



EXECUTIVE SUMMARY

The 2014 Update to the 2008 Suffolk County Multi-Jurisdictional Multi-Hazard Mitigation Plan was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 requires states and local governments to prepare all hazard mitigation plans in order to remain eligible to receive pre-disaster mitigation grant funds that are made available in the wake of federally-declared disasters. **To restate, by not participating in this process and adopting the resulting plan, municipalities will not be eligible to receive future pre-disaster mitigation grant funding (404 grant funds).** It is also important to remember that pre-disaster mitigation grant funds are separate and distinct from those federal and state funds available for direct post-disaster relief (i.e. Public Assistance (PA) and Individual Assistance (IA)). The availability of those funds remains unchanged; if there is a federally-declared disaster in Suffolk County, the affected municipalities will still receive immediate recovery assistance regardless of their participation in this plan.

Hazard Mitigation is any sustained action taken to reduce or eliminate the long-term risk and effects that can result from specific hazards.

FEMA defines a **Hazard Mitigation Plan** as the documentation of a state or local government's evaluation of natural hazards and the strategy to mitigate such hazards.

However, DMA 2000 effectively improves the disaster planning process by increasing hazard mitigation planning requirements for hazard events and requiring participating municipalities to document their hazard mitigation planning process and identify hazards, potential losses, and mitigation needs, goals, and strategies.

Several major natural hazard events occurred since the adoption of the original 2008 Hazard Mitigation Plan (HMP) that signaled a call to action throughout Suffolk County to review the risks disasters pose and create solutions. In 2011 Hurricane Irene occurred and then 14 months later the worst natural disaster since 1938 struck Suffolk County- Hurricane Sandy. To date, properties still remain damaged and communities are still trying to recover from both Hurricane Irene and Sandy. This plan provided an opportunity for communities to learn from the past and strengthen policies and actions taken to reduce impact from natural disasters.

Suffolk County has seen much success in the implementation of the 2008 HMP. Proactive measures such as protecting critical infrastructure through the purchase of backup generators has proven to be a wise investment and strong pre-disaster preparation reduced damages seen in the aftermath of major disasters. Communities have also considered regulatory standards regarding land-use and zoning that exceed minimum requirements and provide the communities with greater capability to manage development without increasing hazard risk and vulnerability.

The process to update the Suffolk County HMP incorporated the four major tasks taken to develop hazard mitigation plans and their subsequent updates (FEMA 386-1 – State and Local Mitigation Planning guidance), specifically:

Organize Resources: From the start, communities should focus on the resources needed for a successful mitigation planning process. Essential steps include identifying and organizing interested members of the community as well as the technical expertise required during the planning process.

Assess Risk: Next, communities need to identify characteristics and potential consequences of hazards. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be on important community assets.



Develop a Mitigation Plan: Armed with the understanding of the risks posed by hazards, communities need to determine what their priorities should be and then look at possible ways to avoid or minimize the undesired effects. The result is a hazard mitigation plan and strategy for implementation

Implement the Plan and Monitor Progress: Communities can bring the plan to life in a variety of ways ranging from implementing specific mitigation projects to changes in the day-to-day operations of the local government. To ensure the success of an on-going program, it is critical that the plan remains relevant. Thus, it is important to conduct period evaluations and make revisions as needed.

The following Executive Summary is organized according to these general steps.

Suffolk County Multi-Jurisdictional Planning Process

DMA 2000 requires states to submit comprehensive Hazard Mitigation Plans (HMPs) to the Federal Emergency Management Agency (FEMA) to be eligible for future pre-disaster mitigation funding. Local governments, including counties, municipalities, tribal governments and special purpose districts must also develop plans. Suffolk County developed and adopted the original county HMP in 2008. The DMA 2000 regulations require that local plans be formally updated and adopted every five years, reassessing their risk and updating their local strategies to manage and mitigate those risks. To comply, Suffolk County and inclusive jurisdictions actively participated in the update of the 2008 Suffolk County Multi-Jurisdictional Multi-Hazard Mitigation Plan. Once the mitigation plan is completed and approved, the participating jurisdictions will continue to address and implement the findings, recommendations and mitigation strategies identified in this plan update.

Extensive outreach efforts by the Suffolk County Department of Fire, Rescue and Emergency Services (FRES) resulted in full participation of all municipalities, as well as the Shinnecock and Unkechaug Tribal Nations. Further, the Suffolk County Water Authority (SCWA) fully participated to achieve the ability to independently apply for grant funding.

It is noted that FEMA and the New York State Office of Emergency Management (NYSOEM) has long been interested in unifying all municipalities under countywide HMPs. The 2008 countywide HMP included eight of the ten Suffolk County towns and their inclusive municipalities. During this update, all municipalities in the County have fully participated in this planning process, resulting in a true countywide HMP. The Town of Islip and several of the villages were previously covered under single-jurisdiction local HMPs, which have now been incorporated into this plan update. Further, the Town of Southampton and their inclusive villages conducted a concurrent hazard mitigation planning process, which has also been fully integrated into this countywide plan update.

Within this plan update process, Suffolk County and the participating jurisdictions accomplished the following:

- Developed a Steering Committee and Planning Committee;
- Sought and incorporated the input of the public and stakeholders;
- Reviewed and updated the hazards of concern;
- Profiled and prioritized these hazards;
- Estimated inventory at risk and potential losses associated with these hazards;
- Reviewed and updated hazard mitigation goals and objectives;



- Reviewed and updated the County and local mitigation strategies to address the identified risks and vulnerabilities;
- Updated and developed mitigation plan maintenance procedures to be executed upon plan approval.

The planning process involved a large number of Federal, State, Regional, County and local stakeholders as identified in Section 3.3, “Stakeholder Outreach and Involvement”.

As required by DMA 2000, the participating jurisdictions and Suffolk County have informed the public about these efforts and provided opportunities for public comment and input on the planning process. In addition, numerous agencies and stakeholders have participated as core or support members to provide input and expertise to the planning process. This HMP documents the process and outcomes of the jurisdictions’ mitigation planning efforts. Announcements regarding the planning process were publicized in local newspapers and on the Suffolk County web site (<http://www.suffolkcountyny.gov/RESPOND/>). The RESPOND website also offered the general public and stakeholder groups an opportunity to provide their input through community surveys.

Suffolk County Profile

According to the 2010 U.S. Census data, Suffolk County has an estimated population of 1,493,350. The County’s population density in 2011 was 1,643 persons per square mile. (U.S. Census, 2010). It is well recognized that the County’s population swells significantly during the summer season, particularly within coastal communities that have great exposure to coastal storms and related hazards. Suffolk County is bordered by Nassau County to the west and major water bodies to the north (Long Island Sound), south and east (Atlantic Ocean).

Suffolk County includes rural landscape, residential areas, business districts, commercial/industrial areas, various transportation systems (local and state roadways, railway, airport, etc.), various terrains and natural features, approximately 1,000 miles of shoreline, 70,000 acres of parkland, and educational facilities. In 2007, Suffolk County had 34,404 acres of farmland and was the leading county in New York State in the production of many crops. This combination of natural and developed features lays the foundation for Suffolk County’s vulnerability to natural hazards, both in terms of exposure to hazard events and the potential impact of hazard events.

The Suffolk County HMP provides a general overview of current and anticipated population and land use within the study area. This information provides a basis for making decisions regarding the type of mitigation approaches to consider and the locations in which these approaches should be applied. This information can also be used to support decisions regarding future development in vulnerable areas. For potential increases in vulnerability, the County and jurisdictions can then plan ahead to mitigate those vulnerabilities early in the development process or can direct development to areas of lower risk. The Planning Committee will revisit the mitigation plan regularly to ensure that mitigation actions support sustainability in order to minimize increased risk and to support the implementation and targeting of specific mitigation actions to address the potential impacts of development over time.

Development increases population and structures and therefore, can increase the impact of hazards on a community. For example, heavy development planned for a flood-prone area would likely increase the impact of the flood event as time progresses.



Risk Assessment

A key component of a mitigation plan is the accurate identification of risks posed by a hazard and the corresponding impacts to the community. The process of identifying hazards of concern, profiling hazard events, and conducting a vulnerability assessment is known as a risk assessment. The risk assessment portion of the mitigation planning process included the steps shown in Figure ES-1. Each of these steps is summarized below.

Step 1: The first step of the risk assessment process is to identify the hazards of concern. FEMA's current regulations only require an evaluation of natural hazards. Natural hazards are natural events that threaten lives, property, and many other assets. Often, natural hazards can be predicted, where they tend to occur repeatedly in the same geographical locations because they are related to weather patterns or physical characteristics of an area.

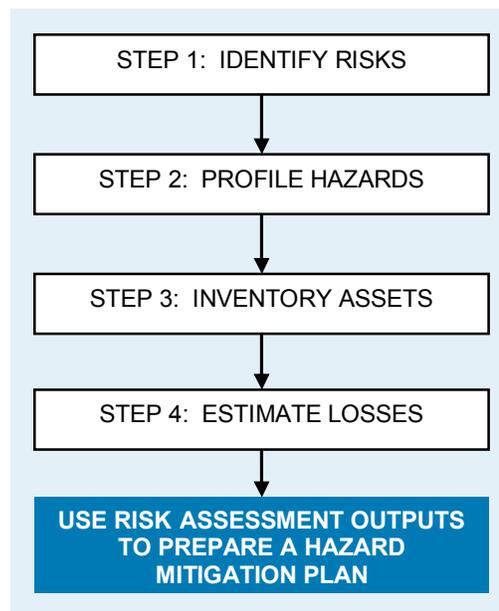
Suffolk County focused on considering a full range of natural hazards that could impact the area, and then identified and ranked those hazards that presented the greatest concern. The following list of thirteen (13) hazards of concern, in order of hazard ranking determined by the Planning Committee, was selected for further evaluation in the mitigation plan:

- Coastal Erosion
- Drought
- Earthquake
- Flooding (riverine, flash, coastal, and urban flooding)
- Groundwater Contamination (natural)
- Hurricane (tropical cyclones, including tropical storms and tropical depressions)
- Infestation (Asian Longhorn Beetle, Lyme Disease and West Nile Virus)
- Nor'easters (extra-tropical cyclones, including severe winter low-pressure systems)
- Severe Storms (windstorms, thunderstorms, hail, lightning and tornados)
- Severe Winter Storm (heavy snow, blizzards, ice storms)
- Shallow Groundwater
- Wildfire
- Expansive Soils

Section 5.2, "Identification of Hazards of Concern" details the process by which all hazards were evaluated, and provides the rationale for selecting the 13 hazards of concern for this plan update.

Step 2: The next step of the risk assessment is to prepare a profile for each hazard of concern. For each hazard, the profile includes: the hazard description; its location and extent; previous occurrences and losses; and the probability of future events. These profiles assist communities in evaluating and comparing the hazards that can impact their area. Each type of hazard has unique characteristics that vary from event to event. That is, the impacts associated with a specific hazard can vary depending on the magnitude and location of each event (a hazard event is a specific, uninterrupted occurrence of a particular type of hazard). Further, the probability of occurrence of a hazard in a given location impacts the priority assigned to that

Figure ES-1. Risk Assessment Process





hazard. Finally, each hazard will impact different communities in different ways, based on geography, local development, population distribution, age of buildings, and mitigation measures already implemented.

The full hazard profiles for all hazards of concern, including the vulnerability assessment/loss estimates (see subsequent section), are found in Section 5.3 of this plan update.

Steps 3 and 4: To understand risk, a community must evaluate what assets they possess and which are exposed or vulnerable to the identified hazards of concern. Hazard profile information combined with data regarding population, demographics, general building stock, and critical facilities at risk prepares the community to develop risk scenarios and estimate potential damages and losses for each hazard.

To address the requirements of DMA 2000 and better understand potential vulnerability and losses associated with hazards of concern, Suffolk County used standardized tools, combined with local, state, and federal data and expertise to conduct the risk assessment. Section 5.1, “Risk Assessment – Methodology and Tools” provides details on the risk and vulnerability assessment process conducted for this plan update. The following summarizes some of the specialized tools and methods used to provide an enhanced risk assessment for this update process.

Hazards U.S. – Multi-Hazard (HAZUS-MH)

In 1997, FEMA developed a standardized model for estimating losses caused by earthquakes, known as Hazards U.S. or HAZUS. HAZUS was developed in response to the need for more effective national-, state-, and community-level planning and the need to identify areas that face the highest risk and potential for loss. HAZUS was expanded into a multi-hazard methodology, HAZUS-MH with new models for estimating potential losses from wind (hurricanes) and flood (riverine and coastal) hazards. HAZUS-MH is a Geographic Information System (GIS)-based software tool that applies engineering and scientific risk calculations, which have been developed by hazard and information technology experts, to provide defensible damage and loss estimates. These methodologies are accepted by FEMA and provide a consistent framework for assessing risk across a variety of hazards. The GIS framework also supports the evaluation of hazards and assessment of inventory and loss estimates for these hazards.

As described in detail in Section 5.1, “Risk Assessment – Methodology and Tools”, custom methodologies in HAZUS-MH version 2.1 (HAZUS-MH) were used to assess potential exposure and losses associated with the hazards of concern for Suffolk County. This included the following significant upgrades to the default data and vulnerability assessment methodologies provided with the HAZUS-MH platform:

- **Default Building Inventory:** The default building inventory in HAZUS-MH was updated and replaced with a custom building inventory developed for the County. The updated building inventory was developed using detailed structure-specific data provided by Suffolk County Department of Planning building footprints, Real Property Tax Service parcels, and assessor data provided by the Towns (where available).
- **Critical Facility Inventory:** The critical facility inventory (essential facilities, utilities, transportation features and user-defined facilities) was updated beginning with the data utilized for the 2008 HMP. An online GIS-based portal was developed and made available to all planning partners to assist in the update of the critical facility inventory. The resulting database supports not only this planning process, but many other emergency management planning, response and recovery efforts.



- **Sea-Level Rise:** To assess the County’s vulnerability of population, buildings and critical facilities to sea level rise, a spatial analysis was conducted with the NOAA sea level rise scenario polygon data. The results of this analysis may be found in the Flood section (Section 5.4.5). To assess vulnerability to sea level rise, the lowest and the highest NOAA sea level rise scenarios were used to account for the full range of impacts.
- **Hurricane/Wind:** A HAZUS-MH probabilistic analysis was performed to analyze the wind hazard losses for Suffolk County. The probabilistic hurricane hazard activates a database of thousands of potential storms that have tracks and intensities reflecting the full spectrum of Atlantic hurricanes observed since 1886 and identify those with tracks associated with the County. The 100- and 500-year MRPs were examined for the wind-only impacts. The “Sea – Lake Overland Surge from Hurricanes – SLOSH Model, which represents potential flooding from worst-case combinations of hurricane direction, forward speed, landfall point, and high astronomical tide was used to estimate exposure.
- **Coastal Erosion:** To help understand the geographic distribution of coastal risk, the New York Department of State prepared coastal and riverine risk assessment layers with assistance from the National Oceanic and Atmospheric Administration Coastal Services Center (NOAA-CSC) and the Federal Emergency Management Agency (FEMA). The coastal risk assessment areas depict the full spectrum of coastal risk, from relatively frequent events to infrequent large storms or future changes in water levels. Risk assessment mapping uses the best currently available science and data sources to identify areas at risk from flooding, erosion, and storm surge as well as potential effects from sea level rise.

The overall vulnerability of Suffolk County to the hazards of concern cannot be underestimated. While the County had been spared a direct hit from a hurricane since the late 1930’s, Hurricane Sandy provided a stark reminder of the region’s vulnerability to coastal storms and its many damaging consequences (e.g. storm surge inundation, coastal erosion, service outages). While perhaps less destructive, the more frequent Nor’Easter, tropical systems and other severe storms result in frequent coastal and inland flooding that affect residents, businesses and government services on a routine basis. Current National Flood Insurance Program (NFIP) statistics for the County identify over 38,000 NFIP policies in force, insuring over \$11 billion in property, with total premiums of over \$45 million annually, and paid claims since 1978 exceeding \$1 billion.

Detailed hazard profiles and associated loss estimates (vulnerability assessments) for all thirteen hazards of concern are found as Sections 5.4.1 through 5.4.13. The following provides a summary of vulnerability assessment results for those hazards determined to pose the greatest risk to the population and built environment of the County.

Hurricane, Nor’Easter, Severe Storm:

Damages from Hurricanes and Nor’Easters are generally associated with high-winds and coastal flooding related to storm surge and wind driven wave action. Losses to Severe Storms are related to high-winds and stormwater related flooding, as well as lightning and hailstorm damage.

Table EC-1 summarizes the building value (structure and contents) damage estimated for the 100- and 500-year MRP hurricane wind-only events. Damage estimates are reported for the County’s probabilistic HAZUS-MH model scenarios. The data shown indicates total losses associated with wind damage to building structure.



Table EC-2 summarizes the estimated building replacement cost value exposed to hurricane storm surge by jurisdiction.

Table EC-3 provides an estimate of the potential loss to the general building stock, in all occupancy classes, by jurisdiction, to the 1-Percent Annual Chance Flood Event.

Table EC-4 summarizes the NFIP policies, claims and repetitive loss statistics for Suffolk County, by jurisdiction.

Severe Winter Storm:

The mitigation planning committee has determined that severe winter storms poses a high risk to the County, however detailed loss assessments were not conducted for this effort as available and appropriate methodologies are limited. Table EC-2 identifies the total replacement cost values of all structural classes for each community. It may be assumed that all structures are exposed and therefore vulnerable to damages to severe winter storms. It is recognized, however, that ice storms, heavy snows and blizzards tend to manifest their greatest impact as utility outages, and transportation interruptions and accidents.



Table EC-1. Estimated Building Value (Structure and Content) Damaged by the 100-Year and 500-Year MRP Hurricane-Related Winds

Jurisdiction	Estimated Total Damages*		Percent of Total Building and Contents RV**		Estimated Residential Damage		Estimated Commercial Damage	
	100-Year	500-Year	100-Year	500-Year	100-Year	500-Year	100-Year	500-Year
Babylon (T)	\$187,592,283	\$13,573,962,156	0.2	16.7	\$162,072,423	\$7,894,438,504	\$6,247,318	\$1,165,520,914
Brookhaven (T)	\$1,725,996,479	\$1,596,906,895	0.8	0.7	\$1,577,373,061	\$1,462,291,741	\$63,984,108	\$70,950,590
East Hampton (T)	\$720,975,178	\$5,868,525	3.8	0.0	\$660,695,000	\$5,715,750	\$40,476,460	\$111,051
Huntington (T)	\$227,878,125	\$22,681,256,507	0.2	24.0	\$213,307,524	\$16,831,608,297	\$9,558,138	\$3,728,530,736
Islip (T)	\$574,924,335	\$5,317,985,701	0.5	4.3	\$508,658,129	\$4,209,001,322	\$32,145,673	\$568,715,135
Riverhead (T)	\$325,488,894	\$30,769,153	1.6	0.1	\$198,226,996	\$26,866,940	\$44,688,490	\$1,920,457
Shelter Island (T)	\$77,030,217	\$1,357,451	2.9	0.1	\$71,952,500	\$1,339,000	\$3,506,770	\$13,557
Smithtown (T)	\$293,791,664	\$4,115,858,896	0.4	5.2	\$276,336,941	\$3,459,363,301	\$7,848,988	\$223,952,339
Southampton (T)	\$1,716,566,622	\$62,864,372	3.2	0.1	\$1,600,344,598	\$61,869,437	\$76,800,962	\$680,499
Southold (T)	\$600,487,753	\$13,430,485	3.7	0.1	\$495,526,816	\$12,714,819	\$44,199,216	\$359,012
Suffolk County	\$6,450,731,550	\$47,400,260,141	0.9	6.7	\$5,764,493,988	\$33,965,209,111	\$329,456,124	\$5,760,754,290

Source: HAZUS-MH 2.1; Suffolk County Planning Department, 2014; Suffolk County Real Property Tax Service, 2014

*Total Damages is sum of damages for all occupancy classes (residential, commercial, industrial, agricultural, educational, religious and government).

RV Replacement Value

Table EC-2. Estimated Building Replacement Cost Value in the Hurricane Inundation Zones

Jurisdiction	Total RCV	Estimated RCV in SLOSH Inundation Zones			
		Cat 1	Cat 2	Cat 3	Cat 4
Amityville (V)	\$4,252,136,181	\$347,025,167	\$1,261,172,046	\$2,072,472,608	\$3,283,770,716
Asharoken (V)	\$372,107,179	\$73,840,063	\$244,440,939	\$258,556,186	\$289,937,148
Babylon (T)	\$65,453,076,501	\$801,564,864	\$4,399,409,423	\$6,556,176,678	\$9,280,628,648
Babylon (V)	\$4,543,925,987	\$361,283,603	\$2,008,832,059	\$4,118,920,562	\$4,528,673,112
Belle Terre (V)	\$669,659,013	\$639,590	\$937,929	\$2,255,107	\$6,734,630
Bellport (V)	\$1,916,728,157	\$7,875,273	\$112,587,773	\$293,082,609	\$461,808,936
Brightwaters (V)	\$1,513,218,570	\$1,641,785	\$240,353,793	\$599,494,198	\$949,842,092





Jurisdiction	Total RCV	Estimated RCV in SLOSH Inundation Zones			
		Cat 1	Cat 2	Cat 3	Cat 4
Brookhaven (T)	\$190,143,257,364	\$1,679,838,274	\$5,558,038,946	\$9,627,425,019	\$12,858,404,693
Dering Harbor (V)	\$50,907,547	\$400,159	\$2,838,025	\$4,531,436	\$6,952,225
East Hampton (T)	\$14,753,173,216	\$246,921,879	\$1,045,826,802	\$1,739,885,090	\$2,372,615,112
East Hampton (V)	\$2,592,657,128	\$1,333,368	\$23,374,287	\$75,686,496	\$185,774,294
Greenport (V)	\$959,195,848	\$145,416,975	\$430,627,517	\$718,359,124	\$894,126,986
Head of the Harbor (V)	\$1,460,689,661	\$2,861,570	\$3,235,338	\$10,040,330	\$28,155,350
Huntington (T)	\$87,620,284,012	\$391,950,507	\$1,143,430,731	\$1,608,654,626	\$1,922,323,807
Huntington Bay (V)	\$824,147,761	\$30,080,007	\$122,847,765	\$170,110,032	\$218,998,695
Islandia (V)	\$3,165,387,995	\$0	\$0	\$0	\$0
Islip (T)	\$116,722,805,765	\$1,846,633,565	\$8,921,195,015	\$21,598,043,527	\$29,249,312,953
Lake Grove (V)	\$4,981,641,857	\$0	\$0	\$0	\$0
Lindenhurst (V)	\$7,338,416,625	\$528,085,959	\$1,969,970,555	\$3,956,614,594	\$5,894,987,453
Lloyd Harbor (V)	\$2,454,429,712	\$44,549,946	\$72,117,074	\$119,358,221	\$182,974,269
Mastic Beach (V)	\$3,233,984,869	\$363,546,604	\$1,289,168,259	\$1,918,578,930	\$2,505,531,957
Nissequogue (V)	\$3,556,614,754	\$28,021,372	\$80,073,320	\$162,634,829	\$321,346,802
North Haven (V)	\$1,038,696,076	\$11,163,300	\$123,378,976	\$311,323,876	\$458,150,776
Northport (V)	\$3,098,715,281	\$18,769,259	\$158,412,706	\$294,877,636	\$400,718,280
Ocean Beach (V)	\$506,864,928	\$457,852,019	\$496,027,651	\$506,864,928	\$506,864,928
Old Field (V)	\$999,833,880	\$33,923,133	\$115,018,597	\$211,495,896	\$286,256,630
Patchogue (V)	\$5,365,465,598	\$44,858,184	\$724,382,408	\$1,965,087,148	\$3,322,688,614
Poquott (V)	\$613,660,785	\$2,838,887	\$8,083,258	\$23,576,824	\$31,790,272
Port Jefferson (V)	\$4,974,246,594	\$116,241,950	\$260,205,071	\$396,725,738	\$433,667,582
Quogue (V)	\$2,538,333,603	\$233,173,892	\$787,110,631	\$1,179,513,907	\$1,496,412,728
Riverhead (T)	\$20,620,083,411	\$280,279,453	\$912,474,055	\$1,439,181,786	\$2,363,817,066
Sag Harbor (V)	\$2,555,414,041	\$176,149,494	\$505,629,047	\$732,811,616	\$924,112,357
Sagaponack (V)	\$1,538,825,257	\$1,185,600	\$39,599,400	\$103,925,100	\$249,445,884
Saltaire (V)	\$577,966,672	\$536,500,096	\$565,121,906	\$573,797,956	\$575,672,692
Shelter Island (T)	\$2,627,033,680	\$101,158,788	\$251,401,942	\$492,686,788	\$717,124,500





Jurisdiction	Total RCV	Estimated RCV in SLOSH Inundation Zones			
		Cat 1	Cat 2	Cat 3	Cat 4
Shoreham (V)	\$444,350,589	\$0	\$0	\$0	\$0
Smithtown (T)	\$72,444,940,121	\$21,410,154	\$85,157,318	\$152,210,023	\$220,302,281
Southampton (T)	\$38,161,684,004	\$1,316,923,709	\$4,036,138,692	\$6,494,096,373	\$9,330,071,047
Southampton (V)	\$5,883,613,602	\$115,312,153	\$284,328,260	\$668,029,844	\$1,109,497,445
Southold (T)	\$15,067,456,341	\$722,581,960	\$2,182,353,789	\$3,524,309,198	\$5,118,077,235
Village of the Branch (V)	\$1,314,993,732	\$0	\$0	\$0	\$0
West Hampton Dunes (V)	\$309,912,300	\$126,960,900	\$302,428,200	\$309,912,300	\$309,912,300
Westhampton Beach (V)	\$2,752,056,759	\$594,112,963	\$1,334,118,949	\$1,643,581,039	\$1,856,495,319
Shinnecock Tribal Nation	\$473,022,431	\$4,834,626	\$62,877,046	\$186,112,761	\$262,219,460
Unkechaug Tribal Nation	\$76,936,042	\$6,606,376	\$17,944,581	\$39,232,338	\$48,474,156
Suffolk County	\$702,562,551,431	\$11,826,347,426	\$42,182,670,083	\$76,860,233,276	\$105,464,671,427

Source: NYOEM; Suffolk County Planning Department, 2014; Suffolk County Real Property Tax Service, 2014

Table EC-3. Estimated General Building Stock Potential Loss to the 1-Percent Annual Chance Flood Event – All Occupancies

Jurisdiction	Total RCV	All Occupancies			
		1% Annual Chance Event		0.2% Annual Chance Event	
		Estimated Loss (RCV)	% of Total	Estimated Loss (RCV)	% of Total
Amityville (V)	\$4,252,136,181	\$131,466,183	3.1	\$187,878,132	4.4
Asharoken (V)	\$372,107,179	\$29,703,526	8.0	\$59,119,365	15.9
Babylon (T)	\$65,453,076,501	\$202,090,599	0.3	\$323,196,644	0.5
Babylon (V)	\$4,543,925,987	\$70,835,634	1.6	\$120,103,908	2.6
Belle Terre (V)	\$669,659,013	\$168,386	0.0	\$192,663	0.0
Bellport (V)	\$1,916,728,157	\$2,314,199	0.1	\$4,550,929	0.2
Brightwaters (V)	\$1,513,218,570	\$480,079	0.0	\$4,446,810	0.3
Brookhaven (T)	\$190,143,257,364	\$375,288,602	0.2	\$610,697,112	0.3
Dering Harbor (V)	\$50,907,547	\$278,856	0.5	\$342,270	0.7
East Hampton (T)	\$14,753,173,216	\$125,364,697	0.8	\$252,373,192	1.7
East Hampton (V)	\$2,592,657,128	\$6,884,454	0.3	\$29,584,680	1.1





Jurisdiction	Total RCV	All Occupancies			
		1% Annual Chance Event		0.2% Annual Chance Event	
		Estimated Loss (RCV)	% of Total	Estimated Loss (RCV)	% of Total
Greenport (V)	\$959,195,848	\$6,921,506	0.7	\$11,722,008	1.2
Head of the Harbor (V)	\$1,460,689,661	\$235,267	0.0	\$379,416	0.0
Huntington (T)	\$87,620,284,012	\$30,854,144	0.0	\$75,643,790	0.1
Huntington Bay (V)	\$824,147,761	\$9,183,858	1.1	\$17,489,771	2.1
Islandia (V)	\$3,165,387,995	\$0	0.0	\$0	0.0
Islip (T)	\$116,722,805,765	\$519,405,259	0.4	\$783,304,733	0.7
Lake Grove (V)	\$4,981,641,857	\$0	0.0	\$0	0.0
Lindenhurst (V)	\$7,338,416,625	\$97,645,341	1.3	\$151,545,552	2.1
Lloyd Harbor (V)	\$2,454,429,712	\$15,635,244	0.6	\$20,900,413	0.9
Mastic Beach (V)	\$3,233,984,869	\$96,673,226	3.0	\$144,918,821	4.5
Nissequoque (V)	\$3,556,614,754	\$5,545,961	0.2	\$10,414,216	0.3
North Haven (V)	\$1,038,696,076	\$213,484	0.0	\$971,786	0.1
Northport (V)	\$3,098,715,281	\$10,433,252	0.3	\$17,424,397	0.6
Ocean Beach (V)	\$506,864,928	\$137,639,580	27.2	\$176,693,437	34.9
Old Field (V)	\$999,833,880	\$9,843,926	1.0	\$13,797,170	1.4
Patchogue (V)	\$5,365,465,598	\$13,039,274	0.2	\$24,710,413	0.5
Poquott (V)	\$613,660,785	\$1,165,857	0.2	\$1,341,343	0.2
Port Jefferson (V)	\$4,974,246,594	\$3,328,257	0.1	\$15,193,985	0.3
Quogue (V)	\$2,538,333,603	\$62,930,814	2.5	\$124,693,602	4.9
Riverhead (T)	\$20,620,083,411	\$24,859,626	0.1	\$51,798,550	0.3
Sag Harbor (V)	\$2,555,414,041	\$11,436,368	0.4	\$34,694,640	1.4
Sagaponack (V)	\$1,538,825,257	\$22,552,675	1.5	\$39,620,273	2.6
Saltaire (V)	\$577,966,672	\$147,537,122	25.5	\$195,757,758	33.9
Shelter Island (T)	\$2,627,033,680	\$7,108,567	0.3	\$14,290,911	0.5
Shoreham (V)	\$444,350,589	\$0	0.0	\$0	0.0
Smithtown (T)	\$72,444,940,121	\$5,733,386	0.0	\$14,568,281	0.0
Southampton (T)	\$38,161,684,004	\$381,451,338	1.0	\$668,181,199	1.8
Southampton (V)	\$5,883,613,602	\$95,700,968	1.6	\$159,963,531	2.7





Jurisdiction	Total RCV	All Occupancies			
		1% Annual Chance Event		0.2% Annual Chance Event	
		Estimated Loss (RCV)	% of Total	Estimated Loss (RCV)	% of Total
Southold (T)	\$15,067,456,341	\$89,765,253	0.6	\$166,043,387	1.1
Village of the Branch (V)	\$1,314,993,732	\$4,266	0.0	\$4,266	0.0
West Hampton Dunes (V)	\$309,912,300	\$81,317,110	26.2	\$112,732,151	36.4
Westhampton Beach (V)	\$2,752,056,759	\$114,077,265	4.1	\$196,286,247	7.1
Shinnecock Tribal Nation	\$473,022,431	\$3,560,365	0.8	\$12,233,323	2.6
Unkechaug Tribal Nation	\$76,936,042	\$1,238,025	1.6	\$2,422,980	3.1
Suffolk County	\$702,562,551,430	\$2,951,911,802	0.4	\$4,852,228,055	0.7

Source: HAZUS-MH v2.1; Suffolk County Planning Department, 2014; Suffolk County Real Property Tax Service, 2014

Note: RCV = Replacement Cost Value; T = Town; V = Village; % = Percent.

Table EC-4. NFIP Policies, Claims and Repetitive Loss Statistics

Jurisdiction	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	Severe Rep. Loss Prop. (1)	# Policies in the 1% Flood Boundary (3)	# Policies in the 0.2% Flood Boundary (3)	# Policies Outside the Combined 1% and 0.2% Flood Boundaries Hazard Areas (3)
Village of Amityville	1,096	1,532	\$83,461,980	227	40	757	20	319
Village of Asharoken	172	247	\$6,325,415	21	1	154	0	18
Village of Babylon	1,243	1,757	\$90,906,465	199	41	743	55	445
Town of Babylon	3,234	4,282	\$167,646,793	468	89	1,973	332	929
Village of Belle Terre	11	6	\$65,991	0	0	0	0	11
Village of Bellport	148	47	\$891,539	4	0	19	3	126
Village of Brightwaters	189	118	\$3,416,895	5	0	23	10	156
Town of Brookhaven	6,370	4,492	\$114,549,216	325	47	2,681	211	3,478
Village of Dering Harbor	12	2	\$0	0	0	0	0	12
Town of East Hampton	3,009	761	\$6,979,997	40	2	433	119	2,457
Village of East Hampton	431	65	\$1,237,298	5	0	65	42	324
Village of Greenport	215	147	\$2,421,362	5	2	63	20	132
Village of Head of the Harbor	12	3	\$17,188	0	0	2	0	10





Jurisdiction	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	Severe Rep. Loss Prop. (1)	# Policies in the 1% Flood Boundary (3)	# Policies in the 0.2% Flood Boundary (3)	# Policies Outside the Combined 1% and 0.2% Flood Boundaries Hazard Areas (3)
Village of Huntington Bay	70	80	\$1,756,888	8	0	21	2	47
Town of Huntington	875	521	\$6,451,178	27	2	80	7	788
Village of Islandia	4	0	\$0	0	0	0	0	4
Town of Islip	6,677	5,304	\$201,009,662	416	57	2,164	155	4,358
Village of Lake Grove	16	0	\$0	0	0	0	0	16
Village of Lindenhurst	1,465	2,730	\$90,459,135	334	74	1,058	53	354
Village of Lloyd Harbor	70	27	\$335,310	1	0	2	0	68
Village of Nissequogue	44	40	\$680,187	2	0	27	0	17
Village of North Haven	175	52	\$425,216	1	0	33	38	104
Village of Northport	114	92	\$1,268,993	3	1	19	5	90
Village of Ocean Beach	570	962	\$46,714,500	128	23	552	0	18
Village of Old Field	37	19	\$154,581	2	0	5	0	32
Village of Patchogue	438	368	\$12,576,675	43	4	206	30	202
Village of Poquott	16	2	\$61,322	1	0	0	0	16
Village of Port Jefferson	68	62	\$977,308	3	1	14	2	52
Village of Quogue	556	354	\$8,212,037	32	3	65	10	481
Town of Riverhead	744	751	\$12,371,429	43	4	129	66	549
Village of Sag Harbor	381	149	\$1,908,532	12	4	108	102	171
Village of Sagaponack	156	15	\$1,085,559	0	0	0	0	156
Village of Saltaire	355	380	\$14,885,923	10	0	293	0	62
Town of Shelter Island	283	104	\$1,823,966	7	0	21	27	235
Village of Shoreham	No record	5	\$1,033	0	0	0	0	0
Town of Smithtown	337	288	\$1,135,162	3	0	4	1	332
Town of Southampton	4,890	3,171	\$76,508,723	257	21	1,442	483	2,965
Village of Southampton	682	225	\$3,499,714	15	0	194	17	471
Town of Southold	1,860	1,079	\$16,291,431	58	7	514	316	1,030
Village of The Branch	6	4	\$7,881	0	0	0	0	6
Village of West Hampton Dunes	179	56	\$881,171	79	21	170	0	9





Jurisdiction	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	Severe Rep. Loss Prop. (1)	# Policies in the 1% Flood Boundary (3)	# Policies in the 0.2% Flood Boundary (3)	# Policies Outside the Combined 1% and 0.2% Flood Boundaries Hazard Areas (3)
Village of Westhampton Beach	955	1,296	\$33,348,427	64	11	665	65	225
Suffolk County	38,165	31,595	\$1,012,752,084	2,848	455	14,699	2,191	14,699

Source: FEMA, 2014

Note (1) Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA and are current as of January 31, 2014 and are summarized by Community Name. Please note the total number of repetitive loss properties excludes the severe repetitive loss properties. The number of claims represents claims closed by 1/31/2014.

Note (2) Total building and content losses from the claims file provided by FEMA Region 2.

Note (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.

Note (4) FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.

Note (5) A zero percentage denotes less than 1/100th percentage and not zero damages or vulnerability as may be the case.

Note (6) The Shinnecock and Unkechaug Tribal Nations do not participate in the NFIP.



Hazard Ranking

After the hazards of concern were identified for Suffolk County, the hazards were ranked to describe their probability of occurrence and their impact on population, property (general building stock including critical facilities) and the economy. Each participating jurisdiction or special district may have differing degrees of risk exposure and vulnerability compared to the County as a whole; therefore each jurisdiction ranked the degree of risk to each hazard as it pertains to their community using the same methodology as applied to the County-wide ranking. This assured consistency in the overall ranking of risk process. The hazard ranking for the County and each participating district can be found in their jurisdictional annex in Volume II of this plan.

Hazard risk is a function of the probability of occurrence and overall impact. The probability of occurrence is an estimate of how often a hazard event occurs. A review of historic events assists with this determination. The impact of each hazard is considered in three categories: impact on population, impact on property (general building stock including critical facilities), and impact on the economy. A full discussion of the risk ranking methodology is presented in Section 5.3 of this plan, which results in an overall hazard ranking of “high”, “medium” or “low” risk.

The overall countywide risk ranking of the thirteen hazards of concern resulted in the following:

High Risk Hazards: Nor’Easter, Severe Winter Storm, Severe Storm, Hurricane

Medium Risk Hazards: Coastal Erosion, Groundwater Contamination (natural), Infestation, Shallow Groundwater, Flooding

Low Risk Hazards: Expansive Soils, Earthquake, Wildfire, Drought

The county-wide risk ranking includes the entire planning area and may not reflect the highest risk indicated for any of the participating jurisdictions. The resulting ranks of each municipality indicate the differing degrees of risk exposure, and vulnerability. The results support the appropriate selection and prioritization of initiatives to reduce the highest levels of risk for each municipality. Both the County and the participating jurisdictions have applied the same methodology to develop the county-wide risk and local rankings to ensure consistency in the overall ranking of risk.

Suffolk County Mitigation Strategy

The outcomes of the risk assessment, supplemented by community input, provided a basis to review past mitigation actions, future goals, and appropriate local mitigation actions.

Mission Statement, Goals and Objectives

Per prevailing FEMA guidance, a mission statement describes the overall duty and purpose of the planning process, and serves to identify the principle message of the plan. Suffolk County’s mission statement is broad in scope, and provided direction for the plan:

Identify and reduce the vulnerability to natural hazards in order to

<p>The mitigation strategy portion of the plan includes:</p> <ul style="list-style-type: none"> • A summary of past and current mitigation efforts • Local hazard mitigation goals and objectives • Identification and analysis of mitigation measures and projects being considered • Multi-jurisdictional mitigation strategy (goals and objectives) • Mitigation action plan (summary of specific actions)
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protect the health, safety, quality of life, environment and economy of the communities within Suffolk County.

The Steering Committee reviewed the eight over-arching mitigation goals from the 2008 plan that summarized the hazard reduction outcomes that the County and participating jurisdictions want to achieve, and elected to maintain them without amendment:

- Save lives and reduce injury.
- Avoid, minimize or reduce damage to property including but not limited to critical facilities, infrastructure and those properties known to receive or experience repetitive damages.
- Reduce exposure to risk, while protecting or restoring natural processes to the maximum extent possible.
- Consider the wise uses of land in known or identified hazard areas.
- Encourage the development and implementation of long-term, cost-effective and environmentally sound mitigation projects.
- Promote hazard mitigation awareness and education throughout the County.
- Improve community emergency management capability (i.e., prepare, respond, recover, mitigate).
- Maintain economic viability after a hazard event.

The 2008 plan identified sixteen (16) objectives that meet multiple goals. The goals, along with their corresponding objectives, guide the identification, evaluation and prioritization of specific mitigation actions. After review of the 2008 objectives, the Steering Committee elected to add an additional objective addressing the implementation of best stormwater management practices and projects/activities to better manage stormwater.

Capability Assessment

A capability assessment was prepared by Suffolk County and each participating jurisdiction. A capability assessment is an inventory of a community's missions, programs and policies; and an analysis of its capacity to carry them out. This assessment is an integral part of the planning process. The capability assessment process includes the identification, review and analysis of local and state programs, policies, regulations, funding and practices currently in place that may either facilitate or hinder mitigation.

By completing this assessment, Suffolk County and participating jurisdictions learned how or whether they would be able to implement certain mitigation actions by determining the following:

- Types of mitigation actions that may be prohibited by law;
- Limitations that may exist on undertaking actions; and
- The range of local and/or state administrative, programmatic, regulatory, financial and technical resources available to assist in implementing their mitigation actions.



Communities within Suffolk County updated many of their policies, programs, and responsible parties updated during the five years since the adoption. Changes have led to more comprehensive understandings of natural hazards and stronger understandings of how to respond when natural disasters occur.

There are significant planning and regulatory programs, administrative and technical, and fiscal resources available within the County to support hazard mitigation. Section 6.4, "Capability Assessment" provides a summary of these capabilities, which includes the following:

Planning and Regulatory Programs:

National Flood Insurance Program (NFIP)

The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968 (FEMA's 2002 National Flood Insurance Program (NFIP): Program Description). The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages.

Suffolk County and many of the county's individual jurisdictions actively participate in the NFIP. As of October 31, 2013, there were 39,873 NFIP policyholders in Suffolk County. There have been 32,239 claims made, totaling nearly \$1 billion for damages to structures and contents. There are 2,393 NFIP Repetitive Loss (RL) properties, and **454** NFIP Severe Repetitive Loss (SRL) properties in the County. Further details on the County's flood vulnerability may be found in the flood hazard profile in Section 5.

The County is actively participating in the management of the floodplain and is in the process of finalizing a Floodplain Management Area-wide Compliance Document in accordance with Executive Order 11988. This plan includes a number of initiatives that will further enhance the County's ability to manage flooding and other natural hazard risks, including the amendment of several ordinances, mitigating flood prone properties (including several RL/SRL properties) and identifying areas for potential buyout properties.

There has also been an increased interest in membership in both the NFIP and Community Rating System (CRS). The passing of the Biggert-Waters Act in 2012 (BW-12) will invariably lead to higher flood insurance premiums, although the timeline and scope of those changes is indeed in flux. On March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act (HFIAA) of 2014 into law. HFIAA of 2014 repeals certain provisions of BW-12 that eliminated eligibility for Pre-Flood Insurance Rate Map (FIRM) subsidies for buildings newly purchased or newly insured on or after July 6, 2012, as well as reinstatements of lapsed policies effective on or after October 4, 2012. FEMA's initial priority is to restore Pre-FIRM subsidies for policyholders covered by Section 3 of the HFIAA (<http://www.fema.gov/flood-insurance-reform>).

One option communities facing higher insurance premiums may consider is participation in the NFIP's CRS. Participation in the CRS not only results in flood insurance premium reductions, but promotes improved overall floodplain management and risk reduction.



The State and a number of Suffolk County communities have mandated and/or adopted regulatory standards that exceed the minimums established under the NFIP program, enhancing their ability to manage flood risk. These include the following:

Freeboard: By law, NYS requires Base Flood Elevation plus 2 feet (BFE+2) for all single- and two-family residential construction, and BFE+1 for all other types of construction. Communities may go beyond this State requirement, providing for additional freeboard or requiring BFE+2 for all types of construction. Further, a number of communities have supported property owners meeting and exceeding freeboard requirements through the site plan review and zoning board of approvals process; for instance, allowing overall structure heights to be determined from BFE+2 rather than grade within NFIP floodplains.

Cumulative Substantial Improvements/Damages: The NFIP allows improvements valued at up to 50% of the building's pre-improvement value to be permitted without meeting the flood protection requirements. Over the years, a community may issue a succession of permits for different repairs or improvement to the same structures. This can greatly increase the overall flood damage potential for the structure and within a community. The community may wish to deem "substantial improvement" cumulatively so that once a threshold of improvement within a certain length of time is reached, the structure is considered to be substantially improved and must meet flood protection requirements.

Limit of Moderate Wave Action (LiMWA): LiMWA depicts the Limit of the Area of Moderate Wave Action (MOWA), the portion of the 1% annual chance coastal flood hazard area referenced by building codes and standards, where base flood wave heights are between 1.5 and 3 feet, and where wave characteristics are deemed sufficient to damage many National Flood Insurance Program (NFIP)-compliant structures on shallow or solid wall foundations. Coastal communities may adopt what is commonly referred to as the "LiMWA standard" where they enforce "V zone" construction standards within coastal LiMWA "A zones".

NFIP Community Rating System (CRS)

As an additional component of the NFIP, the Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance (FEMA, 2012).

Currently only five (5) communities in Suffolk County participate in CRS, specifically the Town of Southampton and the Villages of Babylon, Brightwaters, Northport and Southampton, however all five communities are currently identified as "rescinded" with CRS ratings of 10 (no discount).

Towns and the County as a whole could expect significant cost savings on premiums if enrolled in the CRS program. For example: if all the Towns in the County were enrolled in the CRS program and maintained an average CRS rate class of 8 (10% reduction in flood insurance premiums) policyholders in the County would save approximately 4 million dollars.



Stormwater Management Planning

When proper controls are not in place, research studies show a clear link between urbanization and increased flooding and pollutant export. The goal of stormwater management is to ensure that the quantity and quality of stormwater runoff from a site that is undergoing construction or development should not be substantially altered from its pre-development conditions (NYSDEC, <http://www.dec.ny.gov/chemical/8468.html>).

Suffolk County has developed a Stormwater Phase II management plan that includes county wide and local initiatives to protect water quality and reduce local flooding, including a prioritized plan to meet current and future needs for repair, expansion and management of local stormwater infrastructure. Maintenance programs are developed to continually assess the condition of the stormwater system, to track sediment by volume and type removed, and to reduce the likelihood of flooding due to clogged collection and conveyance systems. Progress on, and updates to, the County’s stormwater management program are documented in annual progress reports. <http://www.suffolkcountyny.gov/stormwater/home.aspx>

All 10 towns in the County have their own individual Stormwater Management Plans and conduct annual progress reports. All Towns have stormwater management and control measures that address the minimum control measures required by the NYSDEC.

Administrative and Technical Resources:

The following administrative and technical resources available to support natural hazard risk management in the County include Suffolk County Department of Planning and Economic Development, Suffolk County Planning Commission, Suffolk County Soil and Water Conservation District, Central Pine Barrens Commission, New York State Office of Emergency Management, NYS DEC, FEMA Region II, SeaGrant (SUNY Stonybrook), Cornell Cooperative Extension, Long Island Regional Planning Council, and the Nature Conservancy.

Fiscal Resources:

New York Rising Community Reconstruction Program

The NY Rising Community Reconstruction program was established to provide additional rebuilding and revitalization assistance to communities severely damaged by Hurricanes Sandy and Irene and Tropical Storm Lee. The NY Rising Community Reconstruction program enables communities to identify resilient and innovative reconstruction projects and other needed actions based on community-driven plans that consider current damage, future threats and the communities’ economic opportunities. Communities successfully completing a recovery plan will be eligible to receive funds to support the implementation of projects and activities identified in the plans.

Based on FEMA assessed damages, each community is eligible for between 3 and 25 million dollars for the implementation of the projects identified in the community’s plan. Table 6-6 shows the eligible funding amounts for the NY Rising Communities in Suffolk County.

Table 6-6. NY Community Rising Funding for Suffolk County Communities

Project Area	Jurisdiction	Eligible Amount
Village of Amityville	Village of Amityville, Town of Babylon	\$5,551,038





Copague	Town of Babylon	\$8,559,028
Village of Lindenhurst	Village of Lindenhurst, Town of Babylon	\$6,120,465
West Babylon	Town of Babylon	\$3,936,687
The Village of Babylon	Village of Babylon, Town of Babylon	\$6,243,971
West Islip	Town of Islip	\$3,089,547
West Gilgo to Captree	Town of Babylon, Town of Islip (part of Captree only)	\$3,000,000
Fire Island	Saltaire, Ocean Beach, Islip, and Brookhaven	\$3,000,000
Oakdale/West Sayville	Town of Islip	\$3,000,000
Mastic Beach and Smith Point of Shirley	Town of Brookhaven	\$3,000,000

Source: <http://www.governor.ny.gov/press/07182013-ny-rising-communities>

Projects range from construction of protective mitigation measures like dunes or sea walls to the development of community planning documents such as comprehensive master plans or economic development plans.

Federal Hazard Mitigation Funding Opportunities

Federal mitigation grant funding is available to all communities with a current hazard mitigation plan (this plan); however most of these grants require a “local share” in the range of 10-25% of the total grant amount. The FEMA mitigation grant programs are described below.

Hazard Mitigation Grant Program (HMGP)

The HMGP is a post-disaster mitigation program. It is made available to states by FEMA after each Federal disaster declaration. The HMGP can provide up to 75% funding for hazard mitigation measures. The HMGP can be used to fund cost-effective projects that will protect public or private property in an area covered by a federal disaster declaration or that will reduce the likely damage from future disasters. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood-proofing or elevation to reduce future damage, minor structural improvements and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved Hazard Mitigation Plan (this plan).

Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. Applications are submitted to NYSOEM and placed in rank order for available funding and submitted to FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and may be considered as additional HMGP funding becomes available.

Flood Mitigation Assistance (FMA) Program

The FMA combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program. FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP insured homes and businesses are eligible for mitigation in this program. Funding



for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is 75%. At least 25% of the total eligible costs must be provided by a non-federal source. Of this 25%, no more than half can be provided as in-kind contributions from third parties. At minimum, a FEMA-approved local flood mitigation plan is required before a project can be approved. FMA funds are distributed from FEMA to the state. NYSOEM serves as the grantee and program administrator for FMA.

Pre-Disaster Mitigation (PDM) Program

The PDM program is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funds will cover 75% of a project's cost up to \$3 million. As with the HMGP and FMA, a FEMA-approved local Hazard Mitigation Plan is required to be approved for funding under the PDM program.

Other Federal programs that help to fund mitigation activities include:

Community Development Block Grants (CDBG)

CDBG are federal funds intended to provide low and moderate-income households with viable communities, including decent housing, as suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, planning, and administration. Public improvements may include flood and drainage improvements. In limited instances, and during the times of "urgent need" (e.g. post disaster) as defined by the CDBG National Objectives, CDBG funding may be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event.

Community Development Block Grants – Disaster Recovery (CDBG-DR)

On September 27, 2013, the New York State Homes & Community Renewal Office of Community Renewal finalized the Suffolk County Floodplain Managing document in accordance with Executive Order 11988. The State of New York was awarded funding, to be administered by the New York State Homes and Community Renewal (HCR), to provide financial assistance to homeowners whose residences were substantially damaged by storms Sandy, Lee and Irene within various New York State Counties, including Suffolk County. HCR is awarding this funding in accordance with the State of New York Action Plan For Community Development Block Grant Program – Disaster Recovery (Action Plan). The Action Plan provides for, among other things, home buyout and acquisition assistance to owners of 1-2 family homes. This Floodplain Management Document applies to homes in Suffolk County, New York (Action Plan Activities). "Buyouts" involve the purchase of properties located within a floodplain. Structures and improvements will be removed, and the parcel will be allowed to return to its natural state in perpetuity. "Acquisitions" also involve purchase of properties, however, the specific details of reuse will be determined based on site specific conditions. Reuse will be in accordance with local zoning and land use plans. This action is of fundamental importance in assisting landowners with damaged property.

At this time, there are defined locations within Suffolk County where buyouts are proposed to occur. The locations are identified as specific storm damaged neighborhoods within the towns/villages of: Strong's Creek, Lindenhurst, Venetian Shores, Oakdale, Sayville, Bayport, Patchogue, Mastic Beach, and Flanders. All of these Buyout areas are located along or near the south shore of Long Island, within Suffolk County, with the exception of Flanders. Flanders is located toward the east end of the county, overlooking Great Peconic Bay.



Hurricane Sandy Coastal Resiliency Competitive Grant Program

Interior Secretary Sally Jewell has announced that competitive grants are now available from the Hurricane Sandy Coastal Resiliency Competitive Grant Program. The program, funded by the Hurricane Sandy disaster relief appropriation, is administered by NFWF.

The Hurricane Sandy Coastal Resiliency Competitive Grants Program will award more than \$100 million in grants throughout the region affected by Hurricane Sandy, including Connecticut, Delaware, the District of Columbia, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Virginia, and West Virginia—the states that officially declared a natural disaster as a result of the storm event.

Grants from \$100,000 to \$5 million will be awarded to projects that assess, restore, enhance or create wetlands, beaches and other natural systems to better protect communities as well as fish and wildlife species and habitats from the impacts of future storms and naturally occurring events.

To further support the implementation of local mitigation activities, some jurisdictions have adopted local funding mechanisms which include the following:

Beach Erosion Control and Erosion Control Districts

Several municipalities within the county have established Beach Erosion Control Districts (e.g. Bridgehampton Erosion Control District and Sagaponack Erosion Control District) for the specific purpose of funding beach maintenance and re-nourishment in those locations.

Community Preservation Fund (CPF)

The Community Preservation Fund is an open-space funding mechanism whereby a 2% tax is imposed on real property transactions for the specific purposes of funding the acquisition and protection of open space parcels within a local jurisdiction. This funding could be used to meet the local share requirements for acquisitions under FEMA's mitigation grant programs.

State-enabling legislation requires the Town Board to establish a Community Preservation Fund Advisory Board. This Advisory Board reviews recommendations on proposed acquisitions of interest in real property using monies from the Transfer Tax, commonly known as the Community Preservation Fund. As required, this Board consists of seven town residents who serve without compensation. This Board acts in an advisory capacity to the Town Board.

Identification, Prioritization, Analysis, and Implementation of Mitigation Actions

Within this planning process, all participants evaluated their risk and known or anticipated losses to the hazards of concern, assessed their capabilities to manage natural hazard risk, reviewed progress on past mitigation efforts, and identified a comprehensive range of mitigation alternatives and actions they endeavor to implement as resources are identified and available. In the HMP, all proposed mitigation actions were identified in relation to the goals and objectives presented above. The County and participating jurisdictions identified appropriate local mitigation actions, along with the hazards mitigated, goals and objectives met, lead agency, estimated cost, potential funding sources and the



proposed timeline. These actions are identified in Volume II, Section 9 for the County and each participating jurisdiction.

Updated County and local mitigation strategies consisted of projects, actions and initiatives identified as follows:

- Incomplete or ongoing initiatives from the 2008 strategy being carried forward as determined by the jurisdiction, typically with further detail to support implementation.
- Projects or initiatives identified to address the findings of the updated risk and vulnerability assessment.
- Projects that the jurisdiction has sought grant funding to implement (primarily through the NY Rising (Sandy) Hazard Mitigation Grant Program (HMGP) described earlier.
- Projects identified as part of the NYRCR program described earlier.
- Other projects identified by the jurisdiction during the course of the planning process.

Concerted efforts were made to assure that municipalities developed updated mitigation strategies that included activities and initiatives covering the range of mitigation action types described in recent FEMA planning guidance (FEMA “Local Mitigation Planning Handbook”, March 2013), specifically:

- Local Plans and Regulations – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Projects - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as the National Flood Insurance Program and Community Rating System, StormReady (NOAA) and Firewise (NFPA) Communities.

Examples of projects, actions and initiatives within these four action types from the updated County and local mitigation strategies are presented below. Full updated mitigation strategies are found within each jurisdictional annex in Section 9.

Local Plans and Regulations:

Village of Patchogue: Develop a Marina Property Protection Plan and a Local Waterfront Revitalization Plan to improve safer waterfront usage, reduced river front flooding, contribute to improved water quality, and preserve natural areas and fish habitats. Information on hazard areas and mitigation measures from the HMP will be incorporated into the plans.



Town of East Hampton: Maintain the Comprehensive Plan, growth management plan, habitat management plan, local waterfront revitalization plan, and shoreline management plan to minimize risk in hazard areas. Updates will include a review of the HMP to ensure that hazard areas are identified in the respective plans.

Suffolk County: Using the Tax-Lien and Open-Space Programs to reduce long term flood vulnerability, the County continues to curtail floodplain development by transferring flood-prone properties in the Narrows Bay area obtained by Suffolk County through tax lien procedures to the Suffolk County Parks, Recreation and Conservation Dept. for open space purposes as per Narrow Bay Floodplain and Mitigation Plan - 1997.

Suffolk County: In an effort to integrate risk data to support land use planning, the County continues to inquire about future development in all participating jurisdictions annually, at the annual plan review meeting, and map these locations within GIS/HAZUS to determine if they are/are not located within identified hazard areas. Improvements in the County's GIS capabilities will facilitate this initiative in the future. It is a key discussion point in the Plan update and will be an Agenda item at each annual plan review meeting moving forward.

Structure and Infrastructure Projects:

Suffolk County Sewer District No. 3 - Southwest - Perimeter Wall

Responsible Jurisdiction/Agency: Suffolk County Department of Public Works

Description of Problem: The Bergen Point Wastewater Treatment facility is located on the Great South Bay. The facility is installed at an elevation that is subject to flooding which could be more severe in the future rendering the treatment process inadequate to handle the flows and provide adequate treatment. If the facility is inundated, the majority of equipment and a portion of the infrastructure would require replacement at a cost of over \$240 million, exclusive of months of inadequate treatment and associated economic and environmental loss. Historical data estimates that the value of the Bay far exceeds \$15 million annually relative to economic, recreational, environmental as well as collated benefits to the entire area.

Hazards Addressed: Flooding

Project Description: Install a flood wall around the entire Bergen Point site which is approximately 5,000 feet at an appropriate elevation to eliminate the flooding and potential disastrous impact such as Storm Sandy.

Drainage Deflection Maintenance to Protect Public and Private Property on Eastern Suffolk

Responsible Jurisdiction/Agency: Suffolk County Soil & Water Conservation District

Description of Problem: flooding of farms and private residences.

Hazards Addressed: Flooding

Project Description: Hurricane damaged existing dike system will be repaired/rebuilt and a tidal floodgate installed to mitigate flooding issues to croplands and protect private residences.

Improvements to County Road 39, North Road/ Flying Point Road

Responsible Jurisdiction/Agency: Suffolk County Department of Public Works

Description of Problem: This portion of CR 39 experiences flooding conditions due to old and insufficient drainage that caused the deterioration of the existing concrete panels and adjacent



asphalt shoulders. The panels are cracking and the joints between the panels are open allowing water to drain to the roadway's subbase, which accelerates roadway deterioration. This has been an ongoing problem for several years.

Hazards Addressed: Flooding

Project Description: This project will rehabilitate the existing roadway before it deteriorates to the point that a more costly full reconstruction will be required. There are two (2) roadways that cross the Shinnecock Canal and can be utilized to evacuate the South fork of Long Island. One is NYS Rte 27, Sunrise Highway (Coastal Evacuation Route) and the other is County Road 80, Montauk Highway. County Road 39 parallels both of these roadways and both roadways are accessible by County Road 39. CR 39 will operate as a part of the Coastal Evacuation Route especially if one of the other roadways will not be accessible.

This project involves installation of stormwater treatment units and leaching basins, catch basins, reinforced concrete pipe, pavement repair, seeding and planting on disturbed areas during construction.

Brookhaven North Shore Properties - Hazard Mitigation

Responsible Jurisdiction/Agency: Town of Brookhaven

Description of Problem: The Town of Brookhaven spans the entire width of Long Island sharing both north and south coastlines. As a result of Super Storm Sandy many north shore properties (Shoreham Beach to Mount Sinai Harbor) experienced damage as a result of soil erosion and severe stormwater runoff. While many road endings (right-of-way) are maintained by the Highway Department, many other municipal properties have impacted adjacent private properties and right-of-ways. One of the main contributors to the problem is the instability of the toe of bluff along most of the north shore coastline. During these storm events which consist of high tidal surges, many areas of the bluff are eroded at the bottom of the slope and cause major collapses to the upper slope and features in proximity of the bluff. Many properties and roadways are impacted by properties that are adjacent (east-west) of the actual parcel or roadway. When the bluffs collapse soil and vegetation is removed leaving the areas even more prone to further deterioration. The Town spends its resources protecting these parcels and maintaining the stormwater runoff each year..

Hazards Addressed: Coastal Erosion, Hurricane, Nor'Easters, Severe Storm, Severe Winter Storms

Project Description: In order to mitigate these problem areas along the twelve-mile section of the Town of Brookhaven (Shoreham to Mount Sinai), the following measures have been proposed; coastal hardening to strengthen the toe of bluff, upland installation of stormwater runoff collectors, erosion and sediment controls along the bluff areas (native vegetative plantings, geotextile "jute mesh" coverings and geogrid slope reinforcement solutions) and removal of features that are detrimental to slope stability during storm events. To mitigate the existing deteriorating condition. Wave run-up calculations will be made to determine the elevation of the top of the proposed shoreline protection system and the area above the proposed coastal hardening features (bulkhead, stone revetment). By protecting these areas in a manner that can withstand future damage, the cost to repair/replace private property and roadways is decreased

Back up Power System Wyandanch Nutrition Center

Responsible Jurisdiction/Agency: Town of Babylon

Description of Problem: The Town operates a community facility in the Hamlet of Wyandanch that provides meals and family services for local residents. United States 2010 census data list Wyandanch as a community of approximately 12,000 residents, over 85% of the households identify themselves as African american or Hispanic/Latino decent, median household income is below the New York State average and 15% of the population is identified as earning below the poverty level. The Town rates this facility as one of our critical facilities providing services to an underserved community. The Facility is not located in the 100-year flood zone however power outages resulting from Hurricanes, Tropical Storms, NorEasters and winter storms has impacted this facility. Most recently Hurricane Sandy caused widespread outages to 90% of Long Island. This facility was not in service for several days, portable generators were not available which resulted in spoilage of stored food stuffs. In addition power surges damaged compressors and electrical components which delayed the opening of the facility after the building was energized by the local power utility. As the residential population served by this facility was also without power the loss of the facility over this time period further exacerbated the problems faced by the residents.



Hazards Addressed: Hurricane, Nor'Easters, Severe Storm, Severe Winter Storms

Project Description: The Town proposes a permanent back-up power supply system using a "Generac" or equivalent system. The system will be fueled using existing natural gas service. The project area is not known to be susceptible to interruption in gas service and will not require fuel stabilization as compared to a liquid fuel system. The system will be sized to operate the entire facility if an outage occurs.

Natural Systems Protection:

Acquisition of Properties within Coastal Flood Hazard Areas in Suffolk County

Responsible Jurisdiction/Agency: Suffolk County Department of Economic Development and Planning

Hazards Addressed: Coastal Erosion, Flooding (all), Hurricane, Nor'easters, Shallow Groundwater

Project Description: Acquisition of properties identified on Suffolk County's Comprehensive Master List Update – 2012 and other legislatively approved properties for open space and environmental protection, to reduce the potential for development within coastal flood hazard and environmentally sensitive areas.

Tidal Wetland Restoration at Smith Point County Park

Responsible Jurisdiction/Agency: Suffolk County Department of Economic Development and Planning

Hazards Addressed: Coastal Erosion, Flood, Hurricane, Nor'Easters, Severe Storms, Severe Winter Storms

Project Description: Tidal wetland restoration project within Smith Point County Park North for the enhancement of marsh functions for coastal protection against flood and storm damage. Restoration of proper sedimentation processes will allow the marsh to be sustainable and resilient to sea level rise, acting as a natural buffer to neighboring communities.

Northeast Branch Nissequogue River Restoration Project

Responsible Jurisdiction/Agency: Suffolk County Department of Public Works

Hazards Addressed: Shallow groundwater

Project Description: Implementation of stormwater management measures within a 4,500 LF segment of the Northeast Branch of the Nissequogue River to include:

- Streambed restoration and silt removal
- Culvert removal and installation of greater capacity culvert at lowered elevation
- Upland stormwater improvements to reduce flow of sediment to waterway, including installation of new or replacement of old catch basins with sediment filters.
- Best Management Practices - public education as well as an appropriate maintenance schedule will be implemented to maintain natural function of the waterbody and sustain its ability to adequately convey groundwater away from the affected area.

The intended outcome of the project is to lower groundwater levels in the project area and improve the stormwater and groundwater conveyance systems, so as to maximize the ability of these systems to convey excess stormwater from the impacted neighborhoods prior to being recharged back into the groundwater regime. To that end, proposed new culverts will be designed to accommodate flows generated by a 100 year storm event. The proposed improvements will have the effect of minimizing the extent and frequency of future stormwater and groundwater related flooding.

Education and Awareness Programs





Mitigation Education for Natural Disasters (MEND)

Responsible Jurisdiction/Agency: Suffolk County Dept of Fire, Rescue and Emergency Services

Hazards Addressed: All Hazards

Project Description: Multi-year public outreach campaign focused on educating Suffolk County's 1.5 million residents on the hazards they face, how they can prepare, and how to mitigate probable impacts. This educational program will utilize print and digital media as well as community meetings to provide preparedness information to our target audience of all County residents.

Build Local Floodplain Management and Disaster Recovery Capabilities

Responsible Jurisdiction/Agency: Suffolk County Dept of Fire, Rescue and Emergency Services

Description of Problem: Federal policies regarding floodplain management and disaster recovery continue to evolve. In response, local government officials are being tasked with responsibilities related to these areas, which are outside their traditional scope of work and knowledge.

Hazards Addressed: All Hazards

Project Description: Facilitate Workshops and Seminars to build local capabilities in floodplain management and disaster recovery in the following areas:

- NFIP Community Rating System (CRS)
- Benefit-Cost Analysis (BCA)
- Substantial Damage Estimating (SDE)
- NFIP Elevation Certificates (EC)
- Certified Floodplain Manager (CFM) Training and Certification

Integration Actions:

It is the intention of this County to incorporate hazard mitigation planning and natural hazard risk reduction as an integral component of the County's administrative, regulatory and operational framework. The following textual summary and table identify relevant planning mechanisms and programs that have been/will be incorporated into existing County programs and planning mechanisms, which may include former mitigation initiatives that have become continuous/on-going programs and may be considered mitigation "capabilities":

Land Use Planning: The Department of Economic Development and Planning supports all aspects of local planning, and seeks to integrate considerations of natural hazard risk and support mitigation project identification and implementation through its planning programs and resources. The Department has been directly supporting the ongoing New York Rising Community Redevelopment programs in participating communities, and have identified a number of County-led mitigation initiatives to address vulnerable areas within the County.

Stream Maintenance and Stormwater Management Programs: Through Suffolk County Department of Public Works (SC DPW) and Suffolk County Parks Department, the County continues to support stream maintenance and stormwater management programs to mitigate local flooding issues. Specific related mitigation initiatives are included in the County's updated mitigation strategy.

Planning for Coastal Storms: The County continues to develop and enhance plans to include comprehensive evaluation of coastal storms and the reduction of their impacts at local level, and seeks to



coordinate all levels of planning in this area. The efforts of the Regional Catastrophic Planning Team and the program are winding down over the next 2 years. Many plans have been completed and are presently being distributed. The RCPT hired a regional field liaison to visit each jurisdiction and advocate and educate for the use of the plans.

Integration of Improved Hazard Information into Existing Emergency Management Plans: The County continues to develop, enhance and implement existing emergency response plans to utilize new and developing technology/information as it becomes available. The Bus Evacuation Plan has been updated to include home pick-ups, a call center, and designated phone number. Fire Island Evacuation and Re-Occupation plans have been completed. Equipment Typing is a work-in-progress, as is the Resource database both of which will continue to be refined as new information and data become available.

Development of Improved Asset Information to support Risk/Vulnerability Assessment and Mitigation Efforts: The County continues to work to resolve discrepancy between the Real Property Tax Dept. and the Treasurer's Office databases regarding number of tax parcels to support or enhance County-wide risk assessment. Further, through this plan update process, the County continues to enhance the building inventory for all of Suffolk County using latest technology and GIS applications for use within HAZUS-MH for future risk assessment to be performed by Suffolk County, Towns and Villages. These databases are being made available to all plan participants and County stakeholders to support mitigation efforts, including performing Benefit-Cost Analysis for grant applications.

Public Education and Outreach Programs: SC FRES routinely gives educational presentations to requesting organizations and regular scheduled meetings are held with the Emergency Managers in each of the ten towns within the County. Additional meetings are held with Native American Nations and a variety of safety organizations and forums across the County. SC Ready program flyers produced for information. SC received an HMPG 1692 Grant for Public Education and has established a website (www.suffolkcountyny.gov/mend) that presents a vast amount of information to the public. In addition, an approved LOI and subsequent HMGP application #1249 under DR 4085 was submitted on 10/30/13 for expansion of the County Education Program over a three year period that will address hazards of concern to all County residents.

Presentations made by SC OEM staff to the public and organizations throughout the County have increased the awareness of Hazard Mitigation. The SC HMP website has recorded over 19,000 visits since coming on line attesting to its visibility and stakeholder involvement. The current update of the SC HMP has an aggressive program for stakeholder involvement including the use of social media and on-line questionnaires.



Plan Implementation

New to this plan update was the incorporation of FEMA's Project Action Worksheet to present applicable mitigation projects. These worksheets serve to better document the process by which appropriate mitigation projects were identified and evaluated by summarizing the process from project identification, through mitigation alternatives analysis, selected project description, and details to support implementation (costs, benefits, lead agency, timeline, etc.). Further, the Action Worksheet includes documentation of the project prioritization evaluation criteria used to determine project viability and implementation priority (high/medium/low).

Beyond better documenting mitigation projects, the Action Worksheet is designed to capture critical information needed to develop mitigation grant applications, thus supporting implementation of projects that would require outside funding support.

Plan Maintenance Procedures

Hazard mitigation planning is an ongoing process. Section 7 of this plan presents procedures for plan maintenance and updates. The Planning Committee will continue ongoing mitigation efforts to implement the mitigation plan and revise and update the plan as necessary.

To monitor implementation of the mitigation plan, the Planning Committee members will meet annually to discuss the status of plan implementation and will prepare a summary report of the plan status and any needed updates. The mitigation evaluation will address changes as new hazard events occur, as the area develops, and as more is learned about hazards and their impacts. The evaluation will include an assessment of whether the planning process and actions have been effective, whether development or other issues warrant changes to the plan or its priorities, if the communities' goals are being reached, and whether changes are warranted. In addition, the mitigation plan will be updated at a minimum within the 5-year cycle specified by DMA 2000.

Point of Contact

To request information or provide comments regarding this plan, please contact Suffolk County Department of Fire, Rescue & Emergency Services:

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