed below.

- Amendment 1 (substantial amendment) – approved by HUD on August 16, 2013
- Amendment 2 (substantial amendment) – approved by HUD on August 19, 2013
- Amendment 3 (non-substantial amendment) – effective August 20, 2013
- Amendment 4 (substantial amendment) – approved by HUD on November 15, 2013
- Amendment 5 (substantial amendment) – approved by HUD on December 18, 2013
- Amendment 6 (substantial amendment) – approved by HUD on May 27, 2014
- Amendment 7 (non-substantial amendment) – effective November 6, 2014
- Amendment 8 (substantial amendment) – approved by HUD on April 13, 2015
- Amendment 9 (substantial amendment) – approved by HUD on June 5, 2015
- Amendment 10 (substantial amendment) – approved by HUD on November 19, 2015
- Amendment 11 (substantial amendment) – approved by HUD on January 25, 2016
- Amendment 12 (substantial amendment) – approved by HUD on March 30, 2016
- Amendment 13 (substantial amendment) – approved by HUD on August 3, 2016
- Amendment 14 (non-substantial amendment) – effective December 19, 2016
- Amendment 15 (substantial amendment) – approved by HUD on June 16, 2017
- Amendment 16 (substantial amendment) – approved by HUD on August 1, 2017
- Amendment 17 (non-substantial amendment) – effective August 28, 2017
- Amendment 18 (substantial amendment) – approved by HUD on January 17, 2018
- Amendment 19 (non-substantial amendment) – effective January 16, 2018
- Amendment 20 (substantial amendment) – approved by HUD on September 14, 2018
- Amendment 21 (substantial amendment) – approved by HUD on February 8, 2019
- Amendment 22 (non-substantial amendment) – effective February 4, 2019

- Amendment 23 (substantial amendment) – approved by HUD on May 21, 2019
- Amendment 24 (substantial amendment) – approved by HUD on March 11, 2020
- Amendment 25 (non-substantial amendment) – effective April 15, 2020
- Amendment 26 (substantial amendment) – approved by HUD on September 11, 2020

Proposed Allocation of Funds

Program	Allocation
Total of All Programs	**$4,501,382,000**
Housing	**$2,872,707,313**
NY Rising Homeowner Recovery Program	**$1,857,577,424**
NY Rising Condominium & Cooperative Program	**$25,500,000**
Interim Mortgage Assistance Prorgam	**$72,000,000**
NY Rising Buyout and Acquisition Program	**$656,707,682**
NY Rising Rental Buildings Recovery Program	**$234,675,000**
Rental Properties	$129,200,000
Multi-Family Affordable Housing	$105,475,000
Public Housing Assistance Relief Program	**$19,247,207**
Manufactured Home Community Resiliency Program	**$7,000,000**
Economic Development	**$120,277,793**
Small Business Grants and Loans	**$90,600,000**
Business Mentoring Program	**$400,000**
Tourism and Marketing	**$29,277,793**
Community Reconstruction	**$537,432,794**
NY Rising Community Reconstruction Program	**$537,432,794**
Infrastructure and Match	**$565,120,000**
Local Government, Critical Infrastructure and Non-federal Share Match Program	**$562,420,000**
Resiliency Institute for Storms and Emergencies	**$2,700,000**
Rebuild by Design	**$185,000,000**
Living with the Bay: Slow Streams	**$125,000,000**
Living Breakwaters: Tottenville Pilot	**$60,000,000**
Administration & Planning	**$220,844,100**

Introduction

On October 29, 2012, the largest storm in New York's recorded history swept ashore. Superstorm Sandy's impact was devastating, causing widespread damage to residents, homes, businesses, core infrastructure, government property, and an economy just recovering from the recent financial crisis. Fourteen counties were declared federal disaster areas. Sixty New Yorkers died and two million utility customers lost power, with some blackouts lasting up to three weeks. The storm damaged or destroyed more than 164,342 housing units, affected or closed over 2,000 miles of roads, produced catastrophic flooding in subways and tunnels, and damaged major power transmission systems.

Superstorm Sandy's impact was particularly tragic coming on the heels of Hurricane Irene and Tropical Storm Lee, which in 2011 devastated many communities in upstate New York's Catskill, Adirondack, and Hudson Valley regions, and caused severe damage on Long Island. Tens of thousands of homes incurred damage in these three storms, and many were destroyed by flood waters and wind. Businesses and infrastructure suffered substantial damage as well. Communities are still working hard every day to build back from the devastations of these storms.

The Disaster Relief Appropriations Act, 2013 (Public Law 113-2, approved January 29, 2013) (Appropriations Act) made $16,000,000,000 in CDBG-DR funds available 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 a major disaster declared pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1974 (42 U.S.C. 5121 *et seq*.) (Stafford Act), in calendar years 2011, 2012, and 2013.

On March 1, 2013, as a result of a sequestration order from the President pursuant to Section 251A of the Balanced Budget and Emergency Deficit Control Act, funding was reduced to $15,180,000,000. On Tuesday, March 5, 2013, HUD published Federal Register Notice 5696-N-01, which established the requirements and processes for the first allocation of $15,180,000,000 in federal CDBG-DR aid appropriated by the United States Congress. Under the first allocation, New York State was allocated $1,713,960,000 to facilitate the recovery and long-term rebuilding of its impacted communities. The State's initial Action Plan was approved by HUD on April 25, 2013.

In June 2013, Governor Andrew M. Cuomo established the Governor's Office of Storm Recovery (GOSR) to maximize the coordination of recovery and rebuilding efforts in storm-affected areas throughout New York State. GOSR was formed under the auspices of New York State's Office of Homes and Community Renewal's Housing Trust Fund Corporation (HTFC), a public benefit corporation and subsidiary of the New York State Housing Finance Agency.

On November 23, 2013, HUD published Federal Register Notice 5696-N-06 which outlined the requirements governing the $5,109,000,000 of the second allocation of CDBG-DR resources to continue disaster recovery efforts from Superstorm Sandy and the events of 2011. New York State was allocated an additional $2,097,000,000 in funds under the second allocation, increasing the State's allocation to $3,810,960,000. On May 27, 2014, HUD approved APA6, outlining GOSR's intended use for the second allocation of funds.

Federal Register Notice 5696-N-11, published October 16, 2014, outlined the requirements governing another allocation of the Disaster Relief Appropriations Act. It allocated $420,922,000 for New York State storm recovery Programs and $185,000,000 to provide resources for projects developed through Rebuild by Design projects. To date, New York State's allocation of CDBG-DR funds totals $4,416,882,000.

The State's initial Action Plan addressed the immediate housing and business assistance needs in communities affected by recent storms. It also allocated funds to assist county and local governments in covering emergency expenses and the matching funds necessary to repair and mitigate key infrastructure

projects. Further, it outlined the State work with storm-damaged communities to begin comprehensive community-based planning..

APA8 funded active Programs, increased funding for both Community Reconstruction and the Infrastructure Program, and provided funding to implement RBD projects. The State continues to prioritize repairs to and mitigation measures for critical infrastructure, and the implementation of community-driven plans to improve resilience and drive economic growth.

The Third Allocation Notice provides funding to implement innovative projects selected in the Rebuild by Design (RBD) competition. The Notice allocates funding to New York State for the implementation of RBD projects in the Tottenville section of Richmond County (Staten Island) and Nassau County communities surrounding the Mill River.

The State of New York will use the Action Plan to guide the distribution of all CDBG-DR recovery funds made available under Public Law 113-2.

Nassau, Suffolk, Westchester, and Rockland counties are the original counties identified by HUD in the March 5, 2013 Federal Register Notice as the most impacted. The November 18, 2013, Federal Register Notice updated the counties in which a minimum of 80% of the State's total allocation must be expended to include counties of New York, Queens, Kings, Bronx, and Richmond. Since New York City received its own allocation of CDBG-DR funds, only a few of the State's disaster recovery programs are targeted to the five boroughs. Additionally, the November 18, 2013 Notice added four more Presidentially declared disasters (1957, 1993, 4111 and 4129) to be eligible for CDBG-DR funding. See Appendix A for eligible counties by storm.

Table 1: Counties where 80% of Funds Must be Expended

Counties where 80% of Allocation Must be Expended		
Bronx	New York	Rockland
Kings	Queens	Suffolk
Nassau	Richmond	Westchester

Source: FR-5696-N-06 and FR–5696-N-11

HUD requires that 50% of total allocations must be spent on persons determined to be low- and moderate-income, unless the Secretary specifically finds that there is a compelling need to further reduce the threshold. On August 7, 2017, HUD published Federal Register Notice 6039-N-01, reducing the low- and moderate-income overall benefit requirement New York State must meet under Public Law 113-2 from 50% to not less than 35%. In addition, consistent with Notice 6039-N-01, the State of New York will also be excluding CDBG-DR funds associated with the State's two Rebuild By Design projects from the overall benefit calculation.

Additionally, the State of New York must either ensure that: (1) a portion of its allocation is used to address resiliency and local cost share requirements for damage to both the Metropolitan Transportation Authority (MTA) infrastructure in New York City and the Port Authority of New York and New Jersey (PANYNJ); or (2) must demonstrate that such resiliency needs and local cost share has otherwise been met. The requirements of the November 18, 2013 and October 16, 2014 Federal Register Notices require the State to document and assert that these entities' recovery needs are met through working relationships with New York City and the State of New Jersey. After conducting outreach and consultations with the MTA and PANYNJ, the State obtained letters from each Authority indicating MTA and PANYNJ compliance with cost share requirements for the Public Assistance Program. The State continues to work with MTA and PANYNJ regarding the Federal Transit Administration (FTA) competitive grant program so additional assistance for these Authorities is secured. If FTA approved awards do not fund all required projects resulting in an unmet need, the State will work with these Authorities to identify non-CDBG-DR funding mechanisms to address these unmet needs. Given the size and scope of damages impacting the MTA rail

system, including the Long Island Railroad and Metro North rail systems, these unmet needs are anticipated to be beyond the State's current CDBG-DR allocation. The State will continue to work with federal, State, and City partners to ensure the recovery of the region's transportation assets.

Updated Impact and Unmet Needs Assessment

Grantees are required by HUD to prepare an analysis of unmet needs related to disaster recovery. This Impact and Unmet Needs Assessment updates the previous two analyses provided by New York State. The unmet needs data in this section represent the estimated gap between identified disaster recovery, rebuilding and mitigation costs and total funding already allocated through current CDBG-DR commitments and other funding sources which New York State has been able to access (e.g. FEMA, insurance, NY Rising Program interventions, etc.). HUD's methodology shows only a partial picture of the full unmet needs of New York State. In addition to using HUD's methodology, GOSR has factored into its analysis, to the extent feasible, updated and new data sources.

The State's updated unmet needs assessment is based on HUD's CDBG-DR Allocation Methodology as published in the October 24, 2014, Federal Register Notice FR-5696-N-11 (HUD Methodology). In addition, the State analyzed a number of different data sources relevant to each program area to identify what it determines to be the full remaining unmet need to repair and rebuild homes, businesses, and infrastructure in the most impacted communities throughout New York State (NYS Methodology). This unmet needs assessment also outlines program data to identify how the State's actions have already addressed unmet need to date through previous allocations of CDBG-DR funds.

Following HUD's methodology, it is estimated that there is approximately $3.51 billion in unmet needs to repair and mitigate New York's housing, business, and infrastructure as a result of the damage from Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. If HUD's high construction cost multiplier is factored in, unmet needs are estimated at $4.19 billion, an increase that reflects the likelihood that reconstruction costs will be higher in New York State than elsewhere in the United States.[1] Additional analysis using the NYS methodology estimates approximately $14.46 billion in outstanding housing, business, and infrastructure repair and recovery-related mitigation needs not currently funded by federal programs. The State will continue to analyze and update its unmet needs as additional information is made available on damages, and/or resources are made available for rebuilding and recovery.

This analysis is divided into four sections: Housing, Economic Development, Infrastructure, and Rebuild by Design. Since New York City received a separate CDBG-DR allocation for their disaster recovery, the unmet needs for housing and economic development exclude the five counties of New York City.[2] As such, summary tables and statistics included for housing and business needs exclude New York City unless stated otherwise. The analysis of infrastructure unmet needs, however, includes New York City since many of the impacted systems are of statewide concern, including public transit, roads, and water management.

This updated analysis also addresses the storms' impact on HUD-assisted properties and vulnerable populations, defined as displaced low income households, substantially damaged LMI areas, and households with special needs. These groups are assessed at the Census Tract level where possible and summarized by municipality within Appendix B.

The data sources used include FEMA grants to households (FEMA-IA) and public entities (FEMA-PA); SBA loans (to households and to small businesses), assumed and estimated insurance proceeds, and other federal and State funding sources (FTA, Federal Highway Administration (FHWA), U.S. Army Corps of Engineers (USACE) storm-related projects, and the USDA Emergency Watershed Repair Program), as well as updated programmatic data. The State quantifies a broader estimate of remaining unmet needs in the area of infrastructure using additional data (outlined in the Infrastructure Section). The needs estimates are effective as of September 2020, and are subject to change as new information becomes available.

There are several differences in the unmet needs methodology for this Action Plan compared to the previous versions.[3] The revised methodology, combined with the availability of new data since the previous versions, results in new unmet need figures. The new estimates reflect the progress of New York State and federal programs to address these previously outlined unmet needs. Table 2 presents the State's latest estimate of unmet needs as a result of Hurricane, Irene, Tropical Storm Lee, and Superstorm Sandy.

Table 2: Estimate of Unmet Needs for Hurricane Irene, Tropical Storm Lee and Superstorm Sandy in Millions (excluding New York City)

	APA26		APA26 (w/ HUD Construction Cost Multiplier)	
	Unmet Need (Based on HUD Allocation Methodology)	**Unmet Need (Based on NYS Methodology)**	**Unmet Need (Based on HUD Allocation Methodology)**	**Unmet Need (Based on NYS Methodology)**
Housing	$1,097	$1,097	$1,580	$1,580
Economic Development	$469	$469	$675	$675
Infrastructure	$1,939	$12,892	$1,939	$12,892
Total	**$3,505**	**$14,458**	**$4,194**	**$15,147**

Source*:* GOSR Programmatic Data (September 2020). HUD high construction cost multiplier of 1.44 applied after state interventions for housing and economic development.

Using these updated data sources, the State is able to more accurately assess the damage and economic impact caused by the storms. In addition, where available, and applicable, data from the GOSR's budget is used to indicate how and where programs intend to address unmet need. A summary of the impact and unmet needs assessment is provided within the body of this Action Plan. Additional county and community data is available in Appendix B.

Housing Damage and Unmet Needs

This section is broken into a number of sub-sections covering owner-occupied housing units, rental units, HUD-assisted units, and other programs.

Owner-occupied and Rental Units

Hurricane Irene, Tropical Storm Lee and Superstorm Sandy caused widespread damage to New York's housing stock along the Atlantic Coast and in the central southern portion of the State, with an estimated 80,878 owner-occupied homes and 16,943 occupied rental units impacted statewide (excluding New York City).[4] Damage consisted of flooding from storm surge, river flooding, and heavy rains along with structural damage caused by heavy winds. The cost to repair or replace damaged homes located outside of New York City, including mitigation needs, is estimated to be $7.20 billion (Table 3). Subtracting out the estimated FEMA grants, SBA loans, and insurance proceeds, the cost of estimated unmet need is still $3.97 billion. When funds allocated by the NY Rising Housing Programs are accounted for, an estimated $1.10 billion in unmet need remains.

Table 3: Overview of Owner-Occupied and Rental Housing Damage and Unmet Need

Damage	Unmet Repair and Mitigation Need before State Programs	Unmet Repair and Mitigation Need after State Programs
$7,198.28	$3,969.31	$1,096

Source: FEMA Individual Assistance data effective December 2014; SBA homeowner assistance data effective December 2014.

Methodology

Unmet needs are estimated for owner-occupied units and for rental units using HUD methodology, with a number of exceptions that are outlined below. There are two key steps in estimating the unmet housing need:

1. Estimate the total damage to owner-occupied and rental units.
2. Subtract the resources allocated to repair or replace the damaged units including resources allocated to improve resiliency and mitigate the effects of future storms.

Total Damage

To estimate the damage to the housing units, all FEMA-IA applications were first classified into one of six damage categories (from 0 for no damage to 5 for severe damage) based on FEMA's initial damage assessment and then again based on flood depth (Table 4). Because FEMA does not inspect rental units for real property damage, personal property damage is used as a proxy for real property damage to rental housing. If a unit is placed in a different damage category based on the FEMA assessment value than based on flood depth, it is assigned the higher of the two. Finally, owner units that are classified as having no damage based on the FEMA assessment and flood depth but received an SBA loan are classified based on the SBA original loan amount as reported in the U.S. Small Business Administration commercial loan applications, effective December 2014.

Table 4: Damage Categories for Impacted Homes Based on FEMA Individual Assistance Records

Damage Category	OWNERS: FEMA-determined real property loss	RENTERS: FEMA-determined personal property loss	Flood Depth
1 ("Minor-Low")	$1 - $2,999	$1 - $999	N/A
2 ("Minor-High")	$3,000 - $7,999	$1,000 - $1,999	N/A
3 ("Major-Low")	$8,000 - $14,999	$2,000 - $3,499	1-4 feet
4 ("Major High")	$15,000 - $28,799	$3,500 - $7,499	4-6 feet
5 ("Severe")	≥ $28,800	≥ $7,500	6+ feet

Source: Damage categories developed using guidelines prescribed in HUD Federal Register Notice (FR-5696-N-06) and the exceptions outlined below.[5]

The damage categorization outlined above follows HUD methodology with two exceptions:

- Units with at least one foot of flooding but less than four feet are classified as having major-low damage (Category 3), even if the real property loss is less than $8,000. The classification was also made in APA6 and is part of a previous HUD methodology outlined in the March 5th, 2013 Federal Register (Notice FR-5696-N-06).
- Units for which FEMA recorded no damage and for which recorded flood depth was less than 1 foot but which received a positive SBA original loan amount are classified based on the value of the SBA loan amount.

Using the current methodology outlined above, there were 80,878 owner-occupied units and 16,943 renter-occupied units damaged in the three storms; 70,064 of these units experienced major to severe damage and are considered, as per the HUD allocation methodology, to be "most impacted."[6] The total estimate of impacted occupied units presented in this chapter is larger than in APA6 due to the updated FEMA-IA and SBA datasets and the revised methodology. Table 5 provides an overall summary of the housing damage that occurred from these three storms, categorized by tenure (owners and renters) and severity of damage.

Table 5: Estimate of Damaged, Occupied Housing Units from Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy (excluding New York City) based on FEMA Individual Assistance Applicants with Verified Damage

Tenure	Minor Damage	Major Damage	Severe Damage	All Damage
Owners	25,685	44,498	10,695	80,878
Renters	2,072	12,802	2,069	16,943
Total	**27,757**	**57,300**	**12,764**	**97,821**

Source: FEMA Individual Assistance Data, effective December, 2014.

HUD defines "most-impacted" as homes with major to severe damage. Based on the current methodology, there are a total of 70,064 units classified as most-impacted in counties outside of New York City.[7] The counties with the greatest number of housing units with major to severe damage are presented in Table 6. Table 6 uses the most recent FEMA data to update the number of majorly- and severely-damaged housing units for both owners and renters.

Table 6: Estimate of Occupied Homes with Major and Severe Damage from Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy (excluding New York City) Based on FEMA Individual Assistance Applicants with Verified Damage

County	Owner-Occupied	Renter-Occupied	Total
Nassau	30,608	9,224	**39,832**
Suffolk	9,047	1,636	**10,683**
Broome	3,863	1,667	**5,530**
Orange	2,156	252	**2,408**
Tioga	1,515	453	**1,968**
Ulster	1,218	249	**1,467**
Westchester	881	154	**1,035**
Schoharie	851	238	**1,089**
Rockland	805	134	**939**
Other	4,249	864	**5,113**
Total	**55,193**	**14,871**	**70,064**

Source: FEMA Individual Assistance Data, effective December 2014. These numbers reflect the CDBG-DR Allocation Methodology published in the Federal Register 79 FR 62182 with two exceptions outlined above.

As noted in APA6, the FEMA damage assessments, in most cases, underestimate the full cost of damage since the assessments were conducted rapidly in the period immediately after the storms. HUD acknowledged this and recommends the use of SBA household loan information to augment and adjust these figures based on averages of SBA damage estimates, derived from more thorough property inspections. Since the SBA loan requires a more detailed cost estimate, the loan value is presumed to more accurately reflect actual repair costs. However, these inspections were less widespread than the initial FEMA inspections. In total, SBA estimated the verified real estate loss for approximately 11,138 applicants outside of New York City at over $1.3 billion. To calculate estimated damages for New York State, the analysis applies the average SBA loan amount from the sample of SBA applicants by damage category as presented in Table 7 to each impacted home without an SBA damage assessment. In other words, if a unit was designated as a 3 ("Major-Low") based on the methodology outlined above and it was not in receipt of a SBA loan, its damage is assumed to be the average damage sustained by SBA loan recipients who were also designated as 3 ("Major-Low); in this example: $51,455.

Table 7: Damage Estimates by Damage Category Based on Average SBA Loan Amounts For New York

Damage Category	FEMA Sample Size	SBA Sample Size	Damage Estimate (Average SBA loan amount by Damage Category)
1 ("Minor-Low")	19,586	901	$28,227
2 ("Minor-High")	6,099	493	$45,324
3 ("Major-Low")	24,330	2,800	$51,455
4 ("Major High")	20,168	4,187	$74,098
5 ("Severe")	10,695	2,757	$101,473

Source: FEMA Individual Assistance data effective December 2014; SBA homeowner assistance data effective December 2014, unlike APA6, this analysis excludes loans awarded in any of the five counties of New York City from the SBA sample.[8]

Unmet Needs

Unmet needs are defined as the difference between the total damage and the funds committed or allocated to date including FEMA awards, SBA loans, private insurance, and State programs. For both owner-occupied and rental units, this chapter follows HUD methodology to estimate unmet needs and then separately presents how State programs have addressed this unmet need to date.

Following HUD methodology, the unmet needs for repair of owner-occupied housing units is estimated as follows:

- For homeowners with SBA loans, the unmet need for repair is determined to be zero as per Federal Register Notice (FR-5696-N-11) because the SBA loan amount is presumed to reflect a detailed calculation of repair estimates. Note: 14% of owner-occupied housing units had received a SBA loan.
- For homeowners with flood insurance, HUD assumes insurance proceeds cover 80% of the difference between the damage and the FEMA grant. The remaining 20% is unmet need.
- For homeowners without flood insurance, the unmet need is the difference between the damage and the FEMA grant.

HUD methodology for calculating unmet needs of repair of rental units also assumes that:

- 75% of repair costs for damaged units occupied by renters earning $30,000 or less a year can be categorized as unmet needs.
- Landlords who rent to households earning more than $30,000 have sufficient insurance proceeds to make the necessary repairs and therefore have no unmet needs.

HUD has also identified hazard mitigation as part of recovery as an unmet need. This includes elevation of structures, elevation of HVAC systems, and other storm-proofing measures. It is difficult to provide an accurate cost estimate of hazard mitigation needs because neither FEMA nor SBA assessed these needs. For the purpose of this analysis – consistent with HUD's methodology – hazard mitigation costs are assumed to equal 30% of total damage costs to owner-occupied and rental housing units that experienced major or severe damage.

Homeowners

Table 8: Owner-Occupied Housing Needs in Units (excluding New York City)

Storm	Unmet Need - Repair (Units Determined to Have Insufficient Funds from FEMA or SBA to Repair Damage)	Unmet Need - Mitigation (Owner-Occupied Housing with Major or Severe Damage)
Lee	7,942	6,285
Irene	20,145	10,763
Sandy	40,839	38,145
Total	**68,926**	**55,193**

Source: FEMA Individual Assistance data effective December 2014; SBA homeowner assistance data effective December 2014.

Table 8 outlines owner-occupied housing repair and mitigation needs. Hazard mitigation costs are estimated as $1.15 billion outside of New York City (Table 9). When combined with the unmet need for repair and mitigation, the total estimated unmet need for owner-occupied homes, excluding New York City, is $3.27 billion.

Table 9: Owner-Occupied Housing Needs in Millions (excluding New York City)

Storm	Unmet Need - Repair	Unmet Need – Mitigation (Owner-Occupied Units with Major or Severe Damage)	Total Need
Lee	$334.74	$124.96	$ 459.70
Irene	$697.40	$198.09	$ 895.49
Sandy	$1,091.99	$826.86	$ 1,918.85
Total	**$ 2,124.13**	**$1,149.91**	**$ 3,274.04**

Source: FEMA Individual Assistance data effective December 2014; SBA homeowner assistance data effective December 2014.

How New York State Has Addressed Unmet Needs to Date

The State's efforts to assist storm-affected homeowners have focused on operating a Housing Recovery Program to facilitate home repairs, rehabilitation, mitigation, and elevation for the owners of single-family homes. Additional programs are available for the owners of multi-family rental properties, and for individual owners of co-ops and condos, as well as owners' associations. The NY Rising Buyout and Acquisition Program was also established for homeowners whose homes were substantially damaged or destroyed during Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy. All programs are operated by GOSR.

The three allocations of federal funds to date have facilitated home repairs, rehabilitation, mitigation, and elevation for single-family homeowners. These Housing programs are intended to address those who live in areas that regularly put homes, residents, and emergency responders at high risk due to repeated flooding. As of November 2016, the Homeowner Program has more than 12,000 active applications.

NY Rising Homeowner Recovery Program

As of November 2016, single-family homeowners in this program have been awarded more than $1.1 billion. Of the more than 12,000 active applicants, 11,858 have received some form of payment. More than $809.2 million has been disbursed to these applicants to support repairs and resilience measures. Of the active applicant pool, 4,113 have received their final payment (totaling $250.0 million) and 7,745 are still in some phase of building back or preparing to build back. To date, over $1.857 billion in CDBG-DR funding has been allocated to this Program.

The State offers a number of mitigation and resilience measures to impacted homeowners as part of their recovery.[9] The Mandatory Home Elevation requirement is for homes that are located in the 100-year floodplain and were substantially damaged in a Qualified Disaster. The State's program provides CDBG-DR funds to elevate all such housing units. The State offers other funding for certain optional items: (1) Optional home elevation; (2) Bulkhead repair or replacement; and (3) Optional mitigation measures. As of November 2016, more than 2,100 active single family homeowners in the program were required to elevate their homes, of which about 700 were part of a complete home reconstruction. As noted in the State's Phase 2 application for the National Disaster Resiliency Competition, the State initially estimated the average cost of elevating an existing unit at approximately $130,000. However, as noted in the application, the high cost nature of construction and repair in the region drove average costs to approximately $190,000. Design costs are estimated to add an additional 10 percent to that figure. Accordingly, program data indicates that the average cost of home elevation for applicants is about $210,000. Additionally, the highly complex nature of these projects has necessitated the State to be engaged in intensive case management and project oversight. Therefore, the State is estimating that with these additional program delivery costs, the average cost of each elevation is now approximately $259,000. This means that for the approximately 1,400 required elevations that were not part of a total reconstruction, estimated cost projections have grown from about $182 million to $362 million. This is an increase of $180 million in additional unmet recovery and resiliency

needs for required single family home elevations. This does not take into account required elevations that are part of a complete reconstruction of a unit.

In addition to these applicants with required elevations, the State estimates that out of a pool of more than 2,500 applicants who entered the State's optional home elevation program, approximately 1,100 are located in the 100-year flood plain and have damage calculations that will likely deem them as being substantially damaged, thereby making these elevations required by floodplain management requirements. As a result of the increased elevation costs highlighted above, the State estimates that the unmet need for these additional required elevations has grown from approximately $143 million to $285 million, an increase of $142 million. In total, due to cost increases in required home elevations, the State estimates that unmet need in this area has grown by $322 million.

If a homeowner is unable to self-perform their recovery and voluntarily elects to join the GOSR Construction Program then, if the case is eligible and if funding remains, GOSR may provide contractors and/or designers and supervision of the work. The GOSR Construction Program carries out four types of projects: elevations, reconstructions, minor repairs, and environmental remediation (which includes lead, asbestos, and radon).

The budget for the GOSR Construction Program is estimated at $30 million, which is within the NY Rising Homeowner Recovery Program allocation. It is anticipated that approximately 600 homes will be served by the elevation and reconstruction scope of the program. As of January 2017, over 200 homes have been served by the minor repair program, and over 400 by the environmental remediation program. There are an additional 1,000 homes that may be served by the environmental remediation program. As a result of these factors and the resultant increase in the State's unmet recovery and resiliency needs, the State is increasing the budget of the NY Rising Homeowner Recovery Program from $1.398 billion to $1.857 billion.

NY Rising Condominium and Cooperative Housing Program

This program provides assistance for owner-occupied units that are being used as places of primary residence, either by the unit owner or by renters. Condominium Associations and Co-Op Boards are also eligible to apply for storm-related damages to repair a building's common elements, such as lobbies, hallways, and mechanical systems.

On January 25, 2016, HUD approved Action Plan Amendment 11, authorizing revised program policies for this program. The program is closed to new applicants as of July 12, 2016. Program data indicated that, as of November 2016, the program has 46 active applications (with 2-4 likely to withdraw prior to closeout). The program is likely to serve 42-44 associations and expects to spend $25 million assisting an estimated 430 damaged units. As a result of this updated unmet recovery and resiliency needs assessment, the State is reducing the budget of this program from $75 million to $25 million.

NY Rising Interim Mortgage Assistance Program

Since February 2014, the State has also paid homeowners through the Interim Mortgage Assistance (IMA) Program. This program covers mortgage payments while homeowners are displaced. In February 2016, HUD approved an extension to the IMA Program, thereby prolonging the cap of mortgage assistance from 20 to 36 months for eligible applicants. As of November 2016, the IMA Program disbursed over $28.7 million to 1,173 applicants. The State anticipated that a number of homeowners in the NY Rising Homeowner Recovery Program would be displaced by elevation and, as a result, need assistance from the IMA Program. In total, $72 million has been allocated to the IMA Program.

NY Rising Buyout and Acquisition Program

The **NY Rising Buyout Program** purchases eligible storm-damaged properties in certain high-risk areas in the floodplain determined to be among the most susceptible to future disasters. Properties purchased are restricted in perpetuity − being returned to nature, and forever-serving as a protective barrier for homes in surrounding communities.

The **NY Rising Acquisition Program** purchases substantially-damaged homes within the 100- and 500-year floodplains from interested homeowners. Aiming to spur new construction in a more robust and energy-efficient manner, these parcels are then auctioned for more resilient redevelopment.

The budget for this program is currently $656 million and was last significantly updated with APA6 (approved May 2014) when the program was in its infancy. At the time there were 764 applicants in the program; 543 in Buyout and 221 in Acquisition. By the time of APA6, the program had completed 234 property purchases; 225 buyouts and 9 acquisitions.

Since then, the program has completed 1,131 purchases, comprised of 619 buyouts and 512 acquisitions (as of November 2016). As a result of this updated program information, the State has a much clearer assessment of the number of likely applicants and the costs associated with this program.

At the time of the last substantial update of the program's budget, the State was only beginning to assess the unmet needs associated with acquisitions in places such as New York City. Since then this Acquisition program has grown much larger to encompass 138 applicants in New York City and many more throughout Long Island. In addition, a total of 410 applicants have transferred from the NY Rising Homeowner Recovery Program, with potential for another 70 applicants as hardship adjudications.

As highlighted in the NY Rising Homeowner Recovery Program, this is a high cost region of the United States. The State continues to reassess costs associated with this program. In particular, the State has identified additional costs associated with maintenance and fully-permitted and abated demolitions of properties that it purchased. In each case, to the extent applicable, the State is required to go through a process of pre-demolition activities. These activities consist of: 1) structural assessments; 2) asbestos containing material (ACM) surveys; 3) water and sewer disconnects; 4) utility disconnects; and 5) the abatement of the positive results of the ACM surveys, and State demolition and wetland permitting in order to complete the demolition of properties. At the time of the budget formation for APA6, the State had completed only 234 property purchases and 38 demolitions. As of November 2016, the State has demolished 290 properties. As a result, it has a much deeper understanding of costs associated with maintenance and demolition of these properties. The State is therefore identifying $60 million in additional unmet recovery needs.

Table 10: Total CDBG-DR Proposed Allocation of Funds By New York State in Millions (excluding New York City) – Homeowner programs

Program	Total Proposed Allocation of Funds
NY Rising Homeowner Recovery Program	$1,857.58
NY Rising Condominium and Coop Housing Program	$25.50
Interim Mortgage Assistance Program	$72.00
NY Rising Buyout & Acquisition Program	$656.71
Total	**$2,611.79**

Source: GOSR Programmatic Data and effective February 2020

Rental Housing

According to FEMA's preliminary damage estimates,[10] Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy damaged an estimated 16,943 rental units in New York State outside of New York City. Of the 16,943 damaged occupied rental units, 14,871 (or 88 percent) are categorized as "most impacted" by having major to severe damage. The estimated cost of damage to rental housing outside of New York City is $1,018.25 million.

Based on HUD methodology, the 8,147 damaged rental units occupied by renters with annual income below $30,000 define the unmet needs. The total damage for this population is estimated at $519.68 million

(excluding mitigation). Therefore, the unmet need for rental repair for these units is estimated to be $389.76 million, 75% of their total damage.

HUD's methodology assumes that landlords of rental units with tenants earning more than $30,000 will have adequate insurance coverage and have no unmet need. However, as stated in APA6, given the high cost of living in much of New York State, incomes of low income renters are likely higher than in most other areas of the country. Therefore, the State estimates the actual gap for landlords' ability to repair and mitigate damaged rental stock to exceed the $389 million. For example, in Nassau County, where the cost of living is particularly high, an individual can earn $58,000 and be "low income" as defined by HUD. In fact, $30,000 more closely represents Extremely Low Income households (defined as households earning less than 30% of Area Median Income) and restricts unmet needs to *deeply affordable rental housing*. And yet the majority of renters who have applied for FEMA assistance (74.5%) are estimated to be low and moderate- income but are excluded from the above calculation.[11]

While the State's analysis does not take into account the needs of landlords with households earning greater than $30,000, it estimates that the unmet needs for rental repair are likely significantly higher than this analysis indicates for the reasons noted above. As such, these estimates represent a conservative set of assumptions.

In addition to unmet need for repairs, HUD guidelines suggest that there are substantial mitigation needs for units with major to severe damage. This analysis assumes 30% of all major to severe damage costs for rental units is needed for mitigation related to the disaster events. This is equivalent to $305.51 million. These estimates include renters earning less than $30,000 annually who also have unmet needs for repairs and higher income renters with major to severe damage, but whose damage costs are presumed to be covered by insurance proceeds.

Combining unmet need for repair and mitigation, there is an unmet need of $695.27 million. This includes the repair costs for rental units damaged and occupied by households earning less than $30,000 annually, plus 30% of damage costs for all rental units that experienced major to severe damage. As stated, since the unmet need does not account for low income renters earning above $30,000 annually, the actual unmet need likely exceeds this figure. As the State operationalizes its rental programs, it will continue to assess these unmet needs of repairing, mitigating, and increasing rental stock within the impacted communities. Tables 11 and 12 outline the unmet repair and mitigation needs for rental units (excluding New York City).

Table 11: Rental Housing Needs in Units (excluding New York City)

Storm	Unmet Need – Repair (Damaged Rental Housing Occupied by Household Earning Less than $30,000/yr.)	Unmet Need - Mitigation (Rental Housing with Major or Severe Damage)
Lee	1,858	2,289
Irene	1,393	1,871
Sandy	4,896	10,711
Total	**8,147**	**14,871**

Source: FEMA Individual Assistance data and effective December 2014.[12] All rental housing units with major or severe damage are used to calculate mitigation.

Table 12: Rental Housing Needs in Millions (excluding New York City)

Storm	Unmet Need – Repair (Damaged Rental Housing Occupied by Household Earning Less than $30,000/yr.)	Unmet Need – Mitigation (Rental Housing with Major or Severe Damage)	Total Need – Rental Housing
Lee	$97.96	$50.22	**$148.18**
Irene	$62.36	$37.31	**$99.67**
Sandy	$229.44	$217.98	**$447.42**
Total	**$389.76**	**$305.51**	**$695.27**

Source: FEMA Individual Assistance data and effective December 2014.[13]

How New York State Has Addressed Unmet Needs to Date

The NY Rising Rental Buildings Recovery Program consists of the NY Rising Rental Properties Program (RP), the Multi-Family/Affordable Housing Program which includes the Affordable Housing Fund and the Small Project Affordable Rental Construction (SPARC) Program. The aforementioned programs with the Public Housing Assistance Repair Program (PHARP), and the Manufactured Home Community Resilience Program (MHCRP) are aimed at repairing or improving damaged properties and provide essential and affordable housing resources to New Yorkers in need. The vast majority of these funds are aimed at LMI New Yorkers. In total, the State is proposing to allocate $260 million to these programs (Table 13).

Table 13: Total CDBG-DR Proposed Allocation of Funds By New York State in Millions (excluding New York City)– Rental Program

Program	Total Proposed Allocation of Funds
NY Rising Rental Buildings Recovery Program	**$234.68**
NY Rental Properties Program	$129.20
Multi-Family/Affordable Housing Program	$105.48
Public Housing Assistance Repair Program	**$19.25**
Manufactured Home Community Resilience Program	**$7.00**
TOTAL	**$260.93**

Source: Governor's Office of Storm Recovery Internal Program data (February 2020).[14]

Repairing Existing Rental Properties

The NY Rising Rental Properties Program

The NY Rising Rental Properties (RP) Program provides awards to eligible rental property owners for prospective and retrospective residential rehabilitation, reconstruction, and/or improvements to make the property more resilient to the impact of future storm events. The RP Program may provide additional funding to comply with the terms of National Environmental Protection Act. The Program provides awards to eligible rental properties of any size with the exception of two family owner-occupied properties. Owner-occupied two-family homes are served in the NY Rising Homeowner Recovery Program. As of November 2016, the program has approximately 712 applicants and is closed to new applicants.

Unmet Recovery Needs

Similar to the NY Rising Homeowner Recovery Program, the State has faced increased costs related to elevations for rental properties in the RP program. The State's latest estimates for elevations are

approximately $46 million for projected applicants. As a result, the State is identifying additional Unmet Recovery Needs associated with these programs.

Constructing New Rental Properties in Storm-Impacted Areas

Multi-Family/Affordable Housing Program

The Multi-Family/Affordable Housing Program supports substantial rehabilitation and new construction of larger affordable rental housing projects. The program seeks to leverage other public and private sources of affordable housing financing, including tax-exempt bonds, conventional private debt, federal and State Low-Income Housing Tax Credits, Historic Tax Credits, State housing capital funds, and other sources. As highlighted in the State's NDRC application, the State issued requests for proposals (RFPs) jointly with the Housing Finance Agency and Housing Trust Fund Corporation to identify shovel-ready projects in storm-impacted areas. Approximately $105 million in CDBG-DR funding was made available for the Affordable Housing Fund, including administrative costs. GOSR ultimately awarded $83.31 million to eligible projects. The State received applications for over $101 million in funding.

Small Project Affordable Rental Construction program

The State sought proposals from certified Community Development Finance Institutions qualified to develop and administer SPARC in spring 2015. The project anticipates making multiple awards to developers across New York State to build affordable rental projects of no less than 8 units and no more than 20 units. Small Projects will be located in areas where housing stock was damaged or lost due to the impact of Superstorm Sandy, Hurricane Irene, and/or Tropical Storm Lee. This is included in the budget allocation for Multi-Family Affordable Housing.

Unmet Recovery Needs

As a result of the RFP processes the Housing Finance Agency and Housing Trust Fund Corporation received additional interest in the program. As a result, the State is identifying these additional $20 million in proposals as Unmet Recovery Needs and will, as a result, increase its funding for the Multi-Family Affordable Housing Program by $10 million.

HUD-Assisted Properties

Introduction

The Unmet Needs Assessment within the State's initial Action Plan noted that HUD had initially identified two Public Housing Authorities (PHAs) on Long Island: The Long Beach and Freeport Housing Authorities. The State then initiated significant outreach mechanisms, including surveys and multiple meetings with other PHAs, to identify additional needs; these were outlined in APA6 and APA8. That process continued through the State's phase 1 and phase 2 applications to HUD's National Disaster Resilience Competition (NDR) and the State was subsequently awarded $35.8 million in funding for resilience measures at four separate PHAs covering five sites: three in Long Island (Freeport, Hempstead, Long Beach), and one in Broome County (Binghamton Housing Authority).

The National Disaster Resilience Competition

The State was awarded $35.8 million for Public Housing Resiliency Pilot Program through the NDR competition. This program aims to reduce the impacts of coastal and riverine flooding by targeting climate-impacted PHAs in Nassau and Broome Counties. The State will provide funding to four PHAs for site-specific physical resilience recommendations based on new resilient guidelines provided by Enterprise Community Partners as well as the social and economic resilience of their residents. The State also made a commitment to provide workforce development opportunities for residents at three storm-impacted PHAs located in Nassau County.

Public Housing Assistance Relief Program

Together with the NDR activities, the State is administering PHARP as a collection of activities with CDBG-DR funds. Through PHARP, the State is aiming to address the unmet recovery and resilience needs of PHAs outside of the City of New York with storm-damaged properties. Public housing presents a unique set of recovery needs. Public housing is typically older housing stock that suffers from deferred maintenance, obsolete physical plant, poor energy efficiency, and critical systems vulnerable to flooding. Damaged developments range in size, including low-rise, attached structures and larger 6-10 story buildings. PHA community centers, technology centers, and ancillary buildings are often vulnerable to flooding and power loss. Mechanical equipment housed below ground in basement areas can be especially vulnerable.

In APA12, the State committed $10. million to assist these authorities through PHARP, to be augmented with grants to cover the local match for FEMA Public Assistance (PA) awards and investments made through the Community Reconstruction Program. GOSR will use CDBG-DR funds to provide supplemental funding, technical assistance and expertise to enhance the recovery efforts of the Freeport, Hempstead, Long Beach, and Binghamton Housing Authorities. GOSR has worked with these PHAs to craft specific strategies to invest in extensive resiliency measures to protect these properties and the vulnerable LMI populations they house.

Freeport Housing Authority: The Freeport Housing Authority manages 351 apartment units at five locations within the village limits of Freeport. Of these complexes, the Moxie Rigby location, consisting of 100 units of family housing, was impacted by Hurricane Irene and Superstorm Sandy. Floodwaters inundated seven buildings, causing damage to mechanical, electrical and specialty systems. High winds blew down trees and power surges caused strain on the water circulation systems, burning out pumps. Both storm events significantly damaged basement systems which subsequently had to be replaced twice in two years.

Freeport Housing Authority successfully negotiated with FEMA on their recovery and mitigations needs. They were then able to leverage that negotiation with HUD to make the case for a new construction project to house the residents at Moxey Rigby Apartments. Freeport Housing Authority was identified by HUD as having a high concentration of LMI households with major to severe damage. The state committed up to $9 million in CDBG-DR funds for eligible new construction for the authority's Moxey Rigby site. The Authority partnered with affordable housing developer, Georgica Green Ventures LLC to construct 100 new residential units available to current PHA residents at Moxey Rigby. The project will be a one to one replacement for its current units. The project is designed to incorporate new and innovative flood mitigation measures and green building design. The project is funded using CDBG-DR and NDR financing along with contributions by FEMA, equity from the sale of federal housing tax credits, tax exempt bonds, Homes for Working People and pledged Developer fees. The State is committed to continue to work with Freeport Housing Authority to secure the best recovery pathway.

***Long Beach Housing Authority*:** The Long Beach Housing Authority operates 374 subsidized low-rent units within five development sites. The overall occupancy rate is 100%.

Channel Park Homes, a family development, experienced the greatest damage, including flooding on the first floor of homes and community facilities. The damage required mold remediation, replacement of floors and drywall, painting, replacement of appliances and kitchen cabinets, and repair or replacement of Heating, ventilation and air conditioning (HVAC) systems. Additionally, brick façade walls on three of the residential buildings collapsed or were severely compromised.

Four senior high-rise buildings were also damaged by high winds and flooding within basements and communal areas. The damage required repairs to floors and walls, equipment, and HVAC systems. While homes were minimally impacted, damage to elevators, electrical systems and heating units emphasized the need to relocate emergency generators and heating and cooling systems.

Repairs are ongoing at the Channel Park Homes using FEMA funds. The Housing Authority received funding from FEMA's HMGP Program for mitigation efforts along with funding from Community Development Corporation, Long Island from its weatherization program to address roofs, doors and windows. In addition, the Long Beach Housing Authority will receive CDBG-NDR funding to pilot approaches and strategies for the overall flood proofing and enhanced levels of protection, adaptation, redundancy and community at the facility.

Town of Hempstead Housing Authority: The Town of Hempstead Housing Authority operates 14 housing sites within Nassau County, five of which are located within the 100-year flood plain and were evacuated before the storm made landfall. All 14 sites sustained some level of damage, with three sites receiving significant damage. Inwood Gardens and Mill River Gardens were damaged by flooding and high winds. Residential units and community spaces were inundated with saltwater. Repairs consisted of mold remediation, asbestos abatement, and replacement of electrical systems, boilers, sheetrock, appliances, cabinets, and fixtures, plus insulation. The asbestos abatement work required relocation of existing residents. Green Acres suffered significant roof damage, requiring structural repair and the relocation of one resident.

Two public housing facilities operated by the Town of Hempstead Housing Authority will receive funding to implement comprehensive resiliency upgrades. The proposed measures are to provide a new administrative/community center and to harden an existing community center, replace existing bulkhead with new bulkhead with landscape features for bank protection, elevate mechanical systems, and replace and elevate standby generators.

Binghamton Housing Authority: The Binghamton Housing Authority operates several housing sites within Binghamton, Broome County. In September 2011, Tropical Storm Lee completely flooded the basements of three housing/shelter properties and destroyed the mechanical systems that provided services to 425 rental units and more than 450 residents, many of whom were special need populations. The properties are uninhabitable for 2 months or more resulting in the highest density and longest displacement of any population in Broome County.

The North Shore Towers is comprised of 224 units which are distributed between 2-10 story buildings. The project design is underway with the State through the Dormitory Authority of the State of New York. Site Assessments are underway to identify additional resiliency initiatives while identifying additional unmet needs. The City of Binghamton submitted an application for a FEMA HMGP grant, but it was rejected. Mitigation measures remain a priority for the Housing Authority site and are currently being explored.

Other PHA's with Identified Unmet Recovery and Resiliency Needs: In addition to the abovementioned PHAs that are receiving funds from the NDR Competition, the State has identified a number of other PHAs that were damaged in one or more of the covered storms, as evidenced by having an active project worksheet in the FEMA PA database showing eligible costs. GOSR is conducting outreach to these PHAs with FEMA PA claims and also exploring opportunities to link public housing (Rockville Center Housing Authority, Town of Islip Housing Authority) with the Mill River RBD project and nearby Community Reconstruction Projects (Town of Islip). In addition to the direct financial assistance, GOSR assists housing authorities in securing resources from FEMA PA and private insurance.

The table below provides the latest assessment of FEMA PA eligible damages, as evidenced by damage and mitigation estimates. These totals reflect damage to all PHA's in New York State (excluding New York City) with FEMA-eligible damages and mitigation.

Table 14: Damage Assessment for Public Housing Authorities

	Repairs and Eligible Mitigation ($)	Federal Share Approved ($)	Estimated Local Match ($)
Binghamton Housing Authority	2,664,497	1,998,373	666,124
Ellenville (Village of) Housing Authority	67,761	50,821	16,940
Freeport Public Housing Authority	5,982,509	5,384,258	598,251
Herkimer Housing Authority	290,308	217,731	72,577
Ilion Housing Authority	680,460	510,345	170,115
Kaser (Village of) Housing Authority	11,000	8,250	2,750
Long Beach Housing Authority	7,986,509	7,185,428	801,081
Plattsburgh Housing Authority	9,232	6,924	2,308
Poughkeepsie Housing Authority	218,199	163,649	54,550
Schenectady Municipal Housing Authority	54,149	40,612	13,537
Town of Hempstead Housing Authority	2,488,160	2,137,194	350,967
White Plains Housing Authority	6,493	5,844	649

Source: FEMA PA EMMIE Database as of November, 2016.

Below is a brief summary of damages and mitigation measures at the eight identified PHA's beyond those in the NDR process:

Village of Ellenville Housing Authority: Village of Ellenville Housing Authority complex was inundated by floodwaters, damaging the flooring, sheetrock walls, bathroom and kitchen plumbing, fixtures and appliances, apartment heat pumps and HVAC systems, a trash compactor, and a riding lawn mower. Village of Ellenville Housing Authority restored the apartment complex to its pre-disaster condition using force account labor and materials, and contract services conducting the following: removing and replacing damaged building contents and interior structural contents, and rewiring electrical equipment. The flood waters at the Ellenville Housing building caused damage to the lower floor during the disaster period. In order to prevent future damages from a similar event, the applicant proposes the following mitigation measures: 1) Prepare and seal the lower 4 feet of building; 2) Elevate all vents exiting the building below 4 feet above ground; 3) Place sewer back flow on incoming line; and 4) Install all door dam brackets.

Herkimer Housing Authority: Eligible costs include emergency protective measures and debris removal, repair and remediation of damage to buildings (kitchen, common areas, laundry, office, etc.), replacement of building contents including HVAC system (plus elevation/mitigation), and parking lot repair. The applicant also has a hazard mitigation proposal to relocate equipment and install watertight panels.

Ilion Housing Authority: Eligible costs include emergency protective measures and building repairs due to severe flooding. First floor demolished down to concrete slabs, steel columns, beams, and masonry walls. Costs also include asbestos abatement. Mitigation was requested in the form of wet proofing the Packaged Terminal Air Conditioner Units.

Village of Kaser Housing Authority: The Community Senior Center building which is owned by the Village of Kaser Housing Authority and was inundated due to overbank flooding of the adjacent Pascack Brook. Damage incurred by flood waters, which reached a height of 3-4 feet, included partition walls; base, case, and chair rail molding; cabinets; flooring; and electrical.

Plattsburgh Housing Authority: Eligible costs include debris removal, minor repairs to building exteriors (wind damage), repairs/replacement of flooring (flood damage), purchase/rental of dehumidifiers and drying units.

Poughkeepsie Housing Authority: Eligible costs include emergency protective measures and temporary heat, remediation and repair of damaged buildings, replacement of building contents, including damaged boilers and water heaters.

Schenectady Municipal Housing Authority: Eligible costs include debris removal and emergency protective measures, repair and remediation due to sewage back-up, and replacement of damaged equipment. In addition, a hazard mitigation proposal has been submitted to prevent potential future flooding. The proposal is to construct a backflow prevention valve on the sewer line outside of the building that would stop sewage backup into the basement of the apartments. As of November 2016, this proposal is not currently approved as part of the obligation. The applicant is applying for assistance for the project from FEMA under Section 406 of the Stafford Act.

White Plains Housing Authority: Primarily work was focused on debris removal.

Other Identified Needs in the State's Public Housing Authorities: In addition to the above, through the NY Rising Community Reconstruction Program, unmet recovery needs were identified for public housing assets related to the Town of Islip Housing Authority (TOIHA). Specifically, this PHA is requesting CDBG-DR funding to install a series of "green infrastructure" drainage improvements at the Penataquit Village facility, a public housing site in Bay Shore operated by the TOIHA with existing LMI multi-family residential housing.

GOSR is working with TOIHA and plans to expend CDBG-DR on the following activities:

- **Oakdale Resiliency Generator (Ockers) (**Project budget of approximately $1,180,000): Funding to design and implement storm resiliency improvements at TOIHA's Ockers Gardens public housing site in the Hamlet of Oakdale, NY. The project will provide reliable backup power for the TOIHA residents at the Ockers Gardens public housing site, 965 Montauk Highway, Oakdale, NY 11769.
- **Penataquit Creek Resiliency Improvements (**Project budget of approximately $440,000): Funding to design and implement storm resiliency improvements at the TOIHA's project related to Penataquit Creek.

For the multifamily assisted housing stock, the State of New York Homes and Community Renewal surveyed properties in its assisted housing portfolio to identify damage and uncovered losses. The State found high levels of insurance coverage. It determined that immediate needs had been met, and referred owners to FEMA where appropriate. HCR helped coordinate between owners and tenants to identify replacement housing. The State continues to assess the resiliency needs of these properties. If needs are identified, they can be addressed through the Rental Properties Program or the Multi-family/Affordable Housing Program. The State also sought input on the recovery needs of affordable housing developers at an industry roundtable held during the development of the Multi-Family/Affordable Housing Program.

Emergency Housing and Homelessness

Very low-income households, the homeless population, and individuals with physical, cognitive, and mental disabilities are particularly vulnerable after a disaster because of the limited availability of temporary housing options to meet particular needs coupled with inflated housing prices where housing supply is significantly reduced. Long-term recovery must include an assessment of needs beyond housing, including providing permanent care providers, access to public transportation, Americans with Disabilities Act (ADA) accessibility, and in-home medical care.

Within storm-impacted areas, there were an estimated 150 transitional housing and homeless initiatives as well as 100 emergency shelters. This resulted in many vulnerable populations being evacuated or living without electricity or heat for weeks. The New York State Homeless Housing and Assistance Program (HHAP), operated by New York State Homes and Community Renewal, stated a need for mitigation measures, including a need for back-up generators, revamping electrical and heating systems, and upgrading electronic storage systems to preserve client and program data.

New York State received an allocation of $235M of Hurricane Sandy Supplemental Social Services Block Grant (SSBG) funds to provide resources to cover necessary expenses resulting from Hurricane Sandy, including social, health and mental health services for individuals, and for repair, renovation and rebuilding of facilities of at-risk of homeless and homeless as well as health care facilities, mental hygiene facilities, child care facilities and other social services facilities. In June of 2013 the NYS Disaster Recovery Social Services Block Grant Superstorm Sandy Supplemental State Plan was published. Following the publication of the State Plan and NYS outreach, to social, health and mental health agencies in communities impacted by Superstorm Sandy, providers were invited to apply for SSBG funds. Applicants were able to apply for one or multiple funding opportunities in a single application. Proposals were then reviewed by an inter-agency committee made up of the NYS health and social service agencies identified to administer the SSBG program. Proposals were evaluated on Need, Impact, availability of alternate funding, and resiliency. In order to be eligible for Sandy SSBG the funding must be used for costs that are 1) directly related to Superstorm Sandy and populations that were impacted by it; and 2) not reimbursed and not currently eligible for reimbursement by the federal government (including FEMA), private insurance and any other public or private funding sources.

Based on the needs identified through the solicitation process and state priority projects, additional unmet need for social and health services in Hurricane Sandy impacted areas has not been identified at this time. The State will continue to reassess the needs of these populations.

Displaced Households

In April of 2013, more than 1,000 displaced New York households were living in emergency housing through FEMA's Temporary Shelter Assistance (TSA), while many more were living with family and friends or paying for rental units while waiting for their homes to be repaired.

Since that time, the State, through New York State Homes and Community Renewal, administered the Disaster Housing Assistance Program (DHAP-Sandy), a FEMA and HUD Program that transitioned households from emergency housing into interim housing. The Program allowed eligible families displaced from their pre-disaster home and in need of interim housing to receive rental assistance for up to 12 months. FEMA and HUD provided a DHAP-Sandy 'calculator' that determined the portion of the monthly rent that the client was responsible for paying. The client's portion was capped as a percentage of income, and was increased after each three-month DHAP re-certification period.

Between April and October of 2013, FEMA referred 304 families to HUD for DHAP-Sandy, and HUD in turn transmitted the data on those families to the State. The State's role included Program briefings for all clients, assistance to families to identify interim housing, operating a DHAP-Sandy call center, and processing monthly payments to landlords for the DHAP portion of the rent. At the time of APA6, the DHAP program was serving 232 families, the majority of which were from Nassau County (60%), with 46

of those households subsequently living in other counties. By December 2014, nine families remained in the program. The program sunsets December 31, 2014 and will have zero active clients on January 1st, 2015.[15]

All households participating in DHAP were required to work with the State's Disaster Case Management Program (DCM) to develop a long-term housing plan. Clients were required to submit a statement every three months on their progress toward a long-term housing plan in order to continue participation in DHAP-Sandy. For some low-income households, transition to permanent housing has been difficult due to the lack of affordable housing.[16]

Low- and Moderate- Income Communities

In this analysis, although FEMA-IA data does not contain household size information, the State estimated average household size using American Community Survey (ACS) Census data to assign an appropriate income limit to determine low- and moderate- income households, and included it in this assessment. The analysis finds that a significant number of low- and moderate- income households were impacted by the storms (Tables 15 and 16). This is particularly true of renters, where the State estimates that over 74.5% of all rental units impacted by the storms were occupied by low- and moderate- income households. For rental units with major to severe damage the low- and moderate- income household proportion was 74.0%, by the State's definition. There are also a tremendous number of moderate-and middle-income homeowners who were impacted, equivalent to 32,472 housing units, with 21,791 units that suffered major or severe damage. In addition, the analysis highlights significant numbers of very low-income households (earning less than 30% of AMI) that likely have a more difficult time repairing their homes or finding affordable rental housing. An estimated 16.5% households who suffered damage to their homes fall within this category; however, almost 40% of renters fall into this category.

Table 15: Households with Homes Determined to be Damaged in Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy, By Tenure and Income (Excluding New York City)

Income Category	Owner-occupied Households	Renter-occupied Households	Total
Below 30% AMI	9,658	6,438	**16,096**
30% AMI to 50% AMI	10,301	3,411	**13,712**
50% AMI to 80% AMI	12,513	2,787	**15,300**
Above 80% AMI	41,833	3,107	**44,940**
Unreported income	6,573	1,200	**7,773**
Total	**80,878**	**16,943**	**97,821**

Source: FEMA Individual Assistance data and effective December, 2014 and HUD Income Limits based on Area Median Income by County, 2012 and average county household size (ACS 2008-12).

Table 16: Households Whose Homes were Majorly or Severely Damaged in Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy, By Tenure and Income (Excluding New York City)

Income Category	Owner-occupied households	Renter-occupied households	Total
Below 30% AMI	6,292	5,489	**11,781**
30% AMI to 50% AMI	6,897	3,010	**9,907**
50% AMI to 80% AMI	8,602	2,517	**11,119**
Above 80% AMI	28,973	2,804	**31,777**
Unreported income	4,429	1,051	**5,480**
Total	**55,193**	**14,871**	**70,064**

Source: FEMA Individual Assistance data and effective December, 2014 and HUD Income Limits based on Area Median Income by County, 2012 and average county household size (ACS 2008-12).

As noted in APA6, the impacted communities with the largest number of low- and moderate-income-households with major to severe damage include Long Beach, Freeport, Oceanside, Lindenhurst, Island Park, Massapequa, Binghamton, East Rockaway, Baldwin, and Seaford.

The majority of major and severe damage (greater than 50%) was incurred by low- and moderate- income households in Nassau County (Baldwin, East Rockaway, Freeport, Island Park, and Long Beach), Suffolk County (Lindenhurst), and Broome County (Binghamton).

The State previously found that damage to low- and moderate- income renter-occupied units was particularly acute in Nassau County (Freeport, Island Park, Long Beach, and Oceanside) and Suffolk County (Lindenhurst).

This needs assessment addresses low- and moderate- income Census Tracts damaged by Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy to further address impacted low- and moderate- income communities. This aligns with the unmet needs assessment conducted in April 2013 and APA6, which focused on communities with substantial low- and moderate- income populations. Middle-income and wealthy communities may have pockets of lower income families. This analysis provides an overview of where those pockets are, regardless of the wealth of the larger community.

The analysis identifies low- and moderate- income Census Tracts with more than 100 housing units damaged, or where there was more than one foot of flooding. A Census Tract is determined to be low- and moderate- income if more than 50% of households earn less than 80% of Area Median Income. Based on this analysis, the low- and moderate- income neighborhoods in Binghamton, Babylon, Poughkeepsie, Hempstead, Middletown, Brookhaven and Blenheim were impacted by the storms.[17]

Homes at Repetitive Risk

Superstorm Sandy's storm surge forcefully illustrated how many homes in New York are located in flood plains and will continue to be at risk after rebuilding. Housing units that are located within 100-year flood plains and were destroyed by flooding are potentially eligible for acquisition or buyout by FEMA and/or the State as a means to avoid damage and loss of life in a future storm.

When the flood damage within the entire State is overlaid with FEMA's 100-year flood plain maps, over 9,000 housing units are located within a 100-year flood plain and were also severely damaged by the storms of 2011 and 2012 (Table 17). These housing units are at a high risk in the event of future floods and may face personal safety risks due to the powerful impact of storm surge. Residents within these communities may have needs beyond repair and mitigation, including relocation to safer areas through buyout programs.

Table 17: Housing Units Severely Damaged by Superstorm Sandy Located within 100-Year Flood Plain

County	Severely Damaged Housing Units
Nassau	6,145
Suffolk	1,543
Broome	508
Tioga	263
Schoharie	173
Rockland	101
Delaware	81
Orange	70
Westchester	68
Greene	61
Ulster	57
Schenectady	32
Other	106
Total	**9,208**

Sources: Flood Data: FEMA Q3 Maps effective February 2014. FEMA Individual Assistance Data, December 2014.

Manufactured Home Communities at Risk in New York State

Manufactured Home Communities (MHCs) provide an affordable housing option for an estimated 71,355 households in nearly 2,012 communities across New York State[18]. The majority of these communities were built on low-lying land, often before the advent of land-use regulations. Consequently, many are located in areas vulnerable to natural hazards—such as riverine, coastal, and stormwater flooding—where hazard mitigation would have been required if permitted today[19]. A combination of low-incomes, high population densities, and a mix of ownership and rental structures compounds this vulnerability. Manufactured homes also present unique challenges with regard to their safe installation and elevation in flood prone locations.

As part of the State's analyses, it has identified MHCs located in the 100- or 500-year floodplain. A key element in this assessment was the Geographic Information System (GIS) dataset collected annually by NYS Homes and Community Renewal's Division of Housing and Community Renewal in accordance with Section 233 of NYS Real Property Law. Analysis of this data identified at least 40 MHCs in the floodplain, containing at least 1,686 units and housing 4,384 residents.

The State then engaged with county officials, subject-matter experts, and State agencies to further define the problem. Through this process, the State identified the particular vulnerabilities MHCs face during both extreme and routine weather events. Vulnerabilities include socio-economic characteristics of residents, physical liabilities of this housing type, the topographic locations of communities in the floodplain, and inadequate storm and wastewater infrastructure leading to increased risk and cost of recovery. Institutionally, manufactured home owners also face unique financial vulnerabilities. Unlike traditional mortgages, financing for most manufactured homes is similar to automobile financing, with interest rates up to five percentage points higher than the average mortgage[20]. Manufactured-housing lenders also specialize in subprime lending, which can increase interest rates by an additional three percentage points[21].

Typically MHCs are comprised of LMI households[22]. In 2011, the median annual household income for Americans living in manufactured housing was $26,000, compared to a national median of $50,054[23], and about 77 percent of manufactured home households earn less than $50,000[24]. Additional socio-economic

vulnerabilities identified in the literature and through stakeholder conversations also include higher proportions of elderly and disabled residents[25] and persons with limited English proficiency.

The state believes that without federal and State intervention, many MHCs will face increasing resiliency needs, jeopardizing a valuable stock of affordable housing and putting vulnerable populations at risk. Each community has unique conditions that must be addressed locally, through significant dialogue with key stakeholders and tailored approaches to resiliency.

Unmet Recovery Needs in MHCs

The Manufactured Home Community Resiliency Program (MHCRP) offers recovery and resiliency options to residents of a manufactured home community in Stony Point, NY. There are a total of 80 active applicants in the current program who own or rent manufactured homes on rental property in the floodplain. Thirty-four of these applicants received a replacement home outside of the floodplain. Forty-three of the applicants received up to 42 months of rental housing lease payment assistance. Three of the applicants received funding to enter into a contract of sale for the purchase of a home, including the full down payment determined to be necessary and reasonable, customary closing costs, and associated due diligence expenses. Thirteen of these 80 applicants also received reimbursement awards for relocation expenses incurred to relocate to their new homes. Based on the needs of eligible applicants, the State is allocating $7,000,000 to the Program.

Summary of Housing Unmet Needs

With an estimated $50 billion in damages, Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy are, collectively, the second costliest storm in American history.[26] Over 90,000 occupied housing units were damaged outside of New York City, including 80,878 owner-occupied units and 16,943 renter occupied units. The majority of these units, approximately 70%, sustained major to severe damage.

Housing unmet needs is reflective of the estimated cost of damage and estimated mitigation needs for occupied units, minus funding received or anticipated from FEMA, SBA, and private insurance to repair damage. Unlike APA6, the State also included detailed programmatic data to indicate how the unmet need has changed as a result of its CDBG-DR allocations. The remaining estimated unmet need for housing is approximately $1.10 billion (Table 18).

Table 18: Remaining Housing Unmet Needs for Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy (excluding New York City) (in Millions)

Tenure	Repair	Mitigation	Total
Renter	$389.76	$305.51	**$695.27**
Owner	$2,124.13	$1,149.91	**$3,274.04**
Identified Unmet Need	$2,513.89	$1,455.42	**$3,969.31**
Less New York Rising Program Allocations:	-		**$2,872.71**
Remaining Unmet Need	-		**$1,096.60**

Source: Sources outlined above and internal program data.

Economic Development Damage and Unmet Needs

Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy had widespread impacts on businesses throughout the Eastern Seaboard, affecting an area that produces 10% of America's economic output.[27] While damage to property and contents was concentrated along coasts and river communities, the effects of the storms caused business disruption for tens of thousands of small businesses throughout the State.[28] Many businesses that did not incur physical damage but were closed as a result of loss of power or damaged roads did not receive assistance. The impacts were especially felt in the short-term.

As noted in APA8, most communities follow a typical pattern in post-disaster economies. Many recovery-related businesses, especially construction, experience a surge in business because of post-disaster rebuilding. Once rebuilding is underway, researchers and economists see clear economic benefits to storm recovery. Households and businesses spend their own money, grant money, and insurance proceeds on rebuilding their homes and workplaces as well as the replacing the contents within them. This spurs the economy, particularly for the construction industry and home-related retail.

At a macro-level, recovery spending has a positive impact on the regional economy. The Economic Impact study published by the Federal Department of Commerce in 2013 for Superstorm Sandy follows this same logic.[29] It acknowledges that Superstorm Sandy caused tremendous damage to businesses throughout the region, but states that it is likely short-term and, through rebuilding efforts, the storm will bolster the regional economy. The public and private dollars used to fund recovery creates approximately 88,000 new jobs per year and increase economic output. Indeed, the analysis estimated that despite temporary business disruptions as a result of the storm, there is relatively little evidence that short-term losses were significant in either the travel or tourism sectors in New York or in other industries over the longer term. These findings are bolstered by data collected by the State (outlined in detail, below). In addition, many of the impacts were not immediately felt by businesses because the landfall of Superstorm Sandy occurred in the off-season for tourism. Furthermore, in the period immediately after the storm, the State invested significant sums in tourism campaigns to aid impacted businesses.

However, devastating effects of the event linger for businesses that experience direct physical damages or significant business interruption. In addition, the direct market for locally produced and sold items is disrupted, sometimes for months. The impact can be severe and long lasting for small and disadvantaged businesses excluded from rebuilding activity. Due to a lack of funds and limited resources, many businesses need assistance to simply maintain business operations and many take months to begin to rebuild. In particular, small businesses and seasonal businesses with limited incomes are less likely to recover without additional assistance. Further, many small businesses do not qualify for Small Business Administration (SBA) disaster loans or are not financially capable of taking on additional debt and are thus left to begin repairs and rebuilding with few resources.

In APA8, the State's analysis of the unmet economic development recovery needs provided an estimated dollar figure for unmet business needs using the following available data: SBA business loan information from December of 2014; an assessment of storm-related business damage and economic impact, using Dun and Bradstreet business data from 2012; FEMA Superstorm Sandy flood inundation maps and census data. In APA8, the State employed new data sources to augment its analysis of the remaining unmet business needs. These sources attempted to present the longer-term economic impact of the storms, particularly Superstorm Sandy, and to put the State's unmet business needs in the context of how the economy reacted to the storms and their aftermath.

Specifically, the State augmented the HUD allocation methodology with a lost profit analysis that classified all businesses located in a Census Tract affected by at least one foot of flooding as affected by the Superstorm Sandy. Using Flood data from the FEMA Modeling Task Force (MOTF)-Hurricane Sandy Impact Analysis, and exact business location (from the Dun and Bradstreet dataset used in APA6), the State refined its analysis to include:

- Any small businesses within Census *Blocks* that had over 1 foot of flooding during Sandy; and
- Businesses that were identified as within a flood zone inundated with more than one foot of water.

The State believes that these more geographically relevant data, along with other data sources presented a clearer picture of the true remaining unmet recovery needs.
In this update, the State used programmatic data and insurance data gathered from the New York State Department of Financial Services (NYSDFS) to further refine its analysis of remaining unmet business needs.

Methodology for Calculating Unmet Business Needs

In APA8, the State calculated unmet business needs as follows: businesses that applied for an SBA business loan but were denied were deemed to have unmet business needs. This approach relied on the methodology outlined in the October 16, 2014 Federal Register Notice and based on the SBA commercial loan application data. To calculate unmet need, the average SBA loan amount within each county is multiplied by the number of denied loan applications. As of December 2014, SBA received 5,132 loan applications for New York businesses outside of New York City, and 3,568 of these businesses (70% of all applicants) were denied a loan. The resulting calculation of unmet needs for these businesses was estimated at $419.6 million. HUD also adjusted this number upward, using the formula (outlined in APA8), in order to account for the businesses that didn't apply for assistance for a variety of reasons (credit, income, interest rates, etc.). The final adjusted unmet need for these businesses is estimated at $711.31 million.

Additionally, the analysis factors in mitigation costs for substantially impacted businesses. Mitigation costs are estimated to be 30% of the damage costs. The estimated mitigation needs for businesses with major to severe damage is $114.8 million, including businesses that incurred physical damage from the storms and businesses negatively impacted by the storms in need of mitigation assistance. As outlined in Table 19, when combined, the unmet business needs is $826.1 million compared to $504.2 million in APA6.

Table 19: Estimated Unmet Business Needs using SBA Data (excluding New York City) (in Millions)

Damaged Businesses	Total Damage	Minus SBA Loans Received	Adjusted Unmet Need – Repair	Mitigation Costs	Unmet Business Needs
5,132	$610.2	$ 190.6	$ 711.3	$ 114.8	$ 826.1

Source: U.S. SBA commercial loan applications, effective December 2014

HUD's allocation methodology has been updated to reflect a broader estimate of business damage. However, as stated in APA8, the State does not believe that the SBA data for unmet business needs fully reflects the number of businesses damaged by the storms and in need of assistance because many impacted businesses do not qualify for SBA loans or cannot afford additional loans. To qualify, businesses must have good credit and assets to guarantee the loan, excluding a majority of small businesses and micro-enterprises, often the businesses with limited resources and therefore greatest need. Many of these business owners were aware that they would not qualify and therefore did not apply to the Program. Thus, their needs may not be reflected in the calculation of unmet needs. In addition, per SBA Loan Guidelines, SBA interest rates could be as high as 8% for business that qualify for the Program and have a credit rating high enough to allow them to access other financing. These high interest rates have the effect of discouraging some small businesses from applying for SBA loans. As a result, the State augmented its analyses with additional data. In this update, the State further updates its analysis with programmatic and insurance data.

Additional Data to Assess Unmet Business Needs

In APA8 the State assessed interrupted business operations as an alternative measure of unmet recovery need with the goal of accounting for businesses that may not have applied for an SBA loan but have unmet needs due to business interruption and lack of infrastructure to support ongoing operations. This issue was particularly acute after Superstorm Sandy, where power outages were widespread and lasted for weeks.

Communities expressed concern that small businesses may struggle and fail without additional support beyond commercial loans.[30]

The State used lost profit due to interrupted business operations as a proxy for estimating unmet business needs beyond repair. In APA6 the State included any small business within a *Census Tract* that had at least one foot of flooding recorded anywhere in its boundaries. This resulted in a total of almost 78,000 businesses for lost-profit analysis. In recognizing HUD's broader assessment, APA8 restricted the sample of impacted small businesses to those within the same *Census Block* and those small businesses identified within flood zones inundated with at least a foot of water. Census Blocks are the smallest publicly available geographical Census area and in denser areas may cover areas as small as a city block or a large apartment building. As such, they are very localized estimates of the neighborhood that a business is in. Census Tracts, on the other hand, are larger areas designed to have between 2,500-8,000 residents each and an optimum size of 4,000 residents. After presenting these results, the analysis further restricted the number of small businesses to only those with geocoded business addresses within the flood zone. Both of these additions to the methodology allowed for a more nuanced and pinpointed analysis of whether a small business was directly impacted or in a neighborhood that was directly impacted.[31]

The analyses assumed that impacted small businesses were closed for two weeks and were in areas with at least one foot of flooding.[32] The tables below present the estimated profit loss due to Superstorm Sandy and then the comparable profit loss for the more restricted geographical areas.

In census tracts with at least one foot of flooding, there were an estimated 77,902 small businesses suffering losses of an estimated $197.6 million.[33] Approximately 75% of this loss occurred within Nassau and Suffolk counties (Table 20).

Table 20: Estimated Unmet Business Need Based On Business Interruption Due to Superstorm Sandy (excluding New York City) (in Millions)

County	Small Businesses in Census Tracts with ≥ 1' of Flooding	Annual Revenue	Estimated Profit Loss Due to Superstorm Sandy
Nassau	28,943	$ 21,097.2	$ 58.3
Suffolk	35,529	$ 32,667.2	$ 90.2
Westchester	10,265	$ 14,383.6	$ 39.7
Orange	1,588	$ 2,688.9	$ 7.4
Rockland	1,287	$ 549.1	$ 1.5
Ulster	290	$ 165.5	$ 0.5
Total	**77,902**	**$71,551.4**	**$ 197.6**

Source: GOSR using business data provided by Dun and Bradstreet and FEMA Inundation Files for Superstorm Sandy April 18, 2013[34]

In APA8, the more geographically refined approaches substantially reduced the estimated lost-profit within each county and reduce the estimated overall lost-profit for businesses in the State. The State argued that this approach offered a more accurate way to classify impacted businesses. This analysis indicates that there were at least 9,370 businesses in the heavily impacted flood zones (any area with more than one foot of water). This is a conservative estimate as there were additional businesses disrupted and/or were in flood zones with less than one foot of flooding. The Census Block analysis indicates that there were just over 60,000 businesses in the immediate vicinity of the flood zones, accounting for an estimated $155 million in lost profit (Table 21). The update to HUD's allocation methodology and the likelihood that many businesses utilized business interruption insurance[35] supports the State's conservative estimate of $14.28 million in lost profit to augment the estimated unmet need arising from HUD allocation methodology (Table 22).

Table 21: Estimated Unmet Business Need Based On Business Interruption Due to Superstorm Sandy (excluding New York City) (in Millions) –Census Block Analysis

County	Small Businesses in Census Blocks with ≥ 1' of Flooding	Annual Revenue	Estimated Profit Loss Due to Superstorm Sandy
Nassau	23,004	$16,856.6	$46.6
Suffolk	992	$2,510.9	$6.9
Westchester	1,774	$2,769.4	$7.6
Orange	26,388	$26,171.8	$72.3
Rockland	291	$164.5	$0.5
Ulster	7746	$7,587.8	$20.9
Total	**60,195**	**$56,061.0**	**$154.8**

Source: GOSR using business data provided by Dun and Bradstreet and FEMA Inundation Files for Superstorm Sandy April 18, 2013

Table 22: Estimated Unmet Business Need Based On Business Interruption Due to Superstorm Sandy (excluding New York City) –Flood Zone Analysis

County	Small Businesses in Census Blocks with ≥ 1' of Flooding	Annual Revenue	Estimated Profit Loss Due to Superstorm Sandy
Nassau	6,752	$4,251.5	$11.74
Suffolk	15	$12.4	$0.03
Westchester	132	$32.5	$0.09
Orange	2,244	$670.2	$1.85
Rockland	1	$1.0	< $0.01
Ulster	226	$184.1	$0.51
Total	**9,370**	**$5,151.7**	**$14.3**

Source: GOSR using business data provided by Dun and Bradstreet and FEMA Inundation Files for Superstorm Sandy April 18, 2013

Insurance Data for Five Most Impacted Counties:

Since APA8, the State has gathered insurance information for five of the most impacted counties outside of New York City (Nassau, Orange, Rockland, Suffolk, and Westchester Counties) using data from NYSDFS. It indicates that, in these five counties, over 5,800 insurance claims were opened for business interruptions and that over $49.95 million was paid to claimants ($28.5 million in Nassau County, and $10.88 million in Suffolk County). There were over 13,400 total insurance claims received for damage to commercial property in those five counties, resulting in $178.19 million in payment to businesses (79.28 million in Nassau County and $54.86 million in Suffolk County). In addition, there were over 1,500 insurance claims for commercial auto damage, worth a total of $22.67 million ($17.67 million in Nassau County, and $3.57 million in Suffolk County). The State now believes that the remaining unmet business needs should be updated to reflect these new data. As such, the State is reducing its estimated remaining unmet business need by the totals of these three categories ($250.81 million dollars). This likely underestimates the insurance payouts to businesses as a result of Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. Primarily because data was only collected and collated for five of the most impacted counties (excluding New York City).

The Economic Environment in Impacted Communities

Many of these businesses recouped a portion of these losses once power was returned and business operations resumed. Some businesses exceeded sales revenue post-storm due to storm-related business activities, particularly within the construction industry. Other businesses were more vulnerable to storm-related revenue loss, particularly small retail establishments, the fishing industry, and service-oriented micro-businesses outside of the construction industry.[36] In order to analyze whether there were any noticeable trends in small business establishments in the most impacted areas, the State used data from the U.S. Census Bureau on County Business Patterns (CBP). Specifically, the State identified whether Superstorm Sandy's had any impact on the number of small businesses with less than 100 employees in five of the most impacted counties (Orange, Nassau, Suffolk, Rockland, and Westchester counties). The State analyzed CBP data for 2011-2013 to identify pre- and post-storm establishment levels. Based on the CBP data at the county level, the number of small businesses increased from 2011 to 2013 in all five counties. These counties added 531 small businesses from 2011 to 2012, and another 1,121 from 2012 to 2013. This is consistent with the national recovery from the Great Recession, in spite of the devastating impacts of Superstorm Sandy and indicates that there was no discernable trend related to Superstorm Sandy in these areas.

The State also presents evidence (below) that while there was a spike in new unemployment claims in impacted areas, it was temporary and new claims returned to previously reported trends. However, while the macro-analysis portrays a recovering economy, it does not account for the individual business perspective. Many businesses were unable to fully restore their operations or rebuild due to depleted resources, limited access to capital, and insufficient insurance. The details of the State's recovery efforts for small businesses are also outlined in detail. In this section, the State presents its analysis of the macroeconomic impacts of the storms using sales tax revenue and unemployment insurance data.

1. Sales Tax Revenue

APA6 used lost profits during a two-week period as a proxy for estimating business needs beyond repair, using average weekly revenues and an estimated ratio of profit to revenues. This was augmented in APA8 with an analysis that used sales tax revenue data from the New York State Department of Taxation and Finance (NYSDTF) to understand the decrease in revenues for businesses collecting sales tax both in terms of the magnitude and duration in the period immediately after Superstorm Sandy.

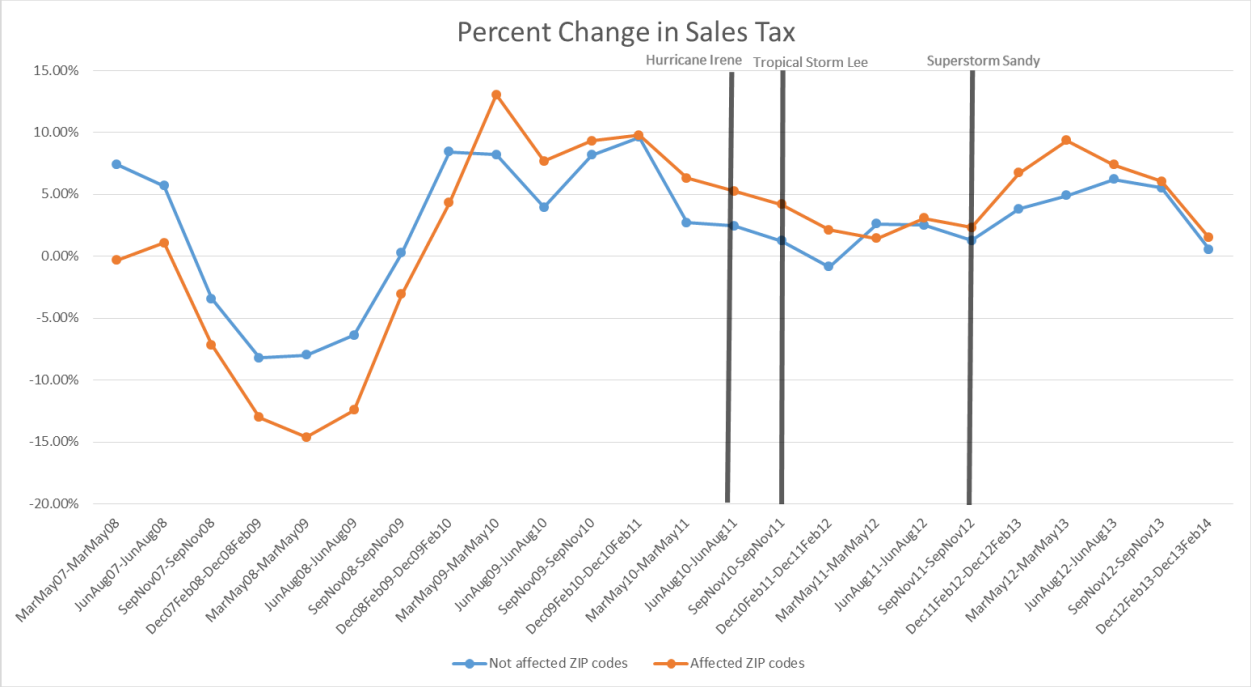
The analysis utilized four data sources:

1. SBA Business Assistance Universe;
2. New York State Department of Taxation and Finance Sales Tax Data;
3. FEMA's Affected Areas shapefile for Hurricane Irene and Superstorm Sandy;
4. NYS' ZIP codes shapefile from NYS Data Clearinghouse.

Sales tax data was available for 1,306 ZIP codes across the State (out of a total of 1,800), 466 of which were affected by at least one of the three disasters. For this purpose, the "affected" and "unaffected" groups are constructed using FEMA maps overlaid with New York State's ZIP codes map. The analysis focused on the storm impact on sales tax revenue from two perspectives: (1) for businesses of different size (identified by the size of their revenue), and (2) for businesses in different industries (identified by their North American Industry Classification System (NAICS) industry code).[37]

After identifying the affected and unaffected ZIP codes, Figure 1 shows changes in sales tax revenue from each group graphed over time.

Figure 1: Percent Change in Sales Tax Between Affected and Not Affected Zip Codes



Source: New York Department of Taxation and Finance—Quarterly Sales Tax Revenue by ZIP Code (August 2014)

All the industry- and revenue-specific graphs, along with detailed data tables, are available in Appendix B of APA8. However, the analysis indicates that, in general, there was not a significant effect on sales tax in the time period following Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. Some more important findings are outlined below:

- Businesses in the affected areas, although smaller in number, generated about 3.27 times the tax generated by the unaffected areas. These findings are mainly a result of the location of affected businesses in wealthier ZIP codes generating more activity and revenue.
- For businesses with revenues between $10,000 and $100,000 (groups 4 and 5), the drop in sales tax revenue in the quarters after the storms was generally steeper than the similar quarters in the previous years.
- The transportation and warehousing industry showed a large drop in sales tax right after Superstorm Sandy, more than 200% over two quarters, unprecedented in the previous years.
- The healthcare and social assistance industry revealed an 80 percent drop compared to the preceding quarter right after Superstorm Sandy.

2. Unemployment Insurance Claims as a Proxy to Business Disruption

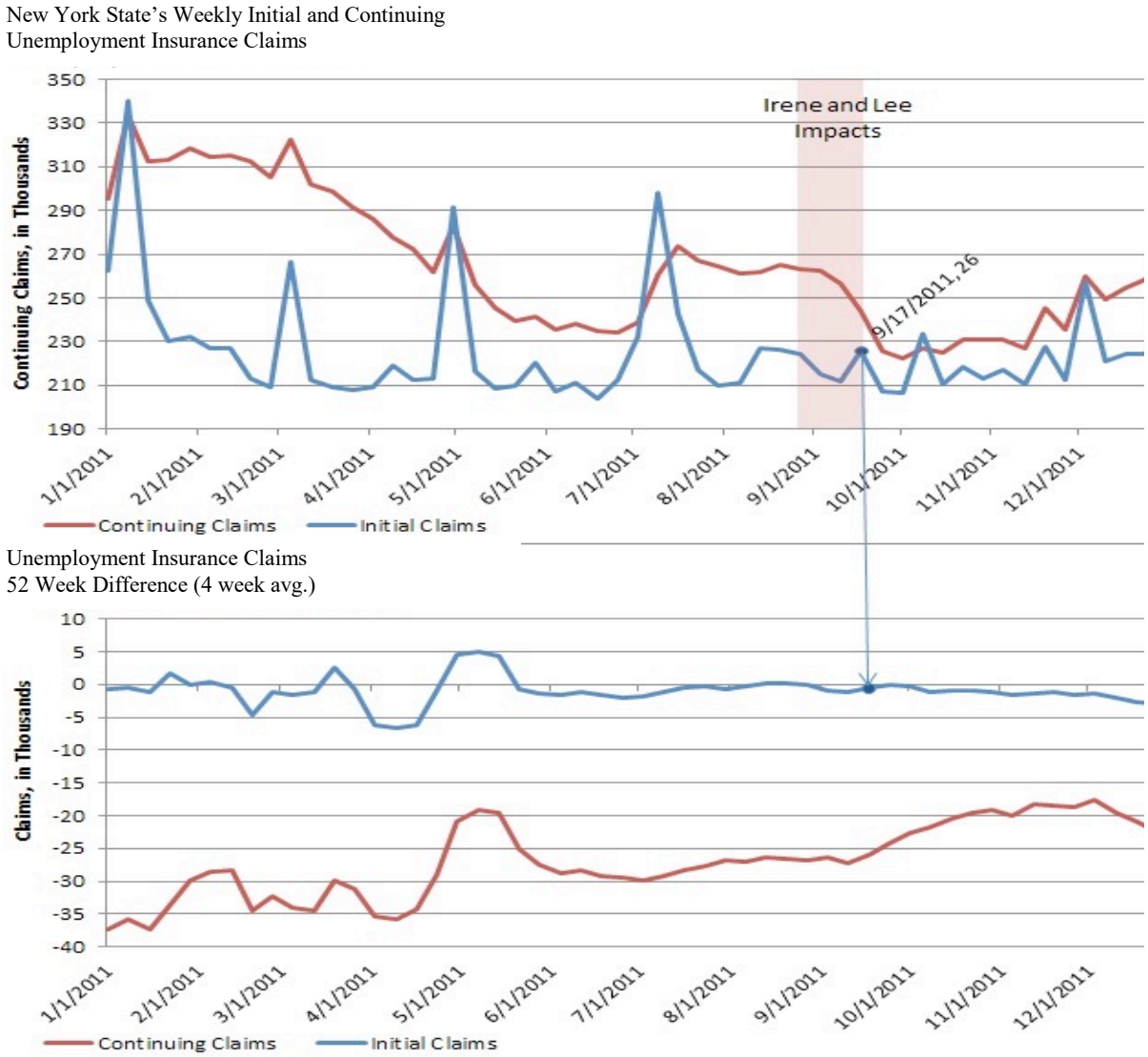
APA6 analysis assumed a business disruption period of two weeks and used an estimate of lost-profit as a proxy for its effect. APA8 augmented this analysis with New York State's unemployment insurance claims data for the periods of Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy to assess their impacts on New York State's small business labor. It can be reasonably assumed that spikes in the initial unemployment insurance claims and sustained growth in continuing claims are an indication of employment disruption. Although not all unemployed file for unemployment benefits, spikes in the unemployment claims are considered a good proxy for disruptions in the broader business cycle.

Initial claims are requests for weekly unemployment payments, whether or not benefits are actually paid. This analysis reviewed changes in the unemployment claims on a year over year basis because weekly unemployment claims are volatile and can often reflect seasonal shifts in employment (layoffs for seasonal

purposes along shore areas, etc.). This includes analyzing the changes in the 52 week time span and then smoothing the changes with a moving monthly (four week) average.

The impacts of Hurricane Irene and Tropical Storm Lee are illustrated in Figure 2. The initial unemployment claims following the storm events were very low, showing that the overall labor market was not negatively impacted from the storms. On a year over year change basis, the initial claims showed no increase while the continuing claims decreased. This is partly due to the growth of the economy during this period.

Figure 2: New York State Unemployment Insurance Claims (Hurricane Irene And Tropical Storm Lee)

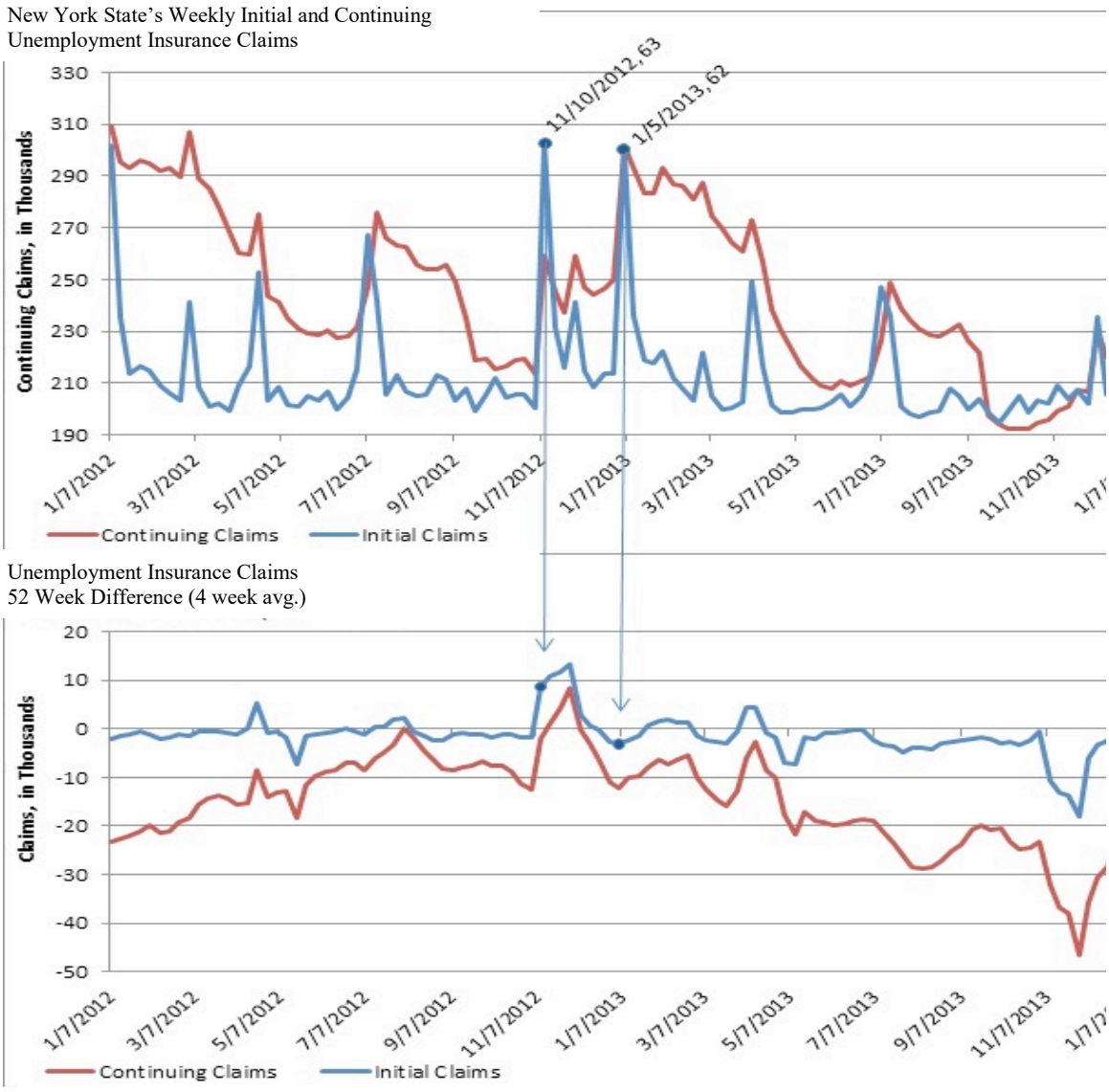


The amount of damage wrought by Superstorm Sandy was the second largest in history. Therefore, it had a stronger impact on the economy compared to Hurricane Irene and Tropical Storm Lee. Figure 3 presents the weekly unemployment claims during Superstorm Sandy and periods before and after for comparison.

There is a noticeable spike within one week after Superstorm Sandy. It is assumed that there was a delay in unemployment insurance filings during this period because people may have been unable to apply for unemployment benefits for various reasons. Unlike the first week of January, which often sees "Post-

Christmas Layoffs," the Sandy claims were out-of-character for the season. This is shown in the year-over-year comparison. The comparison displays a significant and sustained spike that lasts nearly one month, accounted for by the additional, but smaller, second spike in the weekly claims beginning in December.

Figure 3: New York State Unemployment Insurance Claims (Superstorm Sandy)



Some claims are denied or people find work immediately after filing a claim. Therefore, although the initial claim spikes occur, they do not readily translate into continuing claims. During Sandy, initial claims seem to translate into continuing claims reflecting the fact that a good portion of the initial claims were accepted into the system. The spike in the continuing claims in the year-over-year comparison show that the storm did have a temporary impact on the labor market, but it was brief and roughly the same duration of the initial claims sustained peak.

Findings: The unemployment insurance claims data indicates that not all of the storm events had an equal impact on the labor market. Job losses were not significant after Hurricane Irene and Tropical Storm Lee. Superstorm Sandy had a slight impact on the labor market, but remained relatively low compared to

seasonal labor patterns such as the January and July claims. In addition, the duration and translation of the initial claims into longer-term unemployment (continuing claims) is not apparent. The impact of Sandy on unemployment lasts approximately four weeks. This is due to the additional, second round, of claims that occurred early in December. This may reflect that some establishments may have waited to lay off employees after they fully appraised their damage and feasibility of re-opening.

Overall, the results seem to indicate that while there was evidence of negative impacts arising from Superstorm Sandy, those impacts were reasonably short-lived, at least at the macro-level.

How New York State Has Addressed Unmet Needs to Date

The Small Business Recovery Program was launched in April of 2013. In its original design, the Program proposed to offer both grant and/or loan assistance to businesses that were directly impacted by Hurricane Irene, Tropical Storm Lee and/or Superstorm Sandy. The Program's underwriting criteria and review processes were designed in the most prudent and effective manner at the time. Since the initial launch of the program, GOSR revised the Program policies and procedures. The estimated budget for these activities was established at $158.5 million dollars with the first allocation of CDBG-DR funds, increased by $25 million to $183.5 million with the second allocation of CDBG-DR funds. This increase was made up of funds redirected from the Seasonal Tourism Industry and Coastal Fishing Industry Programs which were rolled into the Small Business Recovery Program. Since the third allocation of CDBG-DR funds, the State has undertaken a review of the Program and has determined that the total drawdown of CDBG-DR funds for this program will not exceed $100 million. This analysis is based upon a reassessment of the unmet recovery needs of small businesses in the State (outlined above), and a detailed analysis of program activities and projected beneficiaries. The State has conducted an extensive and multi-pronged outreach effort to small businesses, lasting more than two years, and it has determined that it has facilitated the recovery for potentially eligible business owners. As noted, SBA loan application data suggests that over 5,000 businesses outside of New York City applied for a loan to repair their operations, and roughly two thirds of those who applied were denied. The State engaged with businesses that were identified through this SBA database and through multiple other avenues. Over 3,200 application identification numbers were generated for the Program, of which approximately 1,500 are expected to result in an application determination. The remainder are a combination of duplicate entries and/or entries that never pursued assistance, which could have occurred for a variety of reasons (fully assisted through other sources, business closed/moved, change of ownership, etc.).

Small Business Recovery Program

The Small Business Recovery Program began accepting applications from businesses in the first quarter of 2013. The program adopted an extensive and prolonged outreach effort to identify all potentially eligible business owners, with an emphasis placed on conducting outreach to the following groups:

- LMI Business Owners;
- Businesses that provide economic opportunities to LMI persons;
- Businesses that have not re-opened due to damage or impact from the storm;
- Coastal Fishing Industry Businesses; and,
- Seasonal Businesses.

Outreach efforts were guided by the State and accomplished through a variety of resources and activities:

- Online: Promotion of recovery resources, including program summaries, fact sheets, brochures, Frequently Asked Questions (FAQs), Action Plan and information on the eighteen Small Business Development Center (SBDC) locations and hours at http://www.stormrecovery.ny.gov/.
- In Person: Door-to-door communication by Program staff and partner organizations, availability of trained Business Advisors to assist potentially eligible Business Owners with the completion and submission of an application.

- By Phone:
  - Outbound phone calls to potentially eligible Business Owners, including those who registered with the State to express an interest in receiving assistance, as well as to those known to have registered for disaster aid with FEMA, the SBA, and other sources.
  - GOSR provided access to a State-supported NY Rising Recovery hotline, 1-855-NYS-SANDY, provided trained representatives able to answer questions about the Programs, guide potentially eligible Business Owners through the application process, and provide updates on the status of applications.
- By Television: Paid television advertising campaigns to promote the availability of recovery resources.
- Through Partner Organizations: Partnership and coordination, both formally through sub-recipient arrangements and other more informal arrangements, with not-for-profit community-based organizations involved in disaster recovery efforts in the impacted regions.
- Through Events: Coordinated engagement and participation by Program staff and partner organizations at community forums, town halls, Chamber of Commerce, Business Associations meetings and other locally-supported community-based events. The State created professional signage, documentation, advertisements and other such material to support and enhance the operation of the Program. Outreach leveraged alternative language delivery, including, but not limited to, Spanish, Russian, and Chinese.
- Persons with disabilities, those with limited English proficiency or others who may need Program documents presented in a different format were encouraged to contact the NY Rising Recovery hotline at 1-855-NYS-SANDY for assistance with obtaining information in an accessible format.

In addition, the State utilized any and all available web-based and other electronic resources, including social networking media, to promote the Program and provide timely dissemination of information and notifications to affected small businesses. Program-related materials are readily available for download at http://www.stormrecovery.ny.gov/, and also are distributed by the State and its Program partners to public officials, municipalities, relevant non-profit organizations, and others as necessary or upon request. Direct mailings, calls and emails were also used to notify Business Owners of their application status, appointment notifications, missing information, grant closing, information regarding the disbursement process and timelines, and other program-related information as necessary.

As of March 2015, the program had awarded more than $30 million to more than 750 impacted businesses. The Program informed all active applicants that the Program was closing to new applicants on May 1st, 2015. During the month of April, new and existing applicants were required to complete and return a Confirmation of Interest Form and an Opt-In Form and send it to their nearest Small business Development Center. There was an additional deadline of July 1st, 2015 for associated application documents. The outreach for these deadlines included the following:

- Email to approximately 1,600 applicants and list of elected officials and associations;
- On website;
- SBDCs notified to reach out to applicants;
- Preliminary award recipients contacted via phone.

As noted, approximately 1,500 applications will likely result in an award determination. The remainder are a combination of duplicate entries and/or entries that never pursued assistance, which could have occurred for a variety of reasons (fully assisted through other sources, business closed/moved, change of ownership, etc.).

Of the 1,501 applications that are expected to receive a determination, as of January 2016, there were 1,088 eligible applicants and 413 ineligible applicants. Applicants are deemed ineligible if they fail to meet Program requirements and/or fail to provide requested documentation by Program-mandated deadlines. In

each case where there was a Program-mandated deadline, businesses with outstanding steps were contacted. The state is currently reviewing 228 of the 1,501 applications. With the continuation of this review, the Program anticipates an increased amount of ineligible files. It is estimated that it will take approximately 6 months to process the remaining files. As of January 2016, the average award amount is estimated at $51,412.19.

In total, the State is proposing to use $120 million of allocated CDBG-DR funds for economic development. The Small Business Recovery Program now accounts for $90,600,00 of the total, and the remaining funds are for the Business Mentoring Program and for Tourism and Marketing.

Based on latest program data, it is expected that the $90,600,000 remaining for the Small Business Recovery Program will be sufficient to provide awards to eligible applicants but as applicants move through the program the State will continue to assess the need. After CDBG-DR allocations, the remaining unmet need in Small Business is estimated at $469.2 million (Table 23).

Table 23: Unmet Business Needs (in Millions)

Damaged Businesses	Total Damage	Minus SBA Loans Received	Adjusted Unmet Need-Repair	Mitigation Costs	Unmet Business Needs
Damaged Businesses (HUD Methodology)	$ 610.2	$ 190.6	$ 711.3	$ 114.8	$ 826.1
+ Estimated Loss in Profits in Flood Zones					$14.2
Less Insurance Payouts for Business Interruptions, Commercial Property and Commercial Auto Damage					$250.8
Less New York Rising Program Allocation					$120.3
Remaining Unmet Need					**$469.2**

Source: U.S. SBA commercial loan applications, effective December 2014, Program Data, US Census Data, FEMA Inundation Maps.

Impacted Communities

The State anticipates that heavily impacted communities will have long-term economic impacts to their tax base as a result of depreciated property values, hence ad valorem tax revenue, due to the storms. FEMA is still in the process of adjusting their Advisory Base Flood Elevation maps and/or their Preliminary Flood Insurance Rate Maps for many communities that determine flood zones, and ultimately determine insurance requirements and implied flood risk. These changes, coupled with evidence of prior flooding, will lower property values in many coastal areas.

Additionally, many businesses within heavily impacted communities still struggle to rebuild. Based on an analysis of Dun and Bradstreet data and SBA loan information, small businesses in Long Island, Staten Island, the Rockaways, Red Hook, and Catskill communities like Prattsville and Windham were significantly impacted and have not secured the funding necessary to rebuild or recover to pre-storm levels. The State will continue to monitor these communities closely.

Economic Revitalization Needs

Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee caused widespread damage across New York. Tens of thousands of businesses were located in or near inundated areas. These businesses suffered physical damage to their business operations, or at minimum, were closed for extended periods of time due to power outages and limited transportation networks.

As noted, even those businesses that did not flood were impacted in a variety of ways, including damage to structures and contents, wind damage and business interruptions due to power loss, closed roads, and flooding in the vicinity of the business. The damages incurred by businesses cannot be fully captured as not all businesses applied for federal assistance; however, SBA loan application data suggests that over 5,000 businesses outside of New York City applied for a loan to repair their operations, and roughly two thirds of those who applied were denied.

The businesses denied assistance from the SBA, located outside of New York City, are determined to have unmet needs of $826 million (including the estimated cost of mitigation). This figure represents the unmet need as outlined in HUD allocation methodology. The analysis also includes an update on the estimate of unmet need due to lost business operations for small businesses located in heavily impacted areas that were without power for an extended period of time, resulting in lost operations, revenue, and profit. Using the more conservative assumptions outlined above, the State identifies at least another $14 million in lost profit from heavily impacted small businesses in the flood zone. The State recognizes that many businesses received insurance payments for damages related to the storms. To operationalize this fact, the State is applying the conservative assumption that businesses received some $250.8 million in payments. This is highly conservative as it relates to insurance payout for only three categories of damage and disruption in five counties. Overall, the State notes that industries were able to recoup many losses during the reconstruction period, and overall the economy grew as part of the rebuilding process. Many small businesses were negatively impacted by business interruption and physical damages, some even closing operations permanently due to this loss.[38] Once the allocated CDBG-DR funds are accounted for, the State estimates that the remaining unmet need is in the region of $469.2 million.

Infrastructure Damage and Unmet Needs

The State's infrastructure unmet needs are significantly higher than the unmet needs assessment defined by the HUD allocation methodology. HUD's calculation of unmet needs only accounts for projects already identified and budgeted for from the FEMA PA Program and other federal Sandy-related match programs. Moreover, the number of infrastructure projects will continually increase as more physical needs assessments are completed. The State continues to develop projects that address storm recovery-related mitigation unmet needs, increasing resiliency in storm-impacted areas. The State also continues to assess large-scale infrastructure and recovery related mitigation project costs. These projects may not yet have an identified financial resource to address them.

Using the HUD allocation methodology, infrastructure unmet need is estimated at $1.94 billion. However, the State has also updated its estimate of true unmet need, and through various new data sources, estimates a new figure of $12.89 billion. The State's expanded methodology is outlined below.

HUD Allocation Methodology:

To determine unmet infrastructure needs as per HUD allocation methodology, this analysis first focuses on five public repair programs. The first of the five public repair programs, the FEMA PA Program, provides the basis for most of the unmet need in the State, as determined by HUD. This Program allows communities and public entities to apply for FEMA assistance to repair their roads, water treatment facilities, transit systems, utilities, schools, public buildings, and recreational spaces such as parks and playgrounds. In the Program, FEMA pays 75% to 90% of the project eligible costs and the applicant pays for any ineligible costs, along with 10% to 25% of the costs, depending on the disaster.

The portion paid by the applicant is called the "local match." The local match requirements are oftentimes overly burdensome on communities with limited resources. Therefore, the unmet needs assessment calculation associated with the FEMA PA Program is based on total estimated local match. The State's funding of the local match facilitates reconstruction efforts that may not have happened without the State's assistance. The additional four programs included in HUD allocation methodology for unmet needs assessment are federal initiatives specific to Superstorm Sandy:

- USACE Infrastructure Resilience projects;
- FHWA Sandy Recovery Grants;
- FTA Transit Emergency Relief projects; and
- USDA Emergency Watershed Repair Program data (extracted in May 2014): In addition to these three programs, the October 16, 2014 Federal Register Notice indicated that HUD also estimated unmet needs repair calculations using the USDA Emergency Watershed Repair Program. The State contacted the applicants to this program to also estimate unmet needs.

New York State Methodology:

In most cases, the programs mentioned above have match requirements that can be paid for with CDBG-DR funds. However, as highlighted in APA6, this does not account for the full gap State agencies and other stakeholders reported necessary to repair damaged transportation systems, energy infrastructure, water treatment facilities, community buildings, and other critical repairs. It also does not take full account of hazard mitigation projects related to damaged infrastructure needed to protect recovery-related investments against future hazards. The State's estimate of unmet needs accounts for data collected from State agencies about the needs beyond the match requirements.

The State only funds projects that address a recovery need arising from one of the declared disasters, meet a CDBG national objective, and constitute an eligible CDBG activity. Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee caused unforeseen damages to major infrastructure and equipment throughout the State impacting both State residents and physical geography. To safeguard federal recovery dollars invested in New York to repair these systems, the State, in collaboration with transit agencies, adjacent states, and

federal partners, plans to repair, rebuild, and restore these assets to their pre-storm condition. When possible, collaborators will put mitigation actions in place that make these assets more resilient to future storm events, safeguarding lives, and communities in the process.

To quantify the broader estimate of New York State's unmet needs, the State engaged in extensive consultations with various stakeholders throughout the impacted disaster areas. The estimated remaining unmet needs are derived from these consultations as well as funding gaps in existing programs identified by GOSR staff involved in assessing reconstruction and resilience efforts. In addition to the data sources outlined above, the State's broader estimate of unmet needs includes, *inter alia*, currently unfunded elements or projects in the following programs and areas:

- Hazard Mitigation Grant Program (applications from counties with disaster declarations);
- Unfunded portions of the Rebuild By Design Program;
- "Proposed" and "Featured" Projects arising from the Community Reconstruction Program (Round 1) without identified funding sources;
- Storm Mitigation Loan Program (SMLP) administered by the Environmental Facilities Corporation (EFC) as part of the Clean Water State Revolving Fund (CWSRF).

Where relevant, the broader unmet needs estimates that make up the New York State methodology are outlined throughout the infrastructure section.

This infrastructure section is outlined as follows: first, each of the unmet needs is calculated using the latest HUD allocation methodology; second, the analysis outlines other sources of unmet needs that the State has identified; third and finally, the analysis outlines the unmet need arising from the RBD projects outlined in the October 16th 2014 Federal Register Notice.

FEMA Public Assistance

The FEMA PA Program is designed to assist communities in repairing or rebuilding damaged public facilities and infrastructure after a Presidentially-declared national disaster and to implement resiliency measures to safeguard these facilities against future storm events. The Program is categorized into seven project types, as follows:

Category A: Debris Removal - Clearance, removal, and/or disposal of items such as trees, woody debris, sand, mud, silt, gravel, building components, wreckage, vehicles, and personal property.

Category B: Emergency Protective Measures - Actions taken by applicants before, during, and after a disaster to save lives, protect public health and safety, and prevent damage to improved public and private property.

Category C: Roads and Bridges - Repair of roads, bridges, and associated features, such as shoulders, ditches, culverts, lighting, and signs.

Category D: Water Control Facilities - Repair of drainage channels, pumping facilities, and some irrigation facilities. Repair of levees, dams, and flood control channels fall under Category D, but the eligibility of these facilities is restricted.

Category E: Buildings and Equipment - Repair or replacement of buildings, including their contents and systems; heavy equipment; and vehicles.

Category F: Utilities - Repair of water treatment and delivery systems; power generation facilities and distribution facilities; sewage collection and treatment facilities; and communications.

Category G: Parks, Recreational Facilities, and Other Facilities - Repair and restoration of parks, playgrounds, pools, cemeteries, mass transit facilities, and beaches. This category also is used for any work or facility that cannot be characterized adequately by Categories A-F.

However, because CDBG-DR funds are dedicated to long-term recovery, HUD assumes Category A and B projects (debris removal and emergency protective measures) have already taken place and therefore are excluded from any unmet needs assessment.[39]

Unmet need is calculated as the cost of damage within Categories C-G, minus other funds received (FEMA-obligated amount, etc.), plus estimated mitigation costs. As outlined in Table 24, the total unmet need associated with the FEMA PA Program is estimated at $2.58 billion, reduced from the $3.38 billion estimate in APA6. In this case, unmet needs are defined as the gap between the sum of FEMA estimated damage minus the funds already obligated with an additional estimate for hazard mitigation. While the estimated damage has increased, as defined by HUD allocation methodology, the amount obligated has also increased significantly from APA6 as projects move through the pipeline.

Table 24: Estimated Unmet Infrastructure Needs – FEMA Public Assistance Projects (in Millions)

Damage Category	Estimated Damage	Amount Obligated	Gap	Plus Mitigation	HUD Allocation Methodology: Unmet Need
Roads and Bridges (C)	$346.91	$273.57	$73.33	$79.68	$153.01
Water Control Facilities (D)	$84.40	$63.67	$20.73	$24.58	$45.31
Public Buildings (E)	$1,641.87	$1,453.26	$188.61	$667.54	$856.15
Public Utilities (F)	$2,488.04	$2,210.10	$277.93	$1,178.95	$1,456.88
Recreational (G)	$248.89	$216.79	$32.09	$41.03	$73.12
Total	**$4,810.11**	**$4,217.41**	**$592.70**	**$1,991.77**	**$2,584.47**

Source: FEMA PA Data effective December, 2014; these data include the 30% hazard mitigation factor for Hurricane Irene and Lee but use data Mitigation data from the FEMA-PA worksheet database for Hurricane Sandy. This is done because (1) the data are more complete for Sandy and (2) there are a number of large projects present that would be underestimated in cost if the standard 30% factor was applied.

Three areas of critical infrastructure bore the greatest impact from Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy: public transportation facilities, energy systems, and wastewater management.

As of the end of State Fiscal Year 2016, the State has reimbursed $105.46 million in local match payments for FEMA PA to municipalities and other entities impacted by eligible storms. As of November 2016, the State plans to reimburse local match payments for projects that are documented to meet the LMI national objective in addition to commitments identified in agreements.

Transportation - FTA

New York's transportation infrastructure is renowned throughout the world and is among the most complex and heavily used in the nation. Its airports, train stations, rail lines, road systems, and tunnels drive a large percentage of the nation's economy and almost all rank among the largest systems in the country. New York's economy is fundamentally tied to its infrastructure and most forms of New York's transportation infrastructure were significantly damaged by the storms. New York's train and light rail system provide daily benefits to residents of the tristate area, beyond those who commute and work in New York City. New York State's airports are among the busiest in the world and act as key national and international gateways. The rail system, located both above and below ground, has tunnels. Elevated rail systems and stations all of which were among the hardest hit infrastructure components. The State is working with FEMA, DOT-FHWA, and DOT-FTA to ensure the rail system and its related components are rebuilt to pre-storm conditions at a minimum and, wherever possible, are rebuilt more resilient and less likely to fail in future events.

New York's public transportation system is operated by revenue generating public authorities, the Metropolitan Transit Authority (MTA) and the Port Authority of New York and New Jersey, (PANYNJ), and the Long Island Railroad (LIRR) which provides commuter service to Long Island suffered significant

damage during Superstorm Sandy. This included flooding of facilities and equipment and damage to critical operating systems. Additionally, the Superstorm illustrated the necessity of rebuilding systems in a more resilient manner, mitigating against future damage.

FTA received $10.9 billion to repair areas impacted by Superstorm Sandy[40] and has allocated $5.65 billion to assist in rebuilding public transit systems.[41] Similar to the other federal programs, there is a local match requirement for this program; it is assumed to be 10%. As per HUD's allocation methodology, this local match is considered to be the unmet needs arising from this Program. Based on Agency information as of December 2014, total allocated FTA Emergency Relief (FTA-ER) funds amounted to $3.79 billion. This is equivalent to a local share (and unmet need) of $379.5 million (Table 25); an increase of almost $40 million over the estimate in APA6.

Table 25: Federal Transit Administration Emergency Relief Project Allocation (in Millions)

	Damage	Mitigation	Total Costs	HUD Allocation Methodology: Unmet Need (10% Local Cost Share)
Statewide	$2,896.8	$897.8	$3,794.6	$379.5

Source: Federal Transit Administration Emergency Relief Projects, effective December, 2014

The FTA also made awards through their competitive grant program. Thus, the State includes the remaining repair, resiliency, and mitigation needs of the MTA and PANYNJ remaining after those awards. For the MTA, an analysis of the broader unmet needs of the MTA indicates that documented repair and resiliency needs exceed $9 billion dollars. After deducting funding from the FTA (both through the FTA-ER Program and the FTA-ER competition grant program) the remaining unmet need is in excess of $4 billion.

Resiliency Needs and Requirements and Local Cost Share for the MTA and PANYNJ

The requirements of the November 18, 2013 and October 16, 2014 Federal Register Notices call for the State to ensure that a portion of its allocation is used to address resiliency and local cost share requirements for damage to the MTA in New York City and the PANYNJ or demonstrate that such resiliency needs and local cost share has otherwise been met. After conducting outreach and consultations with the MTA and PANYNJ, the State obtained letters from each Authority indicating the MTA and PANYNJ compliance with cost share requirements for the Public Assistance Program. As such, the State determines that their resiliency needs are currently being otherwise met. The State continues to work with the MTA and PANYNJ regarding the FTA competitive grant program so additional assistance for these Authorities is secured. At this time, the State is also working with the MTA and PANYNJ to ensure match funding needed for FTA projects are secured. If FTA approved awards do not fund all required projects resulting in an unmet need, the State will work with these Authorities to identify non-CDBG-DR funding mechanisms to address these unmet needs. Given the size and scope of damages impacting the MTA rail system, including the Long Island Railroad and Metro North rail systems, these unmet needs are anticipated to be beyond the State's current CDBG-DR allocation. The State will continue to work with federal, State, and city partners to ensure the recovery of the region's transportation assets.

Transportation - FHWA

The Federal Highway Administration (FHWA) administers the Emergency Relief Program to assist communities with repairing roads and bridges funded with federal aid. The Emergency Relief Program provides assistance for most public roads, except those functionally classified as rural or minor collector routes.

The highways are excluded from FEMA PA Program because they are under the authority of the FHWA. As a result, FHWA is responsible for funding the repair of these highways. The FHWA Emergency Relief Program also requires a local match for all projects. This Program's match requirement is 20%. CDBG-DR is eligible to contribute towards this match – this local match is the unmet need as defined by the HUD methodology. As of December 2014, the eligible match amounted to $59.4 million (Table 26); an increase

of approximately $20 million over APA6, as additional projects were approved. However, the FHWA Program identified over $657 million in emergency and permanent damage arising from the storms. The $297.1 million highlighted below - along with the local match - represents only the total dollar amount obligated by the FHWA to date. As such, the unmet need is likely to increase.

Table 26: Federal Highway Administration Emergency Relief Projects (in Millions)

	Obligated	HUD Allocation Methodology: Unmet Need (Local Cost Share 20%)
FHWA Emergency Relief	**$297.1**	**$59.4**

Source: FHWA Emergency Relief projects, effective December, 2014

Energy Systems

Superstorm Sandy caused widespread damage to the publicly operated utility systems and revealed the vulnerability of the electric grid. Electricity is a necessary and critical component of community recovery, the State as a result decided to assist eligible public utilities address repair, recovery and resilience projects that are needed to restore power to storm impacted areas and are eligible to receive FEMA funds. This includes the Long Island Power Authority (LIPA) which provides power to at least 800,000 households on Long Island. LIPA provides electric service to more than 1.1 million customers in Nassau and Suffolk counties and the Rockaway Peninsula in Queens. Superstorm Sandy left tens of thousands of those customers without power for weeks and followed on the heels of Hurricane Irene which left similar power outages. All 12 of LIPA's substations on the South Shore of Long Island sustained some degree of flood damage following Sandy.

After Superstorm Sandy, LIPA, a public authority, began working with FEMA to address the substantial restoration and resilience efforts (e.g. storm hardening measures, including installation of flood prevention barriers, elevation of equipment and adjustments to switching systems etc.) that would be needed to restore the grid and make the system less vulnerable to future events. The State, through GOSR, has provided $90.5 million to assist LIPA address matching requirements for restoration related costs. These will be applied to both the Hurricane Irene and Superstorm Sandy $1.4 billion Public Assistance awards. The match provided will be used to address post storm restoration activities to repair substations and electronic distribution systems. Although there are additional unmet needs associated with LIPA, the State does not intend to make any further match payments associated with this entity. Therefore, the LIPA budget has been reduced by $17 million and reallocated to address other unmet needs.

Wastewater Systems

In Suffolk County, over 70% of the wastewater is managed through on-site disposal systems. Many homes in the County have on-site systems which are located only a short depth to groundwater, and are compromised during flood events. This allows effluent to enter groundwater and surface waters. Even under normal conditions, on-site septic systems do not treat nitrogen effectively, leading large quantities of nitrogen-enriched effluent to flow into the County's groundwater, which then travels to surface waters or infiltrates drinking water aquifers.[42] In January 2014, Suffolk County released an executive summary of its Comprehensive Water Resources Management Plan Report.[43] The State has identified a project cost of $388.5 million for the Suffolk County Coastal Resiliency and Water Quality Improvement Initiative which proposes to extend sewers in Suffolk County in four areas, advanced by the County. The State initially identified up to $300 million in CBDG-DR funding and $83 million to be financed through low-interest loans from the Clean Water State Revolving Fund administered by the New York State Environmental Facilities Corporation (EFC) and the New York State Department of Environmental Conservation (NYSDEC). Subsequently, the amount of CDBG-DR funding for the Initiative changed to account for new sources including using FEMA Hazard Mitigation Grant Program (HMGP), New York State Empire State Development (ESD) and New York State Environmental Facilities Corporation (EFC) Clean Water State

Revolving Funds. With these additional resources identified, the total amount of CDBG-DR funds associated with the Initiative is now $66,437,463 and it remains a covered project.

The Suffolk County Coastal Resiliency and Water Quality Improvement Initiative is a major step forward in addressing an unmet recovery need for the County. The Initiative will provide sewage systems that will lead to improvements to public health and water quality, and over time will allow wetland and marshland areas to be restored along the south shore of Suffolk County, leading to more natural storm resilient measures that will assist communities. There are over 53,000 unsewered parcels in the Great South Bay watershed; the Initiative proposes to sewer over 8,000 of these parcels. In unsewered areas, flooding from Superstorm Sandy caused significant but unquantifiable damages. For instance, sewage overflows from residential cesspools introduced untreated materials into drinking water systems and water bodies, causing harm to public health and environmental assets. In addition, infiltration of seawater damaged residential septic tanks and cesspools and will cause corrosion and increasing risk of failure of septic systems and cesspools over time.

United States Army Corps of Engineers (USACE)

In its allocation methodology, HUD also includes USACE projects for Sandy Infrastructure Resilience Coordination. These projects require large local matches; however, for the purposes of the allocation methodology, only $250,000 of CDBG-DR funds can be applied to the match for each project and are counted towards unmet need for infrastructure. Based on the projects listed as of December 2014, there is a need for $2,500,000 in CDBG-DR funds to be applied to the local match. The qualified match requirement has fallen by $250,000 since APA6. However, the overall estimated project cost for these projects has increased from $523 million to over $660 million, requiring a local match of $226 million (Table 27). This represents an additional $47 million in local match funds over APA6 ($179 million).

Table 27: Estimated Unmet Need for U.S. Army Corps of Engineers Sandy Infrastructure Resilience Projects (in Millions)

Project Name	Estimated Project Cost	Local Match Requirement	CDBG Qualified Match (Unmet Need)
Total	**$660.37**	**$226.37**	**$2.50**

Source: U.S. Army Corps of Engineers Sandy-Related Recovery Projects, effective December, 2014

Beyond the estimates for these 10 USACE projects, there were 19 projects that were authorized, unconstructed, or ongoing. In total, these 29 projects have a total project cost of over $4.98 billion, requiring an overall local match of $226 million. This is much larger than the CDBG-DR qualified match defined above. The State includes this larger match figure in its estimate of broader unmet needs beyond those identified by HUD allocation methodology.

USDA Emergency Watershed Repair Program

HUD estimated unmet needs repair calculations using USDA Emergency Watershed Repair Program data extracted in May 2014. GOSR, on behalf of the State, was one of a number of applicants for this Program in efforts to help communities address watershed impairments that could pose imminent threats to lives and property. Other applications came from Suffolk County, the Town of East Hampton, and the Peconic Land Trust.

The USDA received over 179 applications totaling $96.61 million in requested funds from over two phases of the Program. Of the 179 applications, 131 were selected for tentative funding, amounting to approximately $81 million. The USDA and the State are continuing to work with governmental entities and property owners to further the Program and spread information to other potentially interested entities. Initial outreach at the outset of the Program identified unmet needs well in excess of the subsequently applied for funds. As such, the gap in funding of $15.61 million represents a very conservative figure for unmet repair needs associated with watershed repair. Given further time and effort, the State expects to identify significantly larger sources of unmet repair need.[44]

Infrastructure Unmet Needs Summary

HUD's methodology for unmet need calculation restricts these needs to federally-funded projects already accounted for through FEMA, USACE, FTA, FHWA, and USDA. The methodology also only counts local match requirements from USACE, FTA and FHWA as gap. Using this calculation, the unmet needs for infrastructure is $1.94 billion after budgeted State interventions. However, the State believes that this does not account for the full gap. State agencies have reported repair to damaged transportation systems, energy infrastructure, water treatment facilities, community buildings, and other critical repairs beyond what is accounted in the HUD allocation methodology. It also does not take full account of the hazard mitigation projects related to damaged infrastructure needed to protect recovery-related investments against future hazards. Based on information collected from State agencies, the State's estimate of unmet needs includes an additional $11 billion of recovery-related infrastructure projects. Therefore, the State estimates that the full unmet need for infrastructure exceeds $12 billion based on current information.

As of APA 20, the State is budgeting $1.16 billion to address the unmet needs in infrastructure and match programs. This represents a reduction of $390 million since APA14. The State is focusing its efforts on reallocating these funds toward programs and projects that meet the LMI national objective.

Rebuild By Design Unmet Needs

As noted in the October 16, 2014, Federal Register Notice, HUD allocated a portion of the funds for each awarded RBD project – Living Breakwaters: Tottenville Pilot and Living with the Bay: Slow Streams. The Notice requires grantees to identify any potential gap or shortfall in the RBD funding and provide a strategy and description of funds anticipated to be generated or secured in leveraging the CDBG-DR allocation for RBD project completion as well as any additional CDBG-DR funds the grantee anticipates dedicating to the RBD project. Based on the estimated budgets provided in the RBD plans, the State identified a total preliminary funding gap of $13.1 million for the Living Breakwaters project on Staten Island. The State is currently undergoing a two pronged approach to review and fill this gap.

First, the State is analyzing the budgets provided by the RBD teams and calculating any additional planning and program delivery required to fully execute the project and meet the requirements set out by HUD. The planning and scoping through the environmental review process will help shape the needs of the project not outlined in the current plan.

Once a firm cost for the project is clear, the State will begin to execute the strategy outlined in this Action Plan to leverage funds to fill the gap left in the budget. As the State moves through the leveraging process, the State will reassess the project as needed to identify areas where funding is secured and where funding gaps still remain. The State will work together with stakeholders and federal partners to ensure the strategies in place lead to successful implementation of the project.

Having passed the 30% design phase, the Living Breakwaters project's total budget is now estimated to cost $75.5 million, resulting in a funding gap of $15.5 million.

The State has identified no unmet need for Living with the Bay. As the Living with the Bay project proceeds through the design phase, the State will monitor the project's budget to reassess unmet needs. The State will undertake the leveraging process outlined in this Action Plan for any unmet needs identified in the future.

As a result, the State includes a $15.5 million dollar gap in its broader estimate of remaining infrastructure needs (Table 28).

Table 28: Unmet Needs for the State's RBD Projects

RBD Project	Total Project Cost	October 16th 2014 Allocation	Unmet Need
Living with the Bay	$125.0	$125.0	$0
Living Breakwaters	$75.5	$60.0	$15.5
Total	**$200.5**	**$185.0**	**$15.5**

Source: Programmatic Data

Mitigation Needs

Much of the damage and interruption of basic services like power and clean water caused by Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy could have been avoided with mitigation measures. These measures include elevating electrical systems, shoring structures, coastal restoration, relocations of repetitive flood loss properties, and flood control. The true cost of mitigation is still unknown, but HUD estimates that mitigation costs will be roughly equivalent to 30% of damage costs for homes, businesses, and infrastructure with major to severe damage. These costs are reflected in the unmet needs figures.

Housing and Small Business Construction Cost Adjustment

In its October 16, 2014 Federal Register Notice, HUD noted that its staff had observed that higher construction costs in New York and New Jersey were not being adequately accounted for in its base allocation methodology. As a result, HUD used the same Marshall & Swift regional cost adjustment multipliers used for HUD's annual calculation of Total Development Costs for HUD's public housing repair programs. For New York State the multiplier is 1.44 for housing and small business. In the summary of estimated remaining unmet needs, New York State also includes estimates of unmet needs, including the multiplier applied by HUD, for the housing and small business estimates based on HUD methodology. These are presented below.

Impact and Unmet Needs Conclusion

Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy caused unprecedented damage to New York State, exposing the risks coastal and river communities face from future storm events. The Table below presents New York State's estimated unmet need as outlined in APA26 Discounting the HUD construction cost multiplier, estimated unmet needs decreased (using HUD allocation methodology) from $7.98 billion to $3.51 billion. If the high construction cost multiplier is factored in, unmet needs are estimated at $4.19 billion, an increase that reflects the likelihood that reconstruction costs will be higher in New York State than elsewhere in the country. However, these figures do not account for infrastructure needs not currently funded by federal programs; this figure is likely to continue to rise as the State identifies more needs and as more communities assess their needed resiliency projects. For example, Round I of the NYRCR Program Planning Committees developed over $883 million in priority projects ("Proposed Projects") proposed for CDBG-DR funding. CDBG-DR funding has only been identified for $537 million, leaving a gap of over $346 million, a figure included in the State's broader assessment of infrastructure unmet needs. In addition to the priority projects proposed, NYRCR Planning Committees selected 275 additional unfunded projects ("Featured Projects"), estimated to cost roughly $1.6 billion. As of now, no funding sources have been identified for these projects.

Based on the State's updated assessment of its unmet needs, there exists $15.15 billion of unmet need, assuming the HUD construction cost multiplier is applied to housing and small business. As noted above, many infrastructure projects may not be eligible for CDBG-DR funding, but have been identified nonetheless by State agencies as an unmet recovery-related need. The State continues to assess these unmet needs for CDBG–DR eligibility. Using both the HUD allocation methodology and the State's additional data sources highlights that, despite the progress made to date, there remains large unmet needs arising from the storms (Table 29). This is true even when the proposed CDBG-DR allocations to New York State are accounted for. The largest unmet need remains in the infrastructure sector – $1.9 billion when using HUD allocation methodology and $12.9 billion when all identified unmet needs in this sector are accounted for. Even when HUD's high construction cost multiplier for housing and small business repair is applied, this latter number accounts for over 80% of all unmet needs in the State.

Table 29: Estimate of Unmet Needs for Hurricane Irene, Tropical Storm Lee and Superstorm Sandy (excluding New York City) (in Millions)

	APA26		APA26 (w/ HUD Construction Cost Multiplier)	
	Unmet Need (Based on HUD Allocation Methodology)	**Unmet Need (Based on NYS Methodology)**	**Unmet Need (Based on HUD Allocation Methodology)**	**Unmet Need (Based on NYS Methodology)**
Housing	$1,097	$1,097	$1,580	$1,580
Economic Development	$469	$469	$675	$675
Infrastructure	$1,939	$12,892	$1,939	$12,892
Total	**489**	**$14,458**	**$4,194**	**$15,147**

Source: GOSR Programmatic Data (November 2016). HUD high construction cost multiplier of 1.44 applied after state interventions for housing and economic development.

Comprehensive Risk Analysis

This section has been updated to reflect recent State legislation.

In September 2014, Governor Cuomo signed the Community Risk and Resiliency Act (CRRA) into law. The Act bolsters New York State's preparedness for the effects of climate change and helps protect communities against severe weather and sea level rise. It contains a comprehensive package of actions to help strengthen and reimagine the State's infrastructure with the next storm in mind. The Act furthers the goals of the New York State 2100 Commission, appointed by Governor Cuomo after Superstorm Sandy. The 2100 Commission offered recommendations for making critical infrastructure systems more resilient, offering recommendations in the areas of energy, transportation, land use, insurance, and infrastructure financing.

CRRA requires State agencies to consider future physical climate risks caused by storm surges, sea level rise, or flooding in certain permitting, funding, and regulatory decisions. In addition, it directs the NYSDEC and the Department of State (DOS) to prepare model local laws to help communities incorporate measures related to physical climate risks into local laws, as well as provide guidance on the use of resiliency measures that utilize natural resources and natural processes to reduce risk. It also requires NYSDEC to adopt regulations by January 1, 2016 establishing science-based State sea level rise projections, and to update such regulations every five years. As a whole, the Act enhances the role of State agencies in helping communities in vulnerable coastal areas and across the State implement long-term, science-based resiliency strategies. GOSR will coordinate with State partner agencies in implementing the provisions of the Act.

The State's overall response to infrastructure resilience is driven by the State's Hazard Mitigation Plan. The 2014 Hazard Mitigation Plan identifies natural, technological, and human-caused hazards which have impacted, or have the potential to impact, New York State. It then focuses on 15 natural hazards considered most likely to affect New York residents. The plan meets the requirement that a state receiving FEMA Hazard Mitigation Grant Program (HMGP) assistance have an approved mitigation plan containing a broad risk assessment. The Statewide risk assessment characterizes and analyzes hazards and risks, allows the State to determine priorities for implementing mitigation measures, and provides jurisdictions with technical and financial support to develop more detailed local risk and vulnerability assessments. It includes:

- An overview of the location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events.
- A description of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State-owned critical or operated facilities located in the identified hazard areas are also addressed.
- An overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment, and estimates the potential dollar losses to State-owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas.

To complement the State-wide Hazard Mitigation Plan, GOSR enlisted the assistance of the New York State Resiliency Institute for Storms and Emergencies (RISE) and the DOS. These partners developed a science-based comprehensive risk analysis to guide the State in determining which infrastructure projects to implement. Led by Stony Brook University and NYU Polytechnic, RISE is a consortium of New York institutions of higher education that acts as a hub for cutting-edge research on climate science, storm preparedness, and mitigation. Initial RISE work focused on Nassau and Suffolk Counties.

To the extent feasible and appropriate, projects are reviewed for their social impact, with a focus on vulnerable populations. The State has contracts for such research in place with The Nelson A. Rockefeller Institute of Government at the State University of New York.

The leadership of the RISE consortium and scientific team were intimately involved with developing the Intergovernmental Panel on Climate Change (IPCC) and the New York City Panel on Climate Change (NPCC) processes. At the request of the State, RISE agreed to undertake additional research activity extending the climate forecasting developed for New York City to inform the State's comprehensive risk analysis. Drawing on their experience with the NPCC efforts, RISE replicated the methodology used in the development of climate change projections for New York City and incorporated it into the City's post-Sandy Special Initiative for Rebuilding and Resiliency (SIRR) report. For the State, RISE scientists analyzed forecasts of coastal and inland flooding from storm surge and sea level rise and severe weather events, and used advanced climate models to predict sea level rise and future storm intensity.

RISE developed a science-based climate forecast model that projects future changes of temperature, precipitation, and sea level rise using model simulations from global general circulation models (GCMs). These simulations are obtained from the Coupled Model Inter-comparison Project Version 5 (CMIP5), the basis for the Fifty Assessment (AR5) by the IPCC and NPCC. These models calculate atmospheric winds, temperature, air pressure, precipitation, atmospheric radiation, clouds, ocean currents and temperature, salinity, land surface temperature, soil moisture, and a suite of other meteorological variables. These models use the seasonal variation of solar radiation, surface topography and vegetation, emissions of greenhouse gases and aerosols as input to calculate the evolution of the global climate. The risk assessment includes future coastal and inter-coastal flood risk maps under different scenarios of climate change, over different time periods (2020-2030, 2050-2060, and 2090-2100). Given uncertainties inherent in complex climate modeling, RISE developed ensemble forecasting techniques which compare and integrate multiple forecast models. The State makes RISE flood maps, which reflect the latest information on past climate and projections of future weather events, available to the public.

The RISE analysis considers a broad range of information and best available data, forward-looking analyses of risks to infrastructure sectors, including climate change and other hazards. The State uses this methodology to analyze and guide the selection of infrastructure investment options that maximize risk reduction for community-based planning and State prioritized project proposals. However, when a prioritized recovery need is identified, the State may approve particular infrastructure despite the project having a lower risk reduction value.

For considering specific projects, GOSR has two complementary risk assessments. The first is for projects advanced within the NYRCR program, a grass-roots planning process. The second is for covered projects.

For the NYRCR Program, the State assesses risk using a model created by the DOS. The model incorporates predictions of sea level rise and the likelihood of different storm hazard levels, and analyzes the likelihood that an infrastructure asset will be exposed to various levels of storm hazards in the one-hundred year planning time frame.

Community plans reflecting the application of the model are posted for public review on the GOSR website. They illustrate the model's utility in a wide range of project and program settings.

The exposure score is calculated by using location-specific information of an infrastructure asset and the likelihood that it will be impacted when a hazard type occurs. Factors affecting exposure include elevation, soil types, vegetation, drainage, and engineering design. These factors are obtained from information systems such as building design standards and the ArcGIS in the Sea Level Rise Tool for Sandy Recovery. When a project is spread across multiple locations, the infrastructure at each location is calculated separately and aggregated.

For infrastructure projects undertaken outside the NYRCR Program, including Covered Projects, the State assesses risk using an existing federal risk assessment framework and information developed by RISE. At the State's direction, RISE provides analysis on risk in areas that would affect recovery and specific projects proposed for CDBG-DR funding. Most covered projects under consideration are large infrastructure projects where the State provides a 10-25% of the cost as a non-federal match to another federal source.

FEMA, for instance, conducts a risk assessment in allocating hazard mitigation resources including Section 404 and 406 mitigation. The State relies on FEMA's risk assessment of these projects, and advocates for maximum Section 406 mitigation to address resiliency within the FEMA-PA program. The State also reviews benefit cost analyses developed for these projects. If a Covered Project arises within the NYRCR Program, risk analysis using the DOS model will be supplemented with information developed by RISE.

In addition to any federal risk assessment, GOSR reviews information provided by RISE. At GOSR's request, RISE has developed an analysis based on their NYC work that analyzes the risk factors in a geographic location at the county level. The State uses the RISE maps, models, and additional analysis resulting from the State's Hazard Mitigation Plan, qualitative data, and technical consultants to identify vulnerabilities of critical infrastructure, public facilities, and systems including energy, communications, transportation, water and wastewater management systems, coastal protection, and green infrastructure. In addition, RISE evaluates, and to the extent relevant, incorporates risk assessment data developed as part of the RBD competition and project implementation.

To the extent feasible and practical, the risk model provides a numerical risk score for each of the five risk classes: public health, public safety, economic impacts, social impacts, and environmental impacts.

The State considers the RISE risk reduction ratio in making investment decisions. Risk assessments employed by other State agencies are also considered where available. In some cases, the risk reduction method does not fully capture the importance of a project to particular communities. Projects determined to be critical community assets through the NYRCR or State priorities are categorized separately and evaluated using relevant information from community planning processes, State and local agency data/information, and public sources.

HUD also suggests that grantees should consider the costs and benefits of alternative investment strategies. To the extent practicable, New York State develops a cost-benefit analysis for each project based on the benefit normalized to the investment cost. The benefit is calculated from the anticipated reduction of risk in the different benefit classes: economic, social, environmental, public health and safety assets.

Overview of Method of Distribution and Allocation of Funds

Funds will be utilized for eligible disaster related activities to support housing repair, rebuilding, mitigation, economic revitalization, community planning, and infrastructure repair and improvements related to Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. GOSR will use discretion when deciding the eligibility of Programs for CDBG-DR funding under Major Declared Disasters DR-1957, DR-1993, DR-4111, and DR-4129.

Following consultation with local governments, the State opts to implement most programs in accordance with a waiver of 42 U.S.C.5306, requiring states under the standard CDBG Program to grant funds to units of local governments. As such, the State will implement most programs directly. In some cases, the State will also work directly with local governments and nonprofits in the implementation of its Programs.

Each Program area within this Action Plan describes the details and method of fund distribution including eligibility, application instructions, use of funds, time frames for funding, and terms of assistance.

The method of distribution is subject to change in order to ensure an efficient and timely distribution and expenditure of funds. Any such changes will be subject to the terms of HUD's APA process as detailed in the most recent Federal Register Notice (FR 5696-N-06).

HUD allows that a grantee may expend up to 5% of the total CDBG-DR grant on general administration costs.

Proposed Allocation of Funds

Program	Allocation
Total of All Programs	**$4,501,382,000**
Housing	**$2,872,707,313**
NY Rising Homeowner Recovery Program	**$1,857,577,424**
NY Rising Condominium & Cooperative Program	**$25,500,000**
Interim Mortgage Assistance Prorgam	**$72,000,000**
NY Rising Buyout and Acquisition Program	**$656,707,682**
NY Rising Rental Buildings Recovery Program	**$234,675,000**
Rental Properties	$129,200,000
Multi-Family Affordable Housing	$105,475,000
Public Housing Assistance Relief Program	**$19,247,207**
Manufactured Home Community Resiliency Program	**$7,000,000**
Economic Development	**$120,277,793**
Small Business Grants and Loans	**$90,600,000**
Business Mentoring Program	**$400,000**
Tourism and Marketing	**$29,277,793**
Community Reconstruction	**$537,432,794**
NY Rising Community Reconstruction Program	**$537,432,794**
Infrastructure and Match	**$565,120,000**
Local Government, Critical Infrastructure and Non-federal Share Match Program	**$562,420,000**
Resiliency Institute for Storms and Emergencies	**$2,700,000**
Rebuild by Design	**$185,000,000**
Living with the Bay: Slow Streams	**$125,000,000**
Living Breakwaters: Tottenville Pilot	**$60,000,000**
Administration & Planning	**$220,844,100**

Proposed Use of Funds

This section details the Programs that are currently in place as well as new Programs implemented by GOSR. Programs and budgets are adjusted herein based on the State's revised impact and unmet needs assessment for Housing, Economic Development, and Infrastructure Programs. Additionally, this Action Plan includes the Rebuild by Design projects. Overall, the allocations are largely reflective of the estimated unmet needs.

The third allocation of CDBG-DR funds was focused on the Infrastructure Program (including both the NYRCR program and RBD, outlined in APA8). With the third allocation, the budget allocated approximately 49% of CDBG-DR funds to this sector. Housing programs accounted for approximately 51% of the unmet need in the State, pre-allocation of CDBG-DR funds; increasing to 52% with the latest APA12 estimates. Therefore, the State is proposing to increase the budget allocation of CDBG-DR funds dedicated towards housing programs from 46% to 55% of total allocated funds (excluding administration and planning funds). In absolute terms, Economic Development has the smallest remaining unmet needs. This is reflected in the proposed use of fund where approximately 3%of funds are allocated to these Programs. Unmet needs and program implementation will continue to be assessed as Programs continue to be implemented. The State remains committed to both homeowners and renters and is working diligently in both Programs to address the needs of the community as they recover. The State will continue to make adjustments as needed in further APAs, to ensure that, to the extent feasible, unmet needs of these communities are addressed.

While the State continues to have outstanding unmet needs, its current resources are allocated to address the priorities of the State's communities in repairing and hardening storm-damaged residential units, creating additional affordable housing, reviving businesses, and rebuilding critical infrastructure throughout the State.

Table 30: Percentage Of Funds Allocated By Activity Relative To Unmet Need In Millions

	Approved Allocation (HUD Allocation Methodology)			
	Unmet Need*	% of Unmet Need	Distribution of Funds	% of Proposed Allocation
Housing	**$3,969.31**	**52%**	**$2,872.71**	**67%**
Economic Development	**$589.50**	**8%**	**$120.28**	**3%**
Infrastructure	**$3,041.47**	**40%**	**$1,297.55**	**30%**
Total	**$7,600.28**	**100%**	**$4,290.54**	**100%**

Note: The total above does not include Administration of $220,844,100. For the purpose of this analysis, the Community Reconstruction Program and Rebuild by Design allocation is included with the Infrastructure program. While the Distribution of CDBG-DR funds for Infrastructure is reduced here, this is because these funds have been replaced by other funds identified by the State of New York.
* Unmet Needs estimates exclude allocations of CDBG-DR funding and Program Income

NY Rising Housing Recovery Programs

The State initially allocated $838,000,000 to a slate of Housing Recovery Programs including homeowner reimbursement, mitigation, repair and reconstruction, and acquisitions and buyouts. The current allocation is $2,872,707,313.

In adherence to HUD's guidelines, all reconstructed and substantially damaged/substantially improved residential properties that are located in a 100-year floodplain must be elevated pursuant to New York State Building Code minimum elevation requirements, which exceeds HUD mandated minimum elevation standards. All reconstructed and substantially damaged/substantially improved residential properties must also incorporate Green Building Standards through the New York State Energy Conservation Construction Code of 2010. Due to the highly regulated nature of construction activities in New York State, compliance with the aforementioned requirements is determined through inspection and approval by the local code official that is vested with the authority to determine compliance with local and State requirements.

The State will also institute controls to conservatively identify substantially damaged or potential substantially approved homes, and require that these homes have been rehabilitated to the satisfaction of the appropriate local floodplain official, as evidenced by appropriate documentation showing compliance with applicable requirements. Documented substantially damaged or improved homes will not be closed out of the Program until they meet this requirement.

Residential properties that are not reconstructed or substantially damaged/substantially improved will receive a mandatory prospective scope of work that incorporates the HUD Green Building Retrofit Checklist to the extent feasible.

In addition, all Applicants deemed eligible for the Housing Programs will have an opportunity to improve the resiliency of their storm-damaged property through elevation and/or mitigation efforts where appropriate.

The State is committed to assisting the unmet needs of PHA. As outlined in the unmet needs section of this Action Plan, the State, along with the PHAs and FEMA, are still in the process of assessing their unmet needs. As these needs are identified, the State has committed up to $10 million dollars as outlined in the initial Action Plan to assist these Authorities. The State identified areas in the following programs which are available to address these needs: Multi-Family/Affordable Housing Fund; the State Housing Assistance Relief Program; the Community Reconstruction Program; and the Non-Federal Share Match Program under the Infrastructure Program.

NY Rising Homeowner Recovery Program

The NY Rising Homeowner Recovery Program is now closed to new applications.

Activity Type: Repair, reconstruction, and mitigation of residential owner-occupied structures, and housing incentives

National Objective: Low- to Moderate- Income or Urgent Need

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Activity: Sec. 105 (a) (4) 42 U.S.C. 5305(a)(4); Housing Incentives per FR-5696-N-01 (VI) (B) (29)

Eligible Applicants: This Program is available to owners of one- and two-unit owner-occupied homes, including condominiums, co-ops, and garden apartments, that are located outside of New York City with damage from Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy.

Program Description: The NY Rising Homeowner Recovery Program includes the following components:

- Reimbursement: The Program provides reimbursement for eligible costs incurred by homeowners for completed home repair or reconstruction activities.
- Repair: The Program pays for approved and eligible costs to complete repairs to homes that have not yet been completed.
- Reconstruction: The Program pays for approved and eligible costs of reconstruction when a home is destroyed or determined not feasible to repair.
- Resiliency Measures: Resiliency measures such as home elevation, bulkhead repairs, and other storm mitigating measures, which help minimize future flood damage to storm-damaged Properties, are eligible funding activities.
- Housing Incentives: The Program provides housing Incentives to allow purchase of new manufactured housing units to replace storm-damaged manufactured housing.

The Program covers costs for the repair or replacement of damage to real property including mold remediation, replacement of disaster-impacted non-luxury residential appliances, and environmental and health hazard mitigation costs related to the repair or reconstruction of the disaster-impacted property.

Elevation to New York State Building Code minimum elevation requirements is required for reconstructed or substantially damaged/improved properties located in the 100-year floodplain. For homeowners that are not required to elevate, but who are interested in this protective measure, may opt to elevate their storm-damaged property through the optional elevation component. Optional mitigation measures are available for Applicants who are eligible participants in the NY Rising Housing Recovery Program whether or not they are within the 100-Year Floodplain. Such mitigation measures which include, but are not limited to, the following:

- Elevation of electrical systems and components;
- Securing of fuel tanks;
- Use of flood resistant building materials below base flood elevation (retrofits to be limited in scope to be cost effective;
- Installation of flood vents;
- Installation of backflow valves; and,
- Installation of roof strapping.

Maximum Award: Following the analysis of the needs of the affected communities and the availability of funding, the Program set the following cap amounts and allowances:

- Base Cap**:** The base cap amount for single-family repair and/or reconstruction coverage is $300,000.
- Low- and Moderate- Income Allowance**:** Homeowners who are identified to be low- or moderate-income (total household income is less than or equal to 80% of area median income) will qualify for an increase of $50,000 in the cap amount. ($300,000 Base + $50,000 low- and moderate-income= $350,000 base cap).
- Elevation Allowance: Homeowners with damaged properties within the 100-year floodplain and which are substantially damaged/improved are eligible for up to a $50,000 increase in the base cap amount.

Eligibility Criteria:

- Homes must be the primary residence of the applicant.
- Applicants must have owned the home prior to the disaster event subject to specific exceptions such as the death of the original owner.

- Applicants must complete a process to verify previously received disaster recovery benefits. Unmet need is determined after accounting for all federal, State, local and/or private sources of disaster-related assistance, including, but not limited to, homeowners and/or flood insurance proceeds per the Stafford Act.

In administering this Program, the State provides funding assistance to service providers who provide critical resources necessary for housing recovery. Municipalities are allocated funding to expand code enforcement capacity in order to expedite repair, rebuilding, and reconstruction under the Municipal Support Program. Additionally, legal services are allocated funding to assist low- and moderate- income homeowners and applicants in overcoming storm-related legal obstacles to obtaining necessary recovery assistance under the Legal Services Program. Specific information regarding each Program is outlined below.

Municipal Support Program

Eligible Activity: Public services 105(a)(8)

National Objective: Urgent Need

Budget: $6,000,000 (as part of the Home Repair and Reconstruction Program)

Project Description:

The majority of applicants under the New York State Rising Housing Recovery Program are concentrated in specific counties. The State understands that municipalities within these counties bear part of the costs tied to the rebuilding effort. Further, municipalities may require substantial assistance in their permitting offices in order to process and produce an increased number of inspections and permits. Therefore, New York State developed the Municipal Support Program as part of the NY Rising Housing Recovery Program to provide grant funds for the reimbursement of storm-related costs to municipalities in damaged counties. Reimbursements include, but are not limited to, salaries, permitting costs, and inspection costs as they relate to applicable properties in GOSR's NY Rising Housing Recovery Programs including storm-damaged homes, multi-family buildings, and acquisition or buyout properties. This funding may help eliminate impediments municipalities might face in processing permits and completing inspections that are necessary for both property owner and homeowner recovery projects to proceed.

Legal Services Program

Eligible Activity: Public services 105(a)(8)

National Objective: Low- and Moderate- Income or Urgent Need

Budget: $4,500,000 (as part of the Home Repair and Reconstruction Program)

Program Description: The State has entered into sub-recipient agreements with Hofstra University and New York Legal Assistance Group (NYLAG) to provide pro bono legal services to residents and potential applicants of NY Rising Housing Programs in eligible counties outside of New York City affected by Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy. These entities provide legal counsel and/or representation to storm victims to eliminate barriers for entry into NY Rising Housing Programs and to aid in rebuilding efforts using CDBG-DR funding or other resources. Legal services are provided to residents with storm-related legal issues including but not limited to the following: FEMA benefits, insurance claims, landlord/tenant disputes, eviction, mortgage and foreclosure issues, contractor issues, consumer fraud, real estate issues, and debt/financial and counseling. In addition, legal and business counseling services are provided to small businesses and not-for-profit organizations that suffered storm-related losses including small businesses in planning or start-up stages at the time of Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy.

Both legal assistance sub-recipients place particular emphasis on outreach to immigrant communities, low-

income communities, and other vulnerable populations. The NYLAG Storm Response Unit staff speaks 16 languages and has the ability to arrange translators for additional languages if needed. NYLAG continues to offer services at community outreach events.

Optional Relocation Program

Eligible Activity: 24 CFR 570.606(d)

National Objective: Low- and Moderate- Income or Urgent Need

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Applicants: Eligible applicants of the NY Rising Homeowner Recovery Program whose manufactured home was damaged during Tropical Storm Lee, Hurricane Irene, and/or Superstorm Sandy.

Program description:

The NY Rising Homeowner Recovery Program replaces damaged manufactured homes with a new manufactured home in a location outside of the 100-year floodplain and provides for program-sponsored construction support. In order to meet this Program objective, many applicants, eligible for the replacement of a storm-damaged manufactured home, are in need of additional assistance. Eligible applicants in the NY Rising Homeowner Recovery Program whose manufactured home was damaged may also be eligible for assistance through the Optional Relocation Program. All eligible applications for the Optional Relocation Program may be able to receive one or more of the four benefits outlined below.

The Program has determined that a maximum of 8 months of optional relocation benefits to be necessary and reasonable. Applicants displaced for a period exceeding 8 months may be eligible for additional months of assistance, if determined to be necessary by the Program. As such, applicants to the Program will be eligible for one or more of the following types of relocation assistance:

1. **Relocation Moving Assistance**: Provided for applicants requiring assistance to pay for moving expenses from the damaged property to either a new, reconstructed, or repaired Manufactured Home Unit (MHU), to temporary housing, or both. Moving assistance will be based on the lesser of the actual costs of the move or the moving schedule established by FHWA, the lead agency who sets moving rates to comply with the Uniform Relocation Act (Described in FR44182[45]).
2. **Temporary Lodging Assistance**: Provided for applicants requiring temporary lodging from the time of demolition or the commencement of rehabilitation of the storm-impacted manufactured home to the time where the Program conducts a successful final inspection of the newly installed or rehabilitated MHU. The relocation housing assistance payment will be based on lodging costs incurred, but not to exceed the maximum GSA Per Diem rates for lodging as described in Federal Travel Regulation and Related Files[46] with rates updated on the GSA website[47].
3. **Lot Rental Assistance:** Provided for applicants whose damaged property is in the 100-year floodplain, but whose new manufactured home will be located elsewhere on a lot outside of the floodplain, lease payments for the new lot from the time that the purchase agreement for the new manufactured home has been signed until the time where the Program conducts a successful final inspection of the newly installed or rehabilitated MHU.

Storage Assistance: Provided for applicants whose personal property must be stored during the period of relocation for applicants relocated from their storm-damaged manufactured home or who required relocation for program-sponsored construction work.

NY Rising Housing Flood Insurance Premiums

Activity Type: Repair, reconstruction, and mitigation of residential owner-occupied structures; condominium and cooperative structures; and rental properties

National Objective: Low- and Moderate- Income (LMI)

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Activity: HCD Act Section 105 (a)(4) 42 U.S.C. 5305(a)(4)

Eligible Applicants: LMI recipients of awards in the NY Rising Homeownership Program or the NY Rising Rental Property Program.

Program Description: Applicants to the NY Rising Homeownership Program and the NY Rising Rental Property Program are required to maintain flood insurance to ensure that CDBG-DR assisted properties are protected from future disasters. The initial costs associated with federal flood insurance requirements can be a major obstacle for vulnerable populations served by GOSR's Housing programs. To protect the CDBG-DR investment and to serve the State's most vulnerable applicants, where applicable, GOSR proposes to use a portion of each housing allocation to provide LMI households in these programs with assistance in obtaining required flood insurance. This assistance will cover the costs of initial flood insurance premiums for properties covered by the Flood Disaster Protection Act of 1973, as amended, pursuant to 24 CFR 570.605.

Initial insurance premiums will be provided directly to the insurance provider in exchange for applicants signing a grant agreement which requires the maintenance of hazard and flood insurance in perpetuity, if applicable. The Program will provide flood insurance coverage for up to one year after execution of a final grant agreement.

Eligible Applicants:

- Applicants determined by the program to meet the LMI national objective.
- Applicant must be recipient of CDBG-DR grant funds in the NY Rising Homeownership Program or the NY Rising Rental Property Program.
- Applicant must have received 100% of funding for eligible expenses outlined in an inspection report and completed all repairs identified on the Estimated Cost to Repair (ECR) report.
- Flood insurance assistance will be included in the eligible applicant's award amount and cannot exceed program caps.
- Applicants who have never obtained insurance coverage in the amount to be covered by the CDBG-DR investment.

NY Rising Condominium and Cooperative Program

Activity Type: Repair, reconstruction, and mitigation of residential condominium & cooperative structures.

National Objective: Low- and Moderate- Income or Urgent Need

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Activity: Sec. 105 (a) (4) 42 U.S.C. 5305(a)(4)

Eligible Applicants: This Program is available to Condominium Associations, Cooperative Boards, Condominium Unit Owners, and Cooperative Shareholders whose condominium or cooperative property is located outside of New York City and sustained damage from Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy.

Program Description: The NY Rising Condominium & Cooperative Program includes the following eligible funding activities:

- Reimbursement: The Program provides reimbursement for eligible costs incurred by Condominium Associations/Cooperative Boards and unit owners/shareholders for completed structural repair or reconstruction activities for the Condominium or Cooperative property.

- Repair: The Program pays for approved and eligible costs to complete repairs to Condominium or Cooperative properties that have not yet been completed.
- Resiliency Measures: The Program pays for resiliency measures such as mandatory elevation of the structure when feasible for substantially damaged/improved properties located in the 100-year floodplain, as well as bulkhead repairs and other feasible storm mitigating measures, which help minimize future flood damage to storm-damaged Properties.

Maximum Award: Following the analysis of the needs of the affected communities and the availability of funding, the Program set the following cap amounts and allowances:

- Base Cap**:** The base cap for the total amount for a Condominium Association or Cooperative Board is $5,000,000 which includes an individual unit cap of $300,000. LMI unit increase may raise the base cap over the $5,000,000 threshold.
- Low- and Moderate- Income Allowance**:** Unit owners or shareholders who are identified to be low- or moderate- income (total household income is less than or equal to 80% of area median income) will be deemed low-to-moderate income. Each LMI unit with receive $50,000 increase in award cap.
- Elevation Allowance: Condominium Associations or Cooperative Boards with damaged properties within the 100-year floodplain and which are substantially damaged/improved are required to elevate the structure and, if the elevation is feasible, are eligible for up to a $1,000,000 increase in the base cap amount.

The Program covers costs for the repair or replacement of damage to real property including mold remediation, replacement of disaster-impacted non-luxury residential appliances, and environmental and health hazard mitigation costs related to the repair of the disaster-impacted property.

Optional mitigation measures are available for Applicants who are eligible participants in the NY Rising Condominium & Cooperative Program whether or not they are within the 100-Year Floodplain. Such mitigation measures include, but are not limited to, the following:

- Elevation of electrical systems and components;
- Securing of fuel tanks;
- Use of flood resistant building materials below base flood elevation (retrofits to be limited in scope to be cost effective;
- Installation of flood vents;
- Installation of backflow valves; and,
- Installation of roof strapping.

Eligibility Criteria:

- The applicant will be the primary payee on all flood and other insurance for the areas funded by GOSR. This can be the Condominium Association, Cooperative Board or the unit owner/shareholder.
- The applicant must be responsible for all structural repairs on the areas funded by NY Rising.
- Applicants must complete a process to verify previously received disaster recovery benefits. Unmet need is determined after accounting for all federal, State, local and/or private sources of disaster-related assistance, including, but not limited to, homeowners and/or flood insurance proceeds per the Stafford Act.

Interim Mortgage Assistance Program (IMA)

Activity Type: Homeowner assistance

National Objective: Low- and Moderate- Income or Urgent Need

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Activity: Sec. 105 (a) (8) 42 U.S.C. 5305(a)(8), as amended FR–5696–N–01 (VI) (B) (30)

Program Description: A substantial number of households remain unable to inhabit their primary residences as a result of Hurricane Irene, Tropical Storm Lee and/or Superstorm Sandy. Many of these displaced families are struggling to pay mortgages on damaged homes and simultaneously pay interim housing costs. Many have expended FEMA resources, exhausted available mortgage forbearances, and utilized any rental assistance provided by insurance companies. New York State developed this Program to assist homeowners with short-term mortgage costs or equivalent housing costs so that homeowners do not lose their home.

In November 2013, as a result of HUD approved APA4, the State developed the Interim Mortgage Assistance Program to meet the needs of displaced homeowners. Based upon analysis of current applicants, it is anticipated that there will be approximately 850 households that have been or will be both displaced and forced to pay the costs of their primary mortgage, or an equivalent housing cost such as property taxes, and simultaneously pay the costs for their temporary living residences that will receive IMA payments.

The formulas for determining IMA payments are as follows:

- [Rental housing expenses incurred while displaced, including utilities] minus [Rental assistance from insurance or government agencies] is the formula for calculating the IMA partial payment award amount.
- [Mortgage costs incurred while displaced, capped at $3,000 a month] is the formula for calculating the monthly reimbursement award amount.
- Applicants may be eligible for the IMA partial payment award amount plus the monthly reimbursement award amount as long as the total is less than or equal to 36 months of their mortgage amount capped at $3,000 a month or $108,000.

Per the alternative requirement permitting the extension of interim mortgage assistance to 36 months, applicants will be eligible for IMA assistance beyond 20 months if either substantial construction progress has been made or if substantial progress has not been made, the applicant agrees to participate in the construction program within the NY Rising Housing Recovery Program.

A property owner participating in the Rental Property Program may be eligible for IMA payments if the owner is displaced from his or her storm-damaged owner-occupied primary residence in a multi-family building and pays rent to occupy temporary housing while displaced.

NY Rising Buyout and Acquisition Program

Activity Type: Voluntary Buyout or Acquisition of One- and Two- unit homes

National Objective: Low- and Moderate- Income, Slum and Blight or Urgent Need

Eligible Activity: Sec. 105 (a) (1) (2) (4) (7) (11) (24), 42 U.S.C. 5305(a) (1) (2) (4) (7) (11) (24) FR–5696–N–01 (VI) (B) (31)

Eligible Applicants: Eligible applicants to the Buyout component are owners of one-family or two- family homes and/or vacant land located in an Enhanced Buyout Area and Floodways who owned the property at the time of Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy. Applicants for the Buyout component may also be homeowners in the floodway with or without substantial damage. Applicants who purchase the storm damaged property after the time of Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy are eligible for the Buyout awards without any added incentives; or the price at which the applicant purchased the property, whichever is less. Eligible applicants to the Acquisition component are owners of substantially damaged one-family or two-family homes and/or vacant land that is contiguous to an eligible property with a structure and under the same owner as that property located within the 500-year floodplain in a disaster-declared county who owned the property at the time of one of the above storms.

Program Description: The NY Rising Buyout and Acquisition Program includes State purchase of storm-damaged properties in the Enhanced Buyout Areas and floodways (the "Buyout Component") and the acquisition of substantially damaged properties within the 500-year floodplain but outside of an Enhanced Buyout Area or floodway (the "Acquisition Component").

The Buyout Component includes the purchase of eligible storm-damaged properties in Enhanced Buyout Areas or in the floodway. Enhanced Buyout Areas are certain high risk areas in the floodplain determined to be among the most susceptible to future disasters. Floodways are the portions of the floodplain where flood hazard is generally the greatest. Damaged properties in the floodway are not suitable for rehabilitation because these properties have no other recovery options other than buyout since federal regulations prohibit funding any rehabilitation or reconstruction of a home in a floodway. As of APA10, all properties in the floodway will be purchased through the Buyout Component since they are not suitable for rehabilitation and floodways are at the greatest risk of flood hazard. Properties purchased through the Buyout Component will be restricted in perpetuity for uses compatible with open space, recreation, or wetlands management practices. Additionally, storm-damaged properties in the floodway may participate in the Buyout component and not be in an enhanced buyout area and not be required to be substantially damaged.

The Acquisition Component includes the purchase of substantially damaged homes within the 500-year floodplain from willing sellers. Properties purchased through the Acquisition Component are eligible for redevelopment in the future in a resilient manner to protect future occupants of this property.

Buyout Component

The State purchases property located in designated "Enhanced Buyout Areas" or in the floodway through the voluntary sale from owners. The Buyout Component may also include the buyout of vacant or undeveloped land in these targeted areas to restrict and prevent any future development on these properties.

The following five factors are considered by the State when defining Enhanced Buyout Areas:

1. A documented history of flooding and/or damage caused by extreme weather events, including damage by Hurricane Irene, Tropical Storm Lee and/or Superstorm Sandy.
2. All the properties in the "Enhanced Buyout Area" sustained damage documented by FEMA and/or the Department of State.
3. A determination made by the Department of State, based on analysis of trends in coastal erosion and future flood risk, that the area is in Extreme or High risk areas of the floodplain.
4. Multiple, contiguous parcels in the flood plain where Homeowners collectively voiced interest in relocation; the interest must be documented in a manner that allows the State to identify the individual parcels, and the number and location of the parcels.
5. The State and the respective municipal officials (local/county) will have mutual understanding of the benefit of permanently removing residents/homes from the floodplain.

For applicants who owned the home and/or vacant land at the time of one of the declared storms, the State conducts Buyout purchases starting at 100% of the property's pre-storm Fair Market Value (FMV), plus available incentive(s) ranging from 5%-15%. The State uses the 2013 FHA loan limits as the ceiling for the purchase price for properties that participate in this Buyout Component, not inclusive of incentives. Available incentives include:

- *5% Relocation Incentive:* The State provides a Relocation Incentive to residents who participate in a buyout inside an Enhanced Buyout Area or floodway if they permanently relocate and provide evidence of the purchase of a new primary residence within the same county in which their storm-damaged property is located. Residents of New York City are eligible for this incentive if they permanently relocate and purchase a new primary residence anywhere within the five boroughs of the City. The motivation for such an incentive is to protect and preserve the community while facilitating the reclamation of land in high risk areas for natural protection against future damage.

The State recognizes that, because of extenuating circumstances, the storm may prevent households from returning to their pre-storm county. In the event a homeowner receives CDBR-DR buyout funding and relocates to a residence outside the county in which their storm-damaged property is located, but within New York State, the homeowner can file a hardship request to receive a 5% Relocation Incentive. Homeowners must submit a statement outlining the challenges of relocating within their county of origin. They must also sign a Declaration of Hardship form that documents the submission of a statement of hardship. All Declaration of Hardship Forms are reviewed and approved by Program staff on a case-by-case basis.
This 5% relocation incentive is not available to owners of vacant or undeveloped land.

- *10% Enhanced Buyout and Floodway Incentive:* The State seeks the maximum level of homeowner participation in relocating homeowners out of high risk Enhanced Buyout Areas or floodways to protect as many households as possible from future disasters. The State offers the 10% Enhanced Buyout and Floodway Incentive to individual homeowners so a significant number of properties are involved and as much land as possible within these areas can be returned to and reclaimed by nature.

- *10% Group Buyout Incentive:* The State recognizes that in rare circumstances, the purchase of a group of properties is the most effective way to re-purpose the area and graduated incentives are essential components. Therefore, the State may provide a 10% Group Buyout Incentive to a very limited cluster of homeowners (i.e., two to ten consecutively located properties) whose properties are located inside the floodplain but not inside an identified Enhanced Buyout Area. This incentive may be necessary in certain cases to facilitate the reclamation of a concentrated area of high risk properties and to avoid the patchwork effect of purchasing all but one or two properties inside such a cluster of properties.

For all Buyout Incentives, assistance is determined by property purchased after accounting for all federal, State, local and/or private sources of disaster-related assistance, including, but not limited to, homeowners and/or flood insurance proceeds.

Applicants who purchase the storm damaged property after the time of Hurricane Irene, Tropical Storm Lee and/or Superstorm Sandy are eligible for the Buyout awards without any added incentives; or the price at which the applicant purchased the property.

Acquisition Component

The Acquisition Component includes the purchase of substantially damaged homes within the 500-year floodplain, from willing sellers. The State purchases properties from owners who, due to their own personal circumstances, are either unwilling or unable to withstand prolonged reconstruction and stringent elevation requirements, and thus desire to sell their properties to the State. The State ensures that all storm-damaged properties purchased through Acquisition are redeveloped in a code-compliant, resilient manner.

Purchase offers for Acquisition properties begin with the post-storm Fair Market Value, plus available resettlement incentives. The State uses the 2013 FHA loan limits as the ceiling for the purchase price for properties that participate in this Acquisition Component, inclusive of available resettlement incentives. Participants in the Acquisition Component may also not receive a total amount, inclusive of any incentives, that is greater than the pre-storm Fair Market Value of the storm-damaged property.

APA8 clarified the resettlement incentive made available to participants in the Acquisition Component in Action Plan Amendments No. 3 and No. 6. Specifically, APA8 modified the formula for calculating the resettlement incentive. An original resettlement incentive was approved by HUD in Action Plan Amendment No. 3 ("APA 3"). An alternative approach to this resettlement incentive was proposed in Action Plan Amendment No. 6 ("APA 6"), which was approved by HUD on May 27, 2014. As the Program

discussed steps to transition to the new structure of incentives, a transition period was allowed where applicants received the resettlement incentive identified in APA3. This transition period was through July 31, 2014, and any applicant that had an appraisal letter or offer sent during that period received the resettlement incentive identified in APA 3. The incentive structure outlined below was offered to applicants starting the date of APA 8 approval by HUD.

Following APA 8, the State offered an incentive structure that is relative to property value lost as a result of the storms. As outlined in the chart below, the State provided a gradient incentive based on the *total* percentage of value lost. Additionally, for those homeowners who suffered a 50% loss or greater in the value of their *structure*, the Acquisition Component offered an additional incentive equal to 50% of the post-storm fair market value.

Table 31: Resettlement Incentive Calculator

Percentage Value Lost (Land + Structure)	Total Incentive	Total Incentive if Loss in Structure Value > = 50% Loss
90%+	95% of post-storm FMV	145% of post-storm FMV
60-90%	85% of post-storm FMV	135% of post-storm FMV
50-60%	75% of post-storm FMV	125% of post-storm FMV
40-50%	65% of post-storm FMV	115% of post-storm FMV
30-40%	55% of post-storm FMV	105% of post-storm FMV
20-30%	45% of post-storm FMV	95% of post-storm FMV
10-20%	35% of post-storm FMV	85% of post-storm FMV
0-10%	25% of post-storm FMV	75% of post-storm FMV

The adjusted formula for calculating the resettlement incentive acknowledges that homeowners sustained different amounts of loss and the amount of loss affects the owner's willingness to participate in the Acquisition Component. Participants in the Acquisition Component are homeowners who are either unwilling or unable to withstand prolonged reconstruction and abide by stringent elevation requirements, so the State wants to encourage the participation of these homeowners to ensure that the storm-damaged properties are rehabilitated in a code-compliant, resilient manner.

The incentive payment structure also recognizes the wide variation in total post-storm home values relative to the high costs associated with relocation. Experience in operating the Acquisition Component to date indicates that the amount of resettlement incentive offered is required to induce sufficient levels of participation. A high percentage of homeowners eligible for the Acquisition Component have substantial outstanding mortgage debt on their homes. The incentive must be sufficient to enable an owner to pay down the existing mortgage and make a down payment on a new home. It is a program goal to provide sufficient resources to enable homeowner to purchase a new home but remain in the community if they so choose, with access to the same school district and employment opportunities. Accordingly, the incentive must reflect the cost of purchasing a home in this high-cost housing market.

The additional amount offered for those homeowners who suffered a 50% or greater loss in *structure* value reflects the circumstances of homeowners whose homes were essentially washed away in the storm. For these owners, an incentive based on the remaining total value would be insufficient to enable the owner to pay off the mortgage and purchase a new home. The additional amount provides the incentive necessary to motivate homeowners to participate in the Acquisition Component so the property can be redeveloped in a code-compliant, resilient manner.

Disposition

Acquisition activity will qualify under one of the CDBG national objectives depending on the use of the acquired real property following its acquisition. A preliminary determination of compliance may be based on the planned use. Most Acquisition properties will be acquired for a general purpose, such as housing or economic development. Actual specific projects have not yet been identified. The final determination of national objectives compliance will be based on the actual use of the property, excluding any short-term, temporary use. Where the acquisition is for the purpose of clearance that will eliminate specific conditions of blight or physical decay, the clearance activity may be considered the actual use of the property.

The program will document the general use intended for each property and the national objective expected to be met in the Policies and Procedures.

Any subsequent use or disposition of the cleared property will be treated as a "change of use," under 24 CFR 570.489(j), as applicable. If the disposition constitutes a change of use, the State will give reasonable notice to affected citizens and allows them an opportunity to comment, and ensure that the new use meets one of the national objectives. If the new use will not meet one of the national objectives, the program will reimburse to the CDBG-DR program the proceeds from sale of the property at the fair market value, less transactional costs.

NY Rising Rental Buildings Recovery Program

Activity Type: Repair, Reconstruction and mitigation including bulkheads of rental properties

National Objective: Low- and Moderate- Income, Urgent Need, or Slum and Blight

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Activity: Sec. 105 (a)(1)(4) 42 U.S.C. 5305(a)(4) New Construction: FR-5696-N-01(VI)(B)(28)**Program Description:** The NY Rising Rental Buildings Recovery Program is broken into components.

Rental Properties Program

The Rental Properties Program, formerly named the Small Rental Properties Program, is designed to assist storm-damaged rental properties. Davis-Bacon wages and other labor standards provisions apply where CDBG-DR is used for construction in properties of eight or more units. Eligible Applicants include condominium and cooperative owners who are the primary payee on all flood and other insurance.

Owner-occupied properties with two-units (those with one homeowner unit and one rental unit) will continue to be assisted through the Homeowner Program.

This Program is designed to restore residential rental properties located outside of New York City that were damaged by Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy. The Program is intended to assist owners of damaged small and larger residential rental properties.

The Program operates under the following guidelines:

- The Program covers costs for reimbursement of eligible repair/replacement costs; the repair/replacement of damaged real property; replacement of disaster-impacted non-luxury residential appliances; and environmental and health hazard mitigation costs related to the repair of disaster-impacted property.
- The Program also covers costs (including elevation) to mitigate future damage for those properties that are located within a 100-year floodplain.
- Assistance is provided for unmet repair/reconstruction and elevation/mitigation needs after accounting for all federal, State, local and/or private sources of disaster-related assistance, including, but not limited to property owners' and/or flood insurance proceeds.
- Assistance for repair and elevation activities is capped at the lesser of a specified dollar amount to be determined by New York State, or the ACTUAL unmet repair, and elevation need as described above. To direct sufficient levels of assistance to those most in need, a higher overall dollar cap amount may be applied to those properties that are occupied by low- and moderate- income households and/or those properties serving low- and moderate- income renter households, where the need is justified.
- Household income verification documentation is required for tenants in affordable units for reporting purposes.
- Priority is given to owners of buildings where a minimum of 51% of the units are occupied by or will be occupied by low- and moderate- income persons and to owners of property with remaining repair needs.

Maximum Award: Following the analysis of the needs of the affected communities and the availability of funding, the Program set the following cap amounts and allowances:

- Base Cap: The base cap amount for rental property repair and/or reconstruction coverage is $300,000. Owners are eligible for a $50,000 cap increase for each additional unit.
- Low- and Moderate- Income Allowance: Tenants who are identified to be low- or moderate-income (total household income is less than or equal to 80% of area median income) will qualify

their unit for an increase of $50,000 in the cap amount. ($300,000 Base + $50,000 low- and moderate- income = $350,000 base cap). Property owners who want to convert vacant apartments into LMI units may also qualify for the increase for that unit.

- Elevation Allowance: Rental property owners with damaged properties within the 100-year floodplain are eligible for up to a $100,000 increase in the base cap amount for a 1- or 2-unit property. The allowance is increased by $25,000 for each additional unit. The maximum cap increase for elevation is $225,000.
- Reconstruction Cap: Property owners that require reconstruction are eligible for a base cap of $300,000 (subject to DOB). For each additional unit there is a $50,000 per unit award cap increase.

Table 32: Rental Properties Program Base Cap ($300,000)

Number of Units	LMI (Base cap + $50K per LMI unit + $50K for each additional unit above 1 unit)*	Urgent Need (Base cap + $50K for each additional unit above 1 unit)
1	$350,000	$300,000
2	$450,000	$350,000
3	$550,000	$400,000
4	$650,000	$450,000
100	$10,250,000	$5,250,000

*the chart assumes 100% LMI in the LMI column, but LMI is determined by unit. EX: A 2-unit property with only one LMI unit would qualify for an award of $300K + $50K (unit 2) + $50K (if unit 2 is LMI) = $400K.

The Multi-Family/Affordable Housing Program

This Program supports both the preservation of governmentally-assisted, including HUD-assisted affordable housing and other rental housing developments that were damaged by Hurricane Irene, Tropical Storm Lee or Superstorm Sandy, as well as the development of new affordable housing to address the rental housing shortage created by the storms and to help revitalize hard hit communities. Assistance is limited to projects located in storm damaged counties outside of New York City. The State estimates there are still outstanding needs for affordable rental within the impacted communities, within the Multi-Family/Affordable Housing Fund, it is envisioned that the allocation of CDBG-DR funds dedicated to rental will be leveraged both by tax-exempt private activity bonds (PAB), 4% low income housing tax credits, 9% tax credits, and private financing.

Preservation assistance is targeted to those storm damaged projects that serve low- and moderate- income residents, including special needs and other vulnerable populations. Pursuant to HUD's directive outlined in its November 25, 2013 Federal Register Notice, preservation assistance through the fund focuses on repairing and retrofitting those governmentally assisted housing projects that have continuing and pressing unmet needs. In keeping with HUD's directive, assistance is targeted to public housing and other affordable housing developments assisted through government programs (including public housing, Low Income Housing Tax Credit, Section 8, McKinney Homeless Housing, and New York State's own affordable housing programs) where future affordability is assured through long-term contracts. As the State outlined in introduction to this housing section, when needs are identified by Public Housing Authorities, the Multi-Family/Affordable Housing Program is one of the tools used to meet the commitment of up to $10 million dollars made in the first action plan.

Preservation Assistance offered through the Multi-Family/Affordable Housing Fund operates under the following guidelines:

- It supports reimbursement of eligible repair/replacement costs; the repair/replacement of damaged rental properties with eight or more units; replace disaster-impacted non-luxury residential

appliances; and cover environmental health hazard mitigation costs related to the repair of disaster-impacted property.

- When practical and warranted, it also covers the cost of mitigating future damage (including elevation when practicable and cost effective) for properties located within a 100-year floodplain. Assistance is for "unmet" repair, reconstruction, and mitigation needs after accounting for all federal, State, local and/or private sources of disaster-related assistance, including, but not limited to, property owners' and/or flood insurance proceeds.
- Assistance for repair, reconstruction, and mitigation activities is capped at the lesser of a specified dollar amount to be determined by New York State, or the unmet repair, reconstruction and mitigation need as described above.
- To direct sufficient levels of assistance to those most in need, especially LMI households, a higher overall dollar cap of $50,000 per unit may be applied to those properties that serve special needs or other hard to house groups or provide a significant number of units designated for LMI households.

The State recognizes that in some instances hard hit communities and the tenants of New York State may be best served through the development of new, more sustainable units designed to replace some of the lost rental units that were either located in unsuitable sites or were antiquated in their design. The Multi-Family/Affordable Housing Program offers assistance for the development of new selected affordable housing projects to alleviate the shortage of affordable housing created or exacerbated by Irene, Lee, and/or Sandy. CDBG-DR assistance provided through the Program is generally limited to assisting affordable housing units. However, mixed income developments are eligible for assistance if developers can leverage other funding to support the non-low- and moderate- income units. This initiative works to create new rental housing units through a variety of means, including the substantial repair of uninhabitable rental properties, the conversion of non-residential structures, and new construction. The Program may also "produce" new rental units through the repair of partially occupied properties that have a significant number of vacant, uninhabitable units.

Assistance is awarded through a process that is outlined in the Multi-Family/Affordable Housing Program policies and procedures. This process considers, among other things, the following factors:

- Potential impact on addressing affordable rental housing shortages created or exacerbated by the storms, including replacing damaged housing.
- Extent to which the project serves households displaced by the Storms, the homeless or near homeless, special needs populations, and other vulnerable groups traditionally hard to house.
- Extent to which the project delivers dwellings that are stronger, safer, and more disaster resilient.
- Extent to which the project advances Community Reconstruction Program goals or meets other design criteria established by the State.

Development Assistance awarded through the Multi-Family/Affordable Housing Fund operates under the following guidelines:

- It supports the costs of developing rental housing units including the construction, reconstruction, or repair of quality rental units in multi-family developments of eight or more units (projects involving eight or more small buildings on a single property are eligible).
- When practical and warranted, it also covers costs (including elevation) to mitigate future damage for properties that are being repaired. The elevation of the structure and application of storm hardening features are considered part of the cost of construction for new construction and are consequently eligible expenses.

- All projects are subject to the duplication of benefits (DOB) provisions of the Stafford Act. Consequently, to the extent that the Program does select a project that sustained damage through Irene, Lee, and/or Sandy, and did receive other forms of assistance as a result, the State may not duplicate any earlier assistance received by the owner.
- Development assistance is capped at the lesser of a specified dollar amount to be determined by the State, or the development funding gap. To direct sufficient levels of assistance to those most in need, especially low- and moderate- income and minority households, a higher overall dollar cap amount may be applied to those properties serving special needs or other hard to house groups or provide a significant number of units designated for low- and moderate- income households.

Public Housing Assistance Relief Program (PHARP)

This Program replaces the Sandy Housing Assistance Relief. At this point in the recovery process, the State is focusing on assisting vulnerable populations by investing in the repair and resilience of public housing units damaged by the storm, and the construction of new public housing to replace public housing units that were damaged during the storms.

The State is committed to assisting the unmet needs of the Public Housing Authorities (PHAs). As outlined in the unmet needs section of this Action Plan, the State along with the PHAs and FEMA are still in the process of assessing their unmet needs. The State has met with housing authorities in Freeport, Hempstead, Long Beach, and Binghamton to review their repair and mitigation needs and the status of their efforts to obtain resources from FEMA PA, 404, 406 mitigation, and private insurance. The State has also connected a housing authority with HUD Technical Assistance resources to explore redevelopment scenarios under the HUD Rental Assistance Demonstration (RAD) program.

The State has committed $19.24 million dollars to assist storm-damaged housing authorities through the Public Housing Assistance Relief Program. As remaining needs are identified, the State will determine the most appropriate means of meeting these needs. Additional assistance to Public Housing Authorities may be provided through the NY Rising Infrastructure Program's Non-Federal Share Match Program or NYRCR Program as appropriate.

The Public Housing Assistance Relief Program (PHARP) is a collection of programmatic activities with the purpose of addressing the needs of public housing authorities with storm-damaged properties. These activities include the Multi Family/Affordable Housing Fund, the Non-Federal Share Match Program under the Infrastructure Program, and the Community Reconstruction Program. (These programs are described more fully elsewhere in the Action Plan.)

Public housing authorities may be assisted under PHARP as follows:

1. NY Rising Infrastructure Programs - Non-Federal Share Match Program

Activity Type: Public Facilities and Local Government Support

National Objective: Low- and Moderate- Income or Urgent Need

Eligible Activities: Within the larger set of eligible activities identified under Infrastructure, PHARP focuses on Non-federal share match 105(a)(9).

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Applicants: Eligible applicants to the NY Rising Infrastructure Programs include State, local, and county governments; State agencies and authorities; public schools (K-12) and universities; first responders, including volunteer fire and EMS facilities, public housing authorities and other units of government; and private not for profit entities that are eligible to receive federal recovery funds within federally-declared counties. Within the larger set of set of eligible applicants to the Infrastructure program, PHARP focuses

on PHAs which own affordable housing units damaged by Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy.

Description: The State works with PHAs to review repair and mitigation needs and the status of their efforts to obtain resources from FEMA PA, 404, 406 mitigation, and private insurance. As their needs for supplying non-federal matching funds for projects receiving FEMA assistance are identified, the State will allocate resources from the Non-Federal Match Program to provide 100% of the non-federal match required. To be eligible for "match" funding, PHA projects funded under HMGP, 404, and 406 must have a recovery purpose, and be CDBG-eligible activities.

2. NY Rising Rental Buildings Recovery Program

Activity Type: Rental Repair/Reconstruction

National Objective: Low- and Moderate- Income, Urgent Need, or Slum and Blight

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Activity: Sec. 105 (a) (1) (4); 42 U.S.C. 5305(a) (4) New Construction: FR-5696-N-01(VI) (B)(28)

Eligible Applicants: Within the larger set of set of eligible applicants to the NY Rising Rental Buildings Recovery program, PHARP focuses on PHAs and rental property owners who own affordable housing units damaged by Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy.

Description: The Rental Properties Program and Multi-Family/Affordable Housing Fund may support the repair or reconstruction of governmentally-assisted, including HUD-assisted, affordable housing and other rental housing developments that were damaged by Hurricane Irene, Tropical Storm Lee or Superstorm Sandy. In addition, the Multi-Family/Affordable Housing Fund may support the development of new affordable housing to address the rental housing shortage created by the storms and to help revitalize hard hit communities. PHA recipients of assistance from the Rental Properties Program or Multi-Family/Affordable Housing Fund may use funding to repair or reconstruct housing owned by the housing authority, undertake development in partnership with private entities, or provide financing to a private entity developing housing in whole or in part affordable to very-low income households.

3. NY Rising Community Reconstruction (NYRCR) Program

Activity Type: NYRCR Program

National Objective: Low- and Moderate- Income, Urgent Need, or Slum and Blight

Geographic Eligibility: Within the larger set of eligible counties, PHARP focuses on disaster-declared counties outside of New York City

Eligible Activity: 105 (a) all provisions 42 U.S.C. 5305(a).

Eligible applicants: Within the larger set of set of eligible applicants to the NY Rising Community Reconstruction program, PHARP focuses on communities or PHAs with CDBG-DR-eligible projects identified in the Community Reconstruction planning process.

Program Description: The NYRCR Program empowers communities to prepare locally-driven reconstruction plans that identify innovative resiliency projects and other actions to help each community build back better and smarter in the face of future extreme weather events. Where local reconstruction plans identify projects to assist public housing authorities and PHA residents, resources may be allocated from the NY Rising Community Reconstruction Program to fund these projects.

Manufactured Home Community Resiliency Program

Activity Type: Homeownership assistance, housing incentive for purchase of a new manufactured home, housing incentive for the residential rental assistance, housing incentive for moving allowance, and demolition.

Eligible Activities: 105 (a) all provisions; 42 U.S.C. 5305(a), Housing Incentives per FR-5696-N-01 (VI) (B) (29)

National Objective: Low- to Moderate- Income or Urgent Need

Geographic Eligibility: Disaster-declared counties outside of New York City

Eligible Applicants: Owners or renters of manufactured homes, owners of land on which a manufactured home or a concentration of manufactured homes are located, and municipalities with manufactured home communities located in the 100- and 500- year floodplain in disaster-declared counties that sustained damage from Hurricane Irene, Tropical Storm Lee, and/or Superstorm Sandy.

Program Description:

The NY Rising Manufactured Home Community Resiliency Program (MHCR Program) is designed to assist vulnerable manufactured home communities that require a comprehensive, community-wide solution to recovery.

As of APA15, the State has identified one MHC – Ba Mar (hereinafter, the "MHC") – to participate in the MHCR Program based on the following criteria: (1) location in the floodway or the 100- or 500-year floodplain and its degree of vulnerability as determined by FEMA criteria; (2) a concentration of LMI residents; (3) the number of individual applicants from the community already enrolled in the NY Rising Housing Program; (4) level of damage sustained during a Qualifying Storm; 5) the community's proximity to additional storm recovery investments; and, (6) interest from the community and the local government.

Upon selection of the MHC, a comprehensive community-based planning process modeled after the NY Rising Community Reconstruction Program, was commenced for the purpose of developing the best comprehensive resiliency solutions tailored to the specific needs of individuals in the MHC. Based on an analysis of the MHC's specific needs, the MHCR Program will engage in the following eligible activities:

1. Housing incentive for new manufactured home replacement: In accordance with "Housing Incentives" per FR-5696-N-01 (VI)(B)(29) and similar to the manufactured home component of the NY Rising Homeowner Recovery Program, the MHCR Program intends to provide eligible owners with a replacement manufactured home outside of the storm-impacted MHC.
2. Housing incentive for residential rental assistance: In accordance with "Housing Incentives" per FR-5696-N-01 (VI)(B)(29), the MHCR Program will provide eligible residents up to three months rental assistance plus a housing incentive equivalent to up to 39 months of rental assistance (in accordance with FR–5696–N–01, hereinafter, the "March 5th Notice," which allows for a housing incentive to be provided in conjunction with an eligible activity).
3. Homeownership assistance: In accordance with §105(a) (24) 42 U.S.C. 5305(a) (24) and as amended in the March 5th Notice, the MHCR Program will provide up to 100% down payment and closing cost assistance to households of up to 120% of area median income (AMI) as well as mortgage principal write down assistance to ensure that the property is affordable to the applicant.
4. Housing Incentive for moving assistance (Moving Assistance): In accordance with "Housing Incentives" per FR-5696-N-01 (VI)(B)(29), the MHCR Program will provide a one-time payment for storage and moving costs substantially similar to benefits offered by the Federal Highway Administration Uniform Relocation Assistance, where applicable to all eligible and current residents of the MHC.

5. Clearance and demolition: In accordance with §105(a)(4) 42 U.S.C. 5305(a)(4), the MHCR Program will clear and demolish the MHCR Program eligible applicants' storm-damaged MHUs, located in the MHC, as a condition of participation in the MHCR Program

See below for a more detailed description of each activity.

Maximum Award:

The MHCR Program has set the following award cap amounts and allowances. The base cap is determined by the eligible applicant's household size. The base cap amount is based on the cost to purchase, install, and connect a replacement manufactured home for that household size.

- Base Cap:

Household Size	Manufactured home size	Maximum Award (without deducting applicant Duplication of Benefits (DOB))
1 or 2 people	2 bedroom/2 bath	$105,000
3 people	3 bedroom/2 bath	$115,000
4 + people	4 bedroom/2 bath	$125,000

- Allowances:
  - The MHCR Program will require applicants to demolish storm-impacted manufactured homes and cover the cost of demolition of the storm-damaged manufactured homes for all eligible applicants. The demolition costs are not subject to the base cap.
  - The MHCR Program will offer moving assistance for eligible current MHC residents. The relocation costs are not subject to the base cap.

1) HOUSING INCENTIVE FOR A NEW MANUFACTURED HOME

The MHCR Program will provide a replacement manufactured home to be placed on land purchased by the applicant or within another manufactured home community, outside of the floodplain to eligible applicants who choose this option. This MHCR Program seeks to use the NY Rising Homeowner Recovery Program's Mobile Home component as precedent, wherever feasible.

Basic Eligibility: To be eligible for this benefit, an applicant must demonstrate that s/he holds title to a storm-impacted manufactured home in the MHC and that the home does not meet the IRS definition of a "second home."

Requirements**:** For an applicant to receive benefits under the manufactured home replacement activity, applicants must adhere to the following requirements:

- Agree to demolish or allow the MHCR Program to demolish the storm-impacted manufactured home;
- Must relocate outside of the floodplain, unless, at the MHCR Program's sole discretion, a hardship exception is granted;
- Execute all required grant agreements, intake documents, and subrogation commitments.

2) HOUSING INCENTIVE FOR RESIDENTIAL RENTAL ASSISTANCE

The MHCR Program will provide eligible applicants with 42 months of Rental Housing Incentive payments assistance a permanently displaced tenant may have been eligible for under the Uniform Relocation Act (URA). The housing incentive will be based on fair market rent multiplied by 42 months and will be substantially similar to the benefits offered to tenants permanently displaced by the federal funds as required

by the URA. As this MHCR Program is voluntary a housing incentive is necessary to encourage participation in the MHCR Program by the largest number of MHC residents.

Eligibility: To be eligible for this benefit, an applicant must demonstrate that s/he currently resides in a storm-impacted manufactured home in the MHC.

Requirements: For an applicant to receive benefits under the rental assistance option, applicants must adhere to the following requirements:

- Agree to demolish or allow the MHCR Program to demolish the storm-impacted manufactured home;
- Must relocate outside of the floodplain, unless, at the MHCR Program's sole discretion, a hardship exception is granted;
- Execute all required grant agreements, intake documents, and subrogation commitments.

3) HOMEOWNERSHIP ASSISTANCE

The MHCR Program will provide applicants with 100% of down payment and closing cost assistance for applicants earning up to 120% of AMI. When an applicant identifies a new home and a Federal Deposit Insurance Corporation (FDIC) insured bank is willing to provide a mortgage for the purchase of the identified home, the MHCR Program will provide the full down payment determined to be necessary and reasonable to enter into a contract for sale, along with the customary closing costs needed to secure a mortgage. Where the MHCR Program confirms that the monthly housing cost of the new home will exceed 30% of an applicant's gross income, the MHCR Program will provide assistance to pay down the principal balance. Payment towards principal will be calculated based on the assistance necessary to ensure monthly housing payments to a mortgage servicer do not exceed 30% of property owner's gross income to pay a 30-year fixed-rate mortgage that includes principal, interest, taxes and insurance.

Basic Eligibility: To be eligible for this benefit, an applicant must demonstrate that s/he resides in a storm-impacted manufactured home in the MHC which does not meet the IRS definition of a "second home."

Requirements: For an applicant to receive benefits under the homeownership assistance option, applicants must adhere to the following requirements:

- Agree to demolish or allow the MHCR Program to demolish the storm-impacted manufactured home;
- Must relocate outside of the floodplain, unless, at the MHCR Program's sole discretion, a hardship exception is granted;
- Execute all required grant agreements, intake documents, and subrogation commitments.

4) HOUSING INCENTIVE FOR MOVING ASSISTANCE

The MHCR Program will provide all eligible applicants with a moving cost incentive in the form of a lump sum reimbursement to cover moving costs associated with a one-time move from the storm-impacted MHC. The benefits provided in this component will be substantially similar to the relocation benefits offered to tenants permanently displaced by federal funds and subject to the URA. Specifically, the MHCR Program will provide an award in the amount of the *Fixed Payment for Moving Expenses* outlined in Federal Register Notice 80 FR 44182.

This incentive for moving assistance will be offered in addition to the above-mentioned housing incentive for new manufactured home, housing incentive for residential rental assistance, and homeownership assistance options and is not subject to the maximum award cap.

Eligibility: To be eligible for this benefit, applicants must meet the requirements outlined in either the housing incentive for new manufactured home, housing incentive for residential rental assistance, or

homeownership assistance; and provide evidence that the applicant has relocated outside of the storm-impacted MHC and outside of the floodplain (unless a hardship exception has been granted by the MHCR Program).

Requirements: Applicant must provide evidence that s/he resided at the MHC, relocated outside of the storm-impacted MHC, and elected to participate in either the housing incentive for new manufactured home, housing incentive for residential rental assistance, or homeownership assistance.

5) CLEARANCE / DEMOLITION

The MHCR Program will clear and demolish the MHCR Program eligible applicants' storm-damaged MHUs, located in the MHC, as a condition of participation in the MHCR Program. The cost allowance for clearance and demolition will be offered in addition to the housing incentive for new manufactured home, housing incentive for residential rental assistance, and homeownership assistance options and is not subject to the maximum award cap.

Eligibility: To be eligible for this benefit, applicants must meet the requirements outlined in either the housing incentive for new manufactured home, housing incentive for residential rental assistance, or homeownership assistance.

Requirements: Applicant must provide evidence that s/he resided at the MHC, relocated outside of the storm-impacted MHC, and elected to participate in either the housing incentive for new manufactured home, housing incentive for residential rental assistance, or homeownership assistance.

NY Rising Economic Development and Revitalization

Activity Type: Economic Revitalization

National Objective: Low- and Moderate-Income, Urgent Need, or Slum and Blight

Geographic Eligibility: All damaged declared counties

Eligible Activity: Economic Development Sec. 105(a)(2), (8),(14), (15), (17), (21), (22) 42 U.S.C. 5305(a)(14) (15) (17) (22); Economic Revitalization FR–5696–N–01 (VI) (D); Tourism FR–5710–N–01 (ii) (3)

Program Description: This Program provides for a broad spectrum of activities to support the varied needs of communities recovering from the disaster. Current economic development efforts focus on small business grants, loans and mentorship activities and may expand to address long-term economic development goals of impacted communities. The State continues to implement these recovery-focused economic development programs:

- The Small Business Grant Program provides small businesses with the financial support needed to stabilize their business operations. The State is committed to the recovery of small businesses, and the Program provides small businesses grants for repair/replacement of damaged machinery, equipment, furniture, fixtures, inventory, and building/property, working capital assistance, and/or mitigation assistance to prevent future damage. This program is not a compensation program and does not compensate for losses from the storm.

  For a working capital award, the Program considers direct evidence of the impact of the storm as a proxy for revenue loss, and the size of the award is based on documented working capital related costs prior to the storm as a proxy for unmet working capital need in the aftermath of the storm when the businesses could not function normally. Program calculates 6 months of all eligible working capital expenses except property taxes using a monthly average based on the three-month quarter before the storm, to show the level of expenses incurred by the business before any storm damage occurred. Property taxes for all applicants are reimbursed based on the actual 6 months following the storm.
- The Coastal and Seasonal Tourism Industry Programs, which are being implemented in tandem with the Small Business Grant and Loan program, targets resources to these heavily impacted industries. The Coastal and Seasonal Tourism Industry programs have historically been administered in tandem with the Small Business Grant and Loan program, providing additional assistance to those applicants that qualify for the Grant program AND demonstrate they fall within a coastal or seasonal tourism industry. The budget reflects the Programs more accurately by rolling up the assistance for the Coastal and Seasonal Tourism Industry Programs into the Small Business Grant and Loan Program budget.
- The Tourism Marketing Program provides critical promotion of impacted communities, many of which rely on tourism dollars as part of their economy.
- The Business Mentor NY Program provides mentorship support to small businesses to give businesses the tools to continue to recover and grow.

As needs related to long-term economic development emerge, additional activities to support the business sector may include: small business technical assistance; commercial redevelopment or enhancement; development of public facilities related to economic development; industry cultivation and/or preservation; workforce training or development; planning for economic growth and other activities to catalyze the State's economic recovery. Eligible activities may also include infrastructure development for economic recovery and revitalization purposes as well as mitigation, resiliency and green building efforts to protect, strengthen and increase efficiency of such investments. It is through this comprehensive approach to revitalization that the State will continue to support its communities as they rebuild, recover and grow.

Economic Revitalization can include any eligible activity under Section 105(a) that demonstrably restores and improves some aspect of the local economy; the activity may address job losses, or negative impacts to tax revenues or businesses. All Economic Revitalization activities must address an economic impact(s) caused by the disaster (e.g., loss of jobs, loss of public revenue).

Eligible Applicants: Eligible applicants include local governments and other public agencies, for-profit businesses, nonprofit organizations and other State agencies.

Eligible Criteria: Economic Revitalization efforts enable a multi-pronged approach to ensure the businesses in New York's most impacted areas are provided the support they require, including:

- Coordination of priority projects and key economic revitalization needs identified within a Community Reconstruction Plan;
- Alignment to State and local long-term economic development priorities;
- Financial support to impacted communities for economic revitalization efforts including, but not limited to:
    1. Financial and technical assistance to microenterprise, small and medium-sized businesses;
    2. Prioritized economic revitalization assistance to impacted low- and moderate- income communities;
    3. Workforce training in key economic growth sectors;
    4. Development of high-growth industry clusters;
    5. Revitalization and preservation of legacy sectors including agriculture, aquaculture, and fisheries;
    6. Enhancement of recreational and cultural venues and organizations to increase job opportunities and increase local tax revenues;
    7. Rebuilding and expansion of infrastructure to attract and retain businesses and improve job access;
    8. Rebuilding and development to mitigate and increase resiliency for future impacts;
    9. Conducting planning activities to develop comprehensive revitalization and development plans; and,
    10. Enhancement and/or development of public facilities to further the economic revitalization of storm-impacted areas.

NY Rising Small Business Flood Insurance Program

Activity Type: Economic Revitalization

National Objective: Low- and Moderate- Income (LMI) and Urgent Need

Geographic Eligibility: All damaged declared counties

Eligible Activity: Economic Development Sec. 105(a)(2), (8), (14), (15), (17), (21), (22); 42 U.S.C. 5305(a)(14) (15) (17) (22); Economic Revitalization FR–5696–N–01 (VI) (D); Tourism FR–5710–N–01 (ii) (3)

Eligible Applicants: Recipients of eligible awards in the NY Rising Small Business Grant Program.

Program Description: Eligible applicants who received an award from the NY Rising Small Business Grant Program may be required to maintain flood insurance to ensure that CDBG-DR assisted properties are protected from future disasters. The initial costs associated with federal flood insurance requirements can be a major obstacle for vulnerable populations served by GOSR's Small Business program. To protect the CDBG-DR investment and to serve a vulnerable group, small businesses, where applicable, GOSR proposes to use a portion of the NY Rising Small Business Grant Program allocation to provide eligible applicants who received an award with assistance in obtaining required flood insurance and sufficient

coverage. This assistance will cover the costs of initial flood insurance premiums for properties covered by the Flood Disaster Protection Act of 1973, as amended, pursuant to 24 CFR 570.605.

Eligible insurance premiums will be reimbursed by the NY Rising Small Business Grant Program in exchange for applicants signing a grant agreement which requires the maintenance of hazard and flood insurance in perpetuity, if applicable. The Program will provide reimbursement for eligible flood insurance premiums for up to one year, not to exceed $10,000 per business, subject to funding availability.

Eligible Applicants:

- Applicant must be a recipient of CDBG-DR grant funds in the NY Rising Small Business Grant Program.
- Applicant must have received 100% of the award and must be in good standing.
- Applicants who have never obtained insurance coverage in the amount to be covered by the CDBG-DR investment. For example, if there is already adequate flood insurance on file, an applicant is not eligible for reimbursement.
- Applicants must be located in the floodplain.
- Other eligibility requirements may apply.

NY Rising Community Reconstruction (NYRCR) Program

Through its ground up planning process, the NYRCR Program identified numerous infrastructure, housing, and economic development initiatives which will be implemented through this Program.

Activity Name: NYRCR Program

Type: Infrastructure, Housing, Economic Development, Planning

National Objective: Low- and Moderate- Income, Urgent Need, or Slum and Blight

Geographic Eligibility: Disaster-declared counties, including New York City

Eligible Activity: 105 (a) all provisions 42 U.S.C. 5305(a) , including 105 (a) (8) 42 U.S.C. 5305(a)(8), as amended by FR–5696–N–01 (VI) (B) (30).

Program Description: The NYRCR Program was established by Governor Cuomo to provide additional rebuilding and revitalization assistance to communities damaged by Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. This program empowers communities to prepare locally-driven reconstruction plans that identify innovative resiliency projects and other actions to help each community build back better and smarter in the face of future extreme weather events.

The communities participating in the NYRCR program were selected principally using FEMA Individual Assistance (IA) Full Value Loss (FVL) total claims from Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy obtained in March 2013. Community populations measured in the 2010 census and other factors were considered on a discretionary basis. The NYRCR planning process originally began with 45 Round I Planning Areas, comprising 97 storm-impacted localities. Based on the initial success and popularity of the planning process, the State revisited available data to ensure the most impacted localities were included in the Program. The result was the addition of 22 localities—four of which were added to existing Round I Planning Areas and 18 of which formed 16 new Round II Planning Areas. Therefore, Round I includes 45 Planning Areas comprising 101 localities and Round II includes 16 Planning Areas comprising 18 localities.

After identifying impacted communities to participate in the NYRCR Program, the Governor announced that the GOSR would allot CDBG-DR dollars to fund the implementation of eligible projects identified in NYRCR Plans in each participating locality. These allotments were calculated by taking approximately 25% of each respective locality's total IA FVL, with a minimum allotment of $3,000,000 and a maximum allotment of $25,000,000. Additionally, a set-aside of $24,000,000 was made available for the implementation of projects proposed by Round I Planning Committees through a competitive process for the most innovative practices in categories such as public engagement, green infrastructure, and protection of vulnerable populations. Eight Round I awards were made through the competitive fund.

For Round II, GOSR has set aside $3,500,000 for a commensurate competitive process outlined above. All said, $537,432,794 has been allotted to fund the implementation of eligible projects identified in NYRCR Plans. In both rounds of the planning process, each NYRCR Planning Area is represented by a Planning Committee composed of a cross-section of local civic, business, and nonprofit leaders who participate on a voluntary basis. As approved in the initial Action Plan, the State allocated $25,000,000 to support Round I planning efforts. In January 2014, the State made available an additional $7,000,000 for Round II planning efforts. The CDBG-DR funds are used to hire teams of professional planning consultants to support the citizen Planning Committees in their efforts. As part of the planning process, Committees are required to hold regular Planning Committee meetings, which are open to the public, and at least four larger-scale public engagement events designed to gather input from the greater community. To date, the NYRCR Program held at least 800 Planning Committee meetings and public engagement events.

Upon completion of the planning process, each Planning Committee submits a NYRCR Plan to the State. Once NYRCR Plans are submitted, GOSR works to ensure implementation of a number of projects included

in the plans that are deemed eligible for CDBG-DR funding. Final plans will also include projects that are not CDBG-DR eligible, as well as long-term resiliency recommendations that are not intended for implementation through the NYRCR program. There is a commitment by the State to continue to work with the Committees to look for alternative funding sources for these projects. The State has successfully secured alternative funding sources for projects through the State's Consolidated Funding Application and Regional Economic Development Council process. In addition, the State is examining possible alternative funding sources such as community development banks, other federal grants, and philanthropic organizations for projects that appear across NYRCR Plans. Lastly, the State is identifying community-based organizations that may be interested in implementing projects.

Additionally, $24,000,000 was made available to Round One communities through a competitive process for the most innovative practices in categories such as public engagement, green infrastructure, and protection of vulnerable populations. Eight Round I awards were made through the competitive fund. For Round II, GOSR has allocated $3,500,000 for the competitive process outlined above.

In the second allocation, the State increased the NYRCR budget to more than $650 million of CDBG-DR funds to support the implementation of community-developed resiliency projects as a result of the planning process. The State only funds projects that address a recovery need arising from the disaster(s), meet a CDBG National Objective, and constitute an eligible CDBG activity.

Implementation Approach: As the Committees draft their final reconstruction plans, they are asked to identify "Proposed Projects" where CDBG-DR dollars are intended to be the full or partial source of funding for the project. In an effort to develop resilient, cost effective and successful projects for implementation, GOSR is also partnering with the Department of State to engage the Governor's Regional Economic Development Council State Agency Resource Teams (SARTs) to provide additional review of projects and guidance to the Committees.

After the final submission of the NYRCR Plans, GOSR begins the implementation process. The State conducts a formal review of CDBG-DR eligibility for projects, as well as an initial feasibility analysis of the projects. GOSR identifies specific projects that were included in NYRCR plans for implementation on the basis of eligibility, feasibility, stakeholder support, and alignment with program priorities including but not limited to support for vulnerable populations, innovation, alignment with other resiliency projects and state policy objectives, regional collaboration, and ecosystem restoration.

In most cases an eligible sub recipient is identified by the NYRCR program. Potential classes of sub recipients are, local governments (such as county and special districts), nonprofit organizations, and State agencies. The State may also implement select projects directly by either issuing a request for proposals ("Direct Selection") through a Notice of Funding (NOFA), or by utilizing other eligible implementation strategies. The State may also group like projects and projects which share regional boundaries to create a reasonable and cost effective implementation process when applicable. The State further outlines the implementation process as well as the selection process for the entities who implement these projects in the NYRCR Program Policy and Procedure Manuals.

Eligible Applicants: The State intends to engage both units of local government and local nonprofit organizations, as well as appropriate State agencies, authorities, and public benefit corporations, to carry out these projects.

Eligible Activities: To the extent activities are disaster recovery related and part of the NYRCR Plans submitted to the State, eligible activities for this program include, but are not limited to the following:

- Acquisition of real property, public facilities and improvements, clearance, rehabilitation, reconstruction, and construction of buildings;
- Removal of architectural barriers to access by the elderly and handicapped;
- Disposition of real property, including costs associated with maintenance and transfer of acquired properties;

- Provision of public services, such as job training;
- Infrastructure projects including but not limited to payment of the non-federal share of other federal matching grant programs;
- Relocation associated with projects that utilize one or more of the other eligible activities listed here;
- Activities carried out through nonprofits;
- Assistance to neighborhood-based organizations, local development corporations, and nonprofits serving the development needs of communities; and
- Energy efficiency/conservation programs.

Eligible Economic Revitalization activities, as listed in the above Economic Development section, may also be utilized within the implementation of the NYRCR Program.

Covered Infrastructure Project

Activity Name: Tottenville Shoreline Protection Project (TSPP)

Eligible Activity Type: Public facilities, reconstruction/rehabilitation of a public park

National Objective: Low- and Moderate-Income or Urgent Need

Eligible Activity: 105(a)(2) Public Facilities

Program Description: Superstorm Sandy's tropical storm force winds caused particularly intense waves, flooding and erosion along the south shore of Staten Island, including the community of Tottenville which is the southernmost point on the island. The peak storm surge in Tottenville measured approximately 16 feet, and resulted in the destruction of many homes in the community. The New York City Department of City Planning's (NYCDCP's) *Urban Waterfront Adaptive Strategies* study (June 2013), concluded that the South Shore of Staten Island is particularly vulnerable to erosion during extreme events, as well as on a day-to-day basis. The need for this project is further highlighted by the *New York City Hazard Mitigation Plan* (2014), which states "coastal erosion can cause extensive damage to public and private property because it brings structures closer to the water's edge. If erosion is not mitigated, the structures will become inundated with water, resulting in damage or destruction."

The Staten Island New York Rising Community Reconstruction (NYRCR) Planning Committee, working collaboratively with the NYC Department of Parks and Recreation (NYCDPR) and the New York City Mayor's Office of Recovery and Resiliency, developed the TSPP which will provide shoreline protection features as a coastal resiliency strategy for the Tottenville area. The project area extends from approximately Carteret Street to Page Avenue, an area which is within NYCDPR's Conference House Park (CHP). The TSPP is being developed in coordination with the HUD-funded Rebuild by Design 'Living Breakwaters Project', which is largely focused on the offshore area immediately adjacent to the CHP. The two projects will complement each other to reduce risk, enhance ecology, and foster community and stewardship along the Tottenville shoreline. The environmental review of both projects has been jointly addressed in a single Environmental Impact Statement (EIS). The Living Breakwaters Project is being designed by a separate design team than the TSPP, however the design will be coordinated given their overlapping objectives and functions. The total project cost of the TSPP is $38.5 million, including $13.3 million of CDBG-DR funding. The remainder of the funding will come from New York State and the City of New York. As the TSPP and the Living Breakwaters Projects meet the definition of 'related infrastructure projects'[48], the combined cost of each ($38.5 million and $74 million, respectively) exceeds HUD's threshold for the Covered Project definition.

The TSPP has been designed to withstand storm wave action and overtopping of the shoreline structures (incorporating a sea level rise of 30 inches), and to reduce the risk of coastal flooding. The TSPP's continuous series of on-shore risk-reduction measures will augment the wave attenuation and risk reduction

measures provided by the Living Breakwaters Project. The TSPP involves a comprehensive design of shoreline treatments that respond to the specific characteristics of the approximately 1.5-mile-long project site (See Figure 1). The shoreline risk reduction measures include:

- An Earthen Berm – From approximately Carteret Street to Brighton Street through a wooded portion of CHP, extending approximate 948 linear feet at a height of between approximately 1 and 7.5 feet above grade.
- Eco-Revetments – Between Brighton and Manhattan Streets 338 linear feet along the landward edge of a delineated wetland, and between Loretto St. and Sprague Avenue, 396 linear feet.
- Hybrid Dune/Revetment – Between Manhattan and Loretto Streets extending approximately 937 linear feet and at an elevation of 14 feet.
- Raised Edge (revetment and trail) – From Sprague Avenue to Page Avenue for approximately 2,536 linear feet, to control erosion while accounting for future sea level rise.

Transition nodes will connect certain project elements such as Loretto Street and Sprague Avenue. The entire system will include native plantings and green infrastructure as well as a continuous trail system along the shoreline.

Figure 4: Shoreline Risk Reduction Measures

Geographic Eligibility: The project is located in the Tottenville community of Richmond County. The project area is exposed to extreme wave action and coastal flooding during hurricanes and other severe storm events due to its location at the mouth of New York Bight, which funnels storm-driven waves into New York Harbor, Raritan Bay, and the shoreline of Staten Island. This area was once the home of a rich marine environment but over the last century has suffered significant land loss and habitat degradation. Tottenville, a town which thrived in the 19th century based on its oyster harvesting economy, now

completely lacks these species. The project area has experienced dramatic net erosion between 1978 and 2012 – in the southern portion of CHP the erosion rate has been over 3 feet per year.

In 2014, the New York City Economic Development Corporation (NYCEDC) announced its intention to study and identify high-risk shorelines citywide that are most vulnerable to sea level rise and erosion, and then prioritize those shorelines for future design and construction of resiliency measures. This study analyzed approximately 43 miles of at-risk shoreline across the five boroughs, and included the South Shore of Staten Island, with a goal to evaluate localized measures to reduce coastal risk, make recommendations for resiliency investments, and coordinate with other local coastal protection actions. As part of this coordination, coastal strategy recommendations for the area in Tottenville identified by the NYCEDC study along the eastern stretch of CHP have been incorporated into the TSPP.

CHP is a 265-acre park under the jurisdiction of NYCDPR. Extensive natural areas make up the park, including large tracts of maritime forest, creeks, ponds, bluffs, coastal wetland and beaches. A man-made temporary dune, installed following the damage from Superstorm Sandy, provides interim erosion control and coastal flood risk reduction from approximately Swinnerton Street to Sprague Avenue.

Use of Impact and Unmet Needs Assessment: The damage to the Tottenville community was recognized in the State's post-Sandy assessment of unmet recovery needs. The TSPP is consistent with the State's risk analyses, including the comprehensive risk analysis, as this project aligns with GOSR's strategy of drawing upon science-based risk to guide the location and type of infrastructure projects implemented to protect vulnerable coastal communities from future storms. The TSPP has been designed to withstand storm wave action and overtopping of the shoreline structures (resilient to sea level rise of 30 inches), and provide some level of risk reduction from coastal flooding. The TSPP utilized several modeling efforts to design the four main elements of the project, according to the specific characteristics of each section of the shoreline - the earthen berm, hybrid dune/revetment system, eco-revetments, and raised edge (revetment with trail). Using collected cross-shore transect data, the existing condition of Tottenville beach at each transect was modeled using USACE's SBEACH model, a numerical model that simulates beach profile change by predicting beach, berm, and dune erosion caused by storm waves and water levels. The condition of the shoreline (overtopping, run-up, and scour) at each transect was simulated under various storm conditions. Each simulation included consideration of sea level rise. Additional models were used to simulate sediment settlement, slope stability, and drainage and seepage patterns at each of the project's components.

The TSPP is being designed cooperatively with NYCDPR in an effort to ensure that CHP is better able to withstand coastal flooding and to curtail the significant erosion that has affected the park. By providing for continuous access along the park with a pathway that is integrated with each of the shoreline treatments, the project will expand public use and connection to the waterfront and awareness of both the Living Breakwaters and the TSPP resiliency efforts.

Transparent and Inclusive Decision Process: The Staten Island NYRCR planning process provided the genesis of the TSPP. The Staten Island NYRCR Planning Committee was active 2013 - 2014 and held a series of public meetings to generate and focus priority projects for inclusion in GOSR's NYRCR Program. In 2014, the complementary Living Breakwaters Project was conceptualized and vetted by a range of community stakeholders. Because of their layered benefit and close proximity, in 2015 GOSR established the Community Advisory Committee (CAC) to provide input on the plans for both the TSPP and the Living Breakwaters Projects. The CAC is comprised of 22 citizens, largely from Tottenville and the wider Staten Island community, and also includes educators and concerned environmentalists. The CAC typically meets quarterly and all presentations made at CAC meetings are made available on GOSR's website at https://stormrecovery.ny.gov/LBWCAC.

Also because of the close relationship between the TSPP and the Living Breakwaters Projects – in terms of purpose, need and design – the two projects are being evaluated jointly in one EIS. Concurrent with ongoing consultation with various federal, state and local agencies, the EIS process began with the release of a draft scoping document which was presented at a public hearing in April 2016. After comments were heard and responded to, a Draft EIS was released and a public hearing held on April 26, 2017. Comments were received from government agencies and from the general public through May 8, 2017. The Final EIS was released on June 13, 2018 and the Record of Decision was issued on August 31, 2018.

Long Term Efficacy and Fiscal Sustainability: The project is designed to make the park more resilient, to counteract erosion of the beachfront and, by so doing, improve the safety of nearby physical shoreline, recreational assets, and homes. The TSPP utilizes risk management tools, including the modeling activities mentioned above, to reflect changing environmental conditions. The Project will also improve public access to the park in general and to the shoreline treatments and off-shore resiliency features in particular. The TSPP improvements will reduce the vulnerability of the park and neighborhood behind it and enhance CHP's role as a public amenity.

The funding for the TSPP has been committed from GOSR's CDBG-DR allocation with additional commitments from the State and City of New York. GOSR and NYCDPR entered into a Memorandum of Understanding in June 2015 providing for the joint design and implementation of the TSPP. Design is therefore being done in close collaboration with NYCDPR which is expected to construct and will ultimately own and manage the improvements. All design elements of the project have been and will continue to be developed in a manner consistent with NYCDPR standards for construction and for long-term maintenance. Monitoring and maintenance is not expected to be more than typical for similar facilities in NYCDPR's portfolio, and NYCDPR is committed to taking on the on-going maintenance of the project including the environmental monitoring required in the wetland enhancement area. NYCDPR will monitor the project on a routine basis as required by the city-wide Waterfront Inspection Program managed by NYCEDC. This will largely consist of typical grounds maintenance, but will also involve surveys of certain beach-nesting birds.

Environmentally Sustainable and Innovative Investments: The TSPP has been designed to maintain its structural integrity during severe storms of up to the 100-year level including 30 inches of sea level rise (likely to occur sometime between the 2050s and 2080s). The TSPP has been informed by analyses of risk for coastal communities, including through mapping and modeling by the DOS and RISE which incorporated rigorous, science-based predictions regarding sea-level rise and other climate risk factors. Each of the segments of the shoreline treatment is especially designed to reduce wave heights during certain storm events assuming 30 inches of sea level rise. The earthen berm is designed to reduce wave heights by approximately 10 and 15 percent for 100-year and 50-year events, respectively. The eco-revetment (between Loretto Street and Sprague Avenue), is designed to reduce wave heights by approximately 25 percent for both 100-year and 50-year events. Due to its higher crest elevation, the proposed hybrid dune/revetment is designed to reduce wave height during a 100-year event with 30 inches of sea level rise by approximately 45 percent. The proposed raised edge component of the Shoreline Project (revetment and trail) is projected to reduce wave heights by approximately 5 to 10 percent 30 feet inland of the raised edge during the 100-year and 50-year severe storm events and by approximately 20 to 35 percent for the 25-year and 10-year events when including future sea level rise of 30 inches.

While the TSPP is not designed to avoid flooding caused by severe storms, it will reduce or delay flooding of inland areas during certain storm events and reduce damage to inland structures. It is expected that during coastal storm events, in cases where over-topping from storm surge does not occur, some level of risk reduction from coastal flooding would be provided by the project. While the shoreline treatments would be porous in nature, seepage through them is likely to be slowed and of lower volume than with free-flowing

water entering the land without the project. In summary, the TSPP improves natural defenses against extreme weather, and does so in a way appropriate for the project area.

NY Rising Infrastructure Program

Activity Type: Public Facilities and Local Government Support

National Objective: Low- and Moderate- Income or Urgent Need

Eligible Activities: Public facilities 105(a)(2); Code Enforcement 105(a)(3); Clearance 105(a)(4); Public services 105(a)(8); Non-federal share 105(a)(9) Planning 105(a)(12); Energy Use Strategies 105(a)(16); 42 U.S.C. 5305(a)(2); Economic Revitalization FR–5696–N–01 (VI) (D);

Geographic Eligibility: The program can provide funds to counties in New York that were Presidentially Declared disasters in 2011, 2012 or 2013. This includes events commonly referred to as Hurricane Irene, Tropical Storm Lee, Superstorm Sandy, the 2013 Mohawk Valley Floods (4111) and Winter Storm Nemo.

Eligible Applicants: Eligible applicants for the Infrastructure programs outlined below include: State, local, and county governments; State agencies and authorities; public schools (K-12) and universities; first responders, including volunteer fire and EMS facilities, public housing authorities and other units of government; and private not for profits that entities that are eligible to receive federal recovery funds within federally-declared counties. GOSR will work with State agencies, local governments, and other potential recipients to determine their eligibility for each component of the program.

While New York City received its own CDBG-DR allocation to address infrastructure repairs and rebuilding, it remains geographically eligible. The GOSR Infrastructure program may utilize its resources within New York City as needed, such as providing funds for infrastructure projects through the New York Rising Community Reconstruction Program and for funds designated to Rebuild by Design that are located in Staten Island.

Program Description: The State's Infrastructure Program, as approved in the initial Action Plan and subsequent amendments, supports the use of CDBG-DR funds to address two primary needs: (1) provide support to storm impacted units of government and other eligible entities with payment of their non-federal share requirement ("match") so that they can access other federal disaster recovery resources; and (2) the development of stand-alone CDBG-DR infrastructure projects that are necessary to address identified recovery needs in communities not funded by other federal recovery programs.

New York's infrastructure assets are still recovering from Hurricane Irene, Tropical Storm Lee, Superstorm Sandy, and more recent federally declared disasters. The total cost of recovery from these storms is still being determined however. The State will have a better estimate as federal entities such as FEMA and the United States Department of Transportation (DOT) complete their assessments and determine the full costs of eligible repairs.

However, through the unmet needs analysis and in consultation with State agency partners, local and county government officials, federal agencies, and other public entities, it is clear that the unmet need for infrastructure recovery is great. The most recent unmet needs analysis identifies more than $12 billion in outstanding unmet need. This unmet needs analysis confirmed what the State identified in the Action Plan and previous amendments, that, while substantial federal recovery resources are being provided to assist New York recover from Superstorm Sandy and other federally-declared events, the amount of available resources needed to rebuild damaged infrastructure and mitigate against future storms far exceeds available resources.

The State continues to work with all federal partners to maximize available repair and mitigation funds. In particular the State has been aggressively working to develop solutions to address the recovery needs of local, county and State government agencies and has been focused on ensuring that publicly-owned critical infrastructure assets in the energy, health care, transportation and wastewater sectors are not only identified and funded, but are being repaired and constructed in ways that are more resilient. This is intended to create

a more resilient environment for New York's residents and to safeguard the billions of dollars of federal investment provided to recover and rebuild.

The State has created an Infrastructure Program that addresses these outstanding needs. It is working aggressively to develop solutions to address the recovery needs of local, county and State government agencies and focusing on ensuring that publicly owned critical infrastructure assets in the energy, health care, transportation, and water sectors are rebuilt more resiliently.

As approved in the Action Plan and previous amendments, the Program is organized into two main sub-programs: a Non-Federal Share Match Program which supports CDBG-DR eligible activities, and the Local Government and Critical Infrastructure Program to support stand-alone infrastructure projects. An overview of these components is below. Also outlined below are details on Covered Projects previously outlined in APA6, the State's current Covered Projects, the State Resiliency Retrofit Fund, the Infrastructure Bank, and the Resiliency Institute for Storms and Emergencies (RISE). Information on further program details is provided in the program policies and procedures.

As part of these programs, the State continues to support projects that restore, enhance, and make more resilient the region's natural resource assets through the use of green infrastructure. These projects provide a natural line of defense to safeguard communities against future disasters in a more sustainable holistic way. All of the State's infrastructure projects where possible and feasible will be developed to support green alternatives.

Non-Federal Share Match Program

Many federal programs require that grant recipients provide a non-federal share match of their overall project budget as a condition of funding. In the aftermath of large disasters, this requirement can place a significant fiscal burden on storm-damaged communities. To provide relief to these communities, Congress allows CDBG-DR funds to be used as local match for federal funds that require a cost share to obtain these recovery dollars.

Given this provision, GOSR has designed the Non-Federal Share Match Program, approved in the initial Action Plan and clarified in APA1 and APA6, to assist storm-impacted entities with the cost share associated with other federal disaster recovery funds. Specifically the program uses CDBG-DR funds to provide the required non-federal cost share, or "match," payment for eligible CDBG-DR activities so that these entities can complete recovery and draw down the larger share of federal recovery funds. Rates for each of the federal programs vary by disaster. These are further defined below.

In this Action Plan, the State clarifies which federal programs will be eligible for the matching of the non-federal share.

Table 33: Federal Programs Eligible under the State's Match Program

Federal Program	Federal Agency	Federal Cost Share	State Cost Share	Disasters
Storm Mitigation Loan Program	EPA	84%	16%	Sandy
Hazard Mitigation Grant Program (HMGP)	FEMA	75%	25%	Sandy, Irene, Lee, Nemo, Mohawk Floods.
Individual Assistance (IA)	FEMA	90%	10%	Sandy
Public Assistance (PA)	FEMA	75%	25%	Irene, Lee, Nemo, Mohawk Floods.
Public Assistance (PA)	FEMA	90%	10%	Sandy
Direct Federal Assistance (DFA)	FEMA	90%	10%	Sandy
Federal Highway Administration Emergency Relief (FHWA-ER)	DOT	75%	25%	Irene, Lee, Sandy

Sectors that will receive funds from the match programs shown are:

- Local and county Government and their Departmental units
- State agencies and Authorities
- Schools (K-12) and Universities
- First Responders – Volunteer Fire and EMS facilities,
- Critical Infrastructure Facilities as defined by FEMA (wastewater and drinking facilities)
- Public Housing Authorities
- Other local and county federal program applicants eligible to receive Federal Recovery Funds (including libraries, zoos, museums, nursing homes and medical care facilities)

FEMA Programs

FEMA provides funds to eligible applicants who must document storm-related damages. As a cost sharing program, FEMA requires that the State certify that local applicants that receive FEMA funds have met the "local match" requirement. The match rate is determined by disaster based on the extent of damage. The federal/local cost-share ratio is normally 75% in federal funds and 25% State or local funds. Due to the catastrophic nature of Sandy the federal cost-share was increased to 90% reducing the local share to 10%. Under FEMA regulations however, the Hazard Mitigation Program (HMGP) is always a 75/25 cost share program without regard to disaster.

a. **Public Assistance:** FEMA's Public Assistance Program (PA) is the nation's primary and largest disaster recovery program. While the number of projects eligible and costs incurred for PA has not been finalized, there are currently over 4,200 projects that have been approved by FEMA under the PA program for Superstorm Sandy. These projects are submitted by more than 1,000 eligible applicants. The State estimates that once final assessments are made by FEMA, the Sandy PA program could exceed $8.5 billion in New York State. The program's costs to provide match for New York counties and State agency costs are expected to exceed $350,000,000 with over $153,000,000 needed to assist units of government, schools and eligible non-profits.

Table 34: Total Project Cost for Each Eligible Disaster

Storm	Number of Eligible Applicants	Total Project Worksheets (PWs)	Total Project Cost (inclusive of federal share and local match)
Hurricane Irene (4020)	1230	9255	$ 670,975,918
Tropical Storm Lee (4031)	358	2646	$ 349,861,711
Superstorm Sandy (4085)	1046	4250	$7,683,098,540
NY Severe Storms and Flooding (4111)	73	125	$ 29,748,008
NY Severe Storms and Flooding (4129)	189	670	$ 73,968,580

Source: GOSR Program Data. Project Cost estimates as of 12/1/2014 and 12/2/2014.

As part of its process for its programs, FEMA validates that projects are storm-related. They also account for insurance proceeds and in the calculation for the award reduce cost which helps reduce duplication of benefit issues. The State, through its review of PA worksheets and supporting documentation, continues to ensure that projects are CDBG-DR eligible and that duplication of benefits does not occur.

While the PA Program has thousands of applicants, the State is playing close attention to applicants who provide services to vulnerable populations and to entities that provide in-kind services that benefit community recovery. These entities, while they may not have large amounts of PA funding, provide critical resources to their communities.

b. **Hazard Mitigation Program:** GOSR will provide the required non-federal share for the FEMA Hazard Mitigation Grant Program (HMGP) for Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. Using a global match financing strategy, it will capitalize on the portfolio of projects managed by GOSR that meet HMGP match requirements. This approved strategy will allow the State to assist communities who have FEMA HMGP allocations for DR 4020, 4031, 4085, 4029 and 4111. GOSR is responsible for administration of a Global Match strategy for these disasters, and in so doing identified projects eligible for both CDBG-DR and HMGP funds that create programmatic, policy, and administrative efficiencies for the State's recovery.

Environmental Protection Agency Sandy State Revolving Fund Program

The Environmental Facilities Corporation (EFC), a public benefit corporation of New York State, administers the EPA - Clean Water State Revolving Fund (CWSRF), which provides low- or no-interest rate financing to construct water quality protection projects. Following Sandy Congress appropriated similar founds through the "Disaster Relief Appropriations Act, 2013" that were targeted to Sandy impacted facilities., As a part of the CWSRF, EFC is administering these additional Sandy related funds known as Storm Mitigation Loan Program (SMLP). This program provides funding to eligible municipalities to protect water treatment facilities from future storm events. The SMLP operates as a grant – loan program with a 25% grant and 75% zero-interest loan. This program comes with a 20% local match. GOSR will work with EFC and eligible wastewater systems to provide the 20% match.

The first project to be obligated funding through the SMLP is the Bergen Point Final Effluent Pump Station (FEPS) project. This project will receive a total of $14,510,000 which will result in $3,175,000 match. Further projects will be identified for the SMLP based on submittals of full applications. The deadline for the first round of project applications to be considered was December 1, 2014.

Federal Highway Administration Emergency Relief Program

Provides funds to repair or reconstruct eligible highways damaged by either natural disasters or catastrophic failure from external causes. The FHWA oversees the ER program through coordination and implementation of disaster relief policies and procedures, provides assistance to agencies applying for funds, and supports agencies with technical review, design, repair, and reconstruction of damaged highway

facilities. Emergency work directly following a disaster to restore essential traffic, minimize the extent of damage, and protect remaining facilities that is completed within 180 days of the event is eligible for reimbursement at 100%. GOSR will help cover the local match for eligible applicants.

The State will ensure that each project which receives funding under the Non-Federal Match Program will be for a CDBG-DR eligible activity, meet a national objective, be located in a HUD eligible county, and demonstrate a tie to the eligible storm.

Local Government and Critical Infrastructure Program

The majority of local governments' recovery needs are being addressed through the Non-Federal Share Match Program detailed above. However, the State has developed the Local Government and Critical Infrastructure program to provide resources to communities with gaps in funding for essential public services and critical infrastructure. Under this program component, CDBG-DR funds will be used to repair, rebuild, enhance, or mitigate facilities and provide essential public services that were impacted by Superstorm Sandy.

The Local Government Support component is designed to meet additional recovery needs of heavily impacted local governments, school districts and other public entities that play critical roles in local communities. To be eligible for this track, the public entity must have been directly impacted by one of the named storms and have had a significant and acute funding gap in part caused by lost property tax revenue and/or property abandonment.

The State will also work with local governments to assist the continued repair and mitigation of public facilities and services. Additionally, GOSR is aware that many local school districts and local governments face a strain on their capacity to provide essential services as outlined in section 105 (a)(8) of the HCD Act. To meet these needs the State will consider development of a financing program that would address loss to key public services resulting from the disasters.

GOSR continues to engage with units of local government and schools to identify gaps in recovery and may assist entities that meet the Program guidelines.

As detailed in APA6, four sectors will be covered through the Local Government and Critical Infrastructure Program.

a. **Energy Infrastructure*:*** Superstorm Sandy made landfall on Long Island and crippled the region's largest public energy system, Long Island Power Authority (LIPA). LIPA provides service to over 90% of Long Island residents. Sections of Long Island were without power for weeks. In addition to rebuilding and repairing LIPA's system from Superstorm Sandy, additional resiliency measures are needed so that future events do not add more repair and rebuilding costs. As a public entity, LIPA is eligible for federal programs, including FEMA's PA program. The State will assist LIPA with its match requirement. GOSR will also assist LIPA with rebuilding, repairing, and making more resilient elements of the system that were directly impacted by the storm.

b. **Local Government Support Program*:*** The Program is designed to provide funding to those eligible counties with unmet infrastructure and essential service needs that can be directly tied to the storm, and meet CDBG-DR eligibility requirements. The funding is based on a formula that takes FEMA Public Assistance obligated funds and FEMA Housing Damage Estimates into account. The counties that are considered eligible are those that HUD has deemed to be most impacted by Sandy. Counties will be responsible for identifying and prioritizing eligible projects.

c. **Water and Waste-water Treatment Facilities*:*** Treatment facilities, such as the Bay Park Wastewater Treatment Facility, are generally located in low- lying areas and thus were heavily impacted by Superstorm Sandy. Total estimates to repair the full slate of storm-impacted facilities in New York State exceeds $1 billion. The recovery, repair and resilience of these treatment facilities are a priority for the Governor's Office of Storm Recovery. The eligible FEMA PA

assistance projects, including the amount of Section 406 mitigation measures to be applied to these low-lying facilities, are still being determined. Depending on the final eligibility determinations by FEMA and or EPA, the Governor's Office of Storm Recovery may, depending on the availability of funds, allocate CDBG-DR funds to assist with gap funding for the non-federal share of some of these projects.

d. **Natural Resource Infrastructure:** This program is designed to promote the State's commitment to green infrastructure, meet recommendations made by the Hurricane Sandy Rebuilding Task Force, and embrace HUD's recommendation that grantees incorporate natural resiliency measures into infrastructure projects. The State will also use funds to address the recovery and rebuilding needs of State agencies and units of local government who pursue projects that are natural resource based and or incorporate "green infrastructure" methods in project design. Examples of projects that may be developed include: restoring, developing, and/or enhancing natural barrier dune systems, wetland habitats, near shore vegetation and forest canopies; creating living shorelines; and restoring man-made or natural beach or riverine environments.

Updates on Previously Submitted Covered Projects

APA6, which was approved in May 2014, included details of three Covered Projects: providing PA match and backup generation capacity for the Bay Park Wastewater Treatment Facility; the State's HMGP Bridge Scour Project which addresses the need to repair and make bridges in impacted communities across the State more resilient; and PA match for the repair and restoration of LIPA's energy system. APA10, which was approved in November 2015, included details of an additional Covered Project: the Bergen Point Wastewater Treatment Plant Outfall Replacement Project. Each of these projects was, at the time of submission, considered a covered project because the amount of federal funds provided by FEMA to repair the facilities combined with the non-federal share portion, provided by GOSR exceeds the $10 million CDBG-DR and $50 million or more total project threshold for Covered Projects. While three of these projects, LIPA, the Bridge Scour Project, and the Bergen Point Wastewater Treatment Plant Outfall Replacement Project may no longer meet the definition of a Covered Project, the projects are still active and critical to community recovery.

Bridge Scour Project: The State's HMGP Bridge Scour Project is progressing; however, as a result of a FEMA's approval of a State-initiated financing plan for the HMGP program which outlines how the State will meet the non-federal share requirements for the Sandy HMGP projects, the State's HMGP Bridge Scour Project will not require CDBG-DR funds at this time.

LIPA: The LIPA covered project is also a FEMA PA project. It was found to not meet the Covered Project definition as funds were only needed to reimburse match costs that were tied to restoring power to the electrical system. Funds were not used for construction. The State along with LIPA has continued to address long term recovery and restoration needs of the power grid. As outlined in this Action Plan, the State has identified additional unmet recovery needs that tie to the restoration costs, which need to be reimbursed so that these costs are not passed onto customers. The work that is ongoing at LIPA will not only restore LIPA's assets to pre-storm condition but it will make them more resilient to future events and make Long Island communities more resilient.

The State worked with Long Island Power Authority to address its restoration related recovery needs as it is the primary public energy provider to Long Island providing services to over 95% of Long Island residents. GOSR has committed to assist LIPA cover a portion of storm related restoration costs through assisting with FEMA PA match obligation. From Hurricane Irene, Superstorm Sandy, and Winter Storm Nemo, LIPA's total FEMA PA match obligation exceeds $200 million with over $1.4 billion in damages ($140 million in matching costs) tied to damages from Superstorm Sandy. This Action Plan provides an additional $27.5 million to assist LIPA to assist with match obligation. LIPA is part of GOSR's Non-federal Share Match Program but the allocation to LIPA has been specified in the Action Plan. The additional $27.5

million to LIPA has not been reallocated from another GOSR program; it is increasing LIPA's allocation from the Non-federal Share Match Program budget.

Bergen Point Wastewater Treatment Plant Outfall Replacement Project: The State's Bergen Point Wastewater Treatment Plant Outfall Replacement Project is progressing; however, as a result of program implementation strategy, the Environmental Facilities Corporation and the New York Department of Environmental Conservation secured alternative sources of non-federal match funding for this Storm Mitigation Loan Program project. No CDBG-DR funds will be used at this time.

Covered Infrastructure Project

Activity Name: Suffolk County Coastal Resiliency and Water Quality Improvement Initiative

Eligible Activity Type: Essential public services, construction/reconstruction of water/sewer lines or systems, rehabilitation/reconstruction of residential structures, and rehabilitation/reconstruction of a public improvement

National Objective: Low- and Moderate- Income or Urgent Need

Eligible Activity: 105(a)(2)(4)(8)(17); U.S.C. 5305(a)(2)(4)(8)(17)

Eligible Applicants: Both low- and moderate-income households and households in the project area

Program Description: The Suffolk County Coastal Resiliency and Water Quality Improvement Initiative is a resiliency project that aims to address public health and water quality while benefiting the communities. Suffolk County has a federally-designated sole source aquifer; it derives its drinking water from the ground. The severe flooding in this region during Superstorm Sandy raised the groundwater elevation above the top of the septic systems and cesspools, resulting in the mix of sanitary wastewater and groundwater, causing public health and water quality hazards. The impacts of Superstorm Sandy exacerbated the already rising nitrogen pollution from failing septic and cesspools along river corridors and into the Great South Bay. Nitrogen pollution has caused a water quality crisis, and the erosion of coastal wetlands, which have been scientifically proven to reduce vulnerability from storm surge.

GOSR, in coordination with DHSES, NYSDEC and the County, proposes to extend sewers to communities along four priority watersheds along the Great South Bay. The project combines $66,437,463 in CDBG-DR funding with funding from other sources including FEMA HMGP, ESD and the EFC Clean Water State Revolving Fund and has a total project cost of $388,536,475. The initiative will help Suffolk County recover from Superstorm Sandy by installing sewer and wastewater infrastructure in areas where septic systems were compromised during Superstorm Sandy. These interventions will prevent future septic system flooding, sewage backups and groundwater pollution, and will reduce nitrogen pollution that adversely affects natural coastal protection systems.

In Suffolk County, over 70% of the wastewater is managed through on-site disposal systems such as the cesspools and septic tanks, for wastewater treatment. Many of these on-site systems are located only a short depth to groundwater, and are compromised during flood events. This allows effluent to enter groundwater and surface waters. Additionally, even under normal conditions, on-site septic systems do not treat nitrogen effectively, leading large quantities of nitrogen-enriched effluent to flow into the County's groundwater, which then travels to surface waters or infiltrates drinking water aquifers.[49]

The extension of the sewer system is a crucial factor in rebuilding and recovery for these communities. Properties along all four watersheds experienced flooding during Sandy, and project boundaries have been determined based on area characteristics including inundation history, depth to groundwater, and travel time to surface waters. The design phase of the Initiative will further refine parcel locations based on geography and other factors. As sewer extensions are created, homes will be connected to the new sewer main by means of a sewer lateral.

For many homeowners, paying for the sewer lateral is not financially feasible in light of the financial strain of rebuilding their homes. Providing assistance with installations of sewer laterals aids both individual household and broader community recovery. While funds will be used to assist both low- and moderate-income households and non-low- and moderate- income households, no CDBG-DR funds will be used for this portion of the project. Once the sewer lateral is installed, the homeowner will be responsible for maintaining and repairing it.

This work will be performed on private property; the activity will be carried out as a housing rehabilitation activity[50]. The program will determine the location for the laterals at each residence based on engineering design requirements and cost considerations.

Geographic Eligibility: The Great South Bay sits between Fire Island (a barrier island) and the mainland of Long Island. These areas were selected because of the combination of substandard septic systems, dense populations, a short depth to groundwater, and short travel times for nitrogen-enriched groundwater to enter surface waters.

The project area includes four watersheds:

1. *Forge River Watershed centered on Mastic:* This project will address impacts from Superstorm Sandy and reduce extensive nitrogen pollution to the Forge River and Great South Bay. The proposed project will connect parcels in the area to a new sewer collection system that will flow to a new wastewater treatment plant (that would include advanced nitrogen treatment) located on municipal property. Additionally, groundwater levels of nitrogen in this area are already at the maximum contaminant level for drinking water, and nitrogen levels are projected to continue to increase without an upgrade to the wastewater infrastructure. The community would be left vulnerable and at risk of contaminated drinking water.

2. *Carlls River Watershed centered on North Babylon and West Babylon:* This project will address storm impacts and reduce nitrogen and pathogen pollution in the Carlls River and Great South Bay. Currently over 60% of the nitrogen load from the Carlls River is from septic systems. The proposed project will connect parcels within the current Sewer District No. 3—Southwest Sewer District, and expand the sewer district to include a number of parcels in the North Babylon and West Babylon areas.

3. *Connetquot River Watershed centered on Great River:* After Superstorm Sandy, wastewater flooding caused surface water impairments, resulting in 15 days of emergency closures of shellfish beds by NYSDEC. Actual water quality impacts persisted much longer. This project will address nitrogen pollution and pathogens in Connetquot River, Nicoll Bay, and Great South Bay. The proposed project will connect parcels in the Great River area to the Sewer District No. 3—Southwest Sewer District. The Connetquot River contributes 15% of the total nitrogen in the Great South Bay; it is the single largest source of nitrogen. 63% of the nitrogen load from the Connetquot River is from septic systems.

4. *Patchogue River Watershed centered on Patchogue:* As a result of significant flooding from Sandy, the onsite sanitary disposal systems in the watershed contributed to poor water quality and elevated nitrogen levels that exceed limitations set by the Suffolk County Department of Health Services. This project will address storm impacts and nitrogen and pathogen pollution in Patchogue River and Great South Bay. The proposed project will connect parcels to the Patchogue sewer system.

Use of Impact and Unmet Needs Assessment: As indicated in the Impact and Unmet Needs Assessment, over 70% of the wastewater in Suffolk County is managed through on-site disposal systems. Many of these on-site systems are located only a short depth to groundwater, and are compromised during flood events. This introduces untreated materials into drinking water systems and water bodies, causing harm to public health and environmental assets. Nitrogen and other pollutants remain a constant concern across Long Island as the drinking water for almost 3 million residents is drawn from sensitive groundwater aquifers recharged from the surface. Governor Cuomo directed NYSDEC to undertake an intensive consultation

process with key scientists and stakeholders concerning storm resiliency and water quality on Long Island in the context of nitrogen pollution, and the findings support the work of this project in Suffolk County.

In 2014, Suffolk County was awarded an IBM Smarter Cities Challenge grant. A team of six IBM experts spent three weeks in the County working to help solve the challenge of promoting a resilient community and water quality pollution, resulting in the publication of a Smarter Cities Challenge report. The report identified a $7 billion gap for wastewater infrastructure and treatment upgrades for the 360,000 properties in Suffolk County which currently use on-site septic systems.

There are over 53,000 unsewered parcels in the Great South Bay watershed. This initiative proposes to sewer over 8,000 of these parcels, relieving pressure on on-site systems at increasing risk of failure due to seawater infiltration and corrosion. The frequency and magnitude of severe weather events and subsequent flooding is expected to increase due to climate change. Suffolk County's Comprehensive Water Resources Management Plan Executive Summary (2014) and the State's "Coastal Resiliency and Water Quality in Nassau and Suffolk Counties Recommended Actions and a Proposed Path Forward" (2014) highlight the severe risk of reliance on these vulnerable systems.

The projected sea level rise will increase ground water levels and heighten the risk of groundwater contamination. According to the RISE Climate Risk Report for Nassau and Suffolk (August 2014), the sea level is anticipated to increase by 5.7-8.3 inches in Suffolk County by the 2020s and by 19.4-29.2 inches by the end of the century.

In addition to improving wastewater treatment, the project addresses risks posed by nitrogen concentration in the effluent and surrounding surface waters. Algal blooms linked to excess nitrogen pollution have seriously adverse impacts on swimming, fishing, shellfishing, and boating.

Transparent and Inclusive Decision Process: Since Superstorm Sandy, GOSR and State agencies have engaged the public and elected officials through the Action Plan development process, the NY Rising Community Reconstruction Program, and participation in events and discussions organized by NYSDEC and other entities. Utilizing this three pronged approach, GOSR conducted an inclusive decision process. Through APA8 the State also engaged the public about this project.

GOSR held a public hearing in February 2014 in Suffolk County to get feedback on Action Plan Amendment 6. Over 80% of comments made at the hearing and submitted through our web portal from Suffolk County residents concerned issues around wastewater, sewers and nitrogen in the South Bay.

GOSR also engaged residents and elected officials through the nine New York Rising Community Reconstruction Program planning committees in Suffolk County. Stakeholders in this process repeatedly voiced the need to install advanced wastewater infrastructure for the health of people and ecosystems, for the resiliency of the community during severe weather and disaster events, and for fundamental economic vitality.

In addition, GOSR consulted with the scientific community, subject matter experts, and federal and State partners during the planning for Suffolk County Coastal Resiliency and Water Quality Improvement Initiative. These consultations underscored the need to invest in improving coastal community's resiliency and water quality so as to ensure a thriving economy and a healthy living environment in Suffolk County.

Long Term Efficacy and Fiscal Sustainability: Centralized sewer systems have demonstrated efficacy and fiscal sustainability, supported by a combination of tax revenues and user fees. Suffolk County has substantial experience with managing such systems in the southwest portion of the County.

Public health and water quality improvements are expected to result in increases in property values, increased capacity for business expansion and central business district growth, and healthier marine economies. In coastal areas, reducing nitrogen levels is expected to have a positive impact of reducing beach and shellfish closures resulting from pathogenic contamination. Longer term, it is expected that the stabilization and possible rehabilitation of seagrasses and wetlands along the south shore will protect low

lying areas from wave run-up and longshore currents. Property values of existing homes and businesses will likely increase as a result of the improved protection in the area.

The State is working with the County to ensure fiscal sustainability of this project. To date the County has drafted a multi-pronged approach which will include creation of new sewer districts to provide long term management of the sewer system as well as a process for the long term commitment of the residents of these communities. Fiscal sustainability will continue to be analyzed in further detail during the planning stage of the initiative.

As outlined in the State's Infrastructure Program policy and procedure manual, this project will be subject to all the monitoring and compliance requirements that GOSR currently has in place. GOSR staff and consultants work directly with Suffolk County to ensure that the project remains compliant throughout the life of the project, from concept stage to planning, construction, and closeout. The project will follow the process that GOSR has developed for all infrastructure projects, whereby a pre-application is first developed and is vetted to ensure that its meet all CDBG-DR requirements. After the pre-application is approved, the County by working with the State and its CDBG-DR grant consultants will develop a full application for review by GOSR. In addition to moving through the application approval process, GOSR requires that the County take part in Technical Assistance sessions that address financial record keeping, labor and other cross cutting practices (Section 3, Minority and Women-owned Business Enterprise (MWBE)). GOSR reviews bid documents and takes part in pre-bid and bid-conference meetings. Throughout the project, the monitoring process will continue with items including but not limited to filing of monthly and quarterly reports, wage reports for Davis Bacon compliance and on site job interviews will take place. Both GOSR Infrastructure staff as well as the GOSR Monitoring and Compliance staff will then continue to work with Suffolk County to ensure that the project complies with CDBG-DR requirements, including those related to monitoring the long term efficacy and sustainability of the project.

As part of the project's planning process, GOSR worked directly with staff at FEMA's Superstorm Sandy SRO (Sandy Recovery Office), state agencies and County government on the project. Technical staff continue to assess how this project's long term viability could be impacted by environmental conditions, such as rise in sea level, flooding, heat waves, and other climate changes likely to affect Suffolk County. The environmental review process is being coordinated by GOSR who is working in close consultation with FEMA, HUD, NYSDEC and Federal permitting bodies.

For some project areas, GOSR expects to see immediate environmental benefits and recovery goals obtained for homeowners. These include homes where a tie into the lateral program will result in the removal of septic systems and cesspools, arresting discharges and stop losses and providing immediate benefits to water quality. To assess long-term sustainability and efficacy, GOSR is working in coordination with Suffolk County, DHSES and federal partners including FEMA and other partners in the SRIRC to address the following:

- Reviewing and identifying studies and monitoring protocols that will be needed to address long term environmental resiliency components of the project;
- Developing and looking at surge models and impacts that hurricanes and frequent nor'easters may have on the great south bay and how climate change and more frequent storms could slow demonstrated measure of success;
- Examining how rain and snow events could result in impacts to the sole source drinking water aquifer as Suffolk septic systems and cesspools become comprised, they increase the risk off polluting the drinking water system and;
- Identifying measures and methods that need to be put in place before construction to show that net positive environmental and economic benefits which will result from this project, specifically that as homes and businesses are tied in to the sewer that wetlands marshes will be able to rebound and provide increased natural resiliency measures for these communities. Also, that as water quality

increases, historically important industries that were impacted by Superstorm Sandy in the impacted area such as fishing, agriculture and tourism can be restored more quickly in future disasters.

GOSR will continue to fully utilize the SRIRC for future coordination of any Suffolk County sewage projects. This includes using the SRIRC meeting process to provide updates on the planning and development of the projects as the primary means to coordinate federal and State environmental review processes, following the environmental review, and bringing the results of the public process back to the SRIRC for an update. GOSR has already brought this project to the SRIRC in March 2015 and again in May 2015, and will continue to do so at key project development points.

Environmentally Sustainable and Innovative Investments: Superstorm Sandy highlighted Suffolk County's vulnerability to climate change, sea level rise, and increasingly violent storm events. Due to its geographic location and nearly 1,000 miles of shoreline, Suffolk County is exposed and vulnerable to numerous natural hazards, especially coastal storms traveling up the Atlantic coast. Sea-level rise can exacerbate storm events, causing storm surges and flooding of increasing intensity and threatening shoreline communities and infrastructure.

As Suffolk County derives its drinking water from a sole source aquifer replenished by groundwater, compromised on-site septic systems represent a direct threat to drinking water and surface water quality. Septic systems and cesspools, especially those close to groundwater tables, can be flooded during storm events, causing mixing of partially-treated or untreated effluent with groundwater.

In 2010, the EPA added the Great South Bay to its 303(d) list of impaired water bodies due to eutrophication and harmful algal blooms. NYSDEC identified nitrogen from wastewater as a major contributor to the water body's lower oxygen levels and impaired status; this finding was corroborated by research showing that almost 70% of the total nitrogen load for the Great South Bay comes from wastewater effluent.

Even when functioning as designed, septic systems only remove a small amount of nutrients such as nitrogen, which enters the groundwater and travels to surrounding surface waters. In the Great South Bay, nitrogen pollution and subsequent eutrophication has devastated the shellfish and eelgrass populations. The Great South Bay had supported large hard claim and bay-scallop industries; both shellfish populations today are a fraction of their previous sizes in large part due to nitrogen pollution. Additionally, NYSDEC estimates that there was an 18%-36% loss in tidal wetlands in the Great South Bay between 1974 and 2001. The loss of marshland habitat is detrimental to the entire coastline, as marshes and wetlands act as natural defenses against storm surges and waves in coastal regions.

The NYS 2100 report states that, "tidal wetlands can protect coastal communities from storm damage by reducing wave energy and amplitude, slowing water velocity, and stabilizing the shoreline through sediment deposition. More than half of normal wave energy is dissipated within the first three meters of marsh vegetation such as cord grass. In addition, given sufficient sediment deposition, wetlands are able to build elevation in response to sea-level rise, providing a buffer against climate change and coastal submergence."

The proposed project brings a sustainable set of centralized sewage collection and treatment systems. Treatment facilities and collection systems to be utilized are and will be sized for present and future flows, and appropriately armored to withstand expected severe weather events.

Infrastructure proposed for this project will also be innovative. For example, small diameter low pressure and vacuum sewers will be used where possible. These sewers can be relatively shallow, avoiding construction impacts, disturbance of the community and the environment, and the possibility of infiltration by ground water. Additionally, the proposed waste water treatment plant will be located inland, away from the threat of sea level rise or coastal flooding. Finally, the proposed project provides for waste water reuse. The project proposes to recharge 100% of the treated waste water from the new waste water treatment plant to Long Island's federally designated sole source aquifer. Waste water reuse is an important consideration in the overall sustainability of waste water management practices and strategies.

Regional Coordination Working Group: GOSR will continue to work with the Sandy Regional Infrastructure Resilience Coordination Group (SRIRC) to ensure that this Initiative maximizes the resources available and collaboratively recovers from these storms while preparing the region for future resiliency.

Monitoring and Compliance: Suffolk County Water Quality Improvement Initiative will be subject to monitoring and be required to comply with all rules and regulations similar to all other GOSR sub-recipients and under the Infrastructure Program Monitoring Plan as outlined in the Compliance and Monitoring Policy and Procedure Manual.

Covered Infrastructure Project

Activity Name: Bay Park Wastewater Treatment Plant

Eligible Activity Type: Public facilities, construction/reconstruction of water/sewer lines or systems, and rehabilitation/reconstruction of a public improvement

National Objective: Low- and Moderate- Income or Urgent Need

Eligible Activity: 105(a)(2)(4)(8)(9)(16)(17); U.S.C. 5305(a)(2)(4)(8)(9)(16)(17)

Program Description: Bay Park is the largest wastewater treatment facility in Nassau County, treating 58 million gallons of wastewater a day and serving more than 550,000 residents representing 40% of the county's population. Superstorm Sandy caused catastrophic damages to the facility. During Superstorm Sandy, engines for the plant's main pumping system were flooded by over nine feet of water destroying the plant's electrical system and comprising other critical components of the plant. The electrical failure resulted in over 200 million gallons of raw sewage being discharged into nearby neighborhoods, waterways and natural resource areas causing a public health crisis and safety hazard for these areas. The level of discharge also had a direct impact on already fragile natural resources surrounding Bay Park Wastewater Treatment Plant.

The impact Superstorm Sandy had on Bay Park caused a strong reaction by Nassau county residents for a rebuilding solution that would not only restore Bay Park to its pre-storm condition, but also ensure that similar discharges would not occur in the future. Residents also expressed the necessity of rebuilding Bay Park in a more resilient manner that would allow for the areas bays, waterways and natural resources to be restored to pre-storm quality and mitigated to prevent the environmental hazards, which Superstorm Sandy caused to the community.

As a public facility, Bay Park was eligible to receive FEMA PA funding. Recognizing the magnitude of damages and need to make this critical infrastructure asset more resilient to future events, the State along with Nassau County worked with FEMA to apply for FEMA's Public Assistance Alternative Procedures Pilot Program. A settlement was reached between FEMA, the State and Nassau County that provided $810,708,377 to not only repair but make the facility more resilient to future storms. The Settlement provides two distinct components outlined below:

- **Repair and Restoration Phase** totaling $427,458,239 which includes the repair and restoration of the Bay Park Wastewater Treatment Plant.

- **Resiliency and Mitigation Phase** totaling $383,250,138 which includes the construction of a berm around the facility that will protect against a 500 year storm, among other Section 406 mitigation activities.

The Settlement accounts for sea level rise and thus requires the elevation of athletic fields near Bay Park Wastewater Treatment Facility which will allow for better storm water management practices. The repair phase includes hardening and replacing damaged equipment and the electrical systems at the facility. The Settlement requires a 10% cost share and an additional $20,000,000 for electrical generation of a generator, which includes new backup electrical power generation to be built into the plant during the restoration phase. The Settlement letter identifies the required local match, as well as a description of the CDBG-DR funded generator project.

Table 35: Total Project Cost in millions

PROJECT FUNDS - AGENCY	AMOUNT	SOURCE AND STATUS	USE
Non-Federal Cost Share - GOSR	$81	CDBG-DR/COMMITTED	CONSTRUCTION
Electrical Mitigation - GOSR	$20	CDBG-DR/COMMITTED	CONSTRUCTION
TOTAL GOSR COMMITTMENT	**$101**	**CDBG-DR/COMMITTED**	
Federal Share - FEMA	$19	FEMA PA/COMMITTED	DESIGN/CONSTRUCTION
ESTIMATED TOTAL PROJECT COST	**$120**		

[1] The original settlement between FEMA, the State and Nassau County provided $810,383,784 for both repair/restoration and mitigation costs as stated in a January 22, 2014 letter from FEMA to the State and the County. The settlement was adjusted to $810,708,377 based on changes to the scope of work as recorded in the FEMA Project Worksheet.

Use of Impact and Unmet Needs Assessment: As the State assessed unmet needs, Bay Park's repair was considered a critical need of the community. The Bay Park failure presented an unprecedented natural disaster and public health crisis in the region. Repair of this facility was both an urgent need and consistent with the State's comprehensive risk analysis. The New York State Hazard Mitigation Plan identifies the threat of coastal flooding to critical facilities and identifies elevation, protective measures for critical facilities, storm water management and wet/dry flood-proofing as recommended mitigation measures for vulnerable facilities like Bay Park. The Climate Risk Report for Suffolk and Nassau County developed by the Resiliency Institute for Storms and Emergencies (RISE) highlighted the specific vulnerability of the Bay Park facility under various flooding scenarios associated with projected sea level rise and extreme weather events.

In addition, FEMA conducted site damage and risk assessment in developing a mitigation/resiliency plan for Bay Park as part of the FEMA Public Assistance Alternative Procedures Pilot Program review process. FEMA's exhaustive analysis recommended elevating the new Main Substation building to 18.25 feet to guard against water intrusion during a 500-year flood event among other measures. Researchers at RISE continue to advise the State on evolving plans for Bay Park.

Through the FEMA PA Settlement and GOSR's commitment of CDBG-DR funds, Bay Park's immediate unmet needs from Sandy will have been met. The unprecedented amount of FEMA PA funding for repair and resilience, combined with GOSR providing non-federal share match and CDBG-DR funding for electrical mitigation, ensure that appropriate risk reduction measures will be in place to address vulnerabilities in and around the Bay Park facility. The State has also committed to work to secure additional funds for an ocean outfall pipe to complement the project.

GOSR also worked closely with Nassau County and FEMA to determine how to most efficiently address the recovery needs at the Bay Park Wastewater Treatment Facility while addressing the risks, gaps and vulnerabilities that Sandy caused in the region. In dollar amounts, Bay Park is one of the three most impacted public facilities from Superstorm Sandy. Without federal funding to repair Bay Park, the estimated unmet need to address all the identified impacts would have approached $1.3 billion, with roughly $800 million needed for repairs and restoration at the facility and another $500 million to install an ocean outfall pipe to safeguard and rebuild damaged natural resources that act as natural line of defense for communities. With this project being fully funded and with the added resiliency measures that are scheduled to be part the project, the only unmet need is the ocean outfall pipe. This component is not financially feasible for GOSR to fund due to other program requirements.

Through GOSR's commitment to fund the non-federal share match with CDBG-DR dollars, Nassau County will have a fully rebuilt and resilient Bay Park. The resiliency funds will be used mainly to construct a berm that is approximately 10 feet high that can withstand a 500 year flood event reducing the potential for future environmental impacts to the area. The State also continues to engage in developing strategies to fund the

ocean outfall pipe. The plans that are being used in the current Bay Park project account for the eventual incorporation of the outfall pipe into Bay Park.

To ensure that other environmental aspects of the projects were built into the design, GOSR initiated conversations with FEMA, HUD and other federal agencies through the SRIRC to ensure that the FEMA environmental review for Bay Park would be comprehensive by including the electrical mitigation in the review to allow GOSR to accept FEMA's environmental review. The coordinated and "phased" approach being undertaken at Bay Park will address the immediate post storm recovery and resilience needs while also allowing the flexibility so the State and county can continue to work together to develop additional strategies that could repair the region's natural resources that act as a natural line of defense to communities that are in close proximity to the Bay Park wastewater treatment facility.

Transparent and Inclusive Decision Process: Nassau County was one of the most impacted counties from Superstorm Sandy and Bay Park was one of New York's largest public facilities directly impacted by Superstorm Sandy. Since the storm, Nassau County residents and officials, in addition to federal and State elected officials and agencies, have identified Bay Park Wastewater Treatment Plant as a critical recovery need. GOSR has received public input through public comments on the agency website, at public meetings, in conversations with public officials, through media stories and the committees engaged in the New York Rising Community Reconstruction Program. When the State submitted Action Plan Amendment No. 6, information contained in the attached pre-application and building schedule was not available as the work phases were still in development through the FEMA PA Alternative Procedures Pilot Program Settlement; however, GOSR included Bay Park in its covered project narrative as the State anticipated the additional information would be forthcoming.

The public comments for Action Plan Amendment No.6 again confirmed the citizen views that supporting Bay Park's recovery was vital to the recovery of the State. Residents also stressed the need to add resiliency measures into the Bay Park recovery plan. After FEMA finalized the FEMA PA Settlement, the State continued work with Nassau County to finalize the scope of the project. Once finalized, the project was brought before the Sandy Regional Infrastructure Resilience Coordination Group (SRIRC) for review.

Once the project goes into pre-construction phase, GOSR will also provide information on employment and procurement opportunities at Bay Park through GOSR'S Local Workforce Opportunities Program, MWBE and Section 3 Forum and Technical Assistance. GOSR will also continue discussions with Nassau County to develop strategies that will ensure that vulnerable populations and low to moderate income persons who are located in close proximity to the plant can take part in Bay Park's recovery and derive economic benefits.

Long Term Efficacy and Fiscal Sustainability: To monitor the long term efficacy and fiscal sustainability of the project, GOSR has executed a Subrecipient agreement with Nassau County to ensure that all HUD regulations and requirements including covered project elements will be met throughout the life of the project. GOSR will continue to engage in technical assistance and monitoring of Bay Park through the use of CDBG-DR grant consultants. This will ensure that future work phases including resiliency measures funded by FEMA funding that are critical for long term efficacy such as building the berm are completed. As a county owned facility, Nassau County Department of Public Works (DPW) is required to document long term operations and maintenance plans for Bay Park. The creation of a new berm, elevating athletic fields, installing a generator and hardening assets will address the changing environmental conditions around Bay Park. By providing 100% of the local match in this phase, GOSR is taking the proper steps to maximize the federal funding which ensures that this project has fiscal sustainability as well as long term efficacy. While it is unlikely that additional covered project requirements would be needed after the Bay Park project is completed, the State and GOSR will continue to work with local governments and identify additional financing using Local, State and or Federal funds for an ocean outfall pipe at Bay Park so that the long term natural ecosystem outside of the scope of this project can be restored.

Environmentally Sustainable and Innovative Investments: For Nassau County residents, particularly those located near Bay Park, there is a strong desire to align the reconstruction of the Bay Park Wastewater Treatment Facility to the commitment expressed in the President's Climate Action Plan to ''identify and evaluate additional approaches to improve our natural defenses against extreme weather, protect biodiversity, and conserve natural resources in the face of a changing climate". The Bay Park Settlement was at the time the largest FEMA PA Alternative Procedures Pilot Program Settlement in the nation's history. It was pursued by the federal, State and county partners because of the flexibility it provided to add resiliency and mitigation funds to the plants reconstruction which were recognized as a necessary first step to protect impacted natural resources that are in close proximity to the facility. The use of the FEMA Alternative Procedures Pilot Program and Bay Park's designation as a critical infrastructure facility is a prime example of how to employ elements of the President's Climate Action Plan when a natural disaster occurs. If the State and FEMA had not used the Alternative Procedures Pilot Program model, the traditional FEMA PA Program project worksheet (pw) approach would have led to this facility being restored on pw by pw basis with resiliency and mitigation elements being tied to the damaged asset and its pre-storm condition.

By using $20,000,000 in CDBG-DR funds in combination with $383,250,138 in FEMA PA funds, resiliency elements are being built into the recovery of Bay Park Waste water Treatment Plant during the repair and restoration phase of the project. The community residents will derive regional benefits through more environmentally sustainable and innovative solutions available through this innovative FEMA funding option. Specifically the $383,250,138 designated for resiliency and mitigation actions allow for the inclusion of resiliency measures which will protect the facility against impacts from a 500 year storm. This project allows for resiliency measures which will decrease the risk of catastrophic discharges from the plant during reconstruction. In addition, once all restoration activities are conducted, this investment will allow for local natural resources to be restored in a much quicker timeframe than normal recovery. Finally, within the Resiliency and Mitigation phase of the project, FEMA PA dollars will be utilized for construction of a berm and hardening of the internal assets at Bay Park. The resilience and mitigation measures will be designed and rebuilt in a manner that will allow for the facility to better withstand sea level rise and adverse weather events.

Regional Coordination Working Group: GOSR will continue to work with the Sandy Regional Infrastructure Resilience Coordination Group (SRIRC) to ensure that this Initiative maximizes the resources available and collaboratively recovers from these storms while preparing with region for future resiliency.

Monitoring and Compliance: Bay Park will be subject to monitoring and be required to comply with all rules and regulations similar to all other GOSR sub-recipients and under the Infrastructure Program Monitoring Plan as outlined in the Compliance and Monitoring Policy and Procedure Manual.

Covered Infrastructure Project

Activity Name: Roberto Clemente State Park Shoreline and Park Improvements

Eligible Activity Type: Public facilities, reconstruction/rehabilitation of a public park

National Objective: Low- and Moderate-Income

Eligible Activity: 105(a)(2) Public Facilities

Program Description: Roberto Clemente State Park was severely impacted by Superstorm Sandy when a storm surge topped the park's bulkhead and flooded the pool and park buildings. Three feet of water inundated the park's fields and plazas, while 13 inches of water found their way into the main building. The bulkhead and electrical infrastructure were extensively damaged, and the natural shoreline along the park's northern edge suffered severe erosion. As the floodwaters receded, soil under the concrete esplanade was washed away, causing the concrete sidewalk to fail in several places, jeopardizing the esplanade and the

bulkhead's structural integrity. The esplanade has been closed since the storm and will not reopen until the bulkhead is replaced.

Due to pre-storm deterioration of the bulkhead, FEMA denied funding for all but approximately $1.5 million of the costs of the project. Similarly, the proposed project was deemed ineligible to receive HMGP funding, even though billions in State and private investment are protected by the bulkhead and shoreline. As a result, the park was determined to have significant unmet recovery need, and to be a suitable candidate for CDBG-DR funding. The park serves a broad and diverse user base across the five boroughs and Westchester and Rockland counties.

In 2014, it was expected that the budget for the project, covered by CDBG-DR grant funds, totaled $46.5 million. An additional $5 million was subsequently identified, associated with the project's North End Enhancement and Resiliency component, resulting in a total project allocation of $51.5 million. This project is now considered a Covered Project because the budget exceeds $50 million.

The proposed project will involve the following six components:

1. Redesign and reconstruction of the bulkhead: Involves the replacement of 2,195 linear feet of existing steel sheet pile bulkhead and reconstruction of the existing esplanade adjacent to the bulkhead. Both the bulkhead and esplanade have been designed to withstand impacts from winds, currents, and surges associated with future storm events.
2. Redesign and repair of the esplanade: The newly installed steel sheet piling will be protected from corrosion through resilient design techniques to extend the life of the bulkhead from 30 to 50 years.
3. Creation of a tidal pool area adjacent to the lower plaza: The structure of the tidal pool will employ a "green infrastructure" design to lessen wave impact and include a rehabilitated bulkhead and embankment leading up to the plaza level. The embankment, being above the low tide line, will be in a lower velocity zone and will be protected by wave attenuators within the tidal pool.
4. Lower Plaza rehabilitation and greening: The existing impervious surface of the plaza will be replaced with plantings and pervious pavers that will collect storm water run-off to allow for a more ecologically sustainable and storm resilient design.
5. North Shoreline Revetment: The shoreline will be stabilized to prevent erosion and be designed to be more accessible to the public.
6. North End Enhancement and Resiliency: Implementation of improvements to the multi-purpose athletic field, construction of a Tee Ball-configured athletic field, construction of a plaza area adjacent to existing baseball field, and upland improvements around new athletic fields including improved sub-grade drainage infrastructure and bio-retention areas.

Additional complementary projects are also taking place at Roberto Clemente State Park in response to the damage caused by Superstorm Sandy. None of these projects received CDBG-DR funds from GOSR, and to avoid any duplication of benefits, GOSR and the New York State Office of Parks, Recreation and Historic Preservation (State Parks) coordinate closely to ensure that all recovery, resiliency and mitigation projects at Roberto Clemente State Park are compliant with relevant regulations.

1. Clean Water/Clean Air State Bonded funds - $790,000: Funds were used to pay for the first round of soft costs that State Parks expended on a term consultant contract for the design of the bulkhead, esplanade and tidal pool projects.
2. FEMA Public Assistance – $1,500,000: Funding will be used to cover costs associated with the design and construction of part of the esplanade, repair of the boat ramp, and the replacement of 350 linear feet of benches in the park.
3. City of New York – $1,000,000: These funds will be used by State Parks to pay for costs related to the construction of improvements to the Upper Esplanade.
4. NY Works Funding (FY15-16) – $300,000: These funds will be used to pay for the balance of costs related to the construction of improvements on the Upper Esplanade.
5. Bronx Borough President – $500,000: These funds are for the improvement of the Lower Plaza.

6. Major League Baseball (MLB) Funding – $2,000,000; NY Works Funding (FY15-16) – $500,000; NY Works Funding (FY18-19) – $2,300,000; Harlem RBI – Operations and maintenance: With this assemblage of funds, State Parks will outfit the north end athletic fields and surrounding areas to support the new MLB Youth Academy at Roberto Clemente State Park, which will serve as a central location for Harlem RBI youth programs in the Bronx and Upper Manhattan.

Geographic Eligibility: The project is located within Bronx County, which is one of the most impacted and distressed counties identified in the Disaster Relief Appropriations Act 2013, and in which a minimum of 80% of New York State's CDBG-DR allocation must be expended as per the November 18, 2013 Federal Register Notice. Owned and maintained by the State of New York, Roberto Clemente State Park is a 25-acre urban park serving 1.3 million visitors annually. Located in the Morris Heights neighborhood of the Bronx, the park has 3,700 linear feet of waterfront along the Harlem River. The majority of the shoreline is a hard-edged 2,195 linear foot bulkhead which was constructed in 1971 and serves as the sole coastal defense for the built infrastructure of the Park. A portion of the shoreline is natural and undeveloped. The Harlem River is a Federal navigable waterway and the area of the park has been rated as an "extreme hazard zone" by the NYS Department of State, signifying that the park and its surroundings are at high risk of flooding, erosion, and other factors due to storm events, climate change and sea level rise.

Use of Impact and Unmet Needs Assessment: The damage to, and loss of use of Roberto Clemente, was recognized in the State's post-Sandy assessment of unmet recovery needs. The coastal nature of Roberto Clemente resulted in flooding and erosion caused by storm surges. Additionally, inadequate drainage and filtration capacities compound the effects of flooding, as large volumes of receding water with no easy outlet lead to cracked paved surfaces and uneven playing fields. Repair of Roberto Clemente is consistent with the State's comprehensive risk analysis, as this project aligns with GOSR's strategy to protect and improve vulnerable public infrastructure from future storms.

Following Superstorm Sandy, State Parks used funds from the State's Clean Water/Clean Air Bond and FEMA Public Assistance to study conditions and design a series of remediations and improvements. The Roberto Clemente State Park Revitalization Plan lays out the damages caused and issues revealed by Sandy's devastation and presents a clear and comprehensive set of recovery and resiliency programs across each section of the park. State Parks and GOSR worked closely to determine the appropriate modifications to Roberto Clemente State Park considering the damages it incurred, and coordinated project needs and multiple funding sources to minimize risks from future storms. As a coastal protection feature and a public space in an area desperately in need of both, it was essential to all involved that the park improve both infrastructure and recreational opportunities while including green infrastructure measures wherever possible, prompting the inclusion of the tidal pool and bio-retention improvements.

GOSR's commitment to the project will ensure that, rather than being rebuilt to the same level of protection, Roberto Clemente State Park will be better able to withstand and recover from future flooding and stormwater disasters. Beyond simply allowing for faster and less expensive repairs, this will enable park administrators to create a safer environment and reopen the park more quickly after a disaster – providing benefits to an otherwise underserved community. During normal periods, the project will also improve the parks usability, features, views and visitor experience. The improved flood protection features of the park will enhance the social resilience of the community around the park, before and after any future storm events.

Transparent and Inclusive Decision Process: Since Superstorm Sandy, GOSR and State agencies have engaged the public and elected officials through public notices and comment periods associated with amendments to the New York State Action Plan, meetings of the NY Rising Community Reconstruction Program planning committees, and participation in events and discussions organized by NYSDEC and other entities. Utilizing this three-pronged approach, GOSR enabled an inclusive decision process.

In addition, the full Roberto Clemente State Park Revitalization Plan, including both GOSR-funded and non-GOSR-funded components, was presented to the public at an information meeting on June 19, 2014.

Public comments and responses were recorded and posted online. Governor Cuomo made public announcements about the program and updated the public on its status on multiple occasions, including June 6, 2014 and September 23, 2015. The State's widely publicized *NY Parks 2020* plan also includes many of the components ultimately included in the Revitalization Plan. GOSR and State Parks have also consistently engaged and informed local residents and elected officials through events and public notices at the park. State Parks and its contractors have also participated in local outreach events to engage MWBE and Section 3 firms.

Long Term Efficacy and Fiscal Sustainability: The project is designed to make the park more resilient to changes to the local environment and Harlem River ecosystem. Should storms and floods become more frequent and pronounced – as predicted by many climate models – the strengthened built shorelines, revitalized natural shoreline, and improved drainage and bio-retention features of the park, will help achieve long term benefits. Taken together, these improvements will reduce the storm surge vulnerability of the park and the neighborhood behind it; prevent catastrophic water damage to surface features and fields, slow and filter runoff into the Harlem River; and allow the park to return to use as a public amenity more quickly following a storm or flood.

To monitor the long-term efficacy and fiscal sustainability of the project, GOSR has executed a memorandum of understanding with State Parks to ensure that all HUD regulations and requirements, including covered project elements, will be met throughout the life of the project. GOSR will continue to engage in technical assistance and monitoring of Roberto Clemente State Park through the use of GOSR monitoring staff and CDBG-DR grant consultants. This will ensure that ongoing and future work phases are reviewed in turn and with appropriate consideration given to the effects of non-GOSR-funded work at the site. State Parks is required to document long term operations and maintenance plans for the park, and in selecting specific interventions has taken steps to maximize the use of existing resources and personnel available. By gap-filling important improvements at the park through other funding sources, and with the development of a robust public private partnership, GOSR and State Parks are taking the proper steps to ensure financial sustainability and long term efficacy.

Environmentally Sustainable and Innovative Investments: Roberto Clemente is a 25-acre park with 3,700 linear feet of waterfront along the Harlem River. Approximately 2,000 linear feet of the waterfront is bulkheaded and the remainder consists of unstructured revetments and rip rap shoreline. The Roberto Clemente State Park bulkhead provides coastal defense for extensive park infrastructure – the adjacent River Park Towers residential complex that is home to 5,000 residents, two public school buildings serving 650 elementary and middle school students, and a major power transmission line serving the Bronx. As such, it is an essential component to protecting lives and infrastructure from the impacts of severe storms, flooding, wave and tidal action.

Roberto Clemente experienced three feet of flooding during Superstorm Sandy. Following the storm, inspection of the 40-year-old bulkhead revealed severe corrosion of the steel sea wall and loss of backfill beneath the park esplanade. The condition has led to the closing of the esplanade to pedestrians and emergency vehicles that use it to respond to emergencies at the River Park Towers complex or on the Harlem River. Along the Park's shoreline north of the bulkhead, the unstructured revetment also experienced significant erosion, with the shoreline receding closer to the adjacent recreational facilities. In addition, electrical infrastructure and lighting throughout the Park, including in the Park's Lower Plaza and esplanade, were destroyed by the salt water flooding.

The project will enable State Parks to rebuild the bulkhead with a more resilient design and enhance the adjacent esplanade area. The redesigned waterfront will provide enhanced flood protection, storm resilience and green infrastructure. The outdated esplanade will be rehabilitated into a more park-like setting, featuring new plantings and a scenic 9,000-square-foot inter-tidal area to provide natural habitat and absorb heavy rainfall. The funds will also stabilize 1,400 feet of eroded shoreline located directly north of the bulkhead, protecting park facilities including baseball fields and recreational fields. This project will

provide for a resilient shoreline and park facilities, and restore tidal wetlands that help mitigate floodwaters. Refurbished north end fields will feature green infrastructure including bio-retention areas for stormwater management. A total of 102 trees, all species indigenous to the region, will be planted at the completion of construction, many of which will replace invasive species removed as part of clearance required for construction and realignment of park features. The tidal pool and enhanced natural shoreline will both provide for growth of the native landscape and the habitat for wildlife. As such, this project aligns with the President's Climate Action Plan.

Regional Coordination Working Group: GOSR will continue to work with the Sandy Regional Infrastructure Resilience Coordination Group (SRIRC) to ensure that this project maximizes the effectiveness of its use of resources and collaboratively recovers from these storms while preparing the region for future resiliency.

Monitoring and Compliance: The Roberto Clemente State Park project will be subject to monitoring and will be required to comply with all necessary rules and regulations, as is the case for other GOSR subrecipients.

Resiliency Institute for Storms and Emergencies (RISE)

Activity Type: Planning

National Objective: Urgent Need

Eligibility: The Resiliency Institute for Storms and Emergencies (RISE)

Eligible Activity: Sec. 105 (a) (12) (13) 42 U.S.C. 5305(a) (12) (13)

Program Description: RISE, a consortium of New York higher education institutions, brings together local research centers engaged in Sandy-related work and storm resilience through an inter-disciplinary research and planning effort. RISE is a statewide anchor for policymakers, experts and emergency responders, providing comprehensive analysis to inform critical decisions. RISE research teams pursue applied research projects which increase the State's understanding of storm-hazards risk management; provide expertise to aid agencies in providing and quantifying resilience in ecosystem and infrastructure design, operation, and investment; and develop platforms for transforming predictions into adaptive measures.

RISE consists of prominent faculty from seven regional academic institutions and a national laboratory, selected for specific expertise across the spectrum of social and natural sciences relevant to climate change response, disaster preparedness, disaster recovery, and resilience. Stony Brook University and NYU Polytechnic lead the effort.

RISE research activities help the State and the public understand risks of climate change and extreme weather events. Research projects focused on rapid response planning, "cascading dynamics" of storms on transportation/energy/wastewater/drinking water/coastal ecosystems, investments in resiliency, and environmental risks under climate change inform State investments in housing, economic revitalization, infrastructure and community reconstruction. RISE research also supports the development of resilience performance standards and comprehensive risk analysis.

Resilience Performance Standards

The State is committed to implementing resiliency performance standards for all infrastructure and RBD projects. The State considers how requirements related to flood-proofing, wind-resistance and other mitigation efforts associated with rebuilding more resilient structures and communities can be achieved. Working with the New York State Department of Homeland Security and Emergency Services (DHSES), the State utilizes the mitigation principles of FEMA's Hazard Mitigation Program in the development of its resiliency measures.

GOSR is also is engaging State agencies and partners with expertise in planning and implementing resiliency projects. Under contract to GOSR are New York State's Department of State (DOS) who provides planning advisory services related to GOSR activities and community resiliency efforts and the Department of Environmental Conservation which acts as the State's regulator and primary environmental steward.

In addition, members of the RISE research team are participating in establishing the New York State Center for Clean Water Technology in conjunction with the larger Suffolk County Coastal Resiliency and Water Quality Initiative. The Center will research, develop, and commercialize nitrogen-removal technology, generating valuable insights into performance standards for investments in water quality improvement.

On behalf of the State, RISE continues to refine a set of performance standards that the State uses to measure resiliency within a project. These include:

- Robustness (ability to absorb and withstand disturbances and crises)
- Redundancy (excess capacity and back-up systems, which enable maintenance of the core functionality in an event of disturbance)
- Resourcefulness (ability to adapt to crises and respond flexibly)
- Response (ability to mobilize quickly in the face of crises)
- Recovery (ability to regain a degree of normality after a crisis)

Once this index was compiled, the State reviewed the standards for appropriateness and feasibility of implementation. The State also leverages the SUNY Rockefeller Institute's impact research to inform performance standards. With input from RISE, private stakeholders, and public agencies including the federal agency partners, affected State agencies and units of local government, the State determined a set of performance standards and implemented them.

The State undergoes a review of each CDBG-DR funded infrastructure project, including the two RBD projects and potential projects that could come from the infrastructure bank or resiliency retrofit program, to determine applicable requirements related to performance standard and green infrastructure project elements shown in the Section VI.2 of the November 18, 2013 notice and identify actions to meet those requirements. For projects that are in the match programs, primarily those that are in the FEMA PA program, GOSR recommends ways to incorporate green infrastructure. However, as many of the PA projects are already in construction and or complete, incorporating green infrastructure elements may not be feasible and or practical for communities and it could slow or stop recovery. The State of New York is committed to a recovery is to not only return New York to its pre-storm condition but to do so in ways that are more resilient and to the greatest extent possible to use green and natural methods.

Rebuild by Design Projects

After Superstorm Sandy's devastating sweep over the northeastern part of the United States, President Obama created the Superstorm Sandy Rebuilding Task Force (the Task Force) with the purpose to redesign the approach to recovery and rebuilding through regional collaboration and emphasis on the growing risks of climate change. The Task Force partnered with HUD to initiate the Rebuild by Design (RBD) competition, which was devised to invite the world's most talented designers and engineers to bring their expertise in flood mitigation and coastal resiliency to Sandy-impacted regions. The six RBD competition finalists were announced on June 2, 2014. Two of the six projects were awarded to New York State to implement.

Table 36: New York State awarded proposals

Project	Location	Total Project Cost	CDBG-DR Allocation
Living Breakwaters: Tottenville Pilot	Richmond County	$70,000,000*	$60,000,000
Living with the Bay: Slow Streams	Nassau County	$189,226,000**	$125,000,000

**At preliminary 60% design; ** The design for each component of LWTB ranges from preliminary designs through 100% (final) designs*

The goals of New York State's RBD implementation plan are to make communities in Richmond County (Staten Island) and Nassau County (Long Island) more physically, economically, and socially resilient in the face of intense storm events. Both proposed projects represent innovative, flexible, and scalable interventions that could be replicated in other parts of the State, nation, and globe. Each project must undergo a rigorous environmental review and permitting process, which will include the assessment of potential alternative designs and/or projects.

Monitoring plans for large scale projects such as RBD must be developed in coordination with federal and State permitting agencies, as well as following a rigorous data collection and data review program during design. The monitoring plan strategy for Living Breakwaters: Tottenville Pilot and Living with the Bay: Slow Streams is described in the project section below.

Living Breakwaters: Tottenville Pilot

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

Eligible Activity: Rebuild by Design

CDBG-DR Allocation: $60,000,000

Project Description: Richmond County (Staten Island), one of the City of New York's five boroughs, sits at the southernmost part of New York State. The island is at the mouth of the New York Bight—the waters off the Atlantic Coast extending from the Cape May Inlet in New Jersey, to Montauk Point on the eastern tip of Long Island. The tidal waters surrounding the Borough shape its myriad industries; transportation, housing, and culture. In October 2012, Superstorm Sandy devastated Staten Island's east and south shore neighborhoods. The driving wave action bombarded the coastline, damaging or destroying an unprecedented number of Staten Island homes and businesses, resulting in loss of life and significant harm to the local economy. Tottenville, a community at the southernmost point of Staten Island, experienced some of the most destructive waves in the region during Superstorm Sandy. Historically known as "The Town the Oyster Built," the community was once protected by a wide shelf and series of oyster reefs, much of which was harvested by local oystermen. Today, much of the shore of Staten Island is void of these natural systems, and remains exposed to wave action and coastal erosion.

Figure 5: Map Of Staten Island And New York Bight

HAMweather, 2014

Living Breakwaters: Tottenville Pilot (Living Breakwaters) is an innovative coastal green infrastructure project that aims to increase physical, ecological, and social resilience. The project is located in the waters of Raritan Bay (Lower New York Harbor) along the shoreline of Tottenville and Conference House Park, from Wards Point in the Southwest to Butler Manor Woods in the Northeast. The project area is a shallow estuary that has historically supported commercial fisheries and shell fisheries. This project also fulfills New York City's Resilience Plan Coastal Protection Initiative 15[51].

The Living Breakwaters project consists of both on-shore and off-shore components:

(1) A system of specially designed off-shore breakwaters which will attenuate waves and counteract beach erosion;
(2) Ecological enhancement and activities, including supporting future oyster restoration including: oyster cultivation, shell collection and curing, and the installation of permitted oyster nurseries;
(3) A Water Hub: A public space and shoreline treatments that will enhance physical space for access to the waterfront as well as a location for orientation, education and informational activities related to shoreline resiliency and the breakwaters; and
(4) Shoreline restoration to provide sand fill to a segment of the beach which has experienced significant erosion up to and including Superstorm Sandy (at the rate of approximately 2 feet per year from 1978 to 2012).

In addition to the Living Breakwaters project components described above, an additional project was proposed by the Staten Island New York Rising Community Reconstruction (NYRCR) Committee Plan. Working collaboratively with the NYC Department of Parks and Recreation (NYCDPR) and the New York City Mayor's Office of Recovery and Resiliency, the Tottenville Shoreline Protection Project (TSPP) will provide shoreline protection features as a coastal resiliency strategy for the Tottenville area from approximately Carteret Street to Page Avenue. The TSPP is a separate project from Living Breakwaters, but the two projects will complement each other to reduce risk, enhance ecology, and foster community and stewardship along the Tottenville shoreline. The environmental review of both projects is jointly addressed in a single Environmental Impact Statement (EIS). The TSPP will be designed by a separate design team from the Living Breakwaters project however, the design of the two projects will be coordinated given their overlapping objectives and functions.

The Living Breakwaters project will significantly complement the TSPP noted above. Throughout the development of the Living Breakwaters project, the design team worked closely with many community partners, including the Staten Island NYRCR Planning Committee. The Living Breakwaters project design

team will work closely with the design team of the TSPP. The TSPP will include a system of shoreline protection treatments including an earthen berm, stone-core sand-capped hybrid dune/revetment, eco-revetments and a raised pathway. The project will support the goals of Living Breakwaters – helping to protect communities from damaging wave action and erosion as well as improving access to the waterfront. While independently valuable, the TSPP will be further strengthened by the Living Breakwaters project, as the breakwaters will protect the dunes, the adjoining beach area, and other on-shore project elements against harmful effects caused by coastal erosion. As mentioned above, the State will be coordinating design efforts of both the Living Breakwaters and the TSPP with various New York City agencies and through the environmental review.

Since the approval on April 13, 2015 by HUD of New York State's Action Plan Amendment 8 (APA 8), the Living Breakwaters project has progressed from conceptual plan to a preliminary 60% design phase. Throughout the planning, design and engineering, the State has worked closely with the design teams as well as with the State's environmental team to further identify the technical challenges and solutions needed to construct this ground-breaking project. The State has consulted various federal, State and city agencies, as well as non-governmental organizations, on project design. The State has filed for the necessary permits to construct the Living Breakwaters project and has published the Draft EIS for the project. On April 1, 2015, the State published the *Coastal and Social Resiliency Initiatives for Tottenville Shoreline, Staten Island, NY* – Environmental Impact Statement Draft Scope of Work[52] (Draft Scope of Work). Along with the opportunity for the public to provide input on APA 8, the State held two public hearings on the Draft Scope for Work for the project. On April 1, 2016, the State published the EIS Final Scope of Work[53] and provided responses to all comments received through the public comment process. On March 24, 2017, the State published the Draft EIS, offering interested stakeholders the opportunity to comment through May 8, 2017. The Final EIS is expected to be filed before the end of calendar year 2017 or Quarter 1 2018. In addition, the State formed a Citizens Advisory Committee (CAC) for the Living Breakwaters project to provide an additional opportunity for the public to advise the State on design of the project.

Throughout the design phase, the State expanded its technical team to include an independent peer reviewer on all design elements of the project and deliverables by the design team.

Breakwaters System

The off-shore breakwaters consist of a series of ecologically enhanced breakwater segments off the southwestern tip of Staten Island. Made of a combination of hard stone and biologically enhanced concrete armor units, the breakwaters are rubble mound structures. The system has been designed to reduce or reverse erosion (grow beach), and reduce coastal storm risk through wave attenuation.

A network of ecological enhancements integrated into the breakwater's physical structure ("reef streets," "reef ridges" and water retaining elements) and targeted material selection (bio-enhancing concrete) are aimed to increase biodiversity by providing various ecological niches and improving the ecosystem services provided by the structures. The project will also include ecological restoration activities by creating new habitat in Raritan bay, which would also be amenable to active restoration of bivalves such as eastern oysters (Crassostrea virginica) on and within the breakwaters, as well as an oyster nursery system (floats, anchors and oyster trays) and bottom placement of "spat" (juvenile oysters) attached to shells.

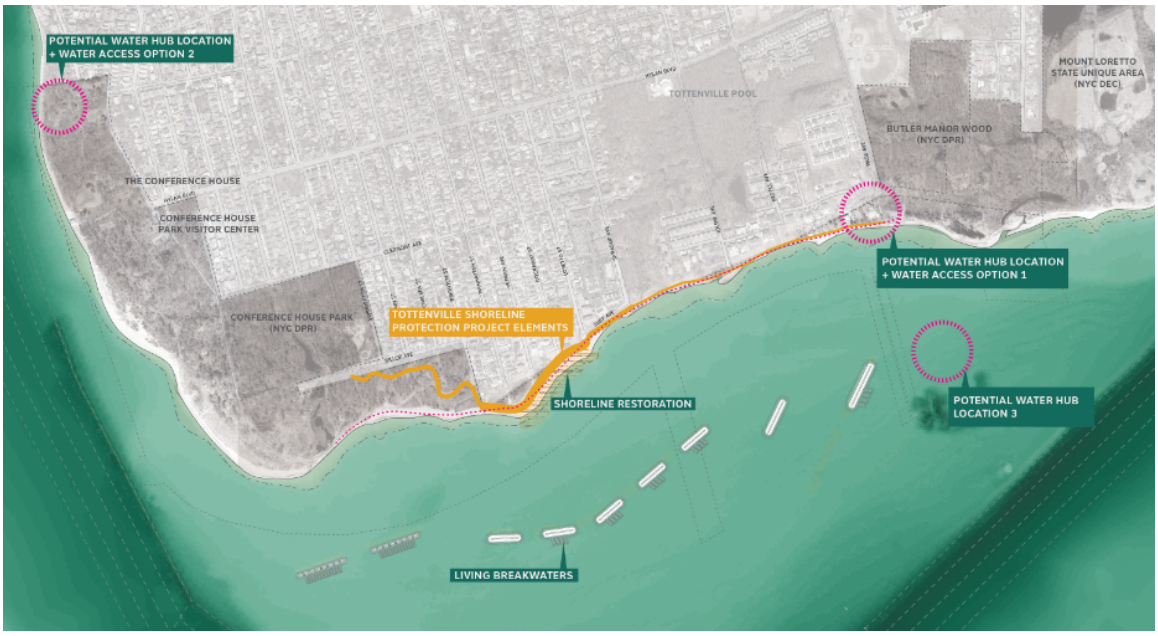
As of APA15, Living Breakwaters is currently at preliminary 60% design level, with 60% design expected to be completed through the final permitting and environmental review stage. 100% design is anticipated to be completed by the end of 2018.

The breakwaters system at the preliminary 60% design stage includes 9 breakwater segments, with approximately 3,300 linear feet of breakwaters in total. The breakwaters will be located between 730 and 1,200 feet offshore and in water depths of approximately 2 feet to 10 feet below mean low water (NAVD88). They will be set back a minimum distance of 500 feet from the Federal Navigation Channel with most project segments set back between 1,000 and 1,500 feet from the channel.

While the breakwater segments are similar in character and construction, three breakwater types, defined largely by their differences in crest elevation and overall height, are being employed in the preliminary 60% design to meet the different bathymetric conditions, shoreline conditions, and priorities within each project zone. Each breakwater type differs in length and crest height (and thus, width). Side slopes are the same for all breakwater types. In addition to the main (traditional) breakwater segment, the breakwaters are being designed to include "reef ridges" and "reef streets". These rocky protrusions (reef ridges) and the narrow spaces between them (reef streets) on the ocean-facing side of the breakwaters, will create diverse habitats including interspaces of narrow rocky conditions within the intertidal (littoral) and subtidal (sublittoral) zones composed of textured surfaces and water retaining elements (in the intertidal zone).

The breakwaters will be primarily constructed as rubble mound (rock) structures with a bedding layer, stone core and outer layers consisting of armor stone or bio-enhancing concrete armor units. In the subtidal and intertidal areas, up to one third of the armor stone will be bio-enhancing concrete units rather than stone, creating an "enhanced" habitat surface. The bio-enhancing concrete units will be integral components of the breakwater, functioning structurally as any stone armor unit would. But, unlike typical stone, the bio-enhancing concrete units are specially designed to promote biological recruitment. The units use special concrete admixtures as well as textured surfaces to promote biogenic accretions and micro-habitat and biological community development. Some units will receive additional surface treatments beyond the basic surface texture; such treatments will include: fish hubs; shell containers; tidal planters; hatchery units; and tidal pool units.

Figure 6: Living Breakwaters at Preliminary 60% Design



Active Restoration

Under the regulatory oversight of the New York State Department of Environmental Conservation (NYSDEC) and the US Army Corps of Engineers (USACE), active bivalve, including oyster restoration activities, will be studied and developed as part of the post-construction ecological enhancements. These efforts will be by the New York Harbor Foundation's Billion Oyster Project (BOP), which is implementing other ongoing oyster restoration efforts and studies within other New York City waterways. Subject to ongoing scientific study activities and permitting, active restoration on or adjacent to the breakwaters may include incorporation of spat placement into a small percentage of the bio-enhancing concrete units, the use of oyster shell gabions (nonstructural units), spat on shell (placed in reef streets and potentially adjacent to the breakwaters), oyster nurseries and in-situ setting pilots. The oyster gabions would use the same design

being employed in the other oyster restoration projects in other harbor locations as part of the Hudson Raritan Estuary Comprehensive Restoration Plan. Spat-on-shell installations would be based on techniques developed and deployed during the Oyster Restoration Research Project, and oyster nurseries will be based on designs developed and currently in place or being installed by the BOP at Governors Island, Wallabout Bay and Jamaica Bay. Additional oyster cultivation efforts are being implemented for study prior to breakwater construction in order to support the active restoration activities.

Shoreline Restoration

The project includes a targeted area of shoreline restoration along approximately 800 linear feet of shoreline between Manhattan Street and Loretto Street. This one-time shoreline restoration will restore it to its 1978 condition, at this narrow and erosion-prone location. The shoreline of the newly filled beach will change somewhat over time, but the breakwater system will hold the newly established shoreline, generating approximately a 50-foot increase in beach width from the current condition.

Social Resiliency

Along with the living breakwaters, the project includes social resiliency plans. The Water Hub, will provide a gathering space for lectures and community events thereby increasing community awareness of the benefits provided by the other elements of the project and enhancing the community's social resilience. The Water Hub will provide a venue for public exhibitions as well as on-site ecological educational space and facilities. The Water Hub will provide the educational and programmatic support necessary to introduce the Living Breakwaters project to the surrounding community and visitors, provide resources and support to educators, and offer direct waterfront access and recreation opportunities to residents. In developing the concept for the Water Hub, the State and design team worked with the Living Breakwaters CAC and the public to identify opportunities for programming. This was the main driver for the size and location of the space. After undertaking a feasibility study of alternatives, including constructing a new building at Page Avenue and the renovation of existing historic structures in Conference House Park, both of which presented challenges to implementation, a third option is being considered for this aspect of the project. Rather than occupying a building on-shore, the third option for the water hub would take the form of: 1) A mobile US Coast Guard-certified passenger vessel which can directly access the breakwaters and is equipped to provide educational, monitoring and stewardship activities onboard (it would be owned and operated by the BOP); and 2) an on-shore system of informational, interactive and wayfinding elements on the shoreline at key vantage points.

BOP and the New York Harbor School – operated by the New York Harbor Foundation[54], a non-profit organization – are critical partners in the Living Breakwaters project to bolster Staten Island's social resiliency. In 2016, GOSR entered into a subrecipient agreement with the New York Harbor Foundation to provide funding for their work on the Living Breakwaters project. BOP plans to restore one billion live oysters to New York Harbor over the next 20 years while educating thousands of youth in the region about the ecology and the economy of their local marine environment. The Living Breakwaters project builds on this foundation by working with the schools, businesses, nonprofits, and individuals that engage with BOP, to provide new opportunities to study and develop plans for the cultivation of oysters and grow existing and new educational programs. Through the expansion of this coastal stewardship and educational programming, the Living Breakwaters project design fosters a vibrant, water-based culture, and invests in students, shoreline ecologies, and economies. Promoting stakeholder participation in local communities will organically create local stewards, helping to ensure the long-term impact of the Living Breakwaters project's social resiliency components.

Citizens Advisory Committee

The Living Breakwaters CAC was officially formed in July 2015, and is comprised of local and regional stakeholders with diverse backgrounds. Up to 25 members may serve on the CAC. GOSR encourages applicants from all cultures and socioeconomic backgrounds in order to represent the diverse communities

across Staten Island and the region. Representatives are selected by the State through on-line application submissions, or through paper submissions. The CAC has two-designated co-chairs. Serving in an advisory role, the CAC members not only represent residents of Tottenville and the adjacent communities in Staten Island, but educators, ecologists, and interested citizens from the larger New York City and New Jersey region. As of October 2017, the CAC has held seven public meetings and all presentations from CAC meetings are made available on GOSR's website (https://stormrecovery.ny.gov/).

Benefit Cost Analysis

A Benefit Cost Analysis (BCA) for the Living Breakwaters project was prepared following the HUD BCA Guidance provided in a HUD Guidance Notice (CPD-16-06). The analysis was completed using generally accepted economic and financial principles for BCA as articulated in OMB Circular A-94.

The project's cumulative present value of net benefits is $13.7 million and the Benefit Cost Ratio is 1.22. These measures of project merit demonstrate that the project is viable and will add value to the community, the environment and the economy. Using a 7% discount rate, and a 50-year planning evaluation horizon, the project will generate significant net benefits to the shoreline community of Tottenville, Staten Island, New York, as well as other beneficiaries from the New York metropolitan region, and regional visitors who use this community asset.

According to the BCA, the lifecycle costs to build and operate the Living Breakwaters project (amounting to $62.4 million in constant 2016 present value dollars) will generate the following quantified benefits (not including qualitative benefits that cannot be quantified):

Total Benefits of $76.1 million, of which:

- Total Resiliency Values are $53.2 million
- Total Environmental Values are $11.6 million
- Total Social Values are $8.3 million, and
- Economic Revitalization Benefits are $2.95 million.

The project's future annual benefit and cost streams, projected over the 50-year horizon were also subjected to a sensitivity analysis examining the impacts of the implementation phase and identified operational risks. The sensitivity analysis examined potential cost overruns and increases as well as significant reductions in the largest benefit categories. The results showed that the net present value of the project's benefits outweigh the costs and are robust, as they can withstand these stress events and remain positive over this period. The largest group of benefits consists of resiliency values related to wave attenuation provided by the project. The BCA demonstrates and quantifies the reduction of flood risk associated with this project.

The Living Breakwaters project BCA can be found at Appendix D to the New York State Action Plan at https://stormrecovery.ny.gov/funding/action-plans-amendments.

Project Feasibility and Effectiveness

The Living Breakwaters project has been and will be continually engineered, modeled and tested during the on-going phases of design development utilizing risk management tools with the purpose of providing feasible and effective hazard mitigation and risk management, including provisions for climate change.

The State will utilize risk management tools to reflect changing conditions. Indeed, New York's Community Risk and Resiliency Act (CRRA) requires State agencies to consider future physical climate risks caused by storm surges, sea level rise, or flooding in certain permitting, funding, and regulatory decisions. CRRA required NYSDEC to adopt regulations by January 1, 2016 establishing science-based State sea level rise projections, and to update such regulations every five years. GOSR is coordinating with State partner agencies in implementing the provisions of the Act, including with regard to the Living

Breakwaters project, to reduce risks to public safety caused by wave damage and to support resilient communities, now and into the future.

Specifically, with regard to the reduction/reversal of erosion, completed shoreline modeling of the breakwaters system estimated that over a 20-year timeframe – including potential sea level rise of up to 30 inches – the beach adjacent to the shoreline protection elements would grow while still maintaining the shoreline within other parts of the project area. The results are greatly improved with the inclusion of the planned shoreline restoration. With regard to wave attenuation, the breakwaters have been designed to - assuming 30 inches of sea level rise - reduce waves below 3 feet in height in the event of a 100-year storm. Thus, the project, as designed, will provide protection against current and future threats, including future risks associated with climate change.

Engineering and modeling are important risk management tools being utilized to review such matters as the design specification of materials, degree of scour protection, and the integration of ecological elements. Specifically, with regard to the reduction/reversal of erosion, completed shoreline modeling of the breakwaters system estimated that over a 20-year timeframe – including potential sea level rise of up to 30 inches – the beach adjacent to the shoreline protection elements would grow while still maintaining the shoreline within other parts of the project area. The results are greatly improved with the inclusion of the planned shoreline restoration.

Numerical and physical hydrodynamic modeling is also being used to manage the risk of changing environmental conditions by testing design modifications and iterations to better understand the breakwaters' influence on sediment transport, potential scour, water circulation, and wave conditions. With regard to wave attenuation, the breakwaters have been designed to - assuming 30 inches of sea level rise - reduce waves below 3 feet in height in the event of a 100-year storm. Thus, risk management tools are helping to refine the reef street design, including parameters such as length, number, spacing, orientation, and location on the breakwater segment to optimize ecological performance.

Finalization of the 60% design of the breakwaters will occur after the current design plan has undergone an extensive modeling exercise which involves the construction of a scale model of the system which is placed in a tide pool simulating the conditions in the project site. Based on the data collected and observations by specialized marine engineers, this modeling exercise will validate that the current design will achieve the hazard mitigation goals established for the project according to the standards set by the best available science and factoring in anticipated changes in environmental conditions over the coming decades. Thus, the project, as designed, will provide protection against current and future threats, including future risks associated with climate change.

After the 60% design has been finalized, it is anticipated that the USACE and the NYSDEC will render a determination on the permit application, which has been the subject interagency consultation and cooperation. GOSR will continue to develop a regionally coordinated and resilient approach to infrastructure investment through continued coordination with organizations such as USACE and FEMA. GOSR has, since 2015, engaged in several conversations and consultations with the Regional Coordination Working Group to discuss the project and elicit feedback.

Construction of the breakwaters and the beach fill will be undertaken directly by GOSR. GOSR will issue open and competitive procurements for a construction management firm and a marine construction contractor. The procurements will require experience in marine construction in order to perform all the functions necessary to certify that the plans and specifications are to industry standards. The construction management team will monitor, inspect and approve payments to the contractor. For added assurance of compliance with industry, engineering and code standards, GOSR will utilize a qualified and experienced peer reviewer to review technical aspects of design and construction documents prepared for this project. The peer review firm is responsible for ensuring that the design documents and procedures meet professional and engineering standards. GOSR certifies that the design will meet the appropriate code, industry design and construction standards.

The November 18, 2013 Federal Register Notice (78 FR 69104) requires grantees "to identify and implement resilience performance standards that can be applied to each infrastructure project." In the "Resilience Performance Standards" of its Action Plan, the State identifies a set of performance standards that it uses to measure resiliency which include:

- Robustness
- Redundancy
- Resourcefulness
- Response
- Recovery.

In determining its resilience performance standards, the State of New York has relied on national and global sources such as the Federal Hurricane Sandy Rebuilding Strategy,[55] the US Department of Commerce Community Resilience Planning Guide for Buildings and Infrastructure Systems,[56] World Economic Forum Global Risk Report,[57] the United Nations,[58] and Rockefeller Foundation City Resilience Framework,[59] as well as New York State sources including as the 2100 Commission Report,[60] Sea Level Rise Task Force Report,[61] and NYS Hazard Mitigation Plan. The State also sought scientific input from the New York State Resiliency Institute for Storms and Emergencies (RISE).[62] State action on resilience performance standards is also informed by the Community Risk and Resiliency Act (CRRA), signed into law on September 22, 2014.

Together, these strategies, regulatory actions, and innovative program initiatives have helped inform the State approach to setting resilience performance standards. The various studies stress several qualities of resilient systems identified above and in the "Resilience Performance Standards" section of the Action Plan – robustness, redundancy, resourcefulness, response and recovery. One or more of these resilience qualities are considered for each infrastructure project, including the RBD projects.

GOSR has developed a Resiliency Monitoring Schedule (set out in Table 37, below) which will ensure that the completed project will achieve the resiliency benefits and mitigation features that the design anticipates, including beach growth/stabilization, wave attenuation, water quality and biological enhancement. This approach to resiliency monitoring, which is detailed in the section on Maintenance and Operations in this Action Plan, will be further developed and refined during the upcoming design phases and the permitting of the structures by NYSDEC and USACE.

GOSR will ensure that all appropriate mitigation measures are put in place and meet applicable federal and State standards. The Resiliency Monitoring Schedule will also include the evaluation methodology, which GOSR will implement after the project is complete. The purpose of the evaluation methodology is to determine the Living Breakwaters project's efficacy level in addressing the community's needs 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 and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes. As detailed below, inspections will assess effectiveness of components, and identify any major unexpected conditions (i.e., deviations from expectations). Lessons learned will be documented as required by HUD.

Maintenance and Operations

NYSDEC will own and operate the breakwaters and will be fully responsible for their maintenance and for monitoring their performance. The State of New York is committed to the long-term maintenance and operation of this important resiliency measure. NYSDEC is the state agency whose mission is to conserve, improve and protect the State's natural resources and the environment. NYSDEC includes a Division of Marine Resources with specific responsibility for managing and enhancing marine resources and their habitats, and is therefore uniquely qualified to undertake the responsibilities of the long-term maintenance of the breakwaters.

Basic maintenance and operations of breakwater structures is anticipated to be minimal, with visual inspection of structures required no more than annually. Maintenance will likely only be necessary following storm events. The breakwaters have a 50-year design life and are designed to function in a 100-year storm. A basic post-storm event inspection may reveal maintenance work such as stone adjustments or replacement, but such maintenance is expected to be, at most, minimal. See below for anticipated operations and maintenance schedule.

Table 37: Anticipated Operations and Maintenance Schedule

Basic Operations and Maintenance Tasks	Suggested frequency of Inspections
Baseline Inspection and as-built survey	Once, immediately after construction
Above water visual inspections	Annually for first 5 years, every 2 to 3 years after that
Surveys at settlement monuments	Monthly for first 6 months, then routine inspections (annually)
Post storm event visual inspection and (if needed) survey	Following storm event roughly equivalent of 10-year return period or greater

Based on a review of similar structures, operations and maintenance costs for rubble mound breakwaters are typically between 1% and 5% of the construction cost, over the lifetime of the project. Based on a conservative estimate of the construction cost of these breakwaters, their operations and maintenance costs over the 50-year life of the asset would be between $500,000 and $2.5 million.

Monitoring for the project's resiliency performance will require on-going attention over at least 5 years after the completion of construction. NYSDEC will be responsible for the necessary monitoring tasks. The exact term and cost of these monitoring tasks has not yet been determined, but will be determined before construction is complete. Below is a Resiliency Monitoring Schedule outlining the anticipated monitoring tasks and likely frequency.

Table 38: Resiliency Monitoring Schedule

Monitoring Tasks	Suggested frequency & duration of Monitoring
Shoreline change and bathymetry: beach profile surveys + sediment samples	Twice annually, spring / fall, min 3 years after construction, ideally 5+ years
Wave climate monitoring: wave height and direction	Minimum 6 months after construction for at least 5 years
Post storm event visual inspection and transect surveys	Following a storm intensity equivalent to 10-year event or greater
Monitoring of biological and ecological performance of flora and fauna: sessile communities	Quarterly for 1st year, semi-annually for 2nd year, annually for 5 years
Monitoring of biological and ecological performance of flora and fauna: fish and other motile species	Quarterly for 1st year, semi-annually for 2nd year, annually for 5 years
Water Quality Sampling, in situ and lab samples	Quarterly for 1st year, semi-annually for 2nd year, annually for 5 years, per permitting requirements
Sediment Characteristics & Chemistry: turbidity, total suspended solids, etc.	Quarterly for 1st year, semi-annually for 2nd year, annually for 5 years or per permitting requirements

Budget

The budget amount submitted in the overall design proposal to the RBD competition for the Living Breakwaters project was $73,904,000. Based on the Living Breakwaters preliminary 60% design, the estimated overall cost for the Living Breakwaters is approximately $70,000,000. With a CDBG-DR allocation of $60,000,000, the State will continue to explore additional funding options to fill any unmet needs and analyze the budget further to implement a reduced scale project which still meets the project objectives. The environmental review and permitting process currently underway may help shape the

potential implementation requirements of the project through the 60% design phase that were not identified at the 30% design level.

Table 39: Living Breakwaters Budget*

Break-down	Cost
Planning	$8,000,000
Pre-Development	$3,000,000
Capital Construction Costs*	$58,000,000
Program Delivery	$1,000,000
Total Project Cost	**$70,000,000**

* At preliminary 60% design, includes construction of the Living Breakwaters project, which includes the breakwaters, environmental enhancements, shoreline restoration, and Water Hub

Timeline

In the 3rd Quarter of 2016, the Living Breakwaters project achieved the milestone of 30% design. As of late 2017, the State is progressing through the planning and design phase of the project and continuing with design of the breakwaters through finalization of 60% design, to be followed by 95% and 100% design, and development of construction bid documents which are expected in the 4th Quarter of 2018. Managed concurrently with these design efforts, the State has completed and published a Draft EIS for the project and permits have been filed with the appropriate regulatory agencies for the project.

Environmental Review and Permitting Schedule

The State has published the *Coastal and Social Resiliency Initiatives for Tottenville Shoreline, Staten Island, NY* Draft EIS for the Living Breakwaters and TSPP projects. The Draft EIS analyzed the environmental impacts of four project alternatives: 1) No action; 2) Construction of the Living Breakwaters project; 3) Construction of the TSPP; or 4) construction of the Living Breakwaters project and TSPP (Preferred alternative). The State received agency and public comments during the review period ending May 8, 2017.

The State has filed for necessary permits to construct the Living Breakwaters project. This includes the filing of a Joint Permit Application with USACE and NYSDEC. Large scale oyster restoration activities, which have independent utility from the resiliency and ecological benefits provided by the breakwater structure, are currently undergoing scientific and agency review, and may be subject to additional review and permitting requirements prior to implementation in the post-construction phase. Since the Draft EIS was published and the permit applications filed, the State has engaged in a rigorous dialogue with all the relevant local, state and federal agencies which commented on the Draft EIS or have permitting authority. As part of the EIS process, GOSR has met and consulted frequently with key government agencies including the USACE, NYSDEC, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Services. GOSR also presented the plans to the Sandy Regional Infrastructure Resiliency Coordination Federal Review and Permitting Team. This dialogue has prompted refinements of the original submissions and will ensure that all necessary permits are secured and that the final design and construction of the project will adhere to all relevant codes. It is anticipated that the Final EIS and Record of Decision will be published in the 4th Quarter of 2017 or 1st Quarter of 2018, and that the regulatory agencies will render their permit determination in 2018.

Breakwater Schedule

Concurrent to finalizing the EIS and permitting for the Living Breakwaters project, the next phase of work will include advancing the breakwaters through final design and preparation of construction documents. There are many steps that will be taken during the next phase of design to refine, modify, and test the current design scenario, and solidify the approach for final design.

Finalizing the 60% design, then 95% and then bid documents (100%) will be the focus of the next design phase. Developing the preliminary 60% design involved refinement of the breakwater system and segment design to optimize their performance relative to the project objectives, taking into account feedback on the 30% design from regulatory agencies, the Living Breakwaters CAC and other stakeholders. This included refinement of breakwater design parameters like crest elevation, orientation and shape. The next phases of design refinement will also include close coordination with the TSPP design team.

Completion of 60% design of the breakwaters is expected in the 1st Quarter of 2018; Completion of 95% design is expected in the 2nd Quarter of 2018; and completion of 100% design is expected in the 3rd Quarter of 2018. Procurement for breakwaters construction is anticipated to take place in the 4th Quarter of 2018 with construction to follow. Construction is expected to take up to 24 months to complete, depending on permitting restrictions.

Water Hub Schedule

The State has completed a Water Hub feasibility study regarding how best to achieve the social resiliency components of the project, and is now seriously considering a preferred alternative that will consist of a vessel equipped with educational and exhibition space. The vessel will be able to travel to and dock near the Breakwaters, thereby eliminating the need for construction of a building and a floating dock. There will also be an onshore interpretive design system likely including signage and other educational features. The Water Hub will be designed specifically to accomplish the RBD project's social resiliency goals and will be purchased by the BOP in time for the Breakwater construction completion by early 2021. The on-shore Water Hub features will be designed in cooperation with the TSPP project and constructed as a part of that effort also by 2021. If either of the original land-based alternatives were pursued, their construction would be undertaken during the term of the breakwater construction, beginning in early 2019 and finishing by early 2021.

Oyster Restoration and Social Resiliency Schedule

The New York Harbor Foundation entered into a subrecipient agreement with GOSR in the 4th Quarter of 2016 to continue work on scientific studies necessary to implement oyster cultivation, as well as to refine the design of oyster installations for the breakwaters and provide input on the Water Hub program and design. The agreement and scope of work runs through the 2nd Quarter of 2018 to coincide with final design of the Living Breakwaters project. BOP will continue scientific evaluation and development of the suitability of an active bivalve restoration plan under regulatory authority and technical review of NYSDEC.

This includes continued work on installation and operation of oyster nurseries at Great Kills and Lemon Creek, development of a workforce training program, and the BOP Shell Collection and Recycling program. Scientific and other information from these pilot studies will ultimately be used to develop a plan for larger scale oyster restoration, which will be subject to the review and approval of NYSDEC. All activities will run through final project design.

Oyster restoration activities are expected to take place after the breakwaters are constructed. It is likely that these restoration activities would begin as smaller scale pilot studies, and that larger scale oyster restoration would be developed as BOP completes its evaluation of ongoing pilot projects. Table 40 provides the anticipated project schedule by quarter.

Table 40: Living Breakwaters Proposed Schedule

	Start	Finish
Living Breakwaters	**Quarter 4 2014**	**Quarter 4 2021**
Study, Research Planning: This Phase will outline all additional studies, research and planning needed prior to the design and engineering phase. As necessary, this phase will be incorporated into the Environmental and Review and Permitting stage as well as the Engineering Phase.	**Quarter 4 2014**	**Quarter 2 2016**
Environmental Review and Permitting: This Phase will include scoping for and preparation of an environmental impact statement, as well as the submittal of permits applications to the appropriate governmental agencies. This Phase will include significant opportunities for public review and comment, as well as intergovernmental consultation. Additionally, as required by State and federal law, the EIS will evaluate alternatives to the proposed project. This timeline is meant to represent an overview of the expected Environmental Review Process for all aspects of the Living Breakwaters. It should be noted that the environmental review and permitting timeline is dependent on the permitting requirements of agencies with jurisdiction, including the United States Army Corps of Engineers, NOAA-NMFS, USFWS, and the New York State Department of Environmental Conservation.	**Quarter 4 2014**	**Quarter 1 2018**
Design and Engineering: This phase will include all design and engineering work required for Living Breakwaters culminating with complete construction specs. Depending on the progress and outcome of the Environmental Review and Permitting process, this process will be able to run concurrently for some components of the project. This phase will include any and all necessary procurement and contracting as appropriate.	**Quarter 4 2015**	**Quarter 4 2018**
Site Development: This Phase will include all necessary elements for site development from the Design and Engineering Phase that will prepare for the construction phase of Living Breakwaters. GOSR will evaluate a potential phased site development schedule for different project components (e.g., upland components and in-water components) and coordination with the TSPP.	**Quarter 3 2016**	**Quarter 1 2018**
Construction: This Phase will include all elements of construction related to Living Breakwaters outlined in the Design and Engineering Phase. For Living Breakwaters, the timeline is extended to reflect that the nature of the project will only allow for construction in specific building seasons. GOSR will evaluate a potential phase construction schedule for different project components (e.g., upland components and in-water components).	**Quarter 1 2019**	**Quarter 1 2021**
Closeout: This phase will include the closeout of the entire project, including but not limited to: Final site visits and review, release of final contingency payments and all applicable CBDG-DR construction closeout requirements.	**Quarter 4 2020**	**Quarter 4 2021**

Living with the Bay: Slow Streams

National Objective: Urgent Need

Eligible Activity: Rebuild by Design 105 (a) all provisions 42 U.S.C. 5305(a)

CDBG-DR Allocation: $125,000,000

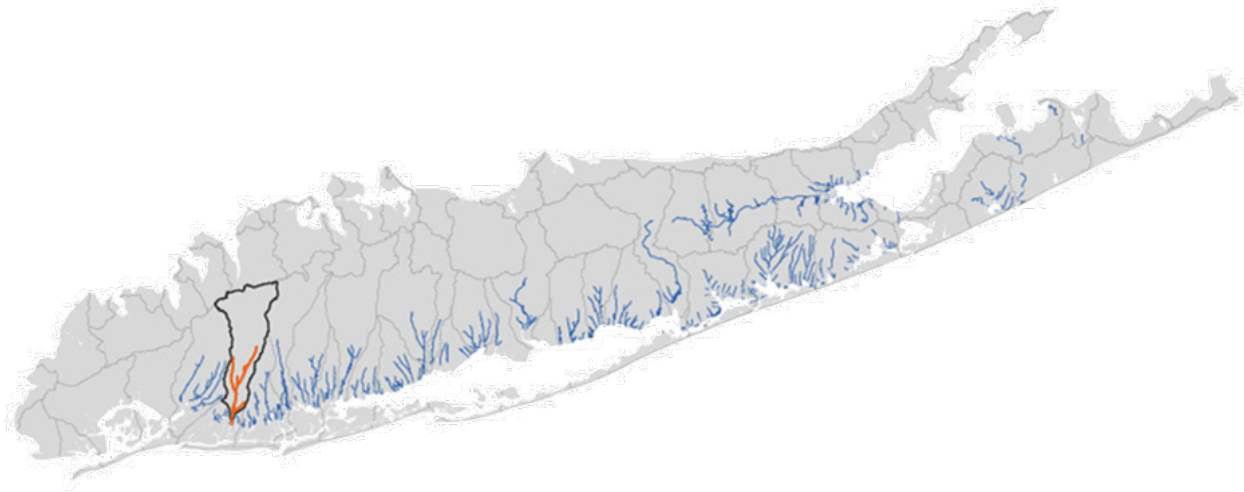
Project Description: Based in Nassau County, Long Island, the $189 million Living with the Bay (LWTB) Rebuild by Design (RBD) project aims to increase the resiliency of communities along the Mill River project area and around the South Shore Back Bay.

LWTB proposes to mitigate damage from tidal storm surge by strategically deploying protective measures such as the installation of check valves on outfalls below the high tide mark and retrofitting wastewater infrastructure to prevent the release of untreated effluent; manage stormwater in order to mitigate the damages from common rain events; as well as improve the water quality in the Mill River and the South Shore Back Bay. As part of LWTB, green and grey infrastructure improvements will be made along the Mill River project area. LWTB will benefit Nassau County communities including Town of Hempstead, the hamlets of Oceanside, Harbor Isle, and Bay Park, Village of Rockville Center, Village of East Rockaway, Village of Island Park, and the City of Long Beach. The project aims to decrease the effects of tidal inundation, increase coastal protection, address stormwater runoff into Mill River and create publicly accessible greenways that connect the South Shore's communities. The core principles from the winning RBD proposal that this project will address are as follows:

- Flood defense,
- Ecological restoration,
- Access and urban quality, and
- Social resiliency.

LWTB includes a suite of resiliency interventions for Nassau County communities surrounding the Mill River watershed; an environmentally degraded north-south tributary. As one of the primary watersheds on Long Island, the entire Mill River watershed is comprised of approximately 35 square miles of land area and spans many municipalities within Nassau County. Figure 7 shows the extent of the Mill River watershed across Long Island.

Figure 7: Mill River Watershed



The Mill River is a product of the glaciers that formed Long Island. For thousands of years, the Mill River flowed unimpeded into the South Shore Estuary (Reserve at South Shore Back Bay), establishing a vital link between marine and upland habitats. Migratory fish moved into and out of the river, providing an important forage source for countless species and helping to drive the region's coastal ecosystem.

Beginning in Colonial times, the flow of the Mill River was harvested to power gristmills. The original dam at Smith Pond was constructed to power a mill. Later, in the late 19th Century, significant impoundments were established in the Mill River's upper reaches as part of the Brooklyn Water Works project, an elaborate effort to satisfy Brooklyn's rapidly growing water needs. These impoundments became the basis of Hempstead Lake State Park. As communities emerged, stormwater and sewer systems developed with outflow pipes entering the river and roads with rail lines crossing the river.

With increasing populations and development, Mill River communities have been more susceptible to flooding. This became most evident during Superstorm Sandy, when Nassau County was hit with rain and a tidal surge of up to 18 feet. Public and private infrastructure along the river were damaged including more than 7,600 homes, as well as bridges, businesses, parks, roads, schools, and a wastewater treatment facility at the entrance of the bay. Directly across the bay from the mouth of the Mill River, the Long Beach Water Pollution Control Plant was also inundated by Sandy generated storm surge, causing $2.7 million in damages and resulting in ongoing issues with the quality of treatment of effluent released into the South Shore Back Bay.

Inland communities in the area regularly experience flooding due to heavy rainfall (such as during Hurricane Irene and other more frequent storm events) exceeding the carrying capacity of the existing stormwater infrastructure. Frequent flooding has been identified by the Town of Hempstead, Village of Malvern Village, the Hempstead Public Housing Authority, and other locations within the project area.

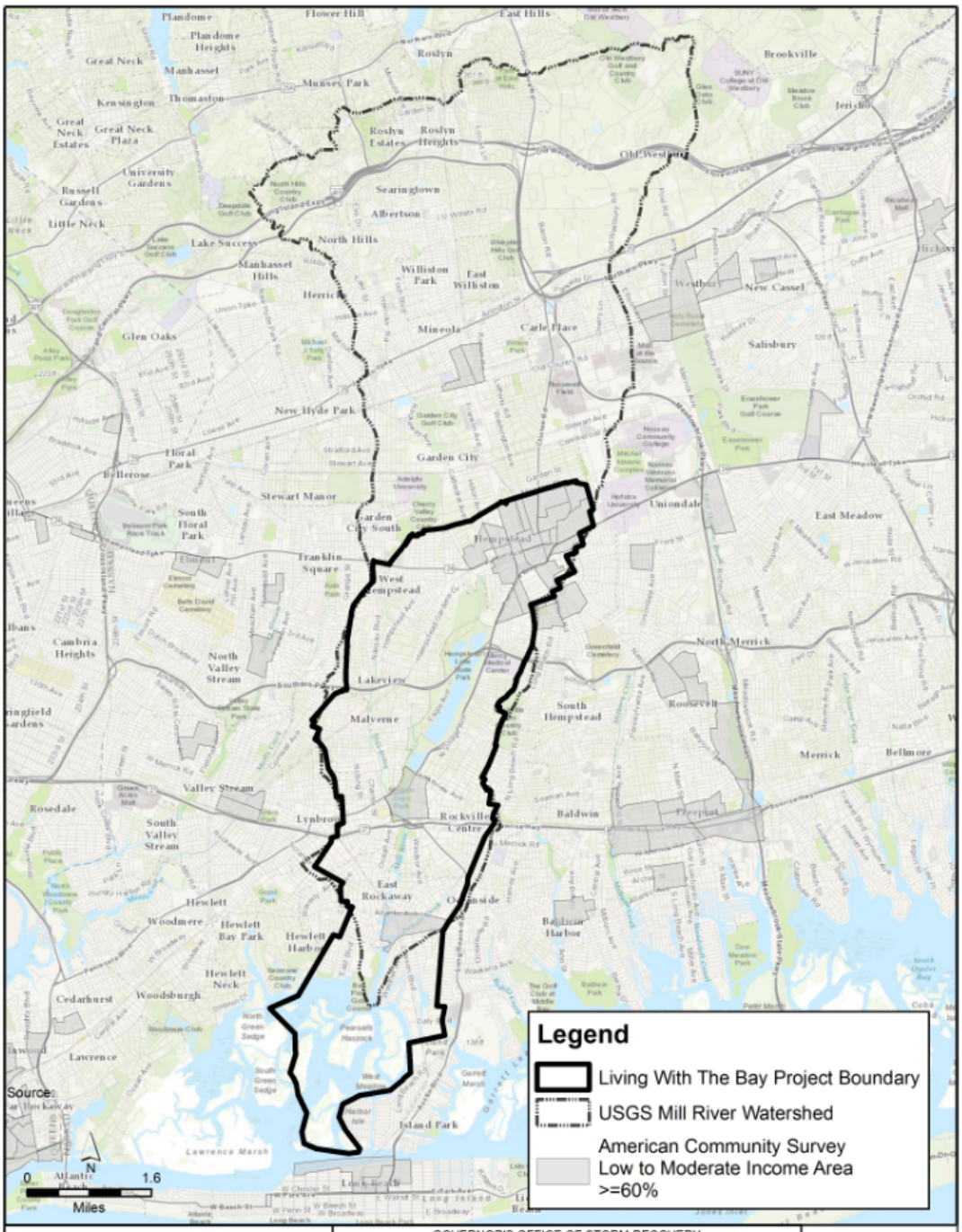
Experience from Sandy and other storms has shown that the project area is primarily susceptible to flooding and property damage due to the following:

- Tidal storm surge during major storm events (as evident from Superstorm Sandy);
- Inundation by surface waters due to poor drainage during storm events;
- Coastal changes associated with erosion; and
- Other coastal changes associated with relative elevation changes (e.g., land/marshland subsidence and/or sea level rise).

Upon GOSR's receipt of the project in November 2014, the State commenced a detailed review of the original LWTB concept to assess its feasibility and potential implementation challenges. The following conclusions were reached during this exercise:

- The new sluice gate had significant implementation obstacles due to the unfunded upland tie-ins necessary to make the structure an effective storm surge barrier. These upland tie-ins would have likely consisted of significant and expansive road raising projects in and throughout the existing communities. In addition to significant funding gaps, the sluice gate and road raisings would offer protection to the communities to the north, but would not prevent and potentially exacerbate surge effects in the communities to the south of the structure. The new grey infrastructure necessary for the sluice gate's effectiveness would have also had significant environmental impacts on the riverine habitat and its surrounding communities, including wide scale construction impacts associated with road raisings. The original design did not incorporate full environmental costs and ownership of land. Based on this analysis, the State decided to evaluate alternative water management strategies, including rehabilitating existing grey infrastructure as opposed to new grey infrastructure, employing wetland buffer restoration as opposed to anthropogenic barriers, and identifying strategies that offer protection along with ecological habitat improvements.
- Projects that increased stormwater capacity and provided social and recreational co-benefits, such as the blue/green water park, were worthy of further study. However, the concept's potential applicability should be expanded to include water capacity and water management projects in the northernmost, upstream reaches of the river and its source waters. This includes several dams, ponds and a reservoir, as well as the largest State public park in the region, Hempstead Lake State Park, which has Long Island's only high hazard dam and the largest publicly accessible forest in southern Nassau County.
- Projects such as bioswales and other green technologies were worthy of further consideration, but should be implemented in accordance with an overall stormwater management plan for the watershed to ensure that the investments in these technologies would be cost-effective, meet uniform performance criteria, and operate in the most coordinated manner feasible.
- Greenways should be included in the project, based upon community input and feasibility.
- The original proposal's geography encompassed the entire Mill River Watershed, as shown in Figure 8, covering more than 35 square miles. Based on further analysis and limited funding, GOSR refined the project area. The refined project area was established based on the watershed of the Mill River, consideration of political boundaries, and consideration of other projects being undertaken in the watershed, to potentially leverage this project, and/or avoid duplication of effort.

Figure 9: LWTB Project Area



Upon conclusion of the State's review, as set forth in this action plan amendment, the project has been amended to include elements that, to the greatest extent practicable and appropriate, comport with the original RBD proposal. The amended project is a combination of new and originally proposed interventions that meet the objectives of the original concepts, and achieve their benefits through feasible and implementable, less impactful and more ecologically beneficial methods.

Figure 9 details the locations of LWTB projects.

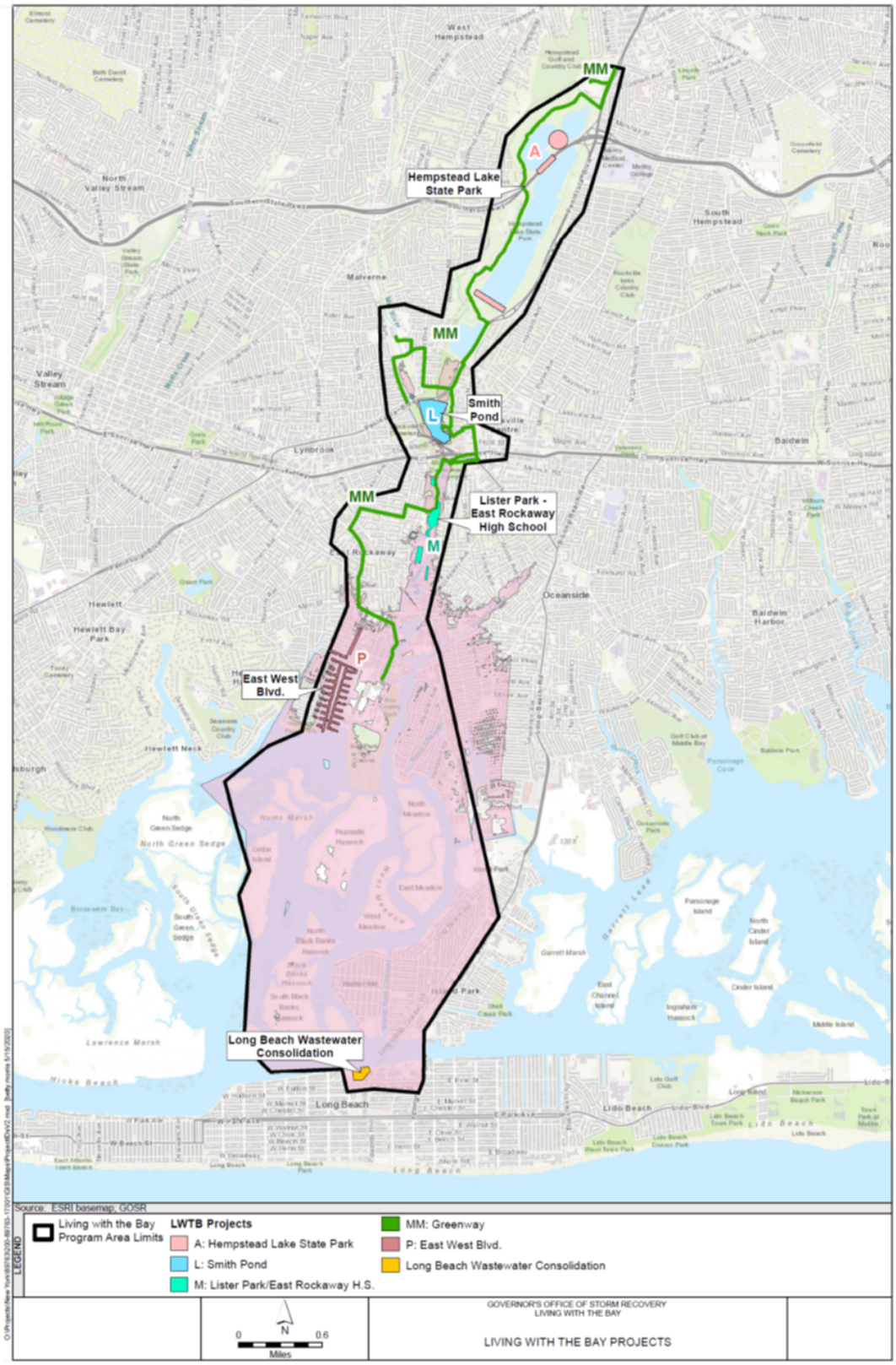


Figure 9: LWTB Projects

To assist in achieving original proposal objectives with the most effective methods possible, the State prepared a Resiliency Strategy for the Mill River project area. The strategy provides an overview of problems within the project area to inform prioritization of potential solutions. Based on information collected to date, documented flooding problems in the project area include poor to inadequate drainage collection and conveyance capacity, high tailwater conditions deeming the existing stormwater systems inadequate for critical storms, and overtopping surge events such as Superstorm Sandy that inundated more than 3,000 residential properties. Other documented problems include habitat and shoreline degradation and decreased water quality from the effects of untreated urban runoff and the release of undertreated wastewater. The Resiliency Strategy proposed projects focused on addressing the problems with the anticipated sea level rise impacts accounted for in the analysis. The Strategy strategically prioritizes project components with specific timeframes and costs for planning, design, permitting, procurement, construction, and project closeout. The strategy will also provide detailed descriptions of prioritized projects that address the problems listed above, along with projects that improve the public's access to the waterfront and educate the public on stormwater and environmental management. The outcome of the Resiliency Strategy was a program of thematically consistent, prioritized, impactful and constructible projects consistent with the goals set forth in the original RBD LWTB project proposal. As detailed in the Resiliency Strategy, the prioritized projects must still undergo the design, permitting and environmental review processes, meaning that further scoping and prioritization of projects is occurring as LWTB moves forward.

LWTB has developed a series of projects to address a variety of flooding sources throughout the project area in a comprehensive, practical and feasible manner. The revised project is organized into eight focus areas, each tied to one or more of the four LWTB objectives. Working collaboratively with community members, municipal leaders, and not-for-profits, GOSR developed the following LWTB objectives:

1. Preserve quality of life in the community during natural disasters, emergency events, and tidal inundation.
2. Increase community resilience and improve drainage infrastructure to address the impacts of rising sea level and increased frequency and intensity of extreme weather events.
3. Incorporate environmental and water quality improvements within the projects.
4. Create and improve public access to the waterfront – lakes, river and bay.

The eight LWTB focus areas are:

- **Focus area – Hempstead Lake State Park (HLSP) Improvements**: LWTB will address stormwater storage capacity management by rehabilitating and enhancing an existing 100+ year old dam located at HLSP. As an instrument for flood mitigation, the dam (with an operating gatehouse) will provide for reduced and delayed peak flows to downstream water bodies and communities during extreme weather events. This project will have several significant co-benefits, such as reducing the risk posed to downstream communities by dam failure and rehabilitation of this historic structure. Other improvements at HLSP, including wetland rehabilitation and dam repairs in the Northern Ponds area, will further enhance stormwater flow attenuation, improve water quality in the watershed by removing contaminants in urban run-off and provide enhanced habitat and new, expanded passive recreational opportunities. The HLSP improvements will also include a new facility to be used for education and as a coordination center during emergencies, as well as improved waterfront access at various locations, further improving recreational opportunities in this critical State park.
- **Focus area – Smith Pond Drainage Improvements**: LWTB will improve water quality, enhance recreation, restore the ecological system to promote native aquatic species and expand the hydraulic surge capacity of the pond. As of APA 26, project elements anticipated include the removal of invasive species and replacement with native plants on the shores of the pond, improvements to existing pathways and overlooks, connection to the Mill River Greenway, adding a fish ladder,

adding floodwalls to the eastern and western shores of the pond, and making improvements to -the existing weir and stormwater improvements to an adjacent parking lot .

- **Focus area – Stormwater Retrofits**: The State will strategically install green infrastructure including, but not limited to: drywells, bioswales, permeable pavement, and select bioretention and infiltration interventions throughout the project area. Per project designs as of APA 26, improvements along East and West Boulevards will mitigate the effects of tidal and stormwater inundation through the deployment of check valves, bioswales and permeable pavement, while stormwater best management practices such as bioswales and surface infiltration systems will be included in other focus areas to retain, treat and delay stormwater before it enters the Mill River.
- **Focus area – Lister Park:** Per project design as of APA 26, LWTB will implement a suite of resiliency, water quality and drainage improvements to an area along the Mill River comprised of the existing Village of Rockville Centre's Department of Public Works (DPW) storage yard and several public parks known as Bligh Field, Centennial Field, Lister Park, and Tighe Field. The improvements include a living shoreline to combat erosion and filter urban and stormwater runoff entering the Mill River, bioretention basins and drainage improvements to improve stormwater management and treatment, flood protection improvements to protect surrounding residential areas, and greenway connections and an improved overlook to connect residents to the Mill River.
- **Focus area – Greenway Network:** LWTB will create greenways connecting communities with sections of the project area and focus areas along the Mill River, including north from HLSP, through HLSP south to Smith Pond and Lister Park and connecting the greenway further south to Nassau County Bay Park.
- **Focus area – Long Beach Water Pollution Control Plant Consolidation Project**: LWTB will convert the existing Water Pollution Control Plant (WPCP) at Long Beach into a resilient pump station that will send untreated effluent to the newly upgraded Bay Park Sewage Treatment Plant. Tidal inundation from Superstorm Sandy overwhelmed the Long Beach plant interrupting treatment, resulting in the release of untreated effluent into the South Bay. Damage from Sandy has resulted in legacy operational issues affecting the quality of treatment that the WPCP provides, resulting in the continued release of undertreated effluent with high levels of nitrogen which negatively impacts tidal marshes and water quality throughout the South Bay, and communities in the Mill River watershed such as Bay Park, Oceanside and East Rockaway which are impacted by the Bay's tides and storm surge. The project will preserve quality of life during increasingly frequent storm events and increase community resiliency in the face of sea level rise by mitigating the hazard of storm impacts that cause the release of untreated effluent to the Bay. The project also incorporates environmental, coastal resiliency and water quality benefits for the LWTB project area by ensuring a higher standard of treatment of effluent at the Bay Park plant.
- **Focus area – Social Resiliency Programs**: LWTB has worked with relevant community organizations and educational institutions to develop public education programs. These education programs will include environmental and historical education for schools and the public. Education programs include a Certificate Program for local government policy makers and staff on environmental sustainability, which will contribute to a culture of focusing on the environment in local decision-making. LWTB will also develop job training programs with a focus on green infrastructure, contributing to the social resiliency of communities along the Mill River and South Bay.

The LWTB focus areas are tied to the four LWTB objectives as follows:

LWTB Objective Number 1: Preserve quality of life in the communities during natural disasters, emergency events, and tidal inundation.

- **Focus area – Hempstead Lake State Park**
- **Focus area – Smith Pond Drainage Improvements**

- **Focus area – Stormwater Retrofits**
- **Focus area – East Rockaway High School Hardening**
- **Focus area – Lister Park**
- **Focus area – Greenway Network**
- **Focus area – Long Beach Wastewater Consolidation Project**

LWTB Objective Number 2: Increase community resilience and improve drainage infrastructure to address the impacts of rising sea level and increased frequency and intensity of extreme weather events.

- **Focus area – Hempstead Lake State Park**
- **Focus area – Smith Pond Drainage Improvements**
- **Focus area – Stormwater Retrofits**
- **Focus area – East Rockaway High School Hardening**
- **Focus area – Lister Park**
- **Focus area – Greenway Network**
- **Focus area – Long Beach Wastewater Consolidation Project**
- **Focus area – Social Resiliency Programs**

LWTB Objective Number 3: Incorporate environmental and water quality improvements within the projects.

- **Focus area – Hempstead Lake State Park**
- **Focus area – Smith Pond Drainage Improvements**
- **Focus area – Stormwater Retrofits**
- **Focus area – East Rockaway High School Hardening**
- **Focus area – Lister Park**
- **Focus area – Greenway Network**
- **Focus area – Long Beach Wastewater Consolidation Project**
- **Focus area – Social Resiliency Programs**

LWTB Objective Number 4: Create and improve public access to the waterfront – lakes, river and bay.

- **Focus area – Social Resiliency Programs**
- **Focus area – Hempstead Lake State Park**
- **Focus area – Smith Pond Drainage Improvements**
- **Focus area – Stormwater Retrofits**
- **Focus area – Lister Park**
- **Focus area – Greenway Network**

Focus Area Timelines, Budgets, and Detailed Descriptions

The following sections provide further details on each of the eight LWTB Focus Areas outlined above, including current scope and design and construction schedule. Each Focus Area will be designed and certified by a New York State Licensed Professional Engineer. The useful life of the interventions was considered to be 50 years for planning and economic benefit evaluations. However, the capital infrastructure is anticipated to remain in use long past this period.

Focus Area: Hempstead Lake State Park Improvements

As the Mill River watershed is an interconnected system, the LWTB project recognizes that both upstream and coastal interventions were required to address two of the largest vulnerabilities faced by surrounding communities during Superstorm Sandy: coastal surge and stormwater flooding. The interventions proposed within HLSP improve water quality and preserve the value of existing habitats within the Park while simultaneously introducing recreational and educational opportunities for citizens to learn about and connect with their natural environment, therefore contributing to the community's social resiliency. Interventions within HLSP are organized into four sections:

Interventions within HLSP are organized into four sections:

1. Dams, Gatehouse and Bridges
2. Northwest (NW) and Northeast (NE) Ponds
3. Environmental Education and Resiliency Center
4. Greenways, Gateways and Waterfront Access.

As of APA 26, the estimated budget for this focus area is approximately $35 million. The HLSP improvements are expected to reach 100% design in the first quarter of 2021 with construction expected take to take place from the second quarter of 2020 through the second quarter of 2022. As a stakeholder and a recipient of disaster recovery funds from GOSR, the NYS Office of Parks, Recreation and Historic Preservation (State Parks) is responsible for funding the long-term operation and maintenance of the overall HLSP improvements.

Dams, Gatehouse and Bridges

This section focuses on improvements to the Mill River dams located within HLSP and enhances the function of the dams as a key instrument for flood mitigation. This work also includes design of pedestrian bridges that are part of the adjacent shared-use path system that increase access and connectivity throughout the park.

The NW Pond and dam were constructed in the 1960's around the same time as a large (96" diameter) drainage pipeline was installed through Hempstead to discharge stormwater runoff from the surrounding community into the NW Pond. The dam provided attenuation of peak stormwater flows from the 96" pipe, allowed sediments to settle out of the runoff, and also prevented floatables from reaching downstream into Hempstead Lake. As a result of the dam being breached in 2012, flow through the NW Pond is uncontrolled bringing sediment and floatables into Hempstead Lake.

Modeling has indicated that constructing a new dam, with an appropriate spillway elevation, at the NW Pond will lessen the impacts to the larger Hempstead Lake Dam during a major storm event. A new NW Pond dam will maintain water at current elevations within the pond limits, encouraging the growth of wetlands which in turn will provide filtering and enhanced water quality. The dam will help attenuate peak flows from the upstream drainage collection systems allowing for better control of flows in the overall watershed, and flood mitigation. By reestablishing a functional dam, the water level will be controlled, and the dam will allow sediment to be filtered out before reaching the downstream waters (especially after the "first flush"), thus enhancing and improving water quality downstream.

Once the NW Pond Dam is in place, flows can be directed downstream of the dam through an open channel and culvert under the Southern State Parkway and into Hempstead Lake. Per project design as of APA 26, a timber pedestrian bridge will be provided to carry a shared use path that encircles Hempstead Lake over this channel. Installation of the bridge will allow removal of existing twin 60" diameter pipes that currently limit flow through the channel (and also create the potential for an unplanned impoundment if blocked), while providing for uninterrupted access to the pedestrian pathway. Modeling has indicated that the removal of the twin pipes would enhance the flow between the NW Pond and Hempstead Lake, which is an important aspect of the project goals. The bridges will be designed to accommodate emergency vehicles, thereby improving emergency access and response times, maintenance vehicles, pedestrians, and horses.

The Hempstead Lake Dam, gatehouse and pipe arch were constructed in 1873. The dam's outlet-controls (currently not functional) are housed in the historic gatehouse structure, that directs water flows through an attached brick pipe arch that extends from the dam into South Pond. HLSP will replace all five of the sluice gates at the dam and provide new gate controls in the gatehouse. An operating plan will be developed to actively manage water flow in small and large storms events. In all, installation of new outlet gates, inspection catwalk and water level monitoring equipment at the dam gatehouse will allow for control of flows through the Park, over the dam, and into the lower reaches of the watershed. Flow-control is key to flood protection and dam safety, as well as maintenance of lake levels for recreational and ecological purposes. In particular, the ability to draw down lake levels prior to the onset of an extreme precipitation event, may reduce peak flows downstream, and will enhance dam safety. As a part of this project, and in accordance with NYSDEC dam safety requirements, trees and vegetation will be removed from the dam to ensure the dams integrity and to allow for proper, ongoing inspections. In addition, vandalized stonework at the historic inlet gatehouse at South Pond will be restored to ensure the integrity of the structure and historical accuracy.

The Dam work proposed throughout HLSP is being progressed in accordance with the overall LWTB project to help improve flood management, water quality, dam safety and ecological conditions throughout the Mill River watershed. This project will enhance public safety and resiliency, provide connections to the adjacent communities, encourage usage of the natural facilities in the Park, and provide environmental education and interpretation opportunities.

Northwest and Northeast Ponds

The NW and NE Ponds, known as the "Northern Ponds," are located in the northern portion of HLSP and are fed by the Mill River, groundwater, and from multiple stormwater drainage systems. The ponds are separated from Hempstead Lake by the Southern State Parkway. As of APA 26, improvements to the NW and NE Ponds (in addition to the dam replacement described above) include wetland creation and restoration, and installation of a culvert and floatables catcher. Currently, the Northern Ponds area is degraded due to runoff from an urbanized watershed leading to extreme floatable accumulation and impacted water quality.

Over time the watershed for the ponds has become urbanized, increasing run-off volume and pollutant load. Flow into the ponds carries pollutants from urban run-off. There are significant floatables deposits, sediment loads and oil residue apparent near many of the outfalls. Water sampling confirms this pollutant load, particularly during the first flush at the onset of a rain event. The high run-off sediment load has filled the creek channel and the high velocity of the runoff entering the Mill River channel has resulted in significant erosion of the channel that is deposited into the ponds and surrounding area. This project seeks to mitigate the pollutant levels that enter the ponds and utilize new and restored wetlands to filter other pollutants from the runoff, which in turn will improve the water quality entering Hempstead Lake and downstream into the bay. By installing a floatables catcher at the Northeast corner of the Northeast pond, floatable deposits coming from the watershed north of the park and accumulating within the Ponds and downstream Hempstead Lake will be significantly reduced. The improved wetlands will also contribute to

the community's social resiliency by providing enhanced passive recreational opportunities, including bird watching, as native plantings are expected to improve wildlife habitat.

Overall, the NW and NE Ponds environmental and stormwater mitigation improvements will result in improving stormwater management, improved water quality, reduced erosion through stabilization of the channel within the Park, creation and restoration of diverse habitats and ecosystems and enhanced social connectivity with a continuous greenway extending to the surrounding neighborhoods.

Figure 10: Current conditions at the Northeast Pond, HLSP

Environmental Education and Resiliency Center

The Environmental Education and Resiliency Center (The Center) at HLSP will be a new and unique hands-on learning center about storm resiliency and environmental management, and will provide educational opportunities and an emergency coordination center for the immediate communities to aid with disaster response. The facility will provide an outreach and educational opportunity for the local community, as well as nearby user groups and school districts that frequent the park.

The Center is being designed to act as a "coordination center" during times of emergency for the following purposes:

- "Command Post" for local disaster response coordination either for agency staff or other agencies such as the NYS Park Police and the Nassau County Police Department. The existing parking area (Field 1) is also utilized by Public Service Electric and Gas (PSE&G) for emergency response staging of equipment in advance of severe weather events. The Center will provide a location for PSE&G staff to coordinate equipment staging, enhancing their emergency response to restore critical utilities and thereby help to promote safety and economic resiliency in the community and region.
- The Center may also serve as an information center if needed, for local residents after an emergency. Parking is available at Field 2 or access via the greenway that provides connection points to the surrounding neighborhoods and communities, some which are predominately low to moderate income. The building will include an emergency generator to provide resiliency and continued functionality during power outages.
- Monitoring station for water levels in HLSP ponds and lakes to inform water management decisions during storm events.

The Center is also being designed to include space to provide for additional partnerships with environmental education, non-profit organizations, educational institutions, community organizations, such as the Nassau County Law Enforcement Explorer Program (Explorer Program), that will use the Center for training space to promote and deliver their programs within the park. The Explorer Program is a volunteer program that provides an opportunity for at risk and low to moderate income young adults to receive basic law enforcement training and to learn about career opportunities within law enforcement. In addition to training and education, volunteers participate in community service events throughout the year to encourage volunteerism and build stronger communities. The space provided to the Explorer Program will serve as a center for local community outreach by the police, educating and positively engaging young people through mentoring and education; further strengthening the connection to the community, giving youth an opportunity for a sense of place and ownership to the park and surrounding community.

Additionally, the Center will also serve a central focal point and core for the park with connections to the greenway, providing educational and community spaces connected to an overlook deck with views of Hempstead Lake and a location where park information can be distributed explaining climate change impacts, community resiliency processes, environmental preservation, and other items of local relevance. The Center will also provide essential facilities to help with building partnerships with local school districts to utilize the education space and wet lab for hands-on learning and activities; engaging young minds through activities that reflect the local surroundings and foster stewardship. The Center will be focused primarily around the importance of environmental education and stewardship, providing a connection between the community and the environment, while also providing a resource, specifically during extreme weather conditions. There will also be information about the Mill River system's local wildlife and the history of the area.

The Center will be constructed to reduce environmental impacts through an approach that focuses on lower operating costs through environmentally conscious building design. The building will be used to educate users about sustainable building practices and construction. The building will be designed with the following key features:

- Robust and sustainable exterior envelope optimized to suit local climate demands.
- Awareness of solar impacts (i.e. siting) and control (i.e. glazing) to reduce heating and cooling loads.
- LED lighting with occupancy sensing and daylight harvesting to reduce electrical usage.
- Photovoltaic roof panels to offset electricity energy usage.
- High-efficiency, low/no water plumbing fixtures.
- Windows designed to minimize bird strikes.

Greenway, Gateways and Waterfront Access

Access improvements, including greenways, gateways and new waterfront infrastructure included in the project designs as of APA 26, will increase the community's connection to Mill River, an important component of the winning RBD LWTB project concept. Connections to surrounding communities and in particular, Hempstead High School students, and other surrounding neighborhoods will draw visitors to the lake and river, with the enhanced, direct, and ADA compliant access this project provides to the water.

Greenways and trails will provide a physical connection linking the ecological network and the communities along the Mill River project area. The greenway provides a unique opportunity to connect the public and provide them with the opportunity to walk the river and learn along the way about the river system through educational signage.

On a daily basis, the trails and greenway will be open to the public for recreational use (walking, jogging, biking, horseback riding, bird watching, etc.) providing connection points to the surrounding neighborhoods and an economical way for people to exercise, increasing the health and well-being of its users, with attention to developing physical environmental connections to nearby underserved communities. The trails and greenway will also provide access to the ponds and lake for other types of recreation such as fishing and kayaking.

Improvements to an existing parking area, utilizing green infrastructure, will be implemented to provide local and regional patrons with improved access to the park to enjoy the Mill River project area. In addition, this centralized parking lot is in close proximity to local mass transit.

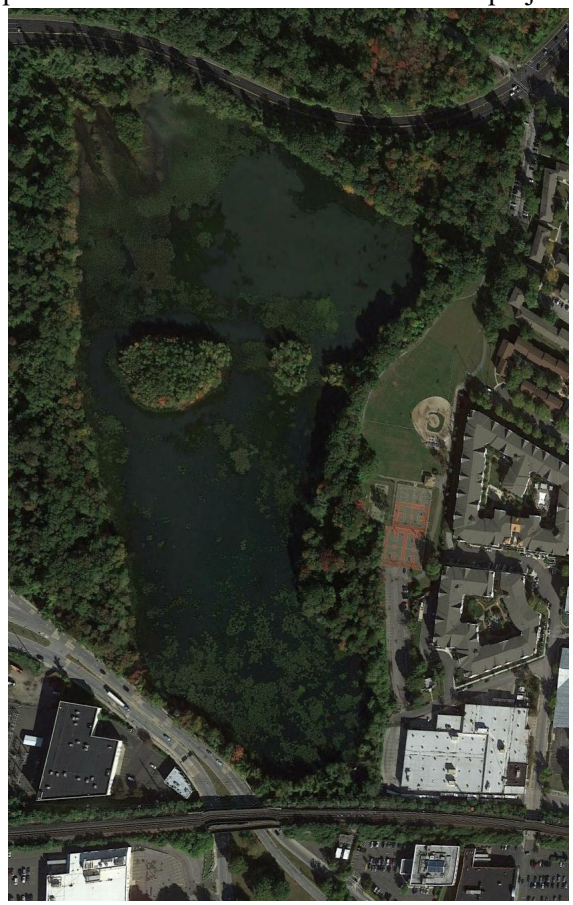
The improvement and creation of gateways into the park will provide new direct, pedestrian access from the adjoining neighborhoods, a significant portion of which are low to moderate income communities. These gateways will also provide a sense of security within the park, by opening views and providing additional access points for emergency vehicles.

As of APA 26, the park waterfront enhancements and improvements will include new amenities such as an ADA compliant dock for fishing; a kayak launch/educational pier; and an observation overlook to facilitate birdwatching.

Focus Area - Smith Pond Drainage Improvements

Figure 11: Smith Pond

Smith Pond, shown in Figure 11, is a 22-acre freshwater pond located in the center of the LWTB project area just north of the Sunrise Highway in the Village of Rockville Centre. The pond is associated with Morgan Days Park and is managed by the Village of Rockville Centre. The Pond is the confluence point of the two primary drainage branches (Pines Brook and Mill River) conveying water from the north end of the Mill River watershed — one on the north eastern side coming from HLSP, and the other on the north western side originating north in the Garden City area.



The Pond receives both the flow (water quantity) and the nutrient loads (water quality) for the entire watershed. Smith Pond is also a unique location as the connecting water body between the upper freshwater system and the lower tidal and salt water system. The Pond's location provides an advantageous opportunity to incorporate RBD and LWTB concepts of ecological restoration, access and urban quality and social resiliency in the Mill River corridor.

As of APA 26, the proposed improvements under consideration at Smith Pond are habitat restoration, storm attenuation, and improving public access. A dredging management plan was prepared evaluating the opportunity to increase water depths to greater than eight feet, but high costs associated with the disposition of dredged material rendered this option impractical. Instead, the addition of flood-walls on the east and west sides of the pond will achieve comparable benefits by supplementing storm runoff attenuation capacity by increasing pond volume and therefore removing areas adjacent to Smith Pond from the 100-year floodplain. Improvements to the weir will be made to accommodate impacts the flood walls have on the flood waters of the pond, and address any weaknesses determined through an inspection, to ensure its longevity.
The proposed interventions will also include improving environmental conditions. Currently, shallow water depths in the Pond, combined with high nutrient loads from upstream runoff, contribute to invasive plant over growth and dominance in the Pond. The proposed project will remove invasives, particularly lily pads, which will provide improved habitat needed for fish and other aquatic life and result in significant environmental improvement. The inclusion of a fish ladder at the Pond weir will provide passage for both herring and the American eel, and as a result of the removal of invasives, the fish will have appropriate habitat in the Pond. Invasives will also be removed from certain sections of the shore and will be replaced with native plants, further improving the natural flora and fauna of the park. The project also proposes improvements to existing pathways and overlooks, as well as connection to the Mill River Greenway, which will improve public access to the waterfront by connecting the South Shore's communities to the natural beauty of the pond and park. Finally, the project also proposes installing permeable pavement in the adjacent parking lots to improve stormwater management and drainage.

One of many benefits of this project will be the ability to monitor this work as an example of a successful scalable strategy that could be replicated elsewhere in other highly developed watersheds. Currently, the estimated budget for this focus area is approximately $11.6million. The Smith Pond Drainage Improvements are expected to reach 100% design in the second quarter of 2020 with construction expected take place from the fourth quarter of 2020 to the second quarter of 2022.
Focus Area - Stormwater Retrofits

A critical piece of the LWTB project is addressing flood mitigation. For the project area, this includes finding solutions to chronic drainage problems in the community that continue to worsen as a result of more frequent critical storm events and tidal surge, and the problems experienced during and after Superstorm Sandy. The approach to address this is through a variety of retrofits incorporating stormwater best management practices (BMPs); which complements an underlying theme of the LWTB concept – that the project components can be duplicated elsewhere in the project area and on Long Island.

The LWTB design identified the desirability of green infrastructure retrofit projects which will improve stormwater collection and conveyance to mitigate flooding and incorporate water quality improvement components. These green infrastructure retrofits can be combined with gray infrastructure improvements to provide additional protection to communities. Some of the project types discussed in the Resiliency Strategy (noted above) include:

Parcel-Based Green Infrastructure. Green infrastructure typically incorporates multiple practices utilizing the natural features of the site in conjunction with the goal of the project. Multiple BMPs can be incorporated into a site to complement and enhance the current land use while also providing volume reduction and water quality treatment. Green infrastructure practices are those methods that provide control and/or treatment of stormwater runoff on or near locations where the runoff initiates. Typical parcel based practices include approaches such as vegetated infiltration basins, stormwater wetlands, and subsurface practices as shown in Figures 12 and 13. Publicly owned open space parcels were evaluated throughout the watershed to identify potential opportunities to incorporate green infrastructure practices to reduce flooding in areas with limited or no drainage infrastructure.

Figure 12: Typical surface infiltration basins

Figure 13: Stormwater wetland in a park

Green Streets. Green streets are a dense network of distributed BMPs concentrated on a public right-of-way. Green streets are often referred to as BMPs, but actually employ multiple distributed BMPs in a linear (rather than parcel-based) fashion. The green street BMP configuration strategy implements BMPs within the street right-of-way with designs that reduce runoff volume and improve water quality of the runoff both from the street and adjacent parcels. Green Street features can include vegetated curb extensions incorporating bioretention, sidewalk planters, bump outs at intersections incorporating bioretention, permeable paving, and suspended pavement systems. Green streets can be implemented throughout residential areas to reduce localized flooding in places where there are micro depressions and little or no drainage infrastructure.

The most common approaches include bioretention areas located between the edge of the pavement and the edge of the right-of-way, and permeable pavement installed in the parking lanes. Due to improvements in construction materials, maintenance on permeable pavements typically occurs once a year. An alternative option for integrating water quantity and water quality improvements is to integrate storage and treatment under the sidewalk using a suspended pavement system. Suspended pavement uses structural frames to support the weight generated by sidewalks and roadways while providing open void space for runoff storage and treatment underneath. The runoff is treated as it passes beneath the pavement and through an engineered soil media before exiting through infiltration or an underdrain. Suspended pavement systems allow for the integration of BMPs with little to no disturbance to the surface, and serve as an improved BMP over more traditional dry wells located throughout the project area.

The benefits of green streets were evaluated using a multi-step process to (1) evaluate the typical green street configuration (2) quantify potential unit load reductions and (3) apply the unit load reductions to streets throughout the watersheds based on expected opportunity. The storage and treatment capacity of the green street can be significantly increased by utilizing available storage under the full width of the right of way. Substantial flood mitigation combined with water quality improvement may be possible. Figure 14 shows some of the potential components of a green street or right-of-way system, including suspended sidewalk and bioretention. Figure 15 shows a typical green street cross section. Although utilization of suspended pavement systems is a stormwater management BMP, the extensive excavation work required to implement these systems makes them better suited for new construction, and often impractical for improvements to existing roadways.

Figure 14: Suspended sidewalk system (left) and bioretention in the Right-of-Way (right)

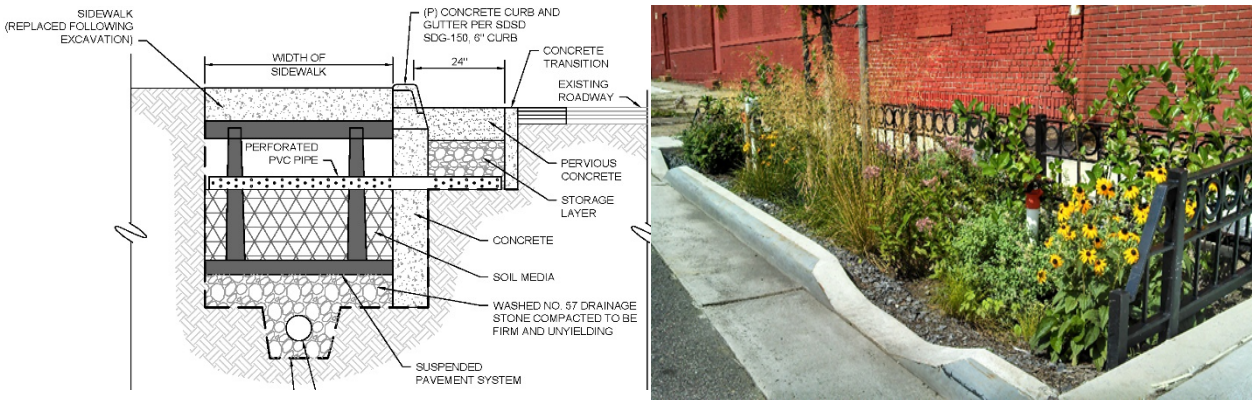
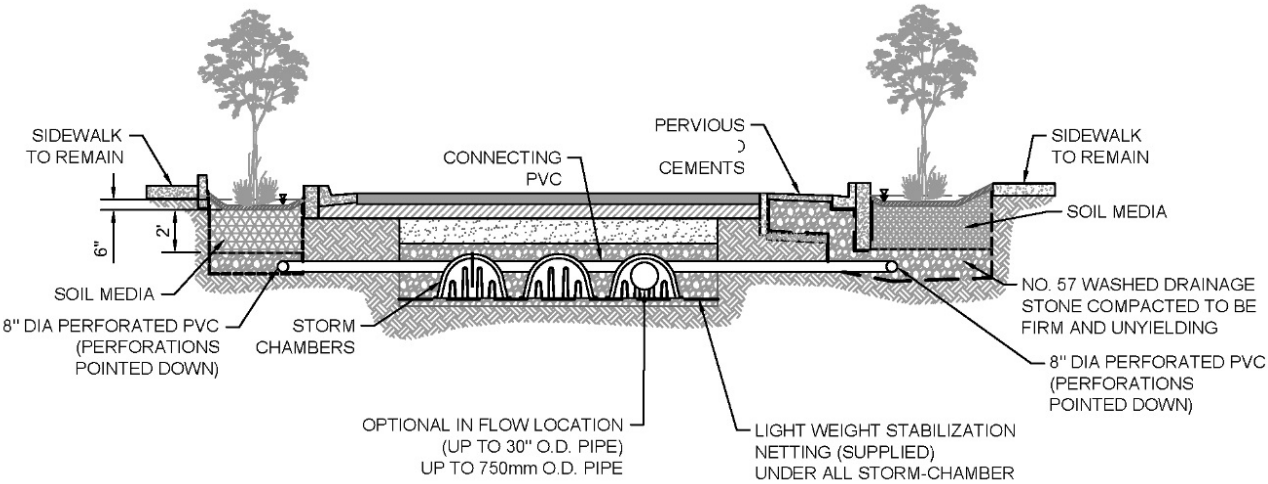


Figure 15: Typical green street cross section



Green-Gray Infrastructure. In some cases, traditional structural or "gray" infrastructure in the form of additional inlets and stormwater pipe will be required to provide the necessary flood mitigation. At locations where this will occur, the design team will incorporate "green" infrastructure elements that will provide more ecological and environmental benefits where practical. Exfiltration beds and/or structures could be utilized to retain and treat the runoff rather than sending the collected water immediately downhill. In addition, minor design elements, such as stormwater structures with sumps (two- to three-foot-deep bottoms) can help collect sediment prior to being discharged to downstream surface waters.

Figure 16: Typical green-gray infrastructure construction

Following the project prioritization through the Resiliency Strategy Plan and further consideration relating to environmental review and permitting requirements, the LWTB project is proceeding with stormwater interventions at East and West Boulevards in the Town of Hempstead. These corridors serve as "lifeline" routes that connect the communities to emergency services locations and critical facilities, and allow residents to evacuate to higher ground during storm events. Under current conditions, continual flooding from both rainfall events and tidal inundations has had many negative impacts to the delivery of municipal services, private property, safety, and quality of life throughout the community.

The East and West Boulevards project includes stormwater BMPs discussed above to reduce the risk and impacts of flooding on these vital arteries during both rain and tidal flooding events. As of APA 26 the proposed interventions include installing 13 check valves at drainage outfalls that are located below the high tide elevation, allowing tidal waters to enter the drainage system through the unprotected outfalls and overflow inlet structures onto the streets. These valves will prevent tidal waters from entering the system but allow for storm water flow to exit the system during low tides. In addition, proposed porous asphalt shoulders on both sides of the roadways with new stone reservoirs under the roadway pavement represent a multifunctional, low impact development technology that integrates ecological and environmental goals, and allows for stormwater infiltration and retention during storm events. The proposed project will also include bioswales surrounding the Grand Canal. Currently, the estimated budget for this focus area is approximately $7.4 million. The East and West Boulevards project is expected to reach 100% design in the second quarter of 2020, with construction expected take place from the fourth quarter of 2020 to the third quarter of 2022.

The LWTB project also incorporates some of the green infrastructure stormwater BMPs discussed above into other focus areas, such as bioswales along the Greenway, and a surface infiltration system at Lister Park, which will contribute to stormwater delay and retention before it enters the Mill River.

Focus Area – East Rockaway High School Hardening

The East Rockaway High School is situated along the west bank of the Mill River, just north of Pearl Street, in Nassau County (see Figure 17). Superstorm Sandy caused heavy rains and storm surge resulting in flood waters flooding the School's northern and eastern property and entering the School's buildings and facilities. The boiler room, auditorium and gymnasium wings, teacher parking lot, and sports fields received the most pronounced damage. The building's floor crawl space typically has flooding associated with normal tidal cycles due to porous soil conditions, however the high level of water from Sandy caused scour below the pile caps and left pools of sewage & fuel oil polluted water. Lack of sufficient backwater valves also created water infiltration of the sanitary outfalls.

Figure 17: East Rockaway High School

The School's buildings and grounds were repaired after Sandy and a recently approved FEMA project is intended to mitigate the flooding of the School's buildings. The teacher parking lot and athletic fields routinely flood from rainfall and, the sport fields remains vulnerable to frequent tidal flooding and shoreline erosion. The bleachers and two story storage and press box at the sports field are on the verge of falling into the Mill River due to ongoing shoreline erosion.

The presence of the continuous stretch of publicly owned land along the western bank of the river at the School and to the north and east of the School offers an opportunity to implement the RBD LWTB goal of protecting and increasing the resiliency of a critical community asset from flood damage. As of APA 26, potential resiliency interventions for protection and social resiliency include linear flood risk mitigation and shoreline stabilization with design considerations to alleviate the tailwater and surge flooding occurring in the teacher parking lot and sports field. Living shoreline elements with stormwater outlet treatment systems to improve water quality in the area are also being incorporated.

As noted, the School's sports field bleachers are located at the river bank. Due to ongoing erosion of the bank, the structural stability of these stands is being compromised. The design proposal provides an integrated solution that stabilizes the river bank, raises its flood protection level, and enhances the conditions for the grandstand. The design incorporates the current 100-year FEMA flood map and calls for an elevation of 7.2 feet.

The goal for this area is to determine the feasibility of design options that help reduce the School's vulnerability to flooding and stabilize its eroding shoreline.

Currently, the estimated budget for this focus are is approximately $6 million. The East Rockaway High School Hardening project is expected to reach 100% design in the second quarter of 2020 with construction expected take place from the fourth quarter of 2020 to the third quarter of 2022.

Focus Area – Lister Park

The Lister Park Improvements project area is located within a residential setting within the Village of Rockville Centre and comprises the existing Village Department of Public Works (DPW) storage yard and several public parks known as Bligh Field, Centennial Field, Lister Park, and Tighe Field. The site is bounded by Merrick Road to the north and East Rockaway High School to the south and by residential developments to the east and west.

During Superstorm Sandy, many residential properties along the Mill River were inundated with stormwater. The area experiences routine flooding and ongoing erosion along the river's edge. Currently, the parking lots for Lister Park, Tighe Field, and Centennial Park are subject to flooding during higher rainfall events and tidal backup. Areas along the east and west banks of Mill River experience shoreline erosion due to high river velocities and tides and/or have been hardened, eliminating their ecological habitat. At present, bike and pedestrian access to the waterfront in the project area is limited.

The goals for the Lister Park Improvements project include providing flood protection to the surrounding community to mitigate future damages to the community, like those experienced from Superstorm Sandy, through flood defenses and stormwater management improvements. The project will also involve enhancing waterfront access, providing connectivity along the Mill River waterfront to existing pathways, enhancing habitat, restoring environmental health, and improving water quality through improvements such as the Greenway, bioretention basins and replacing the overlook at Bligh Field.

As of APA 26, the proposed improvements for Lister Park include a living shoreline along a majority of the project area to provide bank stabilization and enhance habitat along Mill River. Bioretention basins (i.e. green infrastructure) will be constructed at Tighe Park to provide water quality treatment for the parking lot prior to release to the Mill River.

The parking lot at Centennial Park will be re-graded and repaved to eliminate the current ponding that occurs there. In addition, a bioretention basin will be constructed to provide water quality treatment from the parking lot prior to release into the Mill River. The existing inlet at the low point of the parking lot will be removed and replaced with an overflow inlet in the bioretention basin for larger storm events for conveyance to the Mill River.

The project also includes connecting the parks to the planned Mill River Greenway, to connect communities in the LWTB project area to the river. In addition, to increase access to the waterfront, the existing overlook located at Bligh Field near the parking lot will be reconstructed to provide visual access to the waterfront. The overlook will be accessible from the new greenway and parking lot.

Finally, a knee wall will be constructed along the west side of Bligh Field parking lot to provide flood protection to homes located on Riverside Road which are susceptible to flooding from a 100-year storm event, while reducing the footprint of flood protection infrastructure. The knee-wall alignment at Riverside Road and Bligh Field parking lot crossings will be complimented with floodbreak panels to allow continued access during non-flood time periods.

Figure 18: Greenway Network Concept

Through these proposed improvements, the project will improve community resilience to sea level rise and increasingly frequent extreme weather events as well as preserve quality of life during these events with backflow prevention, parking lot regrading, and porous greenway to better manage stormwater. The improvements will also restore environmental health and water quality using Green Infrastructure

(bioretention basins and living shorelines) which will promote aquifer recharge while reducing localized flooding due to storm runoff; while at the same time providing new opportunities for residents of the South Shore to connect with the waterfront.

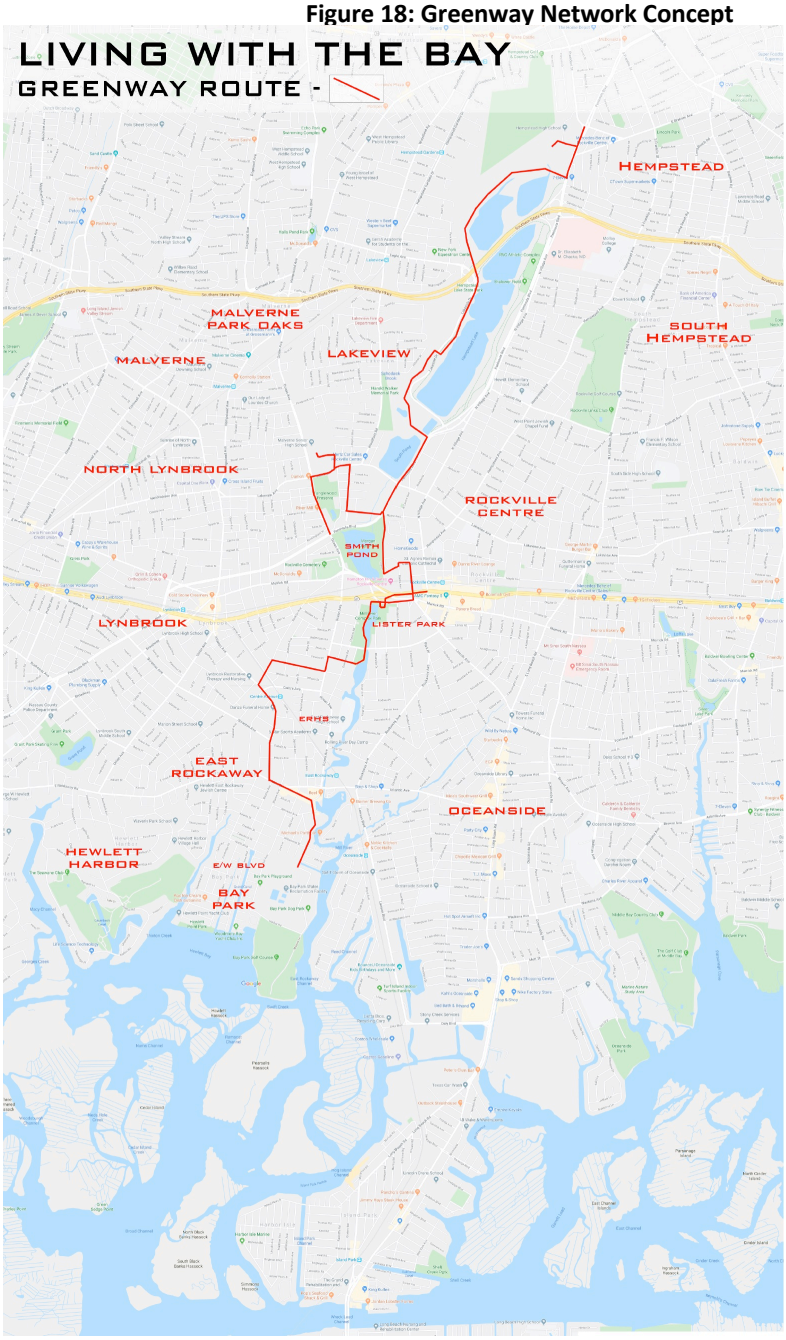
Currently, the estimated budget for this focus area is $4,000,000. The Lister Park project is expected to reach 100% design in the second quarter of 2020 with construction expected take place from the fourth quarter of 2020 to the third quarter of 2022.

Focus Area – Greenway Network

The HLSP improvements, Smith Pond, and Lister Park projects each have greenway components within them. The focus of the Greenway Network project is to provide waterfront access in other sections of the LWTB project area and connect the greenways together in a continuous system.

Continuous safe pedestrian pathways from residential areas to the waterfront in the LWTB project area are rare and if they exist, they are fragmented with little connectivity for any significant lengths. The winning RBD LWTB project proposal noted that the overall scale and existing land use of the area makes it ideal for biking, walking, and boating, but existing routes toward or along the river and bay are ad-hoc and discontinuous, and the adjacent neighborhoods' access to the river is poor. Combining this fact with the potential degradation of stormwater management and environmental habitat has created a concern for the sustainable resilience of the community.

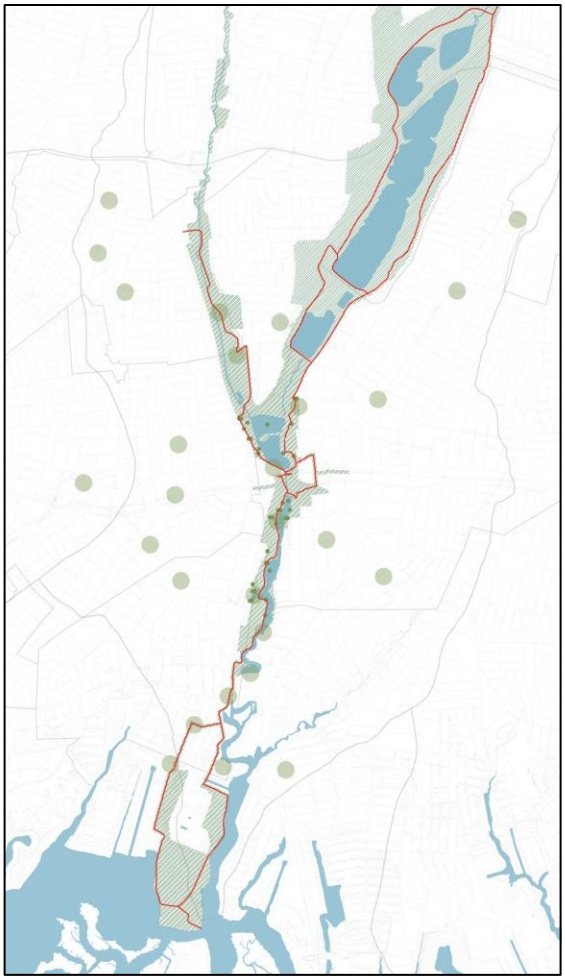
Figure 18: Greenway Network Concept



The RBD LWTB design called for the landscapes along Mill River to be interconnected into a strong "blue green" framework in order to improve public accessibility and visibility of the Mill River as a means to increase safety, and enhance the ecological and landscape value of this historic water course. It will also increase recreational opportunities for the densely populated communities serving as a long-term positive benefit to the residents. The concept for the Greenway Network is shown in Figure 18.

The development of the Greenway Network is intended to be a strong feature for the suburban layout along and adjacent to the Mill River, thus transforming it into an attractive public amenity. The intent is to take the currently disconnected recreational and open resources in the LWTB project area, as well as schools, and link them into a coherent system of pedestrian and bike paths, resulting in the creation of a new

greenway. Another goal of the Greenway Network is to adopt and develop new sites along the Mill River that are presently underutilized and/or not accessible, and make these sites productive towards the LWTB objectives.



As a linear element and where space permits, the paths will serve as interceptors of surface stormwater runoff through parallel bioswales.

Currently, the estimated budget for this focus area is approximately $13.2 million. The Greenway Network project is expected to reach 100% design in the second quarter of 2020 with construction expected take place from the fourth quarter 2020 to the third quarter of 2022.

Focus Area – Long Beach Wastewater Consolidation Project

The Long Beach Wastewater Consolidation project (WPCP) is expected to benefit residents of the areas of the Mill River watershed that experience tidal inundation and storm surge from the South Bay, including the tidal reach of the river itself, by mitigating the effects of tidal inundation and storm surge by removing the potential for release of untreated effluent into the Bay during future storms, and improving water quality by ending the ongoing release of undertreated effluent from the Long Beach WPCP. In the long term, water quality improvements associated with the project are expected to facilitate natural marsh regrowth in the Bay as well as allow for future long term interventions to restore the marsh, which would in turn result in further hazard mitigation for residents of the areas of the Mill River affected by storm surge from the Bay, including along the Mill River itself, deriving from healthy marshes' ability to attenuate wave action.

The Long Beach WPCP is located on the northern, South Bay side of the Long Beach barrier island, directly across the Bay from the mouth of the Mill River. Built in 1951, the plant treats wastewater from the City of Long Beach and the hamlet of Lido Beach, discharging the effluent into Reynolds Channel at the southern end of the Bay. Due to its location directly adjacent to the Bay and in the Special Flood Hazard Area, this critical infrastructure faces significant hazards from coastal flooding and storm surges, in an area which, as a barrier island, is already highly vulnerable due to location and topography. Furthermore, the location of critical equipment in facility basements, low-lying building entrances, and low-lying electrical equipment increase the plant's susceptibility to flooding from storm-surge and tidal inundation during storm events. In the face of expected sea level rise and increasingly strong and frequent storms, the plant's high vulnerability to flooding hazards will only increase.

During Superstorm Sandy, the Long Beach WPCP was overwhelmed by storm surge both from the Atlantic Ocean, and more significantly, the Bay. The WPCP was overwhelmed, and treatment was interrupted, releasing untreated effluent into the South Bay. Although the WPCP was partially operational within 12 hours after flood waters retreated, damages to equipment within the WPCP, such as its sand filter, have resulted in ongoing operational issues affecting the quality of treatment that the plant provides, particularly by impacting its ability to treat suspended solids. Consequently, since Sandy, the undertreated effluent from the Long Beach WPCP has contributed to lowering water quality in the South Bay and the tidal reach of

the Mill River, impacting its ecology, the industries tied to it such as tourism and fishing, and the quality of life of residents of the South Shore and the Mill River watershed. In particular, the high nitrogen loads released by the plant has resulted in the mass proliferation of a species of macro-algae known as Ulva, whose decomposition in turn contributes to water-bottom hypoxia, resulting is the destruction of fish and shellfish habitat. Finally, the lasting impact of Superstorm Sandy's damage on the WPCP has contributed to the continuing loss of marshland in the Bay.

The South Bay's marshes represent a key economic, ecological and hazard mitigation asset for residents of the area. Marshes have a great ecological value, supporting a great diversity of plant and animal life, and serving as a nursery for a variety of fish and shellfish species. The marshes' biodiversity and natural beauty in turn sustains local industries and recreational activities, including tourism, fishing, and boating. Finally, marshes provide valuable environmental services such as carbon capture and water filtration, as well as the possibility for significant hazard mitigation, in the form of wave attenuation. A 2016 risk-based comprehensive modeling effort conducted by Lloyds of London/Nature Conservancy evaluated the effects of marsh systems on upland damage during Superstorm Sandy. The report estimated that coastal areas with large marsh systems contributed to a 10% average reduction in property damage within the associated census tracts, with damage reduction benefits in certain areas reaching as high as 29%.

The Bay has suffered an estimated loss of approximately 30 acres per year of marshland, largely due to marshland erosion exacerbated by nitrogen pollution, such as that caused by the Long Beach WPCP. Nitrogen pollution contributes to the degradation of tidal marshes by promoting the marsh vegetation to grow taller but produce fewer and less-dense root structures. These weakened root structures result in accelerated marshland erosion. When marshlands erode, their ability to attenuate wave action is also diminished, resulting in more powerful and higher waves and increased storm surge. During Sandy, storm surge rose through the Back Bay and into the mouth of the Mill River, flooding over 2,500 acres and 4,000 parcels in the LWTB project area, which likely could have been reduced by the presence of healthier marshes in the Bay.

As of APA 26, the proposed Project would convert the Long Beach WPCP into a resilient pump station and construct a new force main to convey untreated effluent to the new state-of-the-art Bay Park Sewage Treatment Plant. The resilient pump will be designed to withstand flooding from a 500-year storm. The design will also consider sea level rise and additional wave height protections. In addition, an elevated emergency generator will be constructed to provide power to the resilient pump station in the event of a power outage. The force main will consist of approximately 16,000 linear feet of pipe, connecting the resilient Long Beach pump station to the Bay Park plant. Upon completion of the construction and activation of the resilient pump station and force main, the remainder of the Long Beach WPCP will be decommissioned. The scope of decommissioning and redevelopment is not part of this project. At that time, all tanks will be cleaned of residual material, equipment will be sold for reuse or for scrap value, the remaining structures will be demolished, and debris will be removed from site and disposed of appropriately. The newly cleared land will be graded and planted with salt-tolerant vegetation. The installation of green infrastructure measures such as bioswales and rain gardens to facilitate the collection and treatment of stormwater runoff from nearby areas will also be evaluated.

The key benefit of the proposed project will be reducing the hazards posed by tidal inundation and storm surge during major storm events by converting the highly vulnerable Long Beach WPCP into a resilient pump station, and therefore mitigating the serious risk of storm events resulting in the release of untreated effluent into the Bay. The removal of this risk is expected to help increase quality of life during increasingly frequent storm events and community resiliency in the face of sea level rise for residents of the portions of the Mill River watershed that are at risk of flooding from storm surge from the Bay. The proposed project is expected to also result in environmental and water quality improvements in the mouth and tidal reach of the Mill River by ending the release of undertreated effluent from the Long Beach plant into the interconnected Bay. Over the long term, the project is expected to help foster the conditions necessary for marsh regeneration in the South Bay.

The Long Beach project can thus serve as a catalyst for long-term, regional action to restore the South Bay's vital marshes, by improving water quality and therefore facilitating successful marsh restoration projects in the future. Nassau County, working through the South Shore Estuary Reserve Council will implement a long-term adaptive marshland restoration plan to provide crucial storm surge mitigation. In this way, over the long-term, after the completion of the RBD LWTB project, the Long Beach project can facilitate further hazard mitigation for the Mill River watershed in the form of healthier marshes in the South Bay which can serve as a natural barrier against storm surges from future storms, in addition to their economic and ecological benefits to the region.

As of APA 26, the Long Beach Wastewater Consolidation involves a series of projects with an estimated total cost of $93,878,880. The LWTB funded focus area project is estimated to cost $88.23 million dollars for the pump station replacement and connection to wastewater treatment facilities. LWTB will provide $24 million in CDBG-DR funding to the $88.23. million-dollar project. The LWTB component of the Long Beach Wastewater Consolidation is expected to reach 100% design in the second quarter of 2021 with construction expected take place from the first quarter 2021 to the third quarter of 2023.

Focus Area - Social Resiliency Programs

The overall purpose of the Social Resiliency focus area is to strengthen the social infrastructure of communities within the LWTB project area through educational, workforce development, and social service programs that align with the goals of the LWTB project. GOSR intends to support the selected organization(s) in the planning and administration of the Social Resiliency Program through these objectives:

1. Provide Environmental Stewardship opportunities to (pre)K-12 students, higher education students, and other members of the community through:
    - Education about resiliency topics relevant to the LWTB project area, possible options including but not limited to: stormwater interventions included in the LWTB design; environmental awareness; wildlife conservation and ecology; watershed history; STEM/STEAM education and teacher training; on-site and hands-on education and teacher training; affordable housing; economic impacts of natural disasters; etc.
    - Environmental Education and Resiliency Center (as discussed previously).
    - Community service that complements the educational resiliency topics; and
    - Monitoring, research, and data collection that allows students to engage in research projects pertaining to LWTB and monitors long-term effects of the interventions.
2. Develop Workforce Training vocational curriculum for high school students, high school graduates, and/or unemployed/under-employed residents seeking to gain skills in construction. Graduates of the program are eligible to continue to work on and support the LWTB project as helpers on site as part of Hofstra's externship program.

An example of a natural partner in this focus area is the Seatuck Environmental Association, which has held two "Day in the Life of the Mill River" events for school students on Long Island. Participation in the second year of the program targeted participation from schools in the Hempstead, East Rockaway, Rockville Centre and Oceanside districts. Seatuck has also held a series of public presentations, field trips and nature programs to introduce adults and families to the history, habitats and wildlife of the Mill River. LWTB has engaged Seatuck as an implementation partner able to help achieve the project's social resiliency objectives.

Currently, the estimated budget for this focus area is approximately $1 million. A Notice of Available Funds (NOFA) was issued in May 2016 to solicit program proposals and costs for an organization to develop and perform the community education and training.

Following the NOFA process, GOSR selected Hofstra University as a LWTB Subrecipient to implement several educational and workforce development programs aligned with the LWTB objectives. These programs include a summer science research program focused on the Mill River watershed for local high

schoolers; an environmental sustainability certificate program for local government staff, project workers, and policy makers; developing K-12 educational curriculum and professional development for educators focused on the science of climate change and natural hazards; developing educational signage for the LWTB project area; a workforce development program focused on training local adults in construction skills and securing externships for enrollees to acquire hands-on experience; and student-written and produced progress videos for LWTB.

Benefit Cost Analysis

A BCA for the LWTB project was prepared following the HUD BCA Guidance provided in a HUD Guidance Notice (CPD-16-06). The analysis was completed using generally accepted economic and financial principles for BCA as articulated in OMB Circular A-94. For APA 26, an updated BCA was prepared to reflect the updated scope, benefits, costs, projects and other details of the LWTB project included in this APA.

The BCA encompasses the project area as defined by the LWTB project area boundary. The following LWTB focus areas (see project descriptions above) are included in the BCA: Hempstead Lake State Park; East Rockaway High School Hardening; Smith Pond Drainage Improvements; Lister Park; East and West Boulevards Stormwater Retrofits; Long Beach Wastewater Consolidation Project; Social Resiliency Programs; and Greenway Network.

The combined cumulative net present value of activities associated with the eight focus areas is $211 million and the combined Benefit Cost Ratio is 2.4. These measures of project merit demonstrate that the project is viable and would add value to the community, the environment, and the economy. Using a 7% discount rate, and a 50-year planning evaluation horizon, the project will generate significant net benefits to communities within the Mill River Watershed, as well as other beneficiaries from Nassau County and the region, including those who use the improved Hempstead Lake State Park and the new Greenway Network.

According to the BCA, the combined lifecycle costs to build and operate the proposed Project's assets for the LWTB project (amounting to $147.1 million in constant 2018 present value dollars) would generate the following quantified benefits:

Total benefits of $358.6 million, of which:

- Total Resiliency Values are $155.7 million
- Total Environmental Values are $47.1 million
- Total Social Values are $34.3 million, and
- Economic Revitalization Benefits are $121.5 million.

The BCA demonstrates that the LWTB project will generate substantial net benefits (i.e., the benefits exceed the costs of the LWTB project over its useful life). The benefits to the host community and region will be substantial and justify the costs of implementation and operations. The assets (i.e., physical improvements to Hempstead Lake State Park, East Rockaway High School, Smith Pond, Lister Park; East and West Boulevards Stormwater Retrofits; Long Beach Wastewater Consolidation Project and the Greenway Network) created or improved by the project enhancements will create large resiliency values, social values, environmental values and/or economic revitalization benefits.

The project components evaluated are at different stages of development and the costs and final scopes are subject to change as the designs progress and move through the environmental review and permitting processes. However, they are still expected to have a large positive benefit. The largest group of benefits consists of resiliency values relate to flood risk protection provided by the project's assets. The BCA, included at Appendix E to the New York State Action Plan, demonstrates and quantifies how the project reduces the flood risk. An excerpt from the LWTB BCA states, "the largest group of benefits consists of resiliency values related to flood risk protection provides by the projects' assets (p. vii, LWTB BCA)." The BCA shows that the LWTB project would generate approximately $155.7 million in resiliency values and

approximately $47 million in environmental values in addition to social values and economic revitalization benefits.

The LWTB project BCA can be found at Appendix E to the New York State Action Plan at https://stormrecovery.ny.gov/sites/default/files/crp/community/documents/20200519_Updated_LWTB_BCA_Final%20-%20Copy%20-%20Appendix%20E.pdf

Project Feasibility and Effectiveness

LWTB will utilize proven, accepted engineering methods such as retention basins, check valves, green streets, and living shorelines, to achieve the project objectives identified in the Project Description, and to address a variety of flooding sources throughout the project area in a comprehensive, practical and feasible manner. The design for each component of LWTB ranges from preliminary designs through 100% (final) designs. GOSR certifies that the preliminary designs consider the appropriate code, or industry design and construction standards, and that the final design will adhere to all relevant codes and construction standards when it is complete. All project components will incorporate standard engineering principals and guidelines under the direction of New York State Licensed Professional Engineers who will certify that the final design met the appropriate code, or industry design and construction standards.

Engineering and modeling are risk management tools utilized to review such matters as design specification of materials, erosion protection and the integration of ecological elements. As a tool to manage risk, the project will be engineered, modeled and tested during the on-going phases of design development to provide feasible and effective hazard mitigation and risk management, including provisions for climate change. The design of project components will consider the impacts of large storm events, increasing storm frequency, tidal and storm surges, and sea level rise. Specifically, the LWTB modelling will consider scenarios including storm events ranging from 1-year to 100-year events, storm surges ranging from five (5) to fifteen (15) feet, and sea level rise of up to 30 inches, individually and combined.

By modelling anticipated changes in environmental conditions over the coming decades, the final project design will provide protection against current and future threats, including future risks associated with climate change. For instance, the effects of sea level rise will be minimized through ensuring that the elevation of berms, bulkheads and living shorelines are adequate. Additionally, hardening of storm water infrastructure will help prepare for increasing storm frequencies associated with climate change and sea level rise. In addition, rainfall from storm events can be mitigated through retention of storm water and leaching into soils or diversion into wetlands or living shorelines that can absorb the flow. Modeling will be performed by experienced engineers (leveraging relevant information from FEMA and USACE) for each project to determine the level of protection offered for rainfall, storm surges and sea level rise, and optimize technologies utilized.

The use of risk management tools will help ensure that the benefits achieved through implementation of LWTB include providing increased coastal flood protection, while enhancing waterfront access and open space resources, improving water quality and habitats, and providing public education and work force development in the project area of the Mill River watershed.

In addition to the Resilience Strategy detailed later in this section, New York's CRRA requires State agencies to consider future physical climate risks caused by storm surges, sea level rise, or flooding in certain permitting, funding, and regulatory decisions. CRRA required NYSDEC to adopt regulations by January 1, 2016 establishing science-based State sea level rise projections, and to update such regulations every five years. GOSR is coordinating with State partner agencies in implementing the provisions of the Act, including with regard to the LWTB project, to reduce risks to public safety caused by flooding and to support resilient communities, now and into the future.

The November 18, 2013 Federal Register Notice (78 FR 69104) requires grantees "to identify and implement resilience performance standards that can be applied to each infrastructure project." In the

"Resilience Performance Standards" of its Action Plan, the State identifies a set of performance standards that it uses to measure resiliency which include:

- Robustness
- Redundancy
- Resourcefulness
- Response
- Recovery.

In determining its resilience performance standards, the State of New York has relied on national and global sources such as the Federal *Hurricane Sandy Rebuilding Strategy*,[63] the US Department of Commerce *Community Resilience Planning Guide for Buildings and Infrastructure Systems*,[64] World Economic Forum *Global Risk Report*,[65] the United Nations,[66] and Rockefeller Foundation *City Resilience Framework*,[67] as well as New York State sources including as the *2100 Commission Report*,[68] *Sea Level Rise Task Force Report*,[69] and *NYS Hazard Mitigation Plan.* The State also sought scientific input from the New York State Resiliency Institute for Storms and Emergencies (RISE).[70] State action on resilience performance standards is also informed by the Community Risk and Resiliency Act (CRRA), signed into law on September 22, 2014.

Together, these strategies, regulatory actions, and innovative program initiatives have helped inform the State approach to setting resilience performance standards. The various studies stress several qualities of resilient systems identified above and in the "Resilience Performance Standards" section of the Action Plan-- robustness, redundancy, resourcefulness, response and recovery. One or more of these resilience qualities are considered for each infrastructure project, including the RBD projects.

GOSR developed a Resilience Strategy Plan in September 2017–for the continued design and ultimate construction of LWTB to ensure that the completed LWTB project will have appropriate continuity and connection to implementation of subsequent phases of the selected RBD proposal or other associated resilience activities. The Resilience Strategy Plan is a public plan and include LWTB's objectives; geography; hydrology; floodplains; bathymetry; community outreach; areas of concern for flooding; projects to address the areas of concern; scoring and ranking of projects and plans to monitor the effectiveness and efficacy of LWTB.

The LWTB project will primarily be funded by HUD's CDBG-DR allocation for RBD, although additional sources of grants will be sought. The LWTB budget will be maintained within approved grant funding, with regular budget reviews. Contingent reserves will be held for each project component as well as the overall LWTB project to ensure that the project does not exceed budget. Designs and engineering estimates will be reviewed by third parties for reasonableness and accuracy. As additional grants are secured, consideration will be given to enhancements that can be incorporated into LWTB. While the project will introduce improvements to the community, based upon the results of the BCA, it is not anticipated that LWTB will expand the local economy to the point of potential displacement of residents, businesses, and other entities due to potentially increasing costs of rent and property ownership in the years following the completion of the LWTB project.

As part of the design process, GOSR will develop a Monitoring Plan to establish the baseline of flooding and surface water quality near select LWTB project components and in the project area. The plan will specify the parameters to monitor. After completion of construction for LWTB, the monitoring will be repeated to allow a comparison of the project's effectiveness before and after construction. The forthcoming Monitoring Plan will set out actions and approaches for evaluating the impact of LWTB on:

- Flood reductions,
- Water quality improvements and
- Levels of protection against rainfall, surges and sea level rise.

During implementation of the Monitoring Plan, GOSR will ensure that all the appropriate mitigation measures are put in place and meet applicable Federal and State standards. The Monitoring Plan will also include the evaluation methodology, which GOSR will implement after the project is complete. The purpose of the evaluation methodology is to determine the LWTB project's efficacy level in addressing the community's needs 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 and establish benchmarks to gauge the effectiveness of the project against anticipated outcomes to support long-term operation of the flood protection system. Inspections will consist of site visits to assess maintenance effectiveness, observe operational components, and identify any major unexpected conditions (i.e., deviations from expectations). Lessons learned will be documented as required by HUD.

Maintenance and Operations

GOSR certifies that the long-term operation and maintenance of the LWTB RBD Project will be adequately funded from each governmental subrecipient's reasonably anticipated annual operating budget, recognizing that operation and maintenance costs must be provided from sources other than CDBG and CDBG–DR funds. As described below, GOSR will ensure the availability of funds through specific provisions within agreements with subrecipients.

Based on the BCA for LWTB, the present value of the operating and maintenance costs is estimated to be approximately $9.8 million (with a basis of 2019-2069; constant 2018 dollars and a 7% discount rate). Specific costs will be identified as the design is finalized. OPRHP, on behalf of New York State and through a Memorandum of Understanding (MOU), is responsible for funding the long-term operations and maintenance of all components of the project within HLSP, including but not limited to the new building and the dams. Nassau County will be responsible for operating and maintaining the Long Beach pump station and force main. Specific roles and responsibilities will be included as part of the construction documents the contractor will develop for the project. Nassau County will have primary responsibility for overseeing O&M for the Long Beach Resilient Pump Station and force main. The remaining components of the project will be operated and maintained by the local government or authority with jurisdiction over the respective property or asset. These subrecipients will implement the construction of these components of LWTB through a subrecipient agreement with GOSR. The subrecipient agreement, monitored and enforced by the State, will specify the mandatory requirements of operating and maintaining each respective component of the project, including the annual expected cost expenditure by the local government. With the exception of some of the components (e.g., dams) within HLSP, backflow prevention devices in areas affected by tidal inundation, and the Long Beach Pump Station, LWTB is comprised of passive non-mechanical infrastructure that will improve drainage and reduce flooding throughout the Mill River watershed. Thus, as set out in the BCA, the annual operating costs of these components is expected to be low, and maintenance activities will consist of standard activities such as periodic inspections, cleaning, and repair, as necessary.

Through final design, GOSR will develop robust operation and maintenance (O&M) plans, along with budgets, by working collaboratively with appropriate State, county, city and federal agencies, as well as non-profit organizations. The O&M plans will describe the procedures and responsibilities for routine maintenance, communication, and timing of activation in the event of an impending storm. GOSR will serve as a monitoring entity with regard to enforcement of project O&M. O&M for each project component will be provided by the relevant subrecipient. The O&M commitments for project components will be established within applicable subrecipient agreements.

Budget

The overall budget proposal submitted to the RBD competition for the LWTB project was $177,366,078. Based upon the current design, the estimated project cost is $189,226,000. With a CDBG-DR allocation of

$125,000,000, the project has funding needs beyond the CDBG-DR allocation, that are expected to be met through leveraging funds from State and federal sources as described in the "Leveraging of funds" section. Should the situation change, the State will explore additional funding options to fill any unmet needs and analyze the budget further to implement a reduced scale project which still meets the project objectives. State Parks is targeting additional funding for upgrading infrastructure, public facility and environmental habitat management enhancements at the HLSP site. Additionally, the environmental review process will help shape the potential implementation requirements of the project not currently identified in the preliminary design phase. The estimated project budgets in the table below may differ from construction budgets included in the BCA for reasons including the inclusion of projected costs for compensatory mitigation, construction management and contingency funds, and/or funding for additional project elements that may be added as the projects move through the design process. The budget for the Greenway component included below does not include the portions of the Greenway included in the Hempstead Lake State Park, Smith Pond, and Lister Park focus areas. Construction costs for these sections of the Greenway are included in the relevant focus area budget. Design costs for Hempstead Lake State Park are included in the Pre Development line item in the table below. Any budget changes will be reflected in future Action Plan Amendments when the project components are fully designed.

Table 41: Living with the Bay Budget

Breakdown	Cost
Planning	$4,507,266.03
Pre Development	$17,276,168.03
Construction - Hempstead Lake State Park	$25,656,429.68
Construction - Smith Pond Drainage Improvements	$11,642,768.26
Construction - East and West Boulevards	$7,425,000
Construction – Lister Park	$4,000,000
Construction – Long Beach WPCP Consolidation	$24,000,000
Construction - East Rockaway High School Hardening	$6,000,000
Construction - Greenway Network	$13,200,000
Social Resilience Program	$1,142,368
Program Delivery	$10,150,000
Total Allocated Budget	**$125,000,000**

Timeline

The State is in the preliminary design phases of the LWTB project components described above. Set forth below is an overarching proposed timeline for the LWTB project. The State is committed to ensuring the timely expenditure of federal funds for the project, and is committed to designing the project so that it achieves the desired goals of the specific RBD disaster related purposes and support investments in resilient recovery. However, the State recognizes that changes in the project design may occur, depending on the design stages, permit issuance and environmental review requirements. Any timeline changes will be reflected in future Action Plan Amendments when the project is fully designed.

Table 42: Living with the Bay Proposed Schedule

	Start	Finish
Living with the Bay		
Study, Research Planning: This Phase will outline all additional studies, research and planning needed prior to the design and engineering phase. As necessary, this phase will be incorporated into the Environmental Review and Permitting stage as well as the Engineering Phase.	Quarter 1 2014	Quarter 2 2017
Environmental Review and Permitting: This Phase will include scoping for, and preparation of, an environmental review consistent with the National Environmental Policy Act (NEPA), as well as the submittal of permits applications to the appropriate governmental agencies. This Phase will include significant opportunities for public review and comment, as well as intergovernmental consultation. Additionally, as required by State and federal law, the environmental review will evaluate alternatives to the proposed project. This timeline is meant to represent an overview of the expected Environmental Review Process for all aspects of the LWTB project. It should be noted that the environmental review and permitting timeline is dependent on the permitting requirements of agencies with jurisdiction, including the United States Army Corps of Engineers, NOAA-NMFS, USFWS and the New York State Department of Environmental Conservation.	Quarter 1 2017	Quarter 4 2020
Design and Engineering: This phase will include all design and engineering work required for LWTB culminating with complete construction specs. Depending on the progress and outcome of the Environmental Review and Permitting process, this process will be able to run concurrently for some components of the project. This phase will include any and all necessary procurement and contracting as appropriate.	Quarter 1 2017	Quarter 2 2021
Site Development: This Phase will include all necessary elements for site development from the Design and Engineering Phase that will prepare for the construction phase of the LWTB project. GOSR will evaluate a potential phased site development schedule for different project components (e.g., upland components and in-water components).	Quarter 3 2017	Quarter 2 2021
Construction: This Phase will include all elements of construction related to the LWTB project outlined in the Design and Engineering Phase. For the LWTB project, the timeline is extended to reflect that the nature of the project will only allow for construction in specific building seasons. GOSR will evaluate a potential phase construction schedule for different project components (e.g., upland components and in-water components).	Quarter 2 2020	Quarter 3 2023
Closeout: This phase will include the closeout of the entire project, including but not limited to: final site visits and review, release of final contingency payments and all applicable CBDG-DR construction closeout requirements.	Quarter 3 2022	Quarter 3 2023

Overall Rebuild by Design Requirements

Implementation Partnerships

GOSR currently plans to serve as the grantee agency responsible for the implementation of both RBD projects. GOSR is responsible for the implementation of the entire CDBG-DR portfolio for New York State and has taken the necessary steps to build capacity since its inception in June 2013. Two program areas within GOSR have specific skills to address the RBD projects. The New York Rising Community Reconstruction (NYRCR) Program, an award winning community-based resiliency planning and implementation effort comprised of citizen planning committees throughout the Sandy-impacted region has worked in close collaboration with both winning RBD teams in the State of New York throughout project concept development. In addition to engaging with citizen groups, NYRCR Program has working relationships with local and county governments that will be vital to the success of these RBD projects.

The second program is the GOSR Infrastructure Program. GOSR is currently undertaking numerous, large scale infrastructure projects and has demonstrated the capacity to manage these projects in a timely, cost effective manner. Engaging with federal, State, local, and private entities in other CDBG-DR projects, GOSR has demonstrated an ability to work collaboratively with other entities as needed to execute successful resilient recovery projects. It is prepared to leverage institutional knowledge and spearhead RBD project implementation. Both Programs are committed to developing innovative financing strategies that streamline recovery at the local level while maximizing available CDBG-DR funds. The LWTB project implementation team is integrated by GOSR Housing Program, Legal, Environmental, and Policy staff and includes experienced engineers, project managers, lawyers and policy analysts who work closely both internally and with project consultants and implementation partners to advance the LWTB project.

The State maintains up to date certifications of proficient controls, processes, and procedures to ensure that the grantee has established adequate and proficient financial controls; procurement processes; procedures to prevent any duplication of benefits as defined by Section 312 of the Stafford Act; procedures to ensure timely expenditure of funds; procedures to maintain comprehensive websites regarding all disaster recovery activities assisted with these funds; and procedures to detect fraud, waste, and abuse of funds.

Further, each RBD project is subject to complex federal and State environmental review and permitting requirements, which will include the assessment of alternatives. For both projects, GOSR intends to serve as the lead agency for the environmental reviews and, as the projects are shaped through this process, will consult closely with interested governmental and non-governmental stakeholders. The State understands that the partnership and coordination of partners throughout the life of each RBD project is crucial for its success. Throughout the planning and environmental process the State has engaged with numerous entities in the public and private sector.

Additionally, GOSR has an established environmental review bureau, and has procured two experienced environmental review firms to undertake environmental review consistent with the NEPA process and permitting process. GOSR has engaged in rigorous efforts to coordinate with federal, state, and local agencies concerning both projects.

As the State moves towards the implementation phases of the RBD projects, the State will continue to assess the needs of each project and how private sector partners can be engaged to fill any project gaps. The State intends to explore options with local advocacy groups, educational institutions, for profit agencies and not for profit agencies as appropriate for each RBD project.

The nature of the projects also indicate that the State anticipates possible engagement with federal agencies such as HUD, the Army Corps of Engineers, the U.S. Department of the Interior, the U.S. Environmental Protection Agency, National Oceanic and Atmospheric Administration, U.S. National Park Service, and other partners as needed for the design and execution of each project. Within the State, there are numerous agencies that will also play specific roles in the implementation of these projects, such as New York State Department of Environmental Conservation, Department of State, Department of Education, State Historic

Preservation Office, State Parks and others to be identified as the State works through the planning and environmental phase. The State intends to facilitate its coordination and consultation efforts through the Sandy Regional Infrastructure Coordination Group (SRIRC) convened by HUD and FEMA. Each RBD project will also require careful consultation with local governments and necessitate long-term agreements between the State and other relevant entities before construction starts to ensure proper operation and maintenance of the projects.

Living Breakwaters

For Living Breakwaters, GOSR has engaged in multiple meetings and consultations with the SRIRC, HUD, USACE, EPA, NOAA/NMFs, DEC, DOS, State Park's State Historic Preservation Office, and the New York City Department of Parks and Recreation (NYCDPR) throughout the 30% design phase. GOSR has circulated a lead agency letter, and USACE, EPA, and NOAA/NMFs, among others, have agreed to serve as cooperating agencies.

For Living Breakwaters, the State performed outreach to the City of New York and relevant agencies, including the Office of Recovery and Resiliency, NYCDPR, the Department of Environmental Protection, the Department of City Planning, as well as the Office of the Borough President. In 2016, GOSR entered into sub-recipient agreements with the New York Harbor Foundation and New York/New Jersey Baykeeper. Both non-profit organizations are being provided funding to assist in Living Breakwaters project design, social resiliency planning, and ecological restoration.

Additionally, GOSR has already been engaged with NYCDPR as a potential partner on certain elements of the Living Breakwaters project, and view them as a critical involved agency for purposes of the overall EIS. In July 2015, GOSR entered into a memorandum of understanding[71] with NYCDPR outlining processes and procedures for coordinating between the City and State as design of the Living Breakwaters project progresses. GOSR is reviewing the project using the strictest environmental standards, as demonstrated by the fact that GOSR intends to utilize the City's Environmental Quality Review Technical Manual – the blueprint for conducting environmental review in New York City – in its analytical chapters, while according with the State Environmental Quality Review Act and the NEPA, even though State agencies are not typically required to use the City's Manual. GOSR also engaged with New York City agencies during development of its preliminary draft scope, and received detailed comments from NYCDPR, Department of Environmental Protection, NYC Landmarks, Department of City Planning, and the Mayor's Office of Sustainability.

Living with the Bay

With respect to LWTB, GOSR has engaged in consultations with the SRIRC, USACE, NOAA/MFS, DEC, State Parks, U.S. Fish and Wildlife Service (USFWS), as well as Nassau County, the Town of Hempstead, Village of Malverne, Village of East Rockaway, Village of Rockville Centre, the East Rockaway School District, and Village of Lynbrook (local governments) during its planning phase. GOSR provided a presentation on its LWTB planning efforts to the SRIRC Long Island Technical Coordination Team in May 2015. GOSR has held regular progress meetings with these stakeholders as well as HUD, the Technical Advisory Committee (TAC) and the Citizens' Advisory Committee (CAC). Among other activities, local governments will be involved in the environmental review process, evaluation of implementing partners, and establishment of long-term agreements between the State and relevant entities to ensure proper operation and maintenance of projects prior to construction. As of Q1 2020, GOSR has entered into agreements with State Parks, Seatuck, Hofstra University and Rockville Centre as described below. As all focus areas proceed through design, GOSR will develop a comprehensive implementation plan to identify partners with the appropriate capacity, experience and ability to work collaboratively to implement all interventions.

In November 2014, GOSR entered into a Memorandum of Understanding (MOU) with State Parks to perform improvements (unrelated to LWTB) to Robert Moses and Roberto Clemente State Parks. Amendment 1 to the MOU approved additional funds for studies to develop the LWTB project, including:

- Surveying lakes and ponds,
- Assessing groundwater depths and flows,
- Sampling and testing sediments for disposal,
- Investigating subsurface soils at the dam,
- Developing a stream gauge with telemetry based reporting of stream levels and flows, and
- Performing topographic surveys.

Amendment 2 to the MOU authorized State Parks to replace and repair all the equipment in the existing dams and equipment at the existing gatehouse, improve the NW Pond, improve the NE Pond, design and build a new Environmental Education and Resiliency Center, design and build an ADA accessible greenway, and design and build waterfront improvements. As of May 2020, State Parks has performed environmental and engineering studies to develop a scope and has completed final (100%) design of the first stages of improvements; received Authority to Use Grant Funds for the project, and begun construction work on the first stage of the project. State Parks has a demonstrated history of working with GOSR, to collaborate with other agencies and units of government, resulting in a beneficial experience that will assist in the successful implementation of key components of the LWTB project, such as the proposed improvements to Hempstead Lake State Park.

Seatuck has entered into a sub-recipient agreement with GOSR to: 1) consult on migratory fish and other ecological restoration, 2) conduct biological surveys of fish and bird populations, and 3) conduct environmental education related to the river's natural history. Seatuck staff participated in numerous strategy meetings and site visits throughout 2015 and 2016. These meetings, which involved NYSDEC, State Parks, USFWS and a host of various consultants, focused on opportunities for reconnecting the river to the bay, improving habitat and advancing migratory fish restoration. The LWTB project will benefit from the expertise of this partner, aiding the implementation of project components, particularly with regard to the project's social resiliency objectives.

GOSR entered into a sub-recipient agreement with Hofstra University on June 26, 2018, to implement various education and social resiliency programs described above in the social resiliency focus area for LWTB. GOSR entered into a sub-recipient agreement with the Village of Rockville Centre on November 1, 2015 in anticipation of the Village leading implementation of Smith Pond and Lister Park. GOSR will coordinate its efforts with this valuable local partner as the project develops.

As of APA 26, the proposed subrecipients for the remaining focus areas are as follows: East Rockaway High School Hardening- East Rockaway School District; East and West Boulevards and the Greenway- Town of Hempstead; and Long Beach WPCP Consolidation- Nassau County.

Leveraging of Funds

The State is committed to the successful implementation of both RBD projects using the allocations provided and understands the need to identify and secure additional funding outside of the CDBG-DR allocation as needed. This includes not only identifying funds to address the unmet needs identified in the awarded phases of the project, but identifying innovative funding mechanisms to pay for the long-term operation and maintenance costs of these projects. The State will look at funding opportunities such as federal, State or private grants, and collaboration with not for profit and academic institutions focused on similar resiliency actions, as well as financing opportunities, which can be leveraged alongside CDBG-DR for investment.

Table 43: Leveraging of Funds – RBD Unmet Need

Project	Location	Total Project Cost	CDBG-DR Allocation	RBD Unmet Need

Living Breakwaters	Richmond County	70,000,000*	$60,000,000	$10,000,000
Living with the Bay	Nassau County	$189,226,000**	$125,000,000	$21,526,000

**At preliminary 60% design; ** The design for each component of LWTB ranges from preliminary designs through 100% (final) designs*

The process to identify funding and financing opportunities for Living Breakwaters and LWTB started with a high-level review of both projects as a whole and the respective component phases. By taking this approach, the State can elucidate a variety of layered funding and financing opportunities. Many of the grant opportunities identified are both competitive and ongoing, based upon State and federal budget appropriations.

An important initial step will involve finalizing the entities implementing each component of each RBD project and evaluating if they can provide financial support and oversight, long term operations, and maintenance capacity for the project. There are some unique financing opportunities such as public-private partnerships, but this may entail a repayment to the private partner for their work. All options should be further based upon the ability and willingness of the entity implementing the project to entertain these options.

The State will utilize the following iterative approach as the process for assessing the need for and securing additional funding for each RBD project:

1. Prioritize Living Breakwaters and LWTB project components. Isolate components of both projects and identify the following items:
    a. Initial budget, including start-up and capital costs, ongoing operations, and maintenance;
    b. Identify entities/partners to implement, operate, and maintain the project post-completion; and,
    c. Develop time horizon for initial capital costs and ongoing operations and maintenance.
    d. Assess potential funding gaps or opportunities for scope enhancement
2. Organize sources of funding and financing based upon the initial assessment:
    a. Identify sources of funding from entities/partners implementing and operating the projects and agencies or organizations with aligned principles and/or missions to that of the RBD projects or project components;
    b. Prioritize funding opportunities based upon grant funding application dates and probability of success;
        i. Develop a layering strategy for each project component as needed;
    c. Identify if financing structures would be applicable to any components of both projects;
        i. Identify ability and willingness of local municipal partners to issue debt or take on long-term liabilities involving project finance;
    d. Engage not for profit, academic, corporate, and philanthropic partners with draft program framework for funding.
3. Continually update and monitor federal, State, and local grant opportunities.

The approach outlined above is achieving success for the Living Breakwaters project. The New York City Regional Economic Development Council awarded the New York Harbor Foundation a $250,000 grant to bring oysters and their reef habitat back to the New York Harbor. This is anticipated to further the development of oyster restoration activities related to the Living Breakwaters project. Partnering with non-profit organizations and academic institutions will be key in identifying and applying for additional funds for each RBD project.

GOSR and implementing partners are and will continue to identify opportunities for funding to expand investment within the LWTB project area, identify complementary projects and/or fill potential future funding gaps.

In order to help leverage funds to enhance and expand LWTB, State Parks is considering pursuing a project (with funding through the Environmental Protection Fund) to develop an Invasive Species Management Plan to enhance the long-term sustainability of projects funded through CDBG-DR. Also, Parks is planning infrastructure upgrades and public facility enhancements at Hempstead Lake State Park with New York Works infrastructure funding. Projects would include upgrading the Park's primary electrical feed to one that is more energy efficient, constructing a new water main, formalizing a soccer field, upgrading tennis courts and basketball courts, receiving $500,000 to establish a program for at risk youth (Explorers Program) with the Nassau County Police Department and rehabilitating comfort stations to support increased visitation in the future.

GOSR has had initial discussions with US EPA, NOAA and USACE regarding possible grants. GOSR will continue to monitor the availability of leverage funding from these sources to augment LWTB project components.

As part of the resiliency improvements at East Rockaway High School, the School District intends to secure non-GOSR funding to elevate the playing fields to eliminate frequent flooding that is currently experienced. Consideration will be given to installing an artificial turf to improve drainage. Potential grants will be pursued via the US Soccer Foundation and National Football League Foundation for the artificial turf, which would allow better drainage (to avoid flooding), greater field utilization and lower maintenance costs.

The Long Beach Wastewater Consolidation Project involves a series of projects with independent utility with an estimated total cost of $93,878,880. The LWTB funded focus area project is estimated to cost $88.23 million dollars for the pump station replacement and connection to wastewater treatment facilities. LWTB will provide $24 million in CDBG-DR funding to the $88.23 million dollar project in addition to $42.7 million in funds secured by the proposed subrecipient through other NYS grants. The proposed subrecipient intends to address the remaining unmet need through an application for additional State grants and a FEMA PA 406 Mitigation grant. The proposed subrecipient has made commitments to bridge any shortfall if grants are not secured.

GOSR certifies that, for each RBD project, the preliminary design considers the appropriate code, or industrial design standard and construction standards, and that the final design will adhere to all relevant codes and statutes when it is complete. GOSR will have a registered professional engineer, or other design professionals, certify that the final design met the appropriate codes prior to the obligation of funds by the grantee for construction.

Citizen Participation Plan for Rebuild by Design

Public participation was instrumental in the development of each RBD project, as evidenced by the high level of community engagement undertaken by both design teams. This Citizen Participation Plan (CPP) advances policies and procedures that will engage a large and diverse group of stakeholders. Possible outreach strategies are described in the environmental review section as well as below. A primary outreach strategy used to implement RBD projects was the formation of a CAC for each RBD project. When feasible, further opportunities for public input will be aligned with public participation in the environmental review process to ensure that the public has the ability to learn about the projects and also submit comments and concerns that will inform the assessment of potential environmental impacts and project alternatives.

The CPP reflects guidance specified by HUD in the Federal Register (FR–5696–N–11).

The State will ensure that any Units of General Local Government or sub-recipients receiving funds for RBD projects will have a CPP that meets the HUD CDBG-DR regulations and takes into consideration the waivers and alternatives made available under CDBG-DR funding.

Public Outreach for Rebuild by Design

To keep the public informed throughout the RBD project scoping, environmental review, design, and construction phases, the State will undertake public outreach through methods such as in person meetings, through social and print media, and through the GOSR website. Modifications have been made to GOSR's website to include project pages dedicated to the State's RBD projects. Each RBD project page has a subpage with project status updates and materials that are relevant to the project. Outreach may also be in-person meetings, solicitation of verbal and written comments, outreach events, online and traditional media, and through a CAC as appropriate throughout project design and implementation.

Outreach to Vulnerable Populations for Rebuild by Design

The State continues to undertake specific measures to solicit input from low- and moderate- income households and households headed by non-English speaking persons. To do this, key meetings throughout the projects' development are advertised in various languages, and translators, as well as sign language interpreters, will be present, as needed. Notice of meetings will be posted in common areas of public housing and public buildings near the project site, and on the GOSR website. Meetings will be held in handicap accessible locations, and in locations served by public transportation. . Materials presented at meetings will be posted online for public viewing in a timely manner. To further ensure that RBD information is accessible to all residents, all program vital documents will be available in the four languages—English, Spanish, Chinese and Russian.

Citizens' Advisory Committee for Rebuild by Design

The State is firmly committed to continuing to maintain community engagement for both RBD projects. The State has developed CACs to complement the public outreach described above. Each CAC serves an advisory role, meeting and receiving updates on the project as it progresses from conceptual development through environmental review into design and eventually through construction and completion. The CACs engage the wider community at key points in the project development and environmental review process. All CAC meetings are open and advertised to the public.

The CAC will continue to solicit public input through various methods, including as appropriate, toll-free phone lines, mobile recording and listening booths, social media, and other online tools, in addition to more traditional means such as giving presentations at governmental facilities, senior housing sites, public housing sites, local community centers, schools and universities. To the greatest extent possible, the CAC and its public engagement events are coordinated with the citizen participation required for the environmental review and could extend into the building phases of the project. Additionally, technical staff and consultants from GOSR and other local, State, and federal agencies could make presentations and answer questions from community members in order to explain the highly technical components of each RBD project.

Forming a CAC is consistent with the model developed in the State's NYRCR Program, which was led by a community-based committee made up of local leaders and community residents. It is also consistent with New York State's two RBD projects. The proposal for Living Breakwaters states that water hubs will be designed through community design charrettes. The Living Breakwaters CAC has been one of the entities providing input at these charrettes. As of March 2017, the LWTB CAC has met four times and consists of 21 representatives from communities across Long Island. As of APA 26, the LWTB CAC continues to meet on an ongoing basis in accordance with the State's Citizen Participation Plan for RBD.

Environmental Review for Rebuild by Design

The State plans to engage in robust and open public engagement throughout the environmental review process to ensure that the projects comply with State and federal environmental requirements and consider sound environmental practices. The State will undertake the required environmental review process in accordance with the NEPA for each RBD project, which includes multiple opportunities for public review and comment. First, the State intends to hold public meetings on the draft scope for the process. These public meetings will abide by the notice and scheduling requirements set forth in 24 CFR 58.56 and 58.59.

The State will accept both written and oral comments from the public on the draft scope, and the State will consider these comments when preparing the final scope of the projects. The purpose of these scoping public meetings is to allow community members and community organizations, the scientific and academic community along with the public as a whole, to raise issues and concerns to be evaluated in the environmental review process. This will ensure that the review is substantively robust, as well as responsive to any community issues with the projects. Once the environmental review process is completed the State will ensure that the community stays engaged in the process by soliciting, considering, and responding to public comments. The State is conducting a second round of public meetings and comment period following the completion of the Draft EIS. The State will also hold public meetings and comments with the RBD project-specific APA. As it prepares the final EIS, the State will consider and respond to the public comments.

On April 1, 2015, GOSR published the *Coastal and Social Resiliency Initiatives for Tottenville Shoreline, Staten Island, NY* EIS Draft Scope of Work[72] for the Living Breakwaters project. Oral and written comments were received during the public scoping session held on April 30, 2015, by GOSR serving under the auspices of the New York State Homes and Community Renewal's Housing Trust Fund Corporation, and in accordance with HUD regulations at 24 CFR Part 58. GOSR accepted written comments to the EIS Draft Scope of Work through the public comment period which ended June 15, 2015. The EIS Final Scope of Work for the *Coastal and Social Resiliency Initiatives for Tottenville Shoreline, Staten Island, NY* was published on April 2, 2016.[73]

On March 24, 2017, GOSR published the Draft Environmental Impact Statement (DEIS) for the Living Breakwaters project. On March 31, the State submitted its Joint Permit Application to the USACE and DEC for the project's major environmental permits. The timing of these actions reflects the fact that environmental permitting typically requires a project to have reached at least 30% design, and the permitting process runs concurrently with the NEPA process, as the permitting process relies on information within the DEIS. The USACE and DEC's review of the permits will run, at minimum, concurrently with the public comment period and agency consultation for the DEIS. As with any permitting process, it is expected that the USACE and DEC will have questions and comments on the Living Breakwaters project. GOSR will promptly provide any additional information on the permit application if so requested by the USACE or DEC. With the application currently submitted to regulatory agencies, it is anticipated that the USACE and DEC will issue the permits for the Living Breakwaters project in accordance with the schedule at Table 40.

As of APA 26, the LWTB project's focus areas range from the preliminary design phase to final (100%) designs, and the project continues to move through the environmental review and permitting processes. Based on the available information pertaining to the projects that will be completed through LWTB, GOSR does not need to complete an EIS for the LWTB Project. Rather, GOSR is working to complete Environmental Assessments and to issue Findings of No Significant Impact for multiple projects and groups of projects. Environmental permitting and Environmental Assessments are performed as each LWTB focus area enters the 60% design stage and is expected to occur according to the schedule at Table 42 The three focus area groupings for Environmental Assessments are HLSP, which has received Authority to Use Grant Funds; Smith Pond, Lister Park, ERHS, East and West Boulevards, and the Greenway; and the Long Beach Wastewater Consolidation Project.

General Administration

Organizational Infrastructure

In June 2013, Governor Andrew M. Cuomo established the Governor's Office for Storm Recovery (GOSR) to maximize the coordination of recovery and rebuilding efforts in storm-affected municipalities throughout New York State. GOSR is formed under the auspices of New York State's Office of Homes and Community Renewal (HCR) and the Housing Trust Fund Corporation (HTFC), a subsidiary public benefit corporation of the New York State Housing Finance Agency, which directs the administration of federal CDBG-DR funds.

Working in close collaboration with local and community leaders, GOSR responds to communities' most urgent rebuilding needs while also identifying long-term and innovative solutions to strengthen the State's infrastructure and critical systems. It also administers a variety of programs related to housing recovery, economic development, infrastructure, and community reconstruction following the devastating impact of Hurricane Irene, Tropical Storm Lee and Superstorm Sandy.

Programs and the other activities under GOSR are based on the foundation of six key principles:

- **Building back better and smarter** – As New Yorkers work to repair the severe damage caused by Hurricane Irene, Tropical Storm Lee and Superstorm Sandy, the State uses the opportunity to ensure that damaged housing, infrastructure and communities are not simply restored to their pre-storm condition but built back safer and stronger. New York State invests in additional mitigation measures to prevent similar damage from occurring in the future.
- **State-led, community-driven recovery** – New York State is collaborating closely with local governments and other organizations to ensure a coordinated and holistic response, while looking to individual communities to develop forward-looking local recovery plans that meet their specific needs.
- **Recovery from Irene and Lee** – The recovery efforts also extend to those communities still recovering from Hurricane Irene and Tropical Storm Lee.
- **Leveraging private dollars** – New York State undertakes programs that help unlock capital markets and increase the amount of low-interest financing of key projects by reducing the risk for private sector lenders.
- **Spending accountability** – New York State implements rigorous controls and checks to ensure funds are spent responsibly and in compliance with federal and State guidelines.
- **Urgency in action** – The recovery is a long-term endeavor, but people need immediate help. The projects and programs presented in this Action Plan are shaped to balance effective delivery of support to individuals and communities while maintaining compliance with regulatory requirements.

General Administration Expenditures

General administration expenditures include staff, occupancy, equipment, consultant, and other operating costs related to implementing the CDBG-DR program, the selection, funding, assisting, and monitoring of local projects, detailed quarterly reporting to HUD, and documentation of adherence to all laws, and other expenses.

The State is allocating $220,844,100 million from CDBG-DR funds to General Administration. This may include efforts to provide technical assistance and public education, working within existing administrative infrastructure and expanding on already existing programs to create the greatest efficiency for minimizing administrative costs.

The March 5, 2013 Federal Register Notice places a cap on general administration costs (at 5% of the cost of the total CDBG-DR grant). In APA12 the State has chosen to allocate the full amount of funds to which it is entitled to administration. Recipients (i.e. sub-grantees and sub-recipients) will be strongly encouraged to minimize their administrative costs so that the amount available for program activities will be maximized.

Administrative Activities:

The State uses its General Administrative funds to carry out the following activities related to implementing the CDBG-DR grant:

- Providing local officials and citizens with information about the CDBG-DR funded project;
- Internal meetings for general program administration and review that is not related to program delivery activities;
- Preparing program budgets and schedules, and amendments thereto;
- Developing systems for assuring compliance with CDBG-DR program requirements;
- Preparing the Environmental Review Record for the overall program, including the release of funds;
- Preparing Requests for Proposals (RFPs) and Requests for Qualifications (RFQs) to procure consultants for grant administration or other related work;
- Developing interagency agreements and agreements with sub-recipients and contractors to carry out program activities;
- Monitoring program activities for progress and compliance with the program requirements;
- Preparing reports and other documents related to the program for submission to GOSR regarding the grant;
- Coordinating the resolution of audit and monitoring findings;
- Evaluating program results against State objectives;
- Managing or supervising persons whose primary responsibilities with regard to the program include such assignments as those described above;
- Official business travel in carrying out the program and administrative services performed under a third party contract;
- Purchase of equipment, such as file cabinets and computers to be used exclusively for CDBG-DR grant administration; and
- Training on CDBG-DR grant administration requirements.

General Administration Management

Timeliness: GOSR has adopted procedures to ensure the timely expenditure of funds, track expenditures in each month, monitor of recipients, reprogram funds in a timely manner, and project expenditures over time. The procedures indicate which personnel or unit is responsible for the task.

GOSR is committed to ensuring that CDBG-DR funds are spent in a timely manner and within the statutory two-year period. To ensure such commitment, GOSR establishes strict timelines and milestones within each of the agreements entered into with sub-recipients, contractors, consultants and recipients of funds. Failure to meet such milestones may result in full or partial recapture of funds or a reduction in award amount. These requirements and milestones are specifically outlined in each agreement and are designed to be specific to categories of funding.

Tracking and Reporting of Program Income: The State follows the requirements of 24 CFR 570.489 in regards to Program Income. All Program Income goes back to the State.

Procurement: All UGLGs, State agencies/authorities or sub-recipients of New York State CDBG–DR assistance must demonstrate compliance with 24 CFR 85.36. As outlined in the March 5, 2013 Federal Register Notice, 24 CFR 85.36 requires that the State identify how its procurement standards conform to federal standards. To address this, GOSR reviewed the Housing Trust Fund Corporation's existing procurement standard and created and adopted GOSR-specific procurement guidelines which conform to 24 CFR 85.36.

Anti-Displacement and Relocation: The State and Units of General Local Government (UGLGs), State agencies/authorities, and sub-recipients of New York State CDBG-DR funds are expected to minimize displacement of persons or entities and assist those displaced as a result of the disasters. If an individual person or entity is displaced as a result of the New York State CDBG-DR investment, the State provides assistance as required through the Uniform Relocation Act requirements.

GOSR defines a unit as not suitable for rehabilitation if it is:

a. a storm-damaged property eligible for a buyout, or

b. a storm-damaged manufactured home in a floodway or floodplain.

Storm-damaged properties eligible for buyouts are located in certain high risk areas in the floodway or floodplain and determined to be among the most susceptible to future disasters. Floodways are the portions of the floodplain where flood hazard is generally the greatest, where structures commonly incur repeat flooding. Federal regulations prohibit funding for rehabilitation or reconstruction of a home in the floodway. Buyouts in these most susceptible areas improve the resiliency of the larger community by transforming parcels of land into wetland, open space, or stormwater management systems, creating a natural coastal buffer to safeguard against future storms.

Manufactured homes are susceptible to water damage and mold, making restoration to decent, safe and sanitary condition impractical and not cost-effective. Manufactured homes have limited capacity for safe, practical or cost-effective elevation. On-site manufactured home replacement without elevation would not result in a home resilient to future storms. Older manufactured homes constructed prior to June 15, 1976 cannot be rehabilitated to meet current HUD codes for manufactured home dwellings and would not meet municipal code requirements for lot sizes and coverage if rehabilitated.

Prevention of Duplication of Benefits: GOSR provides written policies and procedures, along with required forms and required training, to all of its own staff, sub-grantees, sub-recipients, contractors, etc. As required by the Stafford Act, the State established a uniform procedure for verifying all sources of disaster assistance for the same purpose as CDBG-DR funding. To the greatest extent possible, GOSR determines an applicant's unmet need(s) before awarding assistance, and ensuring beneficiaries agree to repay the assistance if they later receive other disaster assistance for the same purpose. After the initial Duplication of Benefits review, GOSR conducts subsequent reviews to detect additional benefits before release of final payment. These reviews identify situations where new information or changes to previously obtained assistance amounts require a recalculation of benefits.

In instances where full information is not available prior to making a final award, GOSR established a Uniform Recapture Policy to account for newly available data. The primary responsibility for compliance with the Stafford Act rests with GOSR staff. To ensure compliance, GOSR verifies information using available and accessible third party data feeds from federal agencies, insurance companies, and private sources. Data sharing agreements have been developed between GOSR and the Small Business Administration (SBA), the Federal Emergency Management Agency (FEMA), National Flood Insurance Policy (NFIP), and others to ensure that it has all the needed data to perform the analyses and calculations of allowable disaster recovery awards.

Data matching protocols and software tools are utilized to automate the initial review by cross-comparing reported information with FEMA, SBA, and NFIP databases. These data tools are used to verify self-reported information provided by applicants before issuing payments. To ensure accuracy of automated procedures, GOSR staff are trained on data matching protocols and interface with contractors and partner agencies.

Systematic quality assurance (QA) reviews of award calculations are conducted on an ongoing basis to prevent duplication of benefits, verify the accuracy of award calculations, and ensure that program award policies are implemented consistently across applicants. The QA process involves parallel processing of all award amounts in a systematic manner to ensure that all necessary applicant information is collected and consolidated. The results obtained are compared against already-existing award amounts per applicant, to ensure that the same results are derived from the same inputs. Any outstanding award amounts are noted and root-caused, to identify potential process or policy improvements. The QA review also ensures alignment with Stafford Act requirements, and confirms that the procedures address, if appropriate, avoiding utilization of staff with conflicting duties, access to information, or potential conflicts of interest with award recipients.

National Objective: All activities undertaken with New York State CDBG-DR funds must meet one of the following three National Objectives as identified in the Housing and Community Development Act of 1974: (1) address urgent need, (2) primarily benefit low- and moderate- income persons, and/or (3) address slums and blighted conditions.

Per Federal Register Notice 6039-N-01, at least 35% of the CDBG-DR funds awarded to New York State under Public Law 113-2 must be used for activities that meet the National Objective of primarily benefiting low- and moderate- income persons. To track progress towards this goal, the State, along with its sub-grantees, sub-recipients, contractors and other partners measure the following:

- For housing related activities, the State collects income information on beneficiaries of assistance provided through the homeowner and rental programs. In doing so, GOSR ensures a more accurate report of the populations benefitting from assistance under these activities, and contribute towards the 35% expenditure threshold.
- For small business related activities, GOSR requires the documentation of family incomes (salary ranges) of those who benefit from the creation or retention of jobs under this assistance. In doing so, GOSR ensures a more accurate report of the populations benefitting from assistance under these activities, and contribute towards the 35% expenditure threshold.
- The State and its partners closely monitor the actual expenditure of funds and benefiting populations throughout the administration of all activities under this grant.

While serving eligible low- and moderate- income households is the State's priority, our assessment of need demonstrates that the impact of these disasters extends far beyond predominantly low- and moderate-income neighborhoods. Therefore, the State also works to qualify households above 80% of area median income (AMI) under the National Objective of urgent need, where there exists a documented unmet need resulting from one of these storms. Doing so ensures assistance is provided to as many households as possible, and contributes to holistic community recovery.

Access to Records: The State provides citizens, public agencies, and other interested parties with reasonable and timely access to information and records relating to the State's CDBG-DR Action Plan and amendments as well as the State's use of assistance under the programs covered by the Action Plan during implementation. All requests for such information should be directed to GOSR's External Affairs Department who forward on each request to the appropriate department within GOSR.

Monitoring and Compliance and Investigations: GOSR follows a comprehensive Fraud Waste Abuse Prevention Program which consists of integrity monitoring, internal controls assessments, and investigations in order to create a series of "check and balances" to mitigate risks and ensure compliance

with federal and State regulations. This program is directed and managed by the GOSR Operations Department, under which GOSR created a Monitoring and Compliance Department, as well as the GOSR Office of the General Counsel, under which GOSR created an Investigations Department. The Monitoring and Compliance and Investigations Departments are structured to allow for coordination between, and monitoring of, all GOSR Programs and internal operations departments. Each of the Departments consist of a director who is and/or will be supported by additional compliance officers and investigators, respectively, as well as outside integrity monitoring firms and consulting firms with expertise in CDBG-DR program administration and compliance with HUD regulations.

The primary purpose of GOSR's Monitoring and Compliance and Investigations Departments is to ensure that all programs, contractors administering GOSR programs, departments, and sub-recipients comply with applicable State and federal regulations, as well as to prevent and minimize fraud, waste and abuse, and effectively fulfill the goals set forth in GOSR's Action Plans and Action Plan Amendments.

The Monitoring and Compliance and Investigations Departments work in conjunction to:

1. Gauge the overall progress and effectiveness of project implementation;
2. Serve as a management tool to identify issues that may compromise program integrity, fund, and service delivery;
3. Work with program and operational staff to implement corrective action and resolutions;
4. Oversee the implementation of GOSR's recapture process;
5. Provide information and input on how GOSR's programs and practices can be improved and enhanced to improve performance, efficiency, and curtail waste, fraud, and abuse; and
6. Serve as a layer of oversight to mitigate any potential risks, proactively detect and investigate potential fraud, and identify areas in which to strengthen program capacity and the quality of service delivery.

Internal Audit: Until May 2019, GOSR's Fraud Waste Abuse Prevention Program was supported by HCR's Office of Internal Audit (OIA) which provides internal audit coverage for HCR and HTFC and, as such, served as GOSR's internal auditor with independent oversight over GOSR's program operations. GOSR's Monitoring and Compliance Department coordinated with OIA which had a role in detecting fraud, waste, and abuse generally for all HCR and HTFC auditing efforts and specifically as part of the State of New York's administration of its CDBG-DR funding allocations pursuant to Public Law 113-2. OIA was responsible for maintaining a reporting line, independent of GOSR's management team, to HTFC Finance and the HTFC Board as it related to GOSR activities, including any contested findings and recommendations. In addition, OIA was responsible for assisting GOSR with the coordination and review of all external audits, including the annual HTFC Financial Statement Audit, the New York State Single Audit/OMB A-133 audit of GOSR and the OMB A-133 audit of GOSR's sub-recipients, as well as any audits conducted by the Office of the New York State Comptroller.

Furthermore, OIA was responsible for preparing the annual Internal Control Certification Report that describes all HCR program area's internal control activities, including those of GOSR's. This report is prepared annually by the HCR Internal Control Officer of OIA and submitted to the New York State Division of Budget. Different functions within program areas are selected each year for internal control review. Accordingly, OIA was responsible for conducting an annual review of GOSR's internal control process as part of HCR's Internal Control Review Process.

Annually, GOSR must complete a "Risk Assessment Survey" and the "Managers Internal Control Review Form." The Risk Assessment Survey identifies areas related to funding, staffing, duties and responsibilities, data security and previous audits/reviews conducted in the GOSR program area. The Managers Internal Control Review identifies functions performed, risks, procedures/controls in place and the testing of those procedures/controls. HCR's Internal Control Officer from OIA worked closely with GOSR to complete the process. The approach was to review documentation from the risk assessment and manager internal control forms to identify moderate to high risk functions. Meetings were then held with program managers to

discuss those functions and the risks and controls related to them. As necessary, discussions focused on developing an appropriate corrective action plan to strengthen the controls that would mitigate those risks. Discussions may also have included follow-up on any reviews or audits that had outstanding recommendations. Documentation was required to ensure that corrective action has taken place to close out recommendations.

In May of 2019, GOSR hired a Director of Internal Audit to build out and implement an independent Internal Audit function for the State's CDBG-DR Program to supplant the roles and responsibilities of HCR's Office of Internal Audit as described above, and only as they relate to the State's CDBG-DR program. The GOSR Director of Internal Audit is responsible for timely completion of audit tests and analysis in compliance with HTFC standards and reports directly to the HTFC Board of Directors. The Office of General Counsel provides administrative oversight that is limited to ensuring timely deliverables, facilitating management responses, and resource access.

Citizen Complaints: The State responds to complaints from citizens related to the Action Plan or Amendments, and quarterly reports. Written complaints must be directed to GOSR who further direct the complaint to the appropriate agency as necessary. The State provides a timely, substantive written response to the complainant within a reasonable amount of time. All Recipients of funds from New York State (i.e. sub-grantees and sub-recipients) are required to adopt these procedures for responding to citizens' complaints regarding activities carried out by the Recipient.

Certifications and Compliance

In keeping with the requirements detailed in November 18, 2013 Federal Register guidance, GOSR updated its Certifications for submission to HUD. GOSR has also created policies and procedures for updating the Certifications. These policies and procedures include that GOSR will identify in an Action Plan Amendment any material changes in its processes or procedures that could potentially impact GOSR's Certifications.

These policies follow the practices of the HTFC, but recognize that CDBG-DR has special requirements that the State addressed within its administrative policies.

Regulatory Requirements

UGLGs, State agencies/authorities, and sub-recipients must comply with fair housing, nondiscrimination, labor standards, and environmental requirements applicable to the CDBG Program, as follows:

Fair Housing: The State and all UGLGs, State agencies/authorities, and sub-recipients are required to take steps to affirmatively further fair housing; and when gathering public input, planning, and implementing housing related activities, include participation by neighborhood organizations, community development organizations, social service organizations, community housing development organizations, and members of each distinct affected community or neighborhood which might fall into the assistance category of low- and moderate- income communities.

Any activities that are administered by the State are conducted in accordance with the State's Analysis of Impediments to Fair Housing Choice and the Fair Housing Plan adopted in November 2010. Any activities using CDBG-DR funding are conducted in accordance with Fair Housing principles.

Nondiscrimination: The State and all UGLGs, State agencies/authorities, and sub-recipients are required to adhere to the established federal policies which ensure that no person be excluded, denied benefits or subjected to discrimination on the basis race, color, national origin, religion, sex, familial status, and/or physical and mental handicap under any program funded in whole or in part by federal CDBG-DR funds. UGLGs, State agencies/authorities, and sub-recipients are required to document compliance with all nondiscrimination laws, executive orders, and regulations.

Labor Standards: The State and all UGLGs, State agencies/authorities, and sub-recipients are required to oversee compliance with Davis-Bacon Labor Standards and related laws and regulations as provided at 40 U.S.C. 276a-a7 and 29 CFR Part 5. Regulations require all laborers and mechanics employed by contractors or subcontractors on CDBG funded or CDBG assisted public works construction contracts in excess of $2,000, or residential construction or rehabilitation projects involving eight or more units are paid wages no less than those prescribed by the Department of Labor and in accordance with Davis Bacon Related Acts.

Minority and Women's Business Enterprises (M/WBE): The State and all UGLGs, State agencies/authorities, and sub-recipients are required to take affirmative steps to assure that minority-owned firms, women's business enterprises, and labor surplus area firms are used when possible. The State and all UGLGs, State agencies/authorities or sub-recipients take, at minimum, the following steps in accordance with 24 CFR 85.36 and Article 15A of the New York State Executive to further this goal:

- Ensure that small businesses, minority-owned firms, and women's business enterprises are used to the fullest extent practicable.
- Make information on forthcoming opportunities available and arrange time frames for purchases and contracts to encourage and facilitate participation by small businesses, minority-owned firms, and women's business enterprises.
- Consider in the contract process whether firms competing for larger contracts intend to subcontract with small businesses, minority-owned firms, and women's business enterprises.
- Encourage contracting with consortiums of small businesses, minority-owned firms and women's business enterprises when a contract is too large for one of these firms to handle individually.
- Use the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Department of Commerce's Minority Business Development Agency and the Empire State Development Corporation, Division of Minority and Women's Business Development in the solicitation and utilization of small businesses, minority-owned firms and women's business enterprises.

The State, UGLGs, State agencies/authorities, and sub-recipients should obtain a list of Minority and Women-owned Business Enterprises (MBE/WBE) certified firms by contacting the Empire State Development Corporation, Division of Minority and Women's Business Development, 30 South Pearl Street, Albany, NY 12245, (518) 292-5250 or utilize the website-based retrieval process at http://www.esd.ny.gov/MWBE.html.

Section 3 Compliance: GOSR is committed to the goals of Section 3, as outlined in CFR 24 Part 135, to increase employment and business opportunities for low- and very low- income person within projects developed with HUD resources. In accordance with the requirements under Section 3 of the Housing and Urban Development Act of 1968, as amended, UGLGs, State agencies/authorities, and sub-recipients ensure that employment and other economic opportunities generated by the use of CDBG-DR funds are, to the greatest extent feasible, directed to low- and very low- income persons, particularly those who are recipients of government assistance for housing, and to business concerns that provide economic opportunities to low- and very low- income persons. Assistance covered by Section 3 includes the expenditure of CDBG-DR funds for work arising in connection with housing rehabilitation, housing construction, or other public construction projects. Section 3 requirements are applicable to all procurement actions in excess of the small purchase threshold established at 24 CFR 85.36(d) (1), regardless of whether the procurement is governed by 24 CFR 85.36. Section 3 applies to the entire project or activity funded with assistance that triggers Section 3 requirements. The State and all UGLGs, State agencies/authorities or sub-recipients receiving CDBG-DR grants that exceed $200,000 must include a Section 3 clause in all contracts for $100,000 or more. GOSR has included the provisions of CFR 24 Part 135 regarding the implementation of Section 3 goals within its RFPs, contracts, and sub recipient agreements and is monitoring contractors and sub-recipients' efforts to meet these goals.

- Ensure that Section 3 small businesses, minority-owned firms, and women's business enterprises are used to the fullest extent practicable.
- Make information on forthcoming opportunities available via GOSR's Local Workforce Opportunities Portal - a web portal that targets and lists positions for Section 3 Residents and Section 3 Businesses linking them to GOSR Vendors and Subrecipients. www.nystormrecoveryopps.com
- Educate Section 3 Businesses and Residents of the Section 3 program, GOSR initiatives and opportunities by conducting local training sessions.
- Educate Vendor and Subrecipients on Section 3 requirements via Technical Assistance training sessions.
- Require Vendors and Subrecipients to submit Section 3 outreach plans and monitor Section 3 activities.
- Work with Vendor and Subrecipients to review and suggest best practices for Section 3 implementation.
- Procurement processes include Section 3 provisions and requirements.
- Encourage contracting with consortiums of Section 3 small businesses when a contract is too large for one of these firms to handle individually.
- Use the services and assistance, as appropriate, of community-based organizations to recruit Section 3 Residents and Businesses.
- Utilize HUD's Section 3 Business Registry to locate firms that may qualify for opportunities.

Environmental: The State has dedicated staff to implement the environmental review requirements set forth in 24 CFR Part 58 for all CDBG-DR funded storm recovery activities, as well as the floodplain notice requirements set forth in 24 CFR Part 55. The environmental staff oversees the environmental reviews for each GOSR program, which may be individual review or programmatic tiered reviews dependent on the scope of the activities. The environmental staff also consults regularly with program staff to ensure compliance with environmental requirements. GOSR has dedicated certifying officers specifically for CDBG-DR storm recovery projects and, through New York State Division of Homes and Community Renewal's Housing Trust Fund Corporation, assumes "Responsible Entity" status for purposes of issuing required environmental determinations and notices. When permissible, the State may adopt a pre-existing environmental review, or coordinate its environmental review with other entities. The State may also, under appropriate circumstances, allow sub-recipients, subject to all legal requirements, to prepare environmental review documents, which the State then monitors to ensure conformance with all applicable environmental requirements.

Lead Based Paint: All New York State CDBG-DR funded housing rehabilitation and mitigation projects must adhere to the EPA regulations at 40CFR Part 745 and the Residential Lead-Based Paint Hazard Reduction Act of 1992 (24 CFR Part 35). These regulations are carefully followed to ensure that exposure to lead hazards are reduced in any residential property to be rehabilitated or purchased. The regulations can be found at www.hud.gov/offices/lead/enforcement/lshr.cfm

Interpretive Guidance was created by HUD to be used when addressing questions that arise as a result of the implementation of these regulations. The Interpretive Guidance can be found at: www.hud.gov/utilities/intercept.cfm?/offices/lead/library/enforcement/LSHRGuidance21June04.pdf

For questions that cannot be answered through the regulations or Interpretive Guidance, Recipients should submit their questions in writing to GOSR. GOSR will respond in writing.

Monitoring

GOSR established a Monitoring Plan to ensure that all programs and projects comply with applicable federal, State, and local regulations and effectively fulfill the goals set forth in GOSR's Action Plans and Action Plan Amendments. GOSR must ensure compliance with the following HUD regulations, including but not limited to: Record Keeping, Administrative and Financial Management, Environmental Compliance, Citizen Participation, Conflict of Interest, Procurement, Davis-Bacon Labor Standards Compliance, Diversity and Civil Rights regulations (including but not limited to Minority and Women's Business Enterprise (M/WBE), Section 3, Fair Housing, Limited English Proficiency, and American with Disabilities Act), Property Acquisition and Management, Displacement, Relocation, and Replacement.

GOSR's Monitoring Plan serves to identify risks, deficiencies, and remedies relating to GOSR's directly administered programs, administrative and financial management, and programs administered via GOSR's sub-recipients. The monitoring plan will seek to accomplish the following objectives:

- To determine if a grantee/subrecipient is carrying out its CDBG program, and its individual activities as described in the Action Plan for CDBG-DR assistance and its related Agreement.
- To determine if a grantee/subrecipient is carrying out its activities in a timely manner, in accordance with the schedule included in the Agreement.
- To determine if a grantee/subrecipient is charging costs to the project that are eligible under applicable laws and CDBG-DR regulations, and are reasonable.
- To determine if a grantee/sub-recipient is conducting its activities with adequate control over program and financial performance, and in a way that minimizes opportunities for waste, mismanagement, fraud, and abuse.
- To assess if the grantee/sub-recipient has a continuing capacity to carry out the approved project, as well as future grants for which it may apply.
- To identify potential problem areas and to assist the grantee/Sub-recipients in complying with applicable laws and regulations.
- To assist grantee/sub-recipients in resolving compliance problems through discussion, negotiation, and the provision of Technical Assistance and training.
- To provide adequate follow-up measures to ensure that performance and compliance deficiencies are corrected by grantee/Sub-recipients, and not repeated.
- To comply with federal monitoring requirements of 24 CFR 570.501(b) and with 24 CFR 84.51 and 85.40, as applicable.
- To determine if any conflicts of interest exist in the operation of the CDBG-DR program per 24 CFR 570.611.
- To ensure that required records are maintained to demonstrate compliance with applicable regulations.

GOSR conducts a risk analysis on all entities being monitored, including all programs, contractors, and sub-recipients in order to identify the appropriate level of monitoring, include the frequency and depth of review. GOSR makes necessary adjustments in its monitoring plan based on the most current information, data, and analyses available. Any risks and deficiencies identified result in a request for timely corrective action from the entity being monitored. The State and all UGLGs, other State agency/authorities, and sub-recipients provide technical assistance to facilitate compliance with all applicable federal, State, and local regulations.

Citizen Participation Plan

The primary goal of the New York Citizen Participation Plan is to provide all New York citizens with an opportunity to participate in the planning, implementation, and assessment of the State's CDBG-DR Sandy recovery program(s). The Plan sets forth policies and procedures for citizen participation, which are designed to maximize the opportunity for citizen involvement in the community redevelopment process. New York State developed the Citizen Participation Plan to meet the requirements of the CDBG Disaster Recovery (CDBG-DR) funding for Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee. The Plan reflects the alternative requirements as specified by the U.S. Department of Housing and Urban Development (HUD) in the Federal Register (FR-5696-N-01), Federal Register (FR-5696-N-06), Federal Register (FR-5696-N-11), and notice of specific waivers.

The State ensures that any Units of General Local Government (UGLGs) or sub-recipients who receive funds have a Citizen Participation Plan that meets the CDBG-DR regulations and takes into consideration the waivers and alternatives made available under CDBG-DR funding.

In order to facilitate citizen participation requirements and to maximize citizen interaction in the development of the New York Disaster Recovery Action Plan, substantial amendments to the Action Plan, and the Quarterly Performance Reports (QPR), the State has laid out targeted actions to encourage participation and allow equal access to information about programs by all citizens, including those of low and moderate income, persons with disabilities, the elderly population, persons receiving Disaster Housing Assistance Program (DHAP) funding, and persons with limited English proficiency.

Public Outreach

GOSR is committed to ensuring that all populations impacted by the storms are aware of the programs available to assist in the recovery from Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. Through in person meetings, outreach events, online and traditional media, GOSR has publicized programs and conducted outreach efforts throughout the storm impacted areas. In addition, the Governor initiated the NYRCR Program, a grass-roots community driven process that engages the public as a key stakeholder in the planning and rebuilding process. Through 61 cross-jurisdictional Planning Committees representing 119 communities, the NYRCR stakeholders helped to inform their communities about the available recovery programs as they came online.

Programmatic Outreach

Through the NYRCR Program, there have been over 650 Planning Committee Meetings to construct a vision statement; to conduct an inventory of critical assets and an assessment of risks; and then ultimately to craft the strategies, and proposed projects or actions to address these risks. All meetings were open to the public and were publicized by media advisories, flyers, and posters hung in public buildings; radio announcements; and through social media. Where necessary, meetings were advertised in various languages to ensure the immigrant population was informed. Translators were also present at meetings so that information was clearly understood. For the hearing impaired, sign language interpreters were also available.

More than 250 Public Engagement Events attracted thousands of community members, who provided feedback on the NYRCR planning process and proposals and made additional suggestions. Planning Committees members were instrumental in representing communities that are traditionally underrepresented in disaster recovery, from engaging immigrant populations to working with high school students. Committee members made presentations at senior housing complexes, religious gatherings, schools, and at Chambers of Commerce.

For the Small Business program, GOSR worked in coordination with the Empire State Development Corporation (ESD) as well as its sub-recipient, the Small Business Development Center (SBDC) to create a multi-pronged approach to reach out to more than 3,000 businesses in the impacted communities. This

has included paid advertising, door-to-door visits, press releases and other public relations efforts, and collaboration with various constituents and community organizations.

Early in the NY Rising Homeowner Program, the State partnered with the Long Island Housing Partners to target community outreach including but not limited to, persons with disabilities and other special needs, and senior households, with a focus on low- and moderate- income minority communities; outreach to and coordination with civic associations, religious and advocacy groups (racial equity), social service agencies, emergency aid not–for profits, educational institutions, and outreach to residences impacted by the disaster.

The State's vendors on the project also held numerous meetings to inform the public about the availability of grants for home repairs. This outreach consisted of a variety of methods: media announcements, online updates on the Storm Recovery website and through Storm Recovery profiles on social media platforms including Facebook, Twitter, and Instagram, community meetings, and partnerships with sub-recipients. Additionally, staff frequently made presentations to community groups, specifically in Long Island, to provide updated program information. A similar effort has been conducted in counties in upstate New York to make sure that all impacted homeowners have the most up to date information about the program. In addition, frequent technical assistance meetings were held with applicants to assist homeowners in better understanding the program and completing the rebuilding process successfully.

Further the State also engaged the Welfare Council of Long Island/Long Island Long-Term Recovery Group (LTRG) to conduct targeted outreach to low- and moderate- income individuals that were affected by the Superstorm Sandy, in order to encourage these individuals to apply to the NY Rising Housing Recovery Assistance Program before the April 11, 2014 deadline.

For its rental programs, the State conducted outreach to potential landlords throughout the impacted areas that may be eligible for the program. As part of its implementation, the State also conducted outreach to previous tenants of the damaged rental units to make them aware of potential repaired and newly built units as they were completed.

Outreach to Vulnerable Populations

The State also conducted outreach to residents with more acute needs, particularly low- and moderate-income household and households headed by non-English speaking persons. As noted above, within the NYRCR program, where necessary, meetings were advertised in various languages to ensure the immigrant population was informed. Translators were also present at meetings so that information was clearly understood. For the hearing impaired, sign language interpreters were also available.

As the State continues to implement programs and work with communities to recover from Hurricane Irene, Tropical Storm Lee and Superstorm Sandy, GOSR is committed to continued outreach and program accessibility to vulnerable populations and ensuring that program information is accessible to populations with language barriers. For example, the APA is translated into Spanish, Russian and Chinese, which are the three languages most needed for persons with language barriers in impacted counties (based on the 2008-2012 ACS 5-Year Estimates, Table B16001, Populations 5 Years and Over Who Speak English less than "very well"). The State continues to translate programmatic materials within its Programs. The State also continues to provide translation services as needed in case management and public meetings.

The State's website (www.stormrecovery.ny.gov) includes language translation functionality. The State also provides translation of any document into additional languages, braille, or any other formats for persons with visual impairments upon request.

The State continues to further these efforts to reach out to all populations and ensure that the community is educated and aware of all of the recovery programs. As programs adjust and move into new phases, the State will continue to adjust their public outreach to ensure comprehensive outreach to all populations.

Public Notices, Public Hearings, and Comment Period

The State Citizen Participation Plan ensures that there is reasonable and timely access for public notice and comment on the activities proposed for the use of CDBG-DR grant funds. In the Notices for the Second and Third Allocation HUD revised the requirements for public hearings. The State always holds one public hearing, at minimum, for each substantial amendment, starting with APA6. Written minutes of the hearings and attendance rosters are kept for review by State officials. The State continues to coordinate outreach meetings with State entities, local governments, non-profits, private sector, and involved associations. The State invited public comment to the New York Disaster Recovery Action Plan and will continue to invite public comment for any future Substantial Amendments for a minimum thirty days, posted prominently and accessed on GOSR's official website.

Substantial Amendments to the Action Plan

The State has defined Substantial Amendments to the Action Plan as those proposed changes that require the following decisions:

- Addition or deletion of any allowable activity described in the approved application;
- A Program allocation change that is both greater than $5 million and more than 10 percent of a Program allocation; and/or,
- Change in the planned beneficiaries.

Those amendments which meet the definition of a Substantial Amendment are subject to public notification, public hearings and public comment procedures. Citizens and units of local government are provided with reasonable notice and an opportunity to comment on proposed Substantial Amendments to the Action Plan. A notice and copy of the proposed Substantial Amendment is posted on the agency's official website. Citizens are provided with no less than thirty days to review and comment on the proposed amendment.

A summary of all comments received and responses are included in the submission to HUD and posted to GOSR's official website. A summary of the comments and responses can be found in the relevant Action Plan Amendment on GOSR's website.

Non-substantial Amendments to the Action Plan are posted on GOSR's official website after notification is sent to HUD and the amendment becomes effective. Every Amendment to the Action Plan (substantial and non-substantial) is numbered sequentially and posted on the website.

Performance Reports

The State must submit a Quarterly Performance Report through HUD's Disaster Recovery Grant Reporting (DRGR) system no later than thirty days following the end of each calendar quarter. Within three days of submission to HUD, each QPR must be posted on GOSR's official website. The State's first QPR is due after the first full calendar quarter after the grant award. QPR's will be posted on a quarterly basis until all funds have been expended and all expenditures have been reported. Each QPR is available at https://stormrecovery.ny.gov/funding/quarterly-reports.

Each QPR includes information about the uses of funds in activities identified in the Action Plan as entered in the DRGR reporting system. This includes, but is not limited to: project name, activity, location, and National Objective; funds budgeted, obligated, drawn down, and expended; the funding source and total amount of any non-CDBG-DR funds to be expended on each activity; beginning and actual completion dates of completed activities; achieved performance outcomes such as number of housing units complete or number of low- and moderate- income persons benefiting; and the race and ethnicity of persons assisted under direct-benefit activities. The State must also record the amount of funding expended for each Contractor identified in the Action Plan. Efforts made by the State to affirmatively further fair housing are included in the QPR.

During the term of the grant, the grantee provides citizens, affected local governments, and other interested

parties with reasonable and timely access to information and records relating to the approved program and to the grantee's use of grant funds as well as contracts procured with CDBG-DR funding. This information is posted on the grantee's official website and provided on request.

Technical Assistance

The State provides technical assistance to facilitate citizen participation where requested, particularly to groups representative of persons of low- and moderate- income and vulnerable populations. The level and type of technical assistance is determined by the applicant/recipient based upon the specific need of the community's citizens.

Citizen Participation Requirements for Sub-recipients and Local Governments Participating in CDBG-DR Programs

To ensure applicant compliance with Section 508 of the Housing and Community Development Act of 1974, as amended, the citizen participation requirements for Units of General Local Government (UGLG) applying for or receiving Disaster Recovery funds from the State are as follows:

Each applicant shall provide citizens with adequate opportunity to participate in the planning, implementation, and assessment of the CDBG program. The applicant shall provide adequate information to citizens, obtain views and proposals of citizens, and provide opportunity to comment on the applicant's previous community development performance.

UGLGs that receive CDBG-DR funds must have a written and adopted Citizen Participation Plan which:

- Provides for and encourages citizen participation, with particular emphasis on participation by persons of low- and moderate- income who are residents of slum and blighted areas and of areas in which funds are proposed to be used;
- Provides citizens with reasonable and timely access to local meetings, information, and records relating to the State's proposed method of distribution, as required by regulations of the Secretary, and relating to the actual use of funds under Title I of the Housing and Community Development Act of 1974, as amended, and the unit of local government's proposed and actual use of CDBG funds;
- Provides for technical assistance to groups representative of persons of low- and moderate- income that request such assistance in developing proposals with the level and type of assistance to be determined by the grantee;
- Provides for the review of proposed activities and program performance by potential or actual beneficiaries, and with accommodations for the disabled;
- Provides for a timely written answer to written complaints and grievances, within 15 working days where practicable;
- Identifies how the needs of non-English speaking residents will be met where a significant number of non-English speaking residents can be reasonably expected to be involved;
- Establishes procedures and policies to ensure non-discrimination, based on disabilities, in programs, and activities receiving federal financial assistance as required by Section 504 of the Rehabilitation Act of 1973, as amended.

The plan must be made available to the public and must include procedures that meet the following requirements:

- *Performance Hearings:* Prior to close out of the disaster recovery program, the Program, the UGLG and State sub-recipients may be required to hold a public hearing to obtain citizen views and to

respond to questions relative to the performance of the program. This hearing is held after adequate notice, at times and locations convenient to actual beneficiaries and with accommodations for the disabled and non-English speaking persons provided. Written minutes of the hearings and attendance rosters are kept for review by State officials. Nothing in these requirements shall be construed to restrict the responsibility and authority of the applicant for the development of the application.

- *Complaint Procedures:* The State ensures that each UGLG, or as appropriate, sub-recipient funded with CDBG-DR funds has written citizen and administrative complaint procedures. The written Citizen Participation Plan provides citizens with information relative to these procedures or, at a minimum, provides citizens with the information relative to the location and hours at which they may obtain a copy of these written procedures. All written citizen complaints which identify deficiencies relative to the UGLG, sub-recipient's community development program merit careful and prompt consideration. All good faith attempts are made to satisfactorily resolve the complaints at the local level. Complaints are filed with the Executive Director or Chief Elected Official of the entity who is receiving the funds and who is investigating and reviewing the complaint. A written response from the Chief Elected Official, Agency Head, or Executive Director to the complainant is made within 15 working days, where practicable.

Endnotes

[1] Federal Register Notice (FR-5696-N-11) indicates that HUD employs a high construction cost multiplier in its updated CDBG-DR allocation methodology. In the case of New York State, housing and small business unmet needs are multiplied by a factor of 1.44.
[2] Bronx, Kings, Manhattan, Queens, and Richmond counties.
[3] The following summarizes the primary differences and similarities in methodology between the unmet needs assessment conducted in April 2013 and the unmet needs assessment of this report:

1. Damage Categories for Housing – Severe Damage remains at 4 feet to 6 feet of flooding. The State continues to define any unit with 1 foot to 4 feet as "Major-Low". However, when FEMA-IA data indicates a zero damage category and SBA data indicates that damage was assessed, this analysis uses the SBA data as the measure of damage and categorization. In addition, if FEMA-IA data indicates what HUD defines as a zero damage category but there is a recorded flooding of at least one foot, then the housing unit is given a HUD damage category of 3.
2. As in APA6, if the owner has insurance, then the unmet need is 20% of the damage costs not covered by FEMA. If the owner received an SBA loan, than they are determined to have no unmet need.
3. If the renter earns more than $30,000, then HUD presumes the landlord has sufficient insurance and there is no unmet need.
4. If the renter earns less than $30,000, then unmet need is 75% of damage costs. If the renter earns more than $30,000, then there is no need.
5. FEMA PA categories A and B (Emergency Measures and Debris Removal) are excluded from the estimate of infrastructure Unmet Needs
6. Local match for Federal Transit Administration projects, Federal Highway Administration projects, and U.S. Army Corps of Engineers Sandy-related projects are included in the Unmet Needs.
7. Mitigation costs for major and severe damage are included, estimated at 30% of damage costs for homes, businesses and applicable infrastructure projects with major to severe damage.

[4] Limited to occupied housing, vacation homes and vacant properties are not part of the analysis; these units are also not eligible for FEMA assistance
[5] Federal Register Notice (FR-5696-N-11) omitted 1-4 feet as an adjustment category. However, the State continues to believe that any unit that received a foot or more of water should be classified as most impacted.
[6] Damage estimates use FEMA Individual Assistance records for Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee effective December, 2014. Excludes New York City counties (Bronx, Kings, New York, Queens and Richmond).
[7] FEMA Individual Assistance data for Superstorm Sandy, Hurricane Irene and Tropical Storm Lee effective December 2014. Count is based on FEMA Individual Assistance applicants with FEMA Real Property Full Verified Loss (RP FVL) greater than $8,000 (for owners), Personal Property Full Verified Loss (PP FVL) greater than $2,000 (for renters) or flooding of one foot or greater. A home may have more than one FEMA Individual Assistance record if majorly or severely impacted by more than one storm. In instances where this occurs, the home is counted towards damage counts more than once. Excludes New York City counties (Bronx, Kings, New York, Queens and Richmond).
[8] Table 6-1 uses the most recent FEMA and SBA data to construct damage categories and estimate average damage by calculating average SBA loan amount for each damage category. This is based on HUD's recommendation to use SBA loans as more accurate measures of damage than FEMA damage estimates. Since the original amount of SBA loans—upon application—was used in APA6's calculations, this table displays damage estimates using the original loan amount. These data exclude New York City Applicants.
[9] https://stormrecovery.ny.gov/sites/default/files/uploads/fact_sheet_on_optional_items_072414_general_final.pdf
[10] Found within FEMA IA records effective December, 2014
[11] Low and Moderate Income defined as a household earning less than 80% of Area Median Income, which differs across metropolitan area. For the purpose of this analysis, we use 80% of Area Median Income within the Nassau Suffolk MSA of $67,000 annually.
[12] This analysis uses the most recent FEMA and SBA data to update the number of rental housing units with unmet needs for repair and mitigation. It follows the exact same instructions as were used in APA6 to calculate unmet needs.
[13] This analysis uses the most recent FEMA and SBA data to update the unmet needs for rental housing repair and mitigation. It follows the same methodology used in APA6 to calculate unmet needs. In cases where renters had zero FEMA-IA award and a non-zero SBA loan, the State assumed the SBA loan to be the correct figure.
[14] For more information see: http://www.stormrecovery.ny.gov/funding-portal
[15] Source: New York State Homes and Community Renewal, December 5th, 2014.
[16] Communications with New York State Housing Trust Fund, December 2014.
[17] Low and Moderate Income Census Tracts were determined to be substantially impacted if more than 100 units have FEMA-verified loss. A more detailed demographic analysis of these low- and moderate- income areas, including statistics on race and ethnicity, and poverty rates, are provided in Appendix A of APA6.
[18] New York State Homes and Community Renewal (NYSHCR). *Manufactured Home Park Program*, last modified September 21, 2010. http://www.nyshcr.org/programs/manufacturedhomes/
[19] Luciano, P, Baker, D., Hamshaw, K. and Riegler, N. *Report on the Viability and Disaster Resilience of Mobile Home Ownership and Parks*, Vermont: Department of Housing & Community Development, December 2013. http://accd.vermont.gov/sites/accd/files/Documents/strongcommunities/housing/mobile-home-viability-report.pdf
[20] Genz, R. "Why Advocates Need to Rethink Manufactured Housing", *Housing Policy Debate*, Volume 12, Issue 2, 2001: pp. 393-414. http://www.innovations.harvard.edu/sites/default/files/hpd_1202_genz.pdf
[21] Genz, R. "Why Advocates Need to Rethink Manufactured Housing", *Housing Policy Debate*, Volume 12, Issue 2, 2001: pp. 393-414. http://www.innovations.harvard.edu/sites/default/files/hpd_1202_genz.pdf
[22] Genz, R. "Why Advocates Need to Rethink Manufactured Housing", *Housing Policy Debate*, Volume 12, Issue 2, 2001: pp. 393-414. http://www.innovations.harvard.edu/sites/default/files/hpd_1202_genz.pdf

[23] Greer, J. and Levin, E. *Federal Policy Brief - Creating Wealth Opportunities through Resident Ownership of Manufactured Home Communities*. Corporation for Enterprise Development, June 2014. http://cfed.org/assets/pdfs/Policy_Brief_-_Wealth_Building_in_Manufactured_Home_Communities.pdf

[24] Corporation for Enterprise Development. *Manufactured Housing: Building Wealth At Home*. Corporation for Enterprise Development Fact File, September 2013. http://cfed.org/assets/pdfs/Fact_File_-_Manufactured_Housing.pdf

[25] Genz, R. "Why Advocates Need to Rethink Manufactured Housing", *Housing Policy Debate*, Volume 12, Issue 2, 2001: pp. 393-414. http://www.innovations.harvard.edu/sites/default/files/hpd_1202_genz.pdf

[26] Eric S. Blake, Todd B. Kimberlain, Robert J. Berg, John P. Cangialosi, John L. Beven II, National Hurricane Center, *Tropical Cyclone Report, Hurricane Sandy*, February 12, 2013, retrieved January 21, 2014. http://www.nhc.noaa.gov/data/tcr/AL182012_Sandy.pdf

[27] Guy Carpenter, *Post-Sandy: Damage Survey*, October 2013, retrieved January 15, 2014, http://www.guycarp.com/content/dam/guycarp/en/documents/dynamic-content/2013%20Oct%20Post-Sandy%20Damage%20Survey%20Publish.pdf

[28] APA 6 used a broad measure of business impact by estimating the number of businesses in flooded census tracts determined to be impacted (Based on Dun and Bradstreet 2012 business data overlaid with FEMA Flood Inundation Files April 23, 2013). In this analysis, the State uses more nuanced measures to more accurately reflect the estimated business impact.

[29] *Economic Impact of Hurricane Sandy – Potential Economic Activity Lost and Gained in New Jersey and New York.* Prepared by the U.S. Department of Commerce, Economics and Statistics Administration, Office of the Chief Economist, September, 2013. Available online at: http://www.esa.doc.gov/sites/default/files/reports/documents/sandyfinal101713.pdf. Analysis includes 13 counties (including all five in New York City).

[30] Senate Bipartisan Task Force on Hurricane Sandy Recovery, *Preliminary Response and Recovery Report*, February 2013.

[31] A Census Block smallest geographic Census area; as an example, there are over 350,000 Census Blocks as of the 2010 Census. For more see: https://www.census.gov/geo/maps-data/data/tallies/census_block_tally.html. Census Tracts are larger areas, designed to have between 2,500-8,000 residents each. For more see: *Census Tracts and Block Numbering Areas*, available at: https://www.census.gov/geo/maps-data/data/tallies/census_block_tally.html

[32] FEMA Sandy Flood Inundation File April 18, 2013.

[33] Business locations, revenue and employees from Dun and Bradstreet 2013. Profit is assumed at 7.2% of revenue during two-week duration. For the purposes of this calculation, the definition of a small business is one with fewer than 100 employees.

[34] The only change in Table 17 is replacing the "Annual Revenue" with annual revenue for small businesses. APA 6 used the annual revenue for ALL businesses.

[35] Utilizing data collected by the New York State Department of Financial Services from private insurers making up over 95% of insurance market in areas affected by Superstorm Sandy. These data, current as of October 2013 indicates that in State's most impacted counties (outside of New York City) 5,806 business interruption claims were received by insurers.

[36] U.S. Department of Commerce, Economics and Statistics Administration, Office of the Chief Economist, *Economic Impact of Hurricane Sandy*, September 2013. Available online at http://www.esa.doc.gov/sites/default/files/reports/documents/sandyfinal101713.pdf.

[37] Identified by their NAICS industry code.

[38] Brian Patrick Eha, "Six Months after Hurricane Sandy, Many Businesses Still Struggle to recover," *Entrepreneur* online, April 29, 2013, retrieved January 27, 2014, http://www.entrepreneur.com/article/226520.

[39] As in previous notices, HUD advises in the most recent allocation methodology for calculating unmet need that since debris removal and emergency protective measures have already taken place, there is no gap in funding. The State has funded these activities using CDBG-DR funding. However, for the purposes of this unmet need analysis, we ignore categories A and B for determining damage and the funding gap.

[40] That total was subsequently cut by almost $545 million due to sequestration: http://www.fta.dot.gov/newsroom/news_releases/12286_15760.html

[41] http://www.fta.dot.gov/15138_16223.html, retrieved December 11, 2014.

[42] *Coastal Resiliency and Water Quality in Nassau and Suffolk Counties: Recommended Actions and a Proposed Path Forward*. New York State Department of Environmental Conservation and other New York State Agencies and Governments. October 28, 2014. Available at: http://www.lisser.us/lireportoct14.pdf.

[43] *Suffolk County Comprehensive Water Resources Management Plan*. Suffolk County Government. January 2014. Available at: http://suffolkcountyny.gov/Portals/17/Reports/SC%20Comprehensive%20Water%20Resources%20Management%20Plan%20Executive_Summary.pdf.

[44] Applicant numbers confirmed by Alex Zablocki (GOSR), Lauretta Fischer (Suffolk County), Kay Shaw (Town of East Hampton), and Luke McKay (Peconic Land Trust).

[45] https://www.gpo.gov/fdsys/pkg/FR-2015-07-24/pdf/2015-18159.pdf

[46] https://www.gsa.gov/portal/content/102886?_sm_au_=iVV41qQk1QF7M4J5#FTRAmendmentsFederalRegister

[47] https://www.gsa.gov/portal/content/104877

[48] As set out in the November 18, 2013 FRN (FR–5696–N–06) p. 69107

[49] *Coastal Resiliency and Water Quality in Nassau and Suffolk Counties: Recommended Actions and a Proposed Path Forward.* New York State Department of Environmental Conservation and other New York State Agencies and Governments. October 28, 2014. Available at: http://www.lisser.us/lireportoct14.pdf.

[50] U.S. Department of Housing and Urban Development, State Community Development Block Grant Program: Guide to National Objectives and Eligible Activities for State CDBG Program lists eligible types of Rehabilitation assistance including (**Water and sewer—**Costs of connecting existing residential structures to water distribution lines or local sewer collection lines, or installing wells, septic tanks, septic fields for individual houses, as well as replacing any of the above. 2-30)

[51] http://www.nyc.gov/html/sirr/downloads/pdf/final_report/Ch3_Coastal_FINAL_singles.pdf

[52] https://stormrecovery.ny.gov/sites/default/files/uploads/coastal_and_social_resiliency_initiatives__tottenville_draft_scope.pdf

[53] https://stormrecovery.ny.gov/sites/default/files/uploads/Coastal%20and%20Social%20Resiliency%20Initiatives%20-%20Tottenville%20FINAL%20SCOPE%20and%20RTC_1.pdf

[54] https://www.newyorkharborschool.org/crew/new-york-harbor-foundation/

[55] https://www.hud.gov/sites/documents/HSREBUILDINGSTRATEGY.PDF
[56] http://nvlpubs.nist.gov/nistpubs/specialpublications/NIST.SP.1190v1.pdf
[57] http://reports.weforum.org/global-risks-2013/
[58] http://www.unisdr.org/2014/campaign-cities/Resilience%20Scorecard%20V1.5.pdf
[59] https://www.rockefellerfoundation.org/report/city-resilience-framework/
[60] http://www.governor.ny.gov/sites/governor.ny.gov/files/archive/assets/documents/NYS2100.pdf
[61] http://www.dec.ny.gov/docs/administration_pdf/slrtffinalrep.pdf
[62] http://nysrise.org
[63] https://www.hud.gov/sites/documents/HSREBUILDINGSTRATEGY.PDF
[64] http://nvlpubs.nist.gov/nistpubs/specialpublications/NIST.SP.1190v1.pdf
[65] http://reports.weforum.org/global-risks-2013/
[66] http://www.unisdr.org/2014/campaign-cities/Resilience%20Scorecard%20V1.5.pdf
[67] https://www.rockefellerfoundation.org/report/city-resilience-framework/
[68] http://www.governor.ny.gov/sites/governor.ny.gov/files/archive/assets/documents/NYS2100.pdf
[69] http://www.dec.ny.gov/docs/administration_pdf/slrtffinalrep.pdf
[70] http://nysrise.org
[71] https://stormrecovery.ny.gov/sites/default/files/crp/community/documents/MOU-Tottenville%20Dune.pdf
[72]https://stormrecovery.ny.gov/sites/default/files/uploads/coastal_and_social_resiliency_initiatives_-_tottenville_draft_scope.pdf
[73]https://stormrecovery.ny.gov/sites/default/files/uploads/Coastal%20and%20Social%20Resiliency%20Initiatives%20-%20Tottenville%20FINAL%20SCOPE%20and%20RTC_1.pdf