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THE STATE OF NEW YORK

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT NATIONAL DISASTER RESILIENCE COMPETITION

PHASE 2 APPLICATION



REIMAGINING
RESILIENCE
OCTOBER 27, 2015

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The image features a large silhouette of the Statue of Liberty, which is filled with a dense word cloud. The words are in various shades of blue and green, and include terms such as: 'PARTICIPATORY', 'SHIP', 'ITERATIVE', 'COMPREHENSIVE', 'INVESTED', 'PLAN', 'HOUSTIC', 'COMMUNITY', 'BASED', 'SCALABLE', 'REPLICABLE', 'PREPAREDNESS', 'MITIGATION', 'PROTECTION', 'RESPONSE', 'STEWARDSHIP', 'PRESERVATION', 'INNOVATIVE', 'ENGAGEMENT', 'SUSTAINABLE', 'RESILIENT', 'COMMITMENT', 'PARTNERSHIP', 'RECOVERY', 'PREVENTION', 'COMPREHENSIVE', 'INVESTED', 'PLAN', 'HOUSTIC', 'COMMUNITY', 'BASED', 'SCALABLE', 'REPLICABLE', 'PREPAREDNESS', 'MITIGATION', 'PROTECTION', 'RESPONSE', 'STEWARDSHIP', 'PRESERVATION', 'INNOVATIVE', 'ENGAGEMENT', 'SUSTAINABLE', 'RESILIENT', 'COMMITMENT', 'PARTNERSHIP', 'RECOVERY', 'PREVENTION'. The background is a bright blue sky with scattered white clouds. In the bottom left corner, the text 'REIMAGINING RESILIENCE' is written in large, bold, yellow-orange letters, with 'OCTOBER 27, 2015' in smaller, dark blue letters below it.

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Exhibit A Executive Summary
New York State
ExhibitAExecutiveSummary_NYS.pdf

New York State (the State) is committed to implementing a comprehensive and community-driven approach to disaster recovery with the goal of making vulnerable populations more resilient to acute shocks, including extreme coastal and riverine flooding events, as well as chronic stresses like climate change, economic instability, and environmental degradation. The State believes this is best achieved through an integrated approach rooted in addressing and leveraging the interconnectedness of systems and by investing in transformative, scalable interventions with multiple benefits. The projects and programs proposed in this application aim to support a resilient recovery by enhancing the physical, economic, social, and environmental resilience of the Empire State's coastal and riverine communities.

Reimagining Resilience, the State's Phase 2 application to the National Disaster Resiliency Competition (NDRC), builds upon ongoing resiliency efforts, while incorporating newly-understood risks, lessons learned from existing NY Rising programs, and iterative stakeholder involvement. The Governor's Office of Storm Recovery (GOSR), established by Governor Andrew M. Cuomo after Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee, is spearheading the development of this application on behalf of the State.

Reimagining Resilience is a targeted strategy that focuses on reducing the remaining Unmet Recovery Need (URN) in housing, infrastructure, and economic revitalization within Most Impacted and Distressed (MID) Target Areas (Target Area). The State has reframed and updated the Target Areas proposed in Phase 1 to include the following counties: Broome, Orange, Greene, Nassau, Rockland, Schoharie, Suffolk, Tioga, Ulster, Westchester, as well as the five counties of New York City (NYC). In the 10 non-NYC counties, the State has estimated more than \$3.5 billion in housing URN and almost \$2.2 billion in infrastructure URN. In response to these needs, this application proposes two projects and four programs, which enhance the resilience of vulnerable communities impacted by coastal and riverine flooding and further threatened by climate change. The first set of

proposals will create protections for highly-vulnerable, low- and moderate- income (LMI) residents of public housing and manufactured home communities:

- Manufactured Home Community Resiliency Pilot Program
- Public Housing Resiliency Pilot Project

The second group of proposals is aimed at increasing the resilience of infrastructure, upgrading it to withstand changing conditions—many exacerbated by climate change—by right-sizing culverts, bridges, and dams, and upgrading the Bay Park Sewage Treatment Plant:

- Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program
- Right-Sizing Bridges Resiliency Program
- Right-Sizing Critical Dams Resiliency Project
- Nassau County Outfall Pipe and Bay Resiliency Project

The estimated total cost of these programs is \$865,009,610. After leveraging federal, State, local, and private funds, the CDBG-NDR request, as outlined in this proposal, is \$469,939,679. These proposed projects and programs reflect insights from the State’s ongoing recovery and resiliency efforts. They target system weaknesses and pockets of vulnerability that require additional investment to address unmet recovery and resiliency needs.

In developing this application, GOSR has consulted with State agencies, county governments, academic institutions, advocacy groups, and other stakeholders. It is partnering with the NYS Department of Environmental Conservation (DEC), the NYS Department of Transportation (DOT), the NYS Division of Homes and Community Renewal (HCR), and the NYS Office of Parks, Recreation and Historic Preservation (Parks), along with the Binghamton Public Housing Authority (PHA), Freeport PHA, Hempstead PHA, Long Beach PHA, Enterprise Community Partners, Opportunity Long Island, Cornell University’s NYS Water Resource Institute, The Nature Conservancy (TNC), and

Nassau County to leverage technical capacity, expertise, and in some instances, project funds. In addition, the proposed projects and programs are supported by commitments of leverage from various sources, including the Catskill Watershed Corporation (CWC), Community Preservation Corporation (CPC), Enterprise Community Investments, Inc., Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program Funds, FEMA Public Assistance (PA) Funds, Georgica Greene Ventures LLC, the Leviticus Alternative Fund, the NYS Environmental Facilities Corporation (EFC), and the Palisades Interstate Park Commission. The proposals outlined here present innovative, replicable, and scalable resiliency interventions designed to reduce the impacts of coastal and riverine flooding in the State’s most impacted communities and position the State as a leader in recovery, resiliency, and revitalization.

Project	CDBG-NDR Request	Leveraged Funds	Partner(s) and Leverage Sources(s)
Manufactured Home Community Resiliency Pilot	\$ 48,974,461	\$ 21,000,000	NYS Department of Homes and Community (HCR) Renewal Housing Finance Agency; Community Preservation Corporation (CPC); Leviticus Alternative Fund

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Public Housing Resiliency Pilot	\$ 35,800,000	\$ 31,986,000	NYS Department of Homes and Community (HCR) Renewal Housing Finance Agency; Binghamton Public Housing Authority (PHA), Freeport PHA; Hempstead PHA; Long Beach PHA; Enterprise Community Partners; Opportunity Long Island; Enterprise
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			Community Investment, Inc.; Freeport Developer Deferred Fee, Georgica Greene Ventures LLC; FEMA Public Assistance Funding
Right-Sizing Culverts and Restoring Natural Floodplains Resiliency	\$ 89,950,968	\$ 15,735,750	NYS Department of Environmental Conservation (DEC); Catskill Watershed Corporation; Cornell University's New York State Water Resources Institute; Local Match Commitment
Right-Sizing Bridges Resiliency	\$ 100,000,000	\$ 11,110,000	NYS Department of Transportation (DOT)
Right-Sizing Critical Dams Resiliency	\$ 44,590,500	\$ 4,960,000	NYS Parks Recreation and Historic Preservation (Parks); Palisades Interstate Park Commission
Nassau County Outfall Pipe and Bay Resiliency	\$ 150,623,750	\$ 299,376,250	Nassau County; Nassau County Capital Fund; NYS Environmental Facilities Corporation Storm Mitigation Loan Program; FEMA Hazard Mitigation Grant Program Funding
Total	\$ 469,939,679	\$ 384,168,000	

Exhibit B Threshold Requirements
New York State
ExhibitBThresholdReq_NYS.pdf

Eligible Applicant: As per the June 22, 2015, invitation from the U.S. Department of Housing and Urban Development (HUD), New York State is an Eligible Applicant to Phase 2 of the National Disaster Resilience Competition (NDRC). This is noted in the Crosswalk Checklist (Appendix J) in Attachment H. Partner Letters and Partner Agreements, which demonstrate a commitment to work collaboratively throughout the entirety of the grant, are included in Attachment A. This document is the sole application being submitted to this competition by the eligible applicant, the State.

Eligible County: The proposed CDBG-NDR activities benefit HUD-declared Most Impacted and Distressed (MID) counties impacted by a 2011, 2012, or 2013 presidentially-declared major disaster, as detailed in NOFA Appendix B.

Most Impacted and Distressed Target Areas: The State has established the following 10 counties as Target Areas that are HUD-recognized MID in NOFA Appendix B and have Unmet Recovery Needs (URN) in excess of the thresholds established in NOFA Appendix G: Broome, Greene, Nassau, Orange, Rockland, Schoharie, Suffolk, Tioga, Ulster, and Westchester. The State is designating the entirety of each MID county as a Target Area for one or more of the State's proposed projects and programs. The areas primarily benefitting from the proposed projects and programs are MID related to the effects of the Qualified Disaster(s) and have URN; however, the proposed projects and programs are scalable and replicable outside of these areas. The State also recognizes Bronx, Kings, New York, Queens, and Richmond as MID counties proposed in the New York City (NYC) NDRC application ([Source 1](#)). See the "Most Impacted and Distressed Target Areas Analysis" section below for a comprehensive URN analysis, and Exhibit D for a URN breakdown by Target Area.

Eligible Activity: Each proposed CDBG-NDR activity is an eligible activity, as outlined in Appendix A and under Section 105 of the Housing and Community Development Act (HCDA). Eligible activities proposed include Public Facilities and Improvements, HCDA 105(a)(2) (Right-

Sizing Culverts and Restoring Natural Floodplains Resiliency Program, Right-Sizing Bridges Resiliency Program, Right-Sizing Critical Dams Resiliency Project, Nassau County Outfall Pipe and Bay Resiliency Project); Clearance, Rehabilitation, Reconstruction, and Construction of Buildings and Improvements, HCDA 105(a)(4) (Manufactured Home Community Resiliency Pilot Program, Public Housing Resiliency Pilot Project); Public Services, HCDA 105(a)(8) (Public Housing Resiliency Pilot Project); Acquisition of Real Property HCDA 105(a)(1) (Manufactured Home Community Resiliency Pilot Program); and Planning, HCDA 105(a)(12) (Manufactured Home Community Resiliency Pilot Program, Public Housing Resiliency Pilot Project, Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program, Right-Sizing Bridges Resiliency Program, Right-Sizing Critical Dams Resiliency Project, Nassau County Outfall Pipe and Bay Resiliency Project).

Resilience Incorporated: All proposed CDBG-NDR activities will improve the resilience of one or more Target Area(s) to hazards, including coastal and riverine flooding and the effects of climate change. The Manufactured Home Community Resiliency Pilot Program will increase the resiliency of a vulnerable population—the residents of manufactured home communities—by implementing site and housing improvements to minimize vulnerability to flooding, or by voluntarily relocating residents out of the floodplain. The Public Housing Resiliency Pilot Project will be focused on protecting and enhancing the lives of residents of storm-impacted public housing developments, demonstrating a range of resilient interventions and reducing exposure to future disasters. The Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program, the Right-Sizing Bridges Resiliency Program, and the Right-Sizing Critical Dams Resiliency Project will all improve the resiliency of critical infrastructure to flooding and increasingly frequent extreme weather events, and will also decrease the impact of riverine flooding on neighboring communities as a result of right-sizing. The Nassau County Outfall Pipe and Bay Resiliency Project will dramatically improve water quality, restoring a natural

buffer of wetlands that will protect communities from storm surge during extreme weather events.

Meet a National Objective: The State will ensure that all proposed activities meet a National Objective. Proposals expected to meet the Low- and Moderate-Income (LMI) National Objective are the Manufactured Home Community Resiliency Pilot Project and Public Housing Resiliency Pilot Project. For the Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program and the Right-Sizing Bridges Resiliency Program, LMI communities and service areas will be prioritized in the selection process. If not LMI, these proposals will meet the Urgent Need National Objective. The Right-Sizing Critical Dams Resiliency Project, and the Nassau County Outfall Pipe and Bay Resiliency Project are expected to meet the Urgent Need National Objective.

Overall Benefit: The State understands that overall, over 50 percent of CDBG-NDR funds must be used to meet the National Objective of benefiting LMI income individuals, unless a waiver is requested and received. The State will request a waiver; see Attachment G.

Establish Tie Back: Each Target Area has a demonstrated tie-back to one or more of the Qualified Disaster(s) (Hurricane Irene DR-4020, Tropical Storm Lee DR-4031, and Superstorm Sandy DR-4085). As demonstrated in Exhibit E, each proposed project will have a tie-back to the Qualified Disaster(s) and each proposed program will require that all projects selected for implementation have a tie back to the Qualified Disaster(s). As Storm impacts are further outlined in Attachment F, Exhibit D, and Exhibit E.

Benefit-Cost Analysis (BCA): Although the NOFA only requires an applicant to complete a BCA for Covered Projects, the State has completed a BCA for each proposed project and program (see Attachment F). Each project and program has a BCA over one, and the proposals have an overall Benefit-Cost Ratio of 3.8.

CDBG-NDR Certifications: The State commits to all certifications, as outlined in Appendix F of

the NOFA and certified in Attachment C. On August 27, 2015, the State formally requested to consult with the Sandy Regional Infrastructure Resilience Coordination (SRIRC) Group as part of the State's application to the NDRC. On September 1, 2015, HUD confirmed receipt of this request from the State and noted that the State had fulfilled its obligation under the requirements of the NOFA (see Attachment D).

Most Impacted and Distressed Target Areas Analysis: The State has identified economic development, infrastructure, and/or housing URN in accordance with NOFA Appendix G thresholds across the ten County-level Target Areas identified above. The URN for each Target Area is described and quantified in Exhibit D. A MID URN Checklist for each Target Area is in Attachment I. Since submitting a Phase 1 application, the State further analyzed sources of URN in each MID county. This updated narrative analysis of URN uses the best available quantitative data and is informed by robust stakeholder engagement at the County level.

Economic Revitalization URN: In Phase 1, the State identified continuing economic revitalization URN as a result of the Qualified Disaster(s) in the Target Areas of Broome County, Greene County, and Tioga County that exceeds the threshold of 5 businesses outlined in NOFA Appendix G. The State cannot address this continuing economic revitalization URN with existing resources because the current CDBG-DR allocation is fully programmed and, in fact, insufficient to meet demand for existing programs. The State successfully established economic revitalization URN for Greene County in Phase 1, and reconfirmed data and methodology as part of this Phase 2 URN analysis.

Housing URN – Updated: The State's Action Plan Amendment 8 (APA 8) established at least \$3.598 billion in housing URN as a result of the Qualified Disasters in the 10 Target Areas and \$4.969 billion in housing URN throughout the State. After accounting for GOSR's awards and allocations to

date for CDBG-DR housing programs, there is a remaining housing URN of \$2.254 billion in the 10 Target Areas.

The State's current CDBG-DR funding allocation and other available funding sources are inadequate for addressing housing URN in the 10 Target Areas. In accordance with the thresholds outlined in NOFA Appendix G—which allow for the consideration of extra costs to repair homes resiliently through elevation and other measures—the State is demonstrating housing URN due to oversubscription of specific measures within its single- and multi-family housing programs. The following housing URN analysis establishes the number of households not currently served by existing programs due to inadequate funding. The State considers the demonstrated program oversubscription to be a waiting list for the purposes of this competition only.

As noted above, the entirety of the State's allocation of CDBG-DR funding is committed to existing programs and cannot be reprogrammed to address this URN. The monitoring and case management costs of these programs further limit the State's ability to address URN. In the State's Single-Family Homeowner Program, applicants have demonstrated a high-demand, in excess of funds budgeted by the State, for costly resiliency measures, including elevation (\$234.6 million in URN), bulkhead repairs (\$83.1 million in URN), and other optional mitigation measures (\$22.2 million in URN). In addition, over 2,250 applicants are seeking a "clarification" to increase their award, further contributing to URN. Beyond the single-family homeowner program, the State has over \$41 million of URN in its Multi-Family/Affordable Housing Fund Program, and \$36 million in URN in its Public Housing Assistance Relief Program. The State has also identified three manufactured home communities in need of assistance.

Single Family Homeowner Program: The State's Single Family Homeowner Program funds home repairs and mandatory elevation, as well as optional elevation, bulkhead repair/replacement, and

other resiliency measures for the owners of single-family homes. The entire program budget, as per APA 8, is \$1.056 billion. As of September 2015, the State had awarded \$915,942,950 to approximately 11,500 program applicants. This figure includes over \$500 million in resiliency measures. The remainder of this program budget will be needed to cover program delivery costs associated with compliantly administering and monitoring awarded and anticipated grants. Therefore, the State's Single Family Homeowner Program is oversubscribed—and the State cannot address this budget gap with its current CDBG-DR allocation because all funds have been programmed to address other unmet recovery needs. More specifically, as outlined below, the State has identified significant URN for optional elevation, bulkhead repair/replacement, and other resiliency measures constituting a waiting list for the purposes of this competition only, in accordance with NOFA Appendix G thresholds.

Elevations: The Single Family Homeowner Program funds required home elevation for applicants with substantially damaged properties located in the 100-year floodplain and optional home elevation for non-substantially damaged properties located in the 100-year floodplain. The State has identified approximately 1,540 required elevations in the Target Areas—and has awarded \$200.2 million to date, based on a \$130,000 per unit cost estimate. The State has committed to funding all required elevations in the Target Areas. The State has also identified approximately 2,370 optional elevation applicants in the Target Areas—and has awarded approximately \$308.1 million to date, based on the same \$130,000 per unit cost estimate. However, more recent data analysis considering the high cost nature of the region estimates a per unit elevation cost of approximately \$190,000—resulting in a URN of \$60,000 per unit—totaling \$234.6 million in housing URN. The State considers applicants with unfunded elevation costs to be a waiting list, demonstrating housing URN in accordance with NOFA Appendix G thresholds.

Bulkhead Repair/Replacement: The Single Family Homeowner Program allows for optional

bulkhead repair and replacement. The State has identified over 1,400 applicants within the Target Areas. Programmatic data indicates that bulkheads in these areas will likely cost more than \$65,000 per intervention, which amounts to a total need of almost \$91.39 million for this resiliency measure. The State has awarded \$8.3 million to date, leaving an URN of \$83.1 million. The State considers the remaining applicants to be on a waiting list, demonstrating housing URN in accordance with NOFA Appendix G thresholds.

Other Mitigation Measures: The Single Family Homeowner Program funds optional resiliency measures, including flood vents and roof strapping. The State has identified almost 2,400 applicants in the Target Areas, with an estimated average request of \$10,000 for these optional measures, totaling nearly \$24 million in need. The State has awarded approximately \$1.8 million to date, leaving an URN of \$22.2 million. The State considers the remaining applicants to be on a waiting list, demonstrating housing URN in accordance with NOFA Appendix G thresholds.

Clarifications: In addition to these resiliency measures, applicants have the ability seek an increase in their repair grant award through a clarification in their award for reasons such as scope, hardship, or appealing another aspect of their award. In total, the State has over 2,250 open clarification requests from applicants at the time of this application. Given that the State's current CDBG-DR allocation is exhausted, without additional resources, the State considers all of these applicants to be on a waiting list, representing URN ranging from \$25 to \$50 million.

Multi-Family/Affordable Housing Fund: The State operates the Affordable Housing Fund (AHF) to support the preservation and development of affordable housing in storm-impacted communities outside of NYC. In APA 8, the State established a total program budget of approximately \$100 million—\$20 million of which was allocated to fund a loan program through the Community Preservation Corporation to finance small rental housing projects in storm-damaged communities. The

remaining \$80 million in the AHF was set aside for affordable housing development as part of the recovery process, and the State issued two Requests For Proposal (RFP) in 2014. The State received RFP responses totaling \$101 million in qualified project proposals—and GOSR ultimately awarded \$68.5 million to eleven winning projects. Six applicants, requesting a total of \$32.5 million in CDBG-DR funds, did not receive funding because they were unable to secure the necessary tax credit allocations or capital financing from HCR, which finances the majority of each AHF project. Therefore there is \$11.5 million remaining in the AHF program budget—and a program oversubscription of \$21 million.

For context, these six unfunded applicants proposed a total of 268 housing units; of these, 98 units were proposed in the Target Area of Ulster County and 28 were proposed in the Target Area of Suffolk County. It is also important to note that the State did not receive any RFP responses proposing projects in Nassau County, and therefore has not had the opportunity to through the AHF to address the substantial unmet recovery needs of the LMI rental population in Nassau County. Evidence from other agencies and stakeholders suggests that the lack of responses is due in part to the particularly high cost of land acquisition in Nassau County and the lack of available sites.

In addition to the \$21 million oversubscription identified via the RFP process noted above, GOSR and its financing partner, the New York State Housing Finance Agency (HFA), are aware of several new projects that are likely to require at least \$20 million in CDBG-DR funds. In total, the State has identified approximately \$41 million in URN, beyond the existing \$11.5 million remaining in the AHF program budget. For the purposes of this competition, this oversubscription constitutes a waiting list.

Public Housing Assistance Relief Program (PHARP): PHARP addresses the unmet recovery needs of Public Housing Authorities (PHAs) outside of NYC. The Program is currently funded through the AHF, as well as through the Non-Federal Share Match Program. As noted in prior Action Plans,

the State has committed \$10 million to PHARP for eligible PHA repair and rehabilitation. Since APA 8, the State has identified approximately \$36 million in additional resiliency measures for PHAs. Due to the AHF oversubscription described above, as well as the full commitment of GOSR's other storm recovery programs, there is little chance there will be additional AHF funds to support PHARP. Therefore, the State considers this \$36 million housing URN for both Broome and Nassau County. The proposed CDBG-NDR Public Housing Resiliency Pilot Project will fund rebuilding and recovery efforts in Freeport, Long Beach, Hempstead PHAs (all in Nassau County), and Binghamton PHA (Broome County). These efforts are detailed in Exhibit E. The State considers the remaining applicants to be on a waiting list, demonstrating housing URN in accordance with the NOFA Appendix G thresholds.

Manufactured Home Communities: As part of the NY Rising Community Reconstruction (NYRCR) Program, the State identified at least three manufactured home communities that were inundated during a Qualified Disaster in the Orange County and Rockland County MID Target Areas. Two communities, containing a combined 175 homes, were identified as the sites of "Additional Resiliency Recommendation" projects in the NYRCR Final Plan for the Village of Washingtonville (Orange County) ([Source 2](#)) and one, containing 114 homes was identified in the NYRCR Final Plan for Stony Point (Rockland County) ([Source 3](#)). While recovery efforts have continued, the State has identified significant resiliency needs associated with these sites. As such, these resiliency needs demonstrate housing URN for both Orange County and Rockland County.

Infrastructure URN – Updated: All of the State's 10 Target Areas have permanent public infrastructure (i.e. FEMA Category C to G) that has not yet been repaired due to inadequate resources, and for which no CDBG-DR funding has been identified in an Action Plan. In Phase 1, the State identified and quantified permanent damage that remains unrepaired as a result of inadequate resources

(i.e. FEMA PA work in Category C to G) in the counties of Nassau, Suffolk, and Westchester. In Phase 2, the State further identifies and establishes almost \$2.2 billion in additional and continuing infrastructure URN as a result of the Qualified Disaster(s) in all 10 of the Target Areas, exceeding the threshold of \$400,000 per Target Area outlined in NOFA Appendix G. The State cannot address this continuing infrastructure URN with existing resources, as the current CDBG-DR allocation is fully programmed and insufficient to meet demand as evidenced by FEMA Public Assistance (PA) and FEMA Hazard Mitigation Grant Funding Program (HMGP) data. In both cases, the State demonstrates that both programs are significantly oversubscribed and presents them as evidence of continuing infrastructure URN.

FEMA PA: The FEMA PA Program provides funds for State and local emergency response needs, and also the repair and rebuilding of public infrastructure damaged by a presidentially-declared event. To aid recovery, GOSR instituted the FEMA PA Match Program where CDBG-DR is used to cover required non-federal share, or “local match,” for municipalities in the FEMA PA program. As per APA 8, GOSR has committed \$508 million to this program. As per [APA 11](#), the State is dedicating \$27.5 million of this \$508 million to PWs related to the Long Island Power Authority (LIPA). As of this application, the State has identified demand for this program equal to or greater than this commitment. Specifically, the State has identified additional URN from applicants who began a FEMA PA application for permanent damage (i.e. Category C to G), but did not complete the opt-in process to participate in the now fully committed GOSR match program. Without the required match, these projects remain unfunded and constitute infrastructure URN. The State identified over 260 applicants who began the process of opting in, but for various reasons (capacity, administrative time, or staff turnover, etc.), never formally opted-in to the program, despite repeated outreach by the State. In three Target Areas—Nassau, Suffolk, and Westchester— one or more of these demonstrated, in aggregate,

permanent damage in excess of the \$400,000 threshold. As the State's FEMA PA match program is fully programmed, the State does not have additional CDBG-DR funding sources available to address this URN. As such, these Target Areas meet the threshold identified by in NOFA Appendix G (\$400,000 in permanent damage).

HMGP: FEMA provides HMGP funds to states, when authorized under presidentially declared disasters, to boost resiliency, mitigate the risks of loss and damage associated with future disasters, and reduce hardship. The funds require local match, and are currently administered by GOSR and the NYS Department of Homeland Security (DHSES). The State must submit projects to FEMA for approval, and GOSR and DHSES work together to identify and prioritize projects.

When the State announced the HMGP grant cycle, it received almost \$6 billion in qualified applications from 1,200 eligible applicants. The State, however, currently has only roughly \$1.43 billion of HMGP funds, which it is currently programming. The State has received almost \$2.2 billion in applications from over 700 applicants in the 10 Targets Areas that the State is identifying as unfunded. Because the amount of HMGP funding available is insufficient to support these projects, the State is identifying this as an infrastructure URN. In every Target Area, this URN exceeds the minimum threshold of \$400,000 in permanent unfunded infrastructure repair and resiliency need (see Exhibit D).

Exhibit C Capacity
New York State
ExhibitCCapacity_NYS.pdf

New York State (State) has a demonstrated capacity to implement the proposed CDBG-NDRC activities. In particular, the Governor's Office of Storm Recovery (GOSR), which is successfully overseeing the State's recovery programs since 2013, is well-positioned to coordinate the implementation of the portfolio of National Disaster Resilience Competition (NDRC) proposals. As demonstrated by GOSR's past and current work, the agency believes that deep engagement of State agencies, public and private partners, and community stakeholders is central to advancing a regional, cross-sectional approach to addressing unmet recovery needs (URN). For each project or program discussed in this application, GOSR has supplemented its own capacity by partnering with public and private organizations that have the acumen and expertise to ensure the successful delivery of the proposed projects and programs. GOSR staff prepared this application, after extensive collaboration with state agencies, eligible county and municipal governments, and other stakeholders.

General Administrative Capacity: GOSR is spearheading the development of this NDRC application and is well-prepared to manage any additional disaster recovery funding received from the U.S. Department of Housing and Urban Development (HUD). In June 2013, GOSR was established by Governor Andrew M. Cuomo to maximize the coordination of federally-funded recovery and resilience efforts in storm-affected areas throughout the State. GOSR manages the State's \$4.4 billion allocation of Community Disaster Block Grant – Disaster Recovery (CDBG-DR) funding authorized by the Disaster Relief Appropriations Act, 2013 (Public Law 113-2, approved January 29, 2013), administering a variety of programs relating to housing recovery, economic development, infrastructure, and community reconstruction in disaster-impacted areas. Formed under the auspices of the New York State Housing Trust Fund Corporation (HTFC), a public benefit corporation and subsidiary agency of New York State Homes and Community Renewal (HCR), GOSR has demonstrated proficiency in disbursing CDBG-DR dollars in a timely, compliant manner, and has drawn nearly \$1.6 billion as of September 2015.

GOSR has learned from the development and administration of recovery programs and is fully prepared to implement the additional resiliency programs and projects proposed herein, both directly and through partners. GOSR consists of 137 full-time staff, manages an array of contractors, operates financial and procurement management systems that are compliant with all State and federal requirements, and has put in place fully functioning quality assurance, quality control, and internal control systems.

GOSR has established several models for rapid program design and launch, from utilizing contractors and vendors to entering into subrecipient agreements with eligible agency, municipal, and non-profit partners. As of October 2015, GOSR has executed 101 contracts with vendors and 96 subrecipient agreements. In the NDRC and in the State's ongoing recovery efforts, GOSR is prepared to leverage its institutional knowledge and lead the implementation of additional recovery and resiliency projects, developing innovative financing strategies that streamline recovery at the local level and maximize available CDBG-DR funds. The experience of GOSR's program and support teams—and the processes and tools they have developed—will be utilized along with partner resources to implement the proposed CDBG-NDR activities.

While the capacity of GOSR team members is often cross-cutting, the work and experience of specific GOSR programs will serve as a particular asset in the implementation of proposed CDBG-NDR activities. For example, the NY Rising Single Family Homeowner Program involves the closely controlled provision of direct assistance to homeowners for repairing, reconstructing, and increasing the resiliency of storm-impacted homes. As of October 2015, the Program has disbursed \$582 million to homeowners—this case management experience will be invaluable in guiding the provision of direct assistance to manufactured home residents through the proposed Manufactured Home Community Resiliency Pilot Program. GOSR's NY Rising Multi-Family Affordable Housing Program is designed to

both preserve publicly-assisted affordable housing and other larger rental housing developments and to create new affordable housing developments. This experience will be directly applied toward the implementation of the proposed Public Housing Resiliency Pilot Project. GOSR's NY Rising Community Reconstruction (NYRCR) Program has extensive community planning and engagement expertise—more than 600 New Yorkers served on the NYRCR's Planning Committees, and the program held more than 650 Planning Committee meetings, as well as 250 larger scale public engagement events—that will be put to work in the planning phase of the proposed Manufactured Home Community Resiliency Pilot Program, as well as experience in making and managing grants for infrastructure projects similar to the proposed Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program. GOSR's Infrastructure team has experience and capacity needed to support the Right-Sizing Bridges Program, Right-Sizing Critical Dams Resiliency Project, and the Nassau County Outfall Pipe and Bay Resiliency Project.

GOSR has integrated outcomes tracking within its project management frameworks and maintains dedicated research and analysis staff to determine and evaluate the impacts of projects and programs. GOSR's staff also has extensive experience in developing the programs described above to meet and exceed various diversity requirements (M/WBE, EEO, Section 3, etc.), as well as in tracking quantitative data to analyze racial and economic disparities. As announced at the State's Fourth Annual M/WBE Forum held in Albany on October 1-2, 2015, GOSR engages more than 70 M/WBE vendors and requires all of its sub-subrecipients to adhere to the State's M/WBE goals. GOSR's support teams—including communications, finance, legal, and policy—have the proven capacity to manage the critical administrative and internal control requirements of large-scale, federally funded recovery and resiliency activities. GOSR's Finance team is responsible for the disbursement of over \$4 billion in HUD funds, and is skilled in budgeting, invoice review, and financial controls. The Communications team engages a

vast array of stakeholders and is committed to advancing transparency and accountability. GOSR's Policy and Legal teams are experienced with HUD laws, regulations, and rules. GOSR's fully staffed Procurement and Contract Administration (PCA) team within its legal department is experienced in procuring and managing contractors in compliance with all relevant federal and state regulations. Finally, GOSR's Monitoring and Compliance team works across GOSR programs to ensure that all activity complies with federal and state regulations, and is complemented by an Internal Auditor. All of these functions will support the implementation of CDBG-NDR activities, as they currently do for the State's CDBG-DR award. As required by the Disaster Relief Appropriations Act 2013, the State has submitted and continues to update as needed the Certification of Proficient Controls, Processes, and Procedures to HUD, which certify to the GOSR's ability to properly manage federal funds.

This application has been prepared by GOSR staff, after extensive collaboration with state agencies, eligible county and municipal governments, and other stakeholders.

Technical Capacity: GOSR possesses in-house capacity, through staff and contractors, in many of the areas indicated as critical in the NDRC NOFA and relevant to the State's proposed CDBG-NDR activities. GOSR's NYRCR team includes urban planners, and is experienced with the management of State, city, and regional planning activities. The NYRCR Program's planning phase entailed the development of 66 community resiliency plans through an innovative participatory process. That effort was supported by contributions from the NYS Department of State's (DOS) Office of Planning and Development, which has experience in coastal and riverine planning and has developed models that incorporate rigorous, science-based predictions of the effects of climate change such as sea-level rise.

The NYRCR and Infrastructure teams are also experienced in the management of project design, and with the integration of green infrastructure techniques into planning and development. This experience is best seen through the teams' implementation of NYRCR projects and the State's two Rebuild by Design

(RBD) projects, as well as a host of standalone infrastructure projects. The NYRCR and Infrastructure teams also have a range of expertise integrating risk, impact, and vulnerability assessments—particularly those pertaining to sea-level rise and climate change—into planning and project development. These teams have also relied upon their own experience and the experience of sister agencies like the NYS Dormitory Authority to conduct technical assessments and value engineering. This experience and expertise, complemented by the experience and expertise of Partners that is detailed below, will support *all* of the proposed CDBG-NDR activities.

GOSR's Housing teams have extensive experience in acquisition and disposition of real estate, honed through the design and implementation of the State's Buyout and Acquisition Programs, which have purchased over 838 properties, totaling over \$330 million (as of October 2015). These teams, as well as GOSR's Affordable Housing Program, are familiar with accessing operating and investment capital and with leveraged and mixed financing. They are also familiar with the reconstruction of traditional family homes, manufactured housing, and multi-family housing and the Uniform Relocation Act (URA), all of which will be relevant to the implementation of proposed CDBG-NDR activities.

GOSR's Bureau of Environmental Review and Assessment, a cross-cutting legal team, is deeply experienced with issues of floodplain management, pre-development site preparation, remediation of brownfields, and all aspects of environmental review. GOSR is also experienced in performing cost- and price-analyses to determine the cost-reasonableness and cost-benefit ratio of projects and actions in compliance with federal regulations. Both GOSR and its parent agency HCR, have extensive experience working with civil rights and fair housing issues including outreach, technical assistance, data analysis, and HUD reporting to address racial or economic disparities.

The experience discussed above demonstrates that GOSR possesses the overall technical capacity to implement successful recovery and resiliency projects. Below are details of GOSR's experience and the

experience of its Partners. These experiences will enable the State to successfully implement the proposed CDBG-NDR activities.

Manufactured Home Community Resiliency Pilot Program: GOSR's NYRCR team is prepared to provide the planning capacity necessary to engage residents of manufactured home communities, and GOSR's Housing teams are experienced in case management and repair and replacement of manufactured homes. Should a relocation effort involve the development of new housing, GOSR's affordable housing program team also possesses experience in this area. GOSR's Partner in this effort is HCR's NYS Housing Finance Agency's (HFA) Manufactured Home Cooperative Fund Program (MHCFP), a revolving loan program that provides financial and technical resources to facilitate cooperative ownership of and improvements to, manufactured home communities.

Public Housing Resiliency Pilot Project: GOSR's Partners in this project include HCR, the principal agency responsible for funding affordable housing in the State, Enterprise Community Partners, a leading authority on resiliency measures for multi-family affordable housing, Opportunities Long Island, an expert practitioner of workforce development, and the four local public housing authorities (PHA) that will implement the projects and are experienced in using public funds to build and/or manage affordable and public housing. Another partner is Georgica Green Ventures, LLC (GGV), which will act as the developer for one of the properties. GGV has experience as a principal in the development and management of affordable multi-family real estate projects throughout the State, and has worked on all phases of the acquisition, development and operation of affordable housing communities.

Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program: GOSR's Partners in this program are the NYS Department of Environmental Conservation (DEC), The Nature Conservancy (TNC), and Cornell University's NYS Water Resources Institute. DEC employs an experienced staff of environmental scientists and conservation professionals and, through its Water Quality Improvement

Project Program (WQIP), which completed its 12th round of funding and has specific experience in making grants to local government to right-size culverts and restore floodplains. TNC and Cornell have experience in on-the-ground assessment, development of prioritization approach, and development of web-based tools for a wide audience.

Right-Sizing Bridges Resiliency Program: GOSR's NYRCR and Infrastructure teams are experienced in making and managing CDBG-DR grants to support infrastructure resiliency. In addition, the NYS Department of Transportation (DOT), GOSR's principal Partner in this effort, is expert in the design and replacement of bridges, and is in the process of replacing hundreds of bridges around the State to increase their resiliency to extreme weather. DOT is prepared to provide executive and staff support to manage all aspects of the program.

Right-Sizing Critical Dams Resiliency Project: The State will partner with the NYS Office of Parks, Recreation, and Historic Preservation (Parks). The dams that will be improved through this project are located in two State parks. Parks is responsible for the maintenance of these assets, and has the resources to manage the capital construction required for this project. Parks manages its own capital projects from inception, planning, environmental review, design, permitting, bidding, budgeting, finance, construction and project close-out. Capital projects are managed through a combination of internal agency staff and term-consultants/contractors that provide project-specific support. The Right-Sizing Critical Dams Resiliency Project would be overseen by Executive Staff for Lead Recovery. In addition, the Palisades Interstate Park Commission (PIPC) will be a Partner on this project, as it operates State parks and historic sites that make up the State's Palisades Region. PIPC operates parks in both New York and New Jersey.

Nassau County Outfall Pipe and Bay Resiliency Project: GOSR's Infrastructure program will leverage experience in implementing large-scale CDBG-DR infrastructure projects, including two major

wastewater projects on Long Island, repairs and resiliency improvements to the Bay Park Sewage Treatment Plant in Nassau County, and the extension of sewers through the Suffolk Water Quality Initiative Program. Nassau County, the State's Partner that will implement this project, is fully capable of undertaking a major infrastructure project. The project also benefits from the support of a substantial stakeholder coalition with a range of expertise.

Community Engagement and Inclusiveness: GOSR has significant capacity and experience in community engagement, including a proven record of regional collaboration, community engagement and outreach, coordination with stakeholders on complex projects, and extensive consultation in the development of this NDRC application. Moreover, GOSR is well equipped to facilitate regional collaboration. In order to implement Infrastructure and NYRCR projects, GOSR has entered into subrecipient agreements with local governments and eligible not-for-profits across Long Island, the New York City Metropolitan Area, and Upstate New York. This network of local partners is now well-versed in implementing recovery and resiliency projects using CDBG-DR funds, can be expanded as necessary, and stands ready to assist GOSR and its partners in the implementation of CDBG-NDR activities. In particular, the City and State of New York maintain a critically productive working relationship in the administration of recovery programs. The City is a subrecipient to the State and will work with local NYRCR Planning Committees to implement several projects developed through the NYRCR Program. The State and City also coordinate closely to ensure alignment of the State's Acquisition for Redevelopment program.

The State has placed particular emphasis on community engagement and outreach in its recovery and rebuilding efforts, with a strong focus on those most impacted by past disasters and those most vulnerable to future threats. The New York State Citizen Participation Plan (CPP) seeks to engage the community in particular low- and moderate-income (LMI) individuals, individuals with limited English

proficiency (LEP), and the elderly. Moreover, two of GOSR's programs were specifically designed to directly engage community members in storm-impacted localities in their recovery, rebuilding, and resilience: the NYRCR Program, which engaged more than 600 New Yorkers in an intensive participatory planning effort to develop and implement nearly \$700 million in community-generated recovery and resiliency projects, and the RBD Program, which is engaging Citizens Advisory Committees (CAC) to advise the design and implementation of the State's *Living with the Bay* in Nassau County and *Living Breakwaters* in Staten Island project. Each CAC has up to 20 members and applications were open to the public. These efforts offer replicable and scalable engagement models that will be used to help achieve the proposed CDBG-NDR activities.

As is described at greater length in Attachment D, building upon the outreach conducted in Phase 1, GOSR sustained and intensified consultation activities with the eligible counties and with the NDRC State Interagency Working Group. GOSR engaged Declared and MID counties, as well as eligible Tribal Areas, to discuss application development strategy, gather new data, and solicit project and programs for consideration. GOSR convened a meeting in Albany with the NDRC State Interagency Working Group to frame this application approach and gather substantial feedback via an online survey. Many of these agencies were instrumental in shaping the projects and programs proposed here.

Management Structure: GOSR's management structure, detailed in the organizational chart at the end of this section, is robust and will enable the successful implementation of recovery and resiliency efforts. No major positions are vacant, and the implementation of the proposed CDBG-NDR activities will not require any additions to key management personnel. GOSR is led by Interim Executive Director Lisa Bova-Hiatt. Ms. Bova-Hiatt previously served as GOSR's General Counsel, on the leadership team assembled by Mayor Michael Bloomberg to address emergency and long-term needs on Staten Island in the aftermath of Superstorm Sandy, as a Legislative Representative in the NYC Office of Legislative

Affairs, and as the Deputy Chief of the Tax and Bankruptcy Litigation Division of the NYC Law Department.

GOSR's existing program staff, working in concert with the partners the State has identified in this application, has the capacity and the management expertise to deliver the proposed CDBG-NDR activities. GOSR's Affordable Housing team (led by GOSR's Director of Affordable Housing and under the supervision of the Managing Director of Housing), will manage the implementation of the Public Housing Resiliency Pilot Project. The NYRCR team (led by the Managing Director of the NYRCR Program) and the Housing team (led by the Managing Director of Housing) will work together to implement the Manufactured Home Community Resiliency Pilot Program. GOSR's Infrastructure and NYRCR teams, led by the Managing Directors of the Infrastructure and NYRCR Programs, will manage grants of funding to two New York state agencies (DOT and Parks), ensuring performance and compliance with all federal and state regulations, as well as subrecipient agreements with local governments and counties in the Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program. Finally, GOSR's Infrastructure team, under the leadership of the Managing Director of the Infrastructure Program, will manage the grant of CDBG-NDR funds to Nassau County, which will manage the Nassau County Outfall Pipe and Bay Resiliency Project.

GOSR's key Partners each possess the management capacity to directly manage proposed CDBG-NDR activities, or to successfully support activity delivery. All Partners are fully aware of the competition requirements, have been deeply involved in proposal design and development, and have an invested interest in their respective programs and projects. Although unlikely, if any Partner fails to act or is untimely, the State has the capacity and adaptability to identify alternative means of implementation.

The Public Housing Resiliency Pilot Project will be implemented by four PHAs. The Hempstead, Binghamton, and Long Beach PHAs are each structured with an Executive Director, who oversees the effort, including coordination with GOSR and government agencies, a Deputy Executive Director, who serves as project manager and oversee architectural design and engineering, project scoping, contracting, and construction management, and a Facilities Engineer, to oversee day-to-day construction activity, with construction management support as needed. The Freeport PHA has entered into a Joint Venture Agreement with GGV, which will secure project financing, engage an architect and engineer, and handle project scoping, contracting and construction management.

The Manufactured Home Community Resiliency Pilot Program will be supported by a partner, the MHCFFP. This Partner will provide leverage and technical assistance, and is led by a Vice President for Special Projects. Since its inception in 1988, the MHCFFP has developed eighteen manufactured home cooperative communities with 1,287 units with a total development cost of nearly \$30 million, with MHCFFP mortgages totaling more than \$21 million.

The Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program will be led by DEC. Key program leadership will consist of the NYC Watershed and Hurricane Sandy Recovery Coordinator, the Chief of the Procurement, Communication, and Partnership Section of the Division of Water, and a Biologist in the Division of Fish, Wildlife and Marine Resources. DEC will be supported by staff from The Nature Conservancy and Cornell's NYS Water Resources Institute

The Right-Sizing Bridges Program will be led by DOT. Executive and senior management support will be provided the Executive Deputy Commissioner/ Chief Engineer, Chief Financial Officer and Assistant Commissioner, Policy and Planning Division, and the Director, Office of Structures. The Director, Structures Design, will oversee the selected bridge projects. Other senior level staff will be available, as needed, to provide support in key areas determinations.

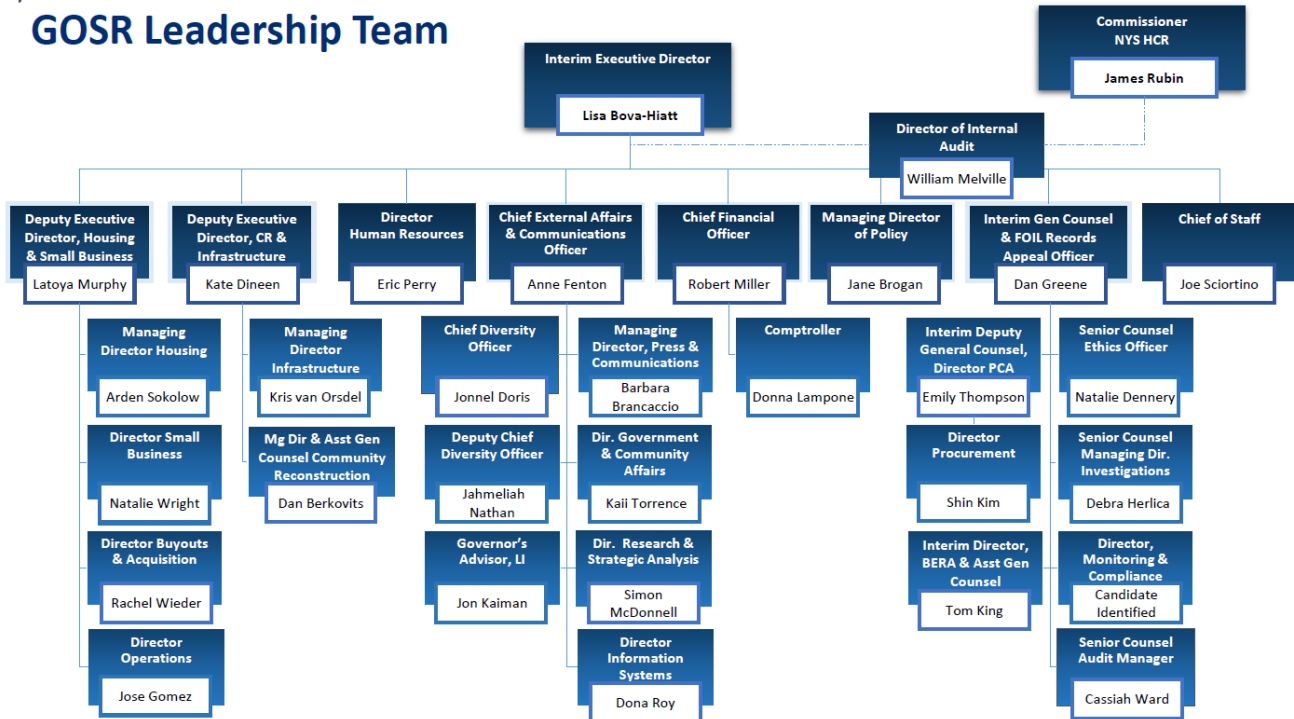
The Right-Sizing Critical Dams Resiliency Project will be led by Parks, under the leadership of the Director of Operations, who serves as Executive Staff Lead for Recovery. This effort will be supported by a Special Funding Program Manager, staff of Regional and Executive Directors, a team of regional Capital Facilities Managers, central engineering and technical staff, and staff from PIPC.

The Nassau County Outfall Pipe and Bay Resiliency Project will be implemented by Nassau County's Department of Public Works (DPW). The Commissioner oversees a staff of 800 employees, is in charge of the design and construction of county buildings, parks and grounds, drains and drainage structures, sewers, sewage disposal plants, water system, and other structures in the nature of public works. The Chief Deputy of Public Works is responsible for oversight of the Sandy-impacted Bay Park Wastewater Treatment Plant.

References: The State offers two references that speak to GOSR's management capacity and its experience doing work similar to the proposed activities.

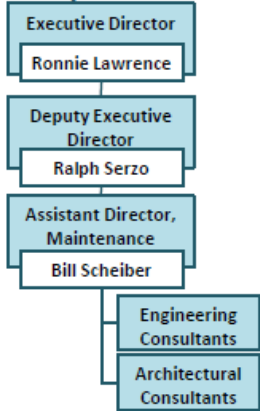
1. James S. Rubin, Commissioner of New York State Homes and Community Renewal.
james.rubin@nyshcr.org, 212-872-0302, 641 Lexington Avenue New York, NY 10022.
2. Additionally, the State's affordable housing work was highlighted in an article published on *LongIsland.com*: <<http://www.longisland.com/news/09-30-15/cuomo-build-affordable-housing-storm-damaged-areas.html>>.

GOSR Leadership Team

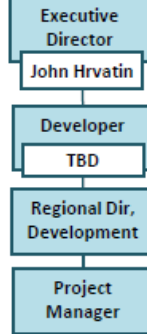


Key Partner Management

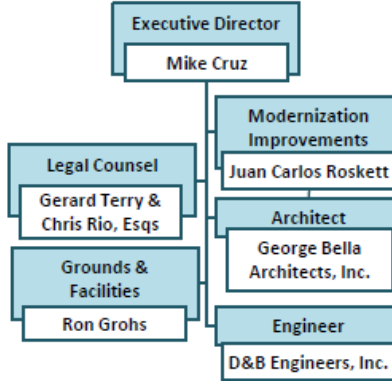
Hempstead PHA



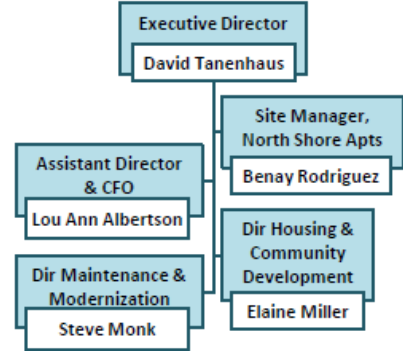
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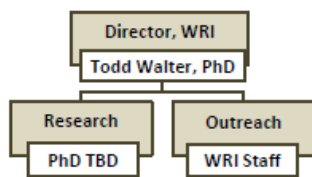
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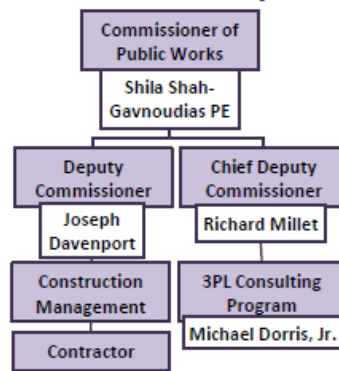
Binghamton PHA



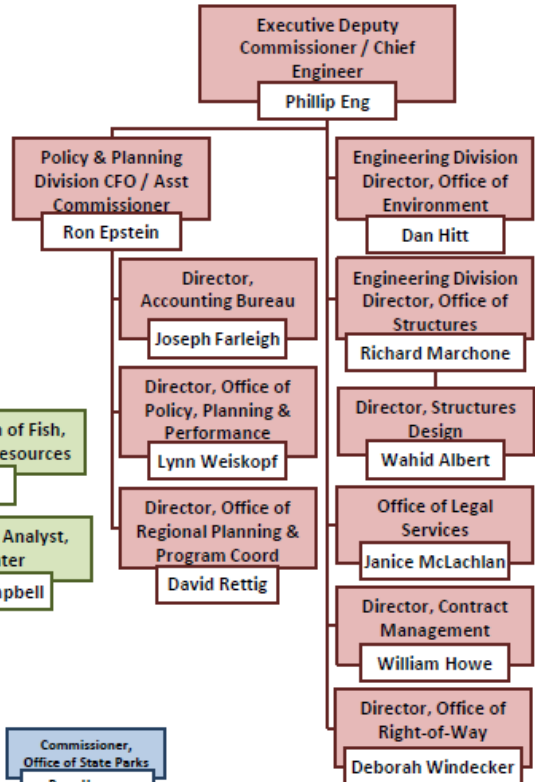
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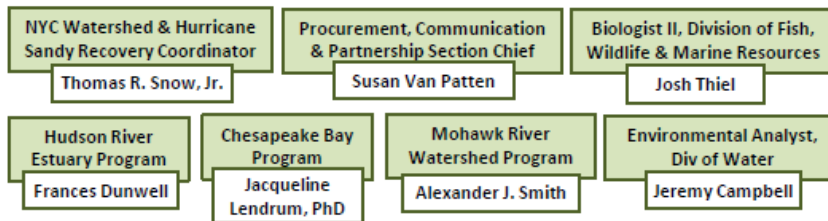
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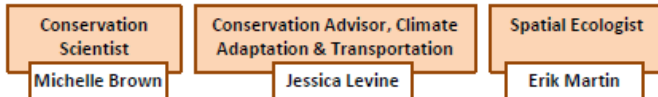
DOT



DEC



TNC



HCR



Parks

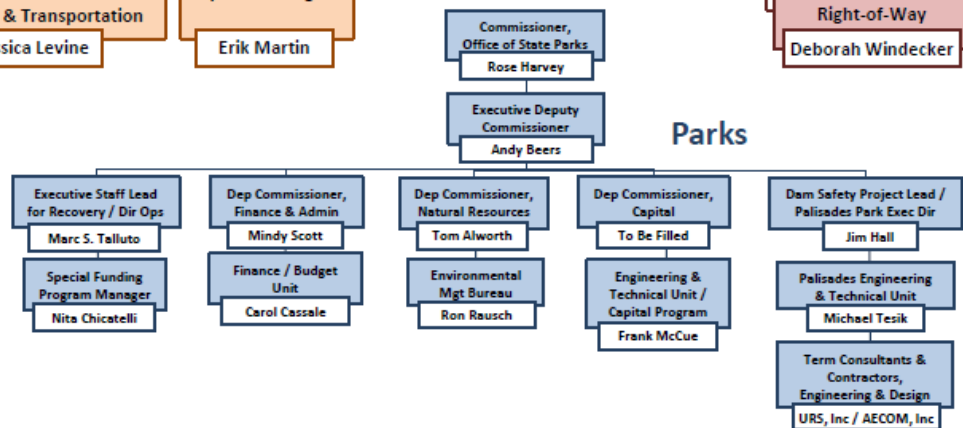


Exhibit D Need
New York State
ExhibitDNeed_NYS.pdf

New York State was granted \$4.4 billion in Community Development Block Grant – Disaster Recovery (CDBG-DR) funds to address the unmet recovery and resiliency needs of impacted and distressed communities following the impacts of Hurricane Irene, Tropical Storm Lee, and Superstorm Sandy. The entirety of this funding has been programmed for expenditure under the State’s Housing, Infrastructure, Community Reconstruction, and Small Business programs. In fact, the State’s programs are vastly oversubscribed, and, as outlined in Action Plan Amendment 8 (APA 8), the State’s unmet recovery needs (URN) greatly outweigh its CDBG-DR allocation. In this Exhibit, the State identifies unmet recovery and resiliency needs within the State’s 10 Most Impacted and Distressed (MID) counties outside of New York City. These Target Areas comprise 13 percent of the State’s landmass, and 26 percent of its population. In addition to these Target Areas, the State’s proposed projects and programs have regional implications and the State is committed to working with New York City and New Jersey, as outlined in the Consultation Summary in Attachment D and Partner Letters and Partner Agreements in Attachment A. Moreover, all proposed projects and programs are scalable beyond the Target Areas, and based on the successes of these activities, the State may consider expanding these activities. Leverage funding commitments comprise almost 82 percent of funding requested, and all leveraged funds are discussed in detail in Exhibits E and F. All Target Areas have unmet resiliency needs, as described herein and in Exhibit B. This Exhibit closes by examining demographic information for the Target Areas and by describing appropriate approaches to addressing these URN.

Unmet Recovery Need and Target Geography

The State is identifying the following MID Counties as Target Areas: Broome, Greene, Nassau, Orange, Rockland, Schoharie, Suffolk, Tioga, Ulster, and Westchester. These Target Areas continue to have significant URN in the areas of *Economic Revitalization*, *Housing*, and *Infrastructure*. The State

also recognizes Bronx, Kings, New York, Queens, and Richmond as MID-URN counties proposed in NYC's NDRC application ([Source 1](#)).

The State is proposing the following projects and programs: (1) *Manufactured Home Community Resiliency Pilot Program*; (2) *Public Housing Resiliency Pilot Project (four Public Housing Authorities (PHAs), five sites)*; (3) *Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program*; (4) *Right-Sizing Bridges Resiliency Program*; (5) *Right-Sizing Critical Dams Resiliency Project (seven sites)*; (6) *Nassau County Outfall Pipe and Bay Resiliency Project (one site)*. The table below shows each project or program proposed as part of this NDRC application, with the target geographies, and URN.

County Target Area, Project/Program, and Unmet Recovery Need

County Target Area	Project/Program						URN: Economic	URN:	URN:
	1	2	3	4	5	6	Revitalization	Housing	Infrastructure
Broome	✓	✓	✓	✓				✓	✓
Greene	✓		✓	✓			✓	✓	✓
Nassau		✓				✓		✓	✓
Orange	✓		✓	✓	✓			✓	✓
Rockland	✓		✓	✓	✓			✓	✓
Schoharie	✓		✓	✓				✓	✓
Suffolk	✓							✓	✓
Tioga	✓		✓	✓				✓	✓
Ulster	✓		✓	✓	✓			✓	✓
Westchester	✓		✓	✓				✓	✓

Each program and project is described separately in Exhibit E and in Attachment F, responding to NOFA Appendix H. All supporting documentation for each Target Area (including MID-URN Summary Checklist A) is submitted as Attachment I. Damage estimates for Low- and Moderate-Income (LMI) households are from the State's APA 8 (Appendix, Table 3; available at [Source 2](#)). Each county below was designated by HUD as a MID area as a result of a Qualified Disaster(s), as outlined in NOFA Appendix B. For NDRC Phase 2, the State designates the entirety of each county as a Target Area. In each case, "remaining URN" reflects unmet recovery need identified *beyond* the State's CDBG-DR programs, which are fully committed.

Target Area: Broome County; Declared Disaster: Lee; URN: Housing, Infrastructure

Housing URN: Over 5,100 owner-occupied (2,400 LMI) units and 1,800 (1,499 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is estimated at \$379 million. The State identifies \$2.34 million in total housing resilience measures, of which, at least \$720,000 of elevation and \$60,000 in other mitigation measures is unbudgeted. The State identifies additional URN as a result of its interactions with the Binghamton Housing Authority (BHA): \$3.8 million in URN from damages associated with Tropical Storm Lee, impacting 222 BHA housing units with no source of funding identified. The State considers this list of housing units to be a waiting list.

Infrastructure URN: There are HMGP applications for 21 projects worth \$4.4 million with no identified source of funding available. All backup data are in Attachment F.

Target Area: Greene County; Declared Disasters: Irene, Sandy; URN: Economic Revitalization (Phase 1), Housing, Infrastructure

Economic Revitalization URN: In the State's Phase 1 NDRC application, the State identified seven businesses in the NY Rising Small Business Recovery Program showing continued unmet recovery need

with no source of funding available or indicated. This surpasses the minimum criteria of five businesses. HUD accepted the State's determination of economic revitalization URN for Greene County in Phase 1.

Housing URN: Over 870 owner-occupied (408 LMI) units and 150 (113 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is estimated at \$59 million. The State identifies \$1.02 million in total housing resilience measures, of which, at least \$300,000 of elevation and \$70,000 in other resilience measures is unbudgeted. This Target Area has 23 damaged homes for which the owner has applied to the State for funding of resiliency measures and for which the State has not approved funding. The State considers this list of housing units to be a waiting list.

Infrastructure URN: There are HMGP applications for 14 projects worth \$10.2 million with no identified source of funding available. All backup data are in Attachment F.

Target Area: Nassau County; Declared Disasters: Irene, Sandy; URN: Housing, Infrastructure

Housing URN: Over 39,200 owner-occupied (14,400 LMI) units and 10,200 (7,300 LMI) renter-occupied units were damaged in the target area. Remaining URN is estimated at \$1.08 billion. The State identifies \$523 million in total housing resilience measures, of which, approximately \$142 million of elevation, at least \$56.7 million of bulkhead repair and replacement, and \$15.8 in other mitigation measures is unbudgeted. This Target Area has over 4,000 damaged homes for which the owner has applied to the State for funding of resiliency measures and which the State has not approved funding. The State considers this list of housing units to be a waiting list. The State also identifies additional URN at the Town of Hempstead Housing Authority (TOHHA), Long Beach Housing Authority (LBHA), and Freeport Housing Authority (FHA). In total, the State identifies \$7.8 million and \$6.6 million in URN at TOHHA's Mill River (104 units) and Inwood Gardens (50 units), and \$11.8 million in URN at LBHA's Long Beach Channel (108 units). It also identifies an additional \$5.5 million in critical resiliency

measures at FHA's Moxey Rigby Homes (100 units). These measures are unfunded. The State considers this list of housing units to be a waiting list.

Infrastructure URN: In Phase 1, the State showed infrastructure URN for this Target Area using a FEMA Project Worksheet associated with the Long Island Power Authority (LIPA) Vegetation Management Program, (PW: PA-02-NY-4085-PW-00367(3)). This URN analysis is updated for Phase 2 with FEMA PA information. The State identifies additional URN from applicants who began a FEMA PA application for permanent damage (i.e. Category C to G), but did not complete the opt-in process to participate in the now fully committed GOSR match program. Without the required match, these projects remain unfunded and constitute infrastructure URN. In this Target Area, 100 projects representing \$5.29 million in permanent damage were submitted by entities that did not opt-in, constituting a URN with no available funding source. All backup data are in Attachment F.

Target Area: Orange County; Declared Disasters: Sandy, Irene, Lee; URN: Housing,

Infrastructure

Housing URN: Over 5,100 owner-occupied (2,090 LMI) units and 350 (289 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is estimated at \$229 million. The State identifies \$495,000 in total housing resilience measures, of which, approximately \$120,000 of elevation, at least \$65,000 of bulkhead repair and replacement, and \$50,000 in other mitigation measures is unbudgeted. This Target Area has 14 damaged homes for which the owner has applied to the State for funding of resiliency measures and which the State has not approved funding. The State considers this list of housing unit to be a waiting list. In addition, as highlighted in Exhibit B, through the a NY Rising Community Reconstruction (NYRCR) Program, the State demonstrates URN for two manufactured home communities, containing 175 homes in this Target Area. Both communities were impacted by a Qualified Disaster and resiliency improvements for both communities were highlighted as "Additional

Resiliency Recommendations” in a NYRCR Plan. However, no source of funding has been identified for these resiliency improvements, demonstrating URN.

Infrastructure URN: There are HMGP applications for 78 projects worth \$142.9 million with no identified source of funding. All backup data are in Attachment F.

Target Area: Rockland County; Declared Disasters: Irene, Sandy; URN: Housing, Infrastructure

Housing URN: Over 2,100 owner-occupied (795 LMI) units and 1,400 (289 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is estimated at \$82 million. The State identifies \$6.61 million in total housing resilience measures of which, approximately \$1.92 million of elevation, at least \$390,000 of bulkhead repair and replacement, and \$140,000 in other mitigation measures is unbudgeted. This Target Area has 49 damaged homes for which the owner has applied to the State for funding of resiliency measures and which the State has not approved funding. The State considers this list of housing units to be a waiting list. In addition, as highlighted in Exhibit B, through the NYRCR program, the State demonstrates URN for one manufactured home community, containing 114 homes in this Target Area. This community was severely impacted by a Qualified Disaster and resiliency improvements for both communities were highlighted as “Additional Resiliency Recommendations” in an NYRCR Plan. However, no source of funding has been identified for these resiliency improvements, demonstrating URN.

Infrastructure URN: There are HMGP applications for 84 projects worth \$45.1 million with no identified source of funding. All backup data are in Attachment F.

Target Area: Schoharie County; Declared Disasters: Irene, Lee; URN: Housing, Infrastructure

Housing URN: Over 1,000 owner-occupied (535 LMI) units and 250 (202 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is \$56 million. The State identifies \$1.25 million in total housing resiliency measures, of which \$1.02 million of elevation and \$230,000 in other mitigation

measures is unbudgeted. The Target Area has 82 damaged homes for which the owner has applied to the State for funding of resiliency measures and which the State has not approved funding. The State considers this list of housing units to be a waiting list.

Infrastructure URN: There are HMGP applications for 22 projects worth \$23.2 million with no identified source of funding. All backup data are in Attachment F.

Target Area: Suffolk County; Declared Disasters: Irene, Sandy; URN: Housing, Infrastructure

Housing URN: Over 13,000 owner-occupied (5,617 LMI) units and 1,900 (1,507 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is \$35 million. The State identifies \$317 million in total housing resiliency measures, of which, approximately \$87 million of elevation, \$34 million in bulkhead repair and \$7.4 million in other mitigation measures is unbudgeted. The Target Area has over 2,000 damaged homes for which the owner has applied to the State for funding of resiliency measures and which the State has not approved funding. The State considers this list of housing units to be a waiting list. In addition, the State identifies one Multi-Family/Affordable Housing (AHF) program funding application that emerged through an RFP and is eligible for CDBG-DR funding, but did not receive the preponderance of funding from other sources required to move the project ahead. This application represents a total of 28 units in this Target Area. The State considers this list of housing units to be a waiting list for the purposes of this competition only.

Infrastructure URN: In Phase 1, the State showed *infrastructure* URN for this Target Area using a FEMA Project Worksheet associated with the LIPA Vegetation Management Program, (PW: PA-02-NY-4085-PW-00367(3)). The State updates its URN for Phase 2 with FEMA PA information. The State identifies additional URN from applicants who began a FEMA PA application for permanent damage (i.e. Category C to G), but did not complete the opt-in process to participate in the now fully committed GOSR match program. Without the required match, these projects remain unfunded and constitute

infrastructure URN. In In this Target Area, 82 projects representing \$959,000 in permanent damage were submitted by organizations that did not opt-in, demonstrating URN. All backup data are in Attachment F.

Target Area: Tioga County; Declared Disaster: Lee. URN: Housing, Infrastructure

Housing URN: Over 1,900 owner-occupied (408 LMI) units and 500 (113 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is \$123 million. The State identifies \$2.9 million in total housing resilience measures, of which, \$900,000 million of elevation and \$60,000 in other mitigation measures is unbudgeted. There are 21 damaged homes for which the owner has applied to the State for funding of resiliency measures and which the State has not approved funding. The State considers this list of housing units to be a waiting list._

Infrastructure URN: HMGP applications for 21 projects worth \$20.8 million with no identified source of funding available. All backup data are in Attachment F.

Target Area: Ulster County; Declared Disaster: Irene, Lee, Sandy; URN: Housing, Infrastructure

Housing URN: Over 2,300 owner-occupied (1,014 LMI) units and 300 (254 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is \$116 million. The State identifies \$489,000 in total housing resilience measures, of which, approximately \$120,000 of elevation, \$65,000 in bulkhead repair and \$120,000 in other mitigation measures is unbudgeted. The Target Area has 15 damaged homes for which the owner has applied to the State for funding of resiliency measures and which the State has not approved funding. The State considers this list of housing units to be a waiting list as a waiting list. In addition, the State identifies two AHF funding applications that emerged through a RFP and are eligible for CDBG-DR funding, but did not receive funding from other sources required to move the project ahead. These two applications represent a total of 98 units in this Target Area. The State considers this list of housing units to be a waiting list. Infrastructure URN: There are HMGP applications for 26

projects worth \$30.9 million for which it has no identified source of funding. All backup data are in Attachment F.

Target Area: Westchester County; Declared Disasters: Irene, Sandy; URN: Infrastructure Housing

URN: Over 2,700 owner-occupied (1,013 LMI) units and 250 (178 LMI) renter-occupied units were damaged in the Target Area. Remaining URN is \$99 million. The State identifies \$695,000 in total resilience measures, of which \$180,000 of elevation, \$65,000 in bulkhead repair and \$60,000 in other mitigation measures is unbudgeted. There are 20 damaged homes for which the owner has applied to the State for funding of resiliency measures and which the State has not approved funding. The State considers this list of housing units to be a waiting list.

Infrastructure URN: In Phase 1, the State demonstrated that Westchester County has incurred almost \$4 million dollars in permanent damage with no source of funding identified. The State identifies additional URN from applicants who began a FEMA PA application for permanent damage (i.e. Category C to G), but did not complete the opt-in process to participate in the now fully committed GOSR match program. Without the required match, these projects remain unfunded and constitute infrastructure URN. In this Target Area, 56 projects representing \$1.1 million in permanent damage were submitted by organizations that did not opt-in, well in excess of the threshold required. This represents URN with no available funding. All backup data are in Attachment F. **Target Area: New York City (five counties)** As in Phase 1, the State and NYC closely collaborated to identify and highlight URN for the five MID counties in NYC (Bronx, Kings, New York, Queens, and Richmond). The relevant URN are identified in NYC's Phase 2 NDRC application ([Source 3](#)).

Unmet Resilience Needs within Recovery Needs

The State proposes a portfolio of programs and projects to address the recovery and resiliency needs of the Target Areas above. For a detailed analysis on how this portfolio would have limited the impacts of the qualified disasters on the Target Areas, see Attachment F.

Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee caused extensive damage to New York communities. As noted in the State's APA 8 (approved by HUD, April 2015), outside of NYC, an estimated 80,878 owner-occupied homes and 16,943 occupied rental units were impacted. The cost to repair or replace damaged homes outside of NYC, including mitigation needs, was estimated to be \$7.20 billion. APA 8 estimated the mitigation needs for businesses with major to severe damage to be \$114.8 million, including businesses that incurred physical damage from the storms and businesses negatively impacted by the storms in need of mitigation assistance. Using the HUD allocation methodology, infrastructure unmet need was estimated in APA 8 at \$3.04 billion. However, the State has also updated its estimate of true unmet need, and through various new data sources, estimated the infrastructure unmet need to be \$13.99 billion.

Using New York State Department of Financial Services (DFS) data, the State estimates that 450,000 Sandy-related insurance claims (276,000 outside of NYC), excluding NFIP, were made within the Target Areas of Nassau, Orange, Rockland, Suffolk, and Westchester, and in NYC. Total loss incurred loss in this downstate region amounted to \$5.3 billion—\$2.3 billion outside of NYC.

In recognition of the staggering costs of recovering from these three disasters, plus the increased likelihood of extreme weather events occurring more frequently and becoming more costly in the future, the State is committed to investing in long-term resiliency improvements. The proposed programs and projects represent one portion of the State's vision for making its communities more resilient. The State is asking for \$469,955,312 in CDBG-NDR funds for all of the programs and projects to invest in the

resilience of Target Areas. Had these programs and projects been in place at the time of the qualified disasters, they would have averted significant impacts.

The State identified \$16.45 million in damage to public housing in Binghamton, Freeport, Long Beach, and the Town of Hempstead. At least \$10.67 million of that damage was to buildings proposed in the State's Public Housing Resiliency Pilot Project. The resilience measures proposed would have averted the majority of this \$16 million in damage. Because the projects will be built to at least the 100-year flood standard, accounting for increased sea level rise associated with climate change, the State is ensuring that future hazards are mitigated.

The State has identified \$1.6 billion in ecological damage to the Western Bays off the South Shore of Long Island. The proposed Nassau County Outfall Pipe and Bay Resiliency Project would have averted the majority of the \$1.6 billion in damage to the 231 acres of salt marsh and 2,173 acres of eelgrass. Because the outfall pipe will be built below the surface of the water (far enough into the ocean that tidal pumps will not be necessary for its function) and the plant it discharges from has a perimeter barrier built above the 500-year flood standard (accounting for increased sea level rise associated with climate change), the State is ensuring that future hazards will likely be mitigated.

Analysis of Investment in Resiliency Needed

If all of the State's proposed programs and projects are implemented, they will prevent approximately \$4.8 billion in economic, social, and environmental damages after mitigation over the estimated useful lifetimes of all of the State's proposed programs and projects (for more details, see Attachment F). The New York State Energy Research and Development Authority (NYSERDA) *ClimAID* report (2011), estimated that without adaptation, climate change costs in the State may approach \$10 billion annually by mid-century. In the same report, the costs of adaption to these risks and hazards, i.e. the general

amount of total investment in resilience necessary to appropriately benefit the State, are estimated at \$513 million annually (2010 dollars) ([Source 4](#)).

An analysis conducted by the SUNY Rockefeller Institute of Government in conjunction with the State estimates that a nearly \$800 million investment in the State's proposed programs and projects—\$469.96 million of which would be from CDGB-NDR funds—will produce almost 10,000 jobs per year of program or project implementation. The investment is expected to generate \$470 million in income, and a total economic output of \$1.427 billion over the implementation period.

Vulnerable Populations

Extreme weather and climate change often disproportionately impact vulnerable populations, including individuals with low- and moderate-income, limited English proficiency, functional needs, the elderly, or the isolated. The State is committed to implementing a comprehensive and community-driven approach to disaster recovery with the goal of making vulnerable populations more resilient to acute shocks, including extreme coastal and riverine flooding events, as well as chronic stresses like climate change, economic instability, and environmental degradation. The projects and programs proposed in this application will enhance the holistic resilience of vulnerable populations and communities in the State's Target Areas—and the State will continue to utilize existing recovery resources to serve and protect vulnerable New Yorkers.

According to the 2010 U.S. Census, there are 5.0 million people and 1.7 million households in the 10 Target Areas outside NYC. Using the American Community Survey (ACS) 2006-2010 (2014) HUD LMI Special Extract, there is a 34.4 percent LMI rate in these 10 Target Areas. In the 10 Target Areas outside of NYC, approximately 75,000 families are below the Federal poverty level.

There has been a marked decline in housing affordability across the State's 10 Target Areas. A 2014 analysis by the New York State Office of the State Comptroller (OSC) highlighted the decline in housing

affordability in the State since 2000 ([Source 5](#)). In seven out of the 10 MID areas, a majority of renters are paying rents above the “affordability threshold” (housing expenses at 30 percent of household income). In nine out of 10 MID areas, at least a quarter of renters were “severely burdened” (more than 50 percent of household income). Analysis conducted for APA 8 found that LMI households were significantly impacted by the Qualified Disasters. This was particularly true of renters; over 74.5 percent of all impacted rental units were occupied by LMI households and three quarters of rental units with major to severe damage were occupied by LMI households.

The ACS 2009-2013 estimates shows that approximately 10.2 percent of people five years or older in the 10 Target Areas outside of NYC have limited English proficiency. This compares to 8.6 percent nationwide. The 10 Target Areas outside of NYC have significant disabled populations. Approximately 470,000 people are living with disabilities (10 percent) relating to hearing, vision, cognitive difficulty, ambulatory difficulty, self-care difficulty, or independent living difficulty. The 2010 Census shows that the Target Areas also have substantial and growing elderly populations: 710,000 seniors (14.3 percent of the population) live in the 10 Target Areas outside of NYC. This population is increasing as Baby Boomers age.

According to the U.S. Bureau of Labor Statistics, the region is an economic powerhouse for the country. The 10 Target Areas outside of NYC accounted for 2.04 million employees and \$111 billion in total annual wages at 171,000 establishments. The population of these 10 Target Areas, especially those six downstate counties, will continue to grow and age, resulting in more people and assets in vulnerable areas ([Source 6](#)). Protecting the region’s population and economy against the risks of more frequent storms of greater intensity, sea level rise, and climate change is thus critical to ensuring the economic prosperity of the region and the U.S.

The projects and programs the State proposes in this application will significantly increase the resiliency of the vulnerable populations detailed above. For example, the proposed interventions for public housing and manufactured home residents will increase the resiliency of communities that are typically LMI and otherwise vulnerable. The State has identified at least 45 Public Housing Authority (PHA) buildings in the 100- and 500-year floodplain in the 10 MID counties. There are 32 manufactured home communities in the 100- and 500-year floodplain. The State's approach will better protect these communities from flooding and extreme weather events. The degree to which proposed projects avert harm to LMI and vulnerable populations will inform the selection of projects in the proposed program to right-size bridges and culverts, in addition to floodplains appropriate for restoration. More broadly, the proposed infrastructural right-sizing projects, including proposed critical dam work, would enhance resilience by protecting infrastructure, homes, and communities from flooding along streams and rivers. All of the proposed right-sizing and reinforcement efforts will reduce damage to adjacent and downstream communities. The proposed outfall pipe project will both increase the capacity of the infrastructure to absorb and respond to these events and enhance ecological resilience. The project will reduce, or even reverse, the deterioration of aquatic habitats. Secondary benefits will include additional flood protection for communities. For more, see Attachment F.

Factors that Enhance Resilience

Factors that enhance resilience include the State's commitment to better understand and respond to the effects of climate change. The State's *NYS 2100 Commission's* efforts inform all policymaking in this area. The State's leadership role in acknowledging the importance of climate change, exemplified by the signing of the Community Risk and Resiliency Act (CRRA) into law (see Exhibit G), will ensure that future decisions take climate change into account. Further, the State's existing capacity to implement recovery and resiliency improvements to communities as a CDBG-DR grantee—demonstrated by

GOSR's ongoing expenditure of funds in compliance with HUD requirements—will also enhance its ability to encourage resilience.

The State's coastal and riverine geography itself inhibits resilience. The State is especially vulnerable to climate change and sea level rise. In addition, the State recognizes the following as potential impediments to resiliency: the lack of resilient housing options for vulnerable populations, the high costs of land and housing in most of the Target Areas, limited public rights of way for facility improvements, aging infrastructure requiring costly maintenance, limited funding availability for resiliency improvements, and the difficulty of coordinating actions across multiple jurisdictions. The State is committed to overcoming these impediments as it continues to plan for resilience. See the NYC NDRC Phase 2 application for additional factors ([Source 7](#)).

Appropriate Approaches

The State's Phase 2 application showcases approaches that will simultaneously address the impacts of flooding—the primary effect of climate change on the Target Areas—while also promoting environmental sustainability, social equity, and economic development. This is in-line with the State's Phase 1 application, which highlighted the need to operationalize resiliency and to develop a systematic approach to resiliency by creating solutions to mitigate the physical threat of flooding, while also generating environmental, social, and economic co-benefits. In Phase 2, the State has created two sets of approaches: the first, protecting and enhancing affordable housing, and the second, fortifying critical infrastructure. The State believes that strategy will preserve, protect, and enhance vulnerable communities in the short-, medium-, and long-term.

Given that the damages sustained in the State's Target Areas were closely linked to riverine or coastal geographies, the State has identified that for the Target Areas in particular, and the greater region in general, the best program types to improve disaster recovery and resilience are those which minimize

the exposure of communities and public assets to inundation zones during flood or storm surge events. The best eligible activities were identified as those that eliminated inundation risk, followed by those that use some combination of engineered and administrative barriers to provide robust protection from inundation. The State contains 1,480 communities situated in flood-prone areas ([Source 8](#)) and places a high priority on moving people and assets out of risk areas or resiliently protecting those communities and assets, whenever appropriate. As a result, the State's approaches mitigate flood risk through the relocation of at-risk communities, improvement of infrastructure to ensure it is appropriate for flood peak flow volumes, construction and retrofit of robust and resilient housing stock, and the strengthening of natural barriers to storm surges.

Ineligible program types include those that do not tie back to the disasters that impacted the State. For example, with climate change, the State will be facing hotter days, but all three disasters were flooding-based; thus, all proposed interventions address coastal or riverine flooding. In addition, a truly resilient approach that addresses all of the State's needs would require more funds than are available through the NDRC. With this in mind, the State has focused on scalable and replicable interventions.

In preparing the portfolio of proposed projects and programs (see Exhibit E), extensive evidence and forecasts were sought to guide reconstruction and resiliency efforts. The State analyzed the 100-year and 500-year flood zones and concluded that a significant amount of the housing stock remained vulnerable. The State also analyzed high volume rainfall runoff into tributaries that feed swollen rivers, concluding that tackling flooding issues systematically—starting upstream—is an appropriate way to protect downstream communities and infrastructure. Analysis of past and projected storm surges allowed the State to identify engineered barriers needed to protect coastal communities now and in the future. The State also analyzed past and projected disruption to municipal infrastructure during flooding events, allowing the State to identify which risks to community safety and sanitation can be reduced. These

logical conclusions allow the State to build upon the systems-based approach to addressing the effects of climate change induced events on riverine and coastal communities described in the State's Phase 1 NDRC application.

Exhibit E Soundness of Approach
State of New York
ExhibitESoundApproach_NYS.pdf

More than 700,000 New Yorkers in 1,480 communities live in designated flood-prone areas ([Source 1](#)). Millions more work in, travel through, or enjoy recreation in areas at risk of riverine and coastal flooding or storm surge inundation. New York State's Phase 1 application to the National Disaster Resiliency Competition (NDRC) outlined a systems-based approach to increasing resilience in the State's Most Impacted and Distressed (MID) counties with Unmet Recovery Need (URN), referred to as the State's Target Areas. In this Phase 2 application, the State is proposing concrete steps to protect New Yorkers. These measures align with a systems-based framework of improving physical resiliency through actions that also promote ecological, economic, social well-being.

The State seeks funding to implement two sets of resilience-enhancing disaster recovery interventions. The first set protects and bolsters highly vulnerable low-income communities: the Manufactured Home Community Resiliency Pilot Program and the Public Housing Resiliency Pilot Project. The second set modernizes infrastructure to meet current and future demands in riverine and coastal areas, while improving ecosystem health: Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program; the Right-Sizing Bridges Resiliency Program; the Right-Sizing Critical Dams Resiliency Project, and the Nassau County Outfall and Bay Resiliency Project. Both sets of activities reflect insights from the State's ongoing recovery efforts, targeting system weaknesses and pockets of vulnerability that require additional investment to address unmet needs.

Manufactured Home Community Resiliency Pilot Program

Selection Process: Manufactured home communities (MHCs) provide an affordable housing option for an estimated 71,355 households in nearly 2,000 communities across New York State ([Source 2](#)). 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 mitigation would have been required if permitted today

([Source 3](#)). A combination of low-incomes, high population densities, and a mix of ownership and rental structures compounds this vulnerability. The State recognizes the importance of preserving this affordable housing stock.

The State identified MHCs located in the 100- or 500-year floodplain in its Target Areas. A key element in this assessment was the GIS dataset collected annually by NYS Homes and Community Renewal's Division of Housing and Community Renewal (HCR) in accordance with Section 233 of NYS Real Property Law. Analysis of this data identified 40 MHCs in the floodplain, containing 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 and brainstorm solutions (see Attachment D for a list of stakeholders consulted). Through this iterative process, the State further defined 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 ([Source 4](#)). Manufactured-housing lenders also specialize in subprime lending, which can increase interest rates by an additional three percentage points ([Source 5](#)).

The consensus among stakeholders is that without federal and State intervention, many MHCs will face increasing resiliency needs, jeopardizing valuable 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. Thoughtful

interventions and risk-reduction measures will help these MHCs adapt to future shocks and stresses associated with climate change, as well as socioeconomic challenges.

Program Description: The State proposes the Manufactured Home Community Resiliency Pilot Program (the Program) to substantially increase the social, physical, and economic resilience of select vulnerable MHCs in the following Target Areas: Broome, Greene, Orange, Rockland, Schoharie, Suffolk, Tioga, Ulster, and Westchester Counties. This Program will meet the Low- and Moderate-Income (LMI) National Objective and is a two-step response to effectively address housing URN as well as the distinctive needs of MHCs. The State will select up to four pilot communities to engage in this process, employing a selection criteria that considers: (1) location within a Target Area; (2) location within a 100-year or 500-year floodplain; (3) amount of damage as a result of a Qualifying Storm(s); (4) number of LMI residents; and, (5) proximity to additional storm recovery investments. All threshold criteria will be met through this process (see Exhibit B). Once a list of eligible communities is refined, Step 1 will begin.

Step 1: Community-Based Planning Process: The first step of the Program is a community-based planning process, modeled after GOSR's NY Rising Community Reconstruction (NYRCR) Program. This process, led by GOSR and its Partners, will engage residents of MHCs, along with other relevant stakeholders such as county and municipal officials, non-profit partners, and MHC park owners, in a community-driven resiliency planning and decision-making process. This step is centered on empowering MHC residents, most of whom are LMI individuals. Through participatory planning, the Program will facilitate the exploration of solutions to mitigate the current and future risks of MHCs in the floodplain.

GOSR and its partners will guide communities through the development of community-specific plans. This includes facilitating the convening of community meetings with multiple stakeholders,

conducting appropriate research, assisting with public outreach events, and undertaking rigorous analytical work, including the development of a community asset inventory, risk assessment, needs and opportunities assessment, and benefit-cost analysis. At the conclusion, communities will have explored possible solutions in addressing current and future risk, and arrived at resilient CDBG-DR eligible project plans with multiple options, tailored to the specific needs of the community.

Step 2: Project Implementation: The planning process will drive the development of the best resiliency solution(s) for each participating community. Two likely categories of intervention are the buyout and relocation of an MHC outside of the floodplain, and the upgrading of an MHC through on-site resiliency improvements (green infrastructure, protective measures) and elevation of homes, to the extent safe and feasible. In Attachment F, the State has conducted a benefit-cost analysis of these likely interventions to demonstrate that both are cost-effective. If other solutions emerge in the planning process, the State will perform a benefit-cost analysis on those interventions.

To guide final project selection, additional criteria will be developed to ensure that projects are designed to meet the requirements set forth in the NOFA, including: (1) credible evidence that the project will decrease risk to vulnerable populations; (2) clearly incorporating resiliency; (3) feasible with regard to permitting requirements and pre-development work including design and engineering; and (4) has a reasonable implementation period. All selected projects will align with federal and State guidelines and comply with HUD's CDBG-NDR funding program, including Covered Project requirements, if applicable.

The State will implement proposed solutions directly and/or through subrecipients. As detailed in Exhibit C, GOSR has extensive experience in the implementation of infrastructure and housing resiliency activities both directly and through subrecipients. The State has also identified three partners that will

provide leverage financing and technical assistance: the Leviticus Alternative Fund, the Manufactured Home Cooperative Fund Program (MHCFP), and the Community Preservation Corporation (CPC).

Benefit to Vulnerable Populations and Section 3 Opportunities: The State's Program will directly engage and involve residents of MHCs in developing more socially and physically resilient communities. Typically MHCs are comprised of LMI households ([Source 6](#)). In 2011, the median annual household income for Americans living in manufactured housing was \$26,000, compared to a national median of \$50,054 ([Source 7](#)), and about 77 percent of manufactured home households earn less than \$50,000 ([Source 8](#)). Additional socio-economic vulnerabilities identified in the literature and through stakeholder conversations also include higher proportions of elderly and disabled residents ([Source 9](#)) and persons with limited English proficiency. Once specific sites are selected, the State will also explore opportunities to involve Section 3 residents and businesses in project implementation through GOSR's existing Section 3 programs.

Measuring Success: The metrics below identify how the State can holistically measure success throughout the lifespan of the Program.

- *Resiliency Value:* Number of MHC households protected on-site or relocated out of floodplain.
- *Social Value:* Increased percentage of resident-owned MHCs or resident-owned lots in project Target Area; increased number of tenant associations developed in Target Areas; increased levels of community cohesion, as reported by residents, in protected or relocated communities.
- *Environmental Value:* Increased number of EnergyStar rated manufactured homes.
- *Economic Revitalization Value:* Amount of tax-base preserved through protection of MHCs or relocation within community.

Alternatives Considered: The State evaluated multiple options to reimagine resilience in MHCs.

Alternative 1: The “no action” alternative would result in repeated damage to MHCs during storm surge events. LMI families and individuals will lose important assets. A significant amount of affordable housing stock would disappear, resulting in the displacement of residents, many of whom are LMI. Additional local, State, and federal resources will be spent on emergency response.

Alternative 2: This alternative involves the State undertaking a single project within one manufactured home community. This requires honing in on the particular damage of one community without engaging the larger universe of vulnerable MHCs in forward thinking resilience measures. It would force municipalities to tackle the problem alone rather than utilizing Statewide expertise and leveraging best practices. While this option would allow for the recovery of one community, the State has identified the need for an equitable, multi-community solution with Statewide advocacy efforts to preserve this affordable housing stock. This approach also fails to reap the co-benefit of lessons learned across multiple sites.

Addressing Risks and Increasing Resilience: By focusing on MHCs in the floodplain that were impacted by a Qualified Storm(s), this Program directly responds to the State’s housing URN, as well as its identified coastal and riverine risks. In addition, the Program will have a significant impact on social resilience by empowering vulnerable manufactured home residents to transform their own communities. With the expertise of State’s Partners, the Program will increase the physical resilience of MHCs through project design and implementation, providing innovative approaches to physical resiliency against flooding and related climate change impacts. Additionally, this Program will decrease the cost spent on municipal resources in the immediate response to flooding.

Model for Other Communities: Due to the increased susceptibility of these communities to natural disasters, specifically riverine, coastal, and stormwater flooding, this Program can serve as a model across the nation as multiple states face a decreasing stock of MHCs. Based on research the State has

conducted, there is a need for best practices and innovative solutions for building resilience in MHCs nation-wide. The model of engagement, measurable outcomes, and innovative project designs will offer states and municipalities with a template to address their vulnerable MHCs.

Feasibility: The proposed Program is highly feasible, as it builds off of the successful NYRCR model of participatory resiliency planning, as well as the State's expertise in implementing CDBG-DR projects in a compliant and expedited manner, with guidance from broad network of community leaders, non-profits, and State agencies already committed to supporting and preserving MHCs. The Program and subsequent projects will utilize the most innovative and sustainable design practices and modeling techniques, while conforming to State and local codes.

The Program is budgeted to assist up to four MHCs, but can be scaled to match available funding and project interventions can be scoped appropriately. Since the Program's projects are not predetermined, the useful life of a project is not yet measurable, but the State will ensure that this criterion is taken into consideration in future project level BCAs.

BCA Summary: The BCR for this Program is 6.6. See Attachment F for more details.

Program Schedule: Manufactured Home Community Resiliency Pilot Program

<u>Task</u>	<u>Start</u>	<u>End</u>
Step 1 – Community Planning Process		
Solidify Universe of MHCs Eligible for the Program	Jan 2016	Feb 2016
Develop Program Policies and Procedures	Jan 2016	Feb 2016
Engagement/Planning with up to Four Communities*	Apr 2016	Sept 2016
Step 2 – Project Implementation		
Develop Project Concept	Oct 2016	Dec 2016

Establish Resident-Owned Conversion, if applicable	Oct 2016	Dec 2016
Procurement of A/E	Jan 2017	Feb 2017
Design and engineering	Feb 2017	Aug 2017
Environmental Review & Permitting	Mar 2017	Sept 2017
Public bidding	Oct 2017	Dec 2017
Construction	Jan 2018	Nov 2018*

*Milestone: Program benefits realized

Budget: The budget was determined based on the recent experiences of the State in designing programs with similar goals and scope, including the State's current planning, housing, and infrastructure CDBG-DR funded programs. The project concept costs were calculated using current NY Rising Program costs, estimates from other State agencies, and estimates from non-profit partners. The total budget is \$70 million and is a combination of these costs for implementation in four communities in NDRC proposed Target Areas. The amount of CDBG-NDR funds requested is \$49 million. The amount of leveraged funds is \$21 million. For a sources and uses statement, please refer to Attachment B. The cost of operations and maintenance is addressed in Attachments B and F.

National Objective	Eligible Activity	Responsible Entity	Amount of Funds	Proposed Source of Funds
Step 1: Community Driven Planning Process Costs				
N/A	Planning	NYS	\$1,000,000	CDBG-NDR
Step 2: Anticipated Project Implementation Costs				
Intervention 1 (in two MHCs)				

LMI	Buyout of Property in Floodplain	NYS	\$5,334,823	CDBG-NDR
LMI	Acquisition of Property outside of Floodplain	NYS	\$5,334,823	Leviticus - \$3,000,000 MHCFP - \$2,334,823
LMI	Clearance & Demolition	NYS	\$205,185	CDBG-NDR
LMI	Construction of New Housing	NYS	\$15,101,652	CDBG-NDR - \$11,818,684 MHCFP - \$665,177 CPC - \$2,617,791
LMI	Relocation Payments and Assistance	NYS	\$820,742	CDBG-NDR
Intervention 2 (in two MHCs)				
LMI	Rehabilitation/ Reconstruction of Residential Structures	NYS	\$40,740,550	CDBG-NDR - \$28,358,341.17 CPC - \$12,382,209
LMI	Relocation Payments and Assistance	NYS	\$1,436,685	CDBG-NDR

Consistency with Other Planning Documents: This project is consistent with a number of planning documents. The relevant sections of these plans are in Attachment E.

Public Housing Resiliency Pilot Project

Selection Process: Many of the State's smaller storm-impacted Public Housing Authorities (PHAs) have limited resources to assess and address the critical and growing physical resilience needs of housing assets vulnerable to coastal and riverine flooding and the related impacts of climate change, including sea-level rise, increased precipitation, and extreme temperature. Additionally, these PHAs often struggle to meet the economic and social resilience needs of residents who are vulnerable to socioeconomic stressors and environmental shocks. GOSR used the best available FEMA PA data and internal program data to identify PHA-owned facilities sited in the 100-year or 500-year floodplain in Target Areas with housing URN. GOSR then analyzed this subset of properties for a tie-back to the qualified disaster(s), site-specific unmet needs, and geographic and demographic considerations with the goal of serving vulnerable populations and addressing a range of resiliency challenges.

GOSR ultimately identified five properties at four PHAs in two Target Areas—Broome and Nassau counties—which have the highest remaining URN for rental housing, after accounting for assistance provided by GOSR's NY Rising Housing Recovery Programs and other sources. The four PHA Partners are the Freeport Housing Authority, Long Beach Housing Authority, Town of Hempstead Housing Authority, and Binghamton Housing Authority. These Partners identified project sites that sustained damage during Superstorm Sandy, Hurricane Irene, and/or Tropical Storm Lee. Damage included flooding, damage to electrical and mechanical systems, loss of power creating unsafe conditions, and loss of habitability. The five projects selected for this proposal represent different building typologies including low-rise, high-rise, coastal and riverine sites, and senior and family facilities, and are ideal candidates for performance retrofitting and/or new resilient new construction. The new construction project achieves substantial leverage, utilizing HUD's Rental Assistance Demonstration (RAD) Program

to access private debt and equity investment in resilient development. GOSR engaged Enterprise Community Partners, residential construction engineers, building science professionals, developers, and housing finance experts to identify appropriate resilience measures for each site. In consultation with architects and engineers, GOSR crafted site-specific strategies.

The proposed construction of new housing and rehabilitation of existing housing are eligible activities which meet the LMI National Objective. The targeted public housing developments overwhelmingly serve senior and family households with incomes below 50 percent of Area Median Income. At least 51 percent of the units in each building assisted will be occupied by an LMI household. The proposed related workforce development component is an eligible public-service activity with a limited clientele of LMI persons.

Program Description: The initiative has two components: 1) piloting innovative, replicable mitigation and resiliency interventions at select public housing properties, and 2) creating job training and placement workforce development opportunities. It leverages larger State and federal investments, including the \$125 million Rebuild by Design (RBD) winning “Living with the Bay” Project along the Mill River in Nassau County, which is adjacent to the proposed Town of Hempstead site. This project’s commitment to public housing resilience aligns thematically with New York City’s NDRC proposal to protect and connect NYC Housing Authority (NYCHA) facilities in Lower Manhattan.

The State will provide grant funding to five sites in four PHAs to implement site-specific resiliency interventions based on the Enterprise Community Partners’ Ready to Respond Toolkit and soon-to-be-released Multifamily Housing Resilience Strategies, including but not limited to: resilient new development (at Freeport Housing Authority); resiliency retrofits to building envelope (at all other sites); nature-based stormwater management features; nature-based coastal protection features; and resilient back-up power/power generation systems.

The proposed construction and site planning techniques include: protection features that reduce vulnerability; adaptation features that respond to changing climate conditions; redundancy features that maintain critical services during an event, enabling residents to shelter in place in low-level weather events; and social resilience features that facilitate community cohesiveness, increase the quality of life through exposure to natural features and increase economic opportunities through workforce development.

Consulting engineers have evaluated each of the five sites for the suitability of these resilience strategies, which are based on best practices and field research by technical experts and informed by FEMA guidance, technical analysis, and case studies. In addition, the State—through GOSR, in partnership with HCR and the NYS Energy Research and Development Agency (NYSERDA)—will investigate opportunities to increase resilience and further reduce the energy demand of these buildings through smaller scale retrofits such as weatherproofing and lighting upgrades.

GOSR has partnered with Opportunity Long Island (OLI) to implement the second component of the project, workforce development programming. This effort capitalizes on both PHA construction employment opportunities and major infrastructure projects in the State's larger Sandy recovery effort, including new "green collar" jobs through the nearby \$125 million RBD Living with the Bay project along the Mill River in Nassau County. Workforce development programming will educate, train, and connect local residents with both traditional and green collar opportunities. A pre-apprenticeship program, offering direct placement into employment with the building trades at project sites, will create a pathway to sustainable, high-wage employment in construction trades and the emerging restoration economy.

Benefit to Vulnerable Populations and Section 3 Opportunities: The project will enhance the physical, economic, social, and environmental resilience of PHA properties and residents. Benefits

include protection of scarce public housing assets for low-income renters; improved safety of low-income residents during emergencies; lower, more sustainable energy costs for tenants and housing operators; extending the useful life of affordable housing; and avoiding of life-threatening power outages and hazardous evacuations of elderly and frail tenants.

GOSR has developed a comprehensive Section 3 Program that this Project will utilize.

The previously-mentioned workforce development component of this project will create targeted employment and training opportunity for residents of public housing. OLI will train approximately 20 people (with potential expansion). Trainees will be LMI residents of the three participating Long Island PHAs.

Measuring Success: PHAs will utilize WegoWise or Energy Score Card to benchmark, track, and analyze their energy and water usage. GOSR will facilitate consultations with NYSERDA's Multifamily Performance Program to inform the effort. GOSR will obtain data on power loss during storm events from utility companies, resistance to flood damage during storms, and other information on building performance at each site. Specifically, the following will be tracked:

- *Resiliency Value:* Power continuity during storm events; number of days to return to full operations following extreme weather events.
- *Environmental Value:* Energy use and cost reduction; reduced water usage.
- *Social Value:* Increased safety and security; decreased mental and emotional stress; and increased social cohesion gauged via survey; increased access to natural features.
- *Economic Revitalization Value:* Number of workforce development program participants enrolled; completion, placement, and post-placement retention percentage for enrolled participants; annual earnings by workforce development program participants.

Alternatives Considered: Repair of existing property without added resiliency measures would not protect against future storms, increase access to life-saving backup power systems during emergencies, or reduce energy requirements. Professionals who assessed each site rejected numerous measures not proposed here as infeasible, not cost-effective, or too risky.

Model for Other Communities: This demonstration project will show the added benefits and costs of incorporating resiliency features in various building types subject to different severe weather hazards. GOSR will collaborate with Enterprise to share results and learning with developers and policy-makers. Lessons learned will inform State underwriting policy for public housing capital improvements, Mitchell-Lama refinancing, and new affordable housing development, including a new State effort to develop financing vehicles to support public housing conversions in the HUD RAD Program.

The demonstration will also inform deep energy retrofit and resiliency strategies to be funded in the coming years under the State's Reforming the Energy Vision (REV) initiative. Under REV, the State has proposed to allocate \$5 billion to promote energy initiatives through the Clean Energy Fund. After a comprehensive stakeholder engagement process, the proposal is currently pending approval by the Public Services Commission.

Feasibility: The resilient retrofit and new construction techniques chosen for this pilot reflect Enterprise's knowledge of best practice and field research by technical experts around the country. Some of the flood-proofing measures, are drawn from FEMA guidance and are supported by FEMA technical reviews.

The site strategies were carefully considered to holistically and efficiently address the needs of each individual site. All proposed activities will protect properties and contents at the 100-year flood protection level and provide a buffer against severe weather events due to climate change. Mechanical equipment will have a life cycle of 20-to-30 years, and project engineers anticipate an average 60-year

useful life of the properties as a whole. The project could be scaled down by eliminating sites, measures undertaken at a given site, or pursuing value engineering.

BCA Summary: The BCA found a BCR of 1.8 low SLR forecast; 2.9 high SLR forecast for the project.

For the workforce component, the BCA identified benefits from employment in the trades, including a normal progression through the skilled trades.

Project Schedule: Public Housing Resiliency Pilot Project

<u>Task</u>	<u>Start</u>	<u>End</u>
NDRC Awards Announced; GOSR announces projects to PHAs; PHAs commence outreach for workforce development	Jan 2016	Jan 2016
NEPA Environmental review commences; follow up letters issued to housing authorities; procurement of A/E as needed	Feb 2016	Apr 2016
Grant awards finalized with HUD; Scopes finalized on all NDRC PHA projects	Mar 2016	Apr 2016
GOSR - PHA agreements finalized	Apr 2016	May 2016
Workforce training program commences	May 2016	Jun 2016
Construction documents complete for rehab projects	Jun 2016	Jul 2016
Construction permits pulled	Jul 2016	Jul 2016

Construction commences on first projects (Binghamton); workforce training program completes	Aug 2016	Apr 2017
Closing on financing for Freeport PHA; construction for all projects has begun	Sept 2016	Sept 2016
Construction substantially complete for all rehab projects; construction 50 percent complete- Freeport PHA New Construction	Sept 2017	Sept 2017
All NDRC funds drawn down (if Freeport PHA not complete, all NDRC funds will have been spent, but subject to default provisions if compliance benchmarks are not met by completion of construction)	Jan 2018	Jan 2018
Disseminate “best practices” document, including lessons learned	Feb 2018	Apr 2018
Freeport PHA residents move in	Sept 2018	Oct 2018*

*Milestone: Program benefits realized

GOSR's program experience with conducting Environmental Review for its Affordable Housing Fund demonstrates that NEPA can be completed concurrent with other pre-construction due diligence. For the Multi-Family/Affordable Housing program, once GOSR issues a conditional award letter, the State begins the process and issues a letter to the applicant, indicating all the items needed to complete environmental review. Depending on the applicant's responsiveness, it takes two to four months (including the mandatory 32-day comment period) for HUD to issue the Authority to Use Grant Funds (ATUGF) which signals completion of environmental review.

Budget: The total budget is \$78.04 million. The State is requesting \$35.8 million in CDBG-NDR, is contributing \$10.26 million in CDGB-DR, and there are \$31.99 million in leveraged funds. The budget was developed using cost estimates from engineers and Project Worksheets prepared by FEMA. Engineers supplemented FEMA damage assessments with mitigation measures identified in the

Enterprise Multifamily Resilience Strategies and industry standard resilience measures. For a sources and uses statement, please refer to Attachment B. The cost of operations and maintenance is addressed in Attachments B and F.

National Objective	Eligible Activity	Responsible Entity	Amount of Funds	Proposed Source of Funds
LMI	Construction of New Housing	Freeport Housing Authority	\$42.7 million	CDBG-DR (\$9.0m), CDBG-NDR (\$5.5m), FEMA PA (\$5.8m), Debt (\$2.7m), Equity (\$16m), Deferred Fee (\$3.7m)
LMI	Rehabilitation of Residential Structures	Town of Hempstead Housing Authority	\$16.4 million	CDBG-DR (\$0.5m), CDBG-NDR (\$14.4m), FEMA PA (\$1.5m)
LMI	Rehabilitation of Residential Structures	Long Beach Housing Authority	\$12.2 million	CDBG-DR (\$0.1m), CDBG-NDR (\$11.8m), FEMA PA (\$0.3m)
LMI	Rehabilitation of Residential Structures	Binghamton Housing Authority	\$6.6 million	CDBG-DR (\$0.7m), CDBG-NDR (\$3.9m), FEMA PA (\$2.0)

LMI Public Services	Econ. Development or Recovery Activity that Creates/Retains jobs	Opportunity Long Island	\$.16 million	CDBG-NDR
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Consistency with Other Planning Documents: This Program initiative is consistent with a number of planning documents. The relevant sections of these plans are in Attachment E.

Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program

Selection Process: The State contains more than 52,000 miles of rivers and streams—and 1,480 communities designated as flood-prone areas ([Source 10](#)). Addressing this risk head-on, the State has invested significantly into researching the effects of climate change on precipitation patterns, including projected increases of future rainfall events. Findings agree that extreme rainfall events are becoming more frequent and more severe, worsening both the risk and impact of flooding. In examining possible forward-looking initiatives that address the causes of flooding in riverine communities, the State consulted experts from the New York State Department of Environmental Conservation (DEC). The agency identified the importance of restoring natural floodplains and enhancing—or “right-sizing”—undersized culverts no longer capable of handling the increased volume of rivers and streams. A culvert is essentially a tunnel that enables a stream or open drain to run under a road or railroad. County officials and communities in GOSR’s NYRCR Program also noted the importance of these projects to improving community resilience against floods.

Program Description: The State proposes the Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program to facilitate the right-sizing of small-scale infrastructure (culverts with up to a 25 foot span) and the restoration of natural floodplains within the following Upstate Target Areas:

Broome, Greene, Orange, Rockland, Schoharie, Tioga, Ulster, and Westchester Counties. The Program will replace defective or insufficiently sized culverts with new structures with the capacity to handle up to 1 in 500 year flood events. The Program will require a 15 percent local match. DEC's current Water Quality Improvement Program (WQIP) requires a local match, and the proposed Program's match maximizes the resilience impact of the NDRC investment. DEC has secured funding commitments for this Program from existing DEC Basin Programs and the Catskill Watershed Corporation (CWC), which will defray the local match requirement in some instances.

Municipalities and counties planning to undertake this work will submit an application to DEC's WQIP grant program through the State's annual Consolidated Funding Application (CFA). The application will be similar to DEC's current WQIP grant program but will include additional criteria responsive to CDBG-NDR requirements, such as: (1) the project's connection to a Qualified Disaster(s); (2) how the project will be responsive to the URN in housing and/or infrastructure; (3) LMI community and vulnerable populations served by the project; (4) flow capacity; (5) downstream impacts; (6) BCA analysis; and (7) aquatic organism passage.

Any activity selected through this Program will undergo a BCA similar to the one completed in Attachment F. The BCAs for the specific projects funded under this Program are expected to have similar results to the BCA completed for this application, including for capital costs and operations and maintenance. Benefits include aversion of functional losses to critical infrastructure, avoided environmental damages, enhanced water quality, avoided injury/fatality, avoided mental stress/anxiety, and avoided disruption of the local economic activity. All projects funded by the grant will have a BCA greater than 1.

The proposed Program will be implemented jointly by GOSR and DEC. The technical reviews and evaluations of eligible applications will be conducted by DEC, while the contractual/administrative

elements will be overseen by GOSR. GOSR will enter into subrecipient agreements with local municipalities and counties awarded the CDBG-NDR funds. Additional partners, an academic institution and a non-profit, will provide technical support to DEC. Partner agreements for DEC and these partners are in Attachment A.

This Program is expected to meet the LMI National Objective through the prioritization of LMI communities and service areas during the selection process. If not LMI, these proposals will meet the Urgent Need National Objective. Projects funded through this Program will have been directly impacted by Superstorm Sandy, Hurricane Irene, or Tropical Storm Lee. Threshold Criteria will be met through the grant application process. It is not anticipated that any project funded through the Program will be a Covered Project. However, if a project triggers Covered Project requirements, the State will ensure that all requirements are met.

Benefit to Vulnerable Populations and Section 3 Opportunities: In its selection process, benefit to LMI communities and residents is one of the considerations that will be prioritized, and there will be a goal of 50 percent of the funds being spent in LMI service areas. Once projects are selected, the State will seek out Section 3 opportunities to utilize the capacity of eligible local residents and business.

Measuring Success: The primary objectives of this Program are to address the riverine flooding risk faced by communities in Upstate New York and respond to the URN in housing and URN in infrastructure. The State will examine the following metrics, which are closely tied to protecting housing and infrastructure and making communities less vulnerable.

- *Resiliency Value:* Increased flood capacity of culverts, capacity above 100 year storms; reduction in floodwater surface elevation for 10, 50, 100, and 500 year storm events.

- *Environmental Value:* Improved aquatic organism passage; length of stream mile available; reduction in land erosion for 10 year, 50 year, 100 year and 500 year storm events; increased linear distance of stream banks to dissipate stream energy and decrease erosion.
- *Social Value:* Reduced risk to community centers/zones of population density; reduced risk of harm to persons and property; and reduced damage to homes and businesses.
- *Economic Revitalization Value:* Avoided culvert and road maintenance costs; avoided road closures; avoided damage to private property and businesses.

Through its WQIP, DEC currently tracks and monitors WQIP grantees for both right-sizing projects and floodplain restoration projects. DEC has the ability to track and monitor additional metrics as required by this Program, in addition to periodically evaluating program outcomes. Anticipated partners will also track and monitor metrics.

Alternatives Considered: One alternative considered was addressing needed right-sizing and floodplain restoration through projects pre-identified by DEC. Because the proposed grant-making program builds resiliency awareness and capacity at a local level, the State believes this to be an optimal approach.

Addressing Risks and Increasing Resilience: As a result of climate change, several 100+ year storm events can be expected annually within the State's Upstate Target Areas ([Source 11](#)). Cornell University's culvert assessments and capacity modeling in the State's Upstate Target Areas has shown that over 50 percent of culverts in 15 municipalities are incapable of passing greater than a five year storm interval ([Source 12](#)). The right-sizing of culverts, coupled with floodplain restoration, will be highly effective in reducing flooding damage. Removing historic fill and berms from the 100-year floodplain and reconnecting streams to natural floodplains allows for the spreading of water over a large area, diminishing water flow velocities and significantly reducing floodwater elevations in the immediate

area and downstream. Creating wetlands within restored floodplains has the cross-cutting benefits of improving water quality and providing habitats for fish and wildlife species.

Models for Other Communities: Flooding exacerbated by under-sized infrastructure and constricted floodplains is not a challenge unique to the State. The proposed Program presents a highly scalable solution for riverine communities across the United States. For communities from Maine to Virginia, the North Atlantic Aquatic Connectivity Collaborative (NAACC) has developed a comprehensive database and assessment protocol that calculates flow capacity and aquatic organism passability, enabling users to assess culverts and thereby allowing other communities to do their own assessments. With this information, other states could develop a similar grant program.

Feasibility: The proposed Program is highly feasible, as it builds off work currently undertaken by DEC and its partners in assessing, prioritizing, and right-sizing infrastructure. In addition, the design standards proposed in this program are well-accepted as best practices in the field: current design guidelines are turning to geomorphic principles to both naturalize stream crossings and make them less prone to flood damages ([Source 13](#)) ([Source 14](#)). The primary principle behind the geomorphic-engineering design approach is to optimize structure size and shape so that the river channel form and processes can be accommodated. Structures that are sized at the bankfull channel width or larger are (1) able to convey more water, sediment, debris, and ice; (2) less prone to clogging; (3) less prone to scour; (4) more compatible with a stable channel; and (4) able to pass fish and wildlife.

Culvert replacements are generally designed with a life-span of up to 75 years and floodplain restoration projects can have an even longer life-span. If these floodplain restoration areas are protected by an easement or covenant, the community benefit(s) of these projects can last in perpetuity. If structures are sized appropriately to incorporate climate change projections, communities will be able to achieve a tremendously high level of flood resiliency well into 2100.

In keeping with normal local government and county responsibilities, operations and maintenance will be provided by the local jurisdiction or county that owns the culvert or land. In addition, right-sized culverts have been shown to have significantly lower maintenance costs over a 50-year timeframe (22-26 percent less than undersized round culverts) ([Source 15](#)).

This Program can be scaled or scoped by: (1) decreasing the number of projects across the Target Areas; (2) focusing on a specific project type (right-sizing culverts, natural floodplain restoration); or (3) focusing on sub-watersheds that chronically flood within the HUD-targeted counties.

BCA Summary: The BCA for this program is 3.6 See Attachment F for more detail.

Program Schedule: It is anticipated that this Program will have five funding rounds. The Program is structured with multiple funding rounds in order to build on the prioritization work undertaken by Partner, The Nature Conservancy (TNC) as well as the assessment work undertaken by Cornell University's Water Resources Institute (WRI). See Attachment A for partner documentation outlining the proposed scope of work for each entity. Moreover, additional rounds will provide evidence to local governments about the beneficial impacts these projects have, potentially encouraging additional local governments to apply to the Program. The one year milestones for right-sizing projects and restoration projects are below; additional rounds are expected to follow the same time schedule, and all five rounds are outlined in Attachment F. The right-sizing milestones are based on conducting additional assessments. However, this process could be shortened by prioritizing projects that are already assessed by DEC. Based on DEC's current assessments, approximately 150 undersized culverts have been identified as a priority for upgrading.

Program Schedule: Right-Sizing Culverts

Task	Start	End
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Conduct additional culvert assessments in Target Areas (125 sub-watersheds/13,000+ structures)	Feb 2016	Feb 2017
Evaluate existing assessed culverts in Target Areas and identify highest priority culvert replacement	Feb 2016	May 2016
Issue WQIP grant program for initial round of assessed culverts through CFA	May 2016	Jul 2016
Award Grants	Aug 2016	Oct 2016
Submission of permit applications (can be performed at different times; SEQR and NEPA review occur)	Oct 2016	Jul 2017
Complete contracts (contracts can be executed prior to final permits issued; municipality/county grantees do their own procurement in this phase)	Oct 2016	Jan 2017
Construction	Jul 2017	Sept 2017
Completion of First Round of Projects, Reimbursement and Contract Closeout*	Sept 2017	Nov 2017

Program Schedule: Restoring Natura Floodplains

Task	Start	End
Issue WQIP grant program for Natural Floodplain Restoration program through CFA	May 2016	Jul 2016
Award Grants (grant reviews/scoring/notification)	Aug 2016	Oct 2016
Submission of permit applications (can be submitted at different times; SEQR and NEPA review occur)	Oct 2016	Apr 2017

Complete contracts (municipality/county grantees do their own procurement in this phase)	Aug 2016	Nov 2016
Construction	Nov 2016	Feb 2017
Completion of First Round of Projects, Reimbursement and Contract Closeout*	Feb 2017	Apr 2017

*Milestone: Program benefits realized

Budget: The budget was determined by looking at DEC's current work. The average price of a culvert replacement project in the WQIP was \$145,000. Estimates for floodplain reclamation work were determined by examining similar work currently being undertaken within the Mohawk Valley region of the State. The cost of restoring an acre of wetland (\$5,500) is based on Upper Susquehanna Coalition figures. For a sources and uses statement, see Attachment B. The cost of operations and maintenance is addressed in Attachments B and F.

National Objective	Eligible Activity	Responsible Entity	Amount of Funds	Proposed Source of Funds
LMI/Urgent Need (Goal of 50% of funds being spent in LMI service areas)	Public Facilities and Improvements	NYS	\$106 million	CDBG-NDR \$90 million; DEC Basin Program and CWC \$7.9 million; Local funds \$7.9 million; \$.6 million CDBG-DR

Consistency with Other Planning Documents: This Program initiative is consistent with a number of planning documents. The relevant sections of these plans are in Attachment E.

Right-Sizing Bridges Resiliency Program

Selection Process: Since 2011, approximately 500 bridges in the State have been damaged, destroyed, or temporarily closed due to flooding in extreme weather events, including Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee. Research shows that extreme precipitation will increase in magnitude and frequency throughout this century. The State, with its partner, the NYS Department of Transportation (DOT), proposes to right-size flood prone bridges in the following Upstate Target Areas. The Right-Sizing Bridges Resiliency Program will build on the successful work being undertaken in DOT's Scour Critical/ Flood Prone Bridge Program, which is improving 105 bridges to make them more resilient to scour through funds provided by FEMA's Hazard Mitigation Program (HMGP). This program addresses bridge scour, which is the erosion of sediment from around bridge abutments or piers, caused by swiftly moving water, the compromised a bridge's structural integrity. DOT is managing this work in addition to its \$1.8 billion per year capital construction program, and will deliver any additional bridge projects funded under this application.

Under the proposed Program, the candidate bridges for improvements will be determined through outreach to local DOT resident engineers knowledgeable about the flooding history of each bridge. Once a bridge candidate is vetted and selected, an engineering analysis will be performed and a design developed to ensure long-term resiliency. Environmental and project processes will drive extensive outreach to affected local communities, elected officials, community officials, businesses, and residents including LMI and LEP populations.

Program Description: The State will right-size up to 30 scour-critical and flood-prone bridges in the following Target Areas: Broome, Greene, Orange, Rockland, Schoharie, Tioga, Ulster, and Westchester Counties. Bridges will be sized to ensure that future stream flows are adequately addressed by comparing

designs based on current stream flows with those developed for future time slices through the StreamStats tool. Right-sizing bridges averts flooding, improves water quality due to decreased erosion, improves access for emergency responders, improves local economies due to less uncertainty from flooding, and improves fish and wildlife habitat.

To be selected for this Program, the structure must have sustained damage during Superstorm Sandy, Hurricane Irene, or Tropical Storm Lee and be evaluated under the following initial selection criteria: (1) project cost (right-of-way (ROW), engineering, construction, and construction inspection (CI)); (2) annual maintenance costs for the proposed bridge; (3) annual average daily traffic counts on the bridge; (4) detour distance and time should the bridge be unavailable; (5) emergency replacement costs (ROW, preliminary engineering, CI, construction); (6) duration of emergency bridge closure due to extreme event (design and construction time); and (7) normal construction duration.

The Program—including technical reviews, evaluations of eligible bridges, and work on bridges—will be administered by DOT, which will enter into an MOU with GOSR for funding. GOSR will provide technical assistance and ensure compliance with all HUD and other federal regulations.

This Program is expected to meet the LMI National Objective through the prioritization of LMI communities and service areas during the selection process. If not LMI, these proposals will meet the Urgent Need National Objective. Threshold Criteria will be met in the selection process. It is not anticipated that any project funded through this Program would be a Covered Project. If any are, the State will ensure that all Covered Project requirements are met.

Benefit to Vulnerable Populations and Section 3 Opportunities: This Program will prioritize LMI communities and service areas during the selection process. Work stemming from this Program may present opportunities to hire Section 3 residents and businesses. While bridge work requires highly specialized labor, DOT will work with the contracting community to identify opportunities and provide

training to Section 3 residents to the greatest extent possible. These efforts will include, but will not be limited to DOT's extensive outreach to women and minority owned businesses.

Measuring Success: DOT will provide periodic progress assessments and can provide data for all proposed metrics through its data systems and other available data sources. Additional data can be obtained from the detailed bridge analysis that will be undertaken for each bridge to be improved. The following criteria will be used to measure each project and the Program:

- *Resiliency Value:* Average annual daily traffic (AADT) on more resilient bridges; reduction of Base Flood Elevations; access to critical emergency services, schools and other functions preserved; value or area of avoided flood damages to housing and businesses.
- *Environmental Value:* Improved fish and wildlife passage; habitat improvements; linear feet of stabilized stream banks as a result of right-sizing.
- *Social Value:* Number of LMI residents within 1/2 mile distance of bridge; number of LEP residents within 1/2 mile distance of bridge; avoided health impacts.
- *Economic Revitalization Value:* Number of businesses within 1/2 mile of bridge; improved attractiveness to businesses within 1/2 mile of bridge; improved eco-tourism (fishing, wildlife viewing, access).

Alternatives Considered: The State considered a "no action" alternative. This alternative would be to continue to monitor the bridges per DOT's Bridge Safety Assurance Program, and to provide maintenance and emergency improvements, as necessary. Right-sizing bridges to enable these structures to withstand more frequent and intense storm events is more a more effective strategy and will decrease physical and psychological stress to the populations that depend on this infrastructure.

Addressing Risks and Increasing Resilience: The State has demonstrated URN in housing and infrastructure and has identified clear risks in riverine flooding, some of which are caused by

inadequately-sized in-stream infrastructure, that are expected to worsen with climate change. In addition to the declared disasters, other severe storms have also caused hardships. The frequency of these flooding events highlights the State's need to right-size bridges. This Program increases resilience through:

- *Improved Safety and Mobility:* Right-sized bridges allow more water to pass during high flows and are less likely to sustain damage from large storms. When bridges fail, the road is also frequently damaged and can be closed for many days. This can isolate households and prevent emergency services from reaching people in need of help. Road closures also cause travel delays, loss of tourism revenue, lost income for local businesses, and lost income for residents who cannot access their places of employment.
- *Avoided Costs:* Flood damage to private property can be avoided with road-stream crossings capable of passing high water flows. Additionally, physical and mental health impacts associated with flooding and the disruption of everyday life can be reduced through avoided flooding.
- *Reduce Upstream Base Flood Elevations:* Increased resilience in Target Areas can be demonstrated by modeling new BFE.

Models for Other Communities: The method of evaluating flood-prone or scour critical bridge impacts on local communities can be undertaken by entities in other states. The Program criteria can also be applied to local infrastructure. This Program is scalable and bridges can be addressed as funding becomes available.

Feasibility: The proposed Program is feasible as it builds on DOT's experience with the Flood Prone, Scour Critical Bridge program. Each bridge is expected to have a useful life of 75 years. Each project will meet or exceed industry standards. Current DOT guidelines require bridges to pass the 50-year flood plus two feet of freeboard. The designs under this application will be checked for climate informed 100-year future floods obtained through HEC-RAS and the future StreamStats tool, which is based on climate

models to ensure that bridges can accommodate future 100-year flows. After right-sizing, annual maintenance costs for each bridge are estimated to be, on average, \$6,300. This Program can be scaled based on the availability of funds. If fewer funds are available, work on the highest priority bridges will be undertaken first.

BCA Summary: The BCR for this Program is 3.4. See Attachment F for more detail.

Program Schedule: The Right-Sizing Bridges Resiliency Program is expected to fund up to 30 bridge projects, each of which will require a detailed engineering assessment, all of which will be required to complete environmental determinations, and some which may require right-of-way acquisition. The State understands that these projects will need to follow the HUD NEPA process, which may require processes beyond those DOT has already established with the Federal Highway Administration. Further, it is the State's understanding that the deadlines include both project construction, and expenditure of all funds. This requires time for billing, processing, etc. The proposed schedule is the best estimate of the time it will take to complete these processes. DOT will be working through all projects and all processes as expeditiously as possible, and the State expects that many if not most projects will be completed before the proposed end dates.

Program Schedule: Right-Sizing Bridges Resiliency Program

<u>Task</u>	<u>Start*</u>	<u>End**</u>
Selection of Projects	January 2016	January 2016
Preliminary Engineering/Environmental Determinations	January 2016	June 2017
Final Design	January 2017	June 2018

Award Projects	June 2017	December 2018
Construction (Complete/Fully Expended)**	July 2017	December 2020

*It is understood that some tasks will overlap with others as individual projects are progressed.

** Milestone: Project benefits realized

Budget and Leveraged Funds: DOT uses industry standards in design and construction. DOT may use design-build delivery as well as the more traditional design-bid-build to ensure that projects meet the necessary schedules, and employ the most efficient techniques. Quality assurance/quality control is a standard component of DOT's procedures. For a sources and uses statement, please refer to Attachment B. As noted in Attachment F, it is estimated that average bridge operations and maintenance is \$6,300 per bridge. As these bridges are owned by DOT, the agency will be responsible for all operations and maintenance costs, which are addressed in Attachments B and F.

National Objective	Eligible Activity	Responsible Entity	Amount of Funds	Proposed Source of Funds
LMI/Urgent Need (Goal of 50% of funds being spent in LMI service areas)	Public Facilities and Improvements	NYS	\$111.1 million	(CDBG-NDR \$100 million; DOT \$11.1 million)

Consistency with Other Planning Documents: This Program initiative is consistent a number of planning documents. As requested in the NOFA, the relevant sections are in Attachment E.

Right-Sizing Critical Dams Resiliency Project

Selection Process: Higher precipitation due to climate change has had, and will continue to have, significant impacts on New York State's existing dam infrastructure, putting thousands of New Yorkers, their homes, businesses, and transportation networks at great risk. To ameliorate significant storm-related vulnerabilities, GOSR, with its partner, the NYS Office of Parks, Recreation and Historic Preservation (Parks), proposes the Right-Sizing Critical Dams Resiliency Project in Harriman State Park and Minnewaska State Park Preserve to ensure these dams meet current safety requirements. The seven dams in this Project are defined as "high hazard" meaning that a dam failure may result in significant or widespread damage to homes, road networks, critical infrastructure, or environmental features. This classification further suggests that the loss of life or significant economic loss is likely.

The Project was developed based on guidance and input from engineering firms specializing in dam safety. These firms performed extensive flood and inundation modeling to determine the consequences of a catastrophic failure of these structures in potential damages and risk to life and property. In addition to consultation with outside engineers, Parks has internal staff with technical backgrounds in dam management and safety and coordinates with DEC on required Federal Dam Safety Standards. The communities directly impacted by potential dam failure have been actively supportive of this Project and are vested in the proposed safety enhancements. Parks has regularly communicated with these communities regarding these dams and their safety.

The Project addresses seven high-hazard dams—First Reservoir Dam, Lake Cohasset Lower Dam, Lake Cohasset Upper Dam, Lake Sebago Dam, Lake Stahahe Dam, Lake Welch Dam, and Tillson Lake Dam—that must be upgraded to ensure the minimization of downstream impacts due to overtopping. For each dam, the primary deficiency relates to inadequate existing spillway capacity, which could compromise the structural integrity and underpinnings of the dam structure and lead to its failure.

Current standards require that the design exceed a 500-year storm event. Additional deficiencies to be corrected include the armoring of upstream and downstream slopes, outlet gate functionality, spillway channel, and spillway elevation.

Project Description: In response to the impacts of climate change and the increasing frequency of severe storm events, this proposal will upgrade the dams' original design from the current 100-year flood standard, to a one-half of the maximum probable flood level, which exceeds a 500-year flooding event. Parks has completed all necessary inspection work to identify the seven critical dams. The dams are located in the Target Areas of Rockland, Orange, and Ulster Counties. Beyond these Target Areas, the beneficial impact of upgrading these dams extends to northern New Jersey, which would also suffer varying degrees of inundation from the failure of one of these dams.

For each of the identified dams, Parks will undertake a competitive procurement process to select qualified firms with relevant engineering and construction expertise to design improvements. Parks will oversee the Project to ensure dam structures meet or exceed all applicable State and federal dam safety standards. State Parks will also coordinate with DEC, which oversees Dam Safety Emergency Action Plans for all the State's dams.

This Project will significantly increase long-term resilience by making physical improvements to these dams to prevent failure, thereby eliminating or dramatically reducing the potential for flooding to hundreds of thousands of residents, businesses and vital transportation corridors, including the Interstate 87 corridor and freight and commuter rail service.

This Project meets the Urgent Need National Objective. Hurricane Irene resulted in the overtopping or near overtopping of all of the dams, with six of the seven dams also heavily impacted by Superstorm Sandy. It is not anticipated this Project will be a Covered Project because environmental review for each dam will be completed individually.

Benefit to Vulnerable Populations and Section 3 Opportunities: Dam failures result in sudden violent destruction to not only the area near the dam but to areas much farther downstream. Upgrading these seven critical dams will benefit all downstream populations by reducing the risk of potentially catastrophic flooding. Such a failure would also remove from service frequently and heavily used environmental and recreational resources utilized by people of all incomes who visit these State parks to swim and recreate in the facilities that these dams support. The Project is estimated to provide approximately 475 direct and indirect jobs providing a short term and long term economic benefit to the communities in which the dams are located. Where feasible, employment opportunities will be made available to Section 3 residents.

Measuring Success: This Project will eliminate potential catastrophic flooding damages associated with the failure of a dam structure due to overtopping during a severe weather event. Parks, with Palisades Interstate Park Commission (PIPC), a Partner in this Project, will actively collect data, track and evaluate the performance of the dams through regular reports, formal engineering assessments of the structural integrity of the dams and periodic inspections by independent regulatory agencies such as the DEC. Parks will also monitor and document surrounding park facility recreational usage. As regular reports and assessments are already required by various government agencies, it is anticipated that collecting the proposed metrics will not be difficult. These metrics respond to the State's identified URN in housing and infrastructure.

- *Resiliency Value:* Increased capacity of spillway to handle 500-year storm events and prevent overtopping of dams and potential flooding.
- *Environmental Value:* Averted costs of debris removal in streams; reduced erosion of stream banks and averted destruction of natural habitat.

- *Social Value:* Averted costs of damage to public roads and rail lines; continued provision of vital recreational resources and natural habitat.
- *Economic Revitalization Value:* Averted costs of damages to businesses and homeowners; averted costs of business closures; averted public costs for emergency services.

Alternatives Considered: Three alternatives to the proposed Project were considered: removing dams, lowering dam structures by partially or completely draining the associated lakes, and taking no action. The first two are not considered viable alternatives as they would result in severe impacts upon, or the elimination of, heavily used recreational assets. In addition, the costs associated with these alternatives are considered prohibitive as dam removal could cost more than 60 percent of the code compliance upgrades, and lowering the dam structures would cost between 25-40 percent of the upgrades. This does not include the cost of the permanent loss of important recreational and environmental resources, which, when combined with loss of local economic activity and subsequent lowered quality of life, is incalculable. Taking no action is unacceptable given the identified vulnerabilities of the dams and the projected worsening of risk over time and the increase in severity and frequency of intense weather.

Addressing Risks and Increasing Resilience: The proposed Project is clearly tied to the State's URN of housing and infrastructure in the three Target Areas and responds to the State's identified flooding risks and impacts of climate change. The proposed Project will improve flood resilience of seven critical dams which must be brought to current safety standards to minimize the risk of overtopping and flooding.

The safety compliance improvements will afford critical protection and reduce the potential for loss of life, serious injuries and extensive damage to major roadways, passenger and freight rail, private residences, businesses, and infrastructure. Parks has calculated that the proposed Project will protect over

850 properties with a value of over \$85 million, as well as over \$40 million in roads, and \$100-200 million in rail lines.

Models for Other Communities: The work undertaken on these seven critical dams will incorporate and demonstrate the latest safety improvement construction techniques. This is significant given that by 2020, 70 percent of the total dams in the United States will be over 50 years old ([Source 16](#)). These Projects will serve as dam safety models and case studies for other states considering similar dam safety and resiliency improvements.

Feasibility: Parks possesses the necessary expertise to bring these seven high-hazard dams to current safety standards. The Project will conform with best practices and draw upon the latest design principles and safety standards to achieve the greatest possible improvement in dam safety. The Project can be scaled by prioritizing the dams based on level of risk.

BCA Summary: The BCA for this program is 2.0. See Attachment F for more detail.

Program Schedule: The Project has an estimated total time for completion of 48 months, with the bulk of this time allocated to engineering analysis, design, and construction. Both the State's Environmental Quality and Review Act (SEQRA) and the National Environmental Protection Act (NEPA) reviews will be conducted on each dam project prior to project construction.

Program Schedule: Right-Sizing Critical Dams Resiliency Project

Task	Start	End
Process of Authorization to Commence	Mar 2016	Mar 2016
Engineering Analysis and Design (includes engineering procurement)	Apr 2016	Oct 2017
Permitting	Nov 2017	Feb 2018
Bidding Process and Bid Award	Feb 2018	Jun 2018

Construction Staging and Construction	Jul 2018	Feb 2020
Excavation of basin, riprap placement	Aug 2018	Feb 2020*

*Milestone: Project benefits realized

Budget: The cost estimate was determined by working with Parks' internal staff and outside experts. The budget of \$49.6 million is consistent with the scope and scale of similar projects. For a sources and uses statement, please refer to Attachment B. Operations and maintenance costs are estimated at \$25,000 per dam annually, and more detail on these costs is included in Attachments B and F.

National Objective	Eligible Activity	Responsible Activity	Amount of Funds	Proposed Source of Funds
Urgent Need	Public Facilities and Improvements	NYS	\$49.6 million	(CDBG-NDR \$44.6 million; Parks \$4.9 million; PIPC \$.1 million)

Consistency with Other Planning Documents: This Project is consistent with a number of planning documents. The relevant sections of these plans are in Attachment E.

Nassau County Outfall Pipe and Bay Resiliency Project

Selection Process: The Bay Park Sewage Treatment Plant (STP) provides wastewater treatment services to 40 percent of Nassau County (approximately 550,000 people) and discharges an average of 50 million gallons per day into Reynolds Channel West (a tributary of Hewlett Bay) via an 84-inch, 2.3-mile long outfall. Over time, the release of nitrogen and other pollutants from the STP has unbalanced the ecosystem of the Western Bays, undermining the area's natural coastal barrier system through loss of salt marshes and subsequent erosion. During Superstorm Sandy, a storm surge flooded the Western Bays and inundated the Bay Park STP, shutting down critical treatment processes and equipment for 56 hours.

The floodwaters resulted in the release of 2.2 million gallons of partially treated effluent into Hewlett Bay. The length of the existing outfall pipe, in combination with the failure of the effluent pumps, placed citizens at risk of illness and degraded water quality in the estuary. To prevent recurrence of these outcomes, the State, with its Partner Nassau County, proposes to replace the existing Reynolds Channel Outfall with a new tunneled outfall pipe, 138 inches in diameter with a 10 inch lining, extending 5.3 miles from Bay Park STP to a diffuser in the Atlantic Ocean.

Since Superstorm Sandy, non-profits, officials, and agency staff from all levels of government have been actively engaged in addressing the impact of the damage to Bay Park STP and the health of the Western Bays estuary. Groups as varied as Citizens Campaign for Environment, Operation Splash, the Long Island Federation of Labor, Vision Long Island, United Water, residents of Island Park, Residents of the City of Long Beach, and Nassau County Department of Public Works have come together to address these urgent issues. Critical input regarding water quality and environmental issues has been contributed by Stony Brook University School of Marine and Atmospheric Sciences, the U.S. Geological Survey (USGS), Battelle Memorial Institute, and DEC. This proposal is the outcome of these consultations.

Project Description: The proposed outfall pipe will run 2.5 miles between Bay Park and Long Beach and an additional 2.8 miles between Long Beach and the diffuser, and will increase the resiliency of the Bay Park STP by securing it against backflow by tidal wave action during storm surges—preventing future service outages and public health hazards. Furthermore, the consequent reduction of the nitrogen load in the Reynolds Channel estuary will significantly improve water quality, allowing the restoration of coastal marshland in the Western Bays and the natural stabilization of the shoreline, enhancing the natural barrier against wave energy and erosion.

This Project meets the Urgent Need National Objective as the current STP outfall construct poses a

serious and immediate threat to community health and welfare. All activities are deemed eligible activities. Another storm surge striking the Western Bays could result in the failure of the STP, the contamination of Western Bay waterways and the inundation of properties and business unprotected by natural barriers. This is a Covered Project and, as discussed below, the State will ensure that the Project meets all Covered Project requirements.

Benefit to Vulnerable Populations and Section 3 Opportunities: A total of 197,450 LMI persons are located within the Bay Park STP service area; 35.9 percent of the area's population. The Project addresses the housing and infrastructure URN in Nassau County because it enables the restorations of marshlands that will act as a storm barrier and protect homes— including 18,426 LMI homes damaged by Sandy— and infrastructure, and prevents damage to the Bay Park STP which serves hundreds of thousands of homes. Nassau County will continue with its successful Section 3 Plan that is already being implemented with all CDBG-DR projects.

Measuring Success: The proposed outfall will reduce nitrogen and pollutants in the Western Bays, and restore the health of the ecosystem of marshlands and eelgrass meadows. U.S. Environmental Protection Agency (EPA) consultants indicate that 80 to 90 percent of the nitrogen loading to the nitrogen-impaired portion of the Western Bays is from the Bay Park STP wastewater effluent discharges. By eliminating nitrogen and pollutants, water quality is expected to improve to a target nitrogen level below current Clean Water Act guidelines. Nitrogen, phosphorus, and other pollutant levels are actively being tracked across 15 sampling stations in the bay and will continue to be measured by State and Federal agencies, including the USGS, EPA, and DEC.

Nassau County is committed to reducing the nitrogen level in the effluent discharge at the Bay Park STP and has conducted various demonstration projects, testing state of the art denitrification technologies. To complement the construction of the outfall pipe, and to achieve a 50

percent reduction in nitrogen load, Nassau County has committed to installing a permanent side stream treatment and a seasonal Biological Nutrient Removal (BNR) system, both of which are in the design phase and expected to be completed within 24 to 30 months.

The following metrics will be tracked through regular assessment:

- *Resiliency Value:* Acres of coastal marshland, which serves as a natural storm-surge barrier, restored or protected.
- *Environmental Value:* Water quality improvements through reduction of nitrogen levels in the Bays; reduction in overgrowth of phytoplankton in the Bays; acres of marshland restored or preserved.
- *Social Value:* Protection of limited affordable housing stock as a result of increased coastal resiliency; decreased frequency of beach closures.
- *Economic Revitalization Value:* Increases in revenue to the tourism and fisheries industries as a result of environmental remediation.

Alternatives Considered: This project responds to the State's demonstrated URN in housing and infrastructure, as well as the coastal flooding risk identified in the State's Phase 1 application. A number of alternative remediation strategies, including tertiary treatment using the existing outfall and also tertiary treatment with land application were considered. None of these alternative strategies achieves the necessary balance of cost and resiliency.

Addressing Risks and Increasing Resilience: The proposed outfall will increase the resiliency of the Bay Park STP by preventing shutdowns due to backflow, and will decrease risks to human health from effluent spills caused by tidal wave action. The Project will enable the growth of a natural barrier of marshlands, which will dissipate wave energy and amplitude, reduce the erosive effect of waves by slowing water velocity, and stabilize shorelines through sediment deposition, the outfall project increases the resilience of communities adjacent to the Western Bays to future storm events. The number of homes

and structures in Nassau at risk from future storm events will decrease. The increased natural coastal protection will also safeguard 12 Sandy-flooded power substations which provide electricity to more than 1.1 million customers in Nassau, Suffolk, and Queens Counties.

Models for Other Communities: This proposal can be adapted for other coastal communities that discharge treated effluent into marshlands.

BCA Summary: The BCA was determined to be 3.8. See Attachment F for more detail.

Program Schedule: The duration of the Project is estimated at 56 months. To minimize risk, extensive surveys will be conducted prior to the design process to identify potential areas of concern allowing them to be mitigated during design. The Project will include a high level of environmental review based on a range of sampling (e.g. sediment and water quality), surveying (e.g. field, bathymetric, ecological), modeling (e.g. hydrodynamic), studies (e.g. geotechnical), and analysis (e.g. routing and tunneling). The resulting reports and reviews will inform regulatory and stakeholder consultation, including public notice and comment periods, prior to submission of the final environmental impact statement.

Program Schedule: Nassau County Outfall Pipe and Bay Resiliency Project

<u>Task</u>	<u>Start</u>	<u>End</u>	<u>Months</u>
Project Administration	Q2 2016	Q3 2020	54
Procurement Services	Q2 2016	Q3 2017	17
Design Process	Q4 2016	Q4 2017	11
Sampling and Survey Program	Q2 2016	Q2 2018	25
Environmental Review	Q2 2016	Q2 2017	12
Obtaining federal, state and local permits	Q2 2016	Q2 2017	12
Construction Process	Q4 2017	Q3 2020	35*

*Milestone: Project benefits Realized

Budget: The estimated total capital cost of this project is \$450 million. This cost estimate is based on a top-down approach informed by a history and knowledge of project pricing labor, materials, and equipment costs, and has been adjusted for local area labor rates, based on the prevailing wage requirement on Long Island. Updated to reflect technical advances and current construction market trends, this cost estimate is lower than previous, conservative estimates. For a sources and uses statement, please refer to Attachment B. Operations and maintenance costs are addressed in Attachments B and F.

National Objective	Eligible Activity	Responsible Entity	Amount of Funds	Proposed Source of Funds
Urgent Need	Public Facilities and Improvements	Nassau County	\$ 450 million	FEMA HMGP (pending formal commitment, \$150 million); Nassau County Capital Fund (formal commitment, \$104 million); NYS Environmental Facilities Corporation (formal commitment; \$45,376,250—75% loan to be repaid by Nassau County, 25% EPA grant); CDBG-NDR (\$150.6 million)

Consistency with Other Planning Documents: This Project is consistent with a number of planning documents. The relevant sections of these plans are provided at Attachment E.

Covered Projects: The proposed ocean outfall pipe is a Covered Project. It is described above under Selection Process and Project Description, and the proposed budget, including federal, State, and local

funding sources, is detailed under Budget. This Project is an eligible Public Facilities and Improvements activity under Section 105(a)(2) of the Housing and Community Development Act, meets the National Objective of Unmet Need, and addresses impacts of Superstorm Sandy as described above under Addressing Risks and Increasing Resilience.

This Covered Project is supported by the State's updated impact and unmet needs assessment. As outlined in the State's Action Plan Amendment 8, the Bay Park STP ocean outfall pipe is one of five Covered Projects determined to have the greatest remaining unmet need. Updated estimates for this application document an unmet need of \$150.6 million.

This Covered Project is supported by a transparent and inclusive consultation and decision-making process. See Attachment H.

The State and Nassau County will monitor and evaluate the efficacy and sustainability of this Covered Project, as detailed above under Measuring Success, and in particular will monitor improvements in water quality, improvements in the health of coastal wetlands, and consequential decreases in damage to residences and other structures following storm events and increases in public health.

This Covered Project is closely aligned with the President's Climate Action Plan as it will reduce nitrogen levels in the Western Bays, remediate coastal wetlands, prevent coastal erosion, and as a result, protect homes and communities from storm surge. In addition, eelgrass meadows are also a vital part of the solution to climate change and, per unit area, can store up to twice as much carbon as the world's temperate and tropical forests ([Source 17](#)).

Exhibit F Leverage
State of New York
ExhibitFLeverage_NYS.pdf

The leverage documentation in Attachment B demonstrates firm direct financial commitments that New York State has obtained for its proposed projects and programs. These commitments will significantly increase the effectiveness of the proposed activities and ensure that the impact of federal funds is maximized to the fullest extent possible. The total direct commitments to the State's NDRC proposal that are eligible as leverage equal to \$384.17 million, equal to 81.7 percent of total CDBG-NDR funds requested. In addition to these leveraged funds, the State is contributing \$10.9 million in CDBG-DR funds to the proposed projects and programs. Operations and maintenance costs are detailed in Attachment B and Attachment F.

Manufactured Home Community Resiliency Pilot Program: Direct financial commitments of \$3 million in financing from the Leviticus Alternative Fund, \$3 million in financing from the Manufactured Homes Cooperative Fund Program, and \$15 million in financing from the Community Preservation Cooperation, representing leverage of 43 percent of CDBG-NDR funds requested.

Public Housing Resiliency Pilot Project: Direct financial commitments of \$2.7 million in tax-exempt debt from NYS Homes and Community Renewal/Housing Finance Agency (HCR/HFA), \$16 million in credit equity from Enterprise Community Investments, \$9.6 million in FEMA PA funds from participating housing authorities, and a \$3.7 million deferred developer fee. This represents 89 percent of CDBG-NDR funds requested. In addition to this leverage, the State is contributing \$10.26 million in CDBG-DR funds to this project.

Right-Sizing Culverts and Restoring Natural Floodplains Resiliency Program: Direct financial commitments of \$7.85 million from the NYS Department of Environmental Conservation (DEC) and the Catskill Watershed Corporation (CWC). Local match on the CDBG-NDR funds will total \$7.89 million.

These funds represent leverage of 17.5 percent of CDBG-NDR funds requested. In addition to this leverage, the State is contributing \$643,000 in CDBG-DR to this program.

Right-Sizing Bridges Resiliency Program: Direct financial commitments of \$11.1 million from the NYS Department of Transportation (DOT), representing leverage of 11.1 percent of CDBG-NDR funds requested.

Right-Sizing Critical Dams Resiliency Project: Direct financial commitments of \$4.86 million from the New York State Department of Parks, Recreation and Historic Preservation (Parks) and \$.1 million from the Palisades Interstate Park Commission (PIPC), representing leverage of 11.1 percent of CDBG-NDR funds requested.

Nassau County Outfall Pipe and Bay Resiliency Project: Direct financial commitments of \$45,376,250 million from the NYS Environmental Facilities Corporation (EFC) Storm Mitigation Loan Program for design through geotechnical analysis; \$104 million from the Nassau County Capital Fund toward construction, and \$150 million from the Federal Emergency Management Agency's Hazard Mitigation Grant Program (FEMA HMGP) toward construction, pending approval, representing leverage of 198.76 percent of CDBG-NDR funds requested.

Exhibit G Long Term Commitment
State of New York
ExhibitGLongTermComm_NYS.pdf

Progress Toward Meeting Phase 1 Commitment: HUD's feedback on the State's Phase 1 NDRC

application noted that while the application demonstrated the State's long-term commitment to resiliency through several initiatives, including the NY Rising Community Reconstruction Program and the Community Risk and Resiliency Act (CRRA), it could have more clearly outlined specific baseline and goal measures for those commitments. While not specifically outlined in that Phase 1 application, the State has made significant progress toward the implementation of CRRA in the intervening months. The State has formed several working groups for the purpose of developing guidance required by CRRA and implementing provisions of the act. As the January 2016 deadline for promulgating sea-level rise projections approaches, DEC released draft projections in June 2015 and held a series of public information listening meetings to gather public comment.

Lessons Learned: Over the past decade, New York State has established one of the most ambitious long term climate change mitigation and adaptation agendas in the nation. Recognizing that resilience is at the nexus of climate change mitigation and adaptation, in January 2015 Governor Cuomo launched the Climate Smart Communities initiative to weave together and strengthen the Administration's efforts to reduce greenhouse gas (GHG) emissions and help the State adapt to the forecasted impacts of changing temperatures, sea levels, precipitation, and other climate factors at the local level ([Source 1](#)).

The State's recovery response to the Qualified Disasters of 2011 and 2012 is firmly rooted in resilience. In the immediate aftermath of Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee, Governor Cuomo established the NYS2100 Commission, which brought together a multi-disciplinary team of experts to develop actionable recommendations to improve infrastructure resilience. Released in January 2013, the NYS2100 Commission's report includes short- and long-term energy, transportation, land use, insurance, and infrastructure financing recommendations, that continue to inform the State's cross-cutting approach to rebuilding and institutionalizing resilience as a central component of policy

development, project planning, and implementation ([Source 2](#)). These recommendations provide a framework to which the lessons learned in implementing resilience measures can be added, enabling dialogue about public policy approaches among state agencies and improving public awareness of the changes that need to be adopted to build resilience.

In June 2013, Governor Cuomo established the Governor's Office of Storm Recovery (GOSR) to administer approximately \$4.4 billion in U.S. Department of Housing and Urban Development's (HUD) Community Development Block Grant—Disaster Recovery (CDBG-DR) funding via four main programs: Housing Recovery, Small Business, Community Reconstruction, and Infrastructure. Incorporated under the "NY Rising" umbrella, GOSR programs aim to build back *better* by meeting urgent recovery needs, integrating long-term resiliency, and iteratively incorporating lessons learned throughout design and implementation.

In fact, the lessons learned in developing this NDRC proposal are already being put into action throughout the State. Inspired by the July 2015 NDRC Resilience Academy in Denver, the State has committed to participating in the Resilience AmeriCorps VISTA Pilot Program, with a focus primarily on advancing social resiliency in New York City communities. After hearing a resounding need for the formal identification of facilities and organizations to serve local recovery needs, GOSR created the NY Rising Community Center (NYRCC) Program, a network of resilient facilities in storm-impacted communities where nonprofit 501(c)(3) organizations will provide expanded recovery and social services. Neither evacuation centers nor shelters, these community hubs emphasize social and economic resilience. Resilience AmeriCorps Members will leverage and enhance the NYRCC Program through the pilot phase, supporting center operators in conducting research and assessing risks to and vulnerabilities of low-income residents to determine what is working, what can be expanded, and if there are gaps in resilience activities. Centers will also facilitate greater access for low-income communities to federal

resources and tools. The Resilience AmeriCorps VISTA Pilot Program will activate the lessons learned in the development and implementation of the State's recovery program, and in the development of this application.

Resilience AmeriCorps VISTA Pilot Program

<u>Outcome Measure</u>	<u>Baseline</u>	<u>Goal</u>	<u>Effective Date</u>	<u>Duration</u>
Organizations served and residents engaged	0	Eight summits of 20+ community-based organizations; 10 community-specific resilience plans; one master resilience plan for communities throughout the State; 500+ residents engaged through workshops/outreach.	1 st Quarter 2016	Monitoring for at least two years. Will create a framework for continued service and master plan will provide ongoing guidance.

Legislative Action: Governor Cuomo's signing of CRRA on September 22, 2014, is the most significant legislative demonstration of the State's long-term commitment to a more resilient future. CRRA ensures that state funding and permitting decisions include consideration of the effects of climate risk and extreme weather events, amending various sections of the Environmental Conservation Law, Agricultural and Markets Law, and Public Health Law accordingly. It will apply to all applications and/or permits from January 1, 2017. The law's provisions require:

1. The NYS Department of Environmental Conservation (DEC), no later than January 1, 2016, to adopt regulations establishing science-based state sea level rise projections (to be updated no less than every five years);
2. DEC and the NYS Department of State (DOS) to develop additional guidance on the use of resiliency measures that utilize natural resources and natural processes to reduce risk;
3. DOS, in consultation with DEC, to prepare model local laws concerning climate risk including sea level rise, storm surges and flooding, based on available data predicting the likelihood of future

extreme weather events, including hazard risk analysis data if applicable, and to make such model laws available to municipalities; and

4. Consideration of climate risk including sea-level rise, storm surges, and flooding, based on available data predicting the likelihood of future extreme weather events in the following: State Smart Growth Infrastructure Policy Act; Water Pollution and Drinking Water Revolving funds; Environmental Protection Fund (including municipal landfill gas management projects, municipal parks, local waterfront revitalization programs, coastal rehabilitation projects, and farmland protection); and major permits issued pursuant to the Uniform Procedures Act.

CRRA advances a number of important recommendations of the NYS2100 Commission and, according to the Georgetown Climate Center, it is the only legislation in the nation to require that climate impacts be a part of the planning, permitting and funding process—and not just in the State's coastal areas, but in all 62 counties ([Source 3](#)). Actions under CRRA will help the State's agencies and communities reduce identified vulnerabilities by improving data available for resiliency decision making. This data will underpin forward-looking climate change analysis and ensure that the state's almost 20 million residents benefit from evidence-based disaster mitigation measures. Select CRRA-related metrics are provided below.

Community Risk and Resiliency Act (CRRA)

<u>Outcome Measure</u>	<u>Baseline</u>	<u>Goal</u>	<u>Effective Date</u>	<u>Duration</u>
Infrastructure projects reviewed with consideration of climate risk	0	Approx. 524 per year (based on permits in 2014)	1/1/2017	Ongoing
Major projects reviewed annually through a process that considers future flooding hazards for permits related to: stream	0 (Minimal guidance existed for permit reviewers on	Approx. 515 permits reviewed per year for flooding hazards (stream disturbance: 200; freshwater	1/1/2017	Ongoing

disturbance, freshwater wetlands, tidal wetlands, and coastal erosion hazard areas Future flooding hazards	future flooding hazards)	wetlands: 250; tidal wetlands: 50; coastal erosion hazard area: 15)		
Local land use tools amended or enacted to improve community resilience to sea level rise, storm surge, and flooding	Of 1551 state communities: 78 percent had zoning, 73 percent subdivision regulations, and 70 percent site plan review authority (2008 survey)	5 percent of municipalities each year to adopt a change to a land use law that will increase resiliency	Anticipated effective date 01/1/2019	Ongoing. Local laws will draw on information about climate change and resilient land use tools

Complementing CRRA, section 192-h of Article 16 of the Agriculture and Markets Law, signed in March 2013, now requires standby power sources at retail gas stations near highway exits or evacuation routes in NYC, Rockland, Westchester, Nassau, and Suffolk Counties as part of the broader Fuel NY program ([Source 4](#)). When Superstorm Sandy knocked out power throughout the region, many gas stations were unable to pump fuel.

192-h of Article 16 of the Agriculture and Markets Law

<u>Outcome Measure</u>	<u>Baseline</u>	<u>Goal</u>	<u>Effective Date</u>	<u>Duration</u>
Gas stations with transfer switch installed	0	1,000	4/1/2014 – all applicable stations near evacuation routes with transfer switch; 8/1/2015 – 30 percent of applicable chain stations with transfer switch.	Ongoing

Raising Standards: In the aftermath of the recent series of severe storms, the State identified a number of ways in which changes to standards could measurably improve resilience. The State already employs the best practice of requiring that all new or substantially improved buildings in flood hazard areas have the lowest floor elevated above the design flood elevation plus the appropriate freeboard of two feet for residential structures, or as determined by ASCE 24-05 for other structures. DOS is also championing resiliency through amendments to the State Building Code, which are currently under

review and consideration by the State Building Codes Council. A Council-approved draft is expected to be released for public comment by the end of 2015, and a final draft is expected to be adopted in mid-2016. Pending updates include amending the Residential Code to require buildings and structures located in a floodway be designed and constructed in accordance with the design standard ASCE 24-2013 (Flood Resistant Design and Construction). For example, new or substantially improved health care facilities in flood prone areas—including hospitals, nursing homes, assisted living—must be equipped with an electrical connection for hookup of temporary generator(s) or with secondary power equipment above the design flood elevation.

DOS is also improving long term resilience through the NYS Coastal Management 2016-2020 Section 309 Assessment and Strategy, which examined issues and opportunities at nine coastal enhancement areas ([Source 5](#)). The Strategy adopts a forward looking approach to climate change and ensures that, if the regulatory flood elevation of the NFIP increases in the future (due to changes in stormwater discharge, local water levels or sea level), the building code regulatory standard will automatically increase, enabling resilient adaptation over time.

State Building Code

<u>Outcome Measure</u>	<u>Baseline</u>	<u>Goal</u>	<u>Effective Date</u>	<u>Duration</u>
Residential building construction permits issued in the State to which more resilient standards apply	0	36,286 per annum (based on 2014 figures)	mid-2016	Ongoing

The State is also measurably increasing resilience through the Environmental Facilities Corporation (EFC), which provides low-cost financing for local wastewater and drinking water infrastructure. EFC has been working with DEC and New England Interstate Water Pollution Control Commission (NEIWPCC) in developing revised construction standards that will add resiliency into the code for

wastewater and drinking water facilities. The EFC's Storm Mitigation Loan Program (SMLP) requires that critical components of treatment facilities (such as pumps, control panels and power systems) be protected to withstand, at a minimum, the 500-year flood elevation. Expected to be finalized by early 2016, the guidance will become the standard for construction and rehabilitation of treatment facilities for the State and will benefit a number of Target Areas. In addition, the SMLP is open to resilience improvements to treatment facilities through green infrastructure including permeable pavement, green roofs, constructed wetlands, and riparian buffers.

EFC Storm Mitigation Loan Program

<u>Outcome Measure</u>	<u>Baseline</u>	<u>Goal</u>	<u>Effective Date</u>	<u>Duration</u>
Number of beneficiaries in the program Target Area	0	13 million New Yorkers (including residents in the following Target Area: Orange, Ulster, Westchester, Rockland, Nassau, and Suffolk)	All projects completed and funds disbursed by July 2019.	20-50 years (Typical treatment plant useful life)

The State is committed to strengthening riparian buffers and wetlands to mitigate the effects of more frequent and extreme flooding events and to protect and improve water quality. This includes providing increased protection of freshwater and tidal wetlands through the state's wetland laws—increasing penalties for violations, updating existing wetlands maps, and expanding the reach of wetlands laws to include smaller wetlands. The State will also complete comprehensive trends analyses of wetlands to track acreage losses and gains of various wetland types ([Source 6](#)).

State protection of tidal wetlands

<u>Outcome Measure</u>	<u>Baseline</u>	<u>Goal</u>	<u>Effective Date</u>	<u>Duration</u>
Restoration of tidal wetland acreage	25,000 acres of tidal wetland (DEC estimate)	26,000 acres (restoration of 1,000 acres lost since 1974)	September 2014	Ongoing

Resilience Actions Related to Plan Updates or Alignment: The examples below provide a snapshot of some of the State’s recent resilience plan updates and alignment actions.

Hazard Mitigation Plans: The State updated its Hazard Mitigation Plan (State Mitigation Plan) to include sea-level rise in January 2014. This plan fulfills the requirements of 44 CFR and is aligned with CRRA. The State Mitigation Plan—most recently submitted to FEMA in December 2013—is updated every three years by the NYS Division of Homeland Security and Emergency Services (DHSES) with assistance from sister agencies and other interested stakeholders. The State Mitigation Plan highlights to state agencies the need to prioritize particular at-risk areas, provides a guide and local plan development tools to local jurisdictions in completing their Local Hazard Mitigation Plans (LHMPs), and drives a coordinated approach between State, territorial, tribal and local entities. The alignment of plans at the State and County level is driven by a desire to speed up recovery and improve resilience planning supported by the DHSES Mitigation Section ([Source 7](#)). DHSES also tracks compliance with planning requirements.

Transportation: The State has partnered with the Federal Highway Administration (FHWA) in collaboration with regional departments of transportation and metropolitan transportation planning organizations to produce the New York-New Jersey-Connecticut Transportation Vulnerability Assessment and Adaptation Analysis. This research project is an example of the planning for resiliency spurred by recent extreme weather events and is being funded by the FHWA. The goals of this project

are to assess the impacts of Superstorm Sandy (and to some extent Hurricane Irene, Tropical Storm Lee, and the Halloween Nor'easter in 2011) on transportation assets; identify adaptation strategies to increase the resilience of those assets; perform a gap analysis for the region, and consolidate data sources and information. The project is scheduled for completion on March 31, 2016. The findings from the project will be incorporated into the State's future transportation planning and will help to increase preparedness for the impact of climate change by aligning best practices among regional participants.

Housing: As part of developing a new long-term plan for affordable housing development, NYS Homes and Community Renewal (HCR) is creating a comprehensive policy to align "green" housing requirements across many State housing grant and loan programs. This policy builds on aggressive green and resilient housing requirements already reflected in State Building Code, funding program requirements, and optional competitive project scoring elements.

Economic Development: As part of Governor Cuomo's transformative plan to improve the State's economic development model, the Regional Economic Development Council Consolidated Funding Application (CFA) was created to serve as the single entry point for access to economic development funding ([Source 8](#)). This streamlined model now features scoring components to reward the inclusion of resilience measures in a grant application.

Resilience Planning: NYS Department of State (DOS)'s Office of Planning and Development is developing a Request for Applications to complete Resilience Action Plans for 11 reaches in the South Shore Estuary Reserve (SSER). These Action Plans will address community recovery and resiliency needs that did not qualify for New York Rising planning assistance. They will prioritize "transition to action" and queue up a range of capital improvement projects that can be funded with subsequent SSER Environmental Protection Fund (EPF) funding and other State funds. DOS will use SSER EPF

appropriations to identify a range of capital improvements for community asset protection and shoreline vulnerability, including living shorelines and green infrastructure.

Financing and Economic Issues: In addition to the previously-mentioned efforts to fund and finance resilience through the CFA grant and EFC loan programs, the State is committed to addressing power grid resilience through a suite of funding mechanisms. The 2015 State Energy Plan issued in June established the nation's most ambitious goal of reducing GHG emissions from the energy sector—power, industry, buildings, and transportation—40 percent below 1990 levels and obtaining 50 percent of all electricity from renewable energy sources by 2030 ([Source 9](#)). As a demonstration of this commitment, in October 2015, Governor Cuomo signed the “Under 2 MOU,” an agreement between states, provinces, and cities worldwide to affirm their resolve to help keep the earth's average temperature from increasing 2 degrees Celsius by 2100.

Through its Reforming the Energy Vision (REV), the State is a national leader in advancing the clean energy economy, initiating regulatory proceedings to modernize the utility industry and programs to reduce emissions such as the Clean Energy Fund, NY Sun, BuildSmart NY, and NY Green Bank (NYGB) ([Source 10](#)). The NYGB, created in December 2013, is a publicly-capitalized investment fund designed to stimulate private capital for innovative energy investments to help create a cleaner and more resilient power grid. The NYGB is a key component of the State's integrated energy strategy which seeks to promote more efficient use of energy, utilization of renewable energy resources, and wider deployment of other distributed energy resources, like microgrids, on-site power supplies, and storage. The NYGB's current business plan was released in June 2015 and commits to realizing specific benefits, such as a strong leverage of private sector capital. Around \$200 million of NYGB investment is expected to mobilize \$600 million of private capital, producing a 3:1 ratio. NYGB Market Studies estimate that

this ratio could be 8:1 after 10 years (factoring in reinvestments), and even higher for a 20-year time horizon ([Source 11](#)).

NYRSERDA has also teamed up with GOSR to launch NY Prize, a \$40 million first-in-the-nation competition to create community microgrids that can operate independent of the power grid. NYSERDA recently awarded funding to 83 communities for feasibility studies and GOSR will ultimately help fund the development of up to five microgrids.

Microgrid pilot program

<u>Outcome Measure</u>	<u>Baseline</u>	<u>Goal</u>	<u>Effective Date</u>	<u>Duration</u>
More resilient grid with improved islanding capabilities	0 State-funded microgrids	Five + microgrids	Projects completed by September 2019.	Ongoing

In addition to the construction standards for wastewater and drinking water facilities and SLMP standards mentioned above, the EFC administers the federal Clean Water State Revolving Fund (CWSRF), providing low-cost financial assistance primarily to municipalities for water quality infrastructure projects. In 2013, EFC made available \$340 million for resiliency projects in the 14 counties impacted by Hurricane Sandy. In 2015, the CWSRF made available \$1.2 billion of financial assistance to all 62 State counties, while through the State budget, EFC received \$200 million to provide grants to municipalities for water quality infrastructure projects over three state fiscal years. These funds are being made available through the New York State Water Grants program, one of the targets of which is the ‘enhancement of wastewater collection/treatment system resiliency from sea level rise and damage from extreme weather.’

Additionally, the Empire State Development, (ESD) in consultation with the DEC, has administered \$16 million in grant program funds to 23 counties to support flood mitigation projects along waterways

impacted by Hurricane Irene and Tropical Storm Lee. This includes the State's \$9 million Flood Mitigation Grant Program and \$7 million in federal Homeland Security funds.