



NEW YORK RECOVERS

Hurricane Sandy Federal Recovery
Support Strategy - Version One, June 2013



TABLE OF CONTENTS

ACKNOWLEDGMENTS	5	CHAPTER 4: INFRASTRUCTURE RSF	93
INTRODUCTION	7	Introduction	
Recovery Support Strategy Scope		Overarching Recommendations	
From Response to Recovery to Resilience		Recovery Priorities	
Plan for a Recovered New York		<i>Energy</i>	
<i>Core Strategies</i>		<i>Healthcare and Public Health</i>	
<i>Effective Recovery Practices</i>		<i>Wastewater</i>	
Conclusion		<i>Dams/Coastal Areas</i>	
		<i>Transportation</i>	
SECTOR STRATEGIES		Chapter Notes	
CHAPTER 1: ECONOMIC RSF	29	CHAPTER 5: NATURAL AND CULTURAL RESOURCES RSF	131
Introduction		Introduction	
Recovery Priorities		Natural Resources Recovery Priorities	
<i>Post-Storm Economic Assessment</i>		<i>Beaches and Dunes</i>	
<i>Action Plan</i>		<i>Marine Debris</i>	
CHAPTER 2: HEALTH AND SOCIAL SERVICES RSF	41	<i>Resilient Waterfront Recovery</i>	
Introduction		<i>Resilient Ecosystem Services Recovery</i>	
Recovery Priorities		Cultural Resources Recovery Priorities	
<i>Public Health Impacts</i>		<i>Historic Resource Preservation</i>	
<i>Health Care Services Impacts</i>		<i>Cultural Institution Preservation</i>	
<i>Behavioral Health Services Impacts</i>		<i>Recreational Resource Restoration</i>	
<i>Environmental Health Impacts</i>		CHAPTER 6: COMMUNITY PLANNING AND CAPACITY BUILDING RSF	155
<i>Social Services Impacts</i>		Introduction	
Chapter Notes		Issues	
CHAPTER 3: HOUSING RSF	61	Community Profiles and Strategies	
Introduction		Chapter Notes	
Recovery Priorities		CHAPTER 7: MITIGATION STRATEGY	181
<i>Utilize Holistic, Place-Based Approach to Redevelopment</i>		APPENDICES	
<i>Expand Housing Options</i>		RSS and Hurricane Sandy Recovery Resources	194
<i>Support Affordable Housing Efforts</i>		Abbreviations/Acronyms	195
<i>Support Accessible Housing Efforts</i>			
<i>Leverage Financial Resources</i>			
Chapter Notes			



ACKNOWLEDGMENTS

FEDERAL DISASTER RECOVERY LEADERSHIP

Ken Curtin
Daniel Alexander
Roy Dunn
Ken Rathje

RECOVERY SUPPORT FUNCTION LEADERSHIP

RSF teams working together to develop the unified support strategy have been directed by the following agencies and field coordinators:

Economic RSF coordinated by Department of Commerce/Economic Development Administration led by Fred Eidson, Philip Saputo
Health and Social Services RSF coordinated by Health and Human Services led by Natalie Grant
Housing RSF coordinated by HUD led by James Cruickshank, Sheila Daniels
Infrastructure Systems RSF coordinated by U.S. Army Corps of Engineers led by Carmine Leone, Hibba Wahbeh
Natural and Cultural Resources RSF coordinated by Department of the Interior led by Todd Lanning, Sandy Eslinger, Cheryl Hapke, Kenneth Walker, William Ypsilantis
Community Planning and Capacity Building RSF coordinated by FEMA led by Timothy Gelston, Myra Shird

MITIGATION ADVISORS

Zach Usher
Leslie Tomic
Douglas Winkler

PRODUCT DESIGN

Cathy Duchek

Following the National Disaster Recovery Framework, the federal family has compiled a multi-layered plan for supporting communities impacted by Hurricane Sandy. It is gratifying to see all these partners working together with local jurisdictions to build a better and stronger New York State.

Federal Coordinating Officer

Experience tells us that when the whole community comes together to tackle a challenge – and everyone plays a role – the end result is more effective. New York’s recovery has been a deeply inclusive process. We will continue to work toward the ideal of an inclusive, wide-ranging recovery. The federal family’s role in that recovery process is outlined in this Recovery Support Strategy, which provides a compass for our efforts to support New York State on the road to recovery.

Federal Disaster Recovery Coordinator

The efforts of the many agencies and organizations that contributed to “New York Recovers” has produced a comprehensive study of recovery issues and programs. The report’s suggested recommendations are extensive, but do not necessarily reflect the specific view of the contributing state agencies.

State of New York





INTRODUCTION

Recovery Support Strategy Scope

Hurricane Sandy affected the entire New York Atlantic coast, from Staten Island to Montauk Point, and up the East and Hudson rivers, heavily damaging concentrated areas along these waterways. The storm's 15-foot surge occurred during an unusually high tide, causing forceful and extensive flooding. The storm surge was especially destructive to six New York counties bordered completely or predominantly by shoreline. These Atlantic-facing coastline communities in Nassau, Suffolk, Kings, Queens, New York, and Richmond counties suffered immense property loss. Tragically, 49 New Yorkers died as a result of the storm.

The magnitude of Hurricane Sandy can also be measured by the area affected by flooding and high winds. At the hurricane's peak, tropical force winds expanded to approximately 1,100 miles across. Corrosive saltwater combined with high winds to disable and damage equipment necessary for power delivery and infrastructure functionality. Power outages in many areas lasted several weeks, hampering communications and response efforts in addition to causing

distress to businesses and residents. In general, Hurricane Sandy revealed that New York's coastal communities are highly susceptible to significant storm surge. The storm exposed vulnerabilities associated with inadequate shoreline protection, a shortage of affordable housing for displaced persons, and limited protection of vital energy and transportation infrastructure.

The scope and complexity of a disaster determines the federal response. For a disaster as widespread and complex as Hurricane Sandy, a concentrated, highly coordinated, multi-disciplinary approach is necessary to foster the most effective federal response possible. The following report describes the coordinated federal approach to recovery in New York. It draws on the guidance of the National Disaster Recovery Framework and reflects the on-the-ground work of the recovery support teams formed in response to the high need created by this disaster.

National Disaster Recovery Framework

Recent disasters have shown the need for greater structure and coordination in how the nation addresses recovery. Recognizing this, the federal family developed a new guidance document, the National Disaster Recovery Framework, which was approved by President Obama in 2011. The NDRF furthers the vision set forth in the Presidential Policy Directive 8 (PPD-8), National Preparedness, which directed FEMA to work with interagency partners to publish a recovery framework.

The NDRF outlines how federal agencies will work with disaster-affected communities to develop realistic, effective, and collaborative recovery strategies. The goal is to expand the local recovery process by increasing coordination at the local, state, tribal, and federal level and by combining regular federal programs in creative ways.

The Framework is guided by nine recovery core principles:

- Individual and Family Empowerment
- Leadership and Local Primacy
- Pre-Disaster Recovery Planning
- Partnerships and Inclusiveness
- Public Information
- Unity of Effort
- Timeliness and Flexibility
- Resilience and Sustainability
- Psychological and Emotional Recovery

In addition, two legally-mandated requirements inform all federal disaster recovery activities:

- Ensure that those with access and functional needs have their recovery needs met
- Ensure that all recovery plans are equitable

Recovery Support Functions

The work of the NDRF is overseen by a federal disaster recovery coordinator, working in conjunction with a state or tribal recovery coordinator, local disaster recovery managers, and teams of specialists organized by sector, known as Recovery Support Functions. The RSFs are designed to integrate federal

resources so multiple organizations and agencies are unified in their efforts to support local, state, and tribal governments' recovery efforts.

Each RSF has a coordinating agency and is managed by staff from that agency who oversee the mission within their designated area. At the same time, the recovery teams join together to tackle issues that reach across sectors. Each RSF works to fashion an overall support strategy that reflects the character of the community and the local priorities for recovery, mitigation, and resilience.

In addition to a coordinating agency each RSF has primary agencies and supporting organizations with relevant programs. The coordinating agencies provide leadership and oversight and harmonize communication and coordination between primary agencies and supporting organizations including government, nonprofit, and private sector groups. Supporting organizations are entities with specific capabilities or resources that aid the primary agencies in executing the mission of the RSF. In all actions, RSFs strive for affected residents to have a voice; for services to reach those who need them most; for equitable distribution of resources; and for recovery programs appropriate to the socioeconomic and cultural makeup of the community.

To implement the NDRF after a disaster the scope of Hurricane Sandy, all six RSFs have been activated. The RSFs and coordinating agencies working on Sandy recovery are as follows:

- Housing, U.S. Department of Housing and Urban Development
- Health and Social Services, U.S. Department of Health and Human Services
- Economic, U.S. Department of Commerce/Economic Development Administration
- Infrastructure Systems, U.S. Army Corps of Engineers
- Natural and Cultural Resources, U.S. Department of the Interior
- Community Planning and Capacity Building, Federal Emergency Management Agency

The larger circle of federal agencies represented in recovery and their cross-RSF associations are shown in the following chart.

Interrelationships Between Agencies & RSF						
	RSF: IS	RSF: Econ	RSF: HSG	RSF: HSS	RSF: CPCB	RSF: NCR
DHS/FEMA						
DHS						
DHS/CRCL						
DHS/NPPD						
HHS						
DOC						
DOI						
DOJ						
DOT						
DRA						
ED						
EPA						
GSA						
HUD						
SBA						
TREAS						
USDA						
DOL						
VA						
ARC						
NVOAD						
US Access Board						
DoD						
DoD/USACE						
DOE						
FCC						
NRC						
TVA						
ACHP						
CEQ						
IMLS						
LOC						
NARA						
NEA						
NEH						
CNCS						
Heritage Pres						

LEGEND:

	Coordinating Agency
	Primary Agency
	Supporting Organizations

The Recovery Support Strategy

The written component of the coordinated federal effort is this document, the Recovery Support Strategy (RSS). It is not a prescriptive recovery plan, but an overview of the federal strategy for providing integrated federal assistance in support of local communities. Every community will determine their own recovery needs—the federal government’s task is to support those local and state efforts in the most meaningful and effective way.

Upon deployment, the RSFs first completed Mission Scoping Assessments (MSA) to outline the work to be done. They then talked with partner organizations and with community members to analyze needs and models. Each RSF then developed a detailed strategy to guide recovery in their area. These are located in Chapters 1 through 6. A seventh chapter describes mitigation strategies. The contributions reflect hours of discussion, consultation, and collaboration with individuals and agencies, each of which has a particular role to play. Each chapter provides strategies that the attendant agencies can offer to New York as it works to recover from Hurricane Sandy, with the goal of creating stronger, smarter, and more resilient communities.

The RSS introduction reviews the traditional disaster programs supporting Sandy recovery and the federal efforts unique to this disaster. The Core Strategies section of the introduction integrates the priorities for recovery support in New York. They are organized around the following five overlapping recovery areas: 1) housing; 2) economic revitalization; 3) infrastructure; 4) coastal resources; 5) whole community recovery. Following this is a discussion of effective recovery practices—actions that benefit recovery across the full spectrum of sectors and roles.

The RSS lays out strategies for recovery; it is just one component of interagency coordination and collaboration under the NDRF. The RSFs continue coordination and plan writing, including communication and implementation plans. It should be understood that the RSS presents a snapshot in time; the document will evolve through multiple iterations to reflect new data, more detailed recovery strategies, and more links and resources to be leveraged in support of local recovery. Version one, to be released in summer 2013, will be followed by an updated RSS in approximately six months.

From Response to Recovery to Resilience

Traditional Recovery Programs

When a disaster strikes and local and state resources are exhausted, a governor can request assistance from the federal government. A Presidential Major Disaster Declaration puts into motion federal recovery programs coordinated by FEMA which are designed to help survivors, businesses, and public entities. The Robert T. Stafford Act authorizes the president to provide financial and other assistance to state and local governments, certain private nonprofit organizations, and individuals to support response, recovery, and mitigation efforts.

Other federal departments and agencies carry out their disaster recovery authorities and responsibilities within the overarching construct of the National Disaster Recovery Framework. While disaster-impacted jurisdictions must necessarily first focus on emergency response activities, the decisions made early after a disaster also influence recovery. In large-scale disasters where a federal role is necessary, the federal disaster recovery coordinator is the focal point for incorporating recovery and mitigation considerations into the decision-making process.

Within FEMA, there are three major categories of disaster aid: Public Assistance (PA), Individual Assistance (IA) and Hazard Mitigation (HM).

In New York, traditional program expenditures to May 20, 2013, included nearly \$7 billion in grants and payments. The following chart shows the breakdown by program area, including FEMA's key programs, National Flood Insurance payouts, and the U.S. Small Business Administration loan program.

Public Assistance

Through the PA program, FEMA provides supplemental federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned and certain private, nonprofit facilities. The PA program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures (406 mitigation).



Traditional Program Disaster Expenditures
for Hurricane Sandy (NY 4085)
Figures as of May 20, 2013

Individual Assistance

The Individual Assistance program provides financial help or direct assistance to those with disaster-related necessary expenses and serious needs who are unable to meet those needs through other means. Individual Assistance is designed to help survivors get back on their feet by bridging the gap between insurance and other funding sources. Types of assistance available may include Housing Assistance, Housing Repair, and Other Needs Assistance (ONA). The maximum award for fiscal year 2013 is \$31,900. Other assistance includes Legal Services, Unemployment Assistance, and Crisis Counseling.

Housing Assistance

Disaster-related housing assistance is available to applicants displaced from their primary residences and/or whose pre-disaster residence was rendered uninhabitable and who are under-insured or have no insurance to provide for their housing needs. There are several kinds of housing assistance available.

Temporary Housing: There are two kinds of assistance, financial and direct. Financial assistance may be available for the purpose of lodging expenses or rental assistance. Another form is the transitional sheltering assistance program that allows eligible survivors whose houses have been severely damaged to stay in a hotel for a limited time.

Repair and Replacement: Financial assistance may be available to homeowners to repair disaster damage to their primary residence that is not covered by insurance. The goal is to make the damaged home safe, sanitary, and functional.

Other Needs Assistance

Money is also available for other necessary expenses and serious needs caused by a disaster including: medical and dental expenses; funeral expenses; clothing; household items; specialized clothing and equipment required for a job; educational materials; fuel for heat; clean-up items (wet/dry vacuum, dehumidifier); disaster-related damage to a vehicle; moving and storage expenses; and other necessary expenses or serious needs as determined by FEMA or authorized by law.

Hazard Mitigation and the National Flood Insurance Program (NFIP)

Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk from natural hazards and their effects. Mitigation is a priority for FEMA and the agency works closely with state, local, and tribal governments to plan and implement mitigation activities. The Stafford Act provides for two types of hazard mitigation funding: 406 mitigation and the Hazard Mitigation Grant Program (aka 404 mitigation).

Long-term mitigation can best be achieved through comprehensive local floodplain management and regulation, and consistent enforcement. Communities that participate in the National Flood Insurance Program (NFIP), administered by FEMA, have adopted and agreed to enforce floodplain management regulations in exchange for the ability of their residents to purchase NFIP flood insurance policies. The NFIP works with nearly 90 private insurance companies to offer flood insurance to property owners and renters. Payments from flood insurance are often critical to recovery. Local community officials

Mitigation Program Comparison		
	406 Mitigation	404 Mitigation
Eligible Applicants:	<ul style="list-style-type: none"> State, local and tribal government agencies that are eligible applicants for Public Assistance (PA) Agencies and departments may include transportation, environmental resources, parks and recreation, air and water quality, and solid waste and hazardous materials 	<ul style="list-style-type: none"> State, local and tribal government agencies, and certain private non-profits that perform a government-like service Must have a FEMA-approved and adopted Hazard Mitigation Plan before projects may be funded
Funding:	<ul style="list-style-type: none"> Implemented through the FEMA Public Assistance (PA) program 	<ul style="list-style-type: none"> Competitive grant program through the State (as the grantee)
Mitigation Measures:	<ul style="list-style-type: none"> Structural measures (such as relocation of facilities from hazardous locations; structure elevation; protection from winds; flood protection of bridges and culverts; etc.) 	<ul style="list-style-type: none"> Structural measures and non-structural measures (such as mitigation planning; property acquisition and structure demolition; structure elevation; etc.)
Directed:	<ul style="list-style-type: none"> Applies only to the damaged element of an eligible facility 	<ul style="list-style-type: none"> Statewide grant made available after disaster declaration - funding does not have to be applied to affected areas.
Program Limitations:	<ul style="list-style-type: none"> No program-wide limits on funds 	<ul style="list-style-type: none"> FEMA determines the allocation of HMGP funding available for a given disaster based on a percentage of the estimated total federal assistance²
Limitations For Projects:	<ul style="list-style-type: none"> May amount to up to 15% of the total eligible cost of the eligible repair work, OR 	<ul style="list-style-type: none"> 75% federal (FEMA) funds requiring a 25% non-federal match
	<ul style="list-style-type: none"> Listed mitigation measures that have been pre-determined to be cost effective, as long as the mitigation measure does not exceed 100% of the total eligible cost of the eligible repair work, OR 	<ul style="list-style-type: none"> Project must be technically feasible and cost effective
	<ul style="list-style-type: none"> For measures that exceed the above costs, the grantee/sut grantee must demonstrate through an acceptable benefit/cost analysis methodology that the measure is cost effective 	
<small>[1] Eligible local governments include towns, cities, counties, municipalities, townships, local public authorities, councils of governments, regional and interstate government entities, agencies or instrumentalities of local governments, special districts or regional authorities organized under State law, school districts, and rural or unincorporated communities represented by the State or a political subdivision of the State. [2] Standard percentages as specified by the Stafford Act: Not to exceed 15% for the first \$2 billion or less of such amounts; not to exceed 10 percent of the portion of such amounts over \$2 billion and not more than \$10 billion; and not to exceed 7.5 percent of the portion of such amounts over \$10 billion and not more than \$35.333 billion.</small>		

are responsible for enforcing the local floodplain ordinance. Greater flood mitigation occurs when building professionals adopt and enforce flood damage resistant building codes and standards. Communities participating in the NFIP community rating system (CRS) can receive credit for adopting standards higher than the NFIP minimum requirements for a reduction in premium rates. This reduction in rates is especially relevant with the implementation of the Biggert-Waters Flood Insurance Reform Act of 2012,¹ which calls for the NFIP to eliminate flood insurance subsidies and discounts and to increase rates to reflect actual flood risk.

To help support reconstruction efforts, FEMA provides the best available information regarding base flood elevations, inundation, and storm surge. Prior to Hurricane Sandy, FEMA was studying New York and New Jersey to update pre-existing Flood Insurance Rate Maps (FIRMs) that were outdated and did not accurately reflect current coastal flood hazard. New studies were used to accelerate the production of Advisory Base Flood Elevation (ABFE) data layers, maps, and methodology reports for Bronx, Kings (Brooklyn), New York (Manhattan), Richmond (Staten Island), Queens, and Westchester counties.

ABFEs are advisory in nature and more accurately reflect the 1 percent and 0.2 percent annual chance flood hazard elevations in a given area. This information can be used to help inform the recovery and rebuilding process for impacted communities. Nassau and Suffolk counties do not have ABFEs because their effective FIRMs were established in 2009; thus, communities in those counties will use the base flood elevations (the 1 percent annual chance flood hazard elevation) to inform their recovery. Community members should check with local building officials to fully understand requirements for rebuilding.

U.S. Small Business Administration Disaster Assistance Program

While some funds to make homes habitable are available through the Individual Assistance program, more household disaster assistance from the federal government is in the form of loans administered by the U.S. Small Business Administration.

Under the SBA program, those who suffered uninsured or underinsured losses may be eligible for Home or Business Disaster Loans. SBA determines the term of each loan and the borrower's ability to repay. The law authorizes loan terms up to a maximum of 30 years. However, for businesses with credit available elsewhere, the law limits the loan term to seven years. To protect each borrower and the SBA, borrowers are required to obtain and maintain appropriate insurance.

Hurricane Sandy Federal Initiatives

Hurricane Sandy prompted an extraordinary federal response. First, the NDRF was enacted in full. Also, the president took the extraordinary step of establishing a task force composed of cabinet-level leadership from federal agencies involved in recovery efforts. Finally, Congress authorized a significant outlay of supplemental funding to cover expenses related to all phases of disaster response and recovery.

The Hurricane Sandy Rebuilding Task Force

On Dec. 7, 2012, President Obama signaled a continuing commitment to long term recovery by signing Executive Order 13632, which created the Hurricane

Sandy Rebuilding Task Force. After careful consideration, the president and his advisors determined that many aspects of Sandy – among them the size and scope of its impact and the need for consideration of recovery measures that cross regional geographic and political boundaries – called for a more comprehensive response than the NDRF alone provided. Chaired by Secretary Shaun Donovan of the Department of Housing and Urban Development, and comprised of most members of the cabinet and several senior White House officials, the task force ensures cabinet level, government-wide, and region-wide coordination to help communities making decisions about long-term rebuilding. Specifically, the task force was charged with providing the coordination necessary for a comprehensive and collaborative approach to the long-term rebuilding plans for this critical region and its infrastructure and with ensuring that the federal government continues to provide appropriate resources to support affected state, local, and tribal communities to improve the region's resilience, health, and prosperity by building for the future.

On April 4, 2013, Secretaries Shaun Donovan and Ray LaHood along with the Hurricane Sandy Rebuilding Task Force announced that all major Sandy-related rebuilding projects must meet a single uniform flood risk reduction standard. The standard, which is informed by the best available data, brings the federal standard into alignment with many state and local standards already in place and begins to take into account the increased risk from extreme weather events, sea level rise, and other impacts of climate change. It applies to the rebuilding of structures that were substantially damaged and will be repaired or rebuilt with federal funding. The new standard will require major residential, commercial, or infrastructure projects that are applying for federal dollars to account for increased flood risk resulting from a variety of factors by elevating or otherwise flood-proofing to one foot above the base flood elevation specified in the most recent federal flood guidance.

The Hurricane Sandy Relief Bill

On Jan. 28, 2013, Congress passed the Disaster Relief Appropriations Act of 2013 ("Hurricane Sandy Relief Bill") which authorized \$60.4 billion to fund federal resources for response, recovery, and FEMA Hazard Mitigation assistance in all affected states. The appropriation included funding for repairs to homes and public infrastructure and to help affected communities prepare for future storms. The appropriation was originally \$50.4 billion with a \$10 billion appropriation approved earlier primarily for flood insurance.

The breakdown below presents the approximations of funds approved for a total of \$47.9 billion (appropriation amount after sequester reductions):²

\$15 billion - Department of Housing and Urban Development

\$12 billion - Department of Transportation

\$11 billion - Department of Homeland Security

\$5 billion - Army Corps of Engineers

\$0.8 billion - Department of the Interior

\$0.8 billion - U.S. Small Business Administration

\$0.8 billion - Department of Health and Human Services

\$0.6 billion - Environmental Protection Agency

\$0.1 billion - Other agencies, including Department of Commerce, Department of Veteran Affairs, Department of Agriculture, Department of Defense, Department of Labor, Department of Justice, National Aeronautics and Space Administration, General Services Administration, Smithsonian Institution, Social Security Administration, and Legal Services Corporation. In total, 11 billion was given to other agencies.

The largest sum, going to HUD for Community Development Block Grant-Disaster Relief (CDBG-DR), represents the largest appropriation in the program's history. Of the \$15 billion, about \$12 billion will be applied toward recovery for survivors from federally-declared disasters in 2011-2013. The remaining \$3.9 billion is solely for Sandy-related projects. Many state and local government programs will be funded through CDBG-DR grants. The city and state of New York have each issued an action plan for utilizing CDBG-DR funds and HUD has approved the plans. Information on the plans is available in the resources appendix.

Plan for a Recovered New York

Along with causing major damage to residences and businesses, Hurricane Sandy destroyed or damaged community assets like boardwalks and public works. Health care centers were shut down. Municipal wastewater treatment facilities were overwhelmed or damaged. Vital energy and transportation infrastructure were disrupted or taken out of service. Recovery must take into account the breadth and depth of damages and the full scope of possibilities for rebuilding.

While the individual chapters of the Recovery Support Strategy discuss detailed sector-specific strategies, this section provides an overview of core strategies—priorities for an integrated recovery. The connections among people, homes, health, businesses, natural and cultural resources, communities, and infrastructure demands a unified approach that learns from the past, focuses on the present, and prepares for the future.

Core Strategies

Housing

Housing, as an element of neighborhood revitalization, does not exist in a vacuum, but in a context that impacts the quality of life for those living within it. “Place-based” recovery works to ensure that revitalized housing exists in a sustainable community that effectively integrates housing, land use, economic and workforce development, transportation, and infrastructure investments. Key priorities for effective housing recovery in New York in the aftermath of Hurricane Sandy are to 1) expand housing options, 2) support affordable



and accessible housing development, and 3) leverage financial resources for preserving, rehabilitating, and creating housing in the impacted neighborhoods.

Expand Housing Options

Housing recovery is particularly challenging in the metropolitan New York region, where rents are among the highest in the nation and there is little available housing stock. In addition, many disaster survivors are low-income renters who require some form of assistance to secure permanent housing. For homeowners, rebuilding assistance—including help leveraging financing options as well as mitigating against future disasters—should be readily available. Assistance in rebuilding is a goal that is thoughtfully addressed in the New York and New York City Community Development Block Grant-Disaster Recovery (CDBG-DR) Action Plans. The state and city will receive full support from all applicable federal agencies in this important endeavor. To address the unmet needs of low-income renters impacted by the storm, affordable housing

programs (including public housing and multi-family programs) would benefit from expansion, including mitigation to make public and assisted housing more resilient to safeguard against future storms and to prevent loss of valuable affordable housing inventory.

State and local jurisdictions are encouraged in the development of customized housing recovery program initiatives that support the preservation, rehabilitation, and development of housing in impacted neighborhoods. Among other actions, the existing interagency working group on sustainability should be leveraged to target resources for creating and revitalizing energy-efficient, climate-resilient housing. Additionally, NGOs, community development corporations (CDCs) and housing counseling agencies should be encouraged to unify and coordinate their efforts in order to accelerate recovery and maximize returns. In order to expand housing options, communities may need to revise local zoning codes and incorporate hybrid housing designs that maximize land use while preserving neighborhood identity.



Support Affordable and Accessible Housing Development

The New York metropolitan region contains three of the nation's five areas with the highest cost of living. The lack of affordable housing supply in the greater New York area has been exacerbated as a result of property damage from Hurricane Sandy. The existing supply of affordable housing, including public and assisted housing, in the impacted neighborhoods is inadequate to meet demand. Hurricane Sandy has added to the urgency to restore and increase the supply of affordable housing in impacted neighborhoods.

To help meet these needs, federal housing partners will support state and local jurisdictions to build capacity, leverage resources, and collaborate with partners as they work to create and stabilize affordable, supportive, and accessible housing in the impacted neighborhoods. These coordinated efforts should include developing an educational outreach and training program on accessible housing. The objective of the training will be to provide a clear understanding of the housing needs of people with diverse disabilities, including the importance of utilizing universal design principles.

Capacity building of nonprofit housing organizations and community development corporations should be enhanced to expand their role in developing low cost supportive housing that will help to bridge the affordability gap, particularly for the large populations of people with access and functional needs who were impacted by Hurricane Sandy.

Specific strategic initiatives to increase the availability of affordable, supportive, and/or accessible housing in impacted neighborhoods include the NYC Small Homes Rehabilitation and the NYC Multifamily Building Rehabilitation Housing programs and the NYS Smart Home and Reconstruction program.

Finally, to prepare for future storms, the infrastructure of public housing investments will require mitigation. Key activities identified in the New York City CDBG-DR Action Plan include the relocation of heating, ventilation, and/or air conditioning (HVAC) systems to higher floors or rooftops and the installation of emergency generators in public housing developments as well as backup power for commercial facility water pumps.



Leverage Financial Resources

The availability of financial resources is often viewed as the primary means of stabilizing a community after a setback. Disaster recovery funding is complicated as it involves multiple sources, which are vested with multiple agencies (at the local, state, and federal level) and nonprofits, foundations, and corporations. It is difficult to navigate and coordinate these diverse resources. This presents an opportunity for recovery partners to come together to streamline the process, while ensuring accommodation for people with disabilities according to federal law (specifically Section 504 of the Rehabilitation Act, as well as the Americans with Disabilities Act and Fair Housing Act).

State and local jurisdictions are to be encouraged in their efforts to leverage public, private, and philanthropic resources, including the CDBG-DR supplemental appropriations and other federal funds, to ensure maximum return on investment. Specific policies and programs to leverage include the Federal Housing Administration and Federal Housing Finance Agency foreclosure moratorium and standardized eviction policy for FHA-insured Fannie Mae and Freddie Mac loans; the NYC Storm Recovery program; the NYC Housing Preservation and Development Department Emergency Loan program; and the Federal Home Loan Bank Board of New York's discounted financing program for homeowners. Especially welcome are efforts to use financing as an incentive to support the development of innovative new housing solutions by local public housing agencies to develop mixed-finance/mixed-income housing in impacted neighborhoods.

Economic Revitalization

As economic recovery fosters stabilization in disaster-affected communities, it is important to support existing businesses in areas heavily impacted by Sandy as well as the development of new business and employment opportunities. For a healthy recovery of New York's economy, the following areas are priorities: 1) health care industry assistance, 2) small business aid, 3) economic development, 4) tourism, and 5) the Port Authority of New York and New Jersey.

Health Care Industry Assistance

Substantial damage to healthcare systems, because of facility closures or limited service provision, has occurred. Large hospitals and biotechnology firms have

sustained significant damage from the disaster. Community health centers and other ancillary care facilities were closed or forced to relocate. The accessibility of these care providers is critical to neighborhoods and lower-income areas as they provide primary care services essential to maintain good health in the community. Damages affected not only care delivery, but also biological research and medical education capacity.

In addition, the healthcare industry comprises a significant percentage of the workforce in many disaster-affected communities and is an important economic engine for those areas. Healthcare providers impacted by Hurricane Sandy have lost revenue and may have incurred increased operating costs. These financial challenges have been identified as a barrier to re-establishing service in heavily-impacted areas.

Small Business Aid

A thriving economy can be directly tied to the health of its small business sector, which has been described as an engine of economic growth and job creation. The financial health of some businesses was already tenuous prior to Hurricane Sandy, so post-storm recovery may prove to be difficult. Many small businesses, such as small manufacturers and industrial firms (which according to the NYC SIRR were disproportionately impacted) lack insurance, capital, or information to rebuild, mitigate their properties, or re-establish their businesses even after they receive emergency federal assistance.

Impacted businesses will benefit greatly from technical assistance and counseling geared toward helping them with developing recovery and growth strategies, mitigation solutions, and risk management and resiliency plans.

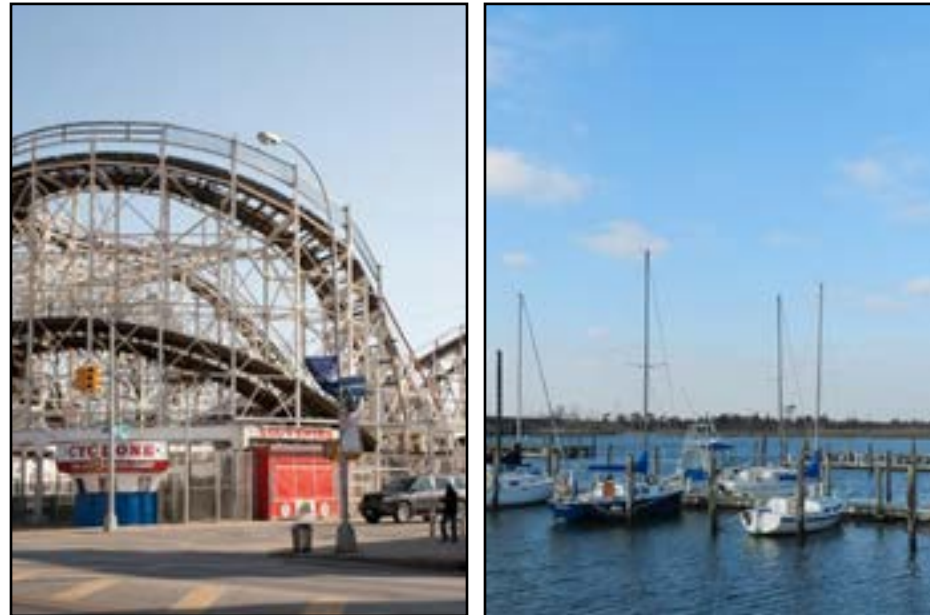
Economic Development

Many property owners did not have flood insurance in those zones where such insurance was not mandatory. As a consequence, local municipalities will experience a loss of revenue due to property and sales tax reductions. There will be a significant need for rebuilding assistance, including financial assistance.

The federal community planning team will link communities with resources that can bolster financial capacity and will facilitate workshops on grant writing and financial management to expand local financial management capacity. This could include partnering with different federal agencies such as the Environmental

Protection Agency and others to provide a workshop on how to manage federal grants or connecting communities with online video workshops.

The city of New York has earmarked \$100 million for physical investments to improve businesses' resiliency to severe weather. The program is designed



to incentivize businesses in the 1 percent (100-year) floodplain to undertake improvements that can reduce the impact of future storms.

Tourism

A widespread concern identified by community stakeholders is Hurricane Sandy's impact on the tourism industry. Many of New York City and Long Island's iconic boardwalks, theme parks, and beaches were damaged by the storm. Additionally, many museums, galleries, popular historic districts, and landmarks were significantly impacted or ceased operations indefinitely. The challenge for much of the waterfront tourism industry is tied to the seasonality of the market. While some impacted regions have a diverse business culture and are equipped to handle a drop in sales off-season, other regions, especially those along the Long Island shorelines and in the Lower Hudson Valley, rely on tourism during the summer months for the majority of their annual revenue.

Recovery activities identified by state and local officials include convening peer-to-peer workshops to continue the recovery planning process; requesting funding from federal, state, and private sources for marketing; and increasing capital access efforts through traditional and non-traditional lenders to finance rebuilding.



The Port Authority of New York and New Jersey

The Port Authority conceives, builds, operates, and maintains infrastructure critical to the New York/New Jersey region's trade and transportation network. These facilities include America's busiest airport system, marine terminals and ports, the Port Authority Trans-Hudson (PATH) rail transit system, six tunnels and bridges between New York and New Jersey, the Port Authority bus terminal—the world's busiest passenger terminal—located in Manhattan, and the World Trade Center.

Federal funds are available through the U.S. Department of Transportation, FEMA Public Assistance, and FEMA Hazard Mitigation to assist the recovery of PANYNJ infrastructure assets. As the recovery operation proceeds the IS RSF is available to enhance understanding of federal and other assistance and to offer advice on the incorporation of mitigation, sustainability, and resilience-building measures into recovery plans and implementation.

Infrastructure

The effectiveness of a community's infrastructure can profoundly influence its quality of life. For a metropolitan area the size and density of greater New York City, the ability to thrive depends on the scope of its infrastructure. For example, infrastructure is necessary to supply potable water and energy, dispose of waste, enable communication, and support vital functions such as healthcare and emergency services. Prudent investments in infrastructure over New York's long history have benefitted economic health supporting the growth of some of the state's largest industries such as finance, media, and tourism.

Restoring and increasing the resiliency of New York's infrastructure faces significant challenges: the aging of structures, limited space, and proximity to water. Where there is a high density of tall buildings and comprehensive network of roads, extra time may be required to secure permits and build around other structures. Many communities that are on or near water must build under,



above, or around the water and account for long-term impacts such as flooding and erosion.

New York's extensive public transportation network and energy sectors were affected badly by the storm. These damages disrupted commerce, slowed distribution of necessary goods and services, and adversely affected wastewater facilities and surrounding waterways. The loss of power and transport, along with flooding and high winds, contributed to the closure of healthcare facilities and failure of communication networks.

The following section addresses these interdependent infrastructure systems: energy, transportation, health care facilities, and wastewater systems.

Energy

One of the hardest hit sectors of New York's energy system was the electrical power grid. As the storm passed over the New York area, over 8 million

customers experienced electrical power outages, revealing significant vulnerability in the grid. FEMA's Sheltering and Temporary Essential Power (STEP) program, piloted in New York as the Rapid Repair program, repaired storm-damaged electrical meters and provided essential electricity, heat, and hot water for almost 20,000 homes in New York City.

In addition to experiencing direct impacts on its electrical systems, New York was significantly impacted by damage to the petroleum sector, which has significant assets in northern New Jersey. New York and New Jersey continue to discuss opportunities to collaborate in rebuilding a resilient petroleum sector.

Going forward, federal agencies will collaborate with the private energy sector to explore opportunities to increase resilience into the energy system through activities such as backup generation capabilities along evacuation routes; "distributed generation" capabilities to build resilience; retrofit critical public facilities (especially buildings and special facilities supporting the emergency services and the public health sectors) with alternative and renewable power supplies; expanded use of the Emergency Power Facility Assessment Tool (EPFAT) database, which is maintained by the U.S. Army Corps of Engineers (USACE), which consolidates information regarding facility-specific emergency power requirements.

Transportation

More than \$287 million has been made available in emergency relief funds for New York to rebuild roads and bridges damaged by natural disasters, with \$250 million specifically designated for Hurricane Sandy recovery. Funds from the Department of Transportation's Federal Highway Administration will be used to reimburse the state for expenses to replace damaged highways and bridges, establish detours, and replace highway infrastructure devices such as lighting and guardrails.

Building resilience into the system can be achieved through activities such as developing redundant power supplies and back-up communication networks to maintain continuity of public transportation and speed restoration during and after disasters; updating technology to increase efficiency and control of transportation networks and improve emergency response; elevating transportation infrastructure; and erecting flood barriers to protect port infrastructure.



Health Care Infrastructure

Restoration of health care facilities after a disaster is critical to the community for the continuity of health care. This includes not just big hospitals but also the constellation of ancillary care providers who treat traditionally underserved communities and other vulnerable populations. While most of New York’s larger care facilities and hospitals have returned to some degree of operation, other health care providers have faced additional challenges. Some of these challenges may include finding resources and staff to develop recovery and resiliency plans that may need to meet more stringent elevation and other mitigation measures. Also, leveraging mitigation opportunities and technical expertise to enhance the physical resilience of the healthcare system infrastructure in disaster-affected areas is critically important.

Wastewater Treatment Systems

Wastewater infrastructure in New York provides important public health and environmental protection benefits. The state provides regulatory oversight and addresses issues and challenges such as combined sewer overflows, nutrient enrichment in estuaries, and adequacy of residential septic systems. In addition to these existing challenges, flooding impacts from Hurricane Sandy have highlighted other vulnerabilities. Water quality and/or drinking water infrastructure projects that can be funded include those that prevent interruptions of service, preserve and protect equipment, prevent flooding, and provide assessment and analysis. Funds will be used for projects whose purpose is to reduce flood-damage risk and vulnerability and/or to enhance resiliency to rapid hydrologic shifts during a natural disaster. The Disaster Relief Appropriation Act-Clean Water State Revolving Fund (DRAA-CWSRF) and Drinking Water State Revolving Loan programs will operate much like an environmental infrastructure bank wherein loans are provided to recipients at rates lower than the marketplace. Eligible projects will be ranked to ensure that the disaster funds will be used for the most needed projects.

Coastal Resources

Natural systems and processes are inextricably linked with and contribute to the resiliency of coastal communities. Restoration of wetlands, dunes, and other natural systems is an important component of regional strategies to protect



compromised coastal areas and also to enhance resiliency proactively in coastal communities that did not sustain serious damage during Hurricane Sandy. Local, state, tribal, and federal governments and nongovernmental organizations are assessing potential ways to help communities to employ natural resources or green infrastructure for recovery, while promoting sustainable growth practices. In addition, federal partners are interested in working with communities on resilient waterfront recovery to help capitalize on their waterfront assets (which include cultural and natural resources), restore waterfront economies, and redevelop infrastructure in order to make all three more resilient and sustainable.

Beaches and Dunes

Sandy resulted in widespread erosion of beaches and dunes and caused damage not only to waterfront communities but to the natural areas in which they are often situated. The loss of protective beaches and dunes has left waterfront communities more vulnerable to damage from storms. A near-term response is to restore beaches and dunes in front of waterfront communities. To coordinate response activities, local, state and federal agencies participated in a Beach Infrastructure Task Force in the weeks after Sandy hit. Federal agencies and partners continue sharing technical expertise to provide coastal impact assessments and collect critical post-Sandy baseline data of offshore areas.

The initial emergency-response beach restoration will provide a short-term level of protection to the most vulnerable coastal communities. The next phase is to begin developing coastal resiliency strategies that will provide a balance of natural processes and infrastructure protection for the long-term and will accommodate scenarios of increased storm intensity and sea-level rise. To address the complexity of creating long-term resiliency and sustainability measures for beaches and dunes, the Coastal Resiliency Task Force (CRTF), an interagency working group, has been convened. The task force provides a structure for the coordination of Sandy coastal resiliency projects. The CRTF does not actively participate in planning or implementing project activities; rather it is a forum where local, state, tribal, and federal agencies, as well as nongovernmental organizations, can obtain information regarding planned and ongoing resiliency activities. The Coastal Resiliency Task Force works within the bounds of existing management plans such as the Fire Island to Montauk Point Reformulation Plan.

Other efforts related to beach and dune resiliency include the coordination on data collection of the inner continental shelf that will provide critical information for managers, planners and scientists. A comprehensive bathymetric survey would provide data for identifying future potential sand sources, sea floor habitat mapping, coastal hazard prediction modeling, and an understanding of how Sandy may have altered the seabed.

Fishing and Aquaculture

Long Island's fisheries and aquaculture are dependent on adequate water quality and healthy coastal habitats. The magnitude of the impacts on the fishing and aquaculture industries in the state of New York has been characterized as "significant" and the majority of losses were uninsured. This includes widespread damage to vessels, docks, dealerships, processing plants, and supporting businesses, as well as the closure of many shell fishing areas. As a result of the coastal devastation caused by Sandy, the U.S. Department of Commerce declared a fishery resource disaster for New York. Federal and state partners are working to provide support to businesses and individuals in the coastal fishing industry.





Ecosystem Restoration Strategies

Sandy also impacted coastal ecosystems and exacerbated existing problems related to coastal waters. This includes water quality impacts, closure of shellfish beds, and erosion of coastal marshes. The restoration of wetlands, shellfish beds, and living shorelines can restore ecosystem functions and reduce community vulnerability. Local, state, tribal and federal partners will support ecosystem restoration and conservation planning to meet both economic recovery and community resilience needs. Priority is directed to protection and restoration of critical natural resources and recovery alternatives that enhance natural and protective ecosystem functions.

Recovery partners will also facilitate the development and application of hybrid engineering approaches that link “soft” (green) ecosystem based approaches with “hard” (grey) infrastructure to provide holistic solutions to enhance resiliency. These efforts will build on the concept of “living shorelines” and identify combinations of natural ecosystems and built infrastructure that best protect coastal communities and shorelines.



Waterfront Strategies

New York’s waterfront communities range from seaside villages within wildlife preserves to skyscrapers housing international financial firms surrounded by historic and cultural waterfront assets. The waterfronts and waterways provide New York communities with a variety of benefits, but these very benefits attract more residents, increasing the risks related to coastline erosion, flooding, and rising sea levels.

Hurricane Sandy’s greatest impacts were to New York’s diverse waterfront communities. For some communities, docks, boardwalks, and piers need to be restored, or waterfront businesses and recreational marinas rebuilt. Other communities are interested in preserving historic waterfront structures, revitalizing waterfronts business districts, or promoting “smart growth” approaches. With New York’s diverse range of waterfront communities, adaptable strategies, technical expertise, and specialized resources are required to reduce vulnerabilities and plan for long-term sustainability.

To develop such strategies, New York is encouraging a more comprehensive assessment of the economic and societal costs of damaged waterfront assets

as it formulates reconstruction guidelines for all communities in coastal risk zones. Through the Community Reconstruction Zone planning process, the state and its partners will work with communities to complete an assessment of vulnerabilities to waterfront resources and identify measures to enhance resiliency. Federal partners will provide tools and technical expertise to assist with the state's workshops to build capacity for local development of Community Reconstruction Zone plans.

New York City is considering a framework for urban waterfront adaptive strategies that will also identify measures to enhance resiliency. Federal and state partners will support the Department of City Planning by providing data, tools, and technical expertise.

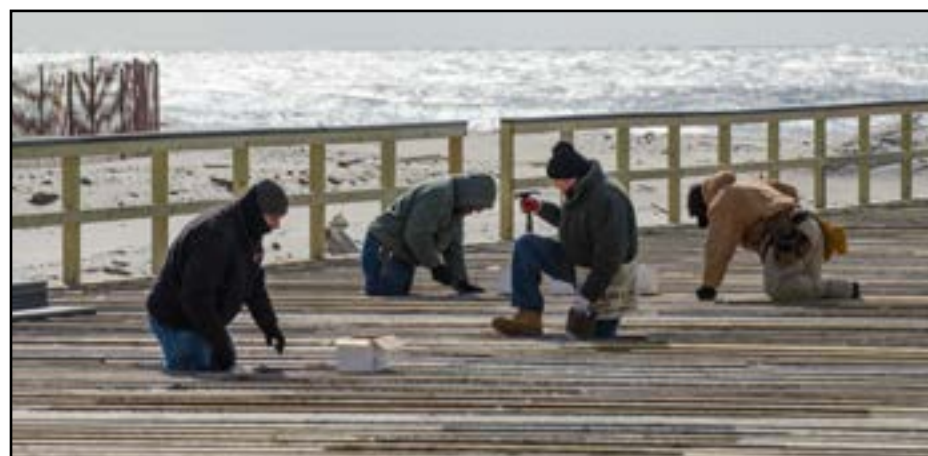
Whole Community Recovery

Local Government Capacity

Activities related to disaster recovery can stress a community's preexisting strengths and uncover hidden weaknesses. A community that may have had plenty of capacity prior to a disaster may become weakened in some or many areas.

Increased workloads and other demands related to disaster recovery require a community to have the capacity to apply for and administer grants and other funding; create or revise planning documents; process permits; and implement recovery projects and strategies. This institutional and staffing capacity is needed in a wide range of community departments and functions, including community planning departments, zoning and permitting, public works, building inspections, and financial management offices. Additional capacity needs include having knowledge of recovery programs like Hazard Mitigation and Public Assistance as well as disaster funding mechanisms.

Post-disaster community planning can provide opportunities to discuss and incorporate ideas and principles designed to foster resilience and mitigation. Planning also provides opportunities to address issues that created pre-disaster obstacles and to approach planning in an integrated way. Federal partners will work with impacted communities to take advantage of these opportunities.



Inclusive Social Services

Social service providers suffered damage to infrastructure and equipment, interruptions to service provision, loss of funding, and other material losses. These challenges have a direct impact on many survivors, particularly children and seniors who are traditionally considered two of the groups within “at-risk” populations following a disaster. (See Chapter Two, Health and Social Services Recovery Support Strategy, for the definition of “at risk”).

Children’s risks in disasters are intensified by disruption to their daily lives and routine due to devastation of homes, schools, childcare facilities and neighborhoods. Effects on schools and early childhood programs can also have significant consequences for the economic recovery of the whole community. Families are impacted as safe affordable child care options may be unavailable, resulting in the inability of caretakers to return to work, repair homes, or, if necessary, find new housing.

The primary concern for the senior population displaced by Hurricane Sandy is their continued need for accessible and affordable housing for those living on fixed incomes. A targeted approach is recommended to avoid placement of otherwise independently functioning individuals into a more restrictive environment than their pre-disaster living conditions. Keeping seniors with their caregivers and their communities is also important.

Numerous service providers seek to assist at-risk populations and other disaster-affected individuals and communities. Disaster Case Management supports service-delivery integration by providing each client with a single point of contact to facilitate access to a broad range of resources.

Cultural Resources

Assistance is required to support the recovery of cultural and historic resources in a manner that restores and enhances cultural, economic and societal value and improves resilience to current and future risks. Treatment alternatives for distressed cultural and historic properties must not adversely affect or destroy cultural and historic fabrics and traditions. A working inventory of cultural resources impacted by the storm, including those eligible for the National Register of Historic Places, must be developed in order to appropriately act on opportunities for cultural grant and mitigation funding as well as technical assistance. Conservation education and technical preservation guidance materials

and trainings will assist in repairing, restoring, and rehabilitating cultural and historic resources and support the heritage and identities of impacted areas and institutions. Federal, tribal, state and local programs can provide emergency response planning tools and best practice guidelines.

Environmental Health Hazards

Clean-up activities have spurred concerns about overall environmental health. Thousands of homes, businesses and public facilities affected by storm surge inundation have experienced varying degrees of mold spore growth that could result in negative health impacts if left unaddressed. Potential lead and asbestos exposures present additional challenges for current residents engaging in debris removal and rebuilding. Improving water and wastewater treatment facilities that sustained damage is also relevant to the rebuilding process.

Education, training and technical assistance, and support on environmental hazards is helpful in reducing the potential risk of exposure. Federal partners will continue collaboration and provision of technical assistance to promote healthy communities, educate communities, and provide scientific knowledge in environmental health and safety.



Environmental Justice

Federal agencies are required to develop strategies to identify and address Environmental Justice in the work they do. The EPA, as chair of the federal Environmental Justice Interagency Workgroup, defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The entire federal family is committed to working with New York and New York City to facilitate actions aimed at addressing Environmental Justice concerns.

Some potential actions include 1) working with local, state, and federal leaders to develop a common approach for identifying impacted areas in accordance with the federal directive; 2) facilitating engagement among local, state, and federal agencies to address the Environmental Justice concerns of affected communities, and 3) providing resources where applicable.

Effective Recovery Practices

As the Recovery Support Strategy has evolved, the federal disaster recovery team has observed a number of overarching considerations that should be taken into account for effective recovery. The following actions help inform a coordinated recovery after a large-scale disaster. They emerged from a combination of RSF observation, recovery best practices, and an advisory document produced by the National Oceanic and Atmospheric Administration and the U.S. Army Corps of Engineers to provide guidance on effective recovery (Infrastructure Systems Rebuilding Principles, Feb. 28, 2013).

Plan Holistically

New York City and Long Island comprise one of the most connected and densely populated regions in the country, and because the impacted areas are also very different, reconstructing and protecting New York's neighborhoods will be an especially complex undertaking. There is profound variation in the affected areas in both the nature of the coastal landscape (e.g. sandy beach-dune systems vs. hard-edged barriers like highways) and the density of development along those coastlines. Some landscapes were more susceptible to long-term

impacts from Hurricane Sandy than others depending on the height and duration of the surge, orientation of the coastline to wave action, and other site-specific considerations. In vulnerable places, shorelines have been reconfigured or returned to a wetland state, while neighboring areas may have gone untouched. In some locales, other sensitive natural resources or infrastructure, such as the aquifer that provides Long Island's potable water, must be repaired or protected because damage has rendered them vulnerable to future storms.

The tools and resources that best facilitate redevelopment and revitalization are different depending on the combination of these various geographic and developmental density characteristics. For these reasons, communities in the Hurricane Sandy impact zone are encouraged to embrace the importance of holistic, coordinated, and regionally-integrated actions.

One example of an inclusive approach is New York's Community Reconstruction Zone (CRZ)* initiative, funded by the federal CDBG-DR program, which will work to revitalize severely damaged communities. Using initial program funds, New York anticipates providing planning grants to targeted communities. Later allocations will implement successful reconstruction zone plans. The CRZ program encourages plans that evaluate a community's full array of assets and address both their restoration and future resiliency. Importance is placed on plans that include new measures to protect underserved communities and populations in the event of future emergencies, improve the future of the local economy while enhancing the resiliency of the community, and align regional and community long-term objectives.

Enhance Regional Integration

The close proximity of municipalities to one another along the NY coast highlights the importance of a regional perspective on community redevelopment actions, as the development and mitigation strategies executed by one community can have a direct impact on neighboring areas. Sandy-impacted communities are also connected by the largest public transportation infrastructure in the country, extending from New York City through Long Island, southeastern New York, central and northern New Jersey, and Connecticut. If investments are coordinated among communities along the same transit corridors, this connectivity can be a

* Program name modified to NY Rising. Throughout this report, CRZ refers to NY Rising program.

tremendous asset; if they are not, revitalization strategies may have the opposite effect and exacerbate the competition for scarce critical resources. A recovery plan that is aligned and integrated with regional investments and plans will draw on the compounding effects of cooperative arrangements and well-coordinated actions.

Develop and Share Data

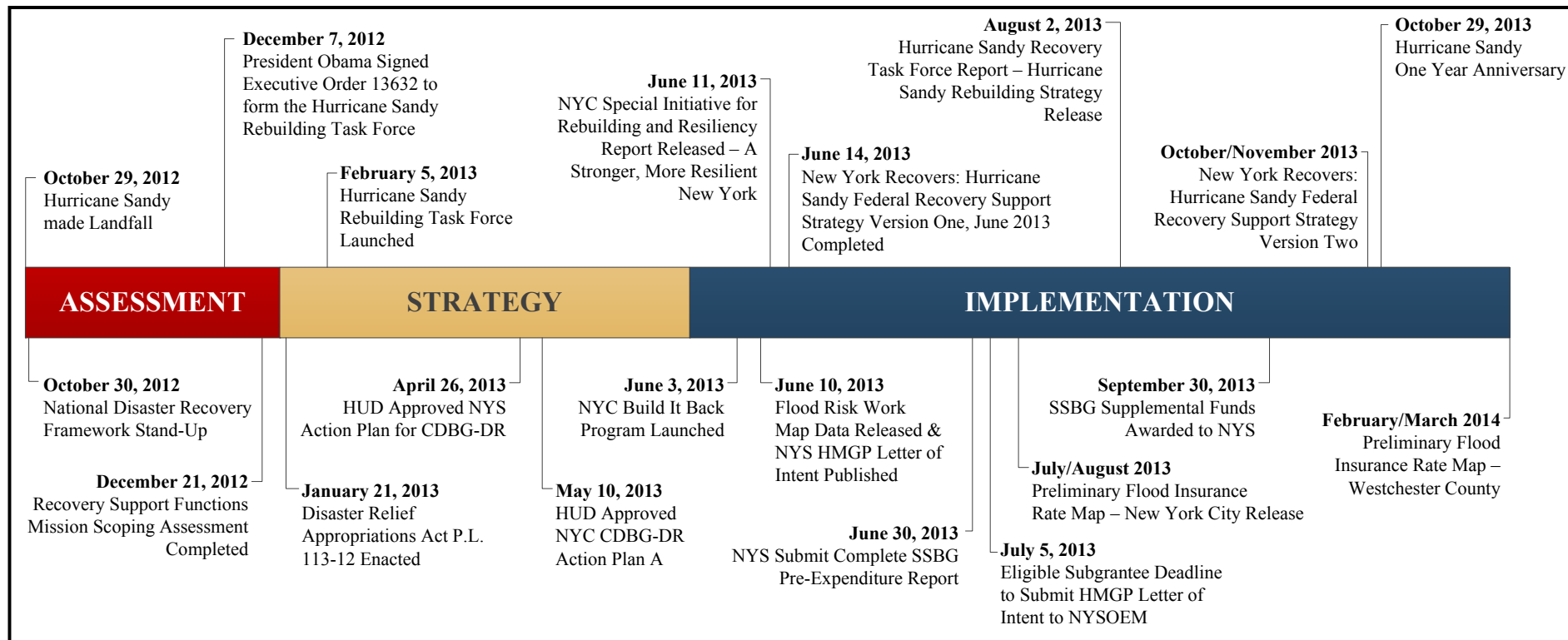
Joint research, data collection, and data sharing contribute to thoughtful community restoration. Engaging in outreach efforts with federal, state, tribal, and local partners to develop information platforms and analytic tools will help establish standardized and efficient performance measures, and identify best practices.

Every piece of storm-related data can contribute to a clearer and more detailed

picture of Hurricane Sandy's impacts. Further aggregation of economic indicators, such as unemployment figures, insurance claims, and business profits/losses, is needed. Federal coordination groups will continue to compile and share data on environmental impacts to New York's coastal areas. Health care experts have called for a coordinated public health impact assessment to be handled through the collection of data from multiple local, state, and federal partners to quantify recovery needs and inform an integrated recovery planning process. Sharing new research and data as it comes to light will support greater alignment among partners and increase understanding.

Increase Resilience

To reflect the needs of tomorrow as well as today, resiliency and sustainability principles should be part of redevelopment plans. Using a version of the definition provided by New York's 2100 Report, resilience can be defined as the ability



of individuals, organizations, systems, and communities to bounce back from stresses, growing stronger in the process. Fostering resilience means creating diversity and redundancy into systems and rewiring their interconnections so that they will function even when individual parts fail. Resilient systems share certain core characteristics, including spare capacity and the ability to stay flexible, manage failure adaptively, rebound quickly, and improve frequently through effective feedback loops, not just when disaster strikes.

Work Collaboratively

In order to maximize resources, enhance existing assets, and ensure positive results, federal partners are committed to working collaboratively and transparently with local and state partners across all agency sectors in order to coordinate an efficient recovery scoping, development, implementation, and monitoring effort. The RSS is one tool that can help foster a collaborative approach to recovery support.

Conclusion

The Recovery Support Strategy extends beyond the traditional recovery programs, core strategies, and effective recovery practices discussed in this introduction. The following chapters provide detailed information about recovery efforts and their scope within different sectors. The chapters provide comprehensive, in-depth approaches that reveal the federal support in place to aid New York's recovery. Recovery activities will evolve and adjust as some programs end and their services migrate to state, local, and nongovernmental entities, or as new data reveals additional priorities. The Recovery Support Strategy is a living document that will capture these changes over time.

Chapter Notes

- ¹ For further information on the Flood Insurance Reform Act: <http://www.fema.gov/national-flood-insurance-program/flood-insurance-reform-act-2012>.
- ² The post-sequester amounts above are based on the best available information as of May 31, 2013. They are still subject to change. The Hurricane Sandy Rebuilding Task Force permits agencies to submit revisions as needed on an ongoing basis.





Coordinating Agency

U.S. Department of Commerce

Primary Agencies

U.S. Department of Homeland Security/Federal Emergency Management Agency,
U.S. Department of Commerce,
U.S. Department of Labor,
U.S. Small Business Administration,
U.S. Department of Treasury,
U.S. Department of Agriculture

Supporting Organizations

Corporation for National and Community Service
Department of the Interior,
U.S. Environmental Protection Agency,
U.S. Department of Health and Human Services,
Delta Regional Authority



CHAPTER 1

ECONOMIC RSF

Introduction

Mission

The mission of the Economic RSF is to integrate the expertise of the federal government to help local, state, and tribal governments and the private sector sustain and/or rebuild businesses and employment and to develop economic opportunities that result in sustainable and economically resilient communities after large-scale and catastrophic incidents.

The Economic RSF's primary and supporting agencies, using their resource base in support of the state of New York, will:

- Provide grants, loans, and technical assistance to rebuild businesses, restore the economy, and plan for a more economically sustainable future
- Support regional economic development plans and projects that address recovery challenges and opportunities and identify potential funding sources for those projects
- Integrate and synchronize economic recovery plans with the overall recovery strategy to ensure that Economic RSF programs are available and leveraged across sectors



Strategy

The Economic RSF strategy is designed to support the rebuilding of key economic sectors of impacted communities and make them more sustainable and resilient to current and future risks. The strategy places a premium on aligning and supporting state and local economic development strategies and priorities. As such, the strategy was prepared in collaboration with state and city agencies including the Empire State Economic Development Council and the New York City Special Initiative for Rebuilding and Resiliency (SIRR). A major component of the strategy includes outreach and communication efforts to assist state and local economic stakeholders in identifying federal programs and other forms of assistance that can contribute to restoration and resiliency efforts. The strategy will change as economic conditions are identified and as recovery projects and priorities are implemented by state and local partners.

The Economic RSF strategy is organized into two sections:

- Post-Storm Economic Assessment: Provides a preliminary assessment of economic impacts and associated issues and challenges that must be addressed to ensure economic sustainability
- Action Plan: Outlines specific actions the Economic RSF will initiate to address identified issues and ensure mission success



Recovery Priorities

Post-Storm Economic Assessment: Issues and Challenges

Hurricane Sandy caused widespread damage after it came inland near Atlantic City, NJ on Oct. 29, 2012. The storm pounded much of the East Coast with devastating impacts to densely populated areas and key economic centers, including New York City. In 2011, New Jersey and New York represented about 9 percent of the population and over 10 percent of the country's Gross Domestic Product (GDP). New York ranked fifth in GDP per capita among the fifty states.

Two million customers lost power, with blackouts lasting up to three weeks. The storm damaged or destroyed as many as 300,000 housing units, affected or closed 2,000 miles of roads, produced flooding in subways and tunnels, and damaged major power transmission systems. The immediate impact on most sectors of the economy in the affected areas was significant and the long-term consequences will take years to accurately quantify.

Sector Specific Consequences

Transportation

Much of the infrastructure maintained by the Port Authority was damaged during Hurricane Sandy. Specifically, many buildings sustained flooding, utility service disruption, and sewage failure. The Port Authority also experienced loss of rail switches and relays, destruction of security booths and fencing, damage to cranes and other cargo facilities, and channel and rail obstruction from debris, in addition to other damages.

The infrastructure damage sustained is estimated to be between \$34 and \$52 million in capital costs, plus an additional \$5.1 million in operating costs and \$1.2 million in lost revenue from port operations. From the storm itself, approximately 15,000 containers and 9,000 automobiles were lost. In addition, 57 vessels and one cruise ship were diverted from the Port of New York and New Jersey to other U.S. ports.



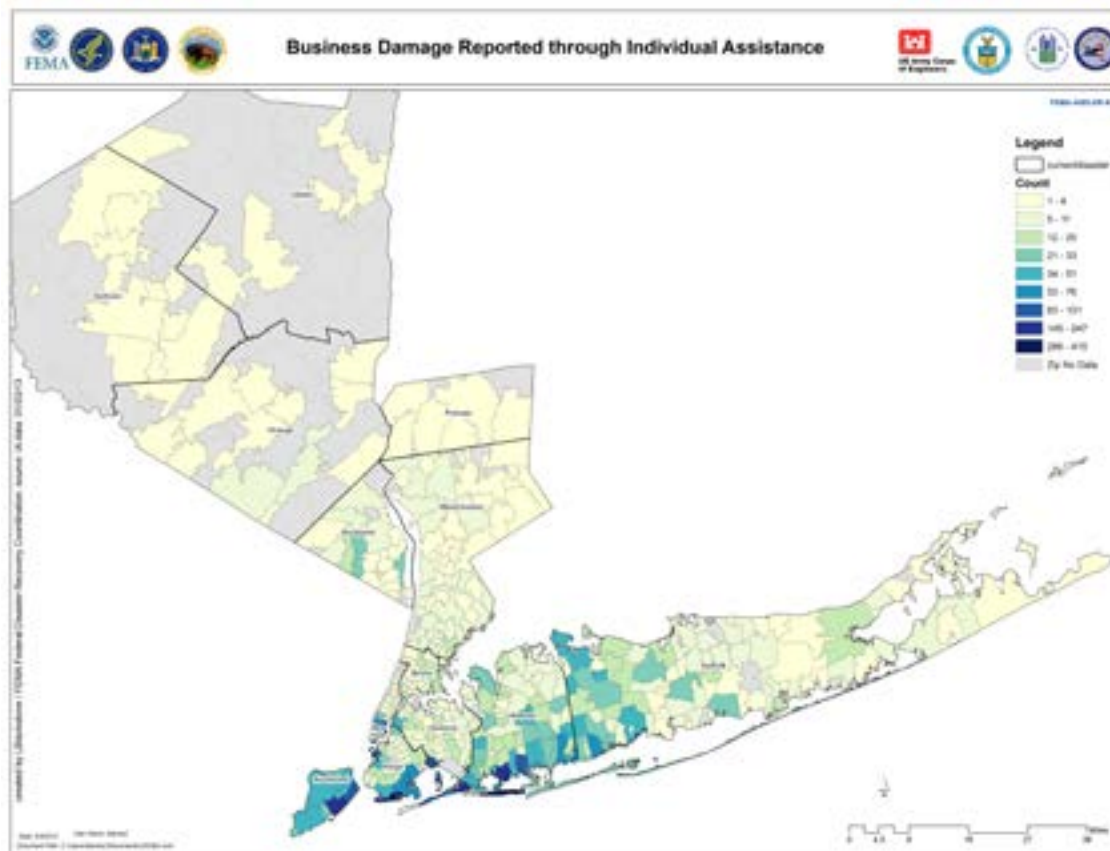
Coastal Fishing and Aquaculture

The magnitude of the impacts to the fishing and aquaculture industries in New York has been characterized in a recent NOAA report as “significant.” Information from the New York state Department of Environmental Conservation corroborates this finding and concludes that there is widespread damage to vessels, docks, dealerships, processing plants, and supporting businesses, as well as the closure of many shell fishing areas.

On Nov. 16, 2012, the U.S. Department of Commerce declared a fishery resource disaster for New York as a result of the coastal devastation caused by Hurricane Sandy. The declaration immediately authorized the SBA to issue disaster loans to impacted fishing businesses and provided funding assistance for coastal communities in Nassau, Suffolk, Westchester, Rockland, Putnam, and Orange counties and New York City.

The NOAA Fisheries (Office of Science and Technology and Northeast Fisheries Science Center) released An Initial Assessment of the Economic Impacts of Sandy on New Jersey and New York Commercial and Recreational Fishing Sectors to provide results from a rapid appraisal of impacts from Hurricane Sandy. The report showed that both New Jersey and New York incurred sizable losses and that the majority of these losses were uninsured.

In New York, damages to the recreational fishing sector totaled \$58 million (\$36 million to marinas; \$17 million to “for hire” services; \$5 million to bait and tackle shops) while damages to the commercial fishing sector totaled \$19 million (\$9 million to seafood dealers; \$5 million to federally-permitted commercial fishermen; and \$5 million to seafood processors).



Tourism

Tourism is New York City's fifth largest industry. In 2012, there were a record 52 million visitors, an economic impact of more than \$55 billion and tourism-related employment of 356,000. Major tourism sites north of lower Manhattan and the financial district experienced little or no disruption of service; however, many culturally significant sites favored by tourists were impacted by the storm and experienced a disruption of service. Some sites (including the Statue of Liberty and Ellis Island) remain closed as damage assessments and repairs are made. The city's tourism promotion agency estimates that Hurricane Sandy caused a loss of approximately 400,000 visitors.

Impacts to the tourism industry have been experienced throughout the region. Looking forward, a major concern in Nassau and Suffolk counties is beach erosion. The governor has made beach restoration a priority to forestall any further economic impacts to coastal communities as the summer season approaches. A study has been commissioned by the U.S. Army Corps of Engineers that will address both beach restoration and dune revitalization. A draft of the study has been completed. Findings and recommendations are being reviewed.



Health Care

Disruptions to healthcare industry and facilities have a significant impact to the regional economy beyond the ability to deliver essential medical care. The industry employs 375,000 people. Unemployment can become a major issue if these facilities are unable to resume services quickly. Similarly, the revenue streams of suppliers can be adversely affected if services are not restored quickly. Clearly, these essential services are critical to the communities they serve. The extent they are unavailable or diminished impacts the pace of recovery in the entire region.

New York City Health and Hospitals Corporation (HHC)

HHC, which serves 1.4 million New Yorkers annually with its 11 hospitals, suffered losses of more than \$800 million (according to HHC President Alan D. Aviles, Jan. 4, 2013). These included cost of repairs, revenue loss, and permanent reconstruction work to build back better. The two major HHC facilities that incurred significant catastrophic damage were Coney Island Hospital (CHC) and Bellevue Hospital. These two hospitals had to shut down all services during



the storm; Bellevue resumed business in February, and CHC is still recovering and could take another 12 months before it is fully restored.

Department of Veteran Affairs (VA) New York Harbor Healthcare System

The basement of the Manhattan hospital campus flooded, affecting the electrical system and destroying clinic equipment. A gradual reopening of the facility began in March, but inpatient care will not resume before July. An initial estimate of Sandy's impact on the VA New York Harbor Healthcare System is \$230 million.

New York University Langone Medical Center (NYU LMC)

NYU LMC suffered extensive flood damage to its infrastructure and medical equipment. Initial estimates are \$1 billion. Most services were closed for two months. NYU received FEMA grants totaling \$149.5 million in Dec 2012.

Manufacturing and Industrial

There are more than 6,000 manufacturing companies in New York City, employing more than 81,000 workers regionally. The Industrial and Technical Assistance Corporation (ITAC) indicated that many manufacturing firms have laid off employees due to the storm. Machinery that was flooded with salt water is still not working. These affected industrial firms are primarily located in the Rockaways, the Brooklyn Navy Yard, Long Island City, and Red Hook. Large portions of the Brooklyn Navy Yard were covered by up to six feet of water. While there was relatively limited structural damage to buildings, capital impacts to waterfront infrastructure and electrical substations and distribution networks total approximately \$30 million. To build the Yard's entire infrastructure more resiliently would require an investment of approximately \$160 million. Madelaine Chocolates, the largest employer in the Rockaways with 450 workers, is considering re-location.

Retail Establishments

The New York State CDBG-DR Action Plan concludes, “[on] Long Island alone, roughly 90 percent of the impacted businesses are retail establishments.” This particular sector can be a target focus of the Economic Development Assessment

Teams (EDATs), discussed later in the strategy. Results provided through these teams will help leverage federal grant and loan programs with programs offered by the state to address unmet needs.

Overarching Issues

The preliminary economic assessment yielded four overarching issues that will impact recovery and efforts to establish a resilient and sustainable regional economy. This section provides a characterization of the issues, and the action plan discusses how each issue will be addressed through the execution of this strategy. The issues represented here are not exclusive to the Economic RSF. Resolution and adjudication of these issues may require adjustment to existing policies, the formulation of new policies, or perhaps legislative changes, which are clearly beyond the scope of the strategy. It is important, however, to articulate these issues to ensure that impacted communities maximize the opportunities that exist in the post-disaster rebuilding environment.

- **Incomplete data:** While our understanding of economic losses and consequences improves each day, a comprehensive assessment is needed to more accurately describe losses—both direct and indirect, and short-term and long-term. Economic indicators such as unemployment figures, insurance claims, business profits/losses, etc. at both the regional, county, and neighborhood/block level lag behind and are not the most accurate indicator of present conditions. Collecting and analyzing more complete economic data is essential to the development of economic restoration and development plans. Similarly, the data will provide the basis to align both federal and state resources to ensure that the needs of all economic stakeholders are met and gaps in assistance minimized.
- **Resiliency:** New York state and New York City have established economic sustainability and resiliency as the central goals of all recovery efforts. While the disaster's effects have been tragic, opportunity now exists, as communities plan and rebuild, to make the economy stronger and more resilient. The Economic RSF will, through the implementation of this strategy, incorporate to the extent possible “green” initiatives that provide both energy conservation and climate change initiatives. Similarly, mitigation best practices will be incorporated into building design and reconstruction. The Economic RSF Brownfield Renewable Energy Initiative as described in the action plan below is an example of this.

- **Uncertainty about future business conditions:** New land use restrictions, building codes, and flood insurance requirements are not universally understood and may serve to both restrict development and increase the cost of construction. This issue coupled with the possibility of increased insurance premiums complicates the decision-making framework for businesses both small and large. Similarly, the prospect for neighborhood “buyout” programs, while reducing properties at risk, will be a factor for business given the potential for a reduced local workforce and reduced commerce, sales, and trade.
- **Access to capital:** Challenges related to access to capital have emerged as consistently significant issues from stakeholder meetings. This can be a common occurrence in a post-disaster environment where there is a gap in resources between what insurance claims, private capital, and other sources of funding can cover. This issue can become especially pervasive when there are damages resulting from flooding and in areas where businesses have experienced previous negative economic impacts (resulting in an existing indebtedness). As a result, the challenge has emerged for many businesses, but principally small businesses, to find the necessary capital to rebuild and subsequently reopen. Taking on additional debt to cover the repair costs becomes particularly unattractive for these businesses because of their existing debt load and because of the uncertainty in the marketplace of whether or not their business will have enough foot traffic to drive future earnings. An additional challenge that has emerged in the state is the creation of many new micro-loan funds. Many of these loan funds were capitalized philanthropically and intended to provide low interest or no interest loans (and some grants) to small businesses that fit the desired eligibility criteria of the funder. While this without question demonstrates the capacity and collaborative nature of the New York business community, it also creates a challenge to understand and capture the universe of these resources. The challenge for recovery managers stems from a need to capture these resources so that then businesses can readily connect to alternative sources of financing that might not otherwise be available to them. Subsequent recovery activities at the federal, state, and local levels sought to convene working group meetings to “train the trainer” to equip local economic developers, chamber of commerce leadership, and other interested parties in better understanding what capital access resources were available.

Action Plan

This section describes how the Economic RSF primary and support agencies will work with state partners, local officials, economic development councils, the private sector, academia, and private non-profit (PNP) groups to address the issues identified during the preliminary assessment. This section also describes cross-cutting challenges. For instance, how the Infrastructure RSF addresses the issue of beach restoration and comfort facilities may impact the tourism economic sector. Similarly, how the Health and Social Services RSF addresses health care facilities may impact employment trends.

Incomplete Data

In response to the lack of detailed information regarding economic impacts and recovery needs at the community level, the Economic Development Administration, in partnership with the state and other federal agencies, may establish EDATs to quantify the direct economic impacts of Hurricane Sandy. The EDATs will be fully integrated with New York’s Community Recovery Zone (CRZ) initiative. The teams will assist with identifying economic development



challenges and opportunities, recommending strategies for economic recovery and identifying economic development best practices that the community may consider in its ongoing economic and community development planning.

The EDATs, in collaboration with the state, will meet with key stakeholders from different sectors of the local community, including economic development leaders, political leaders, local government officials, business owners, workforce intermediaries, educational leaders, and financial sector representatives. They may solicit input from these stakeholders through structured small focus groups and listening sessions to facilitate an in-depth exchange of information. They may then use the results of the qualitative assessments to help stakeholders identify key resources the community can utilize to create a bottom-up strategy for fostering economic development.

The EDATs can include participation by representatives from the U.S. Department of Commerce's Economic Development Administration (EDA), the Department of Housing and Urban Development (HUD), the U.S. Small Business Administration (SBA), the U.S. Department of Agriculture (USDA), the U.S. Environmental Protection Agency (EPA), the U.S. Department of Labor (DOL), state and regional agencies, academia and invited experts.

Renewable Energy and Green Technologies

Leveraging EPA's Re-Power America initiative, FEMA's Public Assistance (PA) and Hazard Mitigation programs, CDBG-DR funds, and private investment, the Economic RSF, in conjunction with the U.S. Department of Energy's National Renewable Energy Laboratory (NREL), is working to identify opportunities for implementing renewable energy projects on or near critical infrastructure to increase community and regional resiliency to natural disasters. There is an important but time sensitive opportunity for communities in New York and New Jersey to incorporate smart mitigation practices and renewable energy technologies into plans for the reconstruction of critical infrastructure and brownfield sites affected by the storm. Through these types of activities, communities could realize short-term goals of immediate operation of vital community and business operations and an ultimate goal of accelerating the regional capacity to grow and strengthen the post recovery economy.

This initiative identifies the renewable energy potential of current and formerly contaminated land and provides other useful resources for communities, developers, industry, and state and local governments interested in reusing these sites for renewable energy development. It also has the potential for significant long term and sustainable economic growth impact on the focal area through faster restart for existing jobs, reduction of business losses in cases of spoiled and damaged goods and equipment during the disaster's immediate aftermath, and the creation of new jobs for the manufacture, installation, and maintenance of renewable energy systems. It can also improve the environment by reducing the carbon footprint through the reduction of fossil fuels, currently the major fuel for electric generation.

As part of the business recovery, mitigation, and resiliency planning, the federal agencies in the Economic RSF will encourage business operation, maintenance, and process modifications that reduce risk to people and the environment by finding ways to prevent pollution. The agencies will take into consideration human health and environmental concerns associated with traditional and alternative chemicals and processes, and facilitate the selection of safer chemicals and technologies by businesses.



Economic Resiliency

Capital Access

In collaboration with the state, the Economic RSF could explore the viability of the formulation of a capital formation task force to investigate best practices in building capital sources and opportunities to implement relatable best practices in New York. Some of these best practices may include Business and Industrial Development Corporations, Investor Tax Credits, Targeted Funds, capital securitization, and other forms of alternative small business financing.

Identify and connect community and economic development professionals in the state with existing training through national organizations involved in business capitalization such as the Opportunity Finance Network, the National Community Capital Association, the International Economic Development Council and the National Association of Development Organizations.

Federal departments and agencies operating through the Economic RSF also offer a variety of traditional grant and loan programs to provide access to capital. These programs are described in a separate document that may be used to support community workshops and other outreach initiatives.

In addition, Senator Gillibrand has provided a guidebook that outlines available disaster assistance programs across the federal government, along with other resources that can help in the recovery effort. It can be found on-line at: <http://gillibrand.senate.gov/>.

Targeted Business and Economic Development Assistance Opportunities

Below are several initiatives that could be implemented by the Economic RSF in close partnership with other RSFs, federal agencies, private sector partners, and with leadership from New York City and the state. These opportunities all related to the issues identified by the Economic RSF and are referenced in the city and state CDBG-DR Action Plans regarding the need to provide targeted technical assistance for businesses and integrate economic recovery and resiliency planning into the recovery process:

- Explore opportunities to integrate existing business assistance resources

with available risk management technical assistance. The Economic RSF could establish a working group comprised of the SBA, FEMA Hazard Mitigation, FDIC, Empire State Development Corporation, NY DOL, and other applicable NYC and NYS agencies to identify resources and leverage each organization's respective networks for disseminating common guidance for businesses as they look to rebuild in a more resilient way. Additional partners could include Small Business Development Centers, chambers of commerce, utilities, and insurance providers.

- Explore viability to convene a marine industry working group which brought together state, local, Federal and academic stakeholders to collaborate on common planning issues and share information related to recovery efforts.
- Explore the viability of facilitating a Small Business Disaster Resiliency Workshop including sessions on topics such as insurance, disaster resiliency, marketing, and finance. Identify subject matter experts from the NY Chapter of the Association of Contingency Planners. Conduct outreach with officials from the state Professional Licensing agency to advertise workshops and other training related to business continuity planning. Work with NY state risk management regulatory agencies to identify insurance industry experts to provide guidance for commercial insurance products.
- Explore the opportunities to leverage RSF partner agency resources for collaborating with activities of the Community Planning/Capacity Building RSF and Housing RSF through coordination of meetings, and promoting inclusion of resilience and economic development considerations throughout the comprehensive planning and housing recovery process.
- Identify opportunities to support the state in the development of CRZ resource opportunities, including virtualized "one-stop-shop" resource for small business disaster recovery.
- Explore methods and tactics to support the NY Small Business Development Centers in connecting with existing recovery resources to increase their capacity and establish a lasting capability to connect with Federal and private sector resources.

Where appropriate to support existing recovery efforts, the Economic RSF could deploy EDATs to provide targeted technical assistance to communities regarding their economic recovery challenges and opportunities. The EDATs could supplement existing efforts underway in the CRZs and would in a targeted way convene topically-focused working group discussions with community

stakeholders and invited economic recovery experts. These invited experts would engage the communities in best practices and lessons learned discussions and would compile their recommendations and findings in a report which would be submitted back to the community for their planning purposes.

Rebuilding Contracts

Provide support where appropriate to share best practices and lessons learned regarding recovery procurement. This effort can build on existing efforts in New York state and New York City to promote local procurement. New York has already stipulated in its action plan that the use of CDBG-DR funds must comply with a variety of standards and requirements, including the use of small, minority and women-owned businesses. The New York City Council passed legislation in March that lifts the \$1.0 million cap on city contracts with small, minority, and women-owned firms, thereby making more eligible for contracts of size and scale. However, a key factor to the success of these policies and/or incentives is monitoring, tracking and enforcement. Both the City and state of New York should consider emulating the American Recovery and Reinvestment

Act (ARRA) website, www.recovery.gov, which tracked the how federal funds were spent. Doing so would go a long way to holding public and private sector recipients accountable. The City and state of New York might also want to consider creating an incentive or a “New Yorkers Rebuilding New York” campaign that touts local businesses winning first tier and sub-contracting contracts from the state, city, and private companies.

New Customers, New Markets

According to The Survey of Business Owners, a report conducted every five years by the U.S. Census Bureau, the number of firms owned by minorities has consistently grown over the past decades and the growth rate out-paces the number of firms owned by non-minorities. In addition, the U.S. Minority Business Development Agency reports that minority-owned firms are twice as likely to export, three times more likely to boast international operations and six times more likely to transact business in a language other than English, compared to non-minority-owned businesses. Consequently, the city of New York is in an enviable position to leverage its business diversity and brand to boost exports.



Through workshops and direct technical assistance, the International Trade Administration and other trade-focused agencies are prepared to work with individual business owners to prepare them to be export-ready and to support their global competitiveness. The SBA and the Minority Business Development Agency can assist firms with becoming export-ready and entering the supply chain of multinational corporations.

Uncertainty about Future Business Conditions

To address the uncertainty that exists in the cost of resuming business operations and/or starting a new businesses, the EDA and other Economic RSF agencies, in conjunction with state agency partners and economic development stakeholders, will engage in outreach and communication efforts at the community level. The goal is to gain their perspective on emerging economic issues, new or changing priorities for rebuilding, and barriers to restoring economic vitality to the area.

To address cross-cutting issues impacting small businesses and economic conditions, the Economic RSF will coordinate across the other RSFs to address information and initiatives that may affect stakeholders. Such outreach may include community meetings regarding flood maps, mitigation measures, and buy outs, as well as environmental and safety reform legislation that could impact rebuilding decisions.

In addition, the Economic RSF will work with the Community Planning and Capacity Building RSF to identify communities in need of technical assistance to address specific issues that may impact economic recovery. Examples include adoption of new building codes, NFIP compliance, mitigation strategies, and techniques that can be incorporated into rebuilding. The Economic RSF will connect communities in need of assistance with expert community volunteers from industry partners, such as the International Economic Development Council and the National Association of Development Organizations. This volunteer technical assistance is a no cost solution for communities that can be integrated with other initiatives discussed in the strategy to support economic development and community resiliency. In addition, the Economic RSF will work with the CPCB RSF to convene topically-focused webinars and other technical assistance sessions to share recovery best practices on topics requested and relevant to economic recovery stakeholders. Some of those topics could include; working waterfronts, economic development and resiliency, workforce development in a post disaster environment, and others.

The Economic RSF will work with the Empire State Economic Development Council and New York City's Special Initiative for Rebuilding and Resiliency. The RSF outreach strategy and data collection efforts will continue and will involve all relevant stakeholder organizations, to include:

- International Trade Administration
- Port Authority of New York and New Jersey
- The Industrial and Technical Assistance Corporation
- Brooklyn Navy Yard Development Corporation
- New York Bankers Association
- New York Business Development Corporation
- New York Colleges and Universities
- Long Island Farm Bureau
- Long Island Association
- Regional maritime industries

Coordinating Agency

Health and Human Services

Primary Agencies

Corporation for National and
Community Service,
U.S. Department of Homeland Security
(Federal Emergency Management
Agency, National Protection and
Programs Directorate, and Civil Rights
and Civil Liberties),
Department of the Interior,
Department of Justice,
Department of Labor,
Education Department,
U.S. Environmental Protection Agency,
Department of Veteran Affairs

Supporting Organizations

Department of Transportation,
U.S. Small Business Administration,
U.S. Department of Treasury,
U.S. Department of Agriculture,
Department of Veteran Affairs,
American Red Cross,
National Voluntary Organizations
Active in Disaster



CHAPTER 2

HEALTH AND SOCIAL SERVICES RSF

Introduction

Mission

The mission of the Health and Social Services (HSS) Recovery Support Function (RSF) is to assist locally led recovery efforts in the restoration of the public health (including behavioral health), health care and social services networks to promote the resilience, health and well-being of affected individuals and communities. Promoting the most integrated community environment for individuals with disabilities and others with access and functional needs is a core value of the RSF.

The HSS RSF is principally concerned with reconnecting impacted communities and displaced populations to essential health and social services (including services provided to children in schools and childcare settings) by assisting in the continuity of service capacity or supporting its restoration. Consequently, the HSS RSF is concerned with disaster impacts to systems and networks of health care and social services delivery with potentially long-term implications for recovery.



Connection to the Mission Scoping Assessment Report

The Mission Scoping Assessment report (MSA) developed on Dec 20, 2012 was designed to highlight the potential “problem set” for recovery through the enumeration of preliminary issues or concerns with a potential long-term recovery implication at D+45 days following the disaster.¹

The MSA was designed to be a snapshot in time during the disaster recovery cycle, recognizing that recovery activities at the individual, organizational and community level began during the disaster response phase through various decisions made and priorities established. The MSA should be utilized as a reference tool to provide additional background information on any of the topics that follow.

Planning Factors

As the federal strategy document for coordinated health and social services long-term recovery, the Recovery Support Strategy highlights federal partners,



programs, and resources with a correlation to the issues previously identified or activities related to supporting the recovery pathway. The following planning factors informed and bounded the creation of the strategy:

- Long-term, multifactorial, and disaster-caused issues with recovery implications articulated through root-cause identification, analysis, strategy and partnership identification, and development.
- The HSS RSF recognizes that there will be an ongoing need for the immediate provision of services to address the acute needs individuals and families in the post-disaster environment. This support will continue to be provided through existing channels until or unless these concerns demonstrate a connection to long-term recovery issues and require enhanced collaboration to address the problem's root cause.
- The contents of this document are not intended to reflect the complete spectrum of potential federal programs and potential support but those that possess the greatest relevance or ability to support issue resolution.
- Some issue areas identified will have barriers or real limitations based upon statutory, regulatory or other conditions. These challenges may necessitate engagement from senior leadership and policy directors.
- The HSS RSF recognizes the need to ensure equity and transparency in the implementation of and support from federal programs and entities. The mere perception of inequitable distribution of support could significantly undermine the implementation of projects and, particularly, any new partnerships sought through the recovery process. Local jurisdictions will identify concerns and choose to address from their own identified priorities. Federal support will strive to apply policies, programs, and rules as equitably and transparently as possible.
- Pursuant to the directives in Executive Order 11988 "Flood Plain Management,"²² associated guidelines will be utilized in the allocation of federal funds for rebuilding damaged infrastructure.
- Priority areas will be addressed over time and the particular tactics of implementation as identified within other recovery strategies (e.g. state government or local jurisdictions) will adjust accordingly. Similarly, the level and type of engagement will adjust to meet the associated need as the recovery progresses.



Approach

Since the development of the MSA the HSS RSF has been working closely with partner entities within the government and nongovernment sphere to address immediate short-term recovery needs and community concerns while building relationships and supporting preliminary long-term recovery planning. This process has highlighted the ongoing need for interagency collaboration across all levels of government and incorporation of nongovernmental partners particularly as long-term recovery committees and local governmental priorities are established.

Incorporating Resilient Recovery Principles

A key component of the recovery process will be complementing mitigation projects and principles with other initiatives to enhance the disaster resilience of affected communities, individuals, and businesses. Opportunities for this integration through federal programs and initiatives are highlighted and should be pursued at every available opportunity throughout the recovery process. Doing so will reduce the likelihood of repetitive loss in future disasters and enhance a community's ability to recover through adaptation of present systems and enhancement of social community networks. An essential initiative for infrastructure reconstitution and resilience is the FEMA Hazard Mitigation Grant program and the FEMA Public Assistance program³ and through technical assistance provided via facility assessments. Another avenue for enhancing resilience will be the development of sustainable community capacity. Opportunities should be pursued to identify and support initiatives that facilitate this local capacity building effort.

The HSS RSF Mission Scoping Assessment Report outlined recovery goals, which have been reframed into core principles. Partner entities will likely be convened collectively to address these issues and will need to collaboratively determine shared goals, objectives and strategies in addressing these complex, interconnected challenges.

Recovery Core Principles

- **Healthcare and Social Services Provision:** Supporting the continuity of and continued access to essential health and social services, including schools and childcare.
- **Sustainable and Resilient Recovery:** Supporting efforts to restore the capacity and resilience of essential health and social services to meet ongoing and emerging post-disaster needs.
- **Environmental Health and Justice:** Protecting the health of the population and response and recovery workers from longer-term effects of a post-disaster environment.
- **Behavioral Health:** Supporting behavioral health systems to meet the behavioral health needs of affected individuals, response and recovery workers, and the community.
- **Inclusive Communities:** Promoting the full integration of at-risk populations, including individuals with disabilities and others with access and functional needs in health and social services recovery planning decisions.



Scope

The HSS RSF has identified the following key recovery mission areas as informed by the core principles:

- Public Health Impacts
 - Supporting coordinated public health impact assessment and data monitoring and analysis
- Healthcare Services Impacts
 - Focusing on building healthcare systems resilience
 - Supporting the healthcare workforce
 - Reinforcing primary care providers
- Behavioral Health Impacts
 - Addressing children’s mental health long term
 - Addressing community behavioral health and continuity of care
- Environmental Health Impacts
 - Monitoring and supporting community environmental health-long term
 - Supporting environmental impact and health assessments, utilizing GIS mapping tools and incorporating principles of environmental justice
 - Promoting injury prevention from environmental factors among residents, responders, and workers during recovery
- Social Services Impacts
 - Focusing on building key services for seniors and increasing resilience of accessible and affordable housing
 - Addressing unique needs of children in disasters⁴
 - Coordinating referral to social services, disaster case management and “service bundling” and connection to local provider networks

Partnerships

Partnerships from across levels of government and nongovernment entities will be critically important to the recovery planning and implementation process. Over the weeks, months and years ahead, various groups will have differing levels of engagement on the key recovery mission areas identified above. To that end, a particular challenge will be the integration and appropriate leveraging skills, contacts and services to best aggregate resources (and avoid duplication) to address complex issues. The following section identifies some key partners.

New York State Government Partners

As identified in MSA, in New York, the core mission areas of the HSS RSF are primarily managed by the following state departments: Department of Health (DOH); Office of Temporary Disability Assistance (OTDA); Office of Child and Family Care Services (OCFS); Office of Mental Health (OMH); Office of Alcoholism and Substance Abuse Services (OASAS); Office of Health Systems Management (OHSM); Office for People with Developmental Disabilities (OPWDD); New York State Office for the Aging (NYSOFA); Department of Environmental Conservation (NYSDEC); and the Education Department. Additionally, the efforts of the New York City Housing Agency (NYCHA) and the NYS Division of Homes and Community Renewal through the state-led Disaster Housing task force and the Unified Disaster Housing Coordination group to identify interim and permanent housing solutions for displaced individuals are of particular concern to the HSS RSF as proposed solutions will factor into long-term access to healthcare and social services.

Each of these offices is actively engaged in the state’s recovery planning and operations through engagement with their jurisdictional steady-state partners or through other working groups. Given the population movement patterns in the greater New York City metropolitan areas and the geographic proximity of these affected jurisdictions, state leadership will be important in facilitating conversations related to inter-jurisdictional issues.

The state-federal relationship is critically important for the HSS RSF as many federal programs and monies are directed, coordinated and assigned through state departments (e.g. U.S. Department of Health and Human Services Social Services Block Grant, Medicare and Medicaid services). Additionally, many of the regulatory requirements established at the state level will impact or influence the healthcare sector (e.g. licensure of health care facilities and other compliance requirements) and also the social services sector (e.g. licensure of childcare providers).

The 2013 New York budget priorities and federal pass-through programs will also play a key role in providing financial support to the identified mission areas⁵ and illustrate some key priority areas for New York state leadership.

Local Government Partners

Local leadership and direction in recovery operations is a key component of the recovery process and a fundamental tenet of the National Disaster Recovery Framework. The support and influence of local priorities will drive the recovery effort at the individual and community level. New York is a home-rule state⁶ and, consequently, many key decisions and municipal laws or regulations are created, managed, and directed at the local level. Certain regulations (e.g. building and zoning code ordinances) are community-specific. Also, proximity to issues, concerns, and needs of disaster survivors manifest themselves at the local level before they reach the state and federal partners. This fact reinforces the importance of continuous, robust engagement.

The HSS RSF has been working with New York City Department of Health and Mental Hygiene (NYCDoHMH), New York City Department of Environmental Protection (NYCDEP), the New York City Special Initiative for Rebuilding and Resiliency (SIRR), Nassau County Department of Health and Department of Social Services, and Suffolk County Department of Health Services and Department of Social Services on issue identification and prospective planning.



Nongovernment Partners

Essential partners in the overall recovery planning and implementation process will be the nongovernmental organizations (NGOs), faith-based organizations (FBOs), professional or organizational associations (e.g. Community Health Center Association of New York State, Hospital Association of New York State), Voluntary Organizations Active in Disasters (VOAD), private foundations, and other for-profit and not-for-profit organizations (e.g. United Way of New York City). These entities play an important role in their capacity to finance or support activities that cannot be financially supported by the federal government. They also have the ability to enhance local capacity and build programmatic sustainability, particularly after federal programs, initiatives, and funding opportunities implemented for the disaster have concluded their work.

To ensure the most integrated planning environment, these partners should be engaged from the outset of the development of recovery planning committees to the greatest extent possible.

Federal Partners

All of the primary and supporting departments and agencies⁷ identified within the Health and Social Services Recovery Support Function are expected to play some role within the recovery effort either through execution of their regular authorities or through the Congressional Disaster Relief Appropriations Act of 2013 (Sandy Recovery Improvement Act).⁸ Additional federal partners may be added as the need presents to address particular issues with which they may have knowledge, skills, expertise, or programs.

Recovery Priorities

Public Health Impacts

Statement of Core Principle

Supporting coordinated public health impact assessment and data monitoring and analysis to inform an integrated recovery planning process.

Summary Background and Challenges

Multiple partners at the local, state, and federal level have access to data points or systems that will be relevant to the ongoing analysis of the individual and community level recovery process for health and social service networks. The ability to leverage the best available data will better enable targeting of resources to various communities to anticipate or project recovery needs. A key challenge has been identifying which entities have ownership of what data and how best to coordinate these resources to quantify recovery need or areas of focus (e.g. data obtained through post-disaster population needs assessments or surveys, regular health care data feeds [syndromic surveillance]). Accessing data is not the only area requiring additional coordination. Data monitoring, interpretation and epidemiological analysis – particularly for indicators of need for social services – and associated findings are necessary.

Ongoing/Immediate Activities Taken

The U.S. Department of Health and Human Services through the Sandy Recovery Improvement Act (SRIA) has released a funding opportunity announcement (FOA) for 12 awards of \$500,000 each (total \$7.5 million) to conduct a variety of evaluations, assessments, and other research to inform the long-term response and recovery from Hurricane Sandy. Eligible applicants include but are not limited to colleges, universities, research institutions, hospitals, community organizations, or state and local governments. Information regarding requirements can be found in the FOA.⁹

Other funding research opportunities have been promulgated by the HHS/ National Institutes of Health/National Institutes of Environmental Health Sciences¹⁰ as they recognized that the potential for exposures to biological and chemical hazards and their effects on physical and mental health for responders and residents could be substantial. Please see the Environmental Health section for additional information.

Additionally, opportunities for future data analysis partnerships are under discussion with U.S. DHHS/ASPR and the NYCDHMH, NYS DOH, and other entities regarding data analysis with a particular focus on measuring the recovery for individuals and communities receiving post-disaster supportive services.

Federal Partners

HSS RSF Coordinating Agency: HHS/CDC; HHS/NIH/NIEHS; HHS/ACL; HHS/ASPR; HHS/CMS; HHS/HRSA

HSS RSF Primary Agency: FEMA/Individual Assistance

HSS RSF Supporting Organizations: American Red Cross

Inter-RSF coordination with Community Planning and Capacity Building RSF; Economic RSF; Housing RSF

Proposed Next Steps

- Collaborating with partner groups with a stake in data collection.
- Supporting identification of recovery priority areas and connection to associated data needs.
- Supporting identification and review of steady-state programs and systems designed to monitor public health and/or medical claims data relevant to this disaster.
- Supporting identification and assessment of new opportunities and existing avenues for data aggregation, analysis and sharing.
- Assisting the implementation of strategies to assess and monitor public health, disease surveillance and injury prevention within the impacted community in order to identify and mitigate health problems.

Health Care Services Impacts

Statement of Core Principle

Supporting efforts to restore the capacity and resilience of essential health care services to meet ongoing and emerging post-disaster needs and support the return to individual and community self-sufficiency.

Summary Background and Challenges

The health care sector (acute care, primary care, and ancillary care providers) suffered significant impact due to wholesale facility closures or reduced service capacity in the immediate aftermath of the disaster. Many providers were offline for several months due to power outages, flooding damage, electrical systems damage, or specialized medical equipment damage sustained during the storm. NYU Langone Medical Center and the care facilities managed by the New York

City Health and Hospitals Corporation (HHC) were so severely affected that a return to full operational and in-patient capacity did not occur until February, 2013. These facilities are key community and economic engines and, while they have resumed some operations, a significant amount of construction is needed to restore them to pre-disaster functioning. These extended closures or reduction in services also had a significant economic impact on business functioning due to lost revenue from cancelled appointments and procedures, loss of patients from transfer, or permanent relocation.¹¹

While several of the larger care facilities and hospitals have returned to some degree of operation, other health care providers – particularly community health centers – have experienced additional challenges in their short-term recovery. Ancillary care facilities (e.g. dialysis centers, alternate surgical sites, primary care facilities, outpatient stand-alone services) provide critical services that allow individuals with additional and advanced healthcare needs to receive necessary regular preventive care treatment. Many of these care providers operated in leased or mixed-use facilities and, in some cases, are ineligible for FEMA Public Assistance for physical building restitution. Additional challenges in reconstituting their structures have been associated with finding alternative space to accommodate the necessary care environment while rapidly replacing damaged and destroyed equipment. Restoration of these facilities in a fixed environment is critical to the community for continuity of health care as they provide health care and social service support to traditionally underserved communities or other at-risk¹² populations. An important factor in restoration will be where and how and in what form these facilities will be restored (if at all), as the service access area needs, economic viability, transportation accessibility and mitigation feasibility should be considered.¹³ It is important to recognize that delays in the reconstitution of various nodes within the healthcare network could – at worst – create barriers to accessing care and potentially impact behavior resulting in individuals seeking inappropriate levels of care or not seek care at all.

Additionally, damages incurred affected not only the care delivery spaces, but also biological research and medical education areas. Years of specialized research test subjects and specimens were lost due to flooding at NYU. A recently constructed and highly technical educational area also suffered from water intrusion while faculty, staff, and students encountered disruption of their

medical education studies. While NYU has received resource supports through other research universities,¹⁴ partner institutions, and the National Institutes of Health (NIH), ongoing technical, financial and programmatic support will be necessary to restore pre-disaster functionality.

Another critical factor in restoration is the impact that FEMA Advisory Base Flood Elevation (ABFE) zones may have on building siting and reconstruction design (see mitigation section in appendix for more information). Future activities incorporating the building envelope and surrounding environs should be identified as key components of a comprehensive plan to reduce risk exposure (e.g. flood protection and high wind mitigation). Capacity to develop these comprehensive facility mitigation plans is achievable for many of the larger facilities; however, many primary care, tertiary and ancillary care (e.g. dialysis) and community health center facilities might not possess this capacity. Given the population base and function these providers serve, it is critically important that they maintain operational capacity in a future incident to avoid patient surges and other cascading effects throughout the health care system.

Some buildings (e.g. Bellevue Hospital) have been identified as historic structures by previous formal designation or are more than 50 years old.



Mitigation activities will necessitate some creative design modifications or compromises in certain circumstances.

The MSA highlighted the impact to nursing homes, residential care providers, and other tertiary care facilities (adult day care, assisted living facilities, etc.) and identified the important function that they serve in providing continuous care and support to older adults and people with medical needs. The impacts that these facilities sustained during the storm highlighted a need to examine the mechanisms and tools for supporting medically fragile populations in place during a disaster. The siting of many of these buildings indicates that they may be vulnerable to future storms – a key factor for consideration. Other factors include potential revisions to building codes and/or any potential changes in the regulatory guidelines for medical care facilities and residential care providers and the impact this could have on their business practice and how they rebuild.

Ongoing/Immediate Activities Taken

The FEMA Public Assistance program is currently providing reimbursements for eligible applicants to restore pre-disaster design and function to damaged

and destroyed equipment and also mitigation money through permanent repairs. Hundreds of millions of dollars have already been appropriated to health care institutions to support their immediate reconstruction and renovation efforts in addition to providing reimbursement for disaster-related emergency protective measures.¹⁵ The FEMA Building Science branch provides additional technical support as they collaborate with the U.S. Army Corps of Engineers through the deployment of Mitigation Assessment Teams (MATs) to “develop mitigation guidance that focuses on creating disaster-resilient communities.”¹⁶

The MATs have been active within the disaster area and have made contact with various hospital facility CEOs and managers to “evaluate the performance of buildings in response to the effects of natural and man-made hazards; conduct field investigations at disaster sites; and work closely with local and state officials to develop mitigation recommendations.”¹⁷ The MATs particular focus on protection of the building from future flooding effects (recovery advisory #2), reducing operational interruption in mid- and high-rise buildings during floods (recovery advisory #4), designing for flood levels above the base flood elevation following Hurricane Sandy (recovery advisory #5) and protecting building fuel supplies from damage (recovery advisory #7) are supportive tools that can be utilized in conjunction with the building design guides (FEMA 577).¹⁸



The final MAT report is scheduled for completion by November, 2013. For additional information, please see the Mitigation section.

FEMA Hazard Mitigation in partnership with FEMA Public Assistance has also conducted technical trainings for applicants on mitigation basics and best practice guidance for incorporation in their rebuilding process. Participants benefitted from these trainings and, consequently, additional opportunities have been scheduled to accommodate interest. Of particular note are the mitigation efforts underway at Bellevue hospital.¹⁹

Ongoing conversations with NYSDOH and NYCDoHMH indicate a desire for continued direct federal assistance in facilitation of discussions to membership groups or associations regarding mitigation plan development, hazard vulnerability assessment, and design code guidance for facilities pursuing reconstruction. To this end, the HSS RSF is coordinating closely with the Infrastructure Systems RSF to examine critical “lifelines” to health care facilities (e.g. power grid, water and wastewater, telecommunications) and providing recommendations to enhance their resilience as supportive systems to complement the FEMA MAT recommendations.

As outlined in the MSA, representative associations from the Primary Care Development Corporation (PCDC), the Community Health Care Association of New York State (CHCANYS), the Hospital Association of New York State (HANYS), and the Greater New York Hospital Association (GNYHA) have been critical partners in planning, messaging, and advocacy for their representative organizations. Opportunities through federal policies (e.g. Affordable Care Act), initiatives and expertise will likely continue through the recovery process, particularly regarding the nuances of healthcare delivery in these facilities and mixed-use settings in addition to identifying challenges that may be unique to their stakeholders.

Through the supplemental appropriations, the U.S. DHHS/National Institutes of Health (NIH) has issued an FOA to assist existing biomedical research grantees that experienced significant research disruptions and losses as a result of the storm by restoring lost and damaged research data, materials, animals, equipment, and facilities. This FOA²⁰ is designed to address the aforementioned needs and concerns of the biomedical research community and, per the FOA, the funding is being supplied “for the purpose of supporting the recovery and restoration of pilot research and data destroyed or damaged as a result of the hurricane by new and early stage investigators. Restoration of these data will

assist new and early stage investigators to rebuild the data and infrastructure needed to again be poised to launch competitive independent research careers. NIH expects that recipients of awards from this FOA will be able to redevelop the pilot data needed to submit an NIH research project grant application within one or two years.”

Federal Partners

HSS RSF Coordinating Agency: HHS/ASPR/OPP; HHS/CMS; HHS/HRSA; HHS/CFBNP; HHS/NIH/NIEHS; EPA

HSS RSF Primary Agency: USACE; FEMA; HHS/ACL; DHS/NPPD

HSS RSF Supporting Organizations: SBA; USDA; VA

Inter-RSF coordination with Infrastructure Systems RSF, Natural and Cultural Resources RSF, Economic RSF

Federal partners identified above will collaborate with stakeholders on mitigation, hazard vulnerability principles and how these considerations impact or influence design and use of facility space. Additionally, economic analysis expertise and health care delivery systems expertise may be needed for planning support.

Proposed Next Steps

- Identifying opportunities for provision of technical assistance to facilitate reconstitution and future mitigation of damaged and destroyed health care infrastructure in development of comprehensive facility mitigation plans.
- Focusing on building healthcare systems resilience through conducting comprehensive mitigation assessments and examining threat vulnerability of building or facility.
- Reinforcing primary care providers and identifying opportunities to support community health center siting and rebuilding in identified areas of need.
- Equipping the healthcare workforce through training or retraining enhancement of those supporting historically underserved populations.
- Development of strategies to provide interim and long-term services while damaged facilities are permanently repaired, replaced or restored.
- Supporting the academic biomedical research community in reconstitution of research activities.

- Providing technical assistance in assessing the health care services needs of disaster-impacted individuals and the applicability of federal programs' waivers/flexibilities that may be leveraged to enhance the state's capacity to meet those needs.

Behavioral Health Services Impacts

Statement of Core Principle

Supporting the mental and behavioral health and enhancing the resilience of disaster-affected individuals and communities through access to, provision of and connection to appropriate care. Ensuring the resilience of the systems that serve domestic violence survivors to monitor for any increases in domestic violence.

Summary Background and Challenges

As noted in the MSA, the behavioral health impacts of this storm are potentially far-reaching. Many “communities of place” have defined identities associated with generational roots in some of the hardest-hit areas; relocation for many resulted in a displacement not only from homes, but also from their cultural and historical support structures. Further, timing around the winter holidays and the slow process of recovery due to the extent of the damages and difficulty accessing permanent replacement housing may exacerbate or extend disaster trauma.

The New York State Office of Mental Health (OMH) is implementing “Project Hope” – the New York implementation of the Crisis Counseling Program (CCP). Program implementation is designed to address this acute need and the expedited program was made available based upon estimated need from 30 percent of the population (207,882) in mandatory evacuation zones.²¹

Project Hope is primarily a psychological first aid and referral to services program. Clinical mental health or substance abuse services are not explicitly covered in this program. Historical record has demonstrated that major disasters can result in the following: an increase in the intensity and need for services of those already receiving treatment; a need for additional recovery supports or relapse prevention services for those who had previously received treatment for

their substance use disorder (SUD); and/or intervention services for increased use of alcohol, tobacco and other drugs/medications by people who may not have previously used such substances. As previously identified in the MSA, there is presently no mechanism to address SUD prevention, treatment and recovery needs through CCP as federal law specifically excludes substance use treatment from the Federal Emergency Management Agency (FEMA) relief appropriations.

While FEMA program guidance encourages collaboration with the state agency responsible for preventing and treating substance use disorders, there is no ability to grant CCP funds directly to the state administering authority. This challenge has been raised by the NYS OMH and has been highlighted by the U.S. DHHS SAMSHA Region II Administrator. Resources to address the SUD prevention, treatment and recovery needs of children, families, and individuals directly impacted by a major disaster and of those responding to the disaster - such as rescue workers - are critical to a healthy recovery following a major disaster.

Lessons learned from past disasters indicate that during the recovery period, risk of domestic violence increases in affected communities. Factors including chronic stress, erosion of social supports, and economic pressures drive an increase in risk of domestic violence. Additionally, social services systems that support survivors of domestic violence and their children can become strained by disaster impacts.

Based on reporting from the New York State Domestic Violence Coalition and the state domestic administrator, the U.S. DHHS Administration for Children and Families (ACF) Family and Youth Services Bureau's Family Violence Prevention and Services Program (FVPSP) reports that there is no indication at this time of increased domestic violence. However, New York domestic violence shelters indicate that facilities are at capacity due to shortages in affordable housing, resulting in challenges discharging clients. FVPSP and domestic violence partners in New York forecast potential challenges serving future clients due to capacity demands.

Other key components of the recovery process will be connecting individuals to ongoing care and services for any non-acute mental health needs, identifying trends in manifestation of behavioral health needs within various communities and transitioning out the CCP in the long-term.

Preliminary Findings

There are no reports of New York domestic violence shelters or other service providers closed due to Sandy impacts. Evidence does not support at this time an increase in domestic violence in the state. However, due to the broader effects of the disaster on the housing market creating barriers to discharging domestic violence survivors from shelters, shelter capacity is strained. Due to the difficulties discharging clients, existing capacity may not be adequate to meet the community's needs even if there is no Sandy-triggered surge in domestic violence. Additionally, the potential exists for a disaster-related increase in domestic violence in the recovery period ahead, further burdening an already stressed system.

Ongoing/Immediate Activities Taken

As of Jan. 25, 2013, more than 700 staff have been identified, trained and deployed through 35 different community providers. Per the NYS OMH, providers identified possess the language diversity and cultural competency to meet the needs of the pre-identified communities. Counselors have been actively canvassing communities and have made more than 31,000 contacts with individuals and groups through in-person meetings, telephone or virtually and through community networking or coalition building. Also, more than 57,000 behavioral health supportive and informational materials have been distributed.

Additionally, several local community providers have convened or joined groups with the aim of facilitating mental health care provision to other neighbors and residents. The HHS SAMSHA regional administrator has been in contact with some of these providers and preliminary conversations with the NYS OMH have identified the opportunity for additional coordination and conversation on mental and behavioral health matters.

Through the supplemental appropriations, SAMSHA received and will issue grants or cooperative agreements to eligible entities.²²

Children's mental health needs have been identified as an area requiring additional attention following the disaster. Conversations are underway between the NYS Office of Child and Family Services (OCFS), U.S.DHHS (ACF), NYS OMH, FEMA-CCP lead, local mental health providers, United Federation of

Teachers (UFT), and New York City and Long Island child care resource and referral groups to discuss the opportunity for cross-training of outreach staff in addressing the mental health needs of children in schools and those under school age. This partnership will be facilitated through the Mental Health working group identified within the state-led Children's Issues Task Force.

ACF's FVPSP is in continuous contact with the New York State Domestic Violence Coalition and state domestic violence administrator, and through Office of Human Services Emergency Preparedness Response (OHSEPR) and ACF Region II provides ongoing situational awareness regarding domestic violence concerns in the state. The ACF-supported National Domestic Violence Hotline (800-799-SAFE or TTY 1-800-787-3224) is available 24 hours a day to connect those concerned about domestic violence with services that can assist them. During Sandy response and recovery, ACF, ASPR, FEMA, and other interagency partners provided public messaging about the increased domestic violence risk following disasters and about the National Domestic Violence Hotline to promote awareness of this key resource.

Through the supplemental disaster appropriation, ACF will issue funds through grants to New York through the aforementioned domestic violence coalitions that will support shelters to directly address victim needs, with a particular focus on the unique needs of children post-disaster.²³ Funds will also address training and technical assistance for disaster relief staff, volunteers, and domestic violence workers through state domestic violence coalitions and the National Domestic Violence Hotline.

Federal Partners

HSS RSF Coordinating Agency: HHS/ASPR/ABC; HHS/SAMHSA; HHS/ACF
HSS RSF Primary Agency: FEMA
HSS RSF Supporting Organizations: HHS/ACF; American Red Cross; NVOAD; VA

Inter-RSF coordination with Housing RSF

Proposed Next Steps

- Identification of long-term children's behavioral health needs and potential services through the coordination of provider and service groups.

- Addressing community behavioral health and engagement with community behavioral health partners to assess needs, provide technical assistance, and identify and share best practices, including those for preventative care.²⁴ Ongoing assessment of disaster-related structural, functional and operational impacts to behavioral health facilities and programs.
- Engagement with stakeholders to develop strategies, including culturally-based strategies, to address ongoing behavioral health assessment, surveillance and long-term treatment needs.
- Identifying pathway for transition of Crisis Counseling Assistance and Training Program (CCP) operations – administered by HHS/Substance and Mental Health Services Administration (SAMHSA) and funded by FEMA – from to local community providers.
- Provision of technical assistance in leveraging existing resources to meet community needs that have surfaced during the response phase, such as increased demand for services from existing behavioral health service systems. For example, EPA's GIS tools could help identify and implement stakeholder engagement methods and needs.
- Engagement with community behavioral health partners to assess needs, provide technical assistance and identify best practices, including those for prevention.
- Development and dissemination of consistent messaging and guidance concerning stress management and mitigation strategies for incident survivors and responders.
- Response preparedness and hazard mitigation strategies can also reinforce mental well-being.
- Ongoing monitoring of indicators of increased domestic violence by partners, including state DV coalition members, and coordination by state and federal domestic violence partners is a clear need.
- Coordinating resources with the National Domestic Violence Hotline (NDVH) may be used to support connection of New Yorker Sandy survivors identifying domestic violence-related needs with services able to assist them. The NDVH is a vital link for dual survivors of domestic violence and disaster, and reinforces the resilience of the overall domestic violence service system by routing clients to services in their area able to assist them.
- Coordinating with state DV coalition with the state grant-funded Disaster Case Management (DCM) mission and the Crisis Counseling Program



(CCP) in New York to ensure that effective channels of referral for DCM or CCP clients with domestic violence-related concerns is possible.

Environmental Health Impacts

Statement of Core Principle

Protecting the health of the population and response and recovery workers from adverse effects of disaster-caused environmental hazards.

Summary Background and Challenges

As identified in the MSA, environmental health concerns are a significant in the post-disaster environment and overall community recovery effort. Thousands of homes, businesses and public facilities in the disaster area were flooded by storm surge or suffered from water intrusion. Many of these affected structures (particularly waterfront structures and single-family units) have been continually occupied since the storm or have since been reoccupied. For unabated structures, this environment is conducive to mold spore growth that may have negative



respiratory impact (e.g. asthma) on the individuals and families remaining in or reoccupying these structures. Lead and asbestos remediation has posed an additional challenge in debris removal and building restitution process for some older (pre-1979 construction) building structures.

Debris collection, removal and proper final disposition are other potential areas of concern for community environmental health. Given the significant volume of debris generated (estimated at 5.25 million cubic yards as of Feb. 1, 2013)²⁵ and the potential co-mingling of hazardous household goods and materials, there is a potential for mishandling these goods during removal and disposal. An additional consideration in managing large volumes of debris is the need to identify opportunities to minimize air quality impacts by using the cleanest transportation modes (e.g. marine or rail instead of trucks), maximizing the potential for reuse of downed trees, and removing non-reusable debris.

Health and environment also intersect in community rebuilding in terms of environmental justice, and per the U.S. Environmental Protection Agency (EPA), environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.²⁶

Other areas that sustained damage include the water and wastewater treatment facilities in the coastal area due to storm-related flooding. The wastewater treatment plants that suffered the most damage were Bay Park (Nassau County), Rockaway (Queens County), and Yonkers Joint Wastewater Treatment Plant (Westchester County). Ocean Beach (Fire Island, Suffolk County) was also impacted.²⁷ There may be a need for federal assistance and guidance on reconstitution and enhancing the resilience of these critical lifelines (see Infrastructure RSF for additional detail).

Ongoing/Immediate Activities Taken

HHS/NIH/NIEHS officially deployed to the field on Jan 5, 2013 in support of recovery to conduct worker training and provide technical assistance and support on a variety of environmental hazards to voluntary (e.g. AmeriCorps), government (e.g. NYCHA, NYSDOL, NYCDohMH), nongovernment, higher education, temporary workers, and potentially “vulnerable” (e.g. day laborers)

groups involved in debris removal and remediation. Through the SRIA funding, NIEHS is in the process of issuing a FOA supplement to existing grantees to support worker safety training to individuals responding to Hurricane Sandy. Training is to include basic safety orientations, HAZWOPER refresher courses, OSHA Disaster Site Worker courses, and mold remediation courses. It would be delivered through existing safety and health training organizations in New York.

As noted in the MSA, the NYCDoHMH has been monitoring the potential health effects from the disaster locally. Similarly, the NYS Department of Health has been conducting ongoing environmental surveys following the storm. It is expected that this work will continue over the recovery period with opportunities for enhanced community-wide monitoring and surveillance – particularly as debris collection and final disposition of debris is ongoing. As part of the NYCDoHMH’s comprehensive approach to plan for and address environmental health concerns, city leadership has recognized the importance of providing direct support to homeowners with mold remediation services. Leadership also sees the need to equip homeowners and communities with training and have leveraged partnerships with the nongovernmental, foundation, and higher education community to aggregate and marshal resources in support of the rebuilding effort.²⁸

As previously identified in the Public Health Section of this document, NIEHS has also issued an FOA for community health research²⁹ to assess the ongoing environmental health impact of the disaster on population health. Per the FOA, applications were sought that “focus on novel questions of public health importance that will provide new insights into exposures and/or potential health effects as an aftermath to Hurricane Sandy. Applications focusing on environmental exposure assessment necessary to understand short- and/or long-term health effects as well as human health studies are appropriate. It is expected that the research conducted will provide information necessary for the rapid translation of the science to protect the health and safety of affected communities.”

The Centers for Disease Control (CDC)/National Center for Environmental Health (NCEH) has been working closely with NIEHS and is seeking to provide through grants and cooperative agreements support to health departments located in states with a major disaster declaration with various activities, including: technical assistance for mold mitigation, assistance with environmental health impact assessments, and an assessment of the morbidity and mortality related to Hurricane Sandy.

Federal Partners

HSS RSF Coordinating Agency: HHS/ASPR; HHS/CDC/NCEH; HHS/NIH/NIEHS; HHS/ATSDR

HSS RSF Primary Agency: FEMA; DHS/CRCL; DOI; EPA

HSS RSF Supporting Organizations: USDA

Inter-RSF Coordination with Infrastructure Systems RSF; and Natural and Cultural Resources RSF

Federal partners identified above will collaborate on various elements of environmental health and environmental justice issues to promote healthy environments, support public health workers, educate communities, and provide scientific knowledge. The National Center for Environmental Health (NCEH),³⁰ is part of the Centers for Disease Control and Prevention (CDC), and the Agency for Toxic Substances and Disease Registry (ATSDR),³¹ a sister agency to the CDC.

Proposed Next Steps

- Monitoring long-term community environmental health and promoting principles of healthy communities through redevelopment.
- Providing technical assistance on Brownfields remediation and sustainable redevelopment.
- Supporting government decision making through assistance in conducting community health assessments, health impact assessments and environmental impact statements.
- Identifying mechanisms to incorporate environmental justice principles in the rebuilding process.
- Establishing mechanisms for long-term tracking of health of groups involved in debris management and removal.
- Providing technical assistance to help determine the appropriate duration and content of long-term health tracking.
- Supporting surveillance of the environment in an affected community to determine whether post-disaster conditions may cause adverse public health effects.
- Identifying and providing technical assistance on mitigation of public health threats in sheltering, potable water and wastewater that can cause or exacerbate negative environmental health outcomes.

- Providing training technical assistance (e.g., instructional staff, curriculum development experts, subject matter experts, scientific data and analysis) to provide site-specific or sector-specific hazard awareness related to environmental health.
- Identifying opportunities to promote the health and well-being of minority and low-income populations with disproportionately high and adverse environmental exposures from Hurricane Sandy.
- Supporting sustainable and equitable communities. These include healthy schools, healthy housing, and healthy workplaces in order to advance health promotion in a diverse policy approach.
- Providing technical assistance in identifying methods for reducing overall air emissions, noise-pollution, and traffic problems from debris removal and rebuilding.
- Identifying opportunities to address air quality aspects of infrastructure development by using the clean diesel construction contract specifications.

Social Services Impacts

Statement of Core Principle

Supporting efforts to restore the capacity, individual and community self-sufficiency, and resilience of social services to meet ongoing and emerging post-disaster needs.

Supporting coordination to promote rapid recovery of the social services upon which children and families depend is key to mitigating the long-term economic, behavioral health, and physical effects of disasters upon children and youth, families, and communities.

Summary Background and Challenges

Children and youth constitute a population at heightened risk in natural disasters. As the National Commission in Children and Disasters documented, children are at higher risk in disasters than adults for injury, illness, long-term behavioral health issues, and economic harm. The challenges faced by families with children are intensified by social disruption that affects children’s daily lives and routine, such as impacts to their homes, schools, childcare facilities,

Head Start centers, and neighborhoods. Effects on schools and early childhood programs also have significant consequences for the economic recovery of the whole community. If parents do not have a safe, accessible, affordable child care option for their young children, they are often unable to return to work, find new housing, or make repairs to their homes.

In addition, due to the movement of residents following the storm, it has proven challenging to identify a firm number of individuals requiring assistive services as some may reside outside formal government supports (e.g. undocumented populations). The reasons for this are many and varied (e.g. relying on social networks, fear/distrust of government, etc.). The inability to identify displaced residents – particularly those unfamiliar with accessing federal programs – remains a challenge to targeting and providing services proactively.

Schools serve a critical function as the connection point for a host of services for students particularly for children living in low-income households. Enhanced, direct coordination between school districts, the U.S. Department of Education (as a Support Agency for the HSS RSF) is necessary to identify opportunities for combining resources to achieve the best possible outcomes for students.



Similarly, a connection should be drawn between schools and the NYS OCFS task force, as there may be an opportunity for synergizing efforts around the particular needs of children and behavioral health.

Health and social service groups have highlighted the need to focus on the potential recovery needs of seniors impacted by Hurricane Sandy. In particular, accessible and affordable housing for displaced senior residents has repeatedly been a topic of conversation.³² In spite of this, it is unknown whether a comprehensive discussion is ongoing with advocacy groups and representative organizations for the aging (e.g. area agencies/offices on aging, associations on aging). A more targeted approach is recommended to avoid placement of otherwise independently functioning individuals into a more restrictive environment and keeping senior residents and their caregivers with their communities. As part of this effort, coordination is being done with the NYS Office of the Aging (NYSOFA), U.S.DHHS Administration of Community Living (ACL), and FEMA Disability Integration Specialists.

Ongoing/Immediate Activities Taken

As identified in the MSA, the Office of Child and Family Services (OCFS) is the lead agency at the state level for children’s services and is the chief coordinating entity for the New York State Children’s Issues Task Force. The activation of the New York Children’s Issues Task Force following Hurricane Sandy had multiple aims: to focus on child care providers who serve vulnerable families, work to address gaps, identify children not in school, re-engage children and address short, intermediate, and long-term recovery challenges and solutions. This children’s issues task force involves local, state and federal stakeholders.

As in many disasters, there are a number of service providers seeking to assist and support disaster-affected individuals and communities. Coordination and communication across these various organizations and including pre-disaster community supports can be challenging – particularly if the ultimate aim is to bundle services to reduce the overall burden on individuals and families. The FEMA Voluntary Agency Liaisons (VALs) have been executing their chief function in facilitating this coordination effort. Additionally, the implementation of disaster case management (DCM) should further support service-delivery integration. To help assist this effort, the HSS RSF initiated a human services working group in late December to begin planning with field-based federal

entities on the structure and mechanism for human service “bundling” for disaster survivors. The main structure and preliminary approach includes the following key elements:

- Define mechanisms for collaborating with communities to identify unmet disaster caused needs.
- Identify potential organizational structures for the health and social services recovery framework and approaches for working with communities to identify unmet disaster caused needs.
- Develop a health and social services plan for recovery and process for plan implementation.
- Identify whole community partners with which to collaborate toward fulfilling the long term needs of the community and partner with state and local government representatives to analyze whole community driven needs assessments.
- Coordinate resource support for long term unmet needs, and communicate policy issues to the Hurricane Sandy Rebuilding Task Force.

Ongoing engagement and support to local, state, and nongovernmental entities in identifying applicable federal programs, addressing difficult policy questions associated with these programs, and providing technical assistance through ongoing DCM data analysis would be a valuable contribution to this effort. Additionally, identifying various “connectors” at the programmatic level would be valuable in providing expertise in the nuances of program intent and delivery. Initial conversations between the CCP and DCM program managers has resulted in identified opportunities for cross-training program staff and field workers in sharing high-level information on sister programs and partner agencies.

As part of the supplemental appropriations, the Administration for Children and Families (ACF) has issued an information memorandum for the Social Services Block Grant (SSBG) totaling \$474.5 million to disaster-affected states with a major disaster declaration.³³ Funds will address social, health, and mental health services for individuals in line with the uses regularly allowed for SSBG as well as expenses for repair, renovation, and construction of health facilities, including mental health facilities, child care centers, and other social services facilities. ACF considers the following to be critical issues: childcare, health and mental health services, transportation services, facility repair, renovation, and rebuilding. SSBG funds are awarded directly to states. States are fully

responsible, within the limitations of the law, for determining the use of their funds (including services to be provided, eligibility, and how funds are distributed among various services within the state). States and local agencies (i.e., county, city, and regional offices) may provide services directly or purchase them from qualified providers.

Acknowledging and addressing the disaster impacts sustained by the early childhood educational community, ACF/Office of Head Start (OHS) has issued a program instruction for existing Head Start grantees and training and technical assistance providers. Funds are available for repair, renovation, and reconstruction of Head Start facilities damaged in Hurricane Sandy, and to provide temporary services where needed.³⁴ Other programmatic flexibilities in class size, space, ratios and student eligibility were made available to grantees through the waiver program at OHS if needed and requested.³⁵

Federal Partners

HSS RSF Coordinating Agency: HHS/ACF; HHS/ACL; HHS/ASPR

HSS RSF Primary Agency: CNCS; FEMA Individual Assistance; FEMA VAL; DHS/CRCL

HSS RSF Supporting Organizations: SBA; NVOAD; USDA; VA

Inter-RSF Coordination with CPCB RSF; Economic RSF; Housing RSF

Federal partners identified above will collaborate on various elements of social service provision, associated “communities of interest”, to identify mechanisms for integrated service provision in restoring community social service capacity and enhancing overall resilience.

Proposed Next Steps

- Supporting opportunities to incorporate housing resilience for senior populations and naturally occurring retirement communities.
- Addressing unique needs of children in disasters through ongoing collaboration, workshops, training opportunities and other forms of technical assistance.³⁶
- Supporting coordinated referral to social services of individuals and families with unmet disaster-related needs across government and nongovernment partners and disaster case management.

- Supporting the identification of disaster-related social services deficits and capacity of extant community resources to meet the need and assessing mechanisms for enhancing or supporting local capacity – particularly in meeting the needs of displaced populations.
- Facilitating the direct delivery of the federal Disaster Case Management program – a partnership of HHS/Administration for Children and Families and FEMA – and transition to the impacted state or tribe’s leadership of disaster case management to address unmet disaster-related recovery needs.
- Supporting the rebuilding and capacity building for a more resilient Head Start system.
- Providing analysis and technical planning assistance to increase the resilience of early childhood programs to emergency events, and improve the capabilities of state and federal partners to maintain situational awareness regarding operational status of early childhood programs following an emergency.
- Supporting the coordination of programs serving children (including education) and planners for rebuilding efforts to identify training opportunities in developing resilient and sustainable early childhood programs.

Chapter Notes

- ¹ For additional information on the detailed description of the purpose and intent of the MSA and RSS, please see the draft Federal Interagency Operations Plan (FIOP).
- ² <http://www.archives.gov/federal-register/codification/executive-order/11988.html> last accessed 01.30.13
- ³ New York State Implementation of the 404 Mitigation program is run by the New York State Department of Homeland Security and Emergency Services (DHSES), via local community hazard mitigation plans. The 406 program is currently being implemented and managed through the FEMA Public Assistance process directly with applicants. (See Hazard Mitigation Section for additional details).
- ⁴ The draft Federal Interagency Operations Plan and HSS RSF Chapter have identified this mission area as “School Impacts”. However for the purposes of the Hurricane Sandy recovery operation in New York, the HSS RSF will refer to “Children in Disasters” in recognition of the RSF’s concern related to all services that address the needs of children impacted by the disaster. The primary federal lead for this effort within the Health and Social Services nexus will be the Administration for Children and Families.
- ⁵ <http://www.governor.ny.gov/press/122201-Executive-Budget-2013-2014> last accessed 01.29.13
- ⁶ Home rule is the right to local self-government including the powers to regulate for the protection of the public health, safety, morals, and welfare; to license; to tax; and to incur debt. Home rule involves the authority of a local government to prevent state government intervention with its operations. The extent of its power, however, is subject to limitations prescribed by state constitutions and statutes. <http://codes.lp.findlaw.com/nycode/MHR/2/10> last accessed 01.30.2013
- ⁷ Corporation for National and Community Service, Department of Homeland Security (FEMA, NPPD, CRCL), Department of Interior, Department of Justice, Department of Labor, Department of Education, Environmental Protection Agency, Department of Veteran’s Affairs, Department of Transportation, Small Business Administration, Department of Treasury, Department of Agriculture, American Red Cross
- ⁸ <http://www.appropriations.senate.gov/news.cfm?method=news.view&id=0f718f5d-c9e1-49a1-9b5a33a313bb423d> last accessed 01.29.13
- ⁹ http://www.acf.hhs.gov/hhsgrantsforecast/index.cfm?switch=grant.view&gff_grants_forecastInfoID=65481 last accessed 04.13.2013
- ¹⁰ <http://grants.nih.gov/grants/guide/notice-files/NOT-ES-13-003.html> last accessed 04.13.2013
- ¹¹ For additional information on the economic impact of the disaster on the healthcare provider network, please see the Economic RSS.
- ¹² As defined in section 2802(b)(4)(B) of the PHS Act, at-risk individuals include “children, pregnant women, senior citizens and other individuals who have special needs in the event of a public health emergency, as determined by the Secretary.” For purposes of this document, the category of at-risk individuals also includes individuals who may need additional response assistance during an emergency, such as persons who have disabilities, live in institutionalized settings, are from diverse cultures, have limited English proficiency or are non-English speaking, are transportation disadvantaged, have chronic medical disorders, or have pharmacological dependency.
- ¹³ <http://www.wnyc.org/articles/wnyc-news/2013/jan/22/coney-island-health-clinic-damaged-sandy-still-closed/> last accessed 04.13.2013
- ¹⁴ http://www.nytimes.com/2012/11/01/health/nyus-lab-rats-and-mice-die-in-flooding.html?_r=0 last accessed 01.30.2013
- ¹⁵ <http://www.fema.gov/news-release/2013/02/12/femas-public-assistance-program-helps-new-york-rebuild> last accessed 04.03.2013
- ¹⁶ <http://www.fema.gov/building-science> last accessed 04.03.2013
- ¹⁷ The recommendations address improvements in building design and construction, code development and enforcement, and mitigation activities that will lead to greater resistance to hazard events. The observations and recommendations of the MATs are presented in reports published by FEMA in the form of Recovery Advisories. For more information, please see the <http://www.fema.gov/mitigation-assessment-team-program> last accessed 01.30.2013
- ¹⁸ <http://www.fema.gov/library/viewRecord.do?id=2739> last accessed 01.30.2013
- ¹⁹ <http://www.fema.gov/disaster/4085/updates/new-yorks-bellvue-hospital-takes-mitigation-steps-after-hurricane-sandy> last accessed 04.13.2013
- ²⁰ <http://grants.nih.gov/grants/guide/rfa-files/RFA-OD-13-005.html> last accessed 04.13.2013
- ²¹ For more information on the Crisis Counseling Program, please see the Mission Scoping Assessment Report Version 1.0
- ²² <http://www.samhsa.gov/grants/>
- ²³ <https://www.acf.hhs.gov/programs/fysb/about/what-we-do> last accessed 03.13.2013
- ²⁴ States and local governments should see New Haven Mental Health Outreach for Mothers partnerships for replicability and scalability.
- ²⁵ <http://www.fema.gov/news-release/2013/02/01/sandy-debris-removal-passes-95-percent-95-days> last accessed 04.13.2013
- ²⁶ Per the U.S. Environmental Protection Agency (EPA), environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. <http://www.epa.gov/environmentaljustice/plan-ej/index.html> last accessed 01.28.2013
- ²⁸ http://www.stormh2o.com/SW/Articles/After_Hurricane_Sandy_21074.aspx last accessed 04.10.2013
http://www.nyc.gov/portal/site/nycgov/menuitem.c0935b9a57bb4ef3daf2f1c701c789a0/index.jsp?pageID=mayor_press_release&catID=1194&doc_name=http%3A%2F%2Fwww.nyc.gov%2Fhtml%2Fom%2Fhtml%2F2013a%2Fpr046-13.html&cc=unused1978&rc=1194&ndi=1 last accessed 04.12.2013
- ²⁹ <http://grants.nih.gov/grants/guide/notice-files/NOT-ES-13-003.html> last accessed 04.12.2013
- ³⁰ NCEH focuses on the broader health issues caused by hazards in the environment. The center conducts research; tracks health problems related to the environment; and supports local, state, tribal and national health agencies. NCEH also combats illnesses associated with environmental hazards such as air pollution, mold, lead, contaminated food and water, and animals that carry disease. In addition, the center provides aid to create healthy homes.
- ³¹ ATSDR focuses on protecting the public from exposures to toxic substances. The agency investigates hazards in communities by collecting and analyzing information on environmental exposures and health. It provides recommendations to communities and industries to limit or prevent exposure to hazardous substances. ATSDR also provides scientific expertise on toxic substances and their effects on health and collects information about people who have the same health condition or disease.
- ³² For additional information on the particular importance of housing on health and social services, please see the MSA. For specific information on Housing recovery planning, see RSS Housing section.
- ³³ New York received a total of \$235,434,600 as allocated by each State’s share of Individual Assistance (IA) registrants through March 18, 2013, as reported by the Federal Emergency Management Agency (FEMA). Each State’s allocation is a share of total available funding of \$474.5 million, which is the amount appropriated under the Disaster Relief Appropriation Act after the application of a 5.1% sequestration in accordance with the Balanced Budget and Emergency Deficit Control Act.
- ³⁴ http://eclkc.ohs.acf.hhs.gov/hslc/standards/Pis/2013/resour_pri_002_032113.html last accessed 04.13.2013
- ³⁵ http://eclkc.ohs.acf.hhs.gov/hslc/standards/IMs/2012/resour_ime_006_110612.html last accessed 04.13.2013
- ³⁶ The draft Federal Interagency Operations Plan and HSS RSF Annex have identified this mission area as “School Impacts”. However for the purposes of the Hurricane Sandy recovery operation in New York, the HSS RSF will refer to Children in Disasters in recognition of the RSF’s concern related to all services that address the needs of children impacted by the disaster. The primary federal lead for this effort within the Health and Social Services nexus will be the Administration for Children and Families.



Coordinating Agency

US Housing and Urban Development

Primary Agencies

U.S. Department of Justice,
U.S. Department of Homeland
Security/Federal Emergency
Management Agency,
U. S. Department of Agriculture,
U.S. Department of Housing and
Urban Development

Supporting Organizations

Corporation for National and
Community Service,
U.S. Department of Commerce,
Department of Energy,
U.S. Environmental Protection Agency,
U.S. Department of Health and Human
Services,
U.S. Small Business Administration,
U.S. Access Board,
Department of Veterans Affairs,
American Red Cross,
National Voluntary Organizations
Active in Disaster



CHAPTER 3

HOUSING RSF

Introduction

Mission

As outlined in the National Disaster Recovery Framework (NDRF), the mission of the Housing Recovery Support Function (RSF) is to address pre- and post-disaster housing issues and coordinate and facilitate the delivery of federal resources and activities to assist local, state, and tribal governments in the rehabilitation and reconstruction of destroyed and damaged housing, whenever feasible, and the development of other new accessible, permanent housing options. In doing so, the Housing RSF will link existing housing resources, programs, technical assistance, and subject matter expertise across Housing RSF partners and stakeholders to state and local recovery efforts.

As the Coordinating Agency for the Housing RSF, HUD is responsible for ongoing communication and coordination between the other five RSFs, state, tribal, and local authorities that are implementing housing recovery efforts. HUD will seek the engagement of the appropriate agencies in implementing the strategic initiatives outlined below. In addition to the federal partners indicated on the Housing RSF cover page, other organizations including nongovernmental organizations (NGOs), housing industry groups, community development stakeholders, financial institutions, and developers are engaged as needed to support state and local housing recovery efforts.

Scope

The Recovery Support Strategy (RSS) is a corollary to the Mission Scoping Assessment (MSA) document, which provided an initial assessment of the housing needs as a result of Hurricane Sandy. As part of the assessment process, the Housing RSF team participated in and collected relevant information from numerous “listening sessions” and community and stakeholder group meetings. In addition, the team convened meetings with the New York City Housing Recovery Operations (HRO), representatives from the New York State Homes and Community Renewal Office, NGOs, and officials representing Nassau, Suffolk and Westchester Counties. Federal partners were also engaged in dialogue to identify cross-cutting issues and leverage resources to support impacted communities.

The Housing RSF was provided with Hurricane Sandy impact data compiled by the U. S. Department of Housing and Urban Development’s (HUD) Office of Policy Development and Research (PD&R). PD&R’s analysis was based on geocoded individual-level FEMA data attached to Census 2010 block-group identifiers. The analysis was completed using “neighborhood” as the unit of geography. The results defined those communities heavily impacted by Hurricane Sandy. The data was aggregated by block-groups and each assigned a neighborhood “concentration level.” If the neighborhood’s housing stock was at least 50 percent damaged (according to FEMA inspections), it indicates a “heavy concentration” of damage. If the neighborhood’s housing stock was 20 percent-50 percent damaged, it is labeled as having a “strong concentration” of damage. Certain neighborhoods were also identified as “high needs” priority areas based on low-income, aging population, and the flood hazard risks of the area. HUD PD&R analysis revealed that the seven most impacted counties were the five New York City boroughs in addition to Nassau and Suffolk Counties. As such, the majority of the Housing Recovery Support Strategy is focused on supporting the disaster recovery efforts of these jurisdictions.

Utilizing the PD&R data analyses, along with feedback received from state, local, and community leaders, the Housing RSF team was able to identify several



housing related thematic concerns. These thematic concerns were formulated into five housing recovery strategies designed to support the recovery efforts of the state, city, and local jurisdictions. Please note that the strategies listed below are not ranked in order of priority.

- Encourage state, county, and local jurisdictions to utilize a holistic, place-based approach to the redevelopment of impacted areas, including the use of sustainability, resiliency, and livability principles.
- Support the state, county, and local jurisdictions in the development of customized housing recovery program initiatives that support the preservation, rehabilitation, and development of housing in the impacted areas.
- Support the state, county, and local jurisdictions' efforts to maintain and create safe, resilient, and affordable housing options for low- and moderate-income individuals and families impacted by Hurricane Sandy.
- Support the state, county, and local jurisdictions' efforts to maintain and create safe, resilient, and accessible and/or supportive housing options for individuals and families impacted by Hurricane Sandy.
- Support state, county, and local jurisdictions in leveraging public, private,

and philanthropic resources, including the newly appropriated CDBG-DR and other federal funds, to ensure maximum return on investment and provision of quality support to individuals and families impacted by Hurricane Sandy.

The strategies identified, and their associated strategic initiatives, were developed in response to unmet needs identified by the state and local jurisdictions, as well as other stakeholder groups, and are intended to complement and support existing housing recovery initiatives. To implement many of these strategies will require support from and the cooperation of the Housing RSF primary agencies, supporting organizations and other housing recovery stakeholders. The Housing RSF strategies are also in alignment with the overall recovery goals of the state and local jurisdictions as indicated in the New York State and New York City CDBG-DR Action Plans. Both recovery action plans include the enactment of programs that support outcomes and objectives to be achieved, including but not limited to the following:

- Rebuild better and smarter
- Utilize a community driven, inclusive, place-based process
- Leverage public, private, and philanthropic dollars in the recovery process
- Include efforts that strengthen resilience
- Support interim and long term measures during the recovery process
- Help those impacted remain in NYS, and preferably within their pre-disaster neighborhood

The five housing recovery support strategies and related strategic initiatives were developed to provide ideas and suggestions for state and local jurisdiction representatives as they continue the recovery process. These initiatives include both short-term and long-term potential solutions. We also acknowledge those activities already completed and those underway that support housing recovery efforts. The Housing RSS is not intended to represent all of the potential solutions nor does it capture all of the activities and contributions to the recovery process. It is our best effort to provide an overview of the breadth of recovery efforts that are underway and present additional tools and options to be included in the recovery toolkit.



Recovery Priorities

Support Strategy 1: Utilize Holistic, Place-Based Approach to Redevelopment

Complement state, county, and local efforts to utilize a holistic, place-based approach to the redevelopment of impacted areas, including the use of sustainability, resiliency, and livability principles.

“Effective place-based policies can influence how rural and metropolitan areas develop, how well they function as places to live, work, operate a business, preserve heritage, and more. Such policies also leverage investments by focusing resources in targeted places and drawing on the compounding effect of cooperative effort.”¹ Place based initiatives usually bring together the efforts of those involved in neighborhood planning, comprehensive services coordination, human capital development and neighborhood revitalization. Housing, as an element of neighborhood revitalization, does not exist in a vacuum, but rather in a context that impacts the quality of life for those living within it. For the purpose of this strategy, the following key components of the place in which housing exists are delineated:

- Physical assets associated with the built environment and physical infrastructure (e.g. housing, commercial buildings, roads, sidewalks, and bike paths)
- Commercial assets associated with production, employment, transactions, and sales (e.g. labor force and retail establishments)
- Developmental assets that allow residents to attain the skills needed to be successful in all aspects of life (e.g. educational institutions, early learning centers and health resources)
- Recreational assets that create value in a neighborhood beyond work and education (e.g. parks, open space, arts organizations, restaurants, movie theatres, and athletics)
- Social assets that establish well-functioning social interactions (e.g. public safety and community engagement)

The region impacted by Hurricane Sandy possesses a number of unique characteristics within each of these categories that must be considered within the overall place-based revitalization strategy of the National Disaster Recovery Framework.

There is a wide variance in the impacted areas of both the nature of the coastal landscape (sandy beaches vs. hard-edged barriers/highways) and the density of development along these coastlines. Some landscapes were more susceptible to long-term impacts from Hurricane Sandy than others. In the wake of the disaster, some developed areas returned to a wetland state. Further, in some parts of the region there are additional natural resources to consider and protect, such as the single-source aquifer that provides all of the drinking water for both Nassau and Suffolk County. The tools and resources that best facilitate redevelopment and revitalization are vastly different depending on the combination of these various geographic and development density characteristics.

In addition to the importance of place-based redevelopment strategies, the close proximity of municipalities to one another along the coast further suggests a regional perspective on community redevelopment actions as the mitigation and resiliency strategies executed by one community may have an impact on neighboring municipalities. These communities are also connected by the largest public transportation infrastructure in the country, extending from New York City through Long Island, southeastern New York, northern New Jersey and Connecticut. If investments are coordinated between communities along



the same transit corridors, this connectivity can be a tremendous asset; if they are not, revitalization strategies may have the opposite effect and exacerbate the competition for scarce critical resources.

Because New York City and Long Island comprise one of the largest and most densely populated regions in the country, and because the impacted areas are also very different, reconstructing and protecting New York's coastal neighborhoods will be an especially complex undertaking. In addition to helping New Yorkers get back on their feet, the region must also take into account several recent developments with potentially dramatic consequences. Future changes in the flood insurance rate maps and the implementation of the Biggert-Waters Flood Insurance Reform Act of 2012 have the potential to change flood insurance rate premiums for property owners in this area.

Advisory Base Flood Elevations (ABFEs) are available for New York City and Westchester county residents and planners to use to help inform the rebuilding effort. Base Flood Elevation (BFE) maps for Nassau and Suffolk County were effective in 2009 and will continue to be used as the best available flood risk data for these counties. These flood elevations and flood risk zones can inform building requirements. Costs of rebuilding will be felt by individuals, businesses, and local governments.

National Flood Insurance Program Impacts

The ABFE maps released after Sandy hit may prompt municipalities to re-examine their existing zoning codes, land use regulations, and design guidelines (see chart). As many of the storm-hit areas were older communities—with outdated construction and non-conforming site layouts—new structures built identically to those lost would not comply with current zoning regulations. Finally, the Biggert-Waters Flood Insurance Reform Act, enacted in July 2012, made significant changes to the National Flood Insurance program, administered by FEMA. Among other things, this Act requires FEMA to take immediate steps to phase out a variety of existing flood insurance subsidies—that is, policy holders will eventually be required to assume all of the risk related to living in a first tier flood plain. Under the new Act, flood insurance premium rates on many properties in special flood hazard areas could potentially increase. Not everyone will be affected by subsidy changes. Only 20 percent of NFIP policies receive subsidies. Owners of subsidized non-primary residences in Special Flood Hazard Areas, beginning Jan. 1, 2013, started seeing a 25 percent

Number of Residential Buildings in BFE vs ABFE by Borough

Borough	BFE Count	ABFE Count	% Change
Bronx	2,750	2510	-9%
Brooklyn	5097	21,960	331%
New York	1065	1691	59%
Queens	10,685	21,119	98%
Richmond	5,897	9404	59%
Total	25,494	56,684	122%

NYC Housing Recovery Office: Post-Sandy Housing Reconstruction Analysis, January 2, 2013

increase, to apply annually until rates reflect the true risk. Owners of subsidized property that has experienced severe repetitive flood losses, or that has incurred flood cumulative damage with flood insurance payments exceeding the value of the structure, will see a similar 25 percent rate increase beginning in late 2013. Owners of subsidized business properties in a Special Flood Hazard Area will see a 25 percent rate increase annually until rates reflect true risk, also beginning late 2013. Also, owners of substantially damaged or substantially improved subsidized property will see a 25 percent rate increase.

Owners of primary residences in Special Flood Hazard Areas will be able to keep their subsidized rates until or unless: the owner sells the property (the new owner will pay the unsubsidized rates if they insure), the policy is allowed to lapse, the property suffers severe, repeated flood losses, or a new policy is purchased. When a community adopts a new flood map, discounts like grandfathering will be phased out, and premiums will rise. This means that the cost of maintaining flood insurance on buildings within Special Flood Hazard Areas, depending on location within the SFHA and the elevation of the structure, has the potential to increase considerably. The cost of building in the flood hazard area will also increase. Land-use patterns that may have existed for decades could change and there may be some shifts in population from at-risk coastal zones to more protected inland areas.

Neighborhood and Population Diversity

In New York City, no one racial group comprises more than half the total population: 33.3 percent of the population is White, 22.8 percent Black (non-Hispanic), 28.6 percent Hispanic origin, 12.6 percent Asian, and 2 percent

multi-racial, non-Hispanic. New York City is fondly referred to as “City of Neighborhoods” mainly because these diverse residents typically identify with their neighborhoods (as opposed to the city as a whole) and are known to be strong advocates for the preservation of their neighborhood identity. Some of these identifiers could be immigrant connections and resources, ethnic or age-specific population clusters, building vernaculars, and the nature of the art, culture, and businesses within the neighborhood. In order for a redeveloped community to feel like home to those who live there, the unique mix of culture and art, ethnic businesses and restaurants, and architectural vernacular must be considered.

The impacted areas are also characterized by income diversity. In New York City, incomes are clustered at the top and bottom of the income distribution spectrum, with about 17 percent of households earning incomes of \$200,000/year or more and about 10 percent of households earning less than \$10,000/year.² In contrast, on most of Long Island, income distributions tend to cluster toward the middle. Throughout the impacted Long Island counties and in New York City, on a neighborhood level, there are pockets with a majority of higher income households or lower income households. Hurricane Sandy stands to have widened the income disparity demonstrated by post disaster reports that indicate that New York lost approximately \$4.5 billion in wages and that “*some communities were hurt disproportionately [by Sandy], such as Long Beach, Freeport, Babylon, [and] Lindenhurst.*”³

Strategic Initiatives

Strategic Initiative 1.1: Coordinate with federal partners and relevant stakeholders to expand the technical capacity of local jurisdictions to utilize context-sensitive, forward thinking resiliency strategies that promote sustainable, equitable, and livable environments in their recovery efforts.

Actions Completed or Underway

- HUD facilitated information sharing conversations with CPCB and the Hurricane Sandy Rebuilding Task Force to enable the sharing and integration of relevant place-based capacity building resources into ongoing disaster recovery initiatives.
- HUD facilitated meetings between HUD Sustainable Communities Regional Planning grantees, Hurricane Sandy Rebuilding Task Force

members, and CPCB where relevant place-based capacity building resources could be shared and integrated into ongoing disaster recovery initiatives.

- Through the NY/NJ Federal Interagency Partnership for Sustainable Communities, HUD, EPA, and DOT representatives participated in working group meetings with representatives from CPCB, the National Oceanic and Atmospheric Administration (NOAA), and the National Renewable Energy Laboratory (NREL) aimed at strategically integrating federal, state, and local place-based capacity building resources into ongoing disaster recovery initiatives.

Activities Planned or Proposed

- NY/NJ Partnership for Sustainable Communities representatives should continue to support the integration of relevant place-based capacity building resources across public/private disaster recovery efforts as implementation of the Recovery Support Strategy unfolds.
- Support the leveraging of the capacity building efforts of the Regional Planning Association and the New York-Connecticut Sustainability Communities Consortium (NY-CT SCC) in communities hardest hit by Hurricane Sandy.

Resources

- EPA Building Blocks Technical Assistance
- Partnership for Sustainable Communities Learning Network
- Partnership for Sustainable Communities Livability Principles
- New York-Connecticut Sustainable Communities Consortium’s Regional Plan for Sustainable Development
- Long Island Regional Planning Council’s Regional Plan for Sustainable Development
- National Oceanic Atmospheric Administration/Environmental Protection Administration’s Achieving Hazard Resilient Coastal and Waterfront Smart Growth Report
- Federal Partnership for Sustainable Communities
- White House Neighborhood Revitalization Initiative
- U.S. Department of HUD Office of Sustainable Housing and Communities
- U.S. Environmental Protection Agency Sustainable Communities Office
- U.S. Department Of Transportation Livability Office
- National Oceanic and Atmospheric Administration
- HUD/EPA Capacity Builders

- The Institute for Sustainable Communities created a National Sustainability Learning Network
- The University of Louisville Research Foundation, Inc. (Louisville, KY) is addressing the need for incorporating water infrastructure planning and investments with other planning efforts
- The Coalition for Utah’s Future/Project 2000 (Salt Lake City, UT) is working to build skills in scenario planning techniques and tools
- Reconnecting America (Washington, DC) is developing effective implementation strategies for economic development and local and regional plans
- PolicyLink (Oakland, CA) and Place Matters, Inc. (Denver, CO) are working with communities to advance social equity in planning, participation, and decision making
- The NADO Research Foundation (Washington, DC) and the Minnesota Housing Partnership (St. Paul, MN) will target their efforts in strengthening sustainability practices for tribes, small towns, and rural places

Strategic Initiative 1.2: Leverage current and ongoing place-based planning initiatives and investments in impacted communities on Long Island by facilitating the strategic targeting and integration of resources and drawing on the compounding effect of cooperative arrangements and well-coordinated actions. Ensure that revitalized housing exists in a sustainable community that integrates housing, land use, economic and workforce development, transportation, and infrastructure investments.

Actions Completed or Underway

- The Housing RSF has leveraged the New York – Connecticut Sustainable Communities Consortium (NY-CT SCC) local and regional networks, initiatives, and resources in the disaster recovery effort through connections to each of the six Recovery Support Functions, as well as the Hurricane Sandy Rebuilding Task Force.
- HUD supports the integration and alignment of current regional and community development plans with those developed within NYS Community Reconstruction Zones (CRZs), partnering with the Community Reconstruction Zone planning committees and the CPCB RSF to maximize resources and provide continuity of community and regional development initiatives long after the disaster recovery period has passed.
- HUD’s Office of Philanthropic and International Innovation has partnered

with HUD Sustainable Communities Regional Planning Grantee, the NY-CT Sustainable Communities Consortium, in leveraging philanthropic resources supporting sustainable, equitable neighborhood revitalization effort. HUD Sustainable Communities grantee liaisons continue to support this integration through information-sharing and networking.

- The Hurricane Sandy Rebuilding Task Force has conducted two working sessions with national and local NGOs including participation from Long Island stakeholders. The Housing RSF recommends that working sessions should continue to engage NGOs on the identification of pressing issues, unmet needs, and the development of potential solutions.

Activities Planned or Proposed

- Support local jurisdictions in their efforts to integrate and leverage existing Transit Oriented Development (TOD) projects, as well as the New York state-funded E-TOD One Region initiative as part of the response to the housing shortage created and exacerbated by Hurricane Sandy.
- As local disaster recovery and rebuilding initiatives unfold, support the coordination of relevant stakeholders for the purpose of matching the capacity of all infrastructure systems to a community’s current and projected demand on its built and virtual environment.
- Support state and local jurisdictions targeting and integrating federal and

Coastal Climate Resilience								
Geomorphology	High-density/Mixed Use	Mid-density Residential/Commercial	Mid-density Commercial/Industrial	Mid-density Residential/Industrial	Mid-Density Residential	Low-density Residential	Low-Density Industrial/Commercial	
Rocky bluffs on sheltered waters				North Shore, Staten Island	Upper Manhattan, the Bronx		West Shore, Staten Island	
Sandy bluffs on sheltered waters					Throggs Neck, City Island	South Shore Staten Island		
Ocean front barrier beaches		Coney Island			Far Rockaway	Breezy Point, Sea Gate		
Marches on sheltered waters						Jamaica Bay		
Hardened Bays straits	Lower Manhattan	East Harlem	South Bronx, Sunset Park	DUMBO, Long Island City				
Canals and small rivers				Gowanus, Newton Creek	Bronx River			

Source: (Recreated table) NYC Planning, Coastal Climate Resilience Coastal Area Typologies

philanthropic resources, as well as leveraging the New York City Department of Planning rebuilding initiatives on a regional level, especially those tied to the 2012 NYC Climate Resiliency Study. This study provides a series of best-practice, context-specific rebuilding strategies that can be utilized in reconstructing damaged housing in Nassau and Suffolk counties. An early version of their resilient rebuilding matrix is provided on page 67.

- Coordinate with the CPCB RSF to leverage the Transfer of Development Rights studies in Suffolk County in helping communities think through how best to allow people to continue living in the villages and townships they choose, while ensuring landowners realize the value of their property in areas where rebuilding is not advised.

Resources

- Cleaner/Greener Long Island plans
- New York-Connecticut Sustainable Communities Consortium’s Regional Plan for Sustainable Development
- Nassau Infill Redevelopment Study
- One Region E-TOD Study
- Suffolk County Transfer of Development Rights Study

- Healthy Indoor Environment Protocols for Home Energy Upgrades
- Long Island Regional Planning Council Housing Strategy: The council working with Nassau and Suffolk counties and other partners, will perform research, outreach and public education on the needs, benefits and impediments to increasing the availability of mixed-income housing. The outcome will include a “Fair Share Housing Plan” to create mixed-income housing options for all to be distributed throughout Long Island in transit supported locations.
- Long Island Regional Economic Development Council Transit-Oriented Development plans
- Long Island Regional Planning Council Sustainable Development plan

Strategic Initiative 1.3: Leverage current and ongoing place-based planning initiatives and investments in impacted communities in New York City by facilitating the strategic targeting and integration of resources. Ensure that revitalized housing exists in a sustainable community that integrates housing, land use, economic and workforce development, transportation, historic, cultural and infrastructure investments.



Actions Completed or Underway

- HUD has leveraged the New York – Connecticut Sustainable Communities Consortium (NY-CT SCC) local and regional networks, initiatives, and resources in the disaster recovery effort through connections to each of the six Recovery Support Functions, as well as the Hurricane Sandy Rebuilding Task Force.
- HUD has supported regional leveraging of the 2012 NYC Department of City Planning 2012 Climate Resiliency Study developed as part of the regional planning effort undertaken by the NY-CT Sustainable Communities Consortium.
- HUD’s Office of Philanthropic and International Innovation is partnering with HUD Sustainable Communities Regional Planning Grantee, the NY-CT Sustainable Communities Consortium, in leveraging philanthropic resources supporting sustainable, equitable neighborhood revitalization within the disaster recovery effort.
- The Hurricane Sandy Rebuilding Task Force has conducted two working sessions with national and local NGOs, including New York City stakeholders. The Housing RSF recommends that working sessions continue going forward to continue to engage NGOs on the identification of pressing issues, and unmet needs, and the development of potential solutions.

Activities Planned or Proposed

- Facilitate the integration of National Park Service Greenway Initiatives into disaster recovery and hazard mitigation efforts, including the Jamaica Bay Greenway Initiative which covers much of the Sandy-impacted area in the Rockaways, in coordination with the NY/NJ Federal Interagency Partnership for Sustainable Communities.
- The Housing RSF and the EPA, one of its supporting organizations, along with the Economic RSF support the facilitation of the integration of current brownfield and Superfund cleanup and assessment projects with disaster recovery efforts. Further information on this integration can be found in the Economic Recovery Support Strategy.

Resources

- New York-Connecticut Sustainable Communities Consortium’s Regional Plan for Sustainable Development

- NYC Department of City Planning 2012 Climate Resiliency Study
- Sustainable Communities and Choice Neighborhoods Grantees
- EPA’s Green Building Toolkit (<http://www.epa.gov/region4/recycle/green-building-toolkit.pdf>)

Support Strategy 2: Expand Housing Options

Support state, county, and local jurisdictions in the development of customized housing recovery program initiatives that support the preservation, rehabilitation and development of housing in the impacted areas.

According to nyc.gov, at the end of 2011 the five boroughs that make up New York City (Bronx, Brooklyn, Manhattan, Queens, and Staten Island) had a combined vacancy rate of 3.12 percent, comprising both open market and rent stabilized units. A rental vacancy rate below 5 percent is generally indicative of an extremely tight rental market. According to the New York Curbed Marketplace Reports, the Manhattan rental market is one of the tightest in the country. At its peak, in August 2012, vacancy rates in Manhattan were at 1.19 percent, up from 1 percent a year earlier. According to a November 2012 study by Citi Habitats, low vacancy rates kept rents high, with the average rent in Manhattan across all unit types at \$3,856, a 5.4 percent increase from October 2011.

As indicated in the housing demand chart, there is an extreme shortage of available housing in both Nassau and Suffolk counties, especially in the rental market.

Housing Demand in the Long Island Housing Market Area (HMAs), 3-Year Forecast, October 1, 2011 to October 1, 2014						
	Long Island Housing Market Area		Nassau County Submarket		Suffolk County Submarket	
	Sales Units	Rental Units	Sales Units	Rental Units	Sales Units	Rental Units
Total Demand	4200	2925	1200	850	3000	2075
Under Construction	1025	140	420	140	600	0

Source: HUD Policy Development and Research: Comprehensive Housing Market Analysis, Long Island, New York, October 1, 2011

The implementation of several planned Transit-Oriented Developments (TODs) may increase the available rental market in the near future. However, for now, the lack of adequate rental units and homes for sale present a major challenge to finding permanent homes for survivors of Hurricane Sandy on Long Island.

Impact of Hurricane Sandy on Existing Housing Stock

The impact of Hurricane Sandy in an already tight housing market was harmful to the region and continues to challenge efforts to rehouse those who lost their homes. The damaged units chart summarizes the total number of homes that were inspected by FEMA and determined to have suffered some level of damage.

The intensity of damage levels for those homes that were harmed by flooding is shown in the adjacent tables. As of Jan. 2, 2013, FEMA's Individual Assistance (IA) inspection crews found approximately 127,000 applicants with damage to their homes in the state of New York. The vast majority of those homes (90 percent) incurred damage from flooding. Of those, only 14 percent were severely flooded with more than four feet of water. A larger share (34 percent) experienced flooding between one and four feet.

All five of New York City's boroughs are among the top eight counties with the highest concentrations of damaged homes. Together, New York City's counties contain more than half of the entire state's heavily concentrated damaged homes; Nassau County alone contains 41 percent of the state's heavily concentrated damaged homes. Nassau County also has the largest share of damaged housing stock at 9 percent of its total stock.

NYC's five boroughs hold about 60 percent of the damaged homes that suffered the most severe flooding (over four feet) in the state. The vast majority of these severely flooded homes lie in Queens and Staten Island (Richmond County). Out of all the most severely impacted counties, Staten Island's Richmond County has the largest share of flooded homes with over 4 feet of water (25 percent), which indicates a strong concentration of severely damaged homes in that borough.

Nassau County, however, contains more flooded homes in the "most severe" category than any other borough or county in the state, accounting for 35 percent of all homes that were severely flooded in the state. It also contains almost half of New York's flooded homes in the second most severe category,

Total Housing Units vs Damaged Units Reported by FEMA Individual Assistance			
County	Total Housing Units	No. of Damaged Units	% Damaged
Nassau	467,515	41,965	9.0%
Queens	833,401	24,920	3.0%
Kings	993,379	23,074	2.3%
Richmond	176,225	10,995	6.2%
Suffolk	567,748	13,286	2.3%
New York	842,807	2,556	0.3%
Bronx	511,180	1,176	0.2%
Westchester	369,753	1,139	0.3%
Rockland	103,392	693	0.7%
Total	4,865,400	119,804	2.5%

Source: U.S. Census, American Community Survey, Selected Housing Characteristics, 2007-2011 5-Year Estimates; FEMA I.A. Data, 4/08/2013

Summary of Damage in New York State			
Concentration Level (% of units that are damaged)	State Total		
	TOTAL	127,015	
	Heavy (>50%)	72,617	57%
	Strong (20-50%)	26,361	21%
	Dispersed (5-20%)	13,290	10%
	Very Dispersed (<5%)	14,747	12%
% of Total Housing Damaged			10%
Flood Information	TOTAL	114,060	
	>4 Ft	15,479	14%
	1 to 4 Ft	39,160	34%
	Less than 1 Ft	14,891	13%
	>2 Ft in Basement	33,476	29%
	<2 Ft in Basement	11,054	10%
	% of Damage from Flooding		

Source: FEMA Individual Assistance, 01/02/2012

1 to 4 feet. Since almost three quarters of Nassau County's damaged homes are heavily concentrated, it is likely that many neighborhoods in this county may have difficulty recovering.

Strategic initiatives listed below are intended to support state, county, and local jurisdictions ability to increase the number of available housing units in the impacted communities. These initiatives may target renters, owners, or both and are inclusive of all types of housing such as supportive housing and housing for individual with Access and Functional Needs (AFN).

The level of destruction to neighborhoods and to the housing stock in the region impacted by Hurricane Sandy indicates the need for a strategic, context-sensitive approach to rebuilding that takes the possibility of future events into account. Therefore, throughout this section it is understood that disaster recovery resources and initiatives will be targeted to rehabilitating existing homes and constructing new housing that has an architectural style that fits into the fabric of the existing community, including being compliant with historic landmark and district design guidelines, and has the following characteristics:

- **Energy-Efficient, Sustainable, Accessible, Connected and Free from Discrimination:** Properties with low per unit energy consumption, healthy indoor air quality, built to be resistant to local disaster risk, exceeding the Section 504 and Fair Housing Act accessibility requirements, with affordable broadband Internet access and free from discrimination in the sale, rental or financing of housing.
- **Mixed-Income:** Properties with a mix of extremely low-income (e.g. public/assisted), low income (e.g. tax credit/HOME units), and, as appropriate, moderate income (e.g. market rate rent/homeownership units).
- **Physically Viable:** Properties that are constructed with durable and low-maintenance materials, receive high quality maintenance over time, and where scheduled upgrades and replacements are performed.
- **Financially Viable:** Projects that have budgeted appropriately for the rental income that can be generated from the project (including rental subsidy) to meet debt payments and meet or exceed industry standards for quality management and maintenance of the property.

Strategic Initiative 2.1: Support state, county and local jurisdictions in rebuilding and rehabilitating sustainable, climate-resilient housing, particularly in the hardest hit areas in New York City, and Nassau and Suffolk counties.

Actions Completed or Underway

- NYC Rapid Repair Program: An early response to recovery was developed that the best temporary shelter is permanent shelter. FEMA funds supported the retention of 9 primary contractors and 140 subcontractors who have completed work in 6,072 buildings; work begun in 7,878 buildings and 4,303 buildings are remaining.⁴ The program has a significant impact on job creation and small and minority business development.
- FEMA, in conjunction with state and local partners, implemented the Sheltering and Temporary Essential Power (STEP) Program to help people get back into their homes quickly and safely. STEP assists state, local and tribal governments in performing work and services essential to saving lives, protecting public health and safety, and protecting property. The program funds certain necessary and essential measures to help restore power, heat and hot water to primary residences that could regain power through necessary and essential repairs. As of March 22, 2013, the STEP program completed repair of 11,773 residential units in New York City; 623 residential units in Nassau County; 183 residential units in Suffolk County.
- HUD continues to facilitate connections between the NY-CT SCC Regional Planning initiative, the NYC Department of City Planning 2012 Climate Resiliency Study, NYSERDA, the Housing RSF and the CPCB RSF in leveraging sustainable, climate-resilient housing best-practices.
- Housing RSF representatives continue to participate in a cross-RSF Sustainability working group with the National Research Energy Laboratory, FEMA, and EPA targeting interagency resources in creating and revitalizing energy-efficient, climate-resilient housing.
- Housing Match Program: HPD, in conjunction with Housing Development Corporation, Homes and Community Renewal and HUD, began working with development partners in New York State Association for Affordable Housing (NYSFAFH), Real Estate Board of New York (REBNY), and Rent Stabilization Association (RSA) to identify vacant apartments at different levels of affordability and make them available to Sandy survivors.

Activities Planned or Proposed

- The Housing RSF and its supporting organizations, including the EPA, support efforts aimed at achieving the integration of WaterSense New Home Specifications into housing construction and rehabilitation efforts. WaterSense labeled new homes not only use less water but also provide

an opportunity to invest in the future and address climate change by integrating water efficiency into the construction process. Products and services that have earned the WaterSense label have been certified to be at least 20 percent more water efficient without sacrificing performance, and will help residents save money on their water and energy bills while reducing stress on local water resources and infrastructure, which benefits the entire community. Specific WaterSense labeled products and services can also be easily deployed into affordable housing to reduce water use.

- Continue cross-RSF sustainability working group efforts with the NYS Energy Research Development Authority (NYSERDA) to facilitate the leveraging of construction and workforce development resources in housing construction and rehabilitation efforts undertaken as part of disaster recovery.
- The Housing RSF and its supporting organizations including the EPA support efforts aimed at achieving the integration of sustainability and resource conservation tools such as ENERGY STAR® into housing construction and rehabilitation efforts. ENERGY STAR® offers solutions to improve the energy efficiency of all sectors of the affordable housing market. These include product-specific solutions such as ENERGY STAR qualified appliances, lighting, windows, and HVAC equipment, as well as systems-based, whole-house solutions such as ENERGY STAR Qualified



Homes for new construction and Home Performance with ENERGY STAR for retrofits. These solutions can be deployed effectively to reduce energy use but must also be sensitive to historic landmark and district design guidelines and local regulations since ENERGY STAR window applications do not meet historic preservation standards.

- Housing RSF and supporting organizations, EPA, support efforts aimed at achieving the integration of healthy construction tools such as airPLUS, a companion label to ENERGY STAR® into housing construction and rehabilitation efforts. The suite of sustainability, resource conservation and healthy construction tools EPA offers will provide health protection and conserve valuable resources such as energy and water. Asthma disproportionately impacts those below the poverty level and many residents impacted by Sandy were exposed to mold and other irritants and allergens after the storm. Homes built to earn the Indoor airPLUS label include features to reduce contaminants that can lead to poor indoor air quality, including mold, moisture, radon, carbon monoxide, toxic chemicals and more.
- In partnership with the RSF Sustainability working group, HUD Sustainable Communities grantees and Green Housing liaisons will facilitate leveraging of NYSERDA and HUD Green Refinance Plus program resources into CDBG-DR funded housing construction and rehabilitation initiatives.
- Leverage best practices identified by the Pace Law School Land Use Law Center to help increase the availability of housing through using meaningful urban policy initiatives.

Resources

- EPA's Healthy Indoor Environment Protocols for Home Energy Upgrades
- EPA's Indoor airPLUS
- NYSERDA Construction and Workforce Development Funding
- NYC Department of City Planning 2012 Climate Resiliency Study
- HUD's Green Refinance Plus program.
- National Renewable Energy Laboratory

Strategic Initiative 2.2: Encourage public housing authorities (PHAs) and multifamily property owners to extend or make permanent a preference for families displaced as a result of this disaster and assist PHAs and multifamily property owners with reconstruction and rehabilitation of their housing inventory.



Actions Completed or Underway

- The Northeast Network of HUD Public Housing conducted initial outreach to PHAs in impacted areas and encouraged the adoption of waiting list preferences for residents displaced by Hurricane Sandy. The NEN provided updates on the number of PHAs that provided a “preference” and the number of units available for occupancy.
- HUD’s Office of Multifamily Housing Programs conducted outreach to HUD-assisted multifamily owners to remind owners that residents that are displaced by Hurricane Sandy are to be given preference for vacant units in FHA-insured projects.
- Regional HUD Offices of Public Housing and Multifamily Housing Programs supported the impacted communities by conducting outreach to neighboring and regional PHAs and HUD-assisted multifamily owners to identify available units and collected supplies such as generators to assist damaged buildings with electrical power restoration.

Activities Planned or Proposed

- Continue to work with respective program and field offices to contact public housing authorities to extend or make permanent an admission

preference for families displaced by the disaster via an amendment to their Administrative Plan or Admissions and Continued Occupancy Policy.

- Provide technical assistance, as needed, to assist PHAs in applying for FY13 Capital Fund Emergency and Disaster Reserve set-aside funds to increase the number of available rental units.
- Conduct outreach and provide technical assistance to PHAs as needed to communicate programmatic flexibilities (including disaster waiver protocols) available to disaster survivors including, but not limited to, the following:
 - PHAs may give a preference to existing public housing and voucher residents displaced by the disaster.
 - PHAs may also give a preference to disaster area victims who are not currently public housing or voucher residents, as long as they are income-eligible.
 - Under existing voucher portability rules, a receiving PHA may admit additional family members to a portable voucher family.
 - If a housing choice voucher unit is damaged by the disaster, but the deficiencies are not life-threatening, a PHA has existing administrative discretion to allow more than 30 days for the unit owner to make repairs to bring the unit up to housing quality standards.
- New York City assembled lending institutions and financial housing industry stockholders to create and improve on new loan and grant programs for Multi-family Building Rehabilitation. The grants, low interest loans, and/or credit support will be used for rebuilding or rehabilitation of multi-family rental buildings. Rebuilding or rehabilitation will incorporate resilience measures for properties throughout the impacted zone, and will serve a wide range of housing types, including HUD-assisted properties such as developments with section 202 or 236 contracts.

Resources

- Local PIH field office subject matter experts
- Local Office of Multifamily Housing Programs subject matter experts

Strategic Initiative 2.3: Federal partners will support state and local jurisdictions in identifying, developing and executing interim rental solutions for individuals and families impacted by the disaster.

Actions Completed or Underway

- To assist families who are still struggling to locate housing after being displaced by Hurricane Sandy, FEMA and HUD will reinstitute the Disaster Housing Assistance Program (DHAP), a unique rental assistance program that provides temporary rental payments directly to landlords to help families displaced by Hurricane Sandy. DHAP-Sandy will help families find intermediate housing as they rebuild their lives.
- NYC Housing Preservation and Development, in conjunction with NYC Housing Development Corporation (HDC), NYS HCR and HUD, is continuing to assist displaced residents with interim to long term housing options through the housing match program, which identifies vacant apartments at different levels of affordability and makes them available to Sandy survivors.
- FEMA has approved multiple extensions of the Transitional Sheltering Assistance (TSA) program, which allows eligible survivors from Hurricane Sandy who cannot return to their homes to stay in participating hotels.

Activities Planned or Proposed

- Housing RSF and supporting organizations continue to work with FEMA, state and local jurisdictions to identify potential housing solutions for those



individuals and families not provided a housing solution through DHAP or any other temporary/interim housing solution.

Resources

- NYC Housing Recovery Operations
- NYC Housing Preservation and Development
- NYC Housing Development Corporation
- NYS Homes and Community Renewal

Strategic Initiative 2.4: Expand eligible activities within the existing CDBG and CDBG-DR program to ensure maximum flexibility for use by state and local jurisdictions in addressing environmental and coastal issues resulting from Hurricane Sandy.

Actions Completed or Underway

- CDBG and Section 108 waivers have been granted to make the program more flexible and immediately responsive to urgent needs.
- Integrated mold task force was stood up to identify resources to address the growing mold problem. Can use CDBG funds to support mold remediation.
- Leverage the Neighborhood Revitalization NYC Mold Treatment program as a “best practice,” which will provide mold treatment services free of charge to up to 2,000 households (with a priority for elderly households under 120 percent of AMI) leveraging public-private-philanthropic resources.

Activities Planned or Proposed

- Support efforts aimed at achieving the expansion of eligible activities within the existing CDBG, Section 108 Loan Guarantee program and HOME Investment Partnerships program (HOME) funds to include environmental remediation of units (e.g. mold clean-up, hazardous substances, etc.) which will allow a quicker return of those units to occupancy. Work with respective program offices in drafting justifications for reallocation of CDBG, Section 108 and HOME funds.
- Seek the engagement of HUD program offices and Housing RSF primary and supporting organizations to determine available resources for

environmental outreach.

- Continue existing efforts and expand where appropriate outreach that supports informing sharing related to housing health and safety hazards for post-Hurricane Sandy rehabilitation.
- Support the state, county and local jurisdictions in their efforts to facilitate the relocation of disaster survivors who opt for buyouts and choose to relocate within the community or the state.
- Housing RSF primary and supporting organizations support efforts designed to utilize GIS and other available tools to identify community needs in conducting outreach. Partners will also sustain a dialogue with affected communities in order to respond to their information needs.
- Support conducting a study of existing residential buildings located in storm surge vulnerable industrial areas that will provide adaptation and resiliency strategies for these communities including but not limited to: Sunset Park, Newtown Creek (Brooklyn/Queens), Brooklyn Navy Yard, Red Hook (Brooklyn), South Bronx (Bronx), Kill Van Kull (Staten Island).

Resources

- Local HUD Community Planning and Development field office subject matter experts
- Existing environmental remediation training and informational materials

Strategic Initiative 2.5: Support state, county, and city development of Sandy mitigation and resiliency programs. One of the challenges of the recovery process is assisting disaster survivors whose homes have been substantially damaged to rebuild to local building codes and standards in order to be considered compliant structures. The cost to rebuild to these standards often has a higher initial cost and can cause additional stress on local building-permitting entities.

Actions Completed or Underway

- FEMA released Advisory Base Flood Elevation maps (ABFE) which are intended to be an advisory tool for federal, state, and local officials, building officials, builders and architects, insurance professionals, and property owners. The tool helps them understand current coastal flood hazard risk and the elevations that communities should consider when rebuilding in order to protect themselves from future flood events.

Activities Planned or Proposed

- Target and integrate federal and philanthropic initiatives and resources to support New York City Department of Planning housing initiatives, especially those tied to the 2012 NYC Climate Resiliency Study.
- Leverage outcomes of 2012 NYC Climate Resiliency study in reconstructing damaged housing in Nassau and Suffolk counties.
- Leverage capacity building efforts of Regional Planning Agency and the New York – Connecticut Sustainability Communities Consortium in communities hardest hit by Hurricane Sandy.
- Support the adoption by state, city, and local jurisdictions of best available flood risk data to facilitate rebuilding efforts.
- Maximize Increased Cost of Compliance (ICC) program efforts through National Flood Insurance program (NFIP) regarding elevation requirements.
- Support and facilitate training for local jurisdictions to ensure comprehension and usage of mandated energy codes, both federal and local.

Resources

- Local building permit authorities
- Local real estate boards



Strategic Initiative 2.6: Encourage and support the development and execution of resiliency plans for public housing authority (PHA) developments within the impacted areas.

Actions Completed/Underway

- Public housing authorities are currently conducting detailed contract inspections of all damaged units, buildings and systems for affected developments in impacted areas (NYC Housing Authority (NYCHA); Freeport Housing Authority; Long Beach Housing Authority; Town of Hempstead Housing Authority; and the Village of Kiryas Joel Housing Authority).

Actions Planned/Proposed

- Support PHA's use of funding in the Public and Indian Housing (PIH) Capital Fund program set aside for emergencies and natural disasters.
- Support NYCHA and other local PHA's plan for new sustainable HVAC systems including relocation to roof-tops. NYCHA administers

approximately 180,000 units of low rent public housing scattered over approximately 2,600 residential buildings, many of which are high rises.

- Support installation of emergency generators for public housing developments. Adding permanent emergency generators at critical housing authority developments would provide backup power to critical systems such as elevators, boilers, water pumps, emergency lighting, and critical life support systems.
- Commercial facility water pumps should have backup power. Generators should be installed and be elevated to the new federal flood risk standard (based on best available data plus one foot of freeboard). Generators should be tested periodically and fuel supply agreements should be in place with at least two fuel suppliers from different geographic regions.
- Support the use of the Rental Assistance Demonstration (RAD), which would allow PHAs in impacted areas to redevelop or rehabilitate public housing projects by converting the assistance to one of two forms of long-term, project-based section 8 contracts: project-based vouchers (PBVs) or project-based rental assistance (PBRA).



- Improve housing authority community centers. By converting a property out of the public housing program and into a project-based Section 8 contract, a PHA can leverage significant debt (including FHA-insured) and equity to support construction costs to transform buildings into warming centers, information distribution sites, local command centers, phone charging stations, or emergency shelters for use during disasters.
- Determine the feasibility of public housing authorities creating project/development-based reserve funds that can be used to support resiliency and sustainability efforts.
- Support NYCHA’s proposal to increase the resilience of the Emergency Operations Center currently located in Flood Zone V/A in New York City.
- Support the housing authority’s future disaster planning and coordination with federal partners, including FEMA.
- Create solar energy projects that will generate power when the electrical grids go out in areas vulnerable to storm surge.

Resources

- United States Green Building Council
- Local PIH office subject matter experts

Support Strategy 3: Support Affordable Housing Efforts

Support state, county, and local jurisdictions efforts to maintain and create safe, resilient and affordable housing options for individuals and families impacted by Hurricane Sandy.

The New York metropolitan region has three of the nation’s top five most expensive areas with the highest cost of living.⁵ A 2009 study from the Center for an Urban Future found that the “New York City premium” on goods and services from housing and groceries to utilities and transportation means that a \$60,000 salary earned in Manhattan is the equivalent of \$26,092 in Atlanta. The Regional Planning Association of Long Island noted in a 2012 report that *“Long Island is at a tipping point, possessing tremendous innovation potential but hamstrung by a shortage of affordable housing and limited downtown development.”*

An average two-bedroom apartment on Long Island costs about \$2,055⁶ a month without utilities. Long Island homeowners pay the highest property taxes in the nation. In New York City, a one bedroom apartment averages \$2,600 per month.⁷

These facts underscore the existence of a shortage of affordable housing before October, 2012. Since Hurricane Sandy, the shortage has increased dramatically. Over the years, the net losses have always surpassed the net gains, resulting in long waiting lists for subsidized housing in particular. The demand for public housing in the region is at an all-time high. In Nassau and Suffolk counties, Freeport and Long Beach Public Housing Authorities have significantly damaged public housing stock. In New York City, as of Feb. 1, 2012 there were:

- 163,965 families on the waiting list for low-rent public housing (including 6,987 who are in the certification process)
- 123,499 families on the waiting list for Section 8 Housing (including 716 who are in the certification process). The Section 8 waiting list re-opened on Feb. 12, 2007 and subsequently closed on May 14, 2007.

The lack and/or loss of affordable homes affect certain populations more than others including persons with mental and/or physical disabilities, single head of households with children, persons with HIV/AIDS, and the homeless. The New York City Department of Homeless Services stated that there were over 47,000 homeless individuals prior to Hurricane Sandy. The Point-In-Time Count, which was conducted in January, 2013, will provide the most current data on the homeless population. Nassau and Suffolk counties experienced a significant increase in homeless populations after Hurricane Sandy hit, in part due to the loss of affordable unregistered rental units. The affordable housing challenge is also pronounced among seniors on fixed incomes. Among the 155,165 individuals and households receiving FEMA’s Individual Assistance throughout New York City as of May 3, 2013, 26,116 (17 percent) are seniors older than 65, many with access and/or functional needs.

Hurricane Sandy has indeed added to the urgency to restore and increase affordable housing in the impacted counties and communities. As the chart provided here indicates, the majority of residents in the impacted counties who have registered for FEMA assistance so far (registration was ongoing at the time of writing) are renters (55.4 percent) and have a low income (median income of \$18,000). For example, 42 percent of all registered renters had an annual income of \$15,000 or less.

Assistance being requested by these FEMA applicants (both renters and owners) includes Temporary Sheltering Assistance (TSA), direct housing assistance, repair to damaged housing units, and personal property loss claims. At its peak, by mid-January 2013, there were more than 2,000 disaster survivors in TSA (with about 630 from Nassau County alone). They were housed in hotels throughout the impacted counties because of lack of vacant affordable housing units, which makes a case for increasing affordable housing in the region.

before the disaster was highlighted by the New York City Rent Guidelines Board in May 31, 2012, which concluded that in 2011, there was a net loss of 6,096 rent stabilized units, representing 34 percent more than the previous year⁹. In addition, the report concluded that “. . . In 2009, 49 percent of New York renters paid more than 30 percent of their household income on rent, compared to 41 percent in 2000. This trend of increasing rents accompanying stagnant incomes has persisted for decades: after adjusting for inflation, the New York City median household income remained essentially unchanged between 1970 and 2009, while the median reported rent almost doubled.”¹⁰

Additions to the city’s affordable housing stock have come from a combination of market-oriented incentives and regulations, an approach that does not meet the minimum need. The use of property tax exemptions and abatements (such as J-51 and the Section 421-a) have created units placed under the rent stabilization program, but at rent levels that are not affordable.

The New York City Department of Housing Preservation and Development (NYC-HPD), under the New Housing Marketplace program, has preserved 140,000 “affordable units” throughout the city since 2004. However, a study of 124,000 affordable units preserved by Mayor Bloomberg’s initiative by the Association for Neighborhood and Housing Development concluded that “while the City has committed to and developed a significant number of affordable housing units . . . , about two-thirds of New Housing Marketplace units are too expensive for the majority of the local neighborhood residents.”¹¹ “From (fiscal) 2009 to 2011, only about 8 percent of the units developed by the city were meant for households that earn 40 percent of the area median income, even though that income group represents a third of all New York households. Meantime, 56 percent of the city’s affordable units were made for households making 51 to 80 percent of the area median, although that group represents only 17 percent of all households. In general terms, the affordable housing plan did create low-income housing, but it was upper-low-income housing...In 13 of the 41 neighborhoods where at least 100 units were created during these three years, 80 percent of the units (or more) were too expensive for the typical household.”¹²

Distribution of Registration for FEMA Individual Assistance		
	Registrants	
	Owners	Renters
Total Registration	67,802	84,279
Share of Total	44.6%	55.4%
Median Income	\$82,000	\$18,000
Income between \$0 and \$15,000	16.6%	42.4%
Income between \$15,001 and \$30,000	13.3%	22.4%
Income between \$30,001 and \$60,000	24.6%	7.1%
Income between \$60,001 and \$90,000	18.9%	7.7%
Income > \$90,000	26.6%	7.1%

Source: Furman Center. Fact Brief. Sandy's Effects on Housing in NYC, March 2013

A poll conducted by the Center for Survey Research at Stony Brook in 2012 shows Long Islanders are concerned about the future and more open to new ways to grow, such as building more apartments in Long Island’s downtown centers. New York State’s Executive Budget for 2013-2014 notes the importance of implementing community focused plans and authorizes a Design-Build project as a proven way to reduce costs and speed completion of affordable housing units.

New York City

The New York City housing market is distinct from that of the other impacted counties and municipalities. Almost 78 percent of the New York City’s homes are renter occupied.⁸ The shortage of affordable housing in New York City

Nassau and Suffolk Counties

In Nassau and Suffolk counties, roughly 80 percent of housing units are owner-occupied, compared to New York City where renters occupy about 77 percent

of the dwelling units.¹³ As such, affordable housing challenges tend to gravitate towards owners. A key limiting factor in housing affordability in Nassau County, according to a HUD study by the PD&R, is the decline in the number of building permits issued for new construction of single-family homes. In 2011, the county issued 330 single-family home construction building permits, down 22 percent from 430 permits issued in the year 2000 and representing the lowest level in more than 30 years. Since single-family homes constitute over 76 percent¹⁴ of the housing structures in the county, the availability of fewer permits will reduce the amount of affordable housing stock in Nassau County. This combined with the rise in demand will drive prices up arbitrarily, thus pricing out low income residents.

As the Nassau County Submarket table demonstrates, there is a concentration of demand for housing units in the range of \$350,000 to \$499,999, representing 42 percent of total demand. To accommodate the need, housing providers should work to increase the supply of units in this price range.

The 2011 American Community Survey has indicated that 46 percent of renters in Nassau County reported that their rental expense is 35 percent or more of their gross household income. The county has also slowed permitting for multifamily building which currently accounts for less than 15 percent of the housing structures in the county.¹⁵

Demand for New Market-Rate Sales Housing in the Nassau County Submarket, October 1, 2011 to October 1, 2014			
From	To	Units of Demand	Percent of Total
\$300,000	\$349,999	180	15%
\$350,000	\$399,999	250	21%
\$400,000	\$499,999	250	21%
\$500,000	\$599,999	120	10%
\$600,000	\$699,999	110	9%
\$700,000	\$799,999	85	7%
\$800,000	\$899,999	60	5%
\$900,000	and higher	140	12%

Source: U.S.HUD, PD&R: Comprehensive Housing Market Analysis. Long Island, New York. October 1, 2011

Strategic initiatives listed below are intended to support state, county, and local jurisdictions to provide affordable housing options to both renters and homeowners in the impacted communities. Strategic initiatives for renters have two-tiered objectives: adding to the existing affordable housing inventory and preserving existing affordable housing. The goal of these initiatives is to minimize the number of renters and owners overburdened by housing costs.

Strategic Initiative 3.1: Support state, county and local jurisdictions in their efforts to increase the number of affordable housing options in the impacted areas.

Actions Completed or Underway

- As part of Mayor Bloomberg's New Housing Marketplace Plan (NHMP), NYC Department of Housing and Preservation Development (HPD) has instituted a 25 percent preference for units in city-subsidized affordable housing developments for income-eligible New Yorkers displaced from their homes by Hurricane Sandy. One of the first developments subject to the preference is Coney Island Commons, a new affordable housing development now being marketed in Coney Island, Brooklyn. The other two developments are St. Nicholas Park Apartments in the Central Harlem section of Manhattan and East Clarke Place Court in the Highbridge section of the Bronx. This should serve as a best practice for future developers.
- The New York State Executive Budget is financing the creation and preservation of more than 14,300 affordable housing units with \$1 billion over the course of five years, including the transfer of the Mitchell-Lama affordable housing asset portfolio from Empire State Development to Homes and Community Renewal. Consequently, HCR will be able to refinance these projects and utilize private and public funding to rehabilitate 8,700 units.
- The micro-apartment initiative is one of many new design models that aim to increase available affordable housing in New York City. Monadnock Development, Brooklyn-based architects nARCHITECTS, and Actors Fund Housing Development Corporation (a nonprofit that serve creative arts professionals) have partnered to create a 10-story tower with 55 units utilizing modular construction, Manhattan's first apartment building to do so. The units will be prefabricated and then stacked on top of one another. Forty percent of the units will be affordable, restricted to tenants earning no

more than \$77,190 a year, with the rest at market rate. Rents start at \$914 a month for those earning up to \$38,344 a year, well below Manhattan’s average studio rent of \$2,000, and go up to \$1,873. This trend is one that Mayor Bloomberg hopes will be replicated where available.¹⁶

- NYCHA is planning to lease some of its underused land to raise money to support its public housing units and affordable housing.¹⁷

Activities Planned or Proposed

- Support efforts aimed at leveraging EPA Energy Star, WaterSense and, Indoor airPLUS programs, NYSERDA and the HUD Green Refinance Plus program to maintain affordability levels in Sandy-impacted areas. The HUD Green Refinance Plus program requires owners to maintain their developments’ affordability levels for the duration of the loan and supports sustainability upgrades that save money for tenants and owners.
- Encourage state and local jurisdictions to research the Seattle South East Effective Development (“SEED”) model as an innovative approach to the development of affordable housing and consider its viability in a New York context. SEED houses offer transportable housing units ready to deploy

into post-disaster environments which may be constructed for transitional or permanent housing. SEED houses allow families and communities to rebuild swiftly in the wake of a disaster. An example of such a development on Long Island is found at: <http://www.buildabetterburb.org>.

- The state of Mississippi successfully implemented a SEED housing program (approximately 1,200 units occupied). Conduct outreach to relevant stakeholders including the Mississippi Emergency Management Agency (MEMA), and the Mississippi Development Agency (MDA) to assess the utility of a SEED housing approach for the New York region. Additionally, more research on locally based companies that build modular steel and concrete prefab houses should be done in order to achieve local economic multiplier effects and community revitalization.
- Seek technical assistance from HUD’s Office of Strategic Planning and Management to convene focus groups with local stakeholders in the New York impacted areas to discuss the efficacy of implementing such a program locally.
- Support conducting an assessment of the impact of geomorphology (study of topographical characteristics by land-use density) and coastal climate



resilience by land use density to guide public policy decisions.

- Engage in and support efforts aimed at increasing the number of housing choice vouchers (subject to budgetary constraints).
- Support efforts that contribute to the development of housing rehabilitation and small rental property rehabilitation programs to augment the available supply of affordable housing.
- Support efforts that enhance the capacity of nonprofit housing organizations to expand their affordable housing development efforts throughout the impacted areas.
- Support efforts that result in the provision of financial incentives for low- and moderate-income households to purchase homes with a deed (use) restriction. This instrument maintains the affordability over the long haul.
- Work with the FEMA CPCB RSF to identify the number of vacant and/or abandoned properties, their locations, and determine the condition of the properties for the purpose of conducting a cost/benefit analysis for rehabilitation/redevelopment.

Resources

- HUD's Green Refinance Plus program
- NYC Department of City Planning 2012 Climate Resiliency Study
- Sustainable Design and Green Building Toolkit for Local Governments

Strategic Initiative 3.2: Support state and local jurisdictions efforts to stabilize and preserve their existing housing inventory.

Actions Completed or Underway

- CDBG-DR grantees can use funds to address unmet recovery needs in affected areas. At least 50 percent of disaster recovery funds must benefit persons of low and moderate income. Funds can be used to assist those of low and moderate income, address conditions of slum and blight, or meet urgent needs.
- Grantees may use CDBG-DR funds for recovery efforts involving housing, economic development, infrastructure and prevention of further damage to affected areas, if such use does not duplicate funding available from



private insurance, the Federal Emergency Management Agency, the Small Business Administration, and the U.S. Army Corps of Engineers.

- HUD unveiled several model programs designed to help communities get CDBG-DR funds more expeditiously to residents struggling to rebuild, repair or restore their homes. These programs are designed to be an add-on to a community's toolkit and can be adapted to a locality's unique needs and readily implemented. The model programs cover three likely areas of need for which communities can use CDBG-DR funding: housing rehabilitation, housing counseling, and housing buyouts.

Activities Planned or Proposed

- Support the engagement of a working group with local officials and nongovernmental organizations (NGOs) to demystify property records and formulate possible local legislation which mandates property owners to register vacant properties on a city list for possible utilization for temporary or long-term housing for displaced residents.

- Support the replication of New York's Smart Home Repair and Reconstruction program as a best practice. Available to owners of one- and two-unit homes, whether owner-occupied or income-generating, including condominiums, co-ops and garden apartments. Assistance could be made available for unmet rehabilitation or repair needs after accounting for all federal, state, local and/or private sources of disaster-related assistance, including but not limited to homeowners and/or flood insurance proceeds.
- Support New York City's Small Homes Rehabilitation and Multifamily Building Rehabilitation housing programs. The Small Homes Rehabilitation program will give grants for reconstruction or rehabilitation of small homes that have been destroyed or damaged by Hurricane Sandy. Assistance will incorporate resilience measures. The Multifamily Building Rehabilitation housing program will give grants, low interest loans, and/or credit support for rebuilding or rehabilitation of multifamily rental buildings that have suffered damaged. Rebuilding or rehabilitation will incorporate resilience measures.



- For unregistered apartments located in impacted communities, encourage and support local jurisdictions to create options and/or incentives for property owners to rehabilitate units for inclusion in the housing inventory.

Resources

- U.S. Department of Housing and Urban Development’s Disaster Recovery Toolkit through the Office of Policy Development and Research
- U.S. Department of Housing and Urban Development’s CDGB-DR Toolkit through OneCPD

Strategic Initiative 3.3: Encourage and support existing public and private partnerships, as well as the formation of new partnerships that support the preservation, rehabilitation and creation of housing.

Actions Completed or Underway

- The president signed an executive order to establish the Hurricane Sandy Rebuilding Task Force. This task force will coordinate private and public stakeholders to deliver cohesive rebuilding strategies within the impacted areas.
- The Mayor’s Fund to Advance NYC, Goldman Sachs Gives, and other funders raised nearly \$1.7 million to fund housing counseling and legal services for homeowners affected by Hurricane Sandy through the Center for NYC Neighborhoods (CNYCN). CNYCN, in coordination with the Department of Housing Preservation and Development (HPD) and the Mayor’s Office of Housing Recovery (HRO), will give homeowners access to expert help in navigating the complex rebuilding and recovery process.
- With the support of Goldman Sachs Gives, the Center for NYC Neighborhoods launched the Neighborhood Recovery Fund (NRF) to provide immediate grant assistance of up to \$5,000 to homeowners with unmet needs whose properties were severely damaged or destroyed. Additional support from the Robin Hood Foundation has enabled the program to continue assisting impacted homeowners.
- In response to the foreclosure crisis, the NYC Department of Housing Preservation and Development (HPD) provided \$5 million in funding for the Mortgage Assistance Program (MAP). Administered by CNYCN,

the program has made \$1.9 million in \$25,000 loans to New York City homeowners at risk of foreclosure so that they may reinstate an affordable mortgage or enter into an affordable mortgage workout. To apply for the program, homeowners work with a housing counselor or legal services provider, at no cost, to determine eligibility and work with their lender to negotiate a resolution.

Activities Planned or Proposed

- Encourage the state and local jurisdictions to seek authorization to provide targeted tax relief in the form of a special allocation of low-income housing tax credits and/or bonds to spur development of affordable housing in the impacted areas (i.e., consider a Gulf Opportunity “GO” Zone Act for NY/NJ). Work with respective agencies to draft proposed legislation to request appropriation and authorization to implement a NY GO Zone. This will require Congressional authorization/appropriation.
- Utilize established legal services providers and housing counseling agencies to assist homeowners with assessing what they can afford,



negotiating with insurance and mortgage companies, taking action against improper denial of claims, applying for affordable home repair loans and grants, and obtaining a stable and secure budget and financing for their homes and households.

- Establish a mortgage assistance program that builds on and complements the existing Mortgage Assistance Program offered by NYC HPD and CNYCN in order to serve the needs of homeowners recovering from Hurricane Sandy. Work with federal, state, and local partners to allocate funding for such an endeavor to assist those in other counties with keeping their homes affordable. Support can be provided to state and local governments interested in implementing a state-wide program for the various counties.

Resources

- HUD Housing Counseling program guide
- Additional resources for first bullet and third bullet

Support Strategy 4: Support Accessible Housing Efforts

Support state, county, and local jurisdictions efforts to maintain and create safe, resilient and accessible housing options for individuals and families impacted by Hurricane Sandy.



There are currently 22,248 New Yorkers living in nursing facilities who have indicated they wish to return to the community. If those nursing facility residents who are Medicaid eligible were transitioned to the community, the state would potentially save \$129 million annually in the non-federal share of Medicaid.¹⁸ People with disabilities represent more than 40 percent of the homeless population. According to HUD's 2011 Annual Homelessness Assessment Report, 17.7 percent of the adult U.S. population has a disability, whereas an estimated 42.8 percent of sheltered homeless adults have a disability.¹⁹

FEMA defines accessible housing as housing which accommodates a person's specific mobility disability and access and functional needs. Supportive housing is a combination of housing and services intended as a cost-effective way to help people live more stable, productive lives. Supportive housing is widely believed to work well for those who face the most complex challenges—individuals and families confronted with homelessness (many of whom are children) and who also have very low incomes and/or serious, persistent issues that may include substance abuse, addiction or alcoholism, mental illness, HIV/AIDS, seniors over 62 years of age living in HUD 202 housing or other serious challenges to a successful life. Supportive housing is typically owned and managed by nonprofit mission-driven organizations.

The HUD program Housing Opportunities for People With AIDS (HOPWA) provides funding for housing assistance and related supportive services. HOPWA funds may be used for a wide range of housing, social services, program planning, and development costs. In 2011-2012, a total of 5,826 persons received HOPWA housing assistance from New York City and/or New York from HUD funding awards of \$43.74 million.

There was a pre-Sandy shortage of accessible and supportive housing for persons with physical, mental and economic challenges which has increased to a crisis in the aftermath of the storm. As the immediate emergency response moves to longer-term solutions, there is a great need to increase the number of accessible and supportive rental and homeownership opportunities within the impacted areas in Suffolk and Nassau counties and New York City. Other areas impacted by Hurricane Sandy have not yet reported the need for replacement of accessible and supportive housing.

There are a diverse and growing number of individuals and families impacted by the disaster where the need for accessible and supportive housing is critical. This segment of the population also includes persons who are very low income,

which defined as persons whose annual incomes are below 30 percent of the average median income (AMI). This also includes persons who are elderly, homeless and single parents and children.

Efforts to secure affordable and supportive housing for Hurricane Sandy survivors with disabilities and other functional needs have clearly shed light on the magnitude of the dearth of accessible and supportive housing in the impacted communities. The fact that a large number of the disaster survivors are seniors with low income also adds to the accessible and supportive housing challenge. The Health and Social Services (HSS) RSF has endorsed the importance of supporting a holistic and integrated approach that caters to the retirement communities on Long Island and other impacted communities with a high rate of aging population.

Strategic Initiative 4.1: Develop, in partnership with the appropriate federal agencies, as well as state and local jurisdictions, educational outreach and training programs for AFN and supportive housing providers and housing industry groups. The outreach efforts and training should raise public awareness of the importance of providing this type of housing and equip housing providers with the most relevant updated information on an array of issues.

Actions Completed or Underway

- Fair Housing Accessibility FIRST (FHAF) is an initiative designed to promote compliance with the Fair Housing Act design and construction requirements. The program offers comprehensive and detailed instruction, useful online Web resources, and a toll-free information line for technical guidance and support. FHAF has been contracted by HUD to provide information, materials, and technical assistance to all relevant stakeholders regarding accessibility design and construction requirements of the Fair Housing Act as amended in 1988. This training is one of 10 trainings offered by FHAF across the country during 2013. It will provide an overview of the accessibility requirements of the Fair Housing Act, its scope and coverage, a discussion of the seven technical requirements, as well as other resources to aid in compliance. The New York State Division of Human Rights will also be participating in this event, providing training in both disability and familial status issues under their fair housing law.

Activities Planned or Proposed

- Seek the support of HUD's Community Planning and Development's Office of Special Needs Assistance programs to assist with identifying the Continuum of Care's (CoC) in the region whose leadership can coordinate with FEMA's Disability and Integration Coordination division to conduct AFN informational forums.
- Support the creation of a New York state accessible and supportive housing forum. Coordinate a meeting with lenders, realtors, rental agencies, brokers, housing authorities, and housing developers to discuss impediments to accessible and supportive housing and provide training to ensure awareness and adherence to federal, state, and local regulations for new construction and substantial rehabilitation of replacement housing. Encourage privately funded builders to maintain a percentage of accessible units that provide design incentives for those who comply with or exceed federal, state, and local accessibility standards.
- Support the creation of an Access and Functional Needs task force that is a collaboration of federal, state, and local agencies. The mission of the task force would be to provide adequate messaging on the Olmstead directive, Section 504 and Affordable Care Act. On a longer-term recovery basis, the task force could determine other recommendations such as requiring all development and repair of housing that is funded by CDBG-DR funds to include a minimal percentage of units that are accessible.
- Seek the support of primary and supporting organizations and state and local jurisdictions in the development of a single point of entry system one-stop shop where Hurricane Sandy survivors can go to obtain information and applications for housing and related services. There are many health care programs for lower income persons. Most of the health care programs have their own applications (financial eligibility, physical eligibility).
- In addition to outreach calls, leverage and engage the Visiting Nurses Association (VNA) to identify the universe of individuals and families with unmet accessible and affordable housing needs in impacted communities (as the VNA aides are in the homes making home visits).

Resources

- National Center for Law Economic Justice
- DC Disability Opportunity Fund
- Center for Supportive House, trainers, established regulations

Strategic Initiative 4.2: Leverage existing federal programs to assist in the preservation, rehabilitation and creation of accessible and supportive housing units.

Actions Completed or Underway

- The Continuum of Care, which is established at a local level, is designed to fill the gap required to assist individuals and families experiencing homelessness and to provide the services needed to help such individuals and families move into transitional and permanent housing, with the ultimate goal of achieving long-term stability. More broadly, the program is designed to promote community-wide planning and strategic use of resources to address homelessness; improve coordination and integration with mainstream resources and other programs targeted to people experiencing homelessness; improve data collection and performance measurement; and allow each community to tailor its program to the particular strengths and challenges within that community.

Activities Planned or Proposed

- Encourage small-scale supportive and accessible housing project development for various segments of the population. This strategy could use CDBG-DR funds for predevelopment and rehabilitation assistance and capital subsidies to effectively leverage HUD supportive housing funding.
- Encourage New York to use the competitive application process for the Low Income Housing Tax Credit (LIHTC), Low Income Housing Trust Fund, and HOME programs to incentivize the development of accessible units via the awarding of additional application points to projects that set aside a certain percentage of their units for low income individuals on SSI.
- Encourage New York and other local participating jurisdictions to prioritize HOME funds to assist with construction and rehabilitation of housing for the individuals and families who are transitioning from institutions with proposed rental assistance.
- Support increased funding commitments and the creation of set asides and overlay of new incentives to existing and future funding streams to support development of accessible and supportive housing units.
- Support the establishment of a New York unified Supportive Housing Services Coordination Unit. The Supportive Housing Services Coordination Unit would convene various state agency service staff and program persons

to raise visibility and coordinate services over program lines. This unit, located at the state level, would ensure service delivery, avoid duplication of efforts, and coordinate planning for future development of accessible and supportive units, including disaster planning.

Resources

- HOME funds, Low Income Housing Tax Credit program, Housing Trust Fund, NY Association for Independent Living

Support Strategy 5: Leverage Financial Resources

Support the state and local jurisdiction in leveraging public, private and philanthropic resources, including the newly appropriated CDBG-DR and other federal funds, to ensure maximum return on investments and support to individuals and families impacted by Hurricane Sandy.

To meet the central need to rebuild and restore housing, a strategy must incorporate two divergent components: the short-term need to house persons displaced by the disaster and the long-term strategies that offer a permanent and stable outcome. The availability of financial resources is often viewed as the primary means of stabilizing an impacted community. Care must be taken to plan for the long term and sustainable rebuilding thus while avoiding duplication of effort.

As reported on Nov. 27, 2012, “*The total in damages and loss from Hurricane Sandy, which could grow, came as New York Governor Andrew Cuomo said on Monday the state will need \$41.9 billion, including \$32.8 billion to repair and restore damaged housing, parks and infrastructure and to cover lost revenue and other expenses. The figure also includes \$9.1 billion to mitigate potential damage from future severe weather events.*”²⁰ Federal, state, and local jurisdictions must collaborate with each other and with stakeholders and financial partners to develop strategies that will create sustainable and resilient communities. Resources are required to assist people in the impacted areas with diverse housing options supported by grants, insurance proceeds, and loans for new construction, repairs, retrofits, and rehabilitation to support affordable housing.

No one source of funds is structured to meet the full need of persons who are homeowners or renters in the private market or in housing provisions with state,

local or federal subsidy. Navigating the financing sources and layers to define what available options are best for homeowners, renters, and owners of rental housing is almost impossible. There is a catalogue of sources of funding targeted to assist disaster survivors that is not being fully utilized because of the overlap of requirements and/or regulations and ineffective messaging.

A prime example of this non-match is the financing and coverage gaps from flood insurance. If there is non-compliance with NFIP flood insurance requirements, no assistance is available. (For example, if a home was damaged in a previous event and the homeowner did not comply with a requirement to elevate their home, coverage is denied in the next event). Homeowners with less than 50 percent of FEMA Verified Loss to property (many of Sandy survivors fall under this category) may face an inability to maximize FEMA's Individual Assistance grant, and there is low participation of SBA loan application process (out of 165,571 SBA applications issued as of June 6, 2013, only 43,141 were returned for processing (FEMA IA Report), thus create a huge unmet financing resources gap.

Strategic Initiative 5.1: Identify housing finance options and incentives for preserving, rehabilitating and creating housing in the impacted areas.

Actions Completed or Underway

- Storm Recovery Loan Program: The NYC Housing Preservation & Development and the Community Preservation Corporation are offering loans to rehabilitate multi-family buildings of 5 units or more. This program can include refinancing of existing debt and/or repairing damage and mitigation. It is recommended that this include a provision for using resilient and sustainable methods to insure future use.²¹
- Neighborhood Housing Services/ NYC Housing Preservation & Development-Landlord One & Emergency Loan Program: In partnership with the City of NY, loans and grants of up to \$10,000 are available to owners of owner-occupied buildings with 1-4 units; Landlord One provides loans of up to \$25,000 to owners of multi-family buildings of 5-20 units.



- Federal Home Loan Bank Board of NY: New commitment of \$1 billion in discounted financing for recovery which includes diverse loan products with favorable terms. These loans will support both housing and economic development and are available to borrowers through lending institution members of the FHLB of NY. Loans have specific program names, including Fresh Start, Disaster Relief Funds that have flexibility and speed, Urban Development Advance funds.
- The Federal Housing Administration (FHA) and the Federal Housing Finance Agency (FHFA) jointly issued a foreclosure moratorium and standardized eviction policy for FHA, Freddie Mac and Fannie Mae loans. FHA and FHFA also issued standardized policies on mortgage forbearance and a streamlined mortgage modification program that provides for arrearages to be paid over the term of the loan.

Activities Planned or Proposed

- Encourage private sources of financing, including banks, investors, corporations and philanthropic organizations to support and leverage federally funded housing development.
- Support targeted outreach efforts to the private finance community to increase the pool of lenders willing to participate in existing financing products, including HUD 203(k) and 203(h) loans.
- Encourage housing counseling agencies to provide best practices, lessons learned, marketing materials, and training for lenders in order to increase use of federally funded financing programs and products.
- Engage private finance partners to develop new financing products to support construction, rehabilitation and development of housing in a coordinated fashion with state, county, local jurisdictions and other housing recovery stakeholders.
- Support state and local jurisdictions in creating a statewide/common investment entity (e.g. NY State Sandy Tax Credit Investment Recovery Corporation) to attract corporate and private investment for low income housing tax credits to support affordable housing projects in impacted communities.
- Work with FEMA's CPCB RSF on potentially utilizing HUD's Neighborhood Stabilization program as a resource to assist impacted communities with recovery and restoration, including strategies for alternative use of vacant land or buildings.

- Work with FEMA's CPCB RSF to identify funding options and explore efforts to mitigate homeowner abandonment and foreclosure as a result of Hurricane Sandy.
- Support state and local jurisdictions in granting tax relief through tax exemptions for the increase in property value resulting from home improvements completed to make the property resilient and/or sustainable.
- Seek the engagement of the National Park Service, IRS, and New York State Office of Parks, Recreation & Historic Preservation to explore increasing the availability of federal and state historic rehabilitation tax credit increases to piggy-back on other funding options to help stimulate creation of more affordable housing units within the impacted area.

Resources

- Federal Home Loan Bank Board
- Comptroller of the Currency
- Banks: JP Morgan, Bank of America, Wells Fargo, etc.
- National Corporation for Stabilization Trust
- National Reinvestment Task Force
- Robin Hood Foundation
- Gates Foundation
- Pew Charitable Trust
- Ford Foundation

Strategic Initiative 5.2: Identify potential financing and funding sources to support the development of affordable rental housing in the impacted areas. Work with industry partners, the state, and local officials on affordable housing development strategies to leverage potential supplemental funding and existing Low Income Housing Tax Credit (LIHTC) investments. Create incentives for incorporating best practices.

Actions Completed or Underway

- NGOs, such as the Community Development Corporation of Long Island and the NYS Affordable Housing Corporation, are supporting impacted homeowners by providing low interest loans and grants for rehabilitation of properties impacted by Hurricane Sandy.

Actions Planned or Proposed

- Support state and local jurisdictions in creating a common investment entity (NY Recovery Tax Credit Investment Fund) to attract corporate investment for low-income housing tax credit investment in building throughout the recovery communities.
- Support local, county, and state request for set aside of low-income housing tax fund credits.
- Support state and local jurisdictions to create and/or use existing Industrial Development Agencies to facilitate mixed-use, transit-oriented developments that increase the production of affordable housing units.
- Encourage local public housing authorities in the impacted areas to develop mixed-finance/mixed-income public housing utilizing “Replacement Housing Factor” funds and other capital finance funding tools (RAD, CFFP, OFFP and Section 30 and the Public Housing Mortgage program), and LIHTC equity, with or without project based housing voucher rental subsidies.

Resources

- NYC HPD Capital Markets Working Group
- Enterprise Community Partners
- Local Initiatives Support Corporation
- HUD’s Office of Public and Indian Housing

Strategic Initiative 5.3: Support and engage nonprofit community-based housing development organizations who increase access to financing sources for individuals, families, and housing providers.

Actions Completed or Underway

- Established the Nonprofit Stakeholders Group—Citizens Housing Planning Council New York (CHPC) worked with NYC Housing Preservation and Development (HPD) to organize a workshop which gathered together nonprofit organizations from around New York City to identify areas of need and coordinate responses. The workshop brought together groups that represented areas heavily impacted by the storm, like Coney Island, the Rockaways, the south shore of Staten Island, and Red Hook. CHPC connected groups with nonprofits that could provide immediate assistance

and resources such as Local Initiative Support Corporation (LISC), Enterprise, Neighborhood Restore, Settlement Housing Fund, and Mutual Housing Association of New York (MHANY).

Activities Planned or Proposed

- Support the development of disaster finance training for housing counselors, nonprofits, and the public at large.
- Support state and local jurisdictions in their utilization of all federal resources (buildings, funded programs and NGOs) in a coordinated, collaborative model to support the implementation of local jurisdiction action plans.

Resources

- Citizens Housing Planning Council New York
- NYC Housing Preservation and Development

Strategic Initiative 5.4: Encourage high capacity NGOs to develop “one stop shopping” and a “Disaster Finance Tool Box” to support the holistic investment of public and private financial resources, matching and leveraging resources (e.g. CDBG-DR funds along with the FEMA Individual Assistance (IA) and 404 Hazard Mitigation Grant programs, SBA, private foundations, federal and NYS historic rehabilitation tax credits and other sources). Such a “one stop” concept will assist homeowners and rental housing owners in making decisions regarding options to restore their housing.

Actions Completed or Underway

- Leverage the Neighborhood Revitalization NYC mold treatment program as a “best practice,” which will provide mold treatment services free of charge to up to 2,000 households (with a priority for elderly households under 120 percent of AMI) leveraging public-private-philanthropic resources.

Activities Planned or Proposed

- Encourage state and local jurisdictions to use financing as an incentive to support critical and new housing solutions that will have a long-term impact. These might include incorporating energy efficiency/sustainable methods in housing development; and ensuring adequate future operating

reserves in multifamily communities;

- Encourage state and local jurisdictions to consider creating special disaster enterprise zones in the impacted communities. Propose congressional action to create a special set aside of low-income housing tax credits and tax-exempt bond authority to support these zones.
- Encourage state and local jurisdictions to utilize technical assistance available through HUD, including federally-funded Section 4 intermediaries (Enterprise, LISC, Habitat for Humanity) and OneCPD to assist local jurisdictions and other grantees with developing strong plans and alternate methods to finance building of affordable housing structures (Mitchell-Lama housing, public housing, cooperatives, housing development fund corporation-owned housing, SEED housing, and housing models developed in Mississippi in the wake of Hurricane Katrina).
- Engage primary and supporting organizations in the identification of potential financing and funding sources to support development of affordable rental housing in the impacted areas.
- Work with industry partners, the state, and local officials on affordable housing development strategies that leverage potential supplemental funding and existing Low Income Housing Tax Credit (LIHTC) investments and create incentives for incorporating best practices.
- Work with state and local jurisdictions to create a matrix of all available funding streams and eligibility requirements for impacted homeowners.

Resources

- Enterprise Community Partners
- Local Initiatives Support Corporation
- NYC Housing Recovery Operations Office

Strategic Initiative 5.5: Develop a strong public message with emphasis on the opportunity provided by recovery to build better housing. In particular, there is an opportunity to recapitalize and rebuild multifamily and other housing that was substandard prior to the disaster and damaged by Hurricane Sandy

Actions Completed or Underway

- The Regional Interagency Committee comprised of the Federal Deposit Insurance Corporation (FDIC), Federal Reserve Bank of New York, NY

State Department of Financial Services, and Office of the Comptroller of the Currency, held an Interagency Community Development Forum to bring nonprofit and private financial organizations together to discuss how the financial community can assist impacted communities in providing long term recovery support.

Activities Planned or Proposed

- Support the creation of a Housing Disaster Recovery Quality Standard for all housing financed with recovery funds. Suggested Recovery Quality Standards could include sustainability, green and healthy building and energy requirements, adequate future operating reserves, incorporation of techniques and planning in case of future disasters, etc.
- Work with federal, state, and local jurisdictions to create a public messaging strategy to ensure impacted homeowners are aware of all possible tax relief and incentives available for rebuilding efforts.

Resources

- Housing Quality Standards utilized by the HUD Housing Choice Voucher program

Chapter Notes

- ¹ Frank Gilliam, “Communicating Place-Based Initiatives,” Frame Works Institute, October 6, 2011.
- ² U.S. Census Bureau, “2007-2011 American Community Survey 5-Year Estimate.” <http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>
- ³ “Feds: Sandy cost NY residents about \$4.5B in lost wages,” *Newsday*, March 28, 2013..
- ⁴ New York City CDBG-DR Action Plan, March 15, 2013, p31
- ⁵ Council of Community and Economic Research
- ⁶ Housing Market Trends, U.S. Department of Housing and Urban Development, 2013
- ⁷ Ibid
- ⁸ U.S. Census Bureau, “2007-2011 American Community Survey. 5-Year Estimate/Counties,”<http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>
- ⁹ New York City Rent Guidelines Board, “Changes to the Rent Stabilized Housing Stock in New York City in 2011,” May 31, 2012.
- ¹⁰ Furman Center for Real Estate and Urban Policy, New York University, “State of New York City’s Subsidized Housing: 2011.”
- ¹¹ Eric Jaffe, “New York’s Affordable Housing Isn’t Always Affordable,” *The Atlantic Cities*, Feb 21, 2013.
- ¹² Ibid
- ¹³ U.S. Census Bureau, “2007-2011 American Community Survey. 5-Year Estimate/Counties,” June 13, 2013,<http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>,
- ¹⁴ Ibid
- ¹⁵ The only exception was in 2008 when a large number of multifamily units were permitted because of the second and third phase of a 720-unit townhome and condominium project.
- ¹⁶ Vivian Yee, “In Winning Design, City Hopes to Address Cramped Future,” *New York Times*, 2013
- ¹⁷ *New York Daily News*, Feb 5, 2013
- ¹⁸ New York Association on Independent Living, “The Housing Crisis for New Yorkers with Disabilities,” November 17, 2011
- ¹⁹ Ibid
- ²⁰ “New York, New Jersey put \$71 billion price tag on Sandy,” *MSN News*, November 27, 2012.
- ²¹ Ibid

Coordinating Agency

Department of Defense/US Army Corps
of Engineers

Primary Agencies

U.S. Department of Homeland
Security/Federal Emergency
Management Agency,
National Protection and Programs
Directorate,
Department of Defense/ U.S. Army
Corps of Engineers,
Department of Energy,
Department of Transportation

Supporting Organizations

U.S. Department of Homeland
Security,
U.S. Department of Commerce,
U.S. Army Corps of Engineers,
Department of the Interior,
Education Department,
U.S. Environmental Protection Agency,
Federal Communications Commission,
General Services Administration,
U.S. Department of Health and Human
Services,
Nuclear Regulatory Commission,
Department of the Treasury,
U.S. Department of Agriculture,
Tennessee Valley Authority,
Delta Regional Authority



CHAPTER **4**

INFRASTRUCTURE SYSTEMS RSF

Introduction

Under the National Disaster Recovery Framework implemented in New York following Hurricane Sandy, the mission of the Infrastructure Systems Recovery Support Function is to help integrate the capabilities of the federal government to support local, state, and tribal governments and other infrastructure owners and operators in their efforts to achieve recovery goals relating to the engineering of infrastructure systems.

According to the recovery mission area in the National Preparedness Goal (Presidential Policy Directive 8 or PPD-8), Infrastructure Systems core capabilities are to:

- Restore and sustain essential services (public and private) to maintain community functionality.
- Develop a plan with a specified timeline for redeveloping community infrastructure to contribute to resiliency, accessibility, and sustainability.
- Provide systems that meet community needs while minimizing service disruption during restoration within the specified timeline in the recovery plan.

Presidential Policy Directive 21 (PPD-21) issued Feb. 12, 2013, establishes national policy on critical infrastructure security and resilience. The directive defines “resilience” as the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions. Resilience includes the ability to withstand and recover from deliberate attacks, accidents, and naturally occurring threats and incidents.

To help achieve these capabilities, the Infrastructure Systems RSF has begun engagement with state and local governments, which play the lead roles in planning for and managing all aspects of their jurisdictions’ recovery. Stakeholders include key community organizations and individuals in community leadership roles.

As identified in the Recovery Federal Interagency Operational Plan (FIOP draft, March 2012), the goal of the Infrastructure Systems recovery process is to match the capacity of all infrastructure systems to communities’ current and projected demands on their built and virtual environments. As communities incorporate resiliency into disaster preparedness, infrastructure systems will need to correlate directly with preparedness and any land use changes. This

applies particularly to land use changes based on the best available flood hazard data, which map current and historic flood information and provide additional tools that project water elevations due to climate change.

The intent of the Infrastructure System RSF is to pursue this course of action to the extent allowable considering available resources and current program authorities within the jurisdiction of participating departments and agencies. Accordingly, the end state for engagement by the Infrastructure Systems Recovery Support Function occurs when its recovery goals are met or when member agencies’ existing programs and authorities are exhausted and/or external funding is no longer available to continue operations (FIOP draft, March 2012).

Recovery Support Strategy

This first version of the Infrastructure Systems Recovery Support Strategy (IS RSS) is based on the initial Mission Scoping Assessment developed for New York in mid-Dec. 2012, which included the most notable infrastructure systems impacted by Hurricane Sandy. Following this initial assessment, Infrastructure Systems considered the 16 critical infrastructure sectors as outlined in Presidential Policy Directive-21 and reflected in adjacent table and developed resiliency recommendations for most sectors. As Infrastructure Systems engaged with stakeholders to help inform the nature of the recommendations, five core areas emerged as infrastructure recovery priorities in New York due to the impacts caused by Hurricane Sandy. As outlined in the Recovery Support Strategy, these five priorities include infrastructure systems associated with energy, health care, wastewater, dams/coastal areas, and transportation. Although resiliency recommendations were developed for most of the remaining infrastructure sectors under Presidential Policy Directive-21, they are not included herein to help retain focus on the areas of primary concern, but they may be made available to stakeholders upon request.

At publication time of the Recovery Support Strategy, many federal agencies are developing guidance to address resilience and long-term approaches to infrastructure systems. For example, the U.S. Army Corps of Engineers (USACE) is developing implementation guidance to determine eligibility of Corps projects for funds appropriated by the Disaster Relief Appropriations Act of 2013, Public Law 113-2 (PL 113-2). In addition, under the Department of Transportation, both the Federal Transit Administration and the Federal Highway Administration plan to release resiliency guidance through their

respective emergency relief programs in the near future. As federal agencies are in the process of developing guidance to address resilience, not enough data is available to develop an Infrastructure Systems Recovery Support Strategy outlining specific activities and actions with an associated timeline.

Provided in Infrastructure Systems Recovery Support Strategy, however, are general recommendations to consider within the five recovery priority areas. The recommendations are examples of a whole set of possible approaches. The recommendations are listed in categories of short-term, intermediate-term, or long-term based on the complexity of implementation; otherwise, the recommendations are not prioritized, are not cumulative, and do not consider cost feasibility. The recommendation categories are differentiated by expected time for implementation with short-term goals in the next year, intermediate-term in the next two to five years, and long-term beyond five years.

State and local governments are currently in the midst of determining where to build, what to build, and how to strengthen communities in areas of greatest risk. As government moves forward in defining, planning, and prioritizing long-term

resilience building, the Infrastructure Systems RSF will continue to facilitate collaboration among state and federal partners and to develop an Infrastructure Systems strategy with a specified timeline.

In addition to stakeholder input, this chapter is informed by recommendations of the 2100 Commission and the Moreland Commission that were convened by New York Governor Andrew Cuomo. The 2100 Commission was tasked with examining and evaluating what investments are needed to enhance New York’s resilience to vulnerabilities faced by the state’s infrastructure systems, with particular focus on five main areas: transportation, energy, land use, insurance, and infrastructure finance. In January 2013, the Commission released specific recommendations that can be implemented to increase resilience. The recommendations help serve as elements of a blueprint for the state to rely upon in preparing New York’s infrastructure and its communities for the increasing challenge of a rapidly changing climate. The Moreland Commission was created pursuant to the Moreland Act (Executive Law Section 6) following Hurricane Sandy and was tasked with making recommendations to reform utility storm preparation and response.

Sector-Specific Agencies and Assigned Critical Infrastructure Sectors	
Critical Infrastructure Sector	Sector-Specific Agency
Chemical	Department of Homeland Security
Commercial Facilities	Department of Homeland Security
Communications	Department of Homeland Security
Critical Manufacturing	Department of Homeland Security
Dams	Department of Homeland Security
Defense Industrial Base	Department of the Defense
Emergency Services	Department of Homeland Security
Energy	Department of Energy
Financial Services	Department of Treasury
Food and Agriculture	U.S. Department of Agriculture Department of Health and Human Services
Government Facilities	Department of Homeland Security General Services Administration
Health Care and Public Health	Department of Health and Human Services
Information Technology	Department of Homeland Security
Nuclear Reactors, Materials, and Waste	Department of Homeland Security
Transportation Systems	Department of Homeland Security Department of Transportation
Water and Wastewater Systems	Environmental Protection Agency

Table 1



Overarching Recommendations

During the course of development of the Recovery Support Strategy it became clear that a few overarching recommendations apply to every sector. These are described in this section.

Elevation and Flood Protection

Elevation and flood-proofing equipment should be elevated or otherwise flood-proofed to one foot above the height determined by the best available flood risk data. (Documents where this data is available include preliminary and effective Flood Insurance Rate Maps and best available flood risk data.) Dry flood-proofing should be a measure of last resort used only when adequate elevation cannot be accomplished.

Backup Power Source

Infrastructure facilities need a backup source of power to maintain operations in the event of a loss of electric power. Backup generators should be installed, with a fuel supply of at least 96 hours, and tested regularly to ensure their operational ability. Overall resiliency will be enhanced by the use of renewable energy to extend the time that conventional fuel generators can operate without refueling. These hybrid backup power systems should be considered for use in critical facilities associated with infrastructure systems and at locations requiring communications devices. For example, conventional fuel/photovoltaic (PV) generator systems typically include batteries and can be designed to meet a specific load for a given duration. A typical hybrid power system is configured to have the batteries serve the load while the conventional fuel generator and photovoltaic system recharge the batteries. The photovoltaic system serves as the primary source of energy and the conventional fuel generator operates when the PV system is unable to meet the recharging demand from the batteries. In this configuration the photovoltaic system reduces the demand on the generator thereby reducing the consumption of conventional fuel. This increases a system's resiliency by extending the period that critical loads can be met by a backup source without having to be refueled. Other configuration options that might not include battery backup can also be considered. These generators have

to be protected against flooding.

Engines classified as emergency often produce levels of emissions much higher than allowed by the newest standards, often operate where people are likely to be more exposed to emissions (near ground level, for example), and may be used for extended periods in densely populated areas resulting in serious impacts on public health and the environment. Hospital patients might be more vulnerable to increased pollution from emergency generators. Cleaner, alternative fuel sources should be planned for emergency power generation. Where renewable energy systems are not available, cleaner emergency power generation should be considered. This can be achieved through the use of retrofit technologies that treat engine exhaust, such as a diesel oxidation catalysts, diesel particulate filters or selective catalytic reduction devices or through the use of alternative fuels such as biodiesel (B20) or natural gas. Diesel generator sets can be retrofitted through technology that displaces diesel with natural gas or other alternative fuels without modification to the internal components or fuel management system.

Redundant Power Feeds

Facilities should have two power feeds coming from separate substations in different geographic areas and entering from opposite sides of the facility. Underground electric power feed lines should be protected against salt water exposure by use of advanced cabling technologies that provide absolute protection.

Resources

- FEMA 543: Design Guide for Improving Critical Facility Safety from Flooding and High Winds
- FEMA 577: Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds
- FEMA Mitigation Assessment Team Recovery Advisories for Sandy
- Recovery Advisory 2: Reducing Flood Effects in Critical Facilities
- Recovery Advisory 3: Restoring Mechanical, Electrical, and Plumbing Systems
- Recovery Advisory 4: Reducing Interruptions to Mid- and High-Rise Buildings During Floods

- Recovery Advisory 5: Designing for Flood Levels Above the BFE After Hurricane Sandy
- Recovery Advisory 6: Protecting Building Fuel Systems from Flood Damage
- American Society for Civil Engineers 24: Flood Resistant Design and Construction

All recommendations in the Infrastructure Systems Recovery Support Strategy necessitate conformance with the Rehabilitation Act of 1973. In particular, under section 504 of the Rehabilitation Act, any program or activity receiving federal financial assistance shall be fully accessible to people with disabilities.

Recovery Priorities

Energy

The general energy recommendation for New York is to direct all impacted utilities to review and evaluate all the energy recommendations contained in the Recovery Support Strategy and develop a plan to implement what they consider the most feasible and beneficial recommendations over the course of 20 years.

Electricity

Electricity Generation, Transmission, and Distribution Infrastructure

The U.S. Department of Energy reported peak outages of 8,511,251 customers as Hurricane Sandy impacted the East Coast. By Nov. 6, 2012 approximately one week after the storm fewer than 1,000,000 customers were still without power. Meanwhile at the direction of the president, a national power restoration working group was established Oct. 31 and included representatives from local law enforcement, The U.S. Army Corps of Engineers, the Department of Homeland Security/National Protection and Programs Directorate, and the U.S. Department of Defense, Transportation and Energy.

Power restoration was accelerated through programs such as Sheltering and Temporary Essential Power, or STEP. The program repaired storm-damaged electrical meters; provided essential electricity, heat, and hot water; and protected storm-damaged residences with temporary exterior repairs. The initial

intent of the program was to meet immediate life-sustaining needs so survivors could stay in or return to their homes and shelter in place until more permanent home repairs could be made.

Electricity Generation and Transmission Resiliency Recommendations

Short-term recommendations

Utilities and generation owners should consider proactively shutting down electric power stations and substations in areas with risk of coastal surge, flood surge, tidal surge, and salt water exposure prior to storm arrival in order to minimize infrastructure damage that could be caused by hurricanes and coastal storms.

Substations that receive electric power transmission feeds into New York City and Long Island should be deemed as critical and afforded the maximum protective measures to enhance resiliency.



Figure 1 New York Energy Network

Electric utility providers should evaluate the integrity and resiliency of their generation, transmission, and distribution systems to identify and mitigate critical failure points that would compromise the system.

Though the following resiliency measures may be deemed cost prohibitive, they strengthen and increase the resiliency of systems, facilities and infrastructure. These measures are listed here for further analysis, evaluation, and consideration.

Electricity generation plants should evaluate their emergency station service. This could potentially include on-site emergency generation and or multiple sources of offsite power. Engineers should design electric power supplies to generation plants with at least two separate electric power feeds. These feeds should be independent of each other and should be underground. Power line feeds should come from separate substations and enter the facility at different sides of the building. Underground electric power feed lines should be protected against exposure to water/salt water by use of cabling technologies that provide absolute protection against water exposure.

Resiliency enhancements for electricity transmission system include upgrading transformers from aluminum to galvanized steel lattice or concrete. Transmission

towers should be upgraded to steel lattice or concrete.

Generation and transmission stations should have reliable two-way communications provided by fiber optic communication lines. All electric generating/transmission stations should have buried fiber optic communications lines to enhance resiliency. Electric power stations must maintain the ability to send and receive generation information to and from operating centers.

Intermediate-term recommendations

Protect electricity generation facilities by building berms around high-risk power generation, transmission and distribution assets located in areas at risk of tidal surge and flooding.

Design backup power generators with provisions for ongoing fuel supplies and consideration of battery recharging requirements.

Conduct analysis to identify all substations and transformers critical to energy generation stations. This could help improve the resiliency of power generating stations and the electric transmission and distribution system and provide

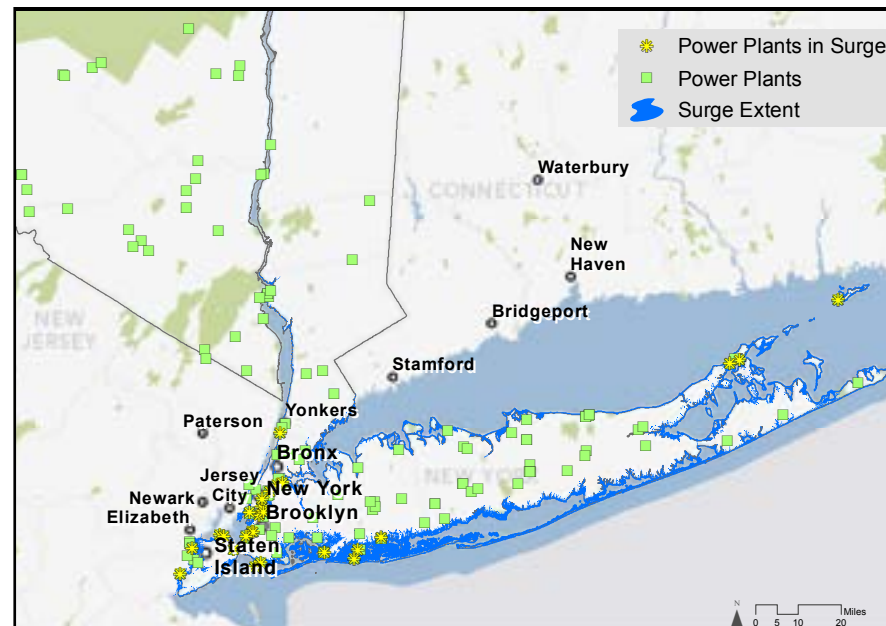


Figure 2: Downstate Power Plants

superior protection against flooding, tidal flooding, storm surge, and exposure to windblown salt water.

Build separate backup power sources (generators) for electric power generation stations. These generators would power lights and basic building/life safety functions only.

Consider building floodwalls around generation stations and substations at risk of flooding, tidal flooding, or storm surge.

Long-term recommendations

Identify substations and transformers vital to electric generation and provide maximum protection. Windblown ocean salt water can cause substations and transformers to flash over possibly impacting electric generation. Critical transformers, substations and connections close to salt water should use insulator designs and materials that reduce the salt spray flashover risk. Substations and transformers at risk of flooding, tidal surge, high winds, and salt water exposure should be protected by placing them inside of hardened structures. Critical substations and transformers could also be relocated to inland areas to protect against exposure to flooding and windblown salt spray. Elevate transformers and substations to a level using best available flood hazard data, such as that reflected by best available flood risk data or preliminary and effective Flood Insurance Rate Maps plus one foot of freeboard to protect against flooding, tidal flooding, and storm surge.

Strengthen substations, transformers, connections, and all transmission and distribution equipment providing power to power generating and transmission stations so as to ensure they remain operational and are able to withstand the effects of hurricanes, nor'easters, floods, coastal storms, and other natural hazards.

Ensure New York City's major network substations have resiliency enhancements made to address the threats of flooding, tidal flooding, storm surge, and wave action. Existing protective measures designed to ensure substation resiliency should be evaluated and strengthened if necessary. Consideration should be given to elevating major network substations or strengthening flood walls and perimeter earthen barriers. Hurricane Sandy's storm surge in New York City was 14 feet. Flood walls should be raised around major network substation to several feet above the best available flood risk data.

Ensure power generating stations have redundant communications systems to supplement fiber optic communications lines and should include traditional analogue wire lines, as well as wireless and satellite communications systems.

Elevate all backup power supply units to mitigate the threat caused by flooding, tidal flooding, and storm surge. Elevate at least to the best available flood risk data.

Protect conduits, connections, and transmission lines leading to power stations from substations transformers, and backup power generators from wind, salt water, and flooding through utilization of advanced cabling technology that provides absolute protection against exposure to water/salt water.

Electricity Transmission and Distribution Recommendations

Short-term recommendation

Conduct routine inspection of trees in the rights of way of the electric power transmission and distribution line. Energy providers should make this a part of their annual maintenance plans.

Long-term recommendations

Elevate or move to higher, inland locations substations and transformers in flood zones, at or near coastal waters or tributaries, in ocean wave action zones, or at risk for coastal/tidal flooding. Elevation should be to the height reflected by best available flood risk data plus one foot of freeboard. The goal is to prevent compromise, failure, and cascading power failures in the electric power generation, transmission, and distribution system.

Conduct a systems analysis and begin selective burying of power lines underground based on risk. Placing utility transmission and distribution lines underground greatly reduces the damage caused by winds, lightning, and falling trees that typically compromise pole-mounted electricity distribution lines. Placing utility lines underground minimizes storm-related service interruptions and can assist in preventing cascading transmission and distribution failures throughout the electric power transmission and distribution system. Underground placement of utility lines requires advanced training for utility workers. Underground placement of electric service distribution lines must incorporate measures to protect lines from exposure to water. Underground systems should be engineered

to withstand contact and submersion in water/salt water. The latest protective cabling should be used to provide absolute protection against exposure to water/salt water. Selective undergrounding placement of transmission and distribution lines will make the electric power transmission and distribution systems more resilient. Areas most vulnerable to the effects of hurricanes, flooding, and storm surges should be a priority.

Prior to Hurricane Sandy, cost-benefit analysis may have shown this resiliency enhancement to not be worth implementation due to the high cost of burying electric distribution lines versus costs of maintaining and repairing the existing distribution system. (Cost estimates range from \$500,000 to \$5,000,000 per mile). Any analysis should examine the damage/repair costs of Hurricane Sandy and estimated damage/recovery costs associated with future storm events and the predicted frequency of these events. The dollar loss to the general public should be included as well. Underground placement of the entire electric transmission and distribution system could be a long-term resiliency recommendation. As an example, this project could be implemented and conducted in stages over a 10-year period.

Electric power transmission and distribution lines should be rerouted to accessible areas. Transmission and distribution lines placed in residential back yards and wooded areas were compromised (mostly by falling trees), were difficult to access by repair crews, and slowed electric transmission/distribution restoration. These lines should be moved to more accessible areas.

Electric Generation, Transmission, and Distribution Resiliency Recommendations

Short-term recommendations

Electricity restoration prioritization plans should be reviewed to update critical infrastructure assets (telecom central offices, critical substations, electric generation plants, water and wastewater treatment plants, cable landings, oil refineries and fuel distribution terminals, natural gas pumping stations and hubs), hospitals and public healthcare facilities, communication systems (wireless communications cell towers), first responders (police, fire, EMS), Military Command/Operations Centers (U.S. Coast Guard) and utilities that need immediate restoration in order to deliver essential lifeline services (electric power, communications, natural gas, water, and wastewater) and emergency response.

Electric generation, transmission, and distribution and communications sector coordination are of critical importance during hurricane preparedness and response as well as restoration of service and recovery. Communication can allow energy providers to understand critical telecommunications assets and support the development of procedures to share outage reporting, resulting in improved electric power and communications restoration times to affected areas. Sharing vital digitized geographic information among energy providers before emergencies occur will speed the restoration of service following events through a common understanding which distribution lines do not have power, what trees and debris can be cleared and where repairs can be made to restore service.

The Emergency Power Facility Assessment Tool (EPFAT) was developed by USACE and is a secure web-based tool that can be used by critical public facility owners and operators, or emergency response agencies to input, store, update and/or view temporary emergency power assessment data. Having pre-installation assessment data in advance of a commercial power outage will help facility owners to procure their own emergency generators and associated cables and clamps. It will also expedite the disaster assistance efforts of local, county, state, and federal agencies by helping them to prioritize temporary power



requirements, and by providing them with the information needed to acquire and install generators when commercial power goes out following a disaster.

Long-term recommendations

The electric power generation, transmission and distribution system in New York could be modernized to take advantage of recent technological advances that improve the efficiency and control of electric grid power generation, transmission, and distribution. Generation plants can utilize Synchronization Phasors to assist in automatically synchronizing generation and transmission levels during generation start up and restoration across the system. A smart transmission and distribution system with smart grid and smart meters and a GIS System can be utilized by electric power operation and control centers to determine if areas, buildings, and residents have power. These meters are useful in diagnosing who has power and who does not during storms and restoration of services after storms. Smart meters allow for rapid identification of structures experiencing electric power failures/interruptions, speed recovery time, and promote greater electric power distribution efficiency. For example, as a hurricane approaches, utilities can use GIS-based damage prediction models to approximate how many customers may lose power, what the infrastructure

damage may be, and how quickly repairs may be made. This information could be used in preparedness efforts prior to the storm's arrival. After the storm, GIS can be used to create maps of damaged areas and share the information with customers, media, government, and support agencies. Smart grid and smart meter technology would minimize the need for electric power utility officials to conduct house-to-house assessments and would result in better use of resources during restoration and recovery of service. It will also assist decision makers in determining how to best respond, recover from, and restore service.

The deployment of automated sectionalizing units (ASUs) coupled with hardening of substations and distribution lines could be beneficial. These units allow for the rerouting of power being distributed and would be beneficial in flood zones, would be beneficial during de-energizing of the system, would assist electric power providers/utilities in minimizing cascading power failures in the transmission and distribution system, and would assist the electric utilities in responding to power outages and during restoration of service efforts. A smart system with Synchronization Phasors, smart meters, and automated sectionalizing units would assist in decision making, implementation of actions to prevent cascading electric power failures throughout the transmission and distribution system, event analysis, and restoration of service/recovery operations. New technologies used together can assist in more efficient transmission and distribution of electric power. Smart meter installation and deployment needs to have usage, privacy, and standards issues addressed in order to be considered for implementation.

Any deployment of new industrial control systems to improve the generation, transmission, and distribution of electric power must incorporate the highest level of cyber security measures. Automated technologies and industrial control systems must address the national security issue of cyber-attacks targeting energy/electric power generation, transmission, and distribution. Myriad vulnerabilities exist within automated control systems. Automated electric power generation, transmission, and distribution control systems are being probed continually by enemy foreign nations, criminal organizations, and cyber-terrorists for vulnerabilities to be exploited. All cyber security measures must be included in any plan to install new supervisory control and data acquisition (SCADA) systems in order to mitigate the cyber security threat and improve the resiliency of the electric power generation, transmission, and distribution system.

Electric utilities and power providers could consider replacement equipment that is available to address both geo-magnetic disturbances (GMD) and electronic



magnetic pulse (EMP) vulnerabilities. Idaho National Labs through the U.S. Department of Energy has developed new transformers and connections that limit and are resilient to damage to electric power infrastructure caused by the effects of EMP and solar storms (last solar storm affecting the United States was in 1921). Utilities replacing electric power infrastructure as part of recovery, building resilience, and rebuilds of generation, transmission, and distribution systems should consider the deployment of equipment designed to mitigate GMD/EMP issues. New York and New York City could lead the United States in deployment of new electricity generation, transmission, and distribution systems/equipment that mitigate the space weather/electromagnetic pulse threats.

Government and utilities could consider the redesign of the electric power generation, transmission, and distribution system to be a regionally distributed electric power system. The current system is an interconnected operation that provides more value to system reliability than any other alternative. Reengineering the interconnected system to a regionally distributed system would require a significant increase in the amount of installed generation in New York and a limitation on the economy of scale in generation construction. Benefits of reengineering of the system from the interconnected system to a regionally distributed system are:

- Generation transmission and distribution failures will be confined to a specific geographic area and may not be as susceptible to the failures caused by falling trees and substation failures, reducing cascading power outages.
- If the distributed energy system is affected, the area impacted will be smaller geographically because the system is not connected to other regions of the city or state. (This can be viewed as a negative as the regionally distributed system will not be able to receive power from the grid in the event of a generation failure).
- Installation of distributed systems will help mitigate the cyber-attack threat as the system is isolated. An attack on the control systems causing complete electricity transmission and generation failure would affect a local geographic area and would not cause cascading electric power failures throughout New York or the United States. The size of this system might eliminate some cyber security vulnerabilities that exist in the current electric power generation, transmission and distribution system and mitigate the national cyber-attack threat.

- Large critical infrastructure areas could establish and build their own on a site backup energy supply systems. This may include oil refineries, financial districts, telecommunications systems, and large commercial facilities/transportation districts, such as the World Trade Center.

Petroleum

Impacts caused by Hurricane Sandy on the various elements of petroleum supply infrastructure in New Jersey and New York resulted in a lack of available petroleum products to consumers. Refineries, pipelines, and storage terminals sustained direct impacts, such as flooding, wind damage and problems caused by debris. In addition, the loss of electricity to both the petroleum infrastructure, as well as to retail distribution locations, impacted the fuel supply chain and resulted in gasoline not being available to the public. Retail gasoline and diesel distributors were unable to dispense adequate amounts of product because of a lack of supply, a lack of electricity, or both. Furthermore, the availability of gasoline and diesel for emergency responders was a major concern.

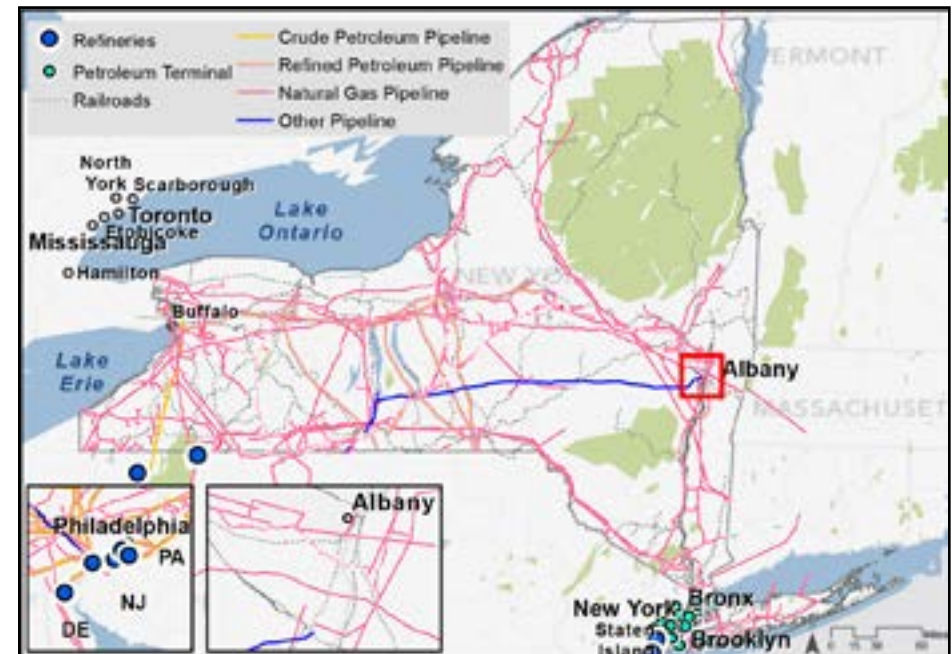


Figure 3 New York State Petroleum Infrastructure Map

Downstate New York is at the center of one of the largest petroleum product hubs in the northeast (Figure 3). Located along the Arthur Kill to the west of Staten Island and northern New Jersey to the south is a complex system of refineries, pipelines, storage terminals, and waterway ports that serve as a major gateway for refining crude oil and distributing petroleum products throughout the northeast (Figure 4). New York’s petroleum product supply comes from (1) regional refineries; (2) the U.S. Gulf Coast via petroleum pipelines; and (3) domestic and foreign marine imports. Much of this petroleum product system was impacted by Hurricane Sandy.

Petroleum Pipeline Transportation Infrastructure

Pipelines are one of the primary methods for transporting petroleum products into New York and for moving crude oil from land-based or offshore oil fields to refineries and then carrying refined petroleum to downstream storage terminals. Large-diameter interstate pipelines are the primary providers of petroleum pipeline transportation into New York. Colonial Pipeline is the largest of the interstate pipelines and operates more than 5,500 miles of pipeline stretching from Houston, Texas, to Linden, NJ; Colonial also leases storage tanks at major

distribution points along the pipeline route. The Colonial pipeline supplies petroleum products such as gasoline, heating oil, diesel fuel, and jet fuel to New York and is of vital importance to regions petroleum and gasoline supply.

Buckeye Partners, L.P. (Buckeye), operates the most extensive petroleum product pipeline network within the state of New York. The system is composed of several different pipelines that are connected to 22 terminals for a total access capacity of 4.7 million barrels (MMbbl). Buckeye owns the majority of the capacity residing along its system, which includes 10 terminals with more than 2.6 million barrels of capacity. The pipeline operates in two main segments (Figure 5). One segment moves product west from Linden junction to Macungie, PA, and then north on two lines from Macungie. These lines diverge in the southern part of the state and continue north to the Auburn, NY, area where both split east-west. From there, two lines run east to Brewerton and Utica, while the other two lines run west to Rochester and Buffalo. The other main segment of Buckeye’s system runs from its distribution hub in Linden, NJ, to terminals in the New York City/Long Island region, which includes destination terminals at LaGuardia and JFK airports.

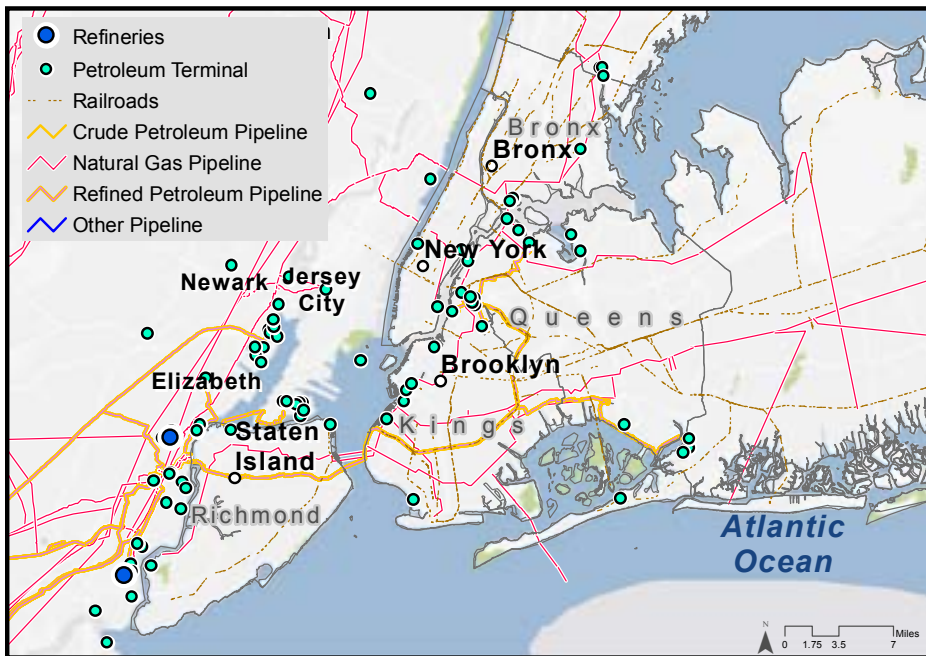


Figure 4 Region II Petroleum Infrastructure Map

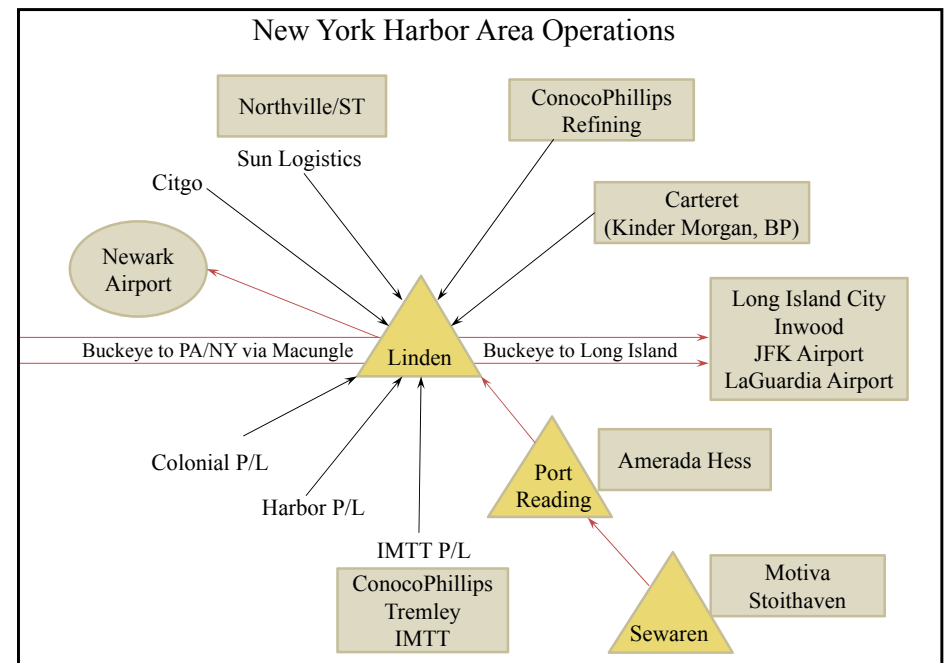


Figure 5

Petroleum Pipeline Transportation Resiliency Recommendations

Intermediate-term recommendation

Consideration should be given to enclosing critical electric substations inside a hardened structure to protect them from winds, flooding, and windblown salt water.

Long-term recommendations

Pipeline transmission systems have critical hubs and junctions that must be strengthened. Assets vital to the operations of pipeline petroleum transportation hubs and critical pump stations should be elevated above flood levels. Pump stations, electric substations, and communications assets such as SCADA systems should be moved out of flood zones, elevated to a level that is one foot above the height indicated using best available data. This should be done in areas susceptible to flooding, tidal surge, or storm surge to build protection and enhance resiliency of the pipeline system.

Pipeline transmission system hubs and pumping stations need to have redundancies built in to ensure that they are not single points of failure. Pipeline hubs and critical pump stations should be supplied by two electric power feeds into the facility. Ideally, power feeds should enter at opposite sides of the facility and the electric power distribution lines should come from separate substations that are not in the same geographic area. Pipeline hubs and major pumping stations should have backup sources of electric power. If these backup power generation sources are generators they should have a 96-hour fuel supply in the tank and have refueling agreements in place with at least two diesel fuel providers. Pipeline operators should determine the Megawatt power and size of generators based on the criticality and power needs of a specific location and generators should be installed as part of preparedness planning prior to the occurrence of a natural disaster. Generators should be installed, fueled, and tested regularly as part of emergency preparedness, business continuity, and all hazards response planning.

Petroleum Pipeline operators and New York government should consider deploying backup power systems that include the use of renewable energy (in most cases solar photovoltaic) to extend the time that conventional fuel generators can operate without refueling. These hybrid backup power systems should be considered for use at pumping stations and at locations requiring

communications devices. Conventional fuel/PV generator systems typically include batteries and can be designed to meet a specific load for a given duration. A typical hybrid power system is configured to have the batteries serve the load while the conventional fuel generator and PV system recharge the battery. The photovoltaic system reduces the demand on the generators thereby reducing the consumption of conventional fuel. This increases a system's resiliency by extending the period that critical loads can be met by a backup power source without having to be refueled. Other configuration options that might not include battery backup can also be considered. These generators have to be protected against flooding, tidal flooding, storm surge, high winds, and exposure to salt water. Government, private sector owners and operators, and electric utilities should identify substations providing electric power transmission/distribution to pipeline hubs and implement all resiliency recommendations.

Electric substations providing electric supply to pipeline hubs and major pumping stations should not be located in flood zones, areas susceptible to flooding, tidal flooding, storm surge, or areas susceptible to windblown salt water.

New York, New York City and Long Island could consider contracting construction of additional fuel pipeline to serve New York, New York City, LaGuardia and JFK airports, and Long Island. This would provide resiliency and redundancy in the transportation, delivery, and supply of fuel to New York, New York City, Long Island, and LaGuardia and John F. Kennedy International airports.

Government and pipeline operators should work to ensure that no one pipeline hub location could be a single point of failure that would compromise the fuel and natural gas pipeline transportation system. Locations where this could happen should be identified and additional pipeline hubs should be constructed to provide redundancies in the pipeline transportation and distribution system. (Example: Multiple pipelines transporting natural gas and fuel across the country should not converge in one single transportation and distribution hub where failure of the hub would cause failure of the entire pipeline transportation and distribution system). Identify and mitigate pipeline hub single points of failure in the natural gas system.

Petroleum Transportation and Distribution

Petroleum transportation and distribution serving New York constitutes an intermodal transportation system that is dependent on various forms of

transportation and originates at the Port of New York and New Jersey. Petroleum transportation and distribution includes maritime transportation through the Port of New York, refinery operations, pipeline transportation, terminals for loading and off-loading petroleum products, land-based tanker truck transportation, and local distribution through service stations. Maritime petroleum transportation enters the Port of New York and New Jersey and is integral to petroleum transportation and distribution in New York, New Jersey, and the eastern United States.

Hurricane Sandy had a significant impact on the Port of New York. Some equipment associated with Port businesses was swept off of land into the waterways of the Port of New York. Shipping containers and electrical equipment that were positioned close to the port waterways are still missing. Shipping containers were reported to have washed up on Governor's Island. The United States Coast Guard (USCG) had to conduct a scan of shipping channels of the port to ensure they were safe for ships to travel. Emergency responders, communication and electric service utility repair crews, and the motoring public require gasoline and diesel fuel. A lack of fuel and the inability to distribute it creates transportation failures and cascading effects. As an example, communications and electric service restoration crews were hampered

in their Hurricane Sandy response efforts as a result of difficulty procuring fuel for vehicular use in restoration and repair operations. Workers also had difficulty commuting to work in order to repair damaged infrastructure, creating a logistical problem for utility providers.

Securing the petroleum/fuel supply chain should be a priority for New York City and the state of New York. Petroleum and fuel transportation and distribution systems should implement protective and resiliency enhancement measures to harden their facilities and increase the likelihood they will be able to resume operations as early as possible. New York State is seeking FEMA approval of a project to ensure that gas stations on key evacuation routes are equipped with emergency power. This will greatly enhance the availability of gasoline/diesel supply during power outages.

Petroleum Transportation and Distribution Resiliency Recommendations

Short-term recommendations

Once Hurricane Sandy passed, the Coast Guard Captain of the port was responsible for opening the Port and declaring it safe for maritime transportation.



The Coast Guard conducted a scan of shipping channels to ensure it was safe for ships to safely travel through the port. NOAA could stage a side scanning ship in a local safe-haven port (possibly up the Hudson River) to expeditiously conduct scanning missions, and assist in timely analysis to the Coast Guard Captain of the port to declare the port safe, and return it to normal maritime operations.

Petroleum terminals and distribution centers should evaluate the best placement of electric service in order to maintain power when faced with high winds, flooding, and tidal surge. Fuel terminals should elevate terminals and transportation and distribution assets to improve resiliency.

Petroleum terminals should evaluate the best placement of electric service lines to ensure the resiliency of their power supply. Lines buried underground in areas susceptible to flooding should be encased to protect against water intrusion while other additional protective measures should be taken to protect overhead lines from exposure to wind and rain.

Petroleum and fuel transportation and distribution infrastructure should ensure they are able to refuel generators. If generator fuel is required from a distributor, then fuel supply agreements should be in place with more than one provider and the providers should be in different geographic locations.

EPA has authority to waive certain fuel requirements in emergency situations when the fuel supply suffers major disruption. In such circumstances, the agency works closely with state and other federal agencies to determine an appropriate response. In an effort to secure the gasoline and diesel fuel supply chain, New York City and New York should provide fuel supply waivers from federal environmental fuel requirements such that adequate supplies of fuel can legally be brought in from other states and refineries in the region as necessary and without delay. Following Hurricane Sandy, this was done along with numerous other waivers.

Government could enact legislation that would require some service stations to install generators and utilize backup power to ensure fuel will remain available to the motoring public. The state of Florida requires this along hurricane evacuation routes.

Intermediate-term recommendations

Petroleum terminals should implement resiliency measures to ensure they have the ability to immediately recover and resume fuel distribution in New York City, Long Island, and New York. Terminals should ensure they have reliable and resilient source of power.

Petroleum and fuel transportation and distribution infrastructure should have backup sources of power to maintain operations in the event of a loss of electric power. Backup generators should be installed, with a fuel supply of at least 96 hours, and tested regularly to ensure their operational ability. The use of solar power as an additional alternate source of power should be considered.

New York City should work to strengthen and enhance the resiliency of existing barge delivery terminals to ensure maritime fuel transportation and distribution resiliency.

Selected endpoint fuel stations, specifically identified as a result of their strategic location, could install generators connected directly to their stations to ensure backup power is available. As a beginning step, gasoline and diesel fuel stations should prewire their facilities that would allow for rapid generator hookup in time of emergency.

Long-term recommendations

Government and electric utility providers should work together to make critical electric power substations more resilient to the effects of hurricanes, flooding, storm surge, and windblown salt water exposure. The petroleum transportation and distribution system is dependent on electric power and failure of these substations results in cascading effects which can compromise the regional gasoline and diesel supply chain.

Consideration should be given to elevating and enclosing substations and transformers supporting petroleum terminals to protect against flooding.

New York City could consider building an inland fuel terminal with storage and the ability to distribute fuel to the city via barge and pipeline or combination of the two. Fuel transportation trucks should be stored outside areas vulnerable to flooding to remain available for service. Trucks should be loaded with product

prior to the arrival of hurricanes.

Natural Gas

The primary use of natural gas in New York is for heating residential and small commercial building and is highly weather sensitive. In 2011, the electric power industry in New York consumed 36 percent of the state's natural gas, followed by the residential sector (33 percent), the commercial sector (24 percent), and the industrial sector (7 percent). Ninety-five percent of New York's natural gas supply is produced in other states (primarily in the Gulf Coast region), as well as by Canada. To meet its natural gas demand, New York relies on supplies from several regional sources delivered over 11 interstate pipeline companies that traverse the state.

More than 25,000 natural gas customers lost service as a result of Hurricane Sandy, and more than 140,000 customers were in some way affected as a result of (1) isolation (system shut down), (2) high-pressure service issues (a flooded regulator requiring replacement), or finally, (3) low-pressure services that were flooded and needed an inspection to determine the integrity of their internal piping and flooded appliances. In addition, approximately 140,000 residential meters in New York needed to be replaced.

In Manhattan, some high-rise commercial buildings have natural gas as a secondary fuel source for power. Supply is limited and natural gas in Manhattan has been deemed an interruptible fuel source that cannot be used for backup power. Natural gas distribution failures in Manhattan during Hurricane Sandy were minimal.

Damage to the natural gas distribution system further inland was limited to that caused by sporadic flooding and by uprooted trees pulling down lines, and thus was not as extensive as that occurring on Long Island and in the New York City (Staten Island, Brooklyn, Queens, and Manhattan) areas, where water intrusion and infiltration occurred. Damage in the lines (because of flooding and soil erosion) led to water and sand infiltration in the Rockaway Peninsula and in portions of New York City, with the Breezy Point area of Long Island and the New Dorp area of Staten Island being the hardest hit. Most of the natural gas lines in New York that were damaged by Hurricane Sandy have been rebuilt and re-pressurized within about six months after the storm.

Natural Gas Resiliency Enhancement Recommendations

Short-term recommendation

New York City should analyze the feasibility of expanding the natural gas supply and distribution system and network. Increased supply, a greater distribution network and increased capacity, along with additional supply lines to high-rise buildings, and the re-designation of natural gas as a non-interruptible fuel source would increase the resiliency of the power system in New York City and allow high-rise office buildings to utilize natural gas as a secondary or backup source of power. This would not alleviate the need for generators as a third source of backup power.

Intermediate-term recommendations

Critical natural gas hubs and pump stations should have a backup power source. If the source is a generator the generator should have a 96-hours fuel supply in the tank and have refueling agreements in place with at least two diesel fuel providers. Natural gas pipeline operators should determine the power and size of generators based on the criticality and power needs of a specific location. Generators should be built and positioned out of flood zones, elevated 15 feet above sea level, or elevated several feet above best available flood risk data levels in areas susceptible to flooding, tidal surge, or storm surge to enhance resiliency of the pipeline system. Generators should be installed, fueled, and tested regularly as part of emergency preparedness, continuity of operations, and all hazards response planning.

New York, New York City and Nassau, Suffolk, and Westchester counties should consider upgrades to the natural gas pipeline distribution system. Replacement of existing pipes with new pipelines will expand natural gas supply and availability while enhancing the resiliency of the distribution system.

Government and natural gas providers should install new shut off valves within the pipeline transportation system. This would improve the utilities ability to locate and isolate gas leaks in areas severely impacted by natural disasters and would prevent natural gas providers from having to scuttle large sections of the natural gas distribution system as a last resort.

Long-term recommendations

Natural gas providers should ensure all pumping stations are protected from flooding.

Natural gas pipelines should be upgraded to high pressure gas transportation and distribution lines as part of any system upgrade.

Steam

New York City and other areas of New York use steam in building heating and cooling systems and other engineering processes. In New York City steam is transported through an underground distribution system operated by Consolidated Edison (Con Ed). This system has to be protected against flooding, such as that caused by Sandy.

Steam Resiliency Recommendations

Short-term recommendation

If a storm is approaching, Con Ed could shut down the steam transportation and distribution system in order to prevent damage and compromise.

Intermediate-term recommendation

Underground steam transportation and distribution pipes must be protected against urban, tidal, and storm surge flooding. The utility provider should work to seal flood water entry points to prevent the entry of flood waters into the system.

Long-term recommendations

Energy providers and New York City should fortify steam generation plants to prevent flooding and ensure the operational capability of steam generation plants during hurricanes, coastal storms, and natural disasters. Sea walls, flood walls, or perimeter barrier protections should be installed to improve the resiliency of steam generation plants. Sea walls and protective barriers height should be several feet above best available flood risk data levels.

Steam generation plants should utilize generators as backup power source. Generators should have a 96-hour fuel supply in the tank and have refueling agreements in place with at least two diesel fuel providers. Generators should be built and positioned out of flood zones, elevated 15 feet above sea level, or elevated several feet above best available flood risk data levels in areas susceptible to flooding, tidal surge, or storm surge to enhance resiliency of the pipeline system. Generators should be installed, fueled, and tested regularly as part of emergency preparedness, continuity of operations, and all hazards response planning.

All steam system controls, pumps, electrical systems, communications systems and industrial control systems (if applicable) should be moved to high ground to protect against exposure to flood waters and enhance the resiliency of the systems.

Health Care and Public Health

For impacts to essential health and social services, including services provided to children in schools and childcare settings please refer to the Health and Social Services RSS chapter.

The health care and public health sector constitutes 17 percent of the nation's gross national product and helps protect or minimize consequences to all sectors of the economy from hazards such as terrorism, infectious disease outbreaks, and natural disasters. Because the vast majority of the sector's assets are privately owned and operated, collaboration and information sharing between the public and private sectors is essential to increasing resilience of the nation's health and public health critical infrastructure. Operating in all states, territories, and tribal areas, the sector plays a significant role in response and recovery operations across all other sectors in the event of a natural or manmade disaster.

While healthcare tends to be delivered and managed locally, the public health component of the sector, focused primarily on population health, is managed across all levels of government. The HPH Sector is highly dependent on other sectors for continuity of service delivery, including: communications; emergency services; energy; food and agriculture; information technology; transportation systems; and water.

During Hurricane Sandy, New York University's Langone Medical center,

Bellevue Hospital, and Coney Island Hospital were badly damaged and were forced to close.

Health Care and Public Health Resiliency Recommendations

The loss of power at hospitals can have a cascading effect on other types of medical facilities such as dialysis centers, chronic care facilities, and special needs facilities.

To help mitigate damages caused by natural disasters and to improve resiliency of the health care system, including hospitals and extended care facilities, it is recommended that the following elements be appropriately addressed.

Short-term recommendations

Hospitals, trauma centers, and medical centers should conduct a power needs analysis to determine the amount of power that is required to operate

vital systems. Once this analysis is completed engineers can recommend the appropriate size for generators needed to maintain operations on backup power during emergencies.

Hospitals, trauma centers, medical centers and public health facilities should have backup sources of power to maintain operations in the event of a loss of electric power. Backup generators should be installed with a fuel supply of at least 96-hours. Generators should be tested regularly as part of emergency preparedness, business continuity, and all hazards response planning.

Hospitals, trauma centers, and medical centers should ensure they are able to refuel generators. Where flood proofed on-site storage capacity is limited or impractical, uninterrupted generator fuel is required from a distributor and fuel supply agreements should be in place with more than one provider and the providers should be in different geographic locations to provide reliability.



Short to intermediate-term recommendations

Hospitals, trauma centers, and medical centers could maintain a backup generator fuel supply on site. This storage tank and all connections and should be elevated. This storage system would have to be connected to the backup generator.

Heating, ventilation, and air conditioning (HVAC) components, generators, and motor control centers should be located on floors above ground level.

Intermediate-term recommendation

Hospitals, trauma centers, and medical centers should have redundant communications systems to increase the resiliency of operations, systems, and facilities. New fiber optic technologies have proven to be relatively resilient to the effects of hurricanes and coastal storms. Fiber communications lines are not affected by salt water exposure like traditional analogue hard lines. They are also more resilient against damage caused by high winds.

Intermediate to long-term recommendations

All health care facility electrical system, water pumping system (including pumps and controls), communications infrastructure (telephone rooms/closets, and fiber optic, wireless, and analogue communications equipment), repeaters used in building communications, and industrial control systems should be elevated and protected against exposure to flooding.

Consideration should be given to rebuilding or relocating essential services to higher floors that would be above flood surge levels.

Long-term recommendations

Critical equipment and key infrastructure items should be raised to the level of best available flood hazard data plus one foot of freeboard.

The use of existing ground elevations and cross sections of topography that will allow the best protection from inundation should be advocated.

New York City could install combined heat and power (CHP) units in hospitals, medical centers, trauma centers, and healthcare facilities to provide heat and

electric power resiliency, CHP units utilize small turbines, are natural gas powered, create water, and then create steam. Steam can then be used for heat and to potentially power chillers to provide air conditioning. Although these units are not recommended as an emergency power replacement, they allow a facility to restore power much more quickly in the event of power loss.

Wastewater

Wastewater Treatment Plants

There are more than 600 municipal wastewater plants in New York, and New York City has 14 wastewater treatment plants and 93 wastewater pumping stations. The New York City Water Board wastewater system is extensive, with collection pipes extending 7,400 miles. Fourteen treatment plants located in the city's five boroughs treat and discharge the wastewater at a rate of 1.3 billion gallons per day in dry weather. New York City maintains a combined system for the treatment of storm water and wastewater. During large rain events, it is not uncommon for the system to become overwhelmed and thus require direct discharge of storm water and wastewater into receiving waterways (Figure 8).

Generally, most treatment facilities are located at the lowest elevations in the area to allow for gravity flow of waste water to the treatment facility. This general siting concept, while beneficial for inflows of effluent by gravity, increases the risks to the facilities' critical infrastructure. Figure 7 shows wastewater treatment plants located inside Hurricane Sandy's inundation zone in Nassau County.

The wastewater infrastructure consists of the collection system of pipes (sewer) and pumps that collect the waste water and carry it to the treatment facilities. When the waste water enters the various facilities, it undergoes various physical, chemical, and biological processes prior to discharge. A 2008 report from the New York State Department of Environmental Conservation states that among "wastewater infrastructure needs of New York, auxiliary power was noted as a KEY resource needed." The report identified more than 10 percent of the state's treatment plants that were in need of auxiliary or backup power.

When wastewater treatment plants are inoperable or not properly treating effluent, the health of residents in the communities they serve is at risk. The resulting impacts may severely affect the Health and Social Services Recovery Support Function; however, these impacts are also felt by the Natural and

Cultural Resources and the Economic recovery support functions.

Hurricane Sandy caused extensive damage to wastewater treatment plants in New York City and Long Island. Coney Island, Bay Park, North River, Hunts Point, Rockaway Beach, Yonkers, and Long Beach wastewater treatment plants sustained significant damage that impacted or halted operations and caused partially treated sewage to be released into the environment. Sewage treatment plants in New York City and Nassau, Suffolk, and Westchester counties were impacted by the storm. The sewage treatment plant in the Rockaways was badly damaged and inoperable. Hurricane Sandy caused extensive damage to the Long Beach wastewater treatment plant, and the Bay Park sewage treatment plant was flooded causing sewage discharge into the surrounding bay. Bay Park sewage treatment plant was out of commission for several weeks and did not return to full operation until just before Thanksgiving.

Mitigation for protection of facility operations is based on the physical layout and location of the critical infrastructure.

The Disaster Relief Appropriations Act of 2013, known as Public Law 113-2 (PL

113-2), includes \$500 million for capitalization grants to New York and New Jersey Clean Water Act programs to allow financing for wastewater treatment projects that reduce flood damage risk and vulnerability or enhance resiliency. EPA is working with the states to establish the funding allocation, define eligible projects and coordinate grant issuance.

Wastewater Treatment Plants/Facility Resiliency Recommendations

General Wastewater Resiliency Recommendations to consider for the short-, intermediate-, and long-term

Wastewater treatment plants in New York City, New York State, and Nassau, Suffolk, and Westchester counties should implement resiliency enhancements and protective measures to ensure the operational capability of wastewater treatment assets and systems located at sea level or at risk of urban, coastal, or tidal flooding and storm surge. Engineers should evaluate the potential storm surge and tidal flooding levels and build protective measures to protect wastewater plants. Wastewater treatment plants close to water or in low lying areas vulnerable to flooding, storm surge, or tidal flooding could build interior

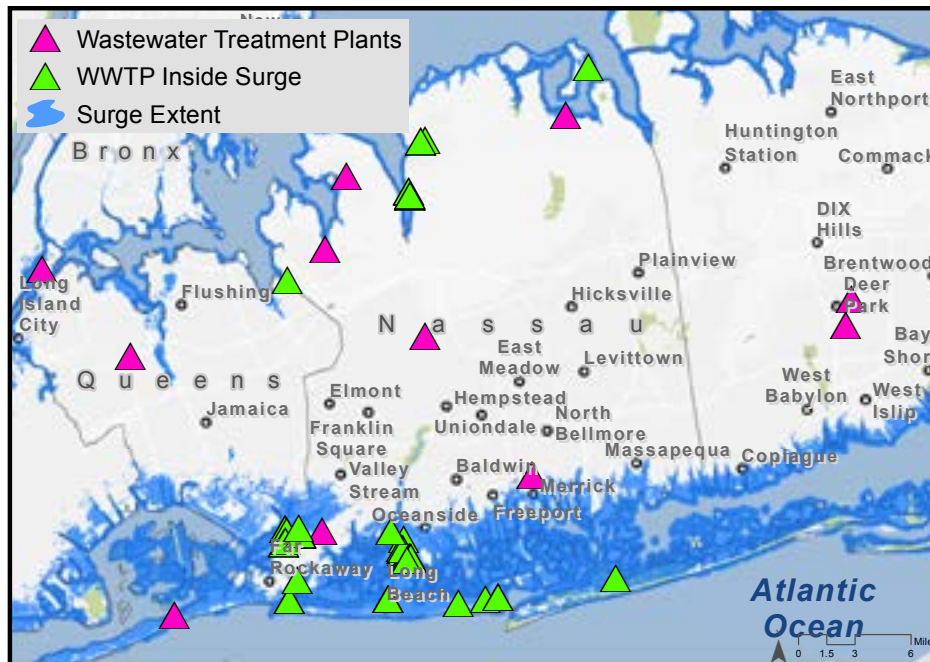


Figure 7 Wastewater Treatment Facilities in Nassau County

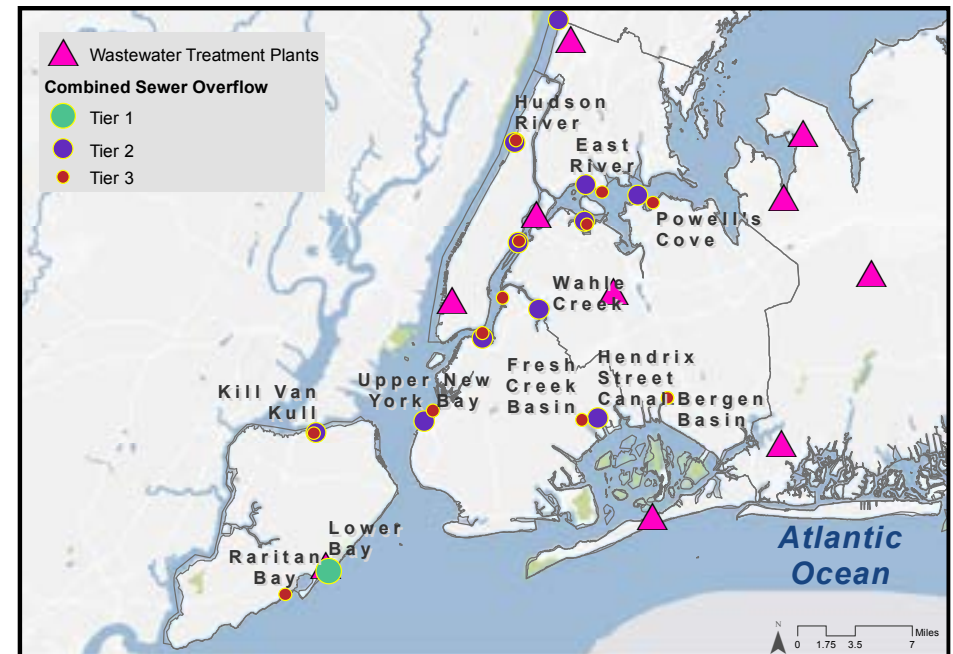


Figure 8 Combined Sewer Overflow Discharge Points

berms, dunes, and walls around critical assets as an additional protective measure.

Owners should evaluate the resiliency and capacities of the entire wastewater system. This should include an analysis of alternative, green, and more energy efficient resources. During Hurricane Sandy the most severe storm surge occurred at the Battery at the southern tip of Manhattan. If this storm surge had occurred along the East River, East River wastewater treatment infrastructure impact/system failures/damages may have been more significant.

Wastewater treatment plants should conduct vulnerability assessments to determine the flood protection level that is reasonable and cost effective to achieve and which systems or areas might be cost effective and reasonable to protect for improved post disaster operations.

Wastewater utilities should use EPA's Climate Resiliency Evaluation and Assessment Tool (CREAT), a software tool that addresses potential climate change threats and provides adaptation options. Subject to funding availability, the agency can conduct training and provide technical support to assist wastewater utilities with this tool in a workshop setting that also includes an energy-efficiency roundtable and sea level rise mapping demonstrations.

Wastewater utilities should use EPA's Fed FUNDS web tool to evaluate funding opportunities from various federal programs for rebuilding and resiliency. Subject to funding availability, the agency will host workshops for wastewater utilities that focus on co-funding and leveraging of different assistance programs from EPA, FEMA, HUD, USDA and SBA.

Short-term recommendations

Power generation controls should be pad mounted above flood and storm surge levels. Equipment to be mounted this way would include switchgear, transformers, motor control centers, disconnect switches, and other SCADA-type control equipment.

Wastewater treatment plants should have generators capable of providing backup power to maintain an operational capability and perform essential functions during disasters.

Chemical storage areas must be protected against flooding and excessive moisture.

Waste water utilities should consider communications devices such as two-way radios that are not dependent on electricity or third-party communications systems as a form of backup communications.

Tap boxes should be installed on exterior walls with connections sealed in waterproof submersible boxes for external connectors. Tap boxes should be installed ahead of the facility automatic transfer switch.

Tanks, sludge pits, clarifiers, and valves will most generally survive flooding events, but their ancillary support equipment, if protected by elevating or dry flood proofing, would assist in maintaining critical operations.

Wastewater treatment facilities utilizing specialty motors and equipment should consider procuring and storing backup equipment at a remote local location that is protected against all flood threats.

Wastewater treatment plants should also participate in New York Water/Wastewater Response Network (NYWARN) for emergency preparedness and disaster response information and aid for public and private water and wastewater utilities.

Wastewater treatment facilities should work to elevate superstructure, motors, and all Tier 1 hydraulic conveyance equipment.

Wastewater treatment plants using plant processed water for cooling operations should evaluate the installation of a dedicated cooling water unit or making the cooling water system independent of other plant operations thereby improving the resiliency of the wastewater processes and system.

Intermediate-term recommendations

Consideration should be given to evaluating and mitigating the potential impacts of high winds on key facilities and components, enabling adequate operation of the wastewater treatment plant.

Electrical controls, pumps, SCADA, and associated electronics should be

designed to be installed in one compact building. This building must be elevated to mitigate the threats posed by urban coastal and tidal flooding, storm surge, and exposure to salt water.

Pumping stations of vital importance to wastewater treatment systems should have generators capable of providing backup power to maintain operational capability and perform essential functions during disasters. Current regulations require pumping stations to have emergency pumping capacity unless the system has adequate storage capacity. State regulations require pumping capacity to be connected to two or more utility substations or by portable in place combustion engine equipment or by a provision of portable pumping equipment.

New York City should evaluate the feasibility of expanding the storage capacity of pump stations and drywells, interceptor sewers and holding tanks to accommodate additional sewage and storm water flows and maximize treatment of wet weather flows created by new storms with increased amounts of rainfall in short periods of time.

New York City should continue to implement its green infrastructure plan which includes construction of swales, rain gardens and green roofs to remove storm

water flows into the combined sewer system.

Wastewater operators should evaluate inflow and infiltration of storm water and ground water into sewer pipes and should remove excessive inflow and infiltration in order to reduce plant influent flows.

Bulkheads should be strengthened to provide additional protection to wastewater treatment plants located close to bodies of water.

New York electric substations and the electric feed supporting the wastewater treatment plants should be strengthened to enhance the electric power feed and electric power resiliency from the substation to pumping stations and wastewater plants.

Long-term recommendations

New York City should evaluate the feasibility of building power co-generation plants at some of the city's 14 wastewater treatment plants as this could improve electric power resiliency for the plants. This resiliency measure would provide wastewater treatment plants with an additional power source to stay online in



Elevated Facility Control Building



Elevated Facility Structure

the event of a primary electric power failure. The New York City wastewater treatment system is the second largest user of power in New York City.

New York City could conduct an analysis on the feasibility of installing hydraulic dams at facilities at sea level in an effort to improve the resiliency of these wastewater system assets.

Dams/Coastal Areas

Hurricane Sandy brought major coastal flooding to the New York, along the south shore from Staten Island to Montauk Point, in parts of the back bay and up the rivers. Coastal infrastructure was significantly damaged in Richmond, Kings, Queens, Nassau, and Suffolk counties--in many cases beyond repair. In Suffolk County, Fire Island was breached in three locations. Major damage and destruction occurred to piers, boardwalks, residential structures, and commercial properties. Boardwalks, especially within New York City, the city of Long Beach, and the public parks of Jones Beach and Robert Moses State

Park, are considered to be part of the coastal infrastructure and are an iconic feature along the New York shoreline.

The Stafford Act authorizes the Public Assistance program of the Federal Emergency Management Agency to fund replacement of sand on damaged public beaches under certain conditions. Eligibility is divided into two areas: emergency work and permanent work. All public beaches are eligible for emergency work if they qualify. Emergency work, in accordance with 44 Code Federal Regulation (CFR) §206.225(a)(3), is eligible for Public Assistance funding when it is necessary to eliminate or lessen immediate threats to life, public health, or safety; or eliminate or lessen immediate threats of significant additional damage to improved property as long as it is cost effective. Immediate threat means the threat of additional damage or destruction from an event which can be reasonably expected to occur within five years. Permanent work, in accordance with 44 CFR §226(j) (2), is eligible for Public Assistance funding when the beach was constructed by the placement of imported sand (of proper grain size) to a designed elevation, width, and slope; a maintenance program involving periodic re-nourishment with imported sand has been established and



adhered to by the applicant; and the maintenance program preserves the original design. Areas of the New York coast that have a project constructed by the USACE constructed project are not eligible for permanent work.

Public Law (PL) 84-99, Flood Control and Coastal Emergencies Act of 1955 (33 United States Code [USC] 701n) (69 Statute 186), authorizes the chief of engineers, acting for the secretary of the Army, to provide emergency and disaster assistance. This law applies to coastal and storm damage reduction projects designed and constructed by the Corps through agreement with the state sponsor (the New York State Department of Environmental Conservation). Operation and maintenance are a state and local responsibility. Repairs to PL 84-99 eligible projects are not cost shared, but must have a positive benefit-to-cost ratio and available funds. However the acquisition of real estate easements necessary for access and construction is a state and local responsibility.

A view of the Atlantic coastline of New York helps illustrate the proportion of New York coastline with and without Corps constructed projects. A small portion of the Atlantic coast of New York has Corps constructed coastal and storm damage

reduction projects covering a total of about 20 miles. In New York, about 3.5 million cubic yards were washed away on areas with Corps constructed projects. A majority of the Atlantic coast of New York (about 100 miles) is congressionally authorized but unconstructed. Those segments of the coastline not yet constructed are not eligible for emergency repair under PL 84-99.

The Corps has 18 coastal studies and projects on the Atlantic Coast of New York (see Table). Eight of those projects have been constructed, four of which are under the authority of the Corps Continuing Authorities Program (CAP 103, 111, and 204)². In addition, two small segments of the fully authorized Fire Island to Montauk Point project are constructed.

Soon after Hurricane Sandy, Corps Headquarters approved funds for the engineering and design for emergency repair (back to pre-storm conditions) of seven of the built project segments on the Atlantic shoreline under PL 84-99. The Disaster Relief Appropriations Act of 2013 (PL 113-2), passed by Congress and signed into law Jan. 29, 2013, permitted restoration to the authorized design profile.



A detailed description of the USACE coastal studies/projects in New York is available at <http://www.nan.usace.army.mil/Missions/CivilWorks/ProjectsInNewYork.aspx>.

The Breach Contingency Plan, an interim project related to the Fire Island to Montauk Point Reformulation Project, is authorized under the River and Harbor Act of 1960 (as modified by Section 103 of the River and Harbor Act in 1962), Section 31 of the Water Resources Development Act (WRDA) of 1974, Section 502 of the WRDA of 1986, and the WRDA of 1992. After a significant barrier island breach in the early 1990s, this Breach Contingency Plan was jointly developed and put in place to quickly assess and resolve future barrier island breaches that impact coastal Long Island from Fire Island Inlet eastward to Montauk Point, pending completion of the reformulation effort in the area. The plan includes pre-coordinated environmental compliance allowing for expedited state and federal environmental and project approvals to allow breach closure actions to proceed, and it outlines the steps necessary to implement rapid breach closures. The breach closure projects are cost-shared between the state of New York (35 percent) and the federal government (65 percent).

Hurricane Sandy created three breaches in Suffolk County on the Fire Island barrier island, listed below. They were basically new inlets between the Atlantic Ocean and Moriches Bay, leaving both the barrier island and the mainland areas of Long Island vulnerable to significant flooding damages.

- Cupsogue County Park Breach, Westhampton Island, Suffolk County
- Smith Point County Park Breach, Fire Island, Suffolk County
- Old Inlet Breach, Fire Island National Seashore's Otis G. Pike Federal Wilderness Area, Fire Island, Suffolk County

On Nov. 2, 2012, the state of New York provided the required formal written request to close two breaches. The Cupsogue County Park breach between the ocean and the bay was closed Nov. 22, 2012, and the Smith Point County Park breach between the ocean and the bay was closed Nov. 26, 2012. With the closing of two of the above three breaches, the barrier islands' cross sections were restored under the joint New York and USACE 1997 Breach Contingency Plan. The third breach, the Old Inlet Breach, is still open and being monitored for its rate of growth by the U.S. Department of Interior National Park Service's Fire Island National Seashore and the U.S. Geological Service.

U.S. Army Corps of Engineers Projects in New York, Starting East with Staten Island on the Atlantic Ocean and Circling West to the Bronx	
Project	Status
South Shore of Staten Island	Study Phase
Oakwood Beach Levee (CAP 103)	Constructed
Coney Island	Constructed
Plumb Beach (CAP 204)	Constructed
Rockaway Inlet to East Rockaway	Constructed, currently under study reformulation
Long Beach	Authorized, not constructed
Jones Inlet – Point Lookout Shoreline*	Constructed by others
Fire Island Inlet to Montauk Point	Authorized, currently under study reformulation
Montauk Point	Two segments constructed – (1) West Hampton Interim and (2) West of Shinnecock Inlet
Lake Montauk Harbor	Authorized, not constructed
Shelter Island (CAP 103)	Study Phase
Hashamomuck Cove	Constructed
Mattituck Inlet (CAP 111)	Study Phase
Asharoken	Authorized, not constructed
Asharoken Dune (CAP 103)	Study Phase
Bayville	Constructed
Orchard Beach	Study Phase
East River Seawall	Constructed
*The latest funding for Jones Inlet is in FY2013 when \$550,000 in Sandy Supplemental funds has been allocated to date for Engineering and Design related to the rehabilitation/repair of the East Rockaway jetty damaged during Hurricane Sandy. Prior to that, in FY11 approximately \$54,000 caretaker funding was provided for environmental coordination and controlling depth reports. In FY07, the State of NY provided \$7.6M to the Corps under an executed Contributed Funds Memorandum of Agreement. These funds were used to dredge approximately 650,000 cubic yards of shoals in the federal channel and deposition basin, with placement of the dredged sand on the badly eroded beaches at Point Lookout, Hempstead, NY. Dredging began on January 13, 2008 and was completed on March 3, 2008.	

Table 2

In March 2013, the New York State Department of Environmental Conservation (DEC) requested that USACE take preliminary steps to prepare for filling the Old Inlet breach to help expedite closure of the breach in the event that the breach does not close naturally or if the DEC, USACE and the Fire Island National Seashore determine closure to be necessary.

Beach Infrastructure Task Force at the New York Joint Field Office

In December 2012, the federal disaster recovery coordinator at the New York Joint Field Office initiated the Beach Infrastructure Task Force, made up of state and federal partners to focus on short- and long-term recovery of coastal infrastructure affected by Hurricane Sandy. The objectives of the this task force were to bring together key stakeholders to develop a comprehensive plan for restoration and to remove obstacles to resilient rebuilding in a manner that addresses existing and future risks and vulnerabilities and promotes the long-

term sustainability of communities and ecosystems. The task force established working groups with subject matter experts from the federal, state, and local levels. The Emergency Protection and Environmental Working Group focused on short-term emergency protection measures, the Fire Island to Montauk Working Group began by focusing on the Fire Island to Montauk Reformulation Plan, and the Recovery and Resiliency Working Group is currently focusing on long-term recovery of coastal infrastructure.

Dams/Coastal Infrastructure Resiliency Recommendations

The Disaster Relief Appropriations Act of 2013, passed by Congress and signed into law on Jan. 29, 2013, is known as Public Law 113-2 (PL 113-2). The legislation provides supplemental appropriations to address damages caused by Hurricane Sandy and to reduce future flood risk in ways that will support the long-term sustainability of the coastal ecosystem and communities and reduce the economic costs and risks associated with large-scale flood and storm events. Guidance from this law helped shape some of the resiliency recommendations below.

In February 2013, the National Oceanic and Atmospheric Administration and the USACE developed Infrastructure Systems Rebuilding Principles to promote a unified strategy for activities in restoring the coast following Hurricane Sandy. The purpose of the principles is to improve long-term performance of coastal rebuilding and restoration actions undertaken through the Infrastructure Systems Recovery Support Function by implementing Executive Order 11988 in conjunction with these principles on a regional scale. The principles anticipate a changing environment; integrate economic, social, and environmental resiliency and sustainability; and promote long term community protection.

The following three principles help guide restoration activities of the National Oceanic and Atmospheric Administration and Corps following Hurricane Sandy:

- Work together in a collaborative manner across multiple scales of governance (i.e., local, state, tribal, and federal) and with relevant entities outside the government to develop long-term strategies that promote public safety, protect and restore natural resources and functions of the coast, and enhance coastal resilience.
- Improve coastal resilience by pursuing a systems approach that incorporates natural, social, and built systems as a whole.

- Promote increased recognition and awareness of risks and consequences among decision makers, stakeholders, and the public.

Public Law 113-2 included a total of \$5.35 billion in supplemental funds for the following USACE accounts, with a brief description of how some of the funds will be spent:

Investigations - \$50 million

- \$29.5 million to expedite and complete ongoing flood and storm damage protection impacted by Hurricane Sandy within the boundaries of the North Atlantic Division.
- \$20 million for the Corps to conduct a comprehensive study that addresses the flood risks of vulnerable coastal populations impacted by Hurricane Sandy within the North Atlantic Division.
- \$500,000 for the Corps to conduct an evaluation of the performance of existing projects impacted by Hurricane Sandy for the purpose of determining their effectiveness and making recommendations for improvement to those projects.

Construction - \$3.46 billion

- \$9 million to repair existing projects that were under construction and damaged by Hurricane Sandy.
- \$2.9 million to reduce future flood risks in ways that will support the long-term sustainability of the coastal ecosystem and communities, and reduce the economic costs and risks associated with large-scale flood and storm events that occurred in 2012 within the boundaries of the North Atlantic Division.
- \$51 million to expedite Continuing Authorities Projects along the coastal states impacted by Sandy within the boundaries of the North Atlantic Division.

Operations and maintenance - \$821 million.

- For dredging of navigation channels and project repair related to the consequences of Hurricane Sandy.

Flood control and coastal emergencies (PL 84-99) - \$1.01 billion

- These funds are limited to expenses related to Hurricane Sandy with a set aside of \$430 million to restore projects impacted by Hurricane Sandy to their “design profiles.”³

Expenses - \$10 million

- Oversight of emergency response and recovery activities. To facilitate monthly reporting to the House and Senate Appropriations committees on the allocations and obligations of all the aforementioned USACE funding.

Short-term recommendations:

- Emergency work through the Public Assistance program of FEMA to construct temporary sand berms on public beaches to protect against additional damage from a five-year storm, in accordance with 44 CFR §206.225(a)(3)⁴ in areas that do not have a Corps constructed project.
- In the case of breaches on the barrier islands, activate the USACE New York District Breach Contingency Plan in partnership with the New York state Department of Environmental Conservation and close breaches as quickly as possible when they occur. In addition, as discussed in the NYS 2100 Commission report, the state and the Corps could preemptively prevent breaches focusing eastward of Jones Beach Island by identifying vulnerable sites, estimating the quantities and construction options (dredging vs. trucking), and proactively augmenting protection at those locations.

Corps near-term coastal restoration efforts in New York include both repair and restoration elements as defined below. Repair and restoration efforts in New York are listed in Table 3.

Emergency Repair: Under Public Law (PL) 84-99, the Corps has the authority to rehabilitate an eligible flood protection system if damaged by a flood event. Systems considered eligible for PL 84-99 rehabilitation assistance are coastal and storm damage reduction projects designed and constructed by USACE (see Table 2 for list of Corps constructed projects). Repairs include returning damaged projects to pre-storm conditions. PL 84-99 eligible projects are not cost shared, but must have a positive benefit-to-cost ratio and available funds. The Disaster Relief Appropriations Act, Public Law 113-2 (PL 113-2), provides funds to help address immediate repairs. The Corps is allocating funds accordingly to address immediate needs. In the table below, “Repair” is how much sand was lost during Sandy and is work generally under the PL 84-99 authorities.

Restore: Restore damaged Corps projects to authorized design dimensions using

the funds set aside for this purpose under the PL 113-2. The Corps is allocating funds accordingly to address immediate needs. In some cases, the restoration of an existing Corps project to its original design profile may not meet the objectives outlined in PL 113-2, and a fundamentally different approach may be more suitable. In the adjacent table “Restore” is the amount of sand, in addition to the repair amount, that will be placed to restore the project area to its original dimensions and is generally work under the PL 113-2 authorities.

Other items for state, local, and tribal entities to consider are:

- Repair and strengthen existing hard infrastructure such as bulkheads, riprap shoreline, levees and seawalls.
- Raise existing seawalls.
- Utilize rapid deployment flood walls.
- Consider nonstructural control measures, including:
 - Elevation of homes so that floodwaters cannot reach damageable portions.
 - Home buyouts through voluntary relocations.

Intermediate-term recommendations

Construct USACE projects that are authorized but unconstructed. Cut project delivery time by streamlining the planning and design phases of the projects. The USACE will perform expedited limited re-evaluation reports that address resiliency, economics, risks, environmental compliance, and long-term sustainability. More detail on this measure will follow once the USACE Headquarters issues Implementation Guidance on PL 113-2.

Long-term recommendations

North Atlantic Coast Comprehensive Study: Under the Disaster Relief Appropriations Act, the USACE is charged with conducting a comprehensive study, at full federal expense, that addresses the flood risks of vulnerable coastal population impacted by Hurricane Sandy within the Northeast region. The Corps will undertake a broad, conceptual examination of the best ideas and approaches to reducing the vulnerability to major storms over time, in a way that is sustainable over the long term, both for the natural coastal ecosystem and for communities. The comprehensive study will be a collaborative effort proceeding in coordination with other federal agencies, and state, local, and

USACE Repair and Restore Efforts in New York			
Project	Cubic yards of sand		
	Repair	Restore	Total
Rockaway Beach (Beach 19th to Beach 149th streets)	1.5 million	2 million	3.5 million
Coney Island	272,000	679,000	951,000
West of Shinnecock Inlet	173,000 (completed in 2012 after the storm in conjunction with previously planned work)	450,000	623,000
West Hampton Dunes	450,000	1.05 million	1.5 million
Fire Island Inlet and Shores Westerly to Jones Inlet (Gilgo Beach)	1.2 million	There is no "Restore" element to this project as it is a standing authority to strategically place material dredged from Fire Island Inlet (providing navigation benefits) along Gilgo Beach.	1.2 million
Non-Sand Related Work			
Project	Description		
Oakwood Beach (CAP 103)	Repairs to a tide gate and a levee built circa 2000		
Asharoken (CAP 103)	Repair the seawall due to damage from Hurricane Irene in 2011		
Coney Island	Repair of 23 rd Street 42" diameter storm water outfall		

Table 3

Other items for state, local, and tribal entities to consider are:

- Consider utilizing dunes in beach areas, wetland improvements, and breakwaters to attenuate waves.
- Design shoreline protective measures to take into consideration sea-level rise and climate change. Consider seawalls, dikes, and other hard structures. Natural (ecological system restoration) and hard engineered infrastructure improvements that are designed to mimic natural processes should be considered wherever practicable. Consider managed retreat, allowing the wetlands and beaches to take over land that is dry. Measures could include land use and zoning appropriate for achieving risk reduction. Ways to implement managed retreat could involve home buyouts.
- Conduct a storm surge barrier assessment as described in the report by the NYS 2100 Commission
- Develop a risk communication plan intended for homeowners, private interests, and local governments to help lessen threats to life and safety
- Create pilot projects using innovative technologies for risk reduction, specifically around areas of critical infrastructure.

Transportation

Roads, Bridges, Tunnels

Transportation infrastructure in New York City, New York state, and Long Island sustained severe damage as a result of Hurricane Sandy. Flooding caused extensive damage to the Holland Tunnel, Hugh Carey (Brooklyn Battery) Tunnel, Queens Midtown Tunnel, the New York Metropolitan Transportation Authority (MTA) subway and rail lines, and Amtrak rail tunnels. The Port Authority of New York and New Jersey sustained significant damage to the region’s transportation assets. Port Authority Trans Hudson (PATH) rail tunnels and stations were flooded, closed, and required dewatering operations to recovery and resume operations. MTA Subway and PATH stations were damaged by flood waters. LaGuardia and John F. Kennedy airports sustained extensive flooding to airfields. Roadways were flooded and bridges were closed. The Holland Tunnel, George Washington Bridge, Hugh Carey Brooklyn Battery Tunnel, Queens Midtown Tunnel, and Port Authority bridges were closed. Flooding

tribal officials. The goals of the comprehensive study are to:

- Provide risk reduction strategies to reduce risks to vulnerable coastal populations.
- Promote coastal resilient communities to ensure a sustainable and robust coastal landscape system, considering future sea level rise and climate change scenarios, to reduce risks to vulnerable populations, property, ecosystems, and infrastructure.

For Corps authorized studies that are not authorized for construction, complete all feasibility studies and move forward to the construction phase. When moving forward on project specific measures, the Corps will adhere to the statutory objectives outlined in Public Law 113-2 to support the long-term sustainability of the coastal ecosystem and communities, reduce the economic costs and risks associated with large-scale flood and storm events, and incorporate current science and engineering standards. More detail on this measure will follow once the Corps headquarters office issues implementation guidance on the law.

Establish an annual review of the Breach Contingency Plan and revise as necessary as recommended in the report by the NYS 2100 Commission. Consider breach closure design and schedule to incorporate updated storm records.

forced suspension of PATH trains which severely impacted transportation of people into and out of New York City. Transportation resiliency enhancements will be at the forefront of efforts to be able to withstand the effects of future hurricanes, coastal storms, and nor'easters. Infrastructure improvements that allow for increased throughput at transportation assets that are under-utilized in their current configuration should be encouraged. Such improvements will provide greater resilience in the systems during events when reduced capacity puts the system under stress.

To help states begin recovery work sooner, the Department of Transportation issued a new rule in the Feb. 19, 2013 Federal Register to streamline the federal environmental review process so repairs on storm-damaged roads, bridges and transit facilities are not hampered by delay. Required under the "Moving Ahead for Progress in the 21st Century Act" which President Obama signed into law in July 2012, the new rule speeds the recovery process by reducing the environmental review for transit, road, and bridge repair projects that substantially conform to the preexisting design, function and location of the original.

Port Authority of New York and New Jersey

The Port Authority of New York and New Jersey is a bi-state port district authority, established in 1921 (as the Port of New York Authority) through an interstate compact that oversees much of the regional transportation infrastructure. Its area of jurisdiction is called the port district, a region within a radius of approximately 25 miles of the Statue of Liberty. The Port Authority was created to promote and protect the commerce of the Port District and to undertake port and regional improvements that were not likely to be financed by private enterprise and would not be attempted by either state alone. These include the development of major infrastructure such as a modern port for the harbor shared by the two states, tunnel and bridge connections between the states, and general trade and transportation projects that secure the region's economic well-being.

The Port Authority conceives, builds, operates, and maintains infrastructure critical to the New York/New Jersey region's trade and transportation network. These facilities include America's busiest airport system, marine terminals and ports, the Port Authority Trans-Hudson (PATH) rail transit system, six tunnels



and bridges between New York and New Jersey, and the Port Authority bus terminal the world's busiest passenger terminal located in Manhattan, and the World Trade Center.

Federal funds are available through the U.S. Department of Transportation, FEMA Public Assistance and Mitigation-406, and potentially the agency's Mitigation-404 program. These funds may be used to assist the recovery of port Authority infrastructure assets. As the recovery operation proceeds the Infrastructure Systems Recovery Support Function is available to enhance understanding of federal and other assistance and to advise on the incorporation of mitigation, sustainability, and resilience-building measures into recovery plans and implementation.

General Transportation Resiliency Recommendation

Transportation agencies are encouraged to use source information generated by the study proposed by the New York Metropolitan Transportation Council, with participation of four metropolitan planning organizations in greater New York

in partnership with the Connecticut, New Jersey, and New York Departments of Transportation along with the Metropolitan Transportation Authority. The study will assess the effects of Hurricane Sandy and the 2011 weather events, and analyze adaptation strategies for critical infrastructure in the planning area of the four metropolitan planning organizations in Connecticut, New Jersey and New York. Funding for this study proposal is through the Federal Highway Administration's as a special grant. The study will be approached in two phases and completed within two years.

Road, Bridge, and Tunnel Infrastructure⁵

On Feb.15, 2013, U.S. Transportation Secretary Ray LaHood announced \$287 million in emergency relief funds for New York to rebuild roads and bridges damaged by natural disasters, with \$250 million specifically designated for Hurricane Sandy recovery. Funds from the Department of Transportation's Federal Highway Administration will be used to reimburse the state for expenses associated with damage mainly from Hurricane Sandy along with a handful of previous weather events. The funds will help pay for reconstructing



or replacing damaged highways and bridges, establishing detours and replacing highway infrastructure devices such as lighting and guardrails. Disability-related accessibility mandates will be met in accordance with repair and resurfacing requirements.

Road Infrastructure Resiliency Recommendations

Short-term recommendations

Perform rigorous maintenance on roadways and culverts, including drainage cleaning, debris removal, and crack sealing (2100 Commission Report).

Elevate roadway traffic signal electrical control boxes to protect against flooding and salt water inundation/exposure.

Reinforce overhead sign structures to withstand winds associated with hurricanes up to Category 3.

Short- to intermediate-term recommendation

Raise or construct floodwater control measures to protect roadways and embankments from immersion and scour (2100 Commission Report).

Intermediate-term recommendations

Mitigate scour on roadway embankments with strategically placed riprap (NY Rising, 2013 State of the State, Governor Cuomo).

Replace metal pipe culverts with concrete and/or bridges on roads in flood-prone areas (NY Rising, 2013 State of the State, Governor Cuomo).

Bridge Resiliency Recommendations

Short-term recommendations

Evaluate all bridge cables and suspension cables to determine if they are engineered to withstand high winds associated with hurricanes up to Category 3.

Perform routine, rigorous maintenance on road and rail bridges, including joint and drainage cleaning, debris removal, and foundation and slope maintenance.

Intermediate-term recommendations

Stabilize slide-prone areas, slopes, embankments, and rock walls around bridges to mitigate scour threat (2100 Commission Report).

Install appropriate countermeasures, which may include:

- Strategically placing riprap to absorb, deflect or redirect flowing water energy to a preferred location.
- Extending footing/pile structures to support slopes or protect them from erosion.
- Constructing spur dikes, barbs, groins, vanes, or other river-training devices that alter stream hydraulics to mitigate undesirable erosion and/or depositional conditions.
- Constructing flow-deflecting plates connected to piers.



Storm-damaged and new Signal System Component

- Performing routine, rigorous maintenance on road and rail bridges, including joint and drainage cleaning, debris removal and foundation and slope maintenance.

Tunnel Resiliency Recommendations

Intermediate-term recommendations

Implement measures to prevent/minimize salt water incursion/inundation of tunnels and tunnel vents. Existing resiliency enhancement measures (water barriers, elevation of electrical communications and signaling equipment, enclosure of equipment in watertight/waterproof boxes and perimeter protection, flood gates) and new technologies under development should be considered to protect tunnels and vents against flooding threats.

Increase pump capacity and protect pump power systems against flooding and salt water exposure to prevent failure/compromise.

Encase tunnel electric and communications conduits, connections, transmission



Storm Debris in South Ferry Station

lines, signal communications, and telecommunications lines in watertight cabling.

Design/install high capacity tunnel water extraction pumping systems to pump water out of vehicular tunnels.

Mass Transit

The Disaster Relief Appropriations Act of 2013, dated Jan. 29, 2013, provides \$10.9 billion for the Federal Transit Administration Emergency Relief program for recovery and relief efforts in areas affected by Hurricane Sandy. Of that total, \$2 billion was distributed by March 31, 2013, as required by law.

Railroad Infrastructure

The Metro North Railroad, Long Island Railroad, and Amtrak were seriously affected by Hurricane Sandy. The storm damaged rail tracks, flooded tunnels, damaged bridges, destroyed communication and signal systems, flooded infrastructure and assets, and caused extensive damage to the railroad assets. During Hurricane Sandy, one of two Hudson River (North River) Tunnels was flooded and three out of four East River Tunnels were flooded all requiring unwatering in order for the tunnels to become operational. Amtrak, New Jersey Transit and Long Island Rail Road operated at reduced service levels.

In the aftermath of Hurricane Sandy, Amtrak's president noted the reduced traffic in the East River tunnels. He indicated that upgrading the signaling infrastructure in all four tunnels would allow for a heavier traffic load in the existing tunnels and thus increase the resilience of the system. See photo below of a storm-damaged signal system component next to its new replacement.

Rail bridges are prime examples of aging assets creating risk for the state's infrastructure system. The Livingston Avenue Rail Bridge, which crosses the Hudson River in Rensselaer, NY, was built in 1866 and had its steel superstructure replaced in 1901. It is still in service today. Because New York led the nation in building new highway bridges more than 50 years ago during the Interstate era, its bridges have been among the first in the nation to decline. These structures have now reached a state at which repair, rehabilitation, or replacement is needed if the bridges are to withstand the frequency and severity of recurring disasters.

One of the most significant vulnerabilities of rail bridges is scour caused by rapidly flowing water against bridge foundation elements — abutments, piers, and embankments. The destructive and erosive action of bridge scour carries away sand and rocks from beneath bridge foundations. The intensity and velocity of water can quickly compromise the structural integrity of bridges.

Railroad Infrastructure Resiliency Recommendations

Subway tunnels in New York City lack sufficient protections against flooding and the capacity to pump out water. This condition not only has the potential to stop mass transit service but also means that communications and other aging systems are less protected. The railroad infrastructure is one of the main backbones for intercity and long-distance mobility as it is pivotal in the transport of raw materials, supplies, finished products, and waste. Key freight rail connections in the upstate region provide important links to and from Canada and adjoining states and to and from ports and other marine facilities in Pennsylvania and New Jersey, as well as New York.

The U.S. Department of Homeland Security Science and Technology Directorate recently tested a new technology for preventing and containing flooding in transit tunnels. The project, known as the Resilient Tunnel Project, consists of an inflatable cylinder that can inflate within minutes and act as a plug to protect tunnels from flooding. The shape and material of the plug are flexible enough to account for the irregular cross-section of tunnels created by platforms, lights, tracks, and other equipment. The inflatable cylinder could provide a more cost-effective solution to flood prevention in existing tunnels, negating the need for costly retrofits. When deflated, the plug can be stored in a small space in the tunnel, similar to a car airbag that is ready for inflation. The plug is being developed by the Pacific Northwest National Laboratory, West Virginia University, and ILC Dover (maker of NASA space suits).

Short-term recommendations

Evaluate procuring backup substations and generators.



Damaged MTA A Train track at the Rockaways



Repaired MTA A Train track at the Rockaways

Consider pre-wiring for generator hookups at key locations to facilitate use of portable generators at critical locations.

Consider reengineering third rail-powered sectionalizing units protect against exposure to brackish and salt water. This might be accomplished through such actions as use of watertight enclosures to prevent the compromise of these units.

Study of rail yard flooding to develop and implement resiliency measures designed to protect rail yards and develop a protective strategy for mitigating flooding/tidal flooding/storm surge exposure. Increased pump capacity and strengthening the resiliency of the power source for the pumping system could be part of this effort.

Intermediate-term recommendations

Consider improvements to protect against flooding in tunnels through tunnel portals and the elevation of street-level vents.



Elevate substations, transformers, and electrical equipment. Further mitigation measures for substations could include enclosure of the substation inside protective structures to mitigate the exposure to hurricanes, high winds, urban/coastal/ tidal flooding, storm surge, and exposure to windblown salt water.

Protect railroad, electrical, communications, and signal equipment (cabinets, switches) against salt-water exposure through sealing of entry points, elevation of equipment, and use of watertight enclosures.

Intermediate to Long-term recommendations

Conduct an engineering study to assess vulnerability of bridges to flooding, tidal and storm surge, and soil erosion caused by storm water runoff. Resiliency enhancements could include raising rail bridges and/or reinforcing riverbanks supporting bridge infrastructure.



Protect rail yards and rail equipment against exposure and inundation of salt water by building protective barriers (flood walls and perimeter berms) around critical locations, where appropriate.

Long-term recommendation

To improve railroad resiliency, consider expanding access of Metro-North to more than one New York terminal. Currently, all Metro-North trains terminate at Grand Central Station in Manhattan.

Metropolitan Transportation Authority

The New York State Metropolitan Transportation Authority is North America's largest transportation network, serving a population of 14.9 million people in the 5,000- square-mile area fanning out from New York City through Long Island, southeastern New York, and Connecticut and carrying 8.5 million people each weekday. The operating agencies under the MTA include New York City Transit, MTA Bus, Metro-North Railroad, and Long Island Rail Road. The New York City Transit system consists of bus and heavy rail rapid transit serving 7.5 million passengers every day in the city's five boroughs. MTA Bus operates express and local bus service in Brooklyn, Queens, Manhattan and the Bronx and is used by 388,000 daily customers. Metro-North Railroad operates 765 track miles of commuter rail service on the east and west sides of the Hudson River, serving more than 280,000 passengers a day. The Long Island Rail Road commuter rail system comprises of almost 600 miles of track on 11 different lines providing service to New York Penn Station for more than 280,000 people every day.

A record storm surge hit New York City on the evening of Oct. 29, flooding eight under-river subway tubes, along with several subway stations, bus depots, and train yards. High winds downed catenary wire and hundreds of trees, blocking tracks and bus routes. The storm surge also littered train tracks with debris and resulted in a complete washout of the subway tracks to the Rockaway Peninsula in Queens.

Portions of underground stations such as South Ferry Station in Manhattan were flooded with salt water and sustained damage to signals and communication

systems, pump rooms, traction power and line equipment, and escalators and elevators. Portions of the eight under-river tubes were flooded and sustained damage to tracks and switches, pump rooms, fan plants, communication cabling, substations, and circuit breaker houses.

Eight subway tunnels were flooded, and 12 subway stations sustained major damage. Furthermore, an entire bridge that carries rail service to the Rockaways was destroyed. Mass transit rail service returned incrementally over the course of several weeks, although service was restored to most stations within a week of the storm.

The South Ferry Whitehall station on the MTA "R" line, which connects Manhattan and Brooklyn, was completely destroyed by flooding. This station is located at the southern tip of Manhattan Island and serves passengers arriving from Staten Island, as well as many passengers from the Wall Street financial district. Prior to Hurricane Sandy, more than 19,000 passengers would pass through this station on a typical business day.

Over the course of three days following the arrival of Hurricane Sandy, the MTA was able to restore service on 80 percent of its routes. Bus service resumed full schedules within 24 hours.

Mass Transit Resiliency Recommendations

Short-term recommendation

Implement resiliency measures when rebuilding subway service to Broad Channel, Rockaway Beach, and the Far Rockaways.

Intermediate-term recommendations

Develop resiliency enhancement measures to protect the system against salt-water exposure through sealing of entry points, elevation of equipment, and use of watertight enclosures for equipment.

Consider constructing additional shoreline protections along the Jamaica Bay/land boundaries to protect infrastructure. Consider strengthening bulkheads, elevating assets, and building protective barriers.

Consider identifying ways to keep flood waters out of tunnel entrances (2100 Commission Report). These kinds of investments should be planned in conjunction with an integrated drainage and floodwater management strategy that includes analysis of the redirection of floodwaters. The implementation strategy should consider the relative criticality and vulnerability of different assets within the entire transit system.

Two related factors contributed to the pace of recovery for railroad and mass transit rail lines. First, both types of rail system are heavily reliant on electric power to either propel vehicles or manage vehicle traffic on the system. The systems could not operate until electric power to the region was restored and service was again reliable. Second, because of the physical geography of the region, the system consists of tunnels that connect the boroughs below waterways. When the tunnel system flooded with salt water from the storm surge, it caused significant damage to electrical components that operate the trains and their supporting signaling infrastructure.

Transportation Control Centers

Transportation control centers are essential to transportation operations. These centers can be integral to mass transit, rail, subway, bridge or highway operations within a transportation system or a geographic area. Not all transportation control centers are at ground level and many are already elevated.

Transportation Control Center Resiliency Recommendation

Intermediate-term recommendation

Make transit and transportation control systems redundant, with operational capabilities at primary and secondary operations centers that are not in the same geographic area.

Water Transportation

Hurricane Sandy resulted in damage to many of the city's Federal Transit Administration-funded facilities, which include the Staten Island Ferry and other ferry facilities, owned by the city and operated either by the New

York City Department of Transportation or private ferry operators through an agreement with the New York City Economic Development Corporation. Of all the ferry facilities owned and operated by the New York City Department of Transportation, and Economic Development Corporation those that were reported to have storm damage and temporary ferry services resulting from the storm damage are summarized below based on information in Federal Trade Administration's report on Hurricane Sandy Relief Efforts.

More than 90 percent of global trade moves by ship, and the maritime industry in New York serves a central role as an international hub of commerce. The Port of New York and New Jersey is the gateway to one of the most concentrated and affluent consumer markets in the world. It is the largest port on the east coast, moving more than 33.3 million metric tons of general cargo and 48.2 million metric tons of bulk cargo in 2011. A total of 53 percent of all of the international waterborne cargo entering the North Atlantic from Halifax, Nova Scotia, to Norfolk, VA enters through the Port of New York and New Jersey. Farther north, the Great Lakes St. Lawrence Seaway system moves more than 160 million metric tons of cargo directly among New York, the other Great Lakes states, and Canada.

St. George Ferry Terminal (STG): The St. George Ferry Terminal sustained significant flooding throughout the lower level. Based on waterline marks on the terminal walls observed during a field review conducted on Dec. 5, 2012, and from photographs provided by the city's Department of Transportation, the depth of the flooding on the lower level was 3 to 4 feet above finished floor elevation.

Ferry Maintenance Facility (FMF): The Ferry Maintenance Facility sustained damage from significant flooding along the piers and to the building. Based on waterline marks on the ferry maintenance building walls during a field review conducted Dec. 5, 2012, and from photographs provided by the city's Department of Transportation, the depth of the flooding was 3 to 4 feet.

Whitehall Ferry Terminal (WHT): The Whitehall Ferry Terminal sustained damage in the lower level from flooding. Waterline marks along the terminal walls observed during a field review Dec. 5, 2012, and photographs provided by the city's Department of Transportation, indicate that the flood depth was 3 to 4 feet in the lower level of the terminal.

City Island Ferry Terminal: The City Island Ferry Terminal facility sustained damage from flooding and the storm surge. A Dec.6, 2012, field review of Hurricane Sandy storm damage was conducted for the City Island Ferry Terminal facilities maintained by city's Department of Transportation. Access to the pier is controlled by a locked gate, and signage indicates it is a New York City Department of Correction facility, with restricted area (no trespassing, no docking, and no anchoring).

Pier 79 Ferry Landing: Damage was sustained to sidewalks around the Pier 79 Terminal from uplift during the flooding. A mold review is to be conducted because of flooding at the terminal building. The location of Pier 79 is on the east bank of the Hudson River, over the Lincoln Tunnel. Activities will also include reconstructing the damaged sidewalks around the Pier 79 Terminal.

Yankee Stadium Ferry Landing: The gangway (platform between barge and bulkhead) at the Yankee Stadium ferry landing was damaged from the storm surge. During a Dec. 11, 2012, site visit, damage observed included the railings on the west end of the gangway. The barge was also listing to the west. It was unknown whether the connection to the bulkhead was damaged. The city's Department of Transportation will conduct a more thorough structural investigation. The total cost associated with storm recovery activities for the Yankee Stadium ferry landing is estimated to be \$50,000.

Great Kills Ferry Service (temporary ferry service): The flooding and storm surge resulted in damage to and a loss of Staten Island Railway service and of other public transportation systems on Staten Island. Emergency ferry service between Great Kills on Staten Island and the Wall Street Pier 11 Terminal in Manhattan was initiated to provide a temporary replacement of the lost public transportation link.

East River Ferry Service: During the storm event, ferry terminals, landings, and maintenance barges along the East River sustained damage. The damage included physical damage to facilities that resulted in interrupted ferry service. To restore ferry service to facilities along the East River, clean up, repair, and maintenance activities were required.

Maritime Portfolio (temporary ferry service to the Rockaways): Hurricane Sandy resulted in damage to and a loss of subway service for the subway between the Rockaways and the rest of New York City. Emergency ferry service between

the Rockaways and Manhattan, via the Wall Street – Pier 11 Terminal and the East 34th Street Terminal, was established to provide a temporary replacement of the lost public transportation link.

Water Transportation Resiliency Recommendations

Maintaining existing upstate canals for movement of commercial freight and goods could provide enhanced system redundancy and offer significant economic benefits. A series of improvements to the canal system's water management infrastructure would allow the canals to be reestablished as a viable commercial artery.

Short-term recommendations

Maintain of embankments to protect surrounding communities from flooding.

Waterproof mechanical and electrical rooms.



Intermediate-term recommendations

Upgrade aged locks and movable dams to allow for reliable management of water levels.

Protect communication and power infrastructure that services port facilities.

Intermediate to long-term recommendations

Restore and maintain design depths to allow for vessel movement.

Install storm surge barriers and reverse-flow tide gates to prevent flooding of docks, berths, terminal facilities, and connecting road and rail freight systems.

Relocate select power lines underground and elevate substations and pump houses above flood levels.

Chapter Notes

- ¹ OPIS/Stalsby. "Petroleum Terminal Encyclopedia." 2012 Edition.
- ² The Continuing Authorities Program (CAP) is a group of nine legislative authorities under with the USACS can plan, design, and implement certain types of water resources projects in partnership with local sponsors without the need to obtain specific congressional authorization for each project. Under CAP, the USACS is authorized to construct small projects within specific federal funding limits. The total cost of a project (including studies, design, and construction) is shared among the federal government and a non-federal sponsor. There are several types of projects considered in the CAP. The two mentioned in this document, CAP 103 and 204, cover Beach Erosion Control (103) and Ecosystem Restoration in Connection with Dredging (204).
- ³ Receipt of these funds is contingent upon the USACS completing and providing to Congress an interim report that includes an assessment of authorized Corps projects for reducing flooding and storm risks in the area affected by the storm that have been constructed or are under construction. This first interim report was submitted to Congress on March 11, 2013.
- ⁴ FEMA Disaster Assistance Fact Sheet DAP9580.8, Eligible Sand Replacement on Public Beaches
- ⁵ Rail bridges or rail tunnels are covered in the Railroad Infrastructure section below.

Coordinating Agency

U.S. Department of Interior

Primary Agencies

U.S. Department of Homeland Security/Federal Emergency Management Agency,
U.S. Environmental Protection Agency,
Department of the Interior

Supporting Organizations

Advisory Council on Historic Preservation,
Corporation for National and Community Service,
Council on Environmental Quality ,
Department of Commerce/
National Oceanic and Atmospheric Administration,
Institute of Museum and Library Services,
Library of Congress,
National Endowment for the Arts,
National Endowment for the Humanities, U.S. Army Corps of Engineers,
U.S. Department of Agriculture,
Heritage Preservation,
Delta Regional Authority,
U.S. National Archives & Records Administration



CHAPTER **5**

NATURAL AND CULTURAL RESOURCES RSF

Introduction

The core recovery strategy for Natural and Cultural Resources is the ability to preserve and protect natural and cultural resources and historic properties through appropriate response and recovery actions consistent with post-disaster community priorities and in compliance with appropriate environmental and cultural resources laws. The Natural and Cultural Resources Recovery Support Function (NCR RSF) coordinates agencies and organizations to identify and provide, when possible, information and assistance required by communities that are seeking to develop approaches incorporating green infrastructure and natural resource resiliency into the recovery.

The Natural and Cultural Resources Recovery Support Function's relevant agencies and partners share expertise in and offer programs to support specific natural and cultural resource issue identification, assessment and management (e.g., beach and dune resiliency, fish and wildlife, historic and traditional cultural properties). These agencies are also leaders in natural and cultural resource planning; environmental planning and historical preservation compliance under federal laws and executive orders specific to programs that provide funding for disaster recovery and community sustainability.

With expertise drawn from these federal departments and agencies, the Natural and Cultural Resources RSF takes into account compliance with environmental planning and historic preservation, assessment of natural and cultural resources and historic properties, and community sustainability with the goals stated below:

- Assist local communities, states, and tribal governments with post-disaster natural and cultural resource recovery needs and to incorporate green infrastructure and natural resources resiliency where possible.
- Provide access to technical assistance and to coordinate capabilities and data sharing.
- Conduct or coordinate essential post-disaster natural and cultural assessments and studies, including proposed solutions to environmental and historic preservation policy and process impediments.

Natural and cultural resources provide the foundations of communities, and are often the very reasons why people choose to live in those communities. Natural and cultural resources cover a broad and varying number of specific resources

(Figure 1) including wetlands and beaches, fisheries, marinas, boardwalks, museums, scenic byways and historic districts, among many others. Following a disaster, the extent of damage to each resource can be difficult to assess and may take significant time and effort to properly evaluate. Although detailed assessments of natural and cultural resource impacts may be beyond the scope of a Mission Scoping Assessment or a Recovery Support Strategy, the required detailed assessments should be identified and prioritized based on information from stakeholders, partners, and any assessments completed during response and recovery.

The Natural and Cultural Resources chapter of the RSS provides broad guidance for recovery strategies that identify, facilitate and coordinate technical assistance needs, access to data, impact assessment and funding. Where possible the document identifies the key issues associated with the two primary categories: Natural Resources Recovery and Cultural Resources Recovery. Implementation strategies to reach achievable outcomes are outlined and guided by information exchange, and interaction and coordination across multiple local, state, and federal agencies and nongovernmental organizations.

The chapter is divided into topical themes including Beach and Dune Resiliency, Resilient Ecosystem Recovery, Resilient Waterfront Recovery, and Resilient Cultural and Historic Resources. The strategy themes are defined by the local geographic scope of their issues and thus many of the strategy themes overlap. For example, issues of shoreline erosion, dune loss, marsh or wetland destruction and beach loss are natural resource issues that may be addressed through Beach and Dune Resiliency and Resilient Ecosystem strategies. Issues related to the community's urban waterfront, including working waterfronts, marinas, boardwalks and piers, are addressed through the Resilient Waterfront Recovery strategy. Finally, important historic districts and structures, landmarks, institutions, and recreational resources are addressed through the Resilient Cultural and Historic Resources Recovery. These four strategy themes are interconnected and are not mutually exclusive. Together, the strategy themes provide a comprehensive approach to assist community-based recovery of natural and cultural resources.

The following diagram illustrates the structure of how the Natural and Cultural Resources RSF organizes its work and supports the achievement of realistic and community-based outcomes.

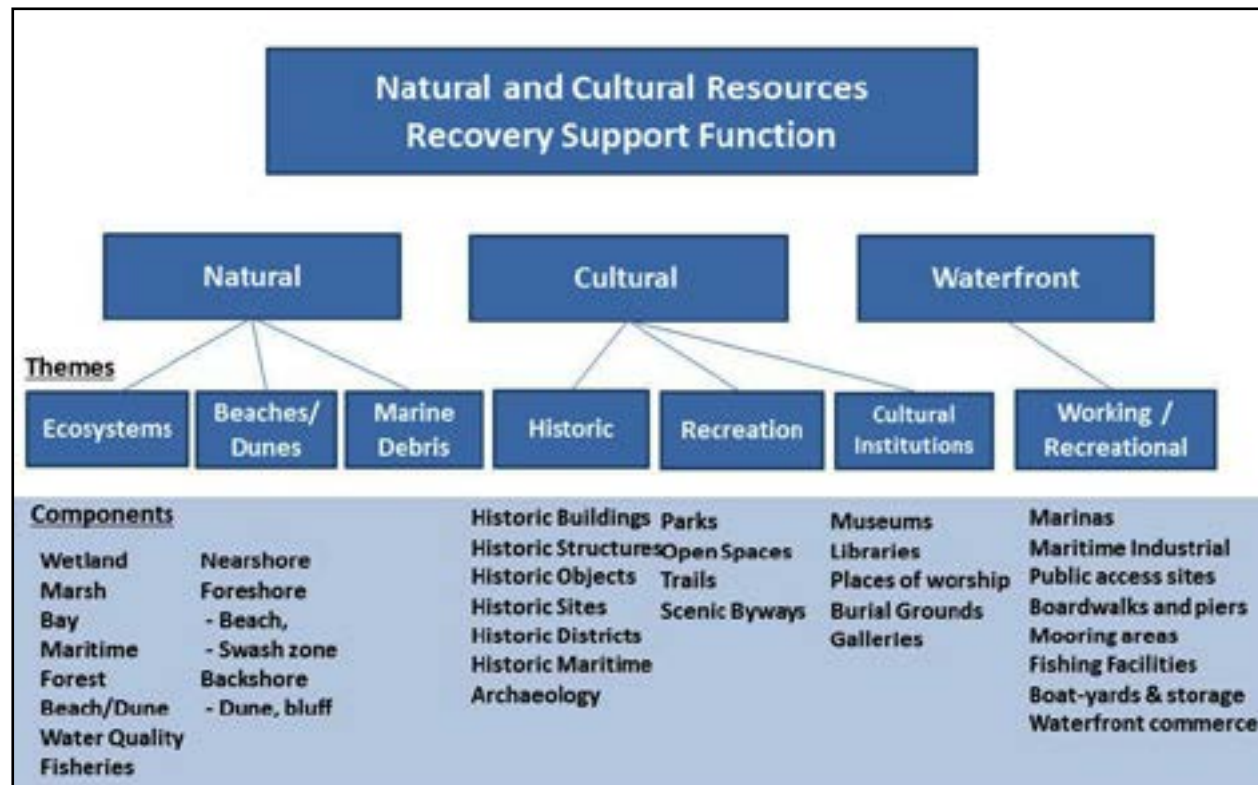


Figure 1: Organizational framework for NCR RSS

Natural Resources Recovery Priorities

A significant amount of beach and dune erosion, and damage or destruction of a wide variety of critical ecosystems was caused by Hurricane Sandy, which was followed by a series of severe nor'easter storms. In addition to the extensive impacts to the natural system, there was widespread damage or destruction of private and community infrastructure throughout the coastal areas of New York. Ample federal assistance is needed for beach, dune, and ecosystem restoration and recovery along the New York coast. This section of the NCR

RSF will outline issues specific to resilient natural resources recovery. Federal assistance with recovery strategies includes 1) identifying the issues specific to beach, dune and ecosystem (habitat) recovery; and 2) coordinating, identifying, facilitating and providing the technical assistance and resources required by state and local agencies to develop resilient recovery strategies most suitable to each community. The strategies range from such acute issues as immediate storm protection, near-term economic development, and restoration of high-priority habitats to such long-term, complex issues as balancing natural resources sustainability with coastal infrastructure resilience.

Beaches and Dunes

Strategies

Coordinate and provide beach and dune impact assessments

Desired outcome: Comprehensive assessment of the distribution and magnitude of storm impacts to the beach and dune system.

Actions: In the response period immediately following Sandy, a number of agencies utilized existing pre- and post-storm data sets to produce a variety of coastal impact assessments for the New York coast. These include 1) FEMA inundation maps based on storm water-levels generated by the United States Geological Survey; 2) “threatened areas” maps generated by U.S. Army Corps of Engineers (USACE) based on post-Sandy lidar and 5- and 10-year storm flood elevations; 3) volumetric change assessments completed by the Joint Airborne Lidar Bathymetry Technical Center of Expertise (JABLTCX) using 2010 and post-storm lidar; and 4) U.S. Geological Survey storm vulnerability maps using post-storm lidar and run-up predictions for a range of future storm scenarios.

Many local, state and federal agencies are developing short- and long-term response and resiliency plans. A common need that was identified is a standardized coastal impact assessment to examine the variation in Hurricane Sandy storm response along the coast and to identify areas that may be most impacted in future storms. Such an assessment would provide a common baseline to be utilized by multiple agencies, rather than the “pick and choose” assessments that are currently available.

Comprehensive Assessment of Hurricane Sandy Coastal Impacts

The effort can utilize and incorporate data already collected and generated and would ideally combine multiple variables to generate the assessment. Coverage areas should extend beyond the ocean-front coastal system, and include:

- Areas of greatest elevation loss
- Areas of greatest volume loss
- Areas of elevation gain (overwash)
- Morphologic change variation (e.g. slope)
- Breach locations
- Sediment transport distances (overwash distribution)

Results of assessments should be validated by on-site visits or supplemented using post-storm field measurements and observations. Ultimately the



assessment will be used as a foundation to generate a geospatial dataset of coastal impact potential.

Status: The U.S. Geological Survey Coastal and Marine Geology program is conducting a comprehensive assessment of coastal impacts based on dune elevation and volumetric changes attributed to Hurricane Sandy for the open-ocean coast of New York. This information will supplement the existing assessments by the Federal Emergency Management Agency and the U.S. Army Corps of Engineers.

Baseline bathymetric mapping of the inner continental shelf

Desired outcome: Systematically collected comprehensive dataset of the bathymetry of the inner continental shelf off the coast of New York and New Jersey.

Partner Agencies: U.S. Army Corps of Engineers, National Oceanic and Atmospheric Administration, U.S. Geological Survey, Bureau of Ocean Energy Management (BOEM), New Jersey and New York

An identified post-Sandy data gap that has a wide range of applications is comprehensive high-resolution bathymetric data of the inner continental shelf of the highly affected areas of New York and New Jersey. The collection of swath bathymetric data for this region has myriad uses for short- and long-term post-Sandy recovery and resiliency efforts.

The proposed offshore mapping initiative would involve multi-agency partnerships and, given the scale and scope of the effort, may entail multiple contracts via several federal agencies (USACE, NOAA). The proposed effort would provide a consistent, regional, post-Sandy baseline for numerous applications benefiting numerous agencies. Examples follow.

- **Potential future sand sources:** High resolution bathymetry would allow for an updated assessment of previously unknown or unmapped sand sources for future beach restoration projects. In much of the proposed study area, the existing bathymetry is based on lead-line data collected in the 1930s and 1940s. Agencies and states to directly benefit: U.S. Army Corps of Engineers, Bureau of Ocean Energy Management, New Jersey and New York.
- **Prediction and future vulnerability modeling:** High resolution bathymetry is one of the critical variables necessary for the development

of accurate models that can be used to forecast vulnerability to future storms and sea level rise, understand how changes to the seabed (from sand extraction for instance) affect the wave energy reaching the coastline, and understand processes of sediment transport along the coast. Without modern data, outcomes of models based on course and interpolated data have high levels of uncertainty. Agencies to directly benefit: U.S. Army Corps of Engineers, U.S. Geological Survey, National Oceanic and Atmospheric Administration.

- **Estimates of nearshore sand volumes:** A critical piece of information to inform understanding of medium to long-term coastal resiliency is sound estimations of nearshore sediment availability and how this varies alongshore. The connection to resiliency is that the sand in the nearshore is material is likely to be available to the littoral system and beaches in timescales of years to decades. Portions of the coast that have higher sediment volumes in the nearshore may have a higher volumetric retention rate of emplaced sand. Agencies to directly benefit: U.S. Army Corps of Engineers, National Park Service, New Jersey, New York.
- **Habitat mapping:** A high resolution bathymetric surface will provide essential baseline data for updated and future benthic habitat maps in the affected regions. Agencies to directly benefit: National Oceanic and Atmospheric Administration, National Park Service, U.S. Fish and Wildlife Service, U.S. Geological Survey.
- **Sandy seabed change assessment:** It is not known whether and how much post-tropical storm Sandy altered the seabed by mobilizing sediment especially in shallower waters, during the storm. Knowledge of this is critical to understanding how storms of this magnitude have the capacity to change nearshore morphology. Quantitative assessments of storm-induced changes can inform vulnerability and resiliency models identify impacts to pre-storm identified sand deposits, and provide fundamental science for understanding coastal processes. Agencies and states to directly benefit: National Park Service, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Geological Survey, New York, and New Jersey.

Suggested specifications: The goal is to utilize in-place contracts (within USACE and NOAA) to provide a mechanism for conducting bathymetric-only mapping of the inner shelf off the coastline of New York and New Jersey (approximately 400 kilometers of coast). The deliverable product is to be an xyz high-resolution seafloor surface (swath bathymetry and co-located backscatter), extending from as shallow as 10 meters to 10 kilometers offshore. The ultimate goal is to

adjust ship track line spacing in order to obtain 100 percent coverage of the sea floor for swath bathymetry; however, more limited coverage (approximately 80 percent) should be considered. Given the regional context and application to post-Sandy response of this proposed work, successful contracts will have to be executed in a timely and efficient, cost-effective manner. Thus, data collection using relatively wider swath dual-head multi-beam and/or interferometric sonar would be ideal. Although this approach does not follow hydrographic standards, it is an efficient way to collect nearshore data on a regional scale.

Status: Planning efforts underway

Beach Infrastructure Task Force

In an effort to facilitate a comprehensive and resilient recovery, the federal disaster recovery coordinator directed staff to develop and create a Beach Infrastructure Task Force (BITF). It was a multi-agency effort that balanced the need for rebuilding and restoring community infrastructure with the natural evolution of physical systems. In addition, from December 2012 through April 2013 this task force also worked within the framework of existing management plans and protocols.

Objectives of the task force were to coordinate, facilitate and assist with all aspects of response and recovery of the beach and dune system. Beaches and dunes protect human life and infrastructure and provide critical habitat. In the event of a catastrophic storm, protection is reduced. During post-event strategic planning, targeted placement of sand to the natural and built coast is required for short-term protection.

The U.S. Army Corps of Engineers was the primary agency performing this work. Already identified sand sources in authorized, unconstructed areas were identified to provide the source material for rapid beach dune rebuilding. Post-storm lidar surveys were used to evaluate areas highly vulnerable to storms.

Beach construction projects are intended to provide immediate, short-term protection. The placement of material is highly dependent on the results of the impact assessments.

Partnering agencies in the Beach Infrastructure Task Force included New York City, Suffolk County, Nassau County, New York State Department of State, New York State Department of Environmental Conservation, National Park Service, U.S. National Fish and Wildlife Service, U.S. Army Corps of Engineers, Federal



Emergency Management Agency, U.S. Geological Survey, and National Oceanic and Atmospheric Administration.

Three working groups within the task force were identified to meet defined objectives. These initially included an Emergency Protection and Environmental working group, the Fire Island to Montauk Point working group, and a Beach Resiliency and Recovery working group. The three working groups were envisioned to address different temporal scales of response and recovery and to acknowledge existence of existing (pre-Sandy) coastal management plans:

- **Emergency Protection and Environmental working group:** The desired outcome of this working group was to enable rapid and effective short-term protection of infrastructure by restoring beach and dunes in highly vulnerable locations, provide appropriate resources, plan for long-term resiliency, and assure that immediate protections to acute dangers are temporary. The efforts were closely coordinated with the Infrastructure Systems Recovery Support Function. The focus of this working group became the primary role of the Beach Infrastructure Task Force. It identified the following needs: 1) identify and prioritize project requirements, 2) determine project eligibility and resource availability.
- **Fire Island to Montauk Point working group.** The Fire Island to Montauk Point Reformulation Plan is a U.S. Army Corps of Engineers proposed coastal storm mitigation plan for the south shore of Long Island. The proposed plan includes a long-term beach nourishment effort and a breach contingency plan. Although the plan has not received final approval and has not been implemented, response and recovery from Sandy should be guided by the reformulation plan. Deviations in response and recovery should be discussed and agreed upon by U.S. Army Corps of Engineers, Department of the Interior, National Park and Service, New Jersey and New York with input from other agencies. Discussion are underway to consider alternative approaches to dune and beach restoration as originally outlined in FIMP, in response to Sandy. In addition, it was agreed that the Breach Contingency Plan be re-evaluated for future response planning.
- **Beach Recovery and Resiliency working group, transitioned to the Coastal Resiliency Task Force (CRTF) (see below):** The Beach Infrastructure Task Force was implemented, served its function and stepped down approximately four months after Hurricane Sandy hit. Principal goals of developing and implementing rapid response to beach and dune erosion issues to protect human life and infrastructure were addressed.



- **Coastal Resiliency Task Force:** A guided and coordinated approach to sustainable and resilient beach and dune restoration. The ultimate goal is a beach system in which human infrastructure is less vulnerable to storm damage and the natural system is more resilient and adaptable to future storms and sea level rise.

A large number of local, state, and federal agencies are exploring options for coastal resiliency in the form of natural system resilience and protection, green infrastructure, and living shorelines. There is currently no overarching coordination body where agencies and partners can find information on other ongoing activities, collaboration can be facilitated, data and information can be shared, and funding can potentially be leveraged. The Coastal Resiliency Task Force can provide the necessary coordination.

Actions: Several working group meetings were held before official action was implemented to convene a Coastal Resiliency Task Force. It was recognized that the issues of coordinating and facilitating collaboration of post-Sandy resiliency studies was a larger effort than could be accomplished by a working group. In addition, the task force was moved from within the Natural and Cultural Resources RSF to the broad umbrella of Federal Disaster Recovery Coordination to ensure longevity in conjunction with projects related to Sandy recovery.

Partners

Federal Agencies: National Park Service, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineer, U.S. Geological Survey, Environmental Protection Agency, National Oceanic and Atmospheric Administration, Federal Emergency Management Agency

State Agencies: New York State Department of State, New York State Department of Environmental Conservation

Municipal / County Government: NYC Department of City Planning, Department of Environmental Conservation, Department of Parks and Recreation

Tribal Nations: Shinnecock Tribe.

Status: The Coastal Resiliency Task Force is an intergovernmental agency working group convened by the federal disaster recovery coordinator that provides a structure for the coordination of Sandy coastal resiliency projects. The Coastal Resiliency Task Force does not actively participate in planning

or implementing project activities; rather it is a forum where local, state, and federal, agencies, as well as nongovernmental organizations, can obtain information regarding planned and ongoing resiliency activities. The Coastal Resiliency Task Force will provide coordination for two years to coincide approximately with projects funded under the Sandy Supplemental funding. The Coastal Resiliency Task Force focuses on coordination of activities specifically focused on resiliency of the natural coastal system and the built or managed lands that exist within that environment.

Marine Debris

Federal assistance is required to support the identification, mapping, and removal of marine debris from the New York coast. Marine debris impacts navigation, recreational uses, and the health of coastal ecosystems.

Strategies

Coordinate relevant agency efforts to collect data and map the location of marine debris.

Desired outcome: Comprehensive assessment of marine debris through the collection of data from a variety of sources and partners

Actions: National Oceanic and Atmospheric Administration and other partners are collecting marine debris data from a variety of sources, including federal partners, state agencies, local nongovernmental organization, marinas and harbor masters

Status: National Oceanic and Atmospheric Administration and its partners will continue to collect data, perform shoreline assessments, and map the locations of stranded items, and provide this information to key partners

Coordinate relevant programs to collect bathymetric data and/or underwater survey information.

Desired outcome: Coordinate state and federal programs to collect bathymetric data and/or underwater survey information, and combine this with pre- and post-storm imagery analysis

Actions: Federal partners (including National Oceanic and Atmospheric Administration, U.S. Geological Survey, and U.S. Army Corps of Engineers) and other partners will collect bathymetric data, particularly in bays and estuaries, to complement and expand the larger mapping efforts of the Inner Continental Shelf Geophysical Survey (included in Beach and Dune Recovery).

Status: The National Oceanic and Atmospheric Administration will support near-shore surveys using both lidar and towed sonar. Broad coordination efforts across the National Oceanic and Atmospheric Administration, U.S. Geological Survey, and U.S. Army Corps of Engineers, and key partners are already occurring.

Coordinate federal and state programs to address marine debris outside navigable waters (coastal marshes, residential canals, other shorelines that may be difficult to access).

Actions: Federal partners will assist state and local partners in prioritizing debris items for collection and develop disposal options.

Status: Continue to work with partners to complete data collection which will inform and prioritize debris removal. Federal partners will continue to strive in providing the best data and information to support state and local prioritization efforts.

Protect important habitats and species during restoration and maintenance of waterways (e.g., essential fish habitat, submerged aquatic vegetation, shellfish beds, other benthic organisms).

Actions: Federal partners, including the National Oceanic and Atmospheric Administration, Department of the Interior (U.S. Fish and Wildlife Service, National Park Service), and the Environmental Protection Agency and other partners will develop best practices for removal of debris from sensitive habitats in coastal wetlands.

Status: To be determined



Development of a marine debris management plan and response protocols for future events.

Actions: Local, state, and federal partners will work collaboratively to develop a long-term marine debris management plan as well as protocols for rapid marine debris response in preparation for future severe marine debris events caused by natural disasters

Status: To be determined

Resilient Waterfront Recovery

New York waterfronts are often the center of economic, cultural, social and recreational activity, and the health of community waterfronts is closely tied to the health of coastal ecosystems and economies. Working waterfronts and associated activities, ranging from fishing to maritime commerce, are deeply connected to the history and culture of coastal communities. Sandy damaged many community waterfronts throughout New York, with devastating effects to waterfront economies, infrastructure, businesses, and individuals. For example, the city of Long Beach and the Rockaway section of Queens County lost large portions of their boardwalk which for decades has brought summer visitors to spend money at their restaurants, concession stands, and specialty shops.

The success of this comprehensive strategy depends on the collaborative efforts of several primary and supporting federal agencies, as well as state, local, and nongovernmental partners. The Natural and Cultural Resources Recovery Support Function recovery strategy intends to coordinate and leverage the resources of municipal, state, federal, and private sector agencies in order to meet needs within the New York Sandy disaster area. Natural and Cultural Resource's comprehensive strategy calls for resilient waterfront recovery that is based on the best available information on current and future risks to the disaster-affected area.

Significant federal assistance is needed to support the resilient recovery and revitalization of coastal community waterfronts. A priority is to provide targeted, well-integrated federal assistance to help communities plan and implement a resilient waterfront recovery.

The Natural and Cultural Resources Recovery Support Function will pursue

recovery and resilience strategies with multiple benefits, working with its allied Recovery Support Function federal agencies and its local, state, and federal partners. This includes coordinating and leveraging resources for the recovery and redevelopment of coastal infrastructure (e.g. docks, piers, moorings, etc.), water dependent businesses (e.g. seafood processing, boat charters, marinas, industrial barges), business infrastructure and assets (buildings, boats, inventories), and related natural resources (shorelines, waterways, aquaculture, fish habitat) and cultural resources (ceremonial areas, bath houses, artistic and memorial objects, and traditional cultural properties, which are properties that are eligible for inclusion in the National Register of Historic Places because of their association with cultural practices or beliefs of a living community that are rooted in that community's history and help maintain its cultural identity).

Strategies

Complete assessment and analysis of storm impact information for community waterfronts.

Desired outcome: Work with communities to help them fully assess the impacts to community waterfronts.

Actions: The assessment requires information from a number of locally based partners (such as marina operators, harbor masters, and nongovernmental organizations) to identify impacts to community waterfronts including water-dependent uses, waterfront coastal infrastructure and businesses, and culturally traditional landmarks and neighborhoods. Partners will work with communities to identify and evaluate impacts on water-dependent uses and waterfront cultural resources. This includes the evaluation of direct and indirect damages, as well as projected economic effects, to public waterfront infrastructure and assets, private sector waterfront infrastructure and assets, recreational resources, water-dependent uses, and waterfront businesses and cultural institutions.

Status: Federal, state, and local partners continue to assess the full range of effects on community waterfronts

Support the development of Community Reconstruction Zone plans and waterfront adaptive strategies for resilient community waterfront recovery.

Desired outcome: Build capacity for the development and implementation of

local Community Reconstruction Zone plans and urban waterfront adaptive strategies.

Actions: New York State Department of State, along with key federal and state partners, will provide financial and technical assistance to communities for the development of Community Reconstruction Zone plans

State, federal, and nongovernmental organization partners (including the Rockefeller Foundation) will organize community workshops to assist local planning committees by providing a forum for discussion of resiliency data, tools, lessons learned, and peer-to-peer opportunities. Partners will work with communities to identify data, information needs (such as current and future risks to redevelopment), and tools to foster more resilient decisions at the local level.

Integrate a state residential buyout program with municipal Community Reconstruction Zone plans. New York, in its action plan for Community Development Block Grant Disaster Recovery funds, has announced the Recreate New York Buyout program. The program is an important element of the state plan for resilient recovery, as it will remove homes from high risk areas and provide a buffer for coastal communities. The program includes targeted buy-out areas and incentives for group buy-outs.

State and federal partners will support the New York City Department of City Planning's efforts to provide a framework for urban waterfront adaptive strategies. New York City will recommend a set of objectives and specific strategies to increase the resilience of specific neighborhoods impacted by Sandy and for the city as a whole. It will provide a guide to climate resilient strategies at multiple scales and lay out a framework for the identification and evaluation of strategies. The Department of City Planning intends to continue this work through the integration of coastal climate resilience into coastal zone management and long-term planning for the city's waterfront and (subject to funding availability) through the development of local studies of specific neighborhood issues.

Status: Federal partners and New York State Department of State have been in discussions about using Community Reconstruction Zone plans to implement the resilient waterfront recovery strategy. Federal partners are also in discussions with the NYC Department of City Planning about the city's approach to urban waterfront adaptive strategies.

Identify and integrate recovery resources to implement and leverage resilient waterfront recovery and revitalization.

Desired outcome: Provide a catalyst for broader and more sustainable community revitalization.

Actions: Partners will identify applicable economic development, infrastructure, housing, health and social services, natural and cultural resources, and community planning and capacity building recovery programs and resources across the public, private and nonprofit sectors. Partners will leverage finance and technical assistance opportunities to implement strategies to foster resilient waterfront recovery and revitalize waterfront communities. As an example, partners will identify program flexibility requirements for public infrastructure projects that will incorporate access for individuals with disabilities.

Status: To be determined

Identification and development of best management practices to assist businesses in coastal areas, such as New York City's Significant Marine and Industrial Areas, in increasing resiliency to flooding.

Actions: The Environmental Protection Agency, along with key Federal, state, and local partners, will provide technical assistance and facilitate information exchange through workshops and webinars on best practices to enhance the resiliency of businesses.

Desired outcome: Work with businesses to develop and implement best practices to enhance resiliency.

Status: To be determined

Partners

New York has a long history of assisting community-based waterfront revitalization through financial and technical assistance (e.g. Local Waterfront Revitalization program, Harbor Management Plans, and Brownfields Opportunity program). The Local Waterfront Revitalization program offers an existing framework to partner with New York communities to speed recovery and enhance the long-term resilience of local waterfronts. Implementation

activities will align closely with these relevant state programs, as well as specific federal recovery initiatives and priorities.

The Department of City Planning is updating New York City’s Waterfront Revitalization Plan policies and maps, which are based on the Vision 2020, the city’s Comprehensive Waterfront Plan. The documents will guide discussions for New York City’s approach going forward.

By partnering with communities to capitalize on their waterfront assets state, local, and federal partners can help communities restore waterfront economies and redevelop infrastructure in order to make their waterfront economies and infrastructure more resilient. In addition, the strategies for resiliency waterfront recovery offer many opportunities to integrate across the Natural and Cultural Resources, Economic, Infrastructure Systems and Community Planning and Capacity Building recovery support functions.

Local engagement and implementation strategies will be developed with both the New York State Department of State and New York City. A New York City working group will be established and aligned with related efforts currently underway as part of the city’s Special Initiative for Rebuilding and Resiliency.

State Agencies

New York State Department of State

Municipal/County Government

New York City Department of City Planning

New York City Department of Environmental Conservation

New York City Department of Parks and Recreation

Nongovernmental Organizations

Metropolitan Waterfront Alliance

Rockefeller Foundation

Next Steps

- Agency funding authorities and opportunities are being mapped out and will identify jurisdictional boundaries, potential overlaps, and leveraging opportunities.
- Priorities will be determined in partnership with key state agencies, NYC departments, and other local partners.
- State implementation priorities and corresponding federal support will be

identified through engagement with key state partners.

- New York City implementation priorities and corresponding federal support requirements will be identified through engagement with key contacts through SIRR.

Resilient Ecosystem Services Recovery

The resilient ecosystems strategy recognizes that natural systems and processes are inextricably linked with and contribute to the resiliency of coastal communities. Restoration of wetlands and implementation of “living shoreline” and green infrastructure projects are important components of regional strategies to improve community resiliency.

Significant federal assistance is required to support the resilient recovery of critical ecosystem services in the disaster-affected region. Since damages to natural resources can be detrimental both to the economy and socio-economic groups dependent on such resources, a multi-jurisdictional, multi-disciplinary collaboration is needed to assess the scale of these impacts. Priority is directed to 1) the protection and restoration of critical, high-value natural resources and 2) implementation of natural resource recovery alternatives that enhance and promote natural and protective ecosystem functions.

Strategies

Explore development of an integrated assessment and monitoring program addressing near-term and long-term storm impacts on critical ecosystem services.

Desired outcome: Provide a common body of scientifically grounded baseline information for development of ecosystem recovery strategies, programs and projects and for use in setting recovery performance goals and evaluating results.

Actions

- Facilitate consultations among local, state, and federal academic and environmental nongovernmental organization partners to gauge interest in development of integrated ecosystem assessments.
- Establish a working group to develop a proposed scope of work for integrated assessment, considering natural resources (e.g., critical habitat, natural

landscapes, water resources, water quality) and projected secondary effects on ecosystem services (e.g., recreation, tourism, fisheries, agriculture).

- Facilitate discussions among the partners to identify potential funding opportunities for the integrated assessment.
- Coordinate and support collaborative efforts across local, state, and federal partners to develop common ecosystem recovery goals, priorities, and performance criteria.
- Provide technical assistance and outreach strategies to improve the integration of engineered and natural ecosystems (including living shorelines) in coastal community recovery plans.

Environmental Protection Agency

National Oceanic and Atmospheric Administration

U.S. Geological Survey

Natural Resources Conservation Service

New York-New Jersey Harbor & Estuary program

Long Island Sound Study

Peconic Estuary program

South Shore Estuary Reserve

Hudson River Estuary program

U.S. National Park Service, Gateway National Recreation Area

U.S. National Park Service, Fire Island National Seashore

American Littoral Society

Save the Sound

Trust for Public Land

The Nature Conservancy

Partners

NYS Department of State

NYS Department of Environmental Conservation

NYC (multiple Departments)

U.S. Army Corps of Engineers



Support ecosystem restoration and conservation planning and implementation projects that help meet both economic recovery and community resilience needs.

Desired outcome: Identify programs, projects and activities that provide multiple ecosystem service benefits to communities by enhancing economic recovery and reducing societal vulnerability.

Actions

- Facilitate the development of resources and information that effectively demonstrates where, when and how healthy or restored natural systems can best contribute to cost-effective risk reduction solutions.
- Facilitate the development and application of hybrid engineering approaches that link “soft” ecosystem-based approaches (green) with “hard” infrastructure (grey) to provide holistic solutions to enhance resiliency. This effort will build on the “*living shoreline*” concept and identify combinations of natural ecosystems and built infrastructure that best protect coastal communities and shorelines.
- Facilitate dialogue among all partners regarding the U.S. Army Corps of Engineers Comprehensive Study and explore whether this study can help inform decision-making about the type and location of coastal resiliency projects.
- Evaluate the effectiveness and benefits of including green infrastructure, such as dunes, wetlands, barrier islands and reefs, in engineered coastal adaptation solutions through reduction of storm surge or wave attenuation. Support development of significant demonstration projects, such as the following:
 - Projects sponsored by New York City and partner organizations based on recommendations of the city’s Special Initiative for Rebuilding and Resiliency that seek to advance research on coastal resilience using wetlands and living shorelines as well as hard infrastructure.
 - Jamaica Bay marsh island and wetlands restoration projects being implemented by the U.S. Army Corps of Engineers, U.S. National Park Service, NYC Department of Environmental Protection and other entities.
 - Green infrastructure and living shorelines demonstration projects.
- Partner with the U.S. Department of Agriculture, Natural Resources Conservation Service, and the U.S. Fish and Wildlife Service to explore

the use of Disaster Relief Appropriations Act of 2013 provisions for ecosystem restoration projects.

- Use existing comprehensive conservation and management plans developed by regional estuary management organizations to identify ecosystem restoration programs and projects.
- Support the economic recovery strategies outlined by the Economic Recovery Support Function for the fishing industry and related businesses. The National Oceanic and Atmospheric Administration’s March 2013 socio-economic assessment report provides an overview of the economic impacts to fishing related businesses in New York and New Jersey.
- Ensure that natural resources and habitat planning and restoration projects are sensitive to the needs of culturally traditional communities.
- Leverage public and private funding opportunities, including the FEMA Hazard Mitigation grant program and the U.S. Army Corps of Engineers funding provided in the Disaster Relief Appropriations Act of 2013.

Implement area-wide strategy for the restoration and enhancement of critical ecosystems that is based on research and demonstration projects and that is informed by recommendations of existing ecosystem restoration partners.

Desired outcome: Implement programs, projects and activities that provide multiple ecosystem service benefits to communities by enhancing economic recovery and reducing societal vulnerability.

Actions

- Support communication and collaboration among government agencies, municipalities, engineering/planning practitioners, academic institutions and environmental/conservation group partners to use the all available resources for development of specific programs and projects that use natural resources or green infrastructure for recovery and resilience.
- Use existing regional estuary management organizations and federal managed area programs to implement ecosystem restoration and conservation projects. The estuary and managed area programs have effective working relationships with numerous environmental/conservation groups and are well placed to compile project proposals and implement priority projects.

- Support communication and collaboration among all partners, including estuary and managed area programs, so that priority ecosystem restoration, conservation and green infrastructure projects are considered for inclusion in Community Reconstruction Zone plans that will be developed by municipalities and supported through Community Development Block Grants.
- Support New York City in its efforts to implement cost-effective green infrastructure projects that are identified through demonstration projects and other research initiatives outlined by the Special Initiative for Rebuilding and Resiliency.
- Support activities of New York State’s water quality management program and existing estuary management organizations to promote water quality enhancement initiatives that complement ecosystem restoration efforts.
- Integrate the state residential buy-out program with municipal Community Reconstruction Zone plans and city of New York planning activities. New York, in its action plan for Community Development Block Grant-Disaster Recovery programs, has articulated key principles, including building back better and smarter, and pursuing a state-led, community-driven recovery. The Recreate New York Home Buyout program is an important element of the state plan for resilient recovery, as it will remove homes from high-risk areas and will establish new natural infrastructure. The program includes targeted buyout areas and incentives for group buyouts, which will promote establishment of relatively large, new coastal ecosystems that will enhance habitat and provide buffer areas for protection of coastal communities.
- Facilitate and coordinate effective and efficient natural resource management and environmental compliance processes across various regulatory agencies in support of Hurricane Sandy recovery efforts, including restoration and conservation project implementation. Ensure conformance with coastal zone management program policies and requirements. Incorporate streamlined review processes as appropriate. Issues and activities include environmental contamination, permitting, assessment and monitoring.

They are also a proven engine of economic growth. Cultural resources include historic landmarks and districts, cultural landscapes, museum and gallery collections, and archeological and ethnographic sites. They also include civic institutions such as libraries, parks, cemeteries, places of worship, and cultural centers. Together these resources often serve as the foundations of community life and as deciding factors in choosing where to live, providing opportunities for public assembly, educational enrichment, and social intercourse. Hurricane Sandy severely damaged a number of historic and cultural sites in New York. A comprehensive recovery strategy will identify these historic and recreational resources and cultural institutions, and seek to preserve and restore their role in economic and social life and to make them more resilient in the face of future disasters.

The success of this comprehensive strategy will depend on the collaborative efforts of several federal agencies as well as the expertise of local, municipal, and regional partners, both public and private. The Natural and Cultural Resources Recovery Support Function cultural recovery strategy seeks to coordinate and leverage this expertise in order to efficiently address both recovery and resiliency needs within the New York Sandy disaster area. Natural and Cultural Resources’ comprehensive strategy takes into account both the cultural and historic fabric of affected communities and identifies current and future risks to the disaster affected area.

Historic Resource Preservation

Strategies

Facilitate the completion of impact condition assessments of cultural/historic resources.

This strategy supports state and local partners as well as allied federal agencies including FEMA Region II Environmental and Historic Preservation staff.

Desired outcome: Better understanding of the location, order of magnitude, and type of impacts on cultural resources within the affected area, so that recovery efforts can be tailored to specific needs and the identification of National Register eligibility to assist in streamlining legal review processes for recovery and resiliency projects.

Cultural Resources Recovery Priorities

Cultural resources enhance the quality of life of communities by providing a sense of place, human scale, diversity of design, places of memory, and a variety of civic amenities, from favorite haunts to neighborhood parks and playgrounds.

Action: Develop a geospatial database of cultural resources (historic and prehistoric) building upon existing databases maintained by New York City, the State Historic Preservation Office, and the National Register of Historic Places. The inventory data, managed by the State Historic Preservation Office, should be readily available to the agencies involved in the recovery (with specific limitations for access to sensitive resource information), dynamic, and in a format that allows for regular updates. It should interface with other geospatial data sets being collected by the other recovery support functions and serve as a working repository of identified impacts for all of the agencies planning and coordinating recovery and resiliency efforts. It can inform future vulnerability models and be used as a means of establishing grant and mitigation funding strategies. The initial database should be developed drawing upon existing information provided by the interested agencies.

Minimally, the geospatial database will include:

- National Register of Historic Places and National Historic Landmark properties, including historic districts (administered by the National Park Service, includes historic structures, sites, and landscapes)
- NYS Register of Historic Places properties
- State Historic Preservation Office surveyed properties not listed on one of the registers
- NYC historic landmarks
- Other archeologically sensitive areas (bubbles around sites) on land and near shore (from compliance or other surveys)
- Other historic landscapes not listed in the registers (check Cultural Landscape Foundation’s “What’s Out There,” and National Association of Olmsted Parks)
- National Heritage Areas
- State Heritage Areas
- Traditional cultural properties
- Museums, libraries, and archives
- National Park system units
- Designated state and local historic sites
- Scenic byways and historic trails

Status: Preliminary historic property information has been compiled and overlaid with key storm surge data; however, the cultural resource data fields need to be greatly expanded. This data will be integrated with other recovery support function maps and databases to create the proposed impacts database.

Action: Compile a list of types of impacts to historic resources so that specific preservation treatment recommendations may be developed to assist recovery efforts. This compilation will facilitate the development of technical guidance for particular building types, materials, etc. For example, flooding of the first floor of an historic building which would likely impact plaster and wood flooring.

Identify which cultural resources were affected by the storm and characterize the types of damage incurred.

This strategy will directly assist local, state, and tribal entities, including the New York State Historic Preservation Officer and tribal historic preservation officers that are addressing the recovery of cultural resources, and will facilitate the work of federal agencies assisting those local, state, and tribal partners.

Desired outcome: Resources in the impact area that appear to be more than 50 years old, and others of special significance, have been surveyed for damage caused by the storm. The range of effects and the materials and features affected are understood well enough to enable recovery and resilience strategies to be formulated.

Actions

- Conduct rapid assessments of structures, sites, and landscapes more than 50 years old within the area affected by the storm surge as well as additional areas affected by other flooding and wind damage.
- Note and survey more recent resources that may have exceptional significance under National Register criteria.
- Use the geographic information system developed in Strategy 1 to identify areas to target for survey, but sweep adjacent zones for eligible resources that may never have been nominated to a national, state, or local register or landmark list.
- Ideally survey all such resources in the zone, but if funding or conditions

will not permit, develop a statistically sound sampling method with sufficient coverage to ensure that the full range of resource impacts can be identified.

- Take special care to note particular structural, landscape, or site features that have been damaged, e.g., particular roof types, siding or fencing materials, specific types of vegetation, physical landforms, etc.
- Consolidate survey data into a central database that can be used by responding agencies to identify impacts and target financial and technical assistance as well as proposed resiliency measures.

Assist owners of affected properties by providing recovery advice, including specific technical guidance, possible sources of project funding, and places to go for help with unique or previously unidentified technical issues.

Desired outcome: Preservation of affected cultural resources to the highest possible standard, based on the best techniques and expertise currently available.

Actions

- Create a centralized clearinghouse that consolidates information on all of the federal assistance programs for which owners of cultural property, including the historic preservation tax incentives for commercial properties, Housing and Urban Development Community Development Block Grant, Small Business Administration business loans, Environmental Protection Agency Smart Growth grants, etc. Provide clear directions for applying and contacts for in-person assistance with each program, along with information about which programs can be combined to reach multiple recovery goals in the same projects. Staff the implementation phase with employees who know these programs well.
- Identify technical and pass-through grant funding assistance for the completion of cultural resource stabilization, conservation, preservation, restoration, and rehabilitation projects.
- Develop a network of assistance organizations and experts in the public, private, and nonprofit sectors to connect property owners with non-federal sources of assistance. Utilize the database of affected resources to pinpoint issues and identify potential partners.



- Recognize and highlight exemplary preservation and conservation recovery projects to share with others facing similar challenges. Assemble and disseminate information regarding best practices, guidelines, and other resources about historic resource projects. Utilize social media and other communication tools to reach the targeted owners, including website postings, e-news, community preservation forums, local media, webinars and podcasts.
- Support local preservation efforts through technical assistance for recovery, mitigation and long-term monitoring.
- Promote widespread understanding among community and business leaders, residents, and others of the importance and value (including economic) of preserving historic resources and cultural heritage development.
- After reviewing the data from the field survey of impacts, offer, as needed, and provide assistance that is informed by the survey results. These may include:
 - Historic tax incentives workshops
 - Wet recovery workshops (treating flooded papers and photographs)
 - Cemetery conservation workshops
 - Technology brief on best practices for raising or flood proofing electrical and elevator systems
 - Rapid documentation brief for properties slated for demolition (perhaps a disaster focused version of Historic American Buildings Survey documentation guidelines)
 - “Interpreting the Standards” brief on raising historic properties (can probably be released only in draft form in the recovery timeframe)
 - Workshop or technical brief on mold remediation in buildings and collections
 - Lead workshop or provide publication on abatement in historic buildings, incorporating new Environmental Protection Agency standards Department of the Interiors standards
 - Guidance on quickly restoring fire and security alarm protection on a temporary basis until permanent repairs can be made
 - Guidance on shifting structures back onto foundations and ensuring structural integrity of shifted structures

- Develop a targeted assistance program for houses of worship and other sacred spaces of all faiths, including churches, synagogues, temples, cemeteries, etc. Work with Partners for Sacred Places and other interested nonprofits to address special concerns of these resources, which are often among the largest and most culturally significant places in historic districts. Provide connection with experts in and out of government who can assist with recovering decorative stonework, specialized roof materials, steeples and domes, gilding and decorative painting, stained glass, and headstones and monuments that may have been damaged by the storm. Work with the National Park Service, which has long-standing cooperative preservation ventures with religious institutions, to learn how to provide assistance that will pass constitutional muster.
- Meet with tribes in the storm impact zone to identify any relevant traditional cultural properties and/or burial sites that may have been damaged by the storm. Provide technical assistance as needed on recovery proposals prepared by the tribes.

Provide information, technical assistance, project funding and program implementation support for long-term resiliency.

Desired outcome: Improve resilience of historic properties.

Actions: Use the data gathered in the field survey to identify areas within the impact zone that have a high concentration of historic resources vulnerable to future storm damage and/or sea level rise. Assist local communities with developing resiliency strategies for those resource types.

In partnership with various state agencies, regional planning councils, and other partners, encourage communities to integrate preservation and heritage development into their planning efforts and to strengthen their heritage preservation policies and investments.

Promote partnerships at the local, regional, state, and federal levels to enhance long-term recovery and resiliency and leverage the maximum benefit to the historic resources. Facilitate links among partner organizations and help promote the accomplishment of long-term recovery goals.

Disseminate existing and develop new information on emergency response and resiliency planning, best practices, and guidelines. Consider developing a joint

task force on disaster response and resiliency planning for cultural resources between FEMA and the National Park Service, and invite other federal agencies (e.g., Institute of Museum and Library Services, Smithsonian, National Archives, Institute of Museum and Library Services, and Advisory Council on Historic Preservation) and external partners (e.g. the Heritage Emergency National Task Force, NYC Alliance for Response, the American Alliance of Museums, the National Trust for Historic Preservation) to participate as they are able to share resources and expertise in this area.

Identify cross-cutting issues, resource leveraging opportunities, and program flexibilities to promote cultural resource elements within more comprehensive project planning, technical assistance, investment, and regulatory streamlining efforts.



Cultural Institution Preservation

Strategies

Conduct preliminary assessment and analysis of storm impacts on cultural institutions.

Desired outcome: Develop an understanding of the scope of impacts to cultural institutions, including museums, galleries, archives, and libraries.

Action: Work with local communities and organizations to obtain information about the types of cultural institutions within the affected area and the types of damage and subsequent resource needs for stabilization and recovery. Important to this data collection effort will be the identification of those institutions that may not be eligible for FEMA funding.

Status: Many institutions have been contacted by Natural and Cultural Resources staff, and a list has been compiled of those that still need to be contacted.

Provide information management, technical assistance, possible funding sources, and program implementation support.

Desired outcome: Successful recovery of affected museums and collections, libraries, archives, and other cultural facilities and improvements that will increase their long term resiliency.

Actions

- Work with a network of government and nonprofit organizations to provide information on grants and access to potential funding sources. Identify technical and pass-through grant funding assistance for artifact and collection stabilization and conservation. Identify those areas where there may be funding gaps and the need for creative, alternative funding sources for long term management.
- Provide links to technical assistance for the stabilization and care of collections and objects. Work with national organizations such as the Institute of Museum and Library Services to tailor specific treatment guidance for these organizations and their collections and long-term care. Work with Heritage Preservation and its partners to develop best practices

guidance for improving the resiliency of both public-facing facilities and behind the scenes storage areas.

Recreational Resource Restoration

Strategies

In coordination with Federal Emergency Management Agency Environmental and Historic Preservation and the state of New York, facilitate the completion of condition assessments on various recreational resources at the local, state, and regional levels.

Desired outcome: Identification, condition assessment, and development of recovery recommendations for recreational resources in the impact zone.

Action: In coordination with the State Office of Parks, Recreation and Historic Preservation and other jurisdictions and organizations, conduct an assessment of impacts and needs of trails, recreational corridors, and scenic byways. This information should be incorporated into the geospatial database, which New York state already has in place. The resource types to be inventoried include hiking, biking, multi-use, water trails, national recreation trails and state heritage trails, greenways, scenic byways, and local parks areas (exclusive of national park units and state parks).

Provide technical assistance, identify potential partners and project funding, and implement support for the long-term management of recreational resources.

Desired outcome: A restored and resilient network of recreational resources, which in many cases will be integral to community revitalization.

Actions

- Identify funding sources and partner opportunities for improvements to recreational resources. Identify and integrate recovery resources with other revitalization actions such as infrastructure, waterfront revitalization, etc.
- Consider recreational travel as a means to bring new audiences and underserved populations to park and open space areas. Consider threats to

water quality in water related recreational resources and work with existing organizations and systems already in place to promote interconnectivity and multimodal access to communities and key recreational destinations..

Possible Funding: Department of Transportation/Federal Highway Administration SAFE-TEA funds can be used to improve transportation facilities (Enhancement program) and construct recreational trails (Recreational Trails Program). Funds for both are prioritized at the state level, so application should be made through the New York State Highway Department (or the Office of Emergency Management if they will serve as an intermediary). Also note the Statewide Comprehensive Outdoor Recreation program administered by the Office of Parks, Recreation and Historic Preservation.

Potential Partners: Work with the following programs to prioritize projects in the impact zone in the near future:

- Department of the Interior/National Park Service Rivers and Trails Conservation Assistance program, administered through National

Park Service regional office, supports community-led natural resource conservation and outdoor recreation projects, including greenways, urban promenades, trails on abandoned corridors, and wildlife corridors. Rivers and Trails Conservation Assistance provide expertise to all types of communities to help them achieve on-the-ground conservation successes. The association's experience in river conservation spans from downtown riverfronts to regional water trails to stream restoration.

- State Scenic Byways program
- Statewide Trails Plan 2010 includes trails inventory database of more than 700 trails and list of potential funding sources.
- Parks and Trails New York: The NYS Park Friends Technical Assistance program will help build the capacity of Friends organizations by working one on one with a few groups on areas such as communications, board development and engaging and recruiting volunteers.
- New York State Horse Council
- NY Trails Council



Partners

State Agencies

New York State Office of Parks, Recreation & Historic Preservation
New York State Department of Environmental Conservation
Tribal Nations
The Shinnecock Nation
The Unkechaug Nation

Municipal Agencies

New York City Landmarks Preservation Commission
To be determined municipal parks commissions
To be determined municipal museum historic site commissions
To be determined municipal library systems
To be determined municipal historic preservation commissions
National Park Service-recognized certified local governments

Universities

Columbia University Historic Preservation program
New York University Historical and Sustainable Architecture
New York University Institute of Fine Arts
Pratt Institute Historic Preservation program

Other Nongovernmental Organizations

Heritage Emergency National Task Force
American Alliance of Museums
National Trust for Historic Preservation
American Association for State and Local History
Society of Architectural Historians
National Council of State Historic Preservation Officers
National Association of Tribal Historic Preservation Officers
National Alliance of Preservation Commissions
Society for Industrial Archeology
New York Library Association
New York State Archives

Museum Association of New York
Preservation League of New York State
Society for the Preservation of Long Island Antiquities
Long Island Traditions
The New York Landmarks Conservancy
Municipal Art Society of New York
Suffolk County Historical Society
Oyster Bay Historical Society
Nassau County Historical Society
Greenwich Village Society for Historic Preservation
NYC Neighborhood Preservation Center
Alliance for Response
Others to be determined as outreach and networking activities continue





Coordinating Agency

U.S. Department of Commerce

Primary Agencies

U.S. Department of Homeland Security/Federal Emergency Management Agency,
Health and Social Services

Supporting Organizations

Corporation for National and Community Service,
U.S. Department of Homeland Security,
Department of Commerce,
Department of the Interior,
Department of Justice,
Department of Transportation,
Education Department,
Environmental Protection Agency,
General Services Administration,
Housing and Urban Development,
U.S. Small Business Administration,
Department of the Treasury,
U.S. Department of Agriculture,
Delta Regional Authority



CHAPTER **6**

COMMUNITY PLANNING AND CAPACITY BUILDING RSF

Introduction

The mission of the Community Planning and Capacity Building (CPCB) Recovery Support Function (RSF) is to support and build recovery capacities and community planning resources of local communities needed to effectively organize, lead, plan, manage, and implement disaster recovery. The CPCB RSF achieves this mission through the coordination of partner resources and technical expertise to build recovery capacity and promote inclusive community planning efforts. The CPCB RSF establishes local relationships, identifies recovery needs and opportunities, and works with the other RSFs to support the community.¹

CPCB also interacts with elements under the National Response Framework that have community recovery support roles, or that bridge short-term, interim, and long-term recovery. In addition, CPCB is coordinating with other RSFs and the state to identify avenues for providing recovery assistance and resiliency strategies to a broader range of communities across New York City and Nassau and Suffolk counties.

CPCB works with states, tribes, communities, and partners to develop an understanding of community systems after a disaster and the potential need for CPCB coordinated support. Gathering summary-level information on the varying impacts, and comparing it against potential local recovery planning and capacity limitations, are essential for CPCB-coordinated agencies and organizations that are concerned with targeting various forms of recovery planning and local capacity assistance.

To facilitate recovery, CPCB coordinates partner support (federal, state, local, and nongovernmental), as well as provides targeted direct technical assistance, depending on the community's needs and capacity. CPCB identifies potential resources and partners to support community recovery. CPCB works with these partners to coordinate delivery of resources to communities such as workshops, tools, programs, and data relevant to an individual jurisdiction's recovery needs. CPCB also provides targeted, direct technical assistance to jurisdictions, such as support to develop community recovery coordination committees; whole community recovery strategies; community-driven recovery plans; outreach, communications and graphic products, and meeting facilitation.

A total of 194 jurisdictions in the 13 disaster-declared counties in New York were evaluated by CPCB in the Mission Scoping Assessment. This MSA was prepared in consultation with state, federal, and nongovernmental partners, and

categorized programmatic policy and regulatory overlap and/or conflicts that may require resolution assistance. As part of this assessment, CPCB conducted a review of the general conditions of communities affected by Hurricane Sandy in order to determine the range of impacts and help identify the geographic areas of CPCB focus. This was followed by an assessment that considered potential issues, opportunities, and challenges and identified resource needs.

The CPCB RSF then conducted an analysis to identify the subset of communities within this disaster that is particularly challenged with low capacity and high impacts, who may benefit from more intensive technical assistance from CPCB partners. A number of indicators were used to assess level of impacts, including data from FEMA's Individual Assistance program, data on home losses, and windshield surveys. Of those communities examined and determined to have the highest level of need, three areas with moderate to high levels of disaster impacts and varying levels of recovery capacity were identified. Within Nassau County, the city of Long Beach and the villages and hamlets within the town of Hempstead, including the villages of Atlantic Beach, East Atlantic Beach, East Rockaway, Island Park, and Lawrence, and the hamlet of Lido Beach were identified. Within Suffolk County the village of Babylon was identified. In New York City, neighborhoods identified included Lower Manhattan; Red Hook, Coney Island, and Sheepshead Bay in Brooklyn; Howard Beach, Arverne, Rockaways, and Breezy Point in Queens; and Midland Beach and South Beach in Staten Island.

Following the MSA, CPCB field teams met with local communities to get an in-depth understanding of their recovery needs as well as their capacity to plan and manage recovery. This helped the teams verify the results of the MSA and make adjustments as necessary. Based on this community engagement, it was determined that several communities identified in the MSA did not have a need for CPCB assistance and several other communities not listed in the MSA show a potential need for CPCB support. This assessment is ongoing as teams continue to work with communities to identify recovery issues and types of CPCB support.

The CPCB RSS captures the work of the teams and comprises two sections: 1) Issues and 2) Community Profiles and Strategies. The Issues section lays out six recovery issues organized into two broad categories of CPCB support: Capacity and Planning. The third section describes sustainable community principles that guide CPCB strategies for sustainability, resiliency, and energy efficiency.

The Community Capacity section includes information on Institutional and Staffing Capacity, Community Financial Capacity, and Community Resource Sharing. The Community Planning section includes information on Community Planning and Plan Integration, Building Abandonment, and Land Use Shift/Population Growth. These are followed by the section on sustainability.

These issues provide an overall context for the types of recovery concerns facing New York communities, as well as approaches to those issues that can be applied, as appropriate, to implement recovery planning and redevelopment strategies for individual jurisdictions.

The Community Profile and Strategy section describes the communities that CPCB is engaging with in order to determine needed support and proposes strategies to address local recovery and redevelopment issues. These communities include the following:

- Nassau County: Nassau County, City of Long Beach, Village of Lawrence, Village of Atlantic Beach, Village of Island Park, Town of Hempstead, Village of Freeport, Town of Oyster Bay (East Massapequa)

- Suffolk County: Village of Lindenhurst, Village of Mastic Beach, Town of Islip, Village of Babylon, Village of Amityville
- New York City: Queens, Staten Island, Brooklyn
- Rockland County

Issues

Community Capacity

Activities related to disaster recovery can stress a community's preexisting strengths and further erode its weaknesses. A community may have had plenty of capacity prior to the disaster, including the personnel, finances, resources, knowledge, and tools to effectively plan for future needs, but the effects of the disaster may have weakened some or all of these areas.



Institutional and Staffing Capacity

Some communities may lack the number of experienced personnel, disaster recovery knowledge or skills necessary to support the increased work load generated by Hurricane Sandy.

Increased workloads and other demands related to disaster recovery require a community to have the capacity to apply for and administer grants and other funding; create or revise planning documents; process permits; and implement recovery projects and strategies. This institutional and staffing capacity is needed in a wide range of community departments and functions, including community planning departments, zoning and permitting departments, public works departments, building inspections, and financial management. Additional capacity needs include having knowledge of recovery programs like Hazard Mitigation, FEMA Public Assistance, and disaster funding mechanisms. Capacity issues for nongovernmental organizations and the private sector, such as community and social institutions like chambers of commerce or business improvement districts, may also exist.

Approach:

- Initiate a dialogue with communities to analyze staffing and other capacity gaps related to recovery.
- Provide technical support to communities to help establish Community Reconstruction Zone planning committees or local recovery coordination committees that can ensure stakeholder engagement to inform the community recovery process. Work with other Recovery Support Functions to provide guidance and resources to these committees.
- Assist with coordination of community recovery planning and project development throughout impacted jurisdictions by coordinating with the New York State Department of State, supporting Community Reconstruction Zone planning.
- Work with the New York State Department of State to support the state's Community Reconstruction Zone program by helping to identify state staffing capacity needs and ways the CPCB RSF can assist the state and its consultants in the implementation of the CRZ planning process.
- Coordinate with partners to educate communities on the availability of funding sources that can be utilized to support staffing needs, such as

Department of Housing and Urban Development (HUD) Community Development Block Grant (CDBG) Technical Assistance funds and its OneCPD Integrated Practitioner Assistance System (One CPD) online training on CDBG technical assistance.

- Support communities' capacity to recover by providing fiscal management training assistance to address the influx of grant money related to disaster recovery.
- Work with the other Recovery Support Functions to support communities' capacity to recover by providing targeted technical assistance and/or supplementing other resource partners' technical assistance to address gaps in local capacity for specific recovery needs.
- Work with communities to explain guidance documents and how to apply them to local recovery, such as the *Long-Term Community Recovery Planning Process: A Self-Help Guide* (December 2005).
- Help communities establish partnerships with agencies and associations—including nonprofit, private sector, professional and governmental associations—that have significant planning and capacity building resources, such as the American Planning Association and Environmental Protection Agency's (EPA's) Smart Growth technical assistance.
- Compile tailored, recovery-related resources, based on existing federal, state, and local partners' sustainable strategies and area wide planning tools, technical assistance, and case studies that can be incorporated into a capacity building and planning "toolbox" for the NY community recovery and rebuilding efforts.

Community Financial Capacity

Local municipalities may experience a loss of revenue due to property and sales tax impacts from Hurricane Sandy.

The loss of homes and businesses in a disaster causes a degradation of the tax base and leads to a loss in economic activity and therefore decreased local government tax revenue. This can affect a community's financial capacity, including the ability to fund operational activities and the ability to match disaster grants. Communities may also experience a lack of cash flow to pay for recovery projects due to the timing and delivery of recovery funds. For example FEMA Public Assistance, FEMA Hazard Mitigation, and HUD CDBG-DR may be on different funding schedules.

Approach:

- Facilitate workshops on grant writing and financial management to expand local financial management capacity. This could include working with partners to provide a workshop or webinar on how to manage federal grants or connecting communities with online video workshops, such as those regarding economic recovery for public officials on www.restoreyoureconomy.org.
- Identify subject matter experts to provide information on potential municipal revenue replacement strategies, such as bond issuance/refinancing, or issuance of hurricane relief bonds.
- Work with communities to identify appropriate funding sources to meet community-specific needs.
- Quantify impacts within a neighborhood/community to determine how the loss of economic activity (retail, businesses) impacts the ability to recover from the disaster. Work with partners such as Community Emergency Response Teams and the Economic RSF.

Community Resource Sharing

Communities may experience a more rapid recovery if they work together regionally to share resources and partner on recovery issues.

The impacts of natural hazards do not stop at municipal boundaries; adjacent communities will have similar recovery issues. Neighboring communities working together on the regional level can strengthen the recovery process by taking a shared approach to maximizing and leveraging combined resources to do more and create synergies. Some disaster recovery funding sources may be targeted at the regional level, requiring communities to work together to be eligible. For example, the State Action Plan for CDBG-DR funds establishes Community Reconstruction Zone planning committees that will take a regional approach. Examples of plans that could be created on a regional level are local waterfront revitalization plans and hazard mitigation plans.



Approach:

- Work with communities and local organizations (such as Regional Plan Association, Long Island Regional Economic Development Council, Sustainable Long Island, Vision Long Island) to confirm mutual issues and identify how communities can leverage commonalities, benefit by working regionally and align with state and federal regulations.
- Provide technical support at the county level to help establish Community Reconstruction Zone planning committees or recovery coordination committees that include membership from each of the disaster affected jurisdictions in the county. The recovery coordination committee can serve as the local interface and technical group to coordinate resources and provide recommendations for recovery planning. CPCB can assist the recovery committee by facilitating initial meetings, providing guidance to develop internal and external communications, and coordinating resource workshops with RSFs and other partners.
- Use existing area partnerships—such as the New York-Connecticut Sustainable Communities members, the Long Island Regional Planning Council, the Regional Plan Association, the Long Island Cleaner, Greener Communities Consortium, the Sandy Regional Assembly, and the NYC Environmental Justice Alliance—to support development of a community recovery planning network.
- Work with communities and the New York State Department of State to align and coordinate with the Community Reconstruction Zone planning committees described in the State Action Plan for CDBG-DR funds.
- Explore staffing capacity and the potential for a job share/loan program among Long Island communities.
- Work with partners like the National Association of Counties to provide counties with recovery guidance on engaging local elected officials on a county or multi-county basis, and to provide peer-to-peer support to counties with township control.
- Facilitate workshops with New York City Community Based Organizations on specific issues such as infrastructure or environmental planning, etc., that transcend specific community boundaries.

Community Planning

Post-disaster community planning can provide an opportunity to discuss and incorporate ideas and principles that foster resilience, address issues that may have created pre-disaster obstacles, mitigate risk, and approach planning in an integrated way.

Community Planning and Plan Integration

Communities may lack experience in a community-driven planning process, developing specific types of plans, and integrating recovery with other planning activities.

Some communities may find it challenging to develop specific types of plans or integrate recovery planning and redevelopment activities with community plans. Integrated planning can ensure consistency among federally-funded recovery plans and projects; state planning, historic preservation, cultural resource protection, and environmental requirements; and local plans and priorities. This includes connecting plans such as local comprehensive plans, hazard mitigation plans, local waterfront revitalization plans, HUD action plans, and recovery plans. In addition, communities may want to explore instituting a variety of local tools to facilitate community recovery (such as adopting a recovery ordinance or creating an open space acquisition fund) but may lack the previous experience to do so.

Approach:

- Provide educational support, data, and tools to communities to encourage the evaluation, promotion and adoption of strategic planning concepts and products (comprehensive plans, recovery plans, mitigation plans, etc.) that reflect the values of the local communities and the goals of resilient/sustainable practices. This could include data like Geographic Information System (GIS) layers provided via the FEMA GeoPortal or existing partner programs such as the National Oceanic and Atmospheric Administration’s Roadmap for Adapting to Coastal Risk program.
- Working with Community Reconstruction Zone planning committees or local recovery coordination committees, other RSFs, and nongovernmental partners, identify and produce technical assistance workshops and topical training sessions on disaster recovery and integrated local planning (for

example, recovery planning workshops conducted by the American Planning Association; workshops to help develop plans that are sustainable and resilient with partners such as HUD, the National Renewable Energy Laboratory, the EPA, and interested local nongovernmental organizations).

- Working with county recovery coordination committees and local partners, coordinate the delivery of technical assistance from other RSFs and nongovernmental organizations.
- Facilitate discussions to promote the integration of planning efforts, such as hazard mitigation planning, comprehensive planning, HUD action planning, etc., and discuss with communities how they might incorporate resiliency into their recovery planning. Coordinate with partners such as the New York State Department of State Office of Communities and Waterfronts, FEMA Region II Mitigation, the Natural and Cultural Resources RSF, and the Infrastructure RSF.
- Work with the Hurricane Sandy Rebuilding task force to communicate strategic funding timelines by using tools such as a website that helps communities understand overlapping and related planning initiatives and funding streams.
- Combine CPCB field team resources with partners such as the New York Extension Disaster Education Network based at Cornell University to assemble teams that can provide input on integrated planning and best practices to communities.
- Provide access to strategic information resources (such as GIS layers) for redevelopment. The FEMA GeoPortal could be used.
- Collaborate with communities to identify and provide relevant case study topics. Case studies of communities could be used to begin peer-to-peer communication. Relevant topics could include: integrating Hazard Mitigation into the planning process (Lee County, FL and PAS 560, Hazard Mitigation: Integrating Best Practices into Planning); and economic recovery plans from sources including the International Economic Development Council (Cedar Rapids, Polk County, the Survival Toolkit).
- Explore opportunities to integrate disaster recovery planning with comprehensive planning and other community plans.
- Work with the Small Business Administration, the New York City Department of Small Business Services, and the Economic RSF to provide information so that economic development is integrated into recovery planning.

- Work with local government structures, including community boards, the New York City Special Initiative for Rebuilding and Resiliency (SIRR), and the Mayor's Office for Housing Recovery Operations, in order to identify planning products that would promote resilient and sustainable recovery and mitigation planning.

Building Abandonment

The potential for abandoned buildings and distressed properties exists, which may slow the progress of recovery.

The impacts from the storm, the issuance of new floodplain maps in New York City, changes to the flood insurance program that will increase flood insurance costs, the national foreclosure crisis which resulted in decreased property values, and other communities' disaster recovery experience suggests that communities may struggle with building abandonment and distressed property issues. Property owners will make choices about whether to rebuild or not based on a number of factors, including finances, alternative housing options, and uncertainty surrounding housing investments. These choices will impact neighborhood and community character and sustainability. Impacts from the proliferation of vacant lots, boarded up or abandoned buildings, and derelict structures, which may remain for months or years, include changes in historic land use patterns, public safety concerns, decreased property values, and lack of available funding, and can hamper the pace of recovery.

Approach:

- Work with federal, state, local, and nongovernmental partners to identify the tools and resources available to assist with community recovery and restoration, including strategies to promote alternative uses of vacant land or buildings. Coordinate with partners and programs such as the EPA Brownfields program, the National Trust for Historic Preservation Main Street programs, Local Initiatives Support Corporation (LISC), and the HUD Neighborhood Stabilization program.
- Assist the community in identifying funding programs that provide assistance to property owners with abandonment and distress issues (such as a revolving loan fund, loan loss reserves, CDBG-DR funds, etc.). Support peer-to-peer relationship building to inform communities about successful strategies and programs that have been implemented to address

abandonment and distress issues. Work with partners such as the Economic RSF and Housing RSF.

- Facilitate workshops or charrettes to help communities plan the reuse of abandoned or distressed areas.
- Explore ways to support local governments in efforts to avoid foreclosures by working with the Housing RSF and organizations such as LISC.
- Work with educational institutions to locate and to quantify abandoned buildings by use. Work with educational institutions, the Economic RSF, and the Housing RSF to understand potential tools and methodologies.

Land Use Shift/Population Growth

Communities have the opportunity to both plan for population increases and shift population away from risk-prone areas.

Integrating new ABFE or BFE regulations into zoning and building codes could result in increased costs being incurred to elevate structures. The change in the National Flood Insurance Program (NFIP) through the Biggert-Waters Flood Insurance Reform Act (2012) also has the potential to increase insurance premiums for waterfront communities. However, it should be noted that elevation of structures has the potential to lower insurance premium rates and balance the potential expenses associated with the Biggert-Waters Insurance Reform Act. This potential increase in cost for residents living in vulnerable areas, along with the loss of homes from a potential buyout program, could change development patterns along the coast. Within a dense urban environment that features a compact street grid and seasonal property along the shoreline, there is a lack of developable land to address the need resulting from the loss of housing and commercial property. This long-standing development pattern will have implications for sustainable and resilient community recovery.



Approach:

- Work with partners to facilitate educational forums that will provide information to the public and decision-makers on changes to the flood insurance program and its impacts on rebuilding, and assist with regional visioning on watershed management to reduce flooding. Partners and programs could include the State NFIP Coordinator, local building code/building department representatives, FEMA Region II Mitigation, New York State Department of State, Smart Rebuild NYS, the New York State Office of Communities and Waterfronts, the Department of Homeland Security Resilience Star pilot program, Housing RSF, Economic RSF, and Natural and Cultural Resources RSF.
- Identify existing plans as well as new strategies for sustainable infill development and determine if changes to the existing plans are needed to address post-hurricane conditions.
- Provide technical assistance to communities, such as scenario planning and land use analysis, to help them identify viable planning tools and development options for expanding their existing housing stock and optimizing land use patterns to meet future demands. Coordinate with partners such as EPA Office of Sustainable Communities, Smart Growth America, American Planning Association, American Institute of Architects, Urban Land Institute Panel Advisory Services, and other RSFs.
- Work with New York City agencies such as the Department of Buildings and Department of City Planning to provide guidance on rebuilding in light of revised floodplains maps. Also provide guidance on building types, such as blocks of row houses or multi-family dwellings that cannot be elevated, in order to educate residents on resiliency measures to provide future protection.
- Use web-based and interactive design tools, such as CommunityViz, to help visualize potential land use and build-out scenarios.
- Work with the New York State Department of State to promote local understanding of the update of the New York state building code, as recommended by the New York State Ready Commission. The updated code would promote smarter, more resilient building, and help ensure that new buildings and major renovations are able to withstand major weather events and are better prepared for climate change.

Sustainable Communities Principles as a Guide to Recovery Support Strategy

A CPCB objective is to integrate sustainability, livability, resiliency, and energy efficiency principles throughout the Recovery Support Strategy to produce more healthy, sustainable, equitable and resilient communities. Working with federal partners, eight guiding principles were identified which include overarching components of sustainability, livability, and resiliency. These principles will lead the discussion of implementable sustainable strategies on a context-sensitive and place-based basis. They include (1) Safeguard coastal and rural landscapes; (2) Enhance economic competitiveness; (3) Provide access to transportation; (4) Promote equitable, energy-efficient, and affordable housing; (5) Support and enhance unique characteristics of existing neighborhoods; (6) Improve public health and mitigate environmental impact; (7) Promote energy efficiency and clean energy programs; (8) Promote inclusive planning processes that produce equitable outcomes.

Approach:

- Encourage a state-led sustainability roundtable with the intended outcome of aligning state, local, and federal sustainability considerations and priorities that incorporate sustainability into recovery and rebuilding efforts. This will help both federal and state agencies tailor their efforts to be as effective as possible, and be supportive of local priorities. Potential participants would include Regional Plan Association, Vision Long Island, Sustainable Long Island, New York State Energy Research and Development Authority (NYSERDA), county executives, local mayors and other public officials, and subject matter experts in professions including hazard mitigation, floodplain management, housing, buildings design, and zoning code.
- Support a bi-state governors' institute and mayors' institute with the intended outcome of aligning sustainability and resiliency principles among states, local, and federal partners, in a manner that is specific to regional and local recovery and rebuilding efforts.
- Develop tailored, recovery-related resources, based on existing federal, state, and local partners' sustainable strategies and area wide planning tools, technical assistance, and case studies, that can be incorporated into a larger community capacity building and planning "toolbox" for the New York community recovery and rebuilding efforts.

- Support the incorporation of federal partners' specific community-planning datasets (e.g., Environmental Justice, brownfields, economic, flood zone, public housing) into a community analysis that will allow Sandy recovery strategies to align and target efforts to support community-based planning and recovery. Federal partners will coordinate with FEMA GIS staff to incorporate the needs of environmentally overburdened, underserved, and under-utilized areas into regional and community land-use plans.
- Support executive leadership in New York and New Jersey to align sustainability and resiliency principles among states, local, and federal partners, through programs such as the Governors' Institute for Community Design and the Mayors' Institute for City Design, in a manner that is specific to regional and local recovery and rebuilding efforts.
- Help scope out and plan cross-cutting, pilot projects that utilize existing federal tools and programs such as but not limited to EPA Building Blocks for Sustainable Communities technical assistance programs. Pilot projects would help to develop a framework and implementation strategy (a set of specific, actionable practices and projects) for rebuilding. Identify communities with potential environmental justice concerns that are also considered high-impact, low capacity communities to ensure that they are able to receive assistance via pilot projects.

Communities. Also supporting sustainable communities are the National Renewable Energy Lab; the U.S. Department of Agriculture; and the Recovery Support Functions as well as their federal partners.

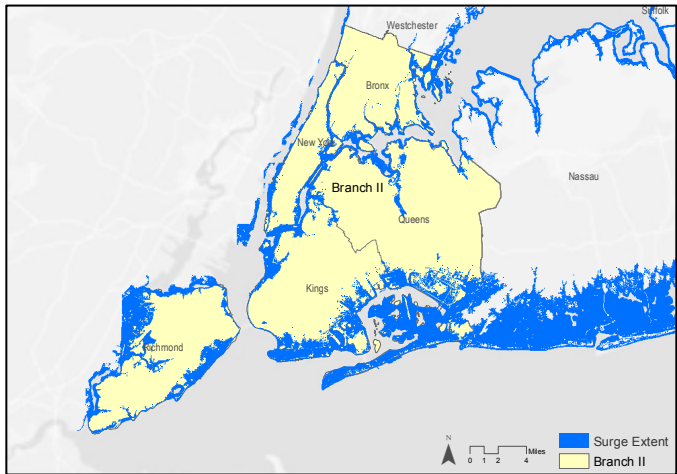
State and local governmental and nongovernmental partners provide technical assistance and other resources; expertise on sustainable and livable communities, smart growth, and energy; knowledge of local communities; capacity-building; grant writing ability and expertise; and comprehensive knowledge of components of sustainable communities, smart growth, energy efficiency, and resiliency. State and local partners include those such as Regional Plan Association; Sustainability Institute at Molloy College; Community Development Corporation of Long Island; Vision Long Island; NYSERDA; Sustainable Long Island; New York State Department of State; and Long Island Cleaner, Greener Communities Consortium.

Sustainable Communities Partners

Sustainable communities' group partners include federal, state, and local governmental and nongovernmental organizations. Partners are integral in developing the guiding principles, providing technical assistance and other resources as part of a sustainability toolkit, implementing strategies, and advising the recovery support functions and localities on matters of sustainability and resiliency.

Federal partners provide guidance on the development of sustainable communities guiding principles, technical assistance and other resources, and expertise on sustainable and livable communities, smart growth, energy efficiency, and resiliency. Federal partners include those such as the Partnership for Sustainable Communities (which includes participation by Department of Transportation, Department of Housing and Urban Development, the Environmental Protection Agency); Housing and Urban Development Office of Sustainable Housing and Communities; the Environmental Protection Agency Office of Sustainable





Community Profiles and Strategies

Nassau County Community Recovery Information

The Nassau County CPCB field team has held more than 20 local community meetings where recovery topics including challenges and opportunities were identified. Local stakeholder meetings were held with the Nassau county executive and deputy county executive, county staff, City of Long Beach, local nonprofit planning organizations, towns and villages. During these meetings, CPCB explained the mission of the Federal Disaster Recovery Coordination group and discussed the technical support that CPCB and other RSFs are capable of providing. These meetings took place between mid-January and the end of February, 2013 with additional meetings completed in March and April. Others are scheduled in the coming weeks.

CPCB has identified potential technical assistance needs related to planning and capacity building for Nassau County and the city of Long Beach and is identifying technical assistance needs within the town of Hempstead, the town of Oyster Bay (East Massapequa), and the villages of Freeport, Island Park, and East Rockaway. In addition the villages of Lawrence and Atlantic Beach will be included in on-going communications with Nassau County about recovery support. It is possible that other towns and villages may request technical assistance in the coming weeks, and information on these jurisdictions and their planning and capacity building needs will be added as specific requests are made.

Nassau County

Nassau County is one of the two counties that make up Long Island, a land area adjacent to New York City. The population of Nassau County is 1.3 million. Nassau County comprises two cities, three towns, 64 incorporated villages, and more than 60 unincorporated hamlets. In addition, there are many other layers of specialized governing districts such as sanitation districts, school districts, library districts, and water districts. The county has an office of community development that administers community development programs which includes local economic development.

Storm Damage

Hurricane Sandy had a significant adverse effect along the south shore of Nassau County and barrier island communities. The disaster primarily affected jurisdictions located south of Highway 27 (Sunrise Highway) where storm surge flooded homes and businesses, closed down public facilities (a hospital, library, schools, and a village hall building) and caused widespread damage to utilities and protective dunes along beaches. According to Individual Assistance data, 45,110 housing units, which is 9 percent of the total housing stock in Nassau County, were damaged.² Power was out for over 14 days in most of the County.

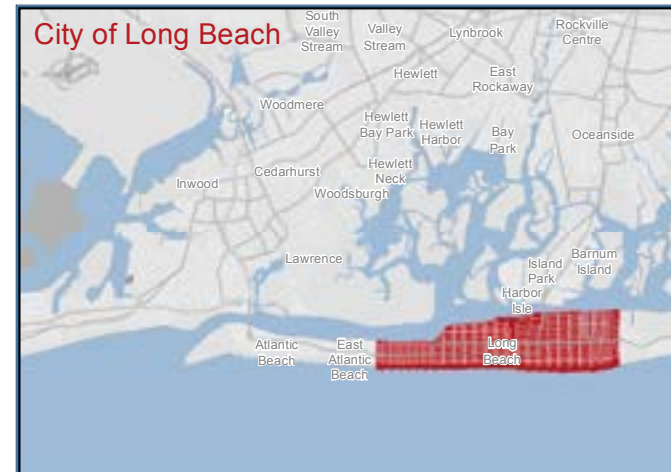
Community Engagement Findings

Through a series of meetings, Nassau County and the CPCB field team discussed recovery issues and recognized the need for coordination among the cities, towns, and villages that are responsible for the public services to residents within their boundaries. Nassau County requested support from the CPCB RSF to work with county staff to establish, organize, and facilitate a community recovery coordination committee. The following table summarizes recovery issues identified during CPCB's engagement with Nassau County and the relationship to the CPCB Recovery Support Strategy issues.

CPCB is continuing meetings with community leaders to develop methods to address the community recovery findings through the team and partner agencies and organizations. CPCB is developing working relationships with localities in need of assistance with planning and building resiliency. The following is

an initial list of CPCB opportunities and strategies. As specific, actionable strategies are developed, they will be added to this list along with the federal, state, and local partners responsible for the specific strategic action.

- Assist Nassau County with facilitating an introductory meeting for all affected jurisdictions. This meeting will include discussion of the development of a recovery coordination committee(s). The committee will serve as the county’s interface and technical group to coordinate resources and provide recommendations for recovery planning. This committee will hold an introductory meeting to which all local leaders will be invited so that the recovery process can be explained and opportunities for coordination and local stakeholder involvement encouraged.
- Provide support and technical assistance related to accessing resources through the state action plan and coordinating with Community Reconstruction Zones as defined in the action plan.
- Assist with the development of internal and external communications, such as facilitating a communications workshop with the recovery coordination committee(s).
- Guide the development of the planning approach, including an understanding of available tools and their functions.



City of Long Beach

The City of Long Beach is centrally located on a barrier island facing the Atlantic Ocean in Nassau County. The city covers 3.9 square miles. As of the 2010 Census, the City of Long Beach had a population of 33,275 with a median household income of \$77,673, which is nearly \$25,000 less than surrounding communities. There are 16,472 housing units consisting of both single and multi-family dwellings and the median home value was \$523,900 according to the 2010 Census. The City of Long Beach operates its own water and sewer treatment plant located on the north side of the island on Reynolds Channel.

Storm Damage

The City of Long Beach was completely inundated by storm surge and sustained significant damage due to flooding. Power was lost for more than 10 days, businesses were closed, and in early March only about 60 percent of businesses in the West End District had reopened. The Long Beach Medical Center, library, schools, and water treatment infrastructure were also damaged. Housing impacts were significant with 10,484 homes (67 percent of the housing stock) sustaining damage.³

Community Engagement and Findings

A CPCB recovery specialist has been working with the City of Long Beach since late January 2013. The City of Long Beach partnered with Sustainable

Findings Related To CPCB Technical Assistance	RSS ISSUES
• Post disaster issues Nassau County is dealing with include limitations on staffing capacity related to	• Institutional & Staffing Capacity
• Need for local coordination and cooperation between all disaster impacted jurisdictions in the county and for community resource sharing between impacted cities, villages and towns to advance recovery.	• Community Resource Sharing
• Need for partnerships with a wide range of community based organizations.	• Institutional & Staffing Capacity
• Need for coastal restoration.	• Community Resource Sharing

Long Island to work on recovery efforts within the community. CPCB specialists are working with Sustainable Long Island to provide technical support to the city for recovery strategy development. Sustainable Long Island is a regional nonprofit agency whose mission takes a long-term approach to promoting economic development, environmental health, and social equity for all Long Islanders. It is important to note that Sustainable Long Island has staffing capacity limitations and is seeking technical support from the CPCB RSF. The CPCB RSF has capacity to provide technical support to this organization and will also seek to leverage other RSF and nongovernmental agency partnerships such as the Community Development Corporation of Long Island, Vision Long Island and Action Long Island to support ongoing recovery efforts on Long Island through this organization.

CPCB interviewed the heads of city departments, undertook field surveys of businesses and met with the Long Beach Chamber of Commerce and other community-based organizations. These meetings have helped to define local recovery issues, needs, and opportunities. A priority for the community is to reconstruct the 2.2-mile boardwalk. Long Beach has a tourism-based economy and the boardwalk is a key asset for the summer tourist season and for pedestrian and cycling transportation. Sustainable Long Island in partnership with CPCB assisted the city in community forums that enabled public input and guidance for rebuilding this facility. The following table summarizes recovery issues and topics from CPCB’s engagement with the City of Long Beach and the relationship to the CPCB Recovery Support Strategy issues.

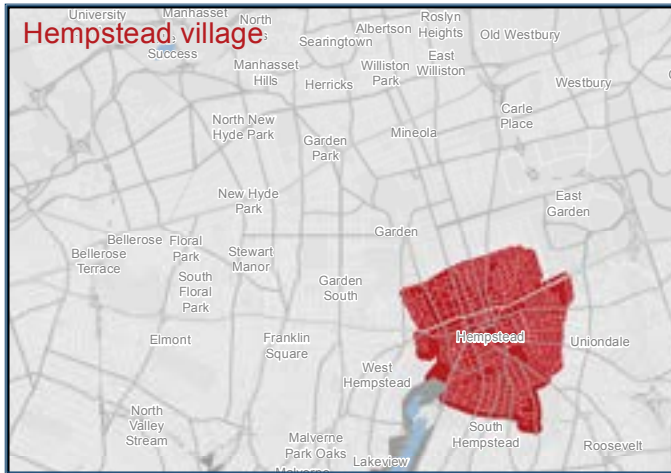
Community-Specific Opportunities and Strategies

CPCB is continuing meetings with community leaders to develop ways to address the community recovery findings and will work with the other RSFs in order to provide technical assistance. CPCB is developing working relationships with localities in need of assistance to plan and build resiliency. The following is an initial list of CPCB opportunities and strategies. As specific, actionable strategies are developed they will be added to this list of opportunities and strategies along with the federal, state, and local partners responsible for the specific strategies.

- Assist Sustainable Long Island efforts to provide the City of Long Beach with community outreach for community recovery. This includes developing a scoping document related to the development of a full recovery plan for the city.

- Partner in the development of the planning approach, including an understanding of available tools and their functions.
- Provide support and technical assistance related to accessing resources through the state action plan and coordination with Community Reconstruction Zones as defined in the action plan.
- Provide technical assistance for land use analysis as it relates to expanding the community tax base and reducing the risk from future storms.
- Provide technical assistance related to small-scale “green” initiatives within the city.
- Assist Sustainable Long Island with the development and implementation of community workshops for improving communications (internal and external) and methodology to identify recovery projects, programs, resources, and technical assistance.

Findings Related To CPCB Technical Assistance	RSS ISSUES
• Need for local coordination and cooperation from a diverse group of community stakeholders to address recovery issues	• Community Resource Sharing
• Local jurisdictions underwent staffing reductions prior to the disaster due to a reduced tax base caused by economic conditions. There is concern that disaster-related losses in business revenue and reduced residential tax base will further reduce service capacity and put an additional strain on local economic viability.	• Community Financial Capacity
• The city has a Master Plan but does not have enough staff (professional or appointed) to assist with planning or community development activities and plan updates to reflect recovery issues.	• Institutional & Staffing Capacity
• Some residents have not returned to their homes. Issues and concerns related to elevating homes and the future cost of insurance are a major factor in reconstruction.	• Building Abandonment
• Land Use Shift / Population Growth	
• The number of closed businesses is a significant issue for recovery. The tourism season runs from Memorial Day to Labor Day and the city seeks to have businesses re-established for the season.	• Community Financial Capacity
• The hospital was heavily damaged and remains closed. The closure of the medical center is a significant recovery issue as the City of Long Beach has an aging full-time population and draws tourists during the summer season. There is concern that there will not be adequate care for the summer beach season.	• Community Resource Sharing • Community Planning & Plan Integration
• Beach and bulkhead restoration is another recovery topic discussed with community leaders and stakeholders. The dune system was destroyed by the hurricane. This dune system, along with a system of public and privately constructed bulk heads, provides the first line of defense for extraordinary tides and storm surges.	• Community Resource Sharing • Community Planning & Plan Integration



Town of Hempstead

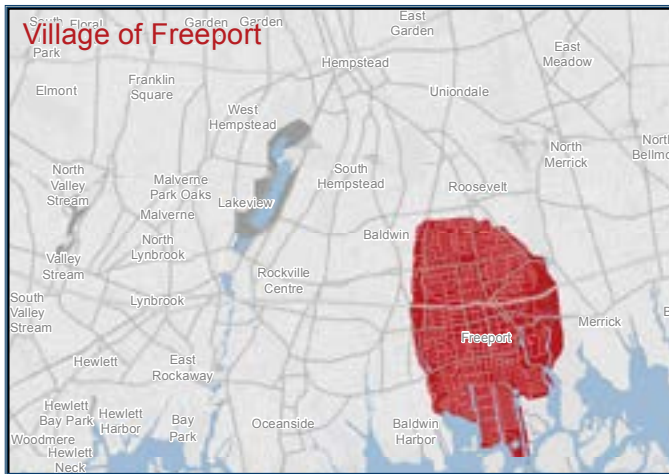
The town of Hempstead has a land area of 191.3 square miles and a population of nearly 760,000 people, according to the 2010 Census. Within the town there are several villages that operate under independent authority; of those, the villages with disaster impacts are discussed separately within this document. There are areas within the town of Hempstead that are classified as Census Designated Places, commonly referred to as hamlets. Hamlets located south of Highway 27, were highly impacted by the disaster and include East Atlantic Beach, Lido Beach and Point Lookout (on the barrier island) as well as the hamlets of Baldwin Harbor, Oceanside, Barnum Island, Harbor Isle, and Bay Park. Disaster impacts within these areas were significant and at meetings with the town of Hempstead hamlet leaders indicated that they would like to participate in recovery resource forums and coordination activities with the county in support of these and other impacted hamlets.

CPCB is planning follow-up meetings in Nassau County that will include the hamlets within the town of Hempstead to assess community needs and develop CPCB technical assistance and support for these areas.



Village of Island Park

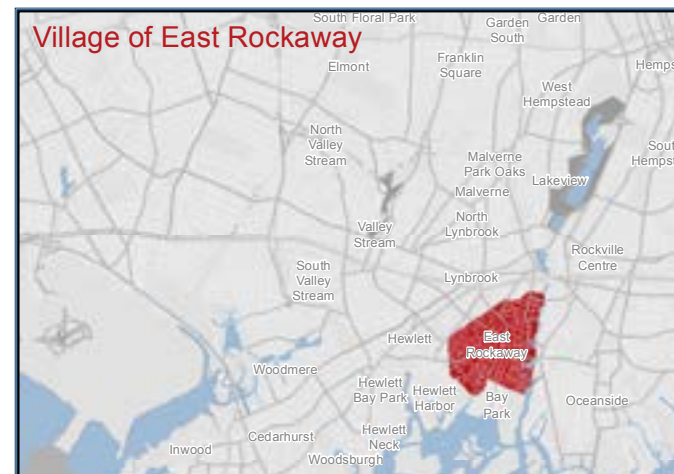
The village of Island Park is an island located in South Oyster Bay on the south shore of Long Island in Nassau County. It is sheltered from the Atlantic Ocean by a barrier island containing the City of Long Beach. According to the 2010 Census, the population of Island Park is 4,655. Through coordination with the FEMA Neighborhood Task Force Initiative (Branch I), the village of Island Park was identified as in need of CPCB technical assistance. The CPCB Nassau County field team held an initial meeting with the village of Island Park to discuss recovery needs which included staffing capacity, infrastructure issues, and beach impacts. Specific activities have not been scoped at this time. Follow-up meetings with the village of Island Park will be held in order to assess community needs and develop CPCB technical assistance and support for the village.



Village of Freeport

The village of Freeport is located on the south shore of Nassau County. The southernmost boundary is the bay formed by the Jones Beach Inlet. The 2010 Census reflects a population of 42,860 people. The median household income for the village is \$69,081, which is 74 percent of the county median household income. There are 15,134 housing units, including both single- and multi-family dwellings.

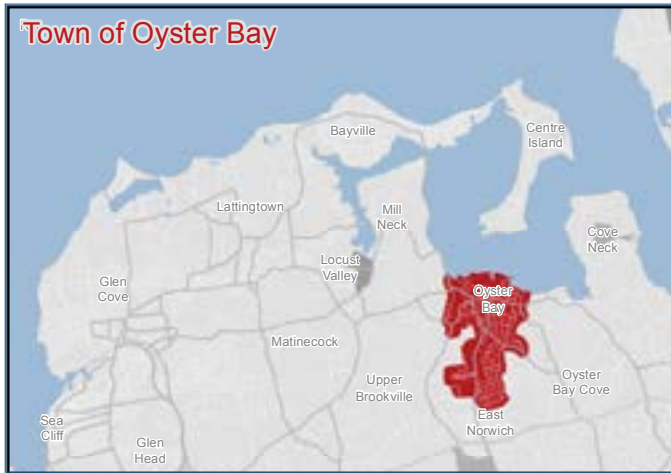
Disaster impacts in the village of Freeport included significant damage to the commercial strip known as the Nautical Mile. A number of businesses in this tourism-based business district were still not in operation following Memorial Day 2013. A second impact was to local housing stock; per Individual Assistance data in the U.S. Department of Housing and Urban Development assessment 3,964 homes (26 percent of the housing stock) were damaged by the disaster. The village of Freeport recently held elections for a new mayor. The Nassau County CPCB field team is working to set up a meeting with the newly elected mayor to discuss recovery issues and opportunities. Based on knowledge gained from local community planners working with the CPCB RSF, it is anticipated that support will be needed for capacity building and economic development in cooperation with the Economic RSF. Technical assistance can be coordinated through the CPCB Team, other RSFs, and outreach to other nongovernmental agencies and organizations. A specific scope of activities has not been developed pending further discussions with local stakeholders within the village.



Village of East Rockaway

The village of East Rockaway is located inland of Bay Park on the south side of Long Island. East Rockaway is a village within the Town of Hempstead in Nassau County. It is one square mile in area with a population of 9,854 and 3,683 housing units.

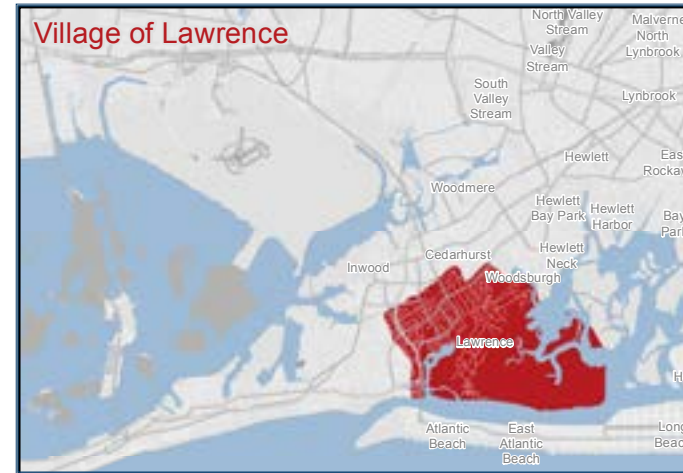
According to Individual Assistance data, 1,065 dwelling units were damaged⁴. The CPCB RSF is working with Nassau County to establish a meeting with the village to discuss recovery issues and opportunities. Recovery issues identified during an introductory meeting include disaster impacts along the waterfront districts and to housing. Follow-up meetings with the village of East Rockaway are being scheduled for the coming weeks in order to assess community needs and develop CPCB technical assistance and support for the village.



Town of Oyster Bay (East Massapequa)

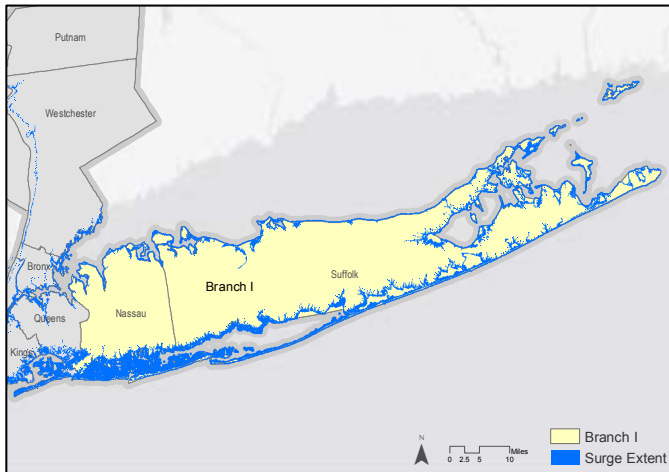
The town of Oyster Bay extends the entire north-south width of Long Island within Nassau County, on the border with Suffolk County. East Massapequa is a hamlet within the town of Oyster Bay. East Massapequa is located in the southeast corner of the town and borders Suffolk County and the incorporated village of Amityville to the east. East Massapequa has a population of 19,069 according to the 2010 Census. There are 6,796 housing units, the median home value is \$451,000 and the median household income is \$96,573.

Based on Individual Assistance data, during Hurricane Sandy 1,339 dwelling units were damaged, or 18 percent of the total housing stock in East Massapequa⁶. Through coordination with the FEMA Neighborhood Task Force Initiative (Branch I), the hamlet of East Massapequa was identified as potentially in need of CPCB technical assistance due to disaster impacts along coastal areas, primarily to residential and beach areas. The Nassau County CPCB field team held an initial meeting with a town of Oyster Bay representative and will meet with the town supervisor to assess community needs and develop a CPCB technical assistance and support strategy for East Massapequa.



Village of Lawrence and Village of Atlantic Beach

The Nassau County CPCB field team has met with the villages of Lawrence and Atlantic Beach. The land use within these two villages is primarily residential. Disaster impacts were not as severe as in neighboring communities. Each village has recovery concerns related to future storms and needs to identify resources for making improvements to streets, storm drainage, and bulkheads. Villages operate with very limited professional staff, which can make it difficult to develop and manage projects. The CPCB RSF will continue to reach out to these villages to ensure that stakeholders are involved with the overall Nassau County recovery coordination committee.



Suffolk County Community Recovery Information

The Suffolk County CPCB field team initially met with elected officials of all 10 townships, the majority of the villages, and representatives from the Shinnecock Indian Nation to explain the mission of the Federal Disaster Recovery Coordination group and to discuss community recovery needs and the type of support that CPCB can provide. Subsequent to these preliminary discussions, the CPCB Suffolk County field team held additional meetings with community representatives to further discuss recovery issues and opportunities. Approximately 30 meetings at the town and village level were held beginning in late January and additional meetings are ongoing. These CPCB Suffolk County field team meetings have focused on community-specific assessments of how Hurricane Sandy affected communities along the shoreline and other vulnerable areas and opportunities for countywide and township-level recovery coordination.

At this time, CPCB has identified potential technical assistance needs related to planning and capacity building for the villages of Lindenhurst and Mastic Beach. Discussions with the villages of Amityville and Babylon and the town of Islip are still underway. Discussions are also underway with the state assemblyman representing the Unkechaug Nation to determine how the Unkechaug Nation and their Poospatuck Reservation could be incorporated into the village of Mastic Beach recovery process. Findings from community meetings are described by jurisdiction below. It is possible additional towns and villages in Suffolk County may request technical assistance in the coming weeks. For example, the town

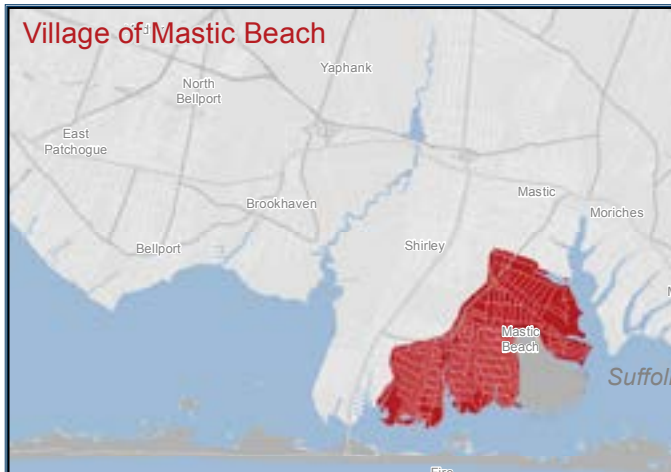
of Southold recently requested CPCB involvement. CPCB is also reaching out to the village of Patchogue and the hamlet of Wyandanch to determine needs for limited economic development engagement. The village of Patchogue, in the town of Brookhaven, attended the early meetings held in the town of Brookhaven to identify recovery issues and is currently working with FEMA Individual Assistance, Public Assistance, and Mitigation to address recovery issues. The hamlet of Wyandanch is located within the town of Babylon and if economic recovery support needs are identified, they would be coordinated for the hamlet via the town of Babylon. Information on additional jurisdictions and their planning and capacity building needs will be added as specific requests are made.

Suffolk County

Suffolk County is the easternmost county in the state and is part of the New York-northern New Jersey-Long Island Metropolitan Statistical Area. The county had approximately 1.5 million people as of the 2010 Census. The median household income was \$87,187 with 5.7 percent of the population living below the poverty level. The median value of owner-occupied homes during the 2007-2011 period was \$411,000. More than half of Long Island's jobs are in Suffolk County, where employment grew by 1.7 percent between 2000 and 2010, to just under 532,000 jobs.

Based on Individual Assistance data, more than 12,800 homes were damaged in Suffolk County. Nearly 11,000 homes suffered flood damage, more than half (52 percent) of which were flooded with between one and four feet of water. The six communities that experienced the highest level of damage in Suffolk County were the villages of Lindenhurst, Babylon, and Amityville and the hamlets of Copiague, West Babylon, and West Islip. Another village, Mastic Beach, was in the top 10 communities in Suffolk County with respect to number of residential units damaged.⁵ Suffolk County's south shore, particularly the barrier islands, suffered significant beach erosion and damage from the storm surge.

CPCB will continue engagement with Suffolk County in order to coordinate recovery support to towns and villages within the county.



Village of Mastic Beach

The village of Mastic Beach is located in the southeast part of the town of Brookhaven between the Forge River and Mastic Road. It was developed in the 1920s as a beachfront getaway for working class people in Brooklyn and Queens. Dozens of these bungalows still stand on either side of Pattersquash Creek down to Moriches Bay. The village contains 5,400 property parcels that are primarily zoned as single family residential. Most of these parcels measure between one-third and one-half acres. Approximately 150 commercial properties are in the village.

The village had a population of 12,930 people as of the 2010 Census. At \$71,606, the village median household income is two-thirds of the county’s median and the lowest in Suffolk County. The poverty rate in the village is 14 percent, higher than the overall county rate of 7.3 percent. The median value of owner-occupied housing units was \$246,500 compared to the County median of \$411,000. The village also has a higher population living in rental housing and a lower homeowner rate as compared to the overall county.

In 2006, the town of Brookhaven created a Vision Plan for Mastic Beach and one of the issues identified was the need to redevelop certain areas of the village in a more resilient and comprehensive manner. The village of Mastic Beach became an incorporated municipality in 2010 but has not yet adopted its own comprehensive plan or local waterfront revitalization plan.

Storm Damage

Based on Individual Assistance data, 520 dwelling units were damaged and 491 were flooded – roughly 3 percent of the total housing stock in the village. All of these homes used oil for heating fuel and many oil tanks became unsecured during the storm, causing oil spills. Village officials met with National Grid to discuss the feasibility of bringing in piped natural gas to the affected area. These officials are also open to discussing the introduction of alternative energy generation facilities such as solar and wind power.

Community Engagement Findings

The table below summarizes findings from CPCB’s engagement with Mastic Beach and the relationship to the CPCB Recovery Support Strategy issues.

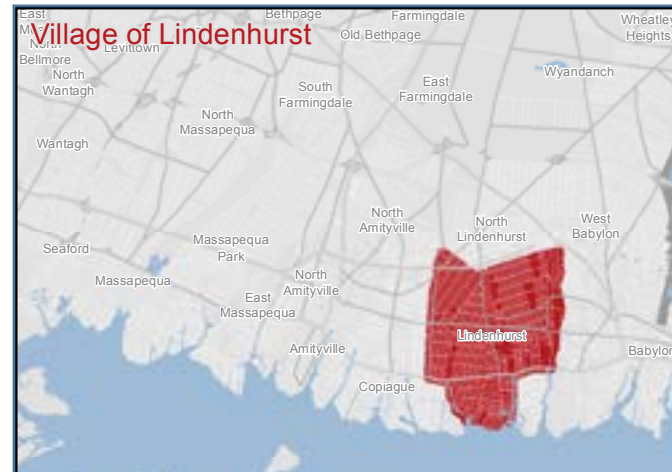
Findings Related To CPCB Technical Assistance	RSS ISSUES
<ul style="list-style-type: none"> Interest in integrated recovery planning approach that connects the following plans / planning issues: <ul style="list-style-type: none"> – Comprehensive Plan – Mastic Beach Community-Based Vision and Revitalization Plan (CBVRP) – Waterfront Revitalization Plan – Hazard mitigation – Economic development – Development Codes 	<ul style="list-style-type: none"> Institutional & Staffing Capacity Community Financial Capacity Building Abandonment Land Use Shift / Population Growth Community Planning & Plan Integration
<ul style="list-style-type: none"> Lack of access to and/or knowledge of planning and analytic tools (GIS, scenario modeling, etc.) 	<ul style="list-style-type: none"> Institutional & Staffing Capacity
<ul style="list-style-type: none"> Foreclosed and damaged homes, leading to the potential for building abandonment Vulnerable infrastructure systems and waterfront facilities exist that could contribute to building abandonment if not addressed 	<ul style="list-style-type: none"> Building Abandonment
<ul style="list-style-type: none"> Limited staff capacity for recovery planning in addition to its other planning and regulatory obligations 	<ul style="list-style-type: none"> Institutional & Staffing Capacity
<ul style="list-style-type: none"> Lack of critical businesses services for economic recovery (such as medical and banking) and is an economically challenged community 	<ul style="list-style-type: none"> Community Financial Capacity
<ul style="list-style-type: none"> Limited financial capacity to undertake recovery planning Experiencing revenue loss and negative economic impact on the local economy associated with Hurricane Sandy as both residences and businesses were affected, including waterfront businesses and facilities 	<ul style="list-style-type: none"> Community Financial Capacity
<ul style="list-style-type: none"> Lack of capacity for recovery planning that considers National Flood Insurance Program changes and insurance costs Consider community recovery planning that locates/relocates housing and business development to less vulnerable areas and environmentally sustainable waterfront revitalization with public access 	<ul style="list-style-type: none"> Land Use Shift / Population Growth Community Financial Capacity
<ul style="list-style-type: none"> Potential benefits from collaborative recovery planning with neighboring villages that share recovery issues (such as waterfront revitalization) 	<ul style="list-style-type: none"> Community Resource Sharing

CPCB Community-Specific Opportunities and Strategies

CPCB continues meetings with community leaders to develop ways to address the community recovery needs with technical assistance related to planning and capacity building. CPCB is developing working relationships with localities in need of assistance to plan and build resiliency. The following is an initial list of CPCB opportunities and strategies. As specific, actionable strategies are developed they will be added to this list of opportunities and strategies along with the federal, state, and local partners responsible for the specific strategies.

- Assist the village of Mastic Beach with the formation of a recovery coordination committee. The committee will serve as the village's interface and technical group to coordinate resources and provide recommendations for recovery planning.
- Work within the structure established for the village of Mastic Beach recovery coordination committee to facilitate access to workshops, tools, and resources that can guide the recovery planning process.
- Designate a CPCB recovery specialist to work with the village of Mastic Beach to support recovery activities.
- Provide support and technical assistance related to accessing resources through the state CBDG-DR Action Plan and coordination with Community Reconstruction Zones as defined in the action plan.
- Coordinate with the town of Brookhaven to explore the potential for the town to provide planning assistance to the village of Mastic Beach.

Provide guidance on and partner/resource identification for recovery plan development and help to identify recovery projects and programs based on information gathered during meetings, as discussed above in the findings chart, and ongoing engagement and collaboration with local officials, stakeholders, and the recovery coordination committee.



Village of Lindenhurst

The village of Lindenhurst encompasses 3.8 square miles on the south shore of the town of Babylon. The southern part of the village, south of the State Route 27, is a low-lying area traversed by three natural creeks that empty out to the Great South Bay. The village was originally built around the Long Island Rail Road stop but expanded in the 1920s as its waterfront developed into working-class summer bungalow communities, some on artificial canals. The bungalows were later converted and expanded to year-round homes and are located on narrow waterfront lots, with some lots as narrow as 20 feet wide. Lindenhurst experienced rapid growth as Long Island suburbanized, and today it is the most populous village in Suffolk County, with 27,253 people and 8,638 households as of the 2010 Census. The village is primarily residential, with commercial and industrial areas along or near the rail line and bayfront areas and along the village's main street, Wellwood Avenue.

As of the 2010 Census, the median value of owner-occupied housing units was \$377,600 compared to the county median of \$411,000. The village has a relatively low vacancy rate (3.6 percent), and 20.7 percent of occupied housing units are occupied by renters. The median income for a household was \$89,044, (84 percent of county median income). Although the median income in Lindenhurst is modest compared to the countywide median, just 3.1 percent of the population is below the poverty line.

Storm Damage

Lindenhurst was the hardest-hit village in Suffolk County, with 1,473 housing units (14 percent of its housing stock) damaged by either flooding (97 percent of damaged homes) or storm surge. In Lindenhurst, 139 homes had more than four feet of inundation.⁷ Many waterfront businesses were flooded up to Montauk Highway (SR 27). The village also suffered significant damage to its storm water management infrastructure south of SR 27.

Community Engagement Findings

The table summarizes findings from CPCB’s engagement with Lindenhurst and the relationship to the CPCB Recovery Support Strategy issues.

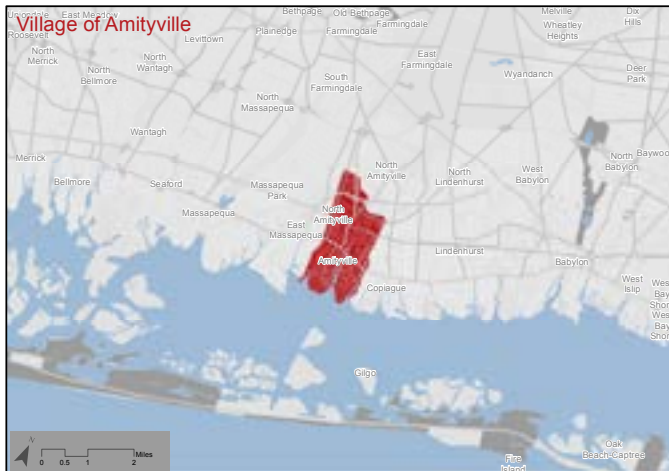
Findings Related To CPCB Technical Assistance	RSS ISSUES
<ul style="list-style-type: none"> • Interest in integrated recovery planning approach that connects the following plans / planning issues: <ul style="list-style-type: none"> – Comprehensive Plan – Lindenhurst Community-Based Vision and Revitalization Plan (CBVRP) – Waterfront Revitalization Plan – Hazard Mitigation – Economic development – Preservation/restore urban creeks, open space areas, and parklands that can serve as buffers – Rebuild coastal infrastructure and roadways in a more resilient manner – Zoning/development codes that align with recovery planning 	<ul style="list-style-type: none"> • Institutional & Staffing Capacity • Community Financial Capacity • Building Abandonment • Land Use Shift / Population Growth • Community Planning & Plan Integration
<ul style="list-style-type: none"> • Lack of capacity for recovery planning that considers National Flood Insurance Program changes and insurance costs • Consider community recovery planning that locates/relocates housing and business development to less vulnerable areas and environmentally sustainable waterfront revitalization with public access 	<ul style="list-style-type: none"> • Land Use Shift / Population Growth
<ul style="list-style-type: none"> • Limited financial capacity to undertake recovery planning • Negative economic impact on the local economy associated with Hurricane Sandy as both residences and businesses were affected, including waterfront businesses and facilities 	<ul style="list-style-type: none"> • Community Financial Capacity
<ul style="list-style-type: none"> • Foreclosed and damaged homes, leading to the potential for building abandonment • Vulnerable infrastructure systems and waterfront facilities exist, that could contribute to building abandonment if not addressed 	<ul style="list-style-type: none"> • Building Abandonment
<ul style="list-style-type: none"> • Limited staff capacity for recovery planning in addition to its other planning and regulatory obligations – no Planning Department and a part-time Planning Board 	<ul style="list-style-type: none"> • Institutional and Staffing Capacity • Community Planning & Plan Integration
<ul style="list-style-type: none"> • Lack of access to and/or knowledge of planning and analytic tools (GIS, scenario modeling, etc.) • Potential benefits from collaborative recovery planning with neighboring villages that share recovery issues (such as waterfront revitalization) 	<ul style="list-style-type: none"> • Institutional & Staffing Capacity • Land Use Shift / Population Growth

CPCB Community-Specific Opportunities and Strategies

CPCB is continuing meetings with community leaders to develop ways to address the community recovery findings with technical assistance related to planning and capacity building. CPCB is developing working relationships with localities in need of assistance to plan and build resiliency. The following is an initial list of CPCB opportunities and strategies. As specific, actionable strategies are developed they will be added to this list of opportunities and strategies along with the federal, state, and local partners responsible for the specific strategies.

Assist the village of Lindenhurst with the formation of a recovery coordination committee. The committee will serve as the village’s interface and technical group to coordinate resources and provide recommendations for recovery planning.

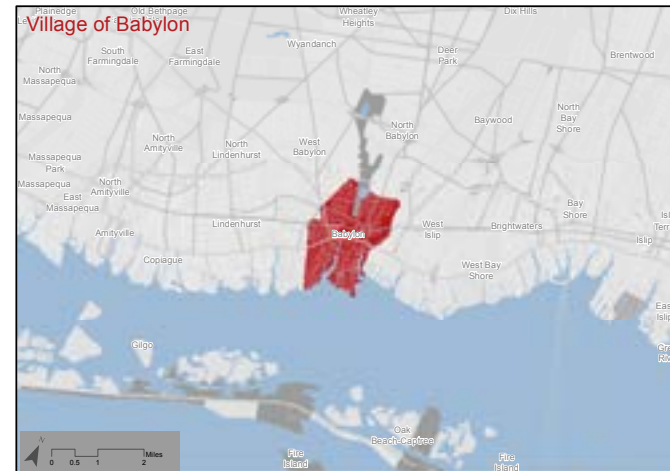
- Work within the structure established for the village of Lindenhurst recovery coordination committee to facilitate access to workshops, tools, and resources that can guide the recovery planning process.
- Provide support and technical assistance related to accessing resources through the state action plan and coordination with Community Reconstruction Zones as defined in the plan.
- Explore the potential for the town of Babylon to provide planning assistance to the village of Lindenhurst.
- Designate a CPCB recovery specialist to work with the village of Lindenhurst to support recovery activities.
- Provide guidance on and partner/resource identification for recovery plan development; help to identify recovery projects and programs and ongoing engagement and collaboration with local officials, stakeholders, and the recovery coordination committee.



Village of Amityville

The village of Amityville is the westernmost village in the town of Babylon and is located on the Great South Bay. It has an estimated 2011 population of 9,556 and a median household income of \$78,997 (2007-2011), which is 91 percent of the county median household income. Based on Individual Assistance data, 914 dwelling units were damaged and 905 of those dwelling units were flooded. These units represent 23 percent of the total housing stock in the village.⁸

The CPCB Suffolk County field team held an introductory meeting with village of Amityville. The village requested that CPCB wait to initiate more detailed recovery discussions until after the mayoral election, which occurred in April. There was a change in administration and the CPCB field team held a follow-up meeting in the village of Amityville at the end of April. Additional meetings are scheduled for the coming weeks in order to assess community needs and develop CPCB technical assistance and support.



Village of Babylon

The village of Babylon encompasses 2.8 square miles on the easternmost portion of the south shore of the town of Babylon, on the Great South Bay. It is bordered by the village of Lindenhurst to the west, North Babylon to the north and West Islip to the east. It has a population of 12,218. The village median home value is \$473,000 and the median household income is \$100,702 (116 percent of the county's median income). The village has a large shopping and business district along Main Street.

Based on Individual Assistance data, 1,167 dwelling units were damaged, which is 23 percent of the total housing stock in the village.⁹

The CPCB Suffolk County field team met with representatives of the village of Babylon during meetings with the town of Babylon, as well as during an initial meeting with the village. Engagement with the village of Babylon to identify recovery issues and opportunities was postponed in order to take Babylon into the Community Reconstruction Zone process.



Town of Islip

The town of Islip is located in Suffolk County on the south shore of Long Island. Its land area is 163.1 square miles, and includes four villages and several hamlets, as well as part of Fire Island. It is surrounded by the towns of Babylon, Huntington, Smithtown, and Brookhaven. The town has a population of 336,801. The median household income is \$84,564 (97 percent of the county median income) and the median home value is \$356,600.

The CPCB Suffolk County field team held several initial meetings with the town of Islip. During those meetings, the town identified issues of concern including: increasing costs of flood insurance, the potential for building abandonment and loss of tax revenue, a need for grant writing capacity, and concerns about options for addressing rising sea levels and storm surges. The town of Islip requested that the CPCB team wait to initiate more detailed recovery discussions until after the town’s initial disaster response issues had been addressed. Engagement with the town of Islip to determine recovery issues and opportunities was scheduled for May to help determine the need for CPCB technical assistance and support.

New York City Recovery Information

New York City consists of five boroughs, each of which is also a county. Brooklyn (Kings County) and the borough of Queens (Queens County) share a land boundary and form the western end of the Long Island land mass. Manhattan (New York County) is an island bound by the Hudson and East rivers. The Bronx (Bronx County) shares a land boundary with Westchester County, and is the city’s northernmost borough. Staten Island (Richmond County) is the city’s southernmost borough. New York City is the largest city in the United States, with a population of 8,175,133 according to the 2010 Census. The city’s most populated borough is Brooklyn, with 2,504,700 residents, followed closely by Queens, with 2,230,722 people. Manhattan has 1,585,873 residents; the Bronx has a population of 1,385,108; and Staten Island’s population is 468,730.¹⁰

Hurricane Sandy caused significant damage in New York City boroughs, including Brooklyn, Manhattan, Queens, and Staten Island, where it affected residential neighborhoods, low-density commercial-industrial areas along the Brooklyn-Queens waterfront, and high density commercial areas in southern Manhattan. Critical infrastructure was damaged in lower Manhattan due



primarily to inundation from sea water. According to HUD's Analysis of Communities Impacted by Hurricane Sandy, approximately 60 percent of the homes that suffered the most severe flooding in the state of New York are located in the five boroughs of New York City. Neighborhoods within Queens, Staten Island, and Brooklyn suffered high volumes of concentrated damage.¹¹

CPCB established a field team to begin working with New York City agencies to acquire data and knowledge of community needs. These agencies include: the New York City Department of City Planning and their borough offices in Staten Island, Brooklyn and Queens; the New York City Special Initiative for Rebuilding and Resiliency (SIRR); and the Mayor's Office of Housing Recovery Operations (HRO). The mission of the HRO is to return Sandy-impacted residents in New York City to permanent, safe and sustainable housing. The HRO is addressing immediate and long-term rebuilding and regulatory housing issues in flood-affected areas of New York City. The HRO is being supported in its effort through a FEMA technical assistance contract. The HRO held community forums which CPCB attended, each with an open house format, in four sections of the city.

SIRR is an initiative of Mayor Bloomberg that is addressing rebuilding efforts in New York City, with a long-term focus on how the city can be more resilient in the wake of Hurricane Sandy. SIRR anticipates releasing a report presenting policy recommendations, infrastructure priorities, and community plans just before the Recovery Support Strategy is released in June, 2013. More than 30 community meetings have been conducted by SIRR with CPCB's NYC field team in attendance at many sessions. The SIRR report is also expected to identify a variety of specific unmet needs that will be eligible for and dependent upon federal funding sources, including Community Development Block Grant Disaster Recovery (CDBG-DR) funds. The CDBG Disaster Recovery Partial Action Plan A prepared by New York City guides uses of \$1.7 billion of the CDBG-DR funds.

Community Engagement Findings

The CPCB NYC field team has held meetings with staff in the Department of City Planning and its offices in the respective boroughs. CPCB has identified and initiated engagement with community board districts along the waterfront in impacted neighborhoods of Staten Island, Brooklyn, and Queens. CPCB is meeting with community board district managers to learn local perspectives on

disaster recovery, identify priorities for recovery, establish which community-based organizations are playing a role in the recovery effort, and help identify post-disaster capacity issues. The map on page 178 provides detail on the community boards that CPCB has contacted. Staten Island – 1, 2, 3; Brooklyn – 2, 6, 13, 15; Queens – 1, 2, 10, 14. In addition, the CPCB NYC field team is meeting with other organizations in New York City, including nongovernmental organizations and community based groups, and elected officials or their representatives from the city council.

The following issues include common themes that were raised during initial community meetings:

- Need for coastal flood protection from inland water bodies, for example in Brooklyn the Gowanus Canal and Newtown Creek, in addition to major water bodies. In many areas, significant inundation also occurred via “backdoor” flooding from inlets, creeks and outfalls, with topography and the built environment trapping waters.
- Need elevation as a means to protect against future storms. Attached housing, such as rows of brownstones and duplexes, face tremendous hurdles in meeting FEMA guidelines. Issues include availability and costs of insurance, expense to repair/retrofit, and the impracticality of raising row homes and not using the garden level where many people reside.
- Need for residents to have more information on rebuilding/retrofitting and the interaction between FEMA guidelines and permits required by the Buildings Department.
- Need to respond to communities' call for a more coordinated evacuation and response plan so residents know what to do and where to go in the future.
- Need to address infrastructure problems related to combined storm and sanitary sewer overflow that are a recurrent issue in southern Queens and Brooklyn. Communities relate that a backup of storm water into streets and basements is a common occurrence during heavy rain-storms.
- Need for small business support.
- Concern over future flood insurance rates.
- Concern regarding public health issues related to mold.

The CPCB NYC field team community meetings are ongoing and the following list of issues will grow longer as engagement continues in order to define potential technical assistance needs. The following table summarizes current findings from CPCB’s engagement in New York City and the relationship to the CPCB Recovery Support Strategy issues.

Findings Related To CPCB Technical Assistance	RSS ISSUES
<ul style="list-style-type: none"> Capacity needed to support Department of City Planning (DCP) recovery planning efforts and identify resources. 	<ul style="list-style-type: none"> Institutional and Staffing Capacity
<ul style="list-style-type: none"> Limited staff capacity to support data collection at the borough level related to recovery, including data on business closures and unoccupied housing due to storm damage in Staten Island, Brooklyn, and Queens. 	<ul style="list-style-type: none"> Institutional and Staffing Capacity Land Use Shift/Population Growth
<ul style="list-style-type: none"> The current workload in each DCP borough planning office has increased, with some indications that the activity level is higher due to Hurricane Sandy damages and subsequent rebuilding efforts by property owners. 	<ul style="list-style-type: none"> Institutional and Staffing Capacity
<ul style="list-style-type: none"> Guidance is needed on rebuilding related to Advisory Base Flood Elevations (ABFE) and the National Flood Insurance Program (NFIP), including how to deal with different types of buildings that cannot be elevated. Communities want to know what rules are before they start rebuilding, but want to start rebuilding quickly and are afraid to do so without firm regulations in place. 	<ul style="list-style-type: none"> Land Use Shift/Population Growth
<ul style="list-style-type: none"> Concern regarding New York City Housing Authority (NYCHA) Public Housing Communities and receipt of essential services. 	<ul style="list-style-type: none"> Community Planning and Plan Integration

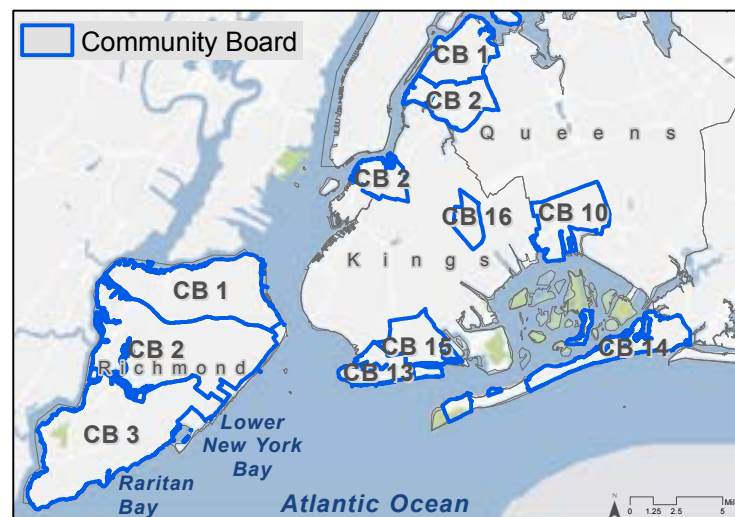
CPCB Community-Specific Opportunities and Strategies

CPCB is continuing community meetings to develop ways to address the community recovery findings with technical assistance related to planning and capacity building. Working within the process New York City has developed for recovery planning, the CPCB NYC field team is identifying a set of action steps to initiate recovery and support community boards within New York City. This role recognizes the distinction between broad strategic planning by the city related to resilience and adaptability to future climate change and neighborhood-level redevelopment planning to help address the requirements of damaged neighborhoods and their residents and businesses. One means to address capacity issues is to utilize planning grant funds authorized by CDBG-DR. As specific, actionable strategies are developed they will be added to this list of opportunities and strategies along with the federal, state, and local partners for specific strategies.

- Work with partners including the Economic RSF to complete data collection related to residential and commercial recovery for Staten Island, Brooklyn, and Queens. This includes identifying patterns of business closures and

abandoned housing due to storm damage in Staten Island and assistance identifying businesses that have closed in the Rockaways and along the Brooklyn-Queens waterfront.

- Assist with environmental justice issues in the impacted areas and New York City Housing Authority public housing communities.
- Work with New York City agencies and other involved stakeholders to communicate information on rebuilding to Department of City Planning borough offices and community boards in light of revised flood maps and to deal with different types of buildings (such as blocks of row houses or multi-family dwellings) that cannot be elevated and to educate residents on resiliency measures to provide future protection.



Rockland County Recovery Information

Rockland County is located 30 miles northwest of Manhattan and has a population of 311,687 as of the 2010 Census. There are five towns, 19 villages, and several hamlets. The Rockland County government includes the county executive office and the Rockland County Legislature. In addition, county departments provide services in areas that include community development, highways, planning, environment, and parks. These departments should be included in initial CPCB meetings with the county.

Storm Damage

According to Individual Assistance data, 693 dwelling units were damaged in Rockland County during Hurricane Sandy. Stony Point, a Census Designated Place within Rockland County, was a hard-hit area of Rockland County where 163 dwelling units were damaged¹², the majority of which were manufactured units that were flooded. Some areas in Stony Point have experienced repetitive flooding and have been impacted by previous storms Lee and Irene. The Stony Point Bar-Mar Trailer Park was severely impacted by Hurricane Sandy.

Community Engagement

FEMA field teams and branch personnel were actively engaged in Rockland County for five months after the storm. CPCB community engagement in Rockland County had not been established as of early June. Stony Point has been identified as a disaster affected area that may require disaster recovery support through the National Disaster Recovery Framework. CPCB staff has been providing assistance to the New York State Department of State in the analysis of the storm impacts in Stony Point. Specific needs in Stony Point include guidance regarding elevation and mitigation in order to avoid flooding in future disaster.

Chapter Notes

- ¹ Within the CPCB RSS, the word “community” is used as an inclusive term to reference areas and jurisdictions, and is representative of any local governmental form such as: city, county, borough, village, or township.
- ² U.S. Department of Housing and Urban Development, Analysis of Communities Impacted by Hurricane Sandy, (Draft, January 29, 2013).
- ³ U.S. Department of Housing and Urban Development, Analysis of Communities Impacted by Hurricane Sandy, (Draft, Jan. 29, 2013).
- ⁴ U.S. Department of Housing and Urban Development, Analysis of Communities Impacted by Hurricane Sandy, (Draft, Jan. 29, 2013).
- ⁵ Ibid.
- ⁶ U.S. Department of Housing and Urban Development, Analysis of Communities Impacted by Hurricane Sandy, (Draft, January 29, 2013).
- ⁷ U.S. Department of Housing and Urban Development, Analysis of Communities Impacted by Hurricane Sandy, (Draft, Jan. 29, 2013).
- ⁸ U.S. Department of Housing and Urban Development, Analysis of Communities Impacted by Hurricane Sandy, (Draft, Jan. 29, 2013).
- ⁹ Ibid.
- ¹⁰ <http://www.nyc.gov/html/dcp/html/census/popcur.shtml>
- ¹¹ U.S. Department of Housing and Urban Development, Office of Policy Development and Research. Analysis of Communities Impacted by Hurricane Sandy. Draft January 2013.
- ¹² U.S. Department of Housing and Urban Development, Office of Policy Development and Research. Analysis of Communities Impacted by Hurricane Sandy. Draft Jan. 2013.

Partners

U.S. Department of Health & Human Services,
U.S. Department of Commerce,
U.S. Department of the Interior,
U.S. Department of Transportation,
U.S. Environmental Protection Agency,
U.S. Department of Housing and Urban Development,
U.S. Small Business Administration ,
U.S. Army Corps of Engineers ,
National Oceanic and Atmospheric Administration



CHAPTER **7**

MITIGATION STRATEGY

New York State Mitigation Strategy

As defined by the Federal Emergency Management Agency (FEMA), hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects.¹ Mitigation is a priority for FEMA, and the agency works closely with state, local, and tribal governments to plan and implement mitigation activities. The 2011 New York State Standard Multi-Hazard Mitigation Plan, written by the New York State Office of Emergency Management (NYSOEM), identifies the state’s mission strategy as the following:

“To demonstrate by example how hazard mitigation benefits the citizens of the State of New York and their communities by eliminating or reducing risks and adverse impacts from hazards, and to encourage and actively support the hazard mitigation activities of local governments, businesses, institutions and non-profit organizations.”

In an effort to better coordinate and implement mitigation activities, FEMA works closely with New York to outline goals and objectives in the Mitigation Strategy. By partnering with the state, FEMA can better understand the driving forces behind mitigation and the distribution of federal funding. Planning is also crucial in providing information to local communities on how, where, and why funding will be directed. The classes of mitigation strategy for the state of New York are prevention, property protection, public awareness education, natural resources protection, and structural projects. The goals of the New York State Hazard Mitigation Program are outlined in Section 4.1.2 Goals and Update Assessment in the NY Hazard Mitigation Plan and represent four categories: end users, services, administration and legislation.² Specific goals and objectives include, but are not limited to:

- Build state and local hazard mitigation infrastructure within the state and promote mitigation as the most effective means to reduce future disaster losses.
- Reduce risk to lives and property from frequent natural, technological, and human-caused disasters. Set priority on hazards that are repetitive and pose severe risk to life and property.
- Promote the implementation of flood mitigation plans and projects in flood-prone areas of the state, in accordance with Flood Mitigation Assistance (FMA).

- Encourage the development and implementation of long-term, cost-effective and environmentally sound mitigation projects at the local level.
- Promote hazard-resistant construction, especially in residential buildings throughout the state.
- Reduce the length of utility “downtimes.”
- Address identified shortfalls and needs in hazard mitigation staff, equipment, and telecommunications within a timeframe that positively impacts productivity and the ability to meet program goals.
- Track and/or recommend federal, state and local legislation related to hazard mitigation.

Although the state has outlined a mitigation strategy, it is important to note that New York is a home-rule state, and the responsibility to implement appropriate mitigation measures generally rests with the municipality where the action is needed. The state has created a general list of mitigation opportunities for municipalities to potentially incorporate in their local planning (e.g. acquisitions, elevation, dry and wet floodproofing, etc.).



Hurricane Sandy Mitigation Strategy

Gov. Andrew Cuomo declared a statewide state of emergency and asked for a pre-disaster declaration on Oct. 26, 2012, for Hurricane Sandy, which President Obama signed later that day. For this disaster (DR-4085), the New York Department of Environmental Conservation, the New York Office of Emergency Management, and the Federal Emergency Management Agency collectively determined strategies and priorities for hazard mitigation. Priorities they identified include the following actions: deliver mitigation programs; develop, publish and track the strategic funds management plan; complete the mitigation incident strategic plan; and gather, track, monitor and report green initiative metrics for hazard mitigation.

Hazard mitigation goals that provide the foundation for building the capacity to mitigate future disaster damage are: the identification and implementation of physical projects; incorporation of hazard mitigation into existing and future policies, plans, regulations and laws; building capacity with information and data development; and increasing awareness of hazards and potential mitigation strategies through education and outreach. These goals can be met through



acquisition and relocation of hazard-prone structures, structural retrofitting, mitigation education of community officials and residents, wise land use and development practices, prudent use of resources and funding, and encouragement of National Flood Insurance Program (NFIP) implementation and compliance, among other measures.

The strategy outlined in the New York State Hazard Mitigation Plan aligns with the mitigation methodologies listed above. For instance, one item speaks to the acquisition of land; the goal is to continue to purchase land and explore enhancement options such as identifying alternate funding sources. NYS Office of Parks, Recreation and Historic Preservation, along with the state Department of Environmental Conservation and Office of Emergency Management, continue to pursue properties as well as funding for acquisitions to reduce the vulnerability of structures in hazard-prone areas as well as the preservation and addition of open space in NYS.³ Elevation, relocation, and acquisition can be funded by Hazard Mitigation Grant Program (HMGP) administered through FEMA, Community Development Block Grants (CDBG) administered by the U.S. Department of Housing and Urban Development, and other funding programs. One such example is the funding for the Greater Catskills Flood Remediation Program administered through the NYS Housing Trust Fund Corporation.⁴

Long-term mitigation can best be achieved through comprehensive local floodplain management and regulations that are consistently enforced. Communities that participate in the National Flood Insurance Program (NFIP) have adopted and agreed to enforce floodplain management regulations in exchange for the ability of their residents to purchase NFIP flood insurance policies. However, participation in the NFIP is voluntary and, therefore, not all communities participate or have floodplain management regulations in place. Local community officials are responsible for enforcing the local floodplain ordinance. If a home or business is damaged by a flood, the owner may be required to meet certain building requirements in the community to reduce future flood damage before repairing or rebuilding the structure. To help cover the cost of meeting the specified requirements, those that participate in the NFIP may be eligible for Increased Cost of Compliance (ICC) coverage for new and renewed Standard Flood Insurance Policies. ICC is available only within existing Special Flood Hazard Areas (SFHAs) and for structures with the lowest floor lower than the Base Flood Elevation (elevation where the annual chance flood is 1 percent). ICC can be used only upon a community determination that a structure has been substantially damaged by a flood, or has been repetitively damaged within a community that has a repetitive damage clause in its local law. Flood insurance

policyholders in high-risk areas, or SFHAs, can get up to \$30,000 of ICC to help pay the expense of bringing their homes or businesses into compliance. The funds can be used for elevation, relocation, demolition, and floodproofing.⁵

Community Education and Outreach specialists are tasked with supporting the impacted area by providing technical assistance to survivors to identify opportunities to implement mitigation techniques in the recovery process. Outreach specialists attended the New York City Housing Recovery Forum Open House efforts, which included liaising with other FEMA program areas, federal agencies, and city officials to serve disaster survivors in the most hard-hit communities following Hurricane Sandy. Additional responsibilities involved assisting with event coordination, ordering and supplying publications for distribution, preparing handouts and media presentations and arranging transportation for staff.

The Mitigation Assessment Team program draws on the combined resources of federal, state, local, and private sector partnerships to assemble and quickly deploy teams of investigators to evaluate the performance of buildings in response to the effects of natural and man-made hazards. These teams also conduct field investigations at disaster sites, and work closely with local and state officials to develop mitigation recommendations. The recommendations address improvements in building design and construction, code development

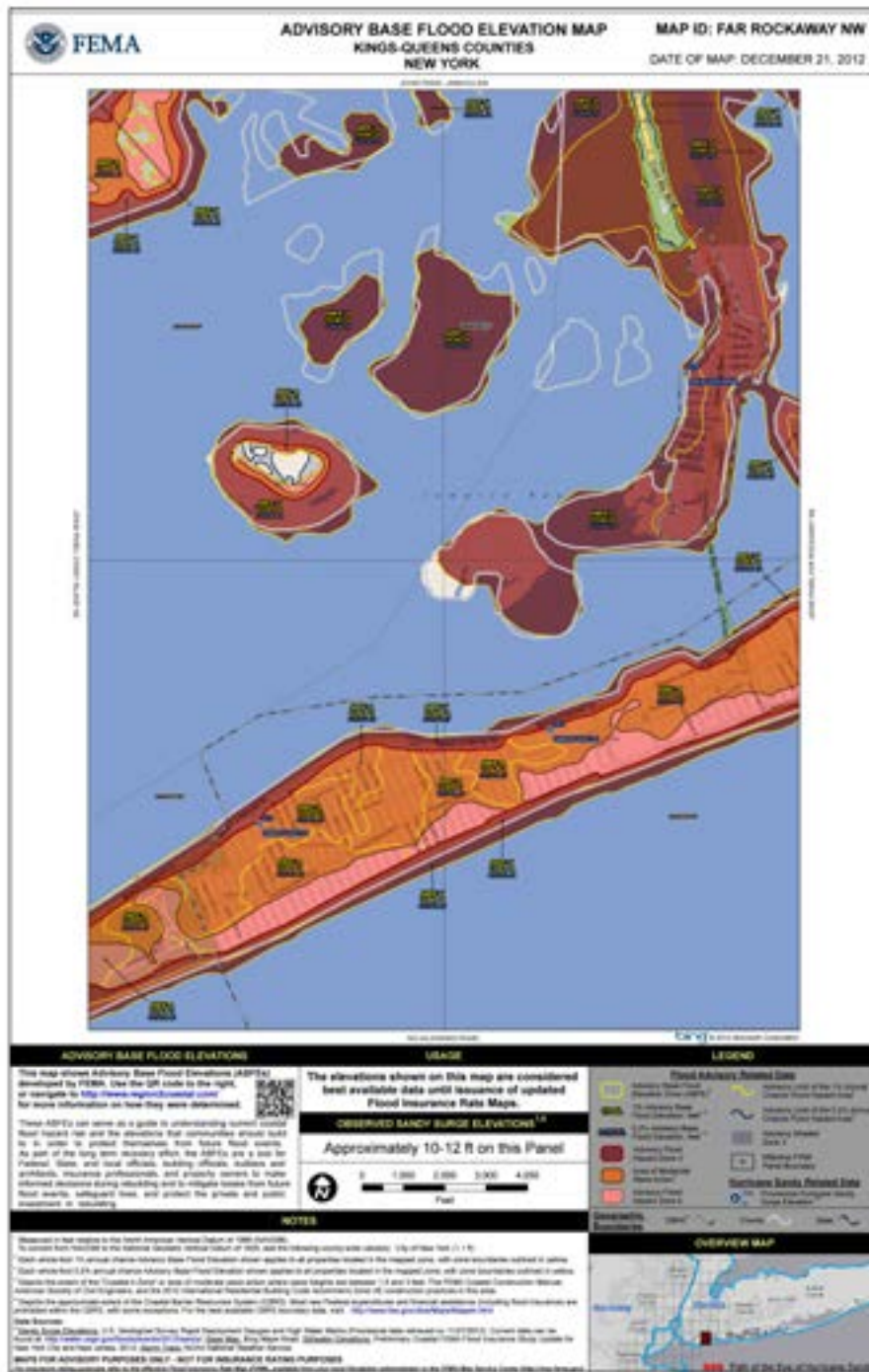


and enforcement, and mitigation activities that will lead to greater resistance to hazard events.⁶ A Mitigation Assessment Team was deployed as part of the mitigation strategy for DR-4085 in an effort to better inform reconstruction after the disaster. The Mitigation Assessment Team is in the process of releasing a series of Hurricane Sandy recovery advisories⁷ and has already released those indicated below, as well as one fact sheet:

- Recovery Advisory 1: Improving Connections in Elevated Coastal Residential Buildings in New York and New Jersey (Completed February 2013)
- Recovery Advisory 2: Reducing Flood Effects in Critical Facilities (Completed April 2013)
- Recovery Advisory 3: Restoring Mechanical, Electrical and Plumbing Systems in Non-Substantially Damaged Residential Buildings (Completed April 2013)
- Recovery Advisory 4: Reducing Operational Interruptions to Mid- and High-Rise Buildings During Floods (Completed March 2013)
- Recovery Advisory 5: Designing for Flood Levels Above the Base Flood Elevations After Hurricane Sandy (Being Finalized)
- Recovery Advisory 6: Protecting Building Fuel Supplies (Completed April 2013)
- Recovery Advisory 7: Reducing Flood Risk and Flood Insurance Premiums for Existing Buildings (Being Finalized)
- Fact Sheet: Cleaning Flood Buildings (May 2013)

Advisory Base Flood Elevations

With the devastation from Hurricane Sandy comes the opportunity to incorporate mitigation actions that ensure structures are rebuilt stronger, safer, and less vulnerable to future flood events. To help support reconstruction efforts, FEMA provides the best available information regarding Base Flood Elevations, inundation, and storm surge. FEMA recovery and mitigation activities and programs must use the best flood hazard data available before the obligation of federal funds. Prior to Hurricane Sandy, FEMA was studying New York and New Jersey to update pre-existing Flood Insurance Rate Maps (FIRMs) that were more than 25 years old. The outdated maps did not accurately reflect current coastal flood hazard risks for Bronx, Kings (Brooklyn), New York (Manhattan),



Richmond (Staten Island), Queens and Westchester counties. The new studies provided by FEMA risk assessment, mapping, and planning partners, were used to accelerate the production of flood maps known as the Advisory Base Flood Elevation (ABFE) data layers, maps, and methodology reports as a reflection of the best available data ⁸.

ABFEs are advisory in nature and more accurately reflect the 1 percent and 0.2 percent annual chance flood hazard elevations in a given area, and storm surge and wave components including:

- Approximate landward limit of three-foot breaking waves
- Limit of moderate wave action to approximately the landward limit of 1.5-foot breaking waves
- Area of moderate wave action to approximately the extent of breaking waves less than three feet and greater than 1.5 feet in height

FEMA uses statistical probabilities of historic storms as part of the updated coastal analysis, which does not include any individual event from past history. The ABFEs associated with the Sandy-impacted communities will include specific United States Geological Survey high water marks observed from Sandy as point data on the advisory maps and range-of-surge elevations in the informational section of each map panel, which will ultimately help to inform the updated FIRMs that will be released mid-2013 for adoption by the counties.⁹



Nassau and Suffolk counties do not have ABFEs because the effective FIRMs for the region were established in 2009; therefore, these communities will continue to rely on the pre-Sandy Base Flood Elevations.

This is not the first disaster where ABFEs have been used as part of the recovery effort. As a result of their use after Hurricane Katrina, some survivors decided to rebuild higher and safer. The use of the advisory information resulted in insurance premium discounts for National Flood Insurance Program (NFIP) policy holders in high-risk areas. Communities participating in the NFIP Community Rating System (CRS) can receive credit for adopting standards higher than the NFIP minimum requirements. The reduction in insurance premium rates is especially relevant with the implementation of the Biggert-Waters Flood Insurance Reform Act of 2012 (effective July 1, 2012), which calls for the NFIP to eliminate flood insurance subsidies and discounts and to increase rates to reflect actual flood risk.

Although initial costs of building to the ABFEs can be slightly higher, the potential is great for owners to save money over the long term by having structures that are more resistant to costly flood damage. The use of this information can reduce vulnerability of structures to flooding and flood damages, and decrease the costs of flood insurance and recovering from future storms and floods. It is important to note that the intended purpose of the advisory elevation products is to provide elevation guidance for rebuilding, not information to support

regulatory floodplain designations or insurance ratings. Community members should check with local building officials to fully understand requirements for rebuilding.

Hazard Mitigation Grant Program

The Hazard Mitigation Grant Program (HMGP) is implemented to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. The amount of funding available to the applicant (i.e. state, territory, or Indian tribal government applying to FEMA) is based on the estimated total federal assistance to be provided by FEMA for disaster recovery under the presidential major disaster declaration. Sub-applicants may include state agencies, Indian tribal governments, local governments and communities, and private non-profit organizations. The applicant selects and prioritizes sub-applications and submits them to FEMA in priority order. Submittal deadlines for applications are established based on the disaster declaration date.¹⁰

Projects covered under the HMGP are subject to a 25 percent non-federal cost share but are eligible for 100 percent coverage of management costs. Federal funds that generally can be used for a non-federal cost share include the U.S. Department of Housing and Urban Development Community Development Block Grants. Additional information for New York can be found using peer-



to-peer assistance through the use of the SHMOnet listserv, where state hazard mitigation officers are able to share ideas and learn best practices. For example, the listserv has been used to discuss the taxability of acquisition and elevation funds provided to property owners. Another conversation addressed the possibility of a memorandum of understanding with HUD to fund acquisitions at 100 percent (no non-federal cost share) and/or throughout the year, regardless of the grant cycles.¹¹ Mitigation projects funded by HMGP include:¹²

- Property acquisitions and structure demolition
- Property acquisition and structure relocation
- Structure elevation
- Dry floodproofing of historic residential structures
- Dry floodproofing of non-residential structures
- Minor localized flood reduction projects
- Structural retrofitting of existing buildings
- Non-structural retrofitting of existing buildings and facilities
- Safe room construction
- Infrastructure retrofitting
- Soil stabilization
- Wildfire mitigation
- Post-disaster code enforcement
- 5 percent initiative projects
- Hazard mitigation planning
- Management costs

HMGP funds cannot be used to fund new construction or substantial improvement in a floodway or new construction in a coastal high hazard zone. Mitigation projects must be cost-effective to be eligible for Hazard Mitigation Assistance (e.g. HMGP) funding as demonstrated by a FEMA-validated benefit-cost assessment. If the future benefits are equal to or greater than the cost, then the benefit-cost ratio is equal to or greater than 1.0 and a proposed activity is considered cost-effective.¹³

Hazard Mitigation Planning

Mitigation is most effective when it is based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs. The purpose of mitigation planning is to identify community policies and actions that can be implemented over the long term to reduce risks and future losses. These mitigation policies and actions are identified based on an assessment of hazards, vulnerabilities,

and risks and through the participation of a wide range of stakeholders and the public in the planning process. Hazard mitigation plans are the foundation of a jurisdiction's long-term strategy to reduce disaster losses and to break the cycle of disaster damage, reconstruction, and repeated damage. The planning process is as important as the resulting written plan. The process creates a framework for risk-based decision making to reduce the harm to lives, property, and the economy from future disasters.

Hazard Mitigation Assistance (HMA) grant programs provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages. Hazard mitigation planning is a FEMA funding-eligible activity under the Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA)¹⁴. For FMA, however, funds can be used only for the flood hazard portion of state, tribal, or local mitigation plans. The Hazard Mitigation Grant Program provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. Planning activities that are funded under FEMA's Hazard Mitigation Assistance programs are designed to develop State, Tribal, and local mitigation plans that meet the planning requirements outlined in 44 CFR Part 201. The purpose of 44 CFR Part 201 is to provide information on the policies and procedures for mitigation planning as required by the provisions of section 322 of the Stafford Act, 42 USC. 5165.

The grantee (i.e. the state) is the government to which the grant is awarded and which is accountable for the use of the funds provided. The key responsibilities of the states are to coordinate all state and local activities relating to hazard evaluation and mitigation and to prepare and submit to FEMA a Standard State Mitigation Plan as a condition of receiving non-emergency Stafford Act assistance and FEMA mitigation grants to address severe repetitive loss properties in their plan, if they choose to, to receive the reduced cost share for the Flood Mitigation Assistance (FMA); to review and update the Standard State Mitigation Plan every three years from the date of the approval of the previous plan in order to continue program eligibility; to make available the use of up to the 7 percent of HMGP funding for planning; and to provide technical assistance and training to local governments to assist them in applying for HMGP planning grants and in developing local mitigation plans. After a declaration, an Indian tribal government may choose to be a grantee, or may act as a sub-grantee under the State. An Indian tribal government acting as grantee assumes the responsibilities of a state for administering the grant.

States must have an approved Standard State Mitigation Plan meeting the requirements of §201.4 as a condition of receiving non-emergency Stafford Act assistance and FEMA mitigation grants. Emergency assistance is not subject to this requirement. The mitigation plan is the demonstration of the state’s commitment to reduce risks from natural hazards and serves as a guide for state decision makers as they commit resources to reducing the effects of natural hazards.

The state’s mitigation planning process includes coordination with other state agencies, appropriate federal agencies, and interested groups, and is integrated to the extent possible with other ongoing state planning efforts as well as other FEMA mitigation programs and initiatives. To be effective the plan must include the following elements:

- A description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.
- Risk assessments that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview.
- A mitigation strategy that provides the state’s blueprint for reducing the losses identified in the risk assessment.
- A section on the coordination of local mitigation planning.
- A plan maintenance process that includes an established method and schedule for monitoring, evaluating, and updating the plan.
- A plan adoption process where the plan must be formally adopted by the state prior to submittal to FEMA for final review and approval.
- Assurances that the state will comply with all applicable federal statutes and regulations with respect to the periods for which it receives grant funding.

The plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities and resubmitted for approval to the appropriate FEMA regional administrator every three years. The state is encouraged to review its plan in the post-disaster timeframe to reflect changing priorities, but it is not required.

The 2011 New York State Standard Multi-Hazard Mitigation Plan, expiring

in January 2014, is the most recently approved hazard mitigation plan for the state. This plan represents Volume 1 of the New York State Comprehensive Emergency Management Plan (CEMP) and profiles natural hazards that may be caused by the weather and geology that dominates New York. Information about human-caused, technological, or biological hazards may be found in Volume 2 of the CEMP. The New York State Division of Homeland Security and Emergency Services, State Office of Emergency Management, served as the lead in the initial development and the update process of the New York State Multi-Hazard Mitigation Plan.

The local hazard mitigation plan is the representation of the jurisdiction’s commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. Local plans also serve as the basis for the state to provide technical assistance and to prioritize project funding. Local governments are responsible to prepare and adopt a jurisdiction-wide natural hazard mitigation plans as a condition of receiving HMGP funds, in accordance with § 201.6 and they must review and update their plans every five years – or more often – after it is approved. Plans prepared for the Flood Mitigation Assistance (FMA) program need only address these requirements as they relate to flood hazards in order to be eligible for FMA project grants. However, these plans must be clearly identified as being flood mitigation plans, and they will not meet the eligibility criteria for other mitigation grant programs, unless flooding is the only natural hazard the jurisdiction faces.

Multi-jurisdictional plans are accepted by FEMA, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan. Statewide plans are not accepted as multi-jurisdictional plans. Currently, multi-jurisdictional plans are being encouraged by New York and the state is providing funding only for the development of multi-jurisdictional plans. An approvable local hazard mitigation plan must include:

- Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.
- A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards.
- A hazard mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

- A plan maintenance process that includes a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle; a process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms and a discussion on how the community will continue public participation in the plan maintenance process.
- Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan. For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

Plans must be submitted to the state hazard mitigation officer (SHMO) for initial review and coordination. The state will then send the plan to the appropriate FEMA regional office for formal review and approval. The regional review will be completed within 45 days after receipt from the state, whenever possible. A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within five years in order to continue to be eligible for mitigation project grant funding. New York also includes “required actions” for any hazard mitigation plan developed with funds administrated by state OEM. These required actions are part of all contracts executed with grant recipients since Oct. 15, 2012.¹⁵

The tribal hazard mitigation planning process must be in accordance with §201.7 and is similar to the local community mitigation planning process with several exceptions. These include, but are not limited to, the following:

- An Indian tribal government applying to FEMA as a grantee may choose to address severe repetitive loss properties in its plan to receive the reduced cost share for the FMA program.
- Multi-jurisdictional plans may be accepted, as appropriate, as long as the Indian tribal government has participated in the process and has officially adopted the plan. Indian tribal governments must address all the elements identified in §201.7 to ensure eligibility as a grantee or as a sub-grantee.
- The mitigation planning process should include coordination with other tribal agencies, appropriate federal agencies, adjacent jurisdictions, and interested groups, and be integrated to the extent possible with other ongoing tribal planning efforts as well as other FEMA mitigation programs and initiatives.

- The mitigation planning process should include an opportunity for the public to comment on the plan during the drafting stage and prior to plan approval, including a description of how the Indian tribal government defined “public.”
- The Indian tribal government’s vulnerability to the hazards is described. This description must include an overall summary of each hazard and its impact on the tribe. The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities; an estimate of the potential dollar losses to vulnerable structures identified; a general description of land uses and development trends; and cultural and sacred sites that are significant, even if they cannot be valued in monetary terms.

An Indian tribal government applying to FEMA as a grantee may request the reduced cost share of the FMA program if it has an approved tribal mitigation plan meeting the requirements of this section that also identifies actions the Indian tribal government has taken to reduce the number of repetitive loss properties (which must include severe repetitive loss properties), and specifies how the Indian tribal government intends to reduce the number of such repetitive loss properties. The Severe Repetitive Loss and Repetitive Flood Claims programs were eliminated by the Biggert-Waters Flood Insurance Reform Act (2012). Severe repetitive loss properties remain a focus of the Flood Mitigation



Assistance program. The plan must also include assurances that the Indian tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding. The Indian tribal government will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes.

As of Nov. 11, 2012, 886 jurisdictions in New York State were covered by approved or approvable pending adoption local hazard mitigation plans. This represents 55 percent of the jurisdictions and 77 percent of the population in the state. Nine percent of the jurisdictions in the state were not in the plan process. Twenty-two percent of the jurisdictions have received funding for their plans, but had not yet submitted plans for approval. Four percent of the plans needed revisions for approval and 6 percent were pending review. Fifteen percent of the plans were approvable pending adoption. Forty percent were approved and current. Four percent of the local plans had expired.

Hazard Mitigation Plans in Disaster Designated Counties

Nassau County and 48 participating jurisdictions have been funded for a multi-jurisdictional plan and are expected to start their planning process during autumn 2013. The village of East Rockaway has a single jurisdiction plan that needs revision and the village of Cedarhurst has been funded for a single jurisdiction plan but has not submitted a draft. The village of Bayville is now a participant of the Nassau County plan, Freeport has a plan under review, and Manorhaven still has an expired plan. Nineteen jurisdictions are not in the planning process.

Suffolk County has a multi-jurisdictional plan, with 27 participating jurisdictions, that expires Sept. 10, 2013. The town of Southampton has received funding and is in the process of drafting a multi-jurisdictional plan with seven incorporated villages and the Shinnecock Indian Nation. It is anticipated that the Southampton hazard mitigation plan will be annexed to the Suffolk County plan when the latter is completed. The town of Islip has a single jurisdiction plan that expires Dec. 12, 2013. The village of Lindenhurst has a plan that has expired. The village of Ocean Beach has a single jurisdiction plan that requires revision before approval. The villages of Brightwaters, Islandia, and Saltaire are not in the planning process.

New York City, which includes the counties of Bronx, Kings, New York, Queens, and Richmond, has a single jurisdiction plan that expires March 12, 2014. A summary of the status of the remaining disaster designated counties may be found in Table 1.

Since a local government sub-applicant must have an approved mitigation plan in order to apply for and receive mitigation project grants under the Hazard Mitigation Grant Program and Flood Mitigation Assistance program, many jurisdictions within the declared disaster area will be ineligible to receive non-emergency hazard mitigation project grant funds.

Capacity

“A weakness in the State’s capabilities is a lack of adequate staffing and related resources to carry out the pre-disaster mitigation efforts that could enhance the goals and objectives presented in this section of the plan. Having recognized this, efforts are underway to secure appropriate approvals to strengthen the areas of weakness and to secure appropriate staffing.” 4.2 State Capability Assessment, Mitigation Strategy, State Hazard Mitigation Plan, 2011¹⁶

The Status of Local Hazard Mitigation Plans in Other Disaster-Designated Counties			
County	Jurisdictions	Type of Plan	Status
Westchester	10	Multi-Jurisdictional	Approved Plan
	8	Single Jurisdiction	Approved Plan
	6	Single Jurisdiction	Expired
	4	Single Jurisdiction	Funded, No Submission
	1	Multi-Jurisdictional	Needs Revision
	8	Multi-Jurisdictional	Funded, No Submission
	7	None	No Plans
Rockland	25	Multi-Jurisdictional	Approved Plan
Putnam	10	Multi-Jurisdictional	Funded, No Submission
Orange	7	Single Jurisdiction	Approved Plan
	1	Single Jurisdiction	Funded, No Submission
	8	Multi-Jurisdictional	Funded, No Submission
	26	None	No Plans
Ulster	13	Multi-Jurisdictional	Approved Plan
	1	Single Jurisdiction	Approved Plan
	11	None	No Plans
Sullivan	22	Multi-Jurisdictional	Requires Revision

Table 1

Disasters create an additional burden on local and state government resources. One specific example is the administrative duties associated with the Hazard Mitigation Grant Program. Guidance on how to increase the capacity of staff to help manage the HMGP can be found in Part VIII of the FEMA Hazard Mitigation Assistance Unified Guidance.¹⁷ One example of how FEMA has been able to support New York communities after Hurricane Sandy is through direct technical assistance. FEMA hired contractors to assess 8,000 potential substantially damaged residential structures throughout Nassau and Suffolk counties.

As part of the State Administrative Plan, the state must identify staffing requirements, resources needed for recovery, and the procedure for expanding staff temporarily following a disaster, if necessary. The plan must also establish procedures to guide implementation activities and reflect grantee management costs and distribution of subgrantee management costs. This is a consideration because even though other state agencies augment the State Hazard Mitigation Office following a disaster, the demand for staff to implement the grant process may be too great for the existing capacity of the government. The plan must identify positions and the minimum number of personnel needed to implement activities funded through the HMGP. This includes clerical and administrative personnel, financial management staff, and specialists to support implementation of mitigation activities and conduct benefit-cost analyses, and environmental planners. The grantee must also include procedures for determining the reasonable amount or percentage of management costs that it will pass through to subgrantees, as well as closeout and audit procedures. Management costs will be provided at a rate of 4.89 percent of the HMGP ceiling and are outside of and separate from HMGP ceiling amount; there is no additional cost share.

As identified by the New York State Administrative Plan, NYSOEM is responsible for the administration of the HMGP. The state determines the priority for funding in concurrence with 44 CFR and the FEMA-approved NYS Standard Multi-Hazard Mitigation Plan. Although FEMA will assist with the determination of subgrantee and project eligibility, the responsibility for program implementation falls on the staff listed in the plan:

- Governor’s Authorized Representative and alternate
- NYSOEM Deputy Director for Recovery
- General Counsel
- State Hazard Mitigation Officer and deputy
- State Coordinating Officer and deputy

Temporary or part-time administrative staff to assist with program implementation may be hired, if necessary. Until such staff are hired, existing state mitigation staff will undertake the initial actions such as notification of applicants and early development of application information packages. Funds provided under management costs can be used for staffing. The dollar amount provided to the grantee for management costs for a single declaration shall not exceed \$20 million unless otherwise specified. The state will submit a staffing plan in accordance with the administration plan requirements outlined in 44 CFR 206.437 for administrative costs in the joint field office. After the office closes, costs of state personnel (regular salaries only) for continuing management of the HMGP may be eligible when approved in advance by the regional administrator. The grantee may expend management cost funds for allowable costs for a maximum of eight years from the disaster declaration or 180 days after the latest performance period of non-management cost HMGP project narrative, whichever is sooner. The State does not provide management costs or administrative costs to subgrantees.

As outlined in the NYS Office of Emergency Management HMGP 4085 Administrative Plan, the state is considering the following priorities to support their mitigation strategy:¹⁸

- Support mitigation planning.
- Train inspectors to assist with damage inspections and substantial damage determinations.
- Run a “lightning-round” acquisition program focusing on properties with substantial-damage determinations in place and no historic preservation concerns.
- Acquire structures from the floodplain (with an emphasis on substantially-damaged properties whose damage exceeds 50 percent of the fair market value).
- Elevate structures in the floodplain (but no properties in the riverine floodway or in a coastal high-hazard area, or V-zone).
- Augment post-Sandy critical infrastructure system repairs, taking into account climate change.
- Address the anticipated effects of climate change, following the recommendations of the NYS Sea Level Rise Task Force and the NYS Energy Research Development Authority ClimAID Report.
- Support emergency power generation at local and state critical facilities to

ensure continuity of government and operations functions.

- Letters of interests for all other project types will be accepted, and processed only if funds remain after all eligible planning, acquisition, and elevation projects have been addressed.

The state may request a relaxation of the benefit-cost analysis module and/or an increase in the 5 percent set-aside funding to allow the development and selection of HMGP projects that adequately address climate change.

NYS Climate Change and Sea Level Rise

The set-aside of the HMGP can be used to help support ongoing climate change initiatives. In 2007, the New York State Legislature created the Sea Level Rise Task Force and charged it with “assessing the anticipated impacts of sea level rise, as well as providing recommendations related to actions the State may take to protect areas at risk of damage, adaptive measures and regulatory and/or statutory changes.”¹⁹ State agencies that participated in the task force included the Department of Environmental Conservation, Department of State Division of Coastal Resources, NYS Office of Emergency Management, and others.

Furthermore, in 2009, Gov. David Paterson’s Executive Order No. 24 directed the development of a State Climate Action Plan with a goal of reducing the state’s greenhouse gas emissions by 80 percent (compared to 1990 levels) by 2050, and established a Climate Action Council to determine how New York would meet the goal. State agencies then launched a process that brought together more than 100 technical experts and the broader public to develop the plan.

The Climate Action Council produced a New York State Climate Action Plan Interim Report (released Nov. 2, 2010) that addressed legal, procedural, and policy changes necessary for the implementation of the initiative. The organizations that developed the report used climate change projections that are found in the ClimAID project.²⁰ The interim report captured recommended actions such as:

- The use of adaptation to climate change as responsible planning, incorporating the most current information about projected climate change into a variety of decisions.
- Avoid investments that are not highly adapted to a modified climate, such as infrastructure located in low-lying floodplains.

- Historical climate conditions are no longer a reliable guide to planning within natural, social, or economic systems.

The document was prepared by a technical work group composed of more than 25 individuals including representatives from state and local government, academia, utilities, environmental justice groups, non-governmental organizations, environmental groups, and the insurance industry (co-chaired by NYSERDA and DEC). Categories that were addressed in the report spanned eight sectors of expertise: agriculture, coastal zones, ecosystems, energy, public health, transportation, telecommunications and information infrastructure, and water resources. The report describes common themes regarding climate change that should be addressed before taking actions on recommendations that have been identified (Table 2).

Themes and Recommendations Regarding Climate Change in the New York State Climate Action Plan Interim Report	
Common Themes	<ul style="list-style-type: none"> • Dissemination of climate change information to decision makers at all levels. • NYS should develop capacity to identify and monitor climate change indicators, including indicators of climate factor interactions, to provide necessary information to decision makers. • Develop a framework for describing, monitoring, assessing, and reporting progress on adaptation efforts within the state. • Support for research and development is necessary to develop new strategies and technological advances, and to provide the proper detail and confidence for recommended strategies. • Emergency management capabilities across the state must be evaluated in light of climate projections to determine where these capabilities will be compromised. • Education and outreach at all levels are critical to the success of climate change adaptation efforts. • Certain groups will be disproportionately affected by climate change; it is necessary to identify these groups and ensure their participation throughout adaptation planning processes. • Immediate action is needed.
Recommendations	<ul style="list-style-type: none"> • Increase the accuracy of the existing real-time weather warning systems. • NYS should endorse a coordinated set of projections for sea level rise and associated changes in flood-recurrence intervals in all coastal areas, including the Hudson River to the Federal Dam at Troy, for use by State and local agencies and authorities for planning and decision-making purposes. Regularly updated, modified, and refined. • Integrate sea level rise and flood-recurrence interval projections into all relevant agency programs and regulatory, permitting, planning and funding decisions. • Identify and map areas of greatest current risk from coastal storms and greatest future risk from sea level rise and coastal storms in order to support risk reduction actions in those areas. • Reduce vulnerabilities in coastal areas at risk from sea level rise and storms (coastal risk management zone) and support increased reliance on non-structural measures and natural protective features to reduce impacts from coastal hazards. • Develop a long-term interagency mechanism to regularly evaluate climate change science; set research priorities to foster adaptation; coordinate programming, regulatory, and funding actions; and assess progress in adapting to climate change and sea level rise. • Allow “room for rivers.” Acknowledge the dynamic nature of rivers on the landscape and strive to reduce risk to critical infrastructure and human development as the risk of flooding increases with climate change. <ul style="list-style-type: none"> ◦ Incorporate water-related climate projections into State and local emergency-management planning.

Table 2 Themes and recommendations regarding climate change in the New York State Climate Action Plan Interim Report.

NYC Climate Change and Sea Level Rise

New York City has been making a concerted effort under PlaNYC to understand the effects that climate change will have on the city. In 2008, Mayor Michael R. Bloomberg convened the New York City Panel on Climate Change (NPCC), a body of leading climate and social scientists, and charged it with making the first-ever climate projects for New York City. These NPCC projects, created using global climate models and released in a 2009 report titled “Climate Risk Information,” found that by mid-century, New York City could experience:²²

- Sea levels of up to a foot higher, causing flooding from the 1 percent storm to occur two to three times more as often.
- Sea level rise by as much as two and a half feet under a more extreme rapid ice melt scenario, which accounts for more rapid melting of the Greenland and Antarctic ice sheets.
- Two to three times as many extreme heat days, with heat waves increasing similarly.
- More frequent, heavy downpours.

These projections were used in the work of the city agencies and the Climate Adaptation task force, another PlaNYC initiative, which is composed of public and private infrastructure operators that plan for the risks to the city’s infrastructure, built environment, and public health.

In August 2012, New York City formally established the NPCC and the task force when it wrote those two entities into law. The bill was the first passed by any state or local government in the country institutionalizing a process for updating climate projections and identifying and implementing strategies to address climate risks. The new law requires that the NPCC meet twice a year, advise the city and the Climate Adaptation Task Force on the latest scientific developments, and update climate projections every three years.

Chapter Notes

- ¹ Federal Emergency Management Agency. (June 10, 2010). Hazard Mitigation Assistance Unified Guidance.
- ² New York State Office of Emergency Management. (Dec. 21, 2010). 2011 New York State Standard Multi-Hazard Mitigation Plan (State Mitigation Plan). Albany, New York.
- ³ New York State Office of Emergency Management. (Dec. 21, 2010). 2011 New York State Standard Multi-Hazard Mitigation Plan (State Mitigation Plan). Albany, New York.
- ⁴ Federal Emergency Management Agency. (June 15, 2012). Retrieved March 19, 2013, from Increased Cost of Compliance Coverage: <http://www.fema.gov/national-flood-insurance-program-2/increased-cost-compliance-coverage>
- ⁵ Federal Emergency Management Agency. (June 14, 2012). Retrieved March 19, 2013, from Mitigation Assessment Team Program: <http://www.fema.gov/mitigation-assessment-team-program>
- ⁶ Published Recovery Advisories: <http://www.fema.gov/library/viewRecord.do?id=6994>
- ⁷ Communities can access their ABFE maps: <http://www.region2coastal.com/>
- ⁸ Further information regarding ABFEs: <http://www.region2coastal.com/faqs/advisory-bfe-faq>
- ⁹ Federal Emergency Management Agency. (June 10, 2010). Hazard Mitigation Assistance Unified Guidance.
- ¹⁰ New York State Office of Emergency Management. (Dec. 21, 2010). 2011 New York State Standard Multi-Hazard Mitigation Plan (State Mitigation Plan). Albany, New York. Multi-hazard 2.
- ¹¹ Federal Emergency Management Agency. (June 10, 2010). Hazard Mitigation Assistance Unified Guidance. Section D.1.1. Mitigation Projects.
- ¹² Federal Emergency Management Agency. (June 10, 2010). Hazard Mitigation Assistance Unified Guidance.
- ¹³ Pre-disaster Mitigation Program has not been funded for FY2013. The program’s unobligated balance of \$174.2 million (as of Dec. 31, 2011) will enable the continued issuance, oversight, and closeout of grants until funding is depleted: http://www.fema.gov/pdf/about/budget/11d_fema_national_pre-disaster_mit_fund_dhs_fy13_cj.pdf
- ¹⁴ New York State Office of Emergency Management. (Dec. 21, 2010). 2011 New York State Standard Multi-Hazard Mitigation Plan (State Mitigation Plan). Albany, New York.
- ¹⁵ NYS Office of Emergency Management. (Oct. 15, 2012). Hazard Mitigation Planning Standards. Albany, New York.
- ¹⁶ New York State Office of Emergency Management. (Dec. 21, 2010). 2011 New York State Standard Multi-Hazard Mitigation Plan (State Mitigation Plan). Albany, New York.
- ¹⁷ Federal Emergency Management Agency. (June 10, 2010). Hazard Mitigation Assistance Unified Guidance.
- ¹⁸ NYS Office of Emergency Management. (n.d.). HMGP-4085: New York Hurricane Sandy Administrative Plan. Albany, NY.
- ¹⁹ New York State Office of Emergency Management. (Dec. 21, 2010). 2011 New York State Standard Multi-Hazard Mitigation Plan (State Mitigation Plan). Albany, NY.
- ²⁰ New York Climate Action Council. (2010). New York State Climate Action Plan Interim Report. Albany: New York State Department of Environmental Conservation.
- ²¹ New York Climate Action Council. (2010). New York State Climate Action Plan Interim Report. Albany: New York State Department of Environmental Conservation.
- ²² NPCC, “Climate Risk Information”: http://www.nyc.gov/html/om/pdf/2009/NPCC_CRI.pdf

RSS & Hurricane Sandy Recovery Resources

Publications

U.S. Senate and U.S. House. 113th Congress. P.L. 113-2, *Disaster Relief Appropriations Act of 2013*. Washington DC: Government Printing Office, 2013. <http://www.gpo.gov/fdsys/pkg/PLAW-113publ2/html/PLAW-113publ2.htm>

U.S. Department of Homeland Security, Federal Emergency Management Agency. *National Disaster Recovery Framework*. Washington DC: Federal Emergency Management Agency, 2011. <http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&id=5124>

NY-NJ-CT-PA Disaster Housing Recovery Program through the Regional Catastrophic Preparedness Grant Program. *Community Recovery Playbook: A Guide for Using Community Development Block Grants for Disaster Recovery*. February 2013.

Websites/Online Resources

The City of New York Development Block Grant Disaster Recovery Partial Action Plan A http://www.nyc.gov/html/recovery/downloads/pdf/nyc_cdbg-dr_action_plan_hud_submission.pdf

Federal Emergency Management Agency. FEMA Region 2 Coastal Analysis and Mapping. Accessed June 3, 2013. <http://www.region2coastal.com/>

Federal Emergency Management Agency. Geoportal for best available flood hazard data for areas affected by Hurricane Sandy. Accessed June 11, 2013. <http://184.72.33.183/best/>

The New York City Environmental Justice Alliance, *Sandy Regional Assembly Recovery Agenda*, April 2013. Accessed June 3, 2013. <http://nyc-eja.org/>

New York State 2100 Commission, *Recommendations to Improve the Strength and Resilience of Empire State's Infrastructure*, 2013. PDF file. Accessed June

3, 2013. <http://www.governor.ny.gov/assets/documents/NYS2100.pdf>

NY.gov (New York State's government website). Rebuild New York Now. Accessed June 4, 2013. <http://www.governor.ny.gov/2013/rebuild-ny>

nyc.gov (New York City's government website). New York Special Initiative for Rebuilding and Resiliency (SIRR). Accessed June 4, 2013. <http://www.nyc.gov/html/sirr/html/home/home.shtml>

Office of Community Renewal. *State of New York Action Plan for Community Development Block Grant Program Disaster Recovery*. New York: New York State Homes and Community Renewal, 2013. PDF file. Accessed June 11, 2013. <http://www.nyshcr.org/Publications/CDBGActionPlan.pdf>

Office of Governor of New York. *New York Rising: State of the State*, 2013. PDF file. Accessed June 4, 2013. <http://www.governor.ny.gov/sites/default/themes/governor/sos2013/2013SOSBook.pdf>

United States Army Corps of Engineers. New York District. Accessed June 3, 2013. <http://www.nan.usace.army.mil/>

Unpublished documents

New York City Department of Planning. *Urban Waterfront Adaptive Strategies - Draft*, December 2012. Accessed June 11, 2013. <http://stormsmart.org/uploads/qs/nyc-urban-waterfront-adaptive-strategies.pdf>

United States. Department of Homeland Security, Federal Emergency Management Agency. *Recovery Federal Interagency Operational Plan – Provisional Draft*, 2011.

United States. Department of Homeland Security, Federal Emergency Management Agency. Mission Scoping Assessments for New York State, December 2012.

Abbreviations/Acronyms

AHP	Advisory Council on Historic Preservation	DOD	Department of Defense
ACL	Administration of Community Living	DOE	Department of Energy
ABFE	Advisory Base Flood Elevation	DOH	Department of Health
AFN	Access and Functional Needs	DOHMH	Department of Health and Mental Hygiene
AMI	Average Median Income	DOI	Department of the Interior
ARC	American Red Cross	DOJ	Department of Justice
BFE	Base Flood Elevation	DOL	Department of Labor
BITF	Beach Infrastructure Task Force	DOT	Department of Transportation
BOEM	Bureau of Ocean Energy Management	DRAA	Disaster Relief Appropriations Act
BRTF	Beach Resiliency Task Force	EDA	Economic Development Administration
CBO	Community Based Organization	EDAT	Economic Development Assessment Team
CCP	Crisis Counseling Program	EIDL	Economic Injury Disaster Loans
CDBG	Community Development Block Grant	EPA	Environmental Protection Agency
CDBG-DR	Community Development Block Grant - Disaster Recovery	EPFAT	Emergency Power Facility Assessment Tool
CDC	Centers for Disease Control and Prevention	ESF	Emergency Support Function
CDC	Community Development Corporation	FBO	Faith-based Organization
CEQ	Council on Environmental Quality	FCC	Federal Communications Commission
CFR	Code of Federal Regulations	FCO	Federal Coordinating Officer
CIS	Critical Infrastructure Sectors	FDRC	Federal Disaster Recovery Coordinator
CNCS	Corporation for National and Community Services	FEMA	Federal Emergency Management Agency
CPCB	Community Planning and Capacity Building RSF	FHA	Federal Housing Administration
CRCL	Office for Civil Rights and Civil Liberties	FHFA	Federal Housing Finance Agency
CRS	Community Rating System	FIOP	Recovery Federal Interagency Operational Plan
CRTF	Coastal Resiliency Task Force	FIRM	Flood Insurance Rate Map
CRZ	Community Reconstruction Zone	FOA	Funding Opportunity Assessment
DCM	Disaster Case Management	FTA	Federal Transit Administration
DHAP	Disaster Housing Assistance Program	GDP	Gross Domestic Product
DHS	Department of Homeland Security	GIS	Geographic Information Systems
DOC	Department of Commerce	GMD	Geo-Magnetic Disturbance

GSA	General Services Administration	MSA	Mission Scoping Assessment
HHS	Department of Health and Human Services	MTA	Metropolitan Transportation Authority
HM	Hazard Mitigation	NADO	National Association of Development Organizations
HMGP	Hazard Mitigation Grant Program	NARA	National Archives and Records Administration
HOME	HOME Investment Partnerships Program	NCEH	National Center for Environmental Health
HPH	Healthcare and Public Health	NCR	Natural and Cultural Resources RSF
HRO	Housing Recovery Operations	NDRF	National Disaster Recovery Framework
HSS	Health and Social Services RSF	NEH	National Endowment for the Humanities
HUD	Housing and Urban Development	NFIP	National Flood Insurance Program
IA	Individual Assistance	NGO	Nongovernmental Organization
ICC	Increased Cost of Compliance	NIH	National Institutes of Health
IHP	Individuals and Households Program	NIPP	National Infrastructure Protection Plan
IMLS	Institute of Museum and Library Services	NOAA	National Oceanic and Atmospheric Administration
IRS	Internal Revenue Service	NPPD	National Protection and Programs Directorate
IS	Infrastructure Systems RSF	NRC	Nuclear Regulatory Commission
ITA	International Trade Administration	NRCS	Natural Resources Conservation Service
JFO	Joint Field Office	NREL	National Renewable Energy Laboratory
lidar	Light Detection and Ranging	NTFI	Neighborhood Task Force Initiative
LOC	Library of Congress	NVOAD	National Voluntary Organizations Active in Disaster
MAT	Mitigation Assessment Team	NY-CTSCC	New York-Connecticut Sustainable Communities Consortium



OCFS	Office of Child and Family Services	TSA	Transitional Sheltering Assistance
ONA	Other Needs Assistance	Treas	Department of the Treasury
PA	Public Assistance	TVA	Tennessee Valley Authority
PANYNJ	Port Authority of New York and New Jersey	USACE	U.S. Army Corps of Engineers
PATH	Port Authority Trans-Hudson	USCG	U.S. Coast Guard
PD&R	Policy Development and Research	USDA	U.S. Department of Agriculture
PNP	Private Non-Profit	USFWS	U.S. Fish and Wildlife Service
PPD	Presidential Policy Directive	USGS	U.S. Geological Survey
PHA	Public Housing Agency	VA	Department of Veterans Affairs
PSAP	Public Safety Answering Points	VAL	Voluntary Agency Liaison
RSF	Recovery Support Function	VNA	Visiting Nurses Association
RSS	Recovery Support Strategy		
SAMHSA	Substance Abuse and Mental Health Services Administration		
SBA	Small Business Administration		
SIRR	Special Initiative for Rebuilding and Resiliency (NYC task force)		
SRIA	Sandy Recovery Improvement Act		
SRTF	Sandy Rebuilding Task Force		
SSA	Social Security Administration		
STEP	Sheltering and Temporary Essential Power		
TOD	Transit Oriented Development		





Strategy created with coordinated efforts from the following agencies:

