



# SECTION 1. INTRODUCTION

## 1.1 BACKGROUND

In response to the requirements of the Disaster Mitigation Act of 2000 (DMA 2000), Suffolk County and the jurisdictions located therein have developed this Hazard Mitigation Plan (HMP), which represents a regulatory update to the 2008 Suffolk County Hazard Mitigation Plan and the 2014 Suffolk County Hazard Mitigation Plan Update. The DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) and is designed to improve planning for, response to, and recovery from disasters by requiring state and local entities to implement pre-disaster mitigation planning and develop HMPs. The Federal Emergency Management Agency (FEMA) has issued guidelines for HMPs. The New York State Division of Homeland Security and Emergency Services (NYS DHSES), formerly the New York State Office of Emergency Management (NYSOEM), also supports plan development for jurisdictions in New York and issued the NYS DHSES Hazard Mitigation Planning Standards for HMPs developed with NYS DHSES-administered funds.

**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 evaluation of natural hazards and the strategies to mitigate such hazards.

Specifically, the DMA 2000 requires that states, with support from local governmental agencies, develop and update HMPs on a five-year basis to prepare for and reduce the potential impacts of natural hazards. The DMA 2000 is intended to facilitate cooperation between state and local authorities, prompting them to work together. This enhanced planning better enables local and state governments to articulate accurate needs for mitigation, resulting in faster allocation of funding and more effective risk reduction projects.

### 1.1.1 DMA 2000 Origins -The Stafford Act

In the early 1990s, a new federal policy regarding disasters began to evolve. Rather than reacting whenever disasters strike, the federal government began encouraging communities to first assess their vulnerability to various disasters and proceed to take actions to reduce or eliminate potential risks. The logic is that a disaster-resistant community can rebound from a natural disaster with less loss of property or human injury, at much lower cost, and, consequently, more quickly. Moreover, these communities minimize other costs associated with disasters, such as the time lost from productive activity by business and industries.

The DMA 2000 provides an opportunity for states, tribes, and local governments to take a new and revitalized approach to mitigation planning. The DMA 2000 amended the Stafford Act by repealing the previous mitigation planning provisions (Section 409) and replacing them with a new set of requirements (Section 322). Section 322 sets forth the requirements that communities evaluate natural hazards within their respective jurisdictions and develop an appropriate plan of action to mitigate those hazards, while emphasizing the need for state, tribal and local governments to closely coordinate mitigation planning and implementation efforts.

The amended Stafford Act requires that each local jurisdiction identify potential natural hazards to the health, safety, and well-being of its residents and identify and prioritize actions that the community can take to mitigate those hazards—before disaster strikes. To remain eligible for hazard mitigation assistance from the federal government, communities must first prepare and then maintain and update an HMP (this plan).

Responsibility for fulfilling the requirements of Section 322 of the Stafford Act and administering the FEMA Hazard Mitigation Program has been delegated to the State of New York, specifically to NYS DHSES. FEMA also provides support through guidance, resources, and plan reviews.



### 1.1.2 Benefits of Mitigation Planning

Mitigation planning forms the foundation for Suffolk County’s long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repeated damage. Mitigation planning also allows Suffolk County, as a whole and with participating jurisdictions, to remain eligible for mitigation grant funding for mitigation projects that will reduce the impact of future disaster events. The long-term benefits of mitigation planning include the following:

- An increased understanding of hazards faced by Suffolk County and their inclusive jurisdictions.
- Building more sustainable and disaster-resistant communities.
- Increasing education and awareness of hazards and their threats, as well as their risks.
- Developing implementable and achievable actions for risk reduction in the County and its jurisdictions.
- Building relationships by involving residents, organizations, and businesses.
- Identify implementation approaches that focus resources on the greatest risks and vulnerabilities.
- Financial savings through partnerships that support planning and mitigation efforts.
- Focused use of limited resources on hazards that have the biggest impact on the community.
- Reduce long-term impacts and damages to human health and structures.
- Reduce repair costs.

National Benefit-Cost Ratio (BCR) Per Peril <small>*BCR numbers in this study have been rounded</small>	Beyond Code Requirements	Federally Funded
<b>Overall Hazard Benefit-Cost Ratio</b>	<b>\$4:1</b>	<b>\$6:1</b>
<b>Riverine Flood</b>	\$5:1	\$7:1
<b>Hurricane Surge</b>	\$7:1	Too few grants
<b>Wind</b>	\$5:1	\$5:1
<b>Earthquake</b>	\$4:1	\$3:1
<b>Wildland-Urban Interface Fire</b>	\$4:1	\$3:1

Source: FEMA 2018; Federal Insurance Mitigation Administration 2018  
 Note: Natural hazard mitigation saves \$6 on average for every \$1 spent on federal mitigation grants.

### 1.1.3 Organizations Involved in the Mitigation Planning Effort

Suffolk County and the participating jurisdictions intend to implement this HMP with full coordination and participation of County and local departments, organizations and groups, and relevant state and federal entities. Coordination helps to ensure that stakeholders have established communication channels and relationships necessary to support mitigation planning and mitigation actions included in Section 6 (Mitigation Strategy) and Section 9 (Jurisdictional Annexes).

In addition to Suffolk County, the Suffolk County Water Authority (SCWA), the Shinnecock Tribal Nation, the Unkechaug Tribal Nation, and 41 of the 42 municipal governments in the County participated in the 2020 planning process as indicated in Table 1-1 below and displayed in Figure 1-1. The Village of Sagaponack was invited to participate but declined to join the planning process. In addition, the Village of Mastic Beach has dissolved and therefore did not participate and does not have an annex in the 2020 HMP update. The Town of Brookhaven reported on the progress of their 2014 mitigation actions.

**Table 1-1. Participating Suffolk County Jurisdictions**

Jurisdictions		
Suffolk County	Village of Asharoken	Village of North Haven
Suffolk County Water Authority	Village of Babylon	Village of Northport
Shinnecock Tribal Nation	Village of Belle Terre	Village of Ocean Beach
Unkechaug Tribal Nation	Village of Bellport	Village of Old Field
Town of Babylon	Village of Brightwaters	Village of Patchogue



Jurisdictions		
Town of Brookhaven	Village of Dering Harbor	Village of Poquott
Town of East Hampton	Village of East Hampton	Village of Port Jefferson
Town of Huntington	Village of Greenport	Village of Quogue
Town of Islip	Village of Head of Harbor	Village of Sag Harbor
Town of Riverhead	Village of Huntington Bay	Village of Saltaire
Town of Shelter Island	Village of Islandia	Village of Shoreham
Town of Smithtown	Village of Lake Grove	Village of Southampton
Town of Southampton	Village of Lindenhurst	Village of The Branch
Town of Southold	Village of Lloyd Harbor	Village of Westhampton Beach
Village of Amityville	Village of Nissequoque	Village of West Hampton Dunes

### Multiple Agency Support for Hazard Mitigation

Primary responsibility for the development and implementation of mitigation strategies and policies lies with local governments. However, local governments are not alone; various partners and resources at the regional, state, and federal levels are available to assist communities in the development and implementation of mitigation strategies. Within New York State, NYS DHSES is the lead agency providing hazard mitigation planning assistance to local jurisdictions. NYS DHSES provides guidance to support mitigation planning. In addition, FEMA provides grants, tools, guidance, and training to support mitigation planning.

Additional input and support for this planning effort was obtained from a range of agencies and through public involvement (as discussed in Section 3). The Suffolk County Fire, Rescue and Emergency Services (FRES), with support from the Steering Committee, provided project management and oversight of the planning process. While participating jurisdictions were asked to identify a primary and alternate local Point of Contact (POC), broad participation by jurisdictional representatives was encouraged and supported throughout the planning process. A list of Steering Committee and municipal POCs is provided in Section 3 (Planning Process), while Appendix B (Participation Matrix) provides further documentation of the broader level of jurisdiction involvement.

This HMP was prepared in accordance with the following regulations and guidance:

- FEMA *Local Mitigation Planning Handbook*, March 2013.
- FEMA *Integrating Hazard Mitigation into Local Planning*, March 1, 2013.
- FEMA *Plan Integration: Linking Local Planning Efforts*, July 2015.
- *Local Mitigation Plan Review Guide*, October 1, 2011.
- DMA 2000 (Public Law 106-390, October 30, 2000).
- 44 Code of Federal Regulations (CFR) Parts 201 and 206 (including: Feb. 26, 2002, Oct. 1, 2002, Oct. 28, 2003, and Sept. 13, 2004 Interim Final Rules).
- FEMA *How-To Guide for Using HAZUS-MH-MH for Risk Assessment* FEMA Document No. 433, February 2004.
- FEMA *Mitigation Planning How-to Series* (FEMA 386-1 through 4), 2002, available at: <http://www.fema.gov/fima/planhowto.shtm>.
- FEMA *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*, January 2013.
- NYS DHSES *Hazard Mitigation Planning Standard*, 2017.
- NYS DHSES *Hazard Mitigation Planning Standard Guide*, 2017.
- NYS DHSES *NYS Standard Multi-Hazard Mitigation Plan*, 2019.





Figure 1-1. Suffolk County, New York Mitigation Plan Area



Source: Suffolk County GIS





Table 1-2 summarizes the requirements outlined in the DMA 2000 Interim Final Rule and provides the section where each is addressed in this HMP.

**Table 1-2. FEMA Local Mitigation Plan Review Crosswalk**

Plan Criteria	Primary Location in Plan
<b>Prerequisites</b>	
Adoption by the Local Governing Body: §201.6(c)(5)	Section 2.0; Appendix A
<b>Planning Process</b>	
Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)	Section 3.0
<b>Risk Assessment</b>	
Identifying Hazards: §201.6(c)(2)(i)	Sections 5.1
Profiling Hazards: §201.6(c)(2)(i)	Section 5.4
Assessing Vulnerability: Overview: §201.6(c)(2)(ii)	Section 5.4
Assessing Vulnerability: Identifying Structures: §201.6(c)(2)(ii)(A)	Section 4.0 Section 5.4
Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)	Section 5.4
Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)	Section 4.0; Section 9 Annexes
<b>Mitigation Strategy</b>	
Local Hazard Mitigation Goals: §201.6(c)(3)(i)	Section 6.0; Section 9 Annexes
Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)	Section 6.0; Section 9 Annexes
Implementation of Mitigation Actions: §201.6(c)(3)(iii)	Section 6.0; Section 9 Annexes
Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)	Section 6.0; Section 9 Annexes
<b>Plan Maintenance Process</b>	
Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(i)	Section 7.0
Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)	Section 7.0; Section 9 Annexes
Continued Public Involvement: §201.6(c)(4)(iii)	Section 7.0

**Organization**

The Suffolk County HMP update is organized as a two-volume plan. Volume I provides information on the overall planning process and hazard profiling and vulnerability assessments, which serves as a basis for understanding risk and identifying appropriate mitigation actions. As such, Volume I is intended for use as a resource for on-going mitigation analysis. Volume II provides an annex dedicated to each participating jurisdiction. Each annex summarizes the jurisdiction’s legal, regulatory, and fiscal capabilities; identifies vulnerabilities to natural hazards; documents mitigation plan integration with other planning efforts; records status of past mitigation actions; and presents an individualized mitigation strategy. The annexes are intended to provide a useful resource for each jurisdiction for implementation of mitigation projects and future grant opportunities, as well as place for each jurisdiction to record and maintain their local aspect of the Countywide plan.

**Goals and Objectives**

The planning process included a review and update of the prior mitigation goals and objectives as a basis for the planning process and selection of appropriate mitigation actions addressing all hazards of concern. Further, the goal development process considered the mitigation goals expressed in the NYS HMP, as well as other relevant County and local planning documents, as discussed in Section 6 (Mitigation Strategy).





## Hazards of Concern

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Suffolk County and participating jurisdictions reviewed the hazards that caused measurable impacts based on events, losses, and information available since the development of the 2014 Suffolk County HMP and the NYS HMP - 2019 Update. A list of potential hazards of concern was reviewed by Suffolk County FRES and the Steering Committee, and evaluated to update the hazards of concern for the 2020 planning process. The list was presented to each of the participating jurisdictions where they evaluated their risk and vulnerability to each hazard of concern. While the overall hazard rankings were calculated for the County and each participating jurisdiction, the overall hazard rankings displayed in each annex reflect jurisdictional input. The hazard risk rankings were used to focus and prioritize individual jurisdictional mitigation strategies.

## Plan Integration into Other Planning Mechanisms

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Plan integration is the process by which jurisdictions look at their existing planning framework and align efforts with the goal of building a safer, smarter, and more resilient community. It is specific to each jurisdiction and depends on the vulnerability of the built environment. Community-wide plan integration supports risk reduction through various planning and development measures, both before and after a disaster. Plan integration involves a jurisdiction's plans, policies, codes, and programs that guide development and the roles of people and government in implementing these capabilities. Successful integration occurs through collaboration among a diverse set of stakeholders (FEMA 2015). Appendix G (Plan Review Matrix) documents the plans that were reviewed for each jurisdiction.

Effective mitigation is achieved when hazard awareness and risk management approaches and strategies are integrated into local planning mechanisms and become an integral part of public activities and decision making. Within Suffolk County, there are numerous existing plans and programs that support hazard risk management and reduction, and thus, it is critical that the 2020 HMP update integrates, coordinates with, and complements those mechanisms.

The *Capability Assessment* section of Section 6 (Mitigation Strategy) provides a summary and description of the existing plans, programs and regulatory mechanisms at all levels of government (federal, state, county, local) that support hazard mitigation within the County. Within each jurisdictional annex in Section 9 (Jurisdictional Annexes), the County and each participating jurisdiction identified how they have integrated hazard risk management into their existing planning, regulatory and operational/administrative framework ("existing integration"), and how they intend to promote this integration ("opportunities for future integration").

A further summary of these continued efforts to develop and promote a comprehensive and holistic approach to hazard risk management and mitigation is presented in Section 9 (Jurisdictional Annexes).

### 1.1.4 Implementation of Prior and Existing Local Hazard Mitigation Plans

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Section 6 (Mitigation Strategy) and Section 9 (Jurisdictional Annexes) of the plan present the status of the mitigation projects identified in the 2014 Suffolk County HMP. Numerous projects and programs have been implemented that have reduced hazard vulnerability to assets in the planning area. The County and jurisdictional annexes, as well as plan maintenance procedures in Section 7 (Plan Maintenance), were developed to encourage specific activities. Future actions include integrating hazard mitigation goals into comprehensive plan updates; reviewing the HMP during updates of codes, ordinances, zoning, and development; and ensuring a more thorough integration of hazard mitigation, with its related benefits, will be completed within the upcoming five-year planning period.



### 1.1.5 Implementation of the Planning Process

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The planning process and findings are required to be documented in local HMPs. To support the planning process in developing this HMP, Suffolk County and the participating jurisdictions have accomplished the following:

- Developed a Steering Committee and Countywide planning partnership with jurisdictions and stakeholders.
- Reviewed the 2014 *Suffolk County Hazard Mitigation Plan Update*.
- Identified and reviewed those hazards that are of greatest concern to Suffolk County and its jurisdictions (hazards of concern) to be included in the plan.
- Profiled the relevant hazards.
- Estimated the inventory at risk and potential losses associated with the relevant hazards.
- Reviewed and updated the hazard mitigation goals and added new objectives.
- Reviewed mitigation strategies identified in the 2014 Suffolk County HMP.
- Developed new mitigation actions to address reduction of vulnerability of hazards of concern.
- Involved a wide range of stakeholders and the public in the plan process.
- Developed mitigation plan maintenance procedures to be executed after obtaining approval of the plan from NYS DHSES and FEMA.

This HMP update documents the process and outcomes of Suffolk County and the jurisdictions' efforts. Section 2 (Plan Adoption) includes documentation that the prerequisites for plan approval have been met. Section 3 (Planning Process) includes additional information on the process to develop this plan.

As required by the DMA 2000, Suffolk County and its participating jurisdictions have informed the public and provided opportunities for public comment and input. This was demonstrated through the invitation to Planning Partnership meetings; individual meetings with the contract consultant; distribution of surveys; deployment of an online Story Map summarizing the planning process with capability to comment; and opportunity to review and comment on the draft plan. Numerous agencies and stakeholders have participated as core or support members by providing input and expertise throughout the planning process. Refer to Section 3 (Planning Process) which summarizes who was invited and actively participated, and Appendix D (Public and Stakeholder Outreach) for copies of website announcements, newspaper articles, and social media posts that announced to the public and stakeholders ways to engage in the HMP update.

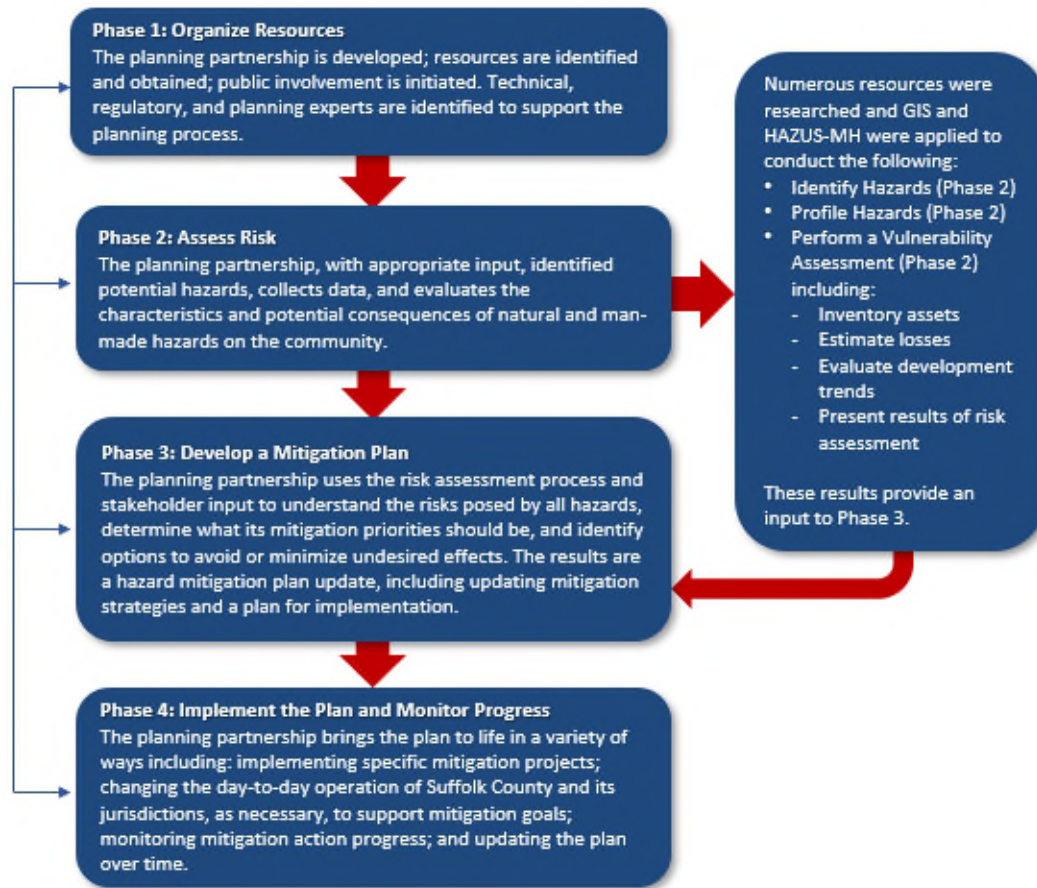
### 1.1.6 Organization of This Mitigation Plan

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This HMP is organized in accordance with FEMA and NYS DHSES guidance. The structure of this HMP follows the four-phase planning process recommended by FEMA and summarized in Figure 1-2.



Figure 1-2. Suffolk County Hazard Mitigation Planning Process



As noted earlier, the HMP is organized into two volumes: Volume I includes all information that applies to the entire planning area (Suffolk County) and Volume II includes participating jurisdiction-specific information.

Volume I includes the following sections:

**Section 1:** Introduction - Overview of participants and planning process.

**Section 2:** Plan Adoption - Information regarding the adoption of the HMP by Suffolk County and each participating jurisdiction.

**Section 3:** Planning Process - Description of the HMP methodology and development process; Steering Committee, Planning Committee, and stakeholder involvement efforts; and a description of how this HMP will be incorporated into existing programs.

**Section 4:** County Profile - Overview of Suffolk County, including: (1) general information, (2) economy, (3) land use trends, (4) population and demographics, (5) general building stock inventory, and (6) critical facilities.

**Section 5:** Risk Assessment - Documentation of the hazard identification and hazard risk ranking process, hazard profiles, and findings of the vulnerability assessment (estimates of the impact of hazard events on life, safety, health, general building stock, critical facilities, the economy); description of changing future conditions and how that may impact hazard vulnerability.





**Section 6:** Mitigation Strategy - Information regarding the mitigation goals and objectives identified by the Steering Committee in response to priority hazards of concern and the process by which Suffolk County and local mitigation strategies have been developed or updated.

**Section 7:** Plan Maintenance Procedures - System established by the Steering Committee to continue to monitor, evaluate, maintain, and update the HMP.

Volume II includes the following sections:

**Section 8:** Planning Partnership - Description of the planning partnership, their responsibilities, and description of jurisdictional annexes.

**Section 9:** Jurisdictional Annexes - Jurisdiction-specific annex for Suffolk County and each participating jurisdiction containing their hazards of concern, hazard risk ranking, capability assessments, mitigation actions, action prioritization specific only to Suffolk County or that jurisdiction, progress on prior mitigation activities (as applicable), and a discussion of prior local hazard mitigation plan integration into local planning processes.

Appendices include the following:

**Appendix A:** Resolution of Plan Adoption - Resolutions from the County and each jurisdiction included as each formally adopts the HMP update.

**Appendix B:** Participation Matrix – A matrix to give a broad overview of who attended meetings and when input was provided to the HMP update, as well as Letters of Intent to Participate as described in Section 3.

**Appendix C:** Meeting Documentation - Agendas, attendance sheets, minutes, and other documentation (as available and applicable) of planning meetings convened during the development of the plan.

**Appendix D:** Public and Stakeholder Outreach Documentation - Documentation of the public and stakeholder outreach effort including webpages, informational materials, public and stakeholder meetings and presentations, surveys, and other methods used to receive and incorporate public and stakeholder comment and input to the plan process.

**Appendix E:** Risk Assessment Supplementary Data – Historic event history to compliment Section 5 (Risk Assessment).

**Appendix F:** Critical Facilities (Confidential) - Critical facilities included in the risk assessment. This appendix is considered confidential due to the sensitivity of this data.

**Appendix G:** Plan Review Matrix - Summary of plans reviewed, including documentation of content relevant to the mitigation planning process.

**Appendix H:** Suffolk County Mitigation Catalog - Documentation of the broad range of actions identified during the mitigation process.

**Appendix I:** FEMA Plan Review Tools - Examples of plan review templates available to support annual plan review.

**Appendix J:** Linkage Procedures - Provides procedures for the increase or decrease in planning partners linked to this plan.



## 1.2 The Updated Plan – What is Different?

Due to the success of the 2014 plan, no major changes were made to the format or function of the 2020 update. The 2020 update has been enhanced using best available data and technology, especially in the risk assessment portion of the plan in Section 5 (Risk Assessment). The updated plan differs from the initial plan in a variety of ways:

- Updated NYS DHSES guidance existed at the time of its development. The 2017 New York State Hazard Mitigation Planning Standards and Guide were used to develop the 2020 update.
- Newly available data provided for a more detailed and accurate risk assessment.
- User-friendly tone to cater to the strong desire for this plan to be understandable to the general public and not overly technical was applied; specifically, to the hazard profiles.
- Identification and priority for numerous actions to be implemented by the planning partnership. The status of these actions will be monitored over the plan performance period by a plan maintenance strategy identified in Section 7 (Plan Maintenance) that included annual progress reporting.
- Updated annexes to include increased information regarding capabilities, adaptive capacity, climate change related actions, and planning integration.
- Relocation of critical facilities from the County Profile to Appendix F (confidential).

Table 1-3 indicates the major changes between the two plans as they relate to 44 CFR planning requirements.

**Table 1-3. Plan Changes Crosswalk**

44 CFR Requirement	2014 Plan	2020 Updated Plan
<p><i>Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:</i></p> <p>(1) <i>An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;</i></p> <p>(2) <i>An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and</i></p> <p>(3) <i>Review and incorporation, if appropriate, of existing plans, studies, reports and technical information.</i></p>	<p>The 2014 plan followed an outreach strategy utilizing multiple media developed and approved by the Steering Committee. This strategy involved the following:</p> <ul style="list-style-type: none"> <li>• Public participation on an oversight Steering Committee.</li> <li>• Establishment of a plan informational website.</li> <li>• Press releases.</li> <li>• Use of a public information survey.</li> </ul> <p>Stakeholders were identified and coordinated with throughout the process. A comprehensive review of relevant plans and programs was performed by the planning team.</p>	<p>Building upon the success of the 2014 plan, the 2020 planning effort implemented an enhanced engagement methodology. The plan included the following enhancements:</p> <ul style="list-style-type: none"> <li>• Using social media, in multiple languages (English, Spanish and Mandarin).</li> <li>• Web-deployed surveys to residents and targeted stakeholders.</li> <li>• Informational brochure available in multiple languages (English, Spanish and Mandarin).</li> <li>• Deployment of a Story Map and interactive Hazard Mapping Tool to allow residents to screen their properties for hazards; access surveys; review the draft plan and provide input.</li> <li>• Individual stakeholder outreach and meetings, where meeting invitations were accepted.</li> <li>• Involvement of the Suffolk County Planning Commission and presentation at a public meeting.</li> </ul> <p>As with the 2014 plan, the 2020 planning process identified key stakeholders and coordinated with</p>



44 CFR Requirement	2014 Plan	2020 Updated Plan
		them throughout the process. A comprehensive review of relevant plans and programs was performed by the planning team.
<p><i>§201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.</i></p>	<p>The 2014 plan included a comprehensive risk assessment of hazards of concern. Risk was defined as (probability x impact), where impact is the impact on people, property, and economy of the planning area. All planning partners ranked risk as it pertains to their jurisdiction. The potential impacts of climate change are discussed for each hazard.</p>	<p>The same methodology, using new, updated data, was deployed for the 2020 plan update. Cyber Security, Disease Outbreak, and Extreme Temperatures (heat and cold) were added as new hazards of concern. The flood hazard was expanded to include urban flooding (or flooding outside of the floodplain). The hazard ranking methodology was expanded to include adaptive capacity and climate change. Jurisdiction-specific risk assessment results are summarized in Section 4 (Risk Assessment) and in each jurisdictional annex (Section 9).</p>
<p><i>§201.6(c)(2)(i): [The risk assessment] shall include a] description of the ... location and extent of all-natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.</i></p>	<p>The 2014 plan presented a risk assessment of each hazard of concern. Each section included the following:</p> <ul style="list-style-type: none"> <li>• Hazard profile, including maps of extent and location, previous occurrences, and probability of future events.</li> <li>• Climate change impacts on future probability.</li> <li>• Impact and vulnerability on life, health, safety, general building stock, critical facilities, and economy.</li> <li>• Impact on people, property, critical facilities, and environment.</li> <li>• Future growth and development.</li> <li>• Additional data and next steps.</li> <li>• Overall vulnerability assessment.</li> </ul>	<p>The same format, using new and updated data, was used for the 2020 plan update. Each section of the risk assessment includes the following:</p> <ul style="list-style-type: none"> <li>• Hazard profile, including maps of extent and location, previous occurrences, and probability of future events.</li> <li>• Climate change impacts on future probability using the best available data for New York State.</li> <li>• Vulnerability assessment includes: impact on life, safety, and health, general building stock, critical facilities, and the economy, as well as future changes that could impact vulnerability.</li> <li>• Cascading impacts.</li> <li>• The vulnerability assessment also includes changes in vulnerability since the 2014 plan.</li> <li>• Assessment of changing future conditions (population, development and climate)</li> </ul>
<p><i>§201.6(c)(2)(ii): [The risk assessment] shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i). This description shall include an overall summary of each hazard and its impact on the community.</i></p>	<p>Vulnerability was assessed for all hazards of concern. Hazus computer model was used for the severe storm, earthquake, and flood hazards. These were Level 2 analyses using County data. Site-specific data on County-identified critical facilities were entered into the Hazus model. Hazus outputs were generated for other hazards by applying an estimated damage function to an asset inventory extracted from Hazus.</p>	<p>A robust vulnerability assessment was conducted for the 2020 plan update, using new and updated asset and hazard data. Volume 1, Section 5.3 summarizes countywide and jurisdiction-specific vulnerability for each hazard of concern. This includes utilizing FEMA's updated Hazus model for the flood, hurricane and earthquake hazards.</p>
<p><i>§201.6(c)(2)(ii): [The risk assessment] must also address National Flood</i></p>	<p>A summary of NFIP insured properties including an analysis of repetitive loss properties was included in the plan.</p>	<p>The same methodology was deployed for the 2020 plan update using new and updated data.</p>



44 CFR Requirement	2014 Plan	2020 Updated Plan
<p><i>Insurance Program insured structures that have been repetitively damaged floods.</i></p>		
<p><i>Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure and critical facilities located in the identified hazard area.</i></p>	<p>A complete inventory of the numbers and types of buildings exposed was generated for each hazard of concern. The Steering Committee defined “critical facilities” for the planning area, and these were inventoried by exposure. Each hazard chapter provides a discussion on future development trends.</p>	<p>Quantitative and qualitative analyses were conducted using the updated hazard and inventory data as presented in Section 5 (Risk Assessment). In addition, critical facilities considered lifelines in accordance with FEMA’s definition were identified and evaluated.</p>
<p><i>Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) and a description of the methodology used to prepare the estimate.</i></p>	<p>Loss estimates were generated for all hazards of concern. These were generated by Hazus for the severe storm, earthquake, and flood hazards. For the other hazards, loss estimates were generated by applying a regionally relevant damage function to the exposed inventory. In all cases, a damage function was applied to an asset inventory. The asset inventory was the same for all hazards and was generated in Hazus.</p>	<p>Quantitative and qualitative analyses were conducted using the updated hazard and inventory data as presented in Section 5 (Risk Assessment). As noted above, FEMA’s Hazus model was utilized for the flood, hurricane and earthquake hazards. Where possible, quantified exposure and impacts were totaled for other spatial hazards.</p>
<p><i>Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.</i></p>	<p>There is a summary of anticipated development in the County profile, as well as in each individual annex.</p>	<p>The same methodology was deployed for the 2020 plan update using new and updated data. In Volume I, Section 5.3, projected changes in population and development are discussed in each hazard section and how these projected changes may lead to increased vulnerability, or plans/regulations/ordinances in place to implement mitigation to protect the development.</p>
<p><i>§201.6(c)(3):[ The plan shall include a 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.]</i></p>	<p>The 2014 plan contained a mission statement, goals, objectives and actions. The guiding principal, goals and objectives were regional and covered all planning partners. Each planning partner identified actions that could be implemented within their capabilities. The actions were jurisdiction-specific and strove to meet multiple objectives. All objectives met multiple goals and stand alone as components of the plan. Each planning partner completed an assessment of its regulatory, technical, and financial capabilities.</p>	<p>The same methodology for setting goals, objectives, and actions was applied to the 2020 plan update. The Steering Committee reviewed and reconfirmed the mission statement, goals, and objectives for the plan. Each planning partner used the progress reporting tool identified for future plan maintenance and evaluated the status of actions identified in the 2014 plan. Actions that were completed or no longer considered to be feasible were removed. The balance of the actions was carried over to the 2020 plan and enhanced to be more specific if necessary, and in some cases, new actions were added to the action plan.</p>
<p><i>Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.</i></p>	<p>The Steering Committee identified a mission statement, goals, and objectives targeted specifically for this hazard mitigation plan. These planning components supported the actions identified in the plan.</p>	<p>The same methodology for setting goals, objectives, and actions was applied to the 2020 plan update. The Steering Committee reviewed and updated the mission statement, goals, and objectives for the plan to include a focus on increased resiliency. This resulted in the finalization of eight</p>



44 CFR Requirement	2014 Plan	2020 Updated Plan
		goals and 19 objectives to frame the plan.
<i>Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.</i>	The 2014 plan includes a hazard mitigation catalog that was developed through a facilitated process. This catalog identifies actions that manipulate the hazard, reduce exposure to the hazard, reduce vulnerability, or increase mitigation capability. The catalog further segregates actions by scale of implementation. A table in the action plan section analyzes each action by mitigation type to illustrate the range of actions selected.	The mitigation catalog was reviewed and updated by the Steering Committee for the 2020 update. As with the 2014 plan, the catalog has been included in the 2020 plan to represent the comprehensive range of alternatives considered by each planning partner. The table with the analysis of mitigation actions was used in jurisdictional annexes to the plan.
<i>Requirement: §201.6(c)(3)(ii): [The mitigation strategy] must also address the jurisdiction’s participation in the National Flood Insurance Program, and continued compliance with the program’s requirements, as appropriate.</i>	All municipal planning partners that participate in the National Flood Insurance Program identified an action stating their commitment to maintain compliance and good standing under the program.	The same methodology was deployed for the 2020 plan update, using new and updated data.
<i>Requirement: §201.6(c)(3)(iii): [The mitigation strategy shall describe] how the actions identified in section (c)(3)(ii) will be prioritized, implemented and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.</i>	Each recommended action was prioritized using a qualitative methodology based on the objectives the project will meet, the timeline for completion, how the project will be funded, the impact of the project, the benefits of the project, and the costs of the project.	A revised methodology based on the STAPLEE criteria and using new and updated data was used for the 2020 plan update. The 14 criteria were used to evaluate each potential mitigation action. The evaluation included a qualitative benefits and cost review. The results of the evaluation were used to identify the actions to include in the plan and assist with the prioritization. An emphasis was placed on benefits and costs (quantified where possible and listed in the mitigation action worksheets), as well as timeline for implementation (also documented in the mitigation action worksheets for FEMA-eligible projects).
<i>Requirement §201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.</i>	The 2014 plan outlined a detailed maintenance strategy.	The 2020 plan contains an enhanced plan maintenance strategy. The update provides a roadmap for the annual monitoring of the plan. This includes the inclusion of a summary plan maintenance matrix that provides an overview of the planning partner responsibilities for monitoring, evaluation, and update of the plan.
<i>Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.</i>	The 2014 plan details recommendations for incorporating the plan into other planning mechanisms.	The 2020 plan details recommendations for incorporating the plan into other planning mechanisms such as the following: <ul style="list-style-type: none"> <li>• Comprehensive Plan.</li> <li>• Emergency Response Plan.</li> <li>• Capital Improvement Programs.</li> <li>• Municipal Code.</li> </ul>
<i>Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will</i>	The 2014 plan details a strategy for continuing public involvement.	The 2014 plan maintenance strategy was enhanced for the 2020 plan. The County will use a proprietary online



44 CFR Requirement	2014 Plan	2020 Updated Plan
<i>continue public participation in the plan maintenance process.</i>		tool to support the annual progress reporting of mitigation actions. Section 7 (Plan Maintenance) also details the continued public participation in the plan maintenance process.
<i>Requirement §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).</i>	46 planning partners participated in the 2014 planning process.	The 2020 plan achieves DMA compliance for 45 planning partners. Resolutions for each partner adopting the plan can be found in Appendix A of this volume once the plan is approved by FEMA, pending adoption.



## SECTION 2. PLAN ADOPTION

This section contains information regarding adoption of the plan by Suffolk County and each participating jurisdiction.

### 2.1 Plan Adoption by Local Governing Bodies

A hazard mitigation plan must document that it has been formally adopted by the governing bodies of the jurisdictions requesting federal approval of the plan. For multi-jurisdictional plans, each jurisdiction requesting approval must document that it has been formally adopted. Adoption by the local governing bodies demonstrates the commitment of Suffolk County and each participating jurisdiction to fulfill the mitigation goals and strategies outlined in the plan. Adoption legitimizes the HMP and authorizes responsible agencies to execute their responsibilities.

This plan will be submitted for a pre-adoption review to NYS DHSES and FEMA Region 2. Once FEMA provides conditional approval of this HMP update, known as Approval Pending Adoption (APA), the County and participating jurisdictions will proceed with formal adoption proceedings.

Following adoption or formal action on the plan, the jurisdiction must submit a copy of the resolution or other legal instrument showing formal adoption (acceptance) of the plan to the Suffolk County Hazard Mitigation Coordinator. Suffolk County will forward the executed resolutions to NYS DHSES after which they will be forwarded to FEMA for record. The jurisdictions understand that FEMA will transmit acknowledgement of verification of formal plan adoption and the official approval of the plan to the Suffolk County Hazard Mitigation Coordinator.

The resolutions issued by each jurisdiction to support adoption of the plan will be included in Appendix A (Plan Adoption).

In addition to being required by DMA 2000, adoption of the plan is necessary because:

- It lends authority to the plan to serve as a guiding document for all local and state government officials.
- It gives legal status to the plan in the event it is challenged in court.
- It certifies the program and grant administrators that the plan’s recommendations have been properly considered and approved by the governing authority and jurisdictions’ citizens.
- It helps to ensure the continuity of mitigation programs and policies over time because elected officials, staff, and other community decision-makers can refer to the official document when making decisions about the community’s future.

Source: FEMA 2003. *How to Series:-Bringing the Plan to Life* (FEMA 386-4).



## SECTION 3. PLANNING PROCESS

### 3.1 INTRODUCTION

This section includes a description of the planning process used to update the Suffolk County HMP, including how it was prepared, who was involved in the process, and how the public was involved. To ensure that the plan meets requirements of the DMA 2000 and that the planning process would have the broad and effective support of the participating jurisdictions, regional and local stakeholders, and the public, an approach to the planning process and plan documentation was developed to achieve the following:

- The plan will be multi-jurisdictional, with the intention of including all municipalities, the Suffolk County Water District (SCWA), and tribal nations in the County. Suffolk County invited all jurisdictions to join with them in the planning process. To date, the County, SCWA, the two tribal nations, and 41 local municipal governments in the County participated in the 2020 planning process as indicated in Table 3-1. As previously noted, the Village of Sagaponack opted not to participate in the 2020 HMP. The plan will consider all-natural hazards of concern facing the area, thereby satisfying the natural hazards mitigation planning requirements specified in the DMA 2000.
- The plan will be developed following the process outlined by the DMA 2000, FEMA regulations, prevailing FEMA guidance, and the 2017 NYS DHSES hazard mitigation planning standard. Following this process ensures that all the requirements are met and support HMP review.

**Table 3-1. Participating Suffolk County Jurisdictions**

Jurisdictions		
Suffolk County	Village of Asharoken	Village of North Haven
Suffolk County Water Authority	Village of Babylon	Village of Northport
Shinnecock Tribal Nation	Village of Belle Terre	Village of Ocean Beach
Unkechaug Tribal Nation	Village of Bellport	Village of Old Field
Town of Babylon	Village of Brightwaters	Village of Patchogue
Town of Brookhaven	Village of Dering Harbor	Village of Poquott
Town of East Hampton	Village of East Hampton	Village of Port Jefferson
Town of Huntington	Village of Greenport	Village of Quogue
Town of Islip	Village of Head of the Harbor	Village of Sag Harbor
Town of Riverhead	Village of Huntington Bay	Village of Saltaire
Town of Shelter Island	Village of Islandia	Village of Shoreham
Town of Smithtown	Village of Lake Grove	Village of Southampton
Town of Southampton	Village of Lindenhurst	Village of The Branch
Town of Southold	Village of Lloyd Harbor	Village of Westhampton Beach
Village of Amityville	Village of Nissequoque	Village of West Hampton Dunes

Note: The Village of Sagaponack did not participate in the 2020 HMP.





The Suffolk County HMP update was written using the best available information obtained from a wide variety of sources. Throughout the HMP update process, a concerted effort was made to gather information from municipal and regional agencies and staff, as well as stakeholders, federal and NYS agencies, and the residents of the County. The HMP Steering Committee solicited information from local agencies and individuals with specific knowledge of certain natural hazards and past historical events. In addition, the Steering and Planning Committees took into consideration planning and zoning codes, ordinances, and recent land use planning decisions. The hazard mitigation strategies identified in this HMP update were developed through an extensive planning process involving local, County and regional agencies, residents, and stakeholders.

This section of the plan describes the mitigation planning process, including (1) Organization of the Planning Process; (2) Stakeholder Outreach and Involvement; (3) Integration of Existing Data, Plans, and Technical Information; (4) Integration with Existing Planning Mechanisms and Programs; and (5) Continued Public Involvement.

## **3.2 ORGANIZATION OF THE PLANNING PROCESS**

This section of the plan identifies how the planning process was organized with the many planning partners involved and outlines the major activities that were conducted in the development of this HMP update.

### **3.2.1 ORGANIZATION OF PLANNING PARTNERSHIP**

Suffolk County applied for and was awarded a multi-jurisdictional planning grant under the FEMA Pre-Disaster Mitigation program (PDMC-PL-02-NY-2017-002), which supported the development of this multi-jurisdictional HMP update.

Project management and grant administration has been the responsibility of the Suffolk County FRES. A contract planning consultant [Tetra Tech, Inc. (Tetra Tech)] was selected to guide the County and participating jurisdictions through the HMP update process. A contract between Tetra Tech and Suffolk County was executed in January 2020. Specifically, Tetra Tech was tasked with the following:

- Assisting with the organization of a Steering Committee and Planning Committee.
- Assisting with the development and implementation of a public and stakeholder outreach program.
- Data collection.
- Facilitation and attendance at meetings (Steering Committee, Planning Committee, stakeholder, public and other).
- Review and update of the hazards of concern, and hazard profiling and risk assessment.
- Assistance with the review and update of mitigation planning goals and objectives.
- Assistance with the review of progress of past mitigation strategies.
- Assistance with the screening of mitigation actions and the identification of appropriate actions.
- Assistance with the prioritization of mitigation actions.
- Authoring of the draft and final HMP documents.

In October 2017, Suffolk County notified all municipalities, the SCWA, and tribal nations within the County of the pending planning process and invited them to formally participate and respond with letters noting their willingness to participate in the update. Jurisdictions were then asked in February 2020 to formally notify the County of their intent to participate (via the Letter of Intent to Participate) and to identify planning POCs for facilitating municipal participation and representing the interests of their respective communities. The Letter of Intent also outlined planning partner expectations. The completed Letters of Intent to Participate are provided as Appendix B (Participation Matrix), as available.



To facilitate plan development, Suffolk County developed a Steering Committee to provide guidance and direction to the HMP update effort and to ensure the resulting document will be embraced politically by the constituency within the planning area (refer to Table 3-2). Each Steering Committee member received a copy of the Steering Committee Guidelines, outlining the responsibilities of the participants and the agreement of the partners to authorize the Steering Committee to represent the jurisdiction in the completion of certain planning elements. All jurisdictions participating in the plan update authorized the Steering Committee to perform certain activities on their behalf, via the LOIP. Specifically, the Steering Committee was charged with the following:

- Providing guidance and oversight of the planning process on behalf of the general planning partnership.
- Attending and participating in Steering Committee meetings.
- Assisting with the development and completion of certain planning elements, including:
  - Reviewing and updating the hazards of concern.
  - Developing a public and stakeholder outreach program.
  - Assuring that the data and information used in the plan update process are the best available.
  - Reviewing and updating the hazard mitigation goals and objectives.
  - Identifying and screening of appropriate mitigation strategies and activities.
- Reviewing and commenting on plan documents prior to submission to NYS DHSES and FEMA.

The Steering Committee provided guidance and leadership, oversight of the planning process, and acted as the point of contact for all participating jurisdictions and the various interest groups in the planning area.

**Table 3-2. Suffolk County Hazard Mitigation Steering Committee Members**

Affiliation	Name	Title
Suffolk County FRES/OEM	Jeanne Lenz *	HMP Project Manager and Program Examiner
	Ken Kutner *	Project Aide
	Edward Schneyer **	Director of Emergency Preparedness, Retired
	Joseph Trzepizur **	Deputy Director of Emergency Preparedness
Suffolk County Department of Public Works	Darnell Tyson	Acting Commissioner
Suffolk County Soil and Water Conservation District	Corey Humphrey	District Manager
Suffolk County Water Authority	Richard Bova	Deputy Director Strategic Initiatives / Emergency Manager
	Katelyn Cassagne **	GIS Strategic Initiatives Tech.
Suffolk County Economic Development & Planning	Rebecca Sinclair	Deputy Commissioner
	Sarah Lansdale **	Director of Planning
Unkechaug Nation	Mary Treadwell	Emergency Management Coordinator
Town of Babylon	Brian Zitani	Department of Environment Control - Waterways Management Supervisor
	John Cifelli **	Director of Operations
Town of Brookhaven	John Meehan	Commissioner Public Safety
	Chris Mehrman **	Chief Fire Marshal
Town of East Hampton	Bruce Bates	Emergency Preparedness Coordinator
	Kent Howie **	Deputy Emergency Preparedness Coordinator
Town of Huntington	Betty Walsh Emergency Manager	Emergency Manager
	Patrick Maisch **	Patrick Maisch
Town of Islip	Anthony J. D'Amico	Commissioner of Public Safety



Affiliation	Name	Title
	Anthony Prudenti **	Deputy Commissioner, Public Safety
Town of Riverhead	David J. Hegermiller	Project Manager / Chief of Police
	Edward Frost **	Detective Sergeant
Town of Shelter Island	James J. Read	Police Chief, Emergency Management Coordinator
Town of Smithtown	Nicholas Kefalos	Chief Fire Marshal
Town of Southampton	Ryan Murphy	Public Safety and Emergency Management Administrator
	Francis Zappone **	Deputy Town Supervisor / Emergency Manager
	Christine Fetten **	Director of Municipal Works
Town of Southold	Lloyd Reisenberg	Assistant Deputy Emergency Preparedness Coordinator
	Martin Flatley **	Chief of Police, Deputy Emergency Preparedness Coordinator
Village of East Hampton	Gregory J. Brown.	Lieutenant
	Kenneth Collum **	Code Enforcement Officer
Village of Patchogue	Marian Russo	Executive Director - CDA
	Paul Pontieri **	Mayor
Village of Quogue	William Nowak	Chief Building Inspector

\*Co-Chair

\*\*Alternate Steering Committee Member

Planning Partner expectations were outlined in the letter distributed by the County to each jurisdiction inviting them to participate in the HMP update. Table 3-3 lists the current municipal members of the Planning Partnership at the time of this HMP’s publication. It is noted that many of the Steering Committee members also are part of the overall project Planning Partnership, fulfilling these responsibilities on behalf of Suffolk County. This planning partnership (Steering and Committee and participating jurisdictions) were charged with the following:

- Identify representatives to serve as the planning point of contacts (POC).
- Support the Steering Committee selected to oversee the development of this plan.
- Provide representation at Planning Committee meetings.
- Provide data and information about their jurisdictions.
- Support public outreach efforts in their jurisdictions.
- Assist with the identification of stakeholders within their jurisdiction that should be informed and potentially involved with the planning process.
- Review draft plan sections when requested and provide comment and input as appropriate.
- Prepare and submit a Jurisdictional Annex.
- Identify specific mitigation actions to address each of the natural hazards posing high risk to their jurisdiction.
- Involve the local NFIP Floodplain Administrator in the planning process.
- Adopt the HMP by resolution of their governing body after FEMA conditional approval.
- Provide the Steering Committee with summary or jurisdiction staff and volunteer labor spent on the planning process on a monthly basis.

**Table 3-3. Suffolk County Hazard Mitigation Planning Partnership Members**

Jurisdiction	Primary Point of Contact	Title	Alternate Point of Contact	Title
Suffolk County	Jeanne Lenz	HMP Project Manager	Ken Kutner	PDM Project Aide



Jurisdiction	Primary Point of Contact	Title	Alternate Point of Contact	Title
Suffolk County Water Authority	Richard Bova	Deputy Director Strategic Initiatives / Emergency Manager	Katelyn Cassagne	GIS Strategic Initiatives Tech.
Shinnecock Tribal Nation	Daniel Collins, Sr.	Trustee and Secretary	Brian Polite	Chairman and Launcelot Gumbs, Vice Chairman
Unkechaug Tribal Nation	Mary Treadwell	Emergency Management Coordinator	Wendy Samuels	Recovery Manager
Town of Babylon	Brian Zitani	WMS	John Cifelli	Director of Operations
Town of Brookhaven	John Meehan	Commissioner of Public Safety	Chris Mehrman	Chief Fire Marshal
Town of East Hampton	Bruce Bates	Emergency Preparedness Coordinator	Kent Howie	Deputy Emergency Preparedness Coordinator
Town of Huntington	Betty Walsh	Emergency Preparedness Manager	Patrick Maisch	Emergency Preparedness
Town of Islip	Anne Mendes	Associate Administrator/Public Safety OEM	Robert Iberger	Assistant Town Emergency Prep Coordinator Public Safety OEM
Town of Riverhead	Chief David Hegermiller	Police Chief	Ed Frost	Deputy
Town of Shelter Island	James Read	Chief of Police	Jennifer Beresky	Senior Office Assistant
Town of Smithtown	Nicholas Kefalos	Chief Fire Marshal	Thomas Lohmann	Director of Public Safety
Town of Southampton	Ryan J. Murphy	Town Code Compliance and Emergency Management Administrator	Christine Fetten	Director of Municipal Works
Town of Southold	Lloyd Reisenberg	Office of Emergency Management	Chief M. Flatley	Chief/EMO
Village of Amityville	Dennis Siry, Mayor	Dennis Siry, Mayor	Bryan Donato, Building Inspector	Bryan Donato, Building Inspector
Village of Asharoken	Nancy Rittenhouse	Clerk	Pamela Pierce	Trustee
Village of Babylon	Skip Gardner	Superintendent	Scott Glenn	Foreman
Village of Belle Terre	Bob Sandak	Mayor	Sheila Knapp	Deputy Mayor
Village of Bellport	John Kocay	Clerk	Donald Mullins	Director of Code Enforcement
Village of Brightwaters	John Catania	Foreman of DPW	Jeanne Pirkl	Clerk
Village of Dering Harbor	Vicki Weslek	Village Clerk	Karen Kelsey	Deputy Mayor
Village of East Hampton	Michael Tracey	Chief of Police	Gregory J. Brown	Lieutenant
Village of Greenport	Paul J. Pallas, P.E.	Village Administrator	Sylvia Pirillo	Village Clerk
Village of Head of Harbor	Douglas Dahlgard	Mayor	Daniel W. White	Deputy Mayor
Village of Huntington Bay	Gail Devol	Village Administrator	Christopher Jack	Police Chief
Village of Islandia	Gerald Peters	Building Inspector	Allan Dorman	Mayor
Village of Lake Grove	Lynda Howell	Deputy Village Clerk	Carmela Constant	Village Clerk/Village Assessor
Village of Lindenhurst	Doug Madlon	Village Administrator	Tom Maher	Building Inspector
Village of Lloyd Harbor	Thomas Krumpert	Chief of Police	Robert Schwarz	Highway Superintendent
Village of Nissequoque	John Valentine	Emergency Manager	Jennifer Mesiano Higham	Strategic Grant Development
Village of North Haven	Eileen Tuohy	Clerk/Treasurer	George Butts III	Building Inspector
Village of Northport	Chris Hughes	Chief of Police	Roland Buzard	Village Administrator
Village of Ocean Beach	Steven Brautigam	Clerk/Treasurer	Matt Amin	Clerk
Village of Old Field	Mike Levine	Mayor	Adrienne Kessel	Village Clerk
Village of Patchogue	Marian H. Russo	CBA Executive Director	Paul Poutieri	Mayor



Jurisdiction	Primary Point of Contact	Title	Alternate Point of Contact	Title
Village of Poquott	Delores Parrish	Mayor/Emergency Manager	Jeff Koppelson	Deputy Mayor
Village of Port Jefferson	Joseph Palumbo	Village Administrator	Barbara Sakovich	Village Clerk
Village of Quogue	William Nowak	Chief Building Inspector	Chris Osborne	Emergency Preparedness Coordinator
Village of Sag Harbor	Austin J. McGuire	Chief of Police/Emergency Manager	Beth Kamper	Village Clerk-Administrator
Village of Saltaire	Donna Lyudmer	Treasurer	Meagan Leppicello	Deputy Clerk, Treasurer
Village of Shoreham	Edward Brickley	Trustee	Laura Baish	Trustee
Village of Southampton	Thomas Cummings	Chief of Police	Steven Zukosky	Sergeant
Village of The Branch	Mark Delaney	Mayor	John Carro	Deputy Mayor
Village of Westhampton Beach	Trevor Gonce	Chief of Police	Maria Moore	Mayor
Village of West Hampton Dunes	Gary A Vegliante	Mayor	Aram Terchunian	Coastal Geologist

The jurisdictional LOIP identifies the above Planning Partner expectations as serving to identify those activities comprising overall participation by jurisdictions throughout the planning process. The jurisdictions in Suffolk County have differing levels of capabilities and resources available to apply to the plan update process, and further, have differing exposure and vulnerability to the natural hazard risks being considered in this plan. Suffolk County’s intent was to encourage participation by all-inclusive jurisdictions and to accommodate their specific needs and limitations while still meeting the intents and purpose of plan update participation. Such accommodations have included the establishment of a Steering Committee, engaging a contract consultant to assume certain elements of the plan update process on behalf of the jurisdictions, and the provision of additional and alternative mechanisms to meet the purposes and intent of mitigation planning.

Ultimately, jurisdictional participation is evidenced by a completed annex to the HMP (Section 9), wherein jurisdictions have individually identified their planning POCs; evaluated their risk to the hazards of concern; identified their capabilities to effect mitigation in their community; identified and prioritized an appropriate suite of mitigation initiatives, actions, and projects to mitigate their hazard risk; and eventually, adopted the updated plan via resolution.

Appendix B (Participation Matrix), identifies those individuals who represented the jurisdictions during this planning effort and indicates how they contributed to the planning process.

All municipalities in Suffolk County actively participate in the National Flood Insurance Program (NFIP) and have a designated NFIP Floodplain Administrator (FPA). The Unkechaug Tribal Nation is actively working to join the NFIP and has identified joining the NFIP as a mitigation action. All known FPAs in the participating municipalities were informed of the planning process, reviewed the plan documents, and provided direct input to the plan update. Local FPAs are identified in the Points of Contact and Administrative and Technical portions of the jurisdictional annexes in Section 9 (Jurisdictional Annexes).

### 3.2.2 PLANNING ACTIVITIES

Members of the Planning Partnership (individually and as a whole), as well as key stakeholders, convened and/or communicated regularly to share information and participate in workshops to identify hazards; assess risks; review existing inventories of and identify new critical facilities; assist in updating and developing new mitigation goals and strategies; and provide continuity through the process to ensure that natural hazards vulnerability information and appropriate mitigation strategies were incorporated. All members of the Steering



Committee and Planning Partnership had the opportunity to review the draft plan and supported interaction with other stakeholders and assisted with public involvement efforts.

A summary of Steering Committee and Planning Partnership meetings held, and key milestones met during the development of the HMP update is included in Table 3-4 that also identifies which DMA 2000 requirements the activities satisfy. Documentation of meetings (e.g., agendas, sign-in sheets, notes where available) are in Appendix C (Meeting Documentation). Table 3-4 identifies only the formal meetings held during plan development and does not reflect the planning activities conducted by individuals and groups throughout the planning process. In addition to these meetings, there was a great deal of communication between the County, committee members, and the contract consultant through individual local meetings, electronic mail (email), and by phone.

After completion of the HMP update, implementation and ongoing maintenance will become a function of the Steering Committee and Planning Partnership, as described in Section 7 (Plan Maintenance). The Planning Partnership is responsible for reviewing the HMP and soliciting and considering public comment as part of the five-year mitigation plan update.

**Table 3-4. Summary of Mitigation Planning Activities / Efforts**

Date	DMA 2000 Requirement	Description of Activity	Participants
February 5, 2020	1b, 2	Steering Committee and All Jurisdictions Kickoff Meeting	Suffolk County FRES, Suffolk County Dept. of Public Works, Suffolk County Dept. of Health Services, Suffolk County Police Dept., Suffolk County Legislature, Suffolk County Economic Development & Planning, Suffolk County Legislature, Suffolk County SWCD, Suffolk County Water Authority, Babylon (T), Brookhaven (T), East Hampton (T), Huntington (T), Islip (T), Riverhead (T), Shelter Island (T), Smithtown (T), Southampton (T), Southold (T), Asharoken (V), Brightwaters (V), East Hampton (V), Northport (V), Ocean Beach (V), Patchogue (V), Quogue (V), Saltaire (V), Southampton (V), Westhampton Beach (V), Nassau County OEM, Stony Brook Hospital, PSEG Long Island, NYS DHSES, Tetra Tech
February 25, 2020	1b, 2	Steering Committee Meeting	Suffolk County FRES, Suffolk County Dept. of Public Works, Suffolk County Economic Development & Planning, Babylon (T), Brookhaven (T), Southampton (T), Southold (T), East Hampton (T), Huntington (T), Islip (T), Riverhead (T), Smithtown (T), Unkechaug Tribal Nation, PSEG Long Island, Tetra Tech
April 8, 2020	1b, 2	Steering Committee Meeting	Suffolk County FRES, Suffolk County Dept. of Public Works, Suffolk County Dept. of Parks, Suffolk County Economic Development & Planning, Suffolk County Dept. of Health Services, Babylon (T), Amityville (V), Lindenhurst (V), East Hampton (T), Huntington (T), Asharoken (V), Northport (V), Islip (T), Riverhead (T), Shelter Island (T), Smithtown (T), Southampton (T), Sag Harbor (V), Southold (T), PSEG Long Island, American Red Cross, Stony Brook Hospital, NYS DHSES, Tetra Tech
April 29, 2020	1b, 2, 3a, 3b, 3c, 3d, 3e	Planning Partnership Meeting: Risk Assessment Overview	Suffolk County FRES, Suffolk County Dept. of Public Works, Suffolk County Legislature, Suffolk County Economic Development & Planning, Suffolk County Department of Health Services, Suffolk



Date	DMA 2000 Requirement	Description of Activity	Participants
			County Water Authority, Babylon (T), Amityville (V), Babylon (V), Lindenhurst (V), Brookhaven (T), Belle Terre (V), Bellport (V), Patchogue (V), Poquott (V), Port Jefferson (V), Shoreham (V), East Hampton (T), East Hampton (V), Huntington (T), Asharoken (V), Huntington Bay (V), Lloyd Harbor (V), Northport (V), Islip (T), Ocean Beach (V), Saltaire (V), Riverhead (T), Shelter Island (T), Dering Harbor (V), Smithtown (T), Nissequoque (V), Southampton (T), Quogue (V), Sag Harbor (V), Southampton (V), Westhampton Beach (V), Southold (T), Greenport (V), Shinnecock Tribal Nation, Unkechaug Tribal Nation, PSEG Long Island, Stony Brook Hospital, NYS DHSES, Tetra Tech
June 3, 2020	1b, 2, 4a, 4b, 4c	Mitigation Workshop	Suffolk County FRES, Suffolk County Dept. of Public Works, Suffolk County Dept. of Parks, Suffolk County Police Dept., Suffolk County Economic Development & Planning, Suffolk County Department of Health Services, Suffolk County Water Authority, Babylon (T), Brookhaven (T), Bellport (V), Lake Grove (V), Patchogue (V), Port Jefferson (V), Shoreham (V), East Hampton (T), East Hampton (V), Huntington (T), Lloyd Harbor (V), Northport (V), Islip (T), Ocean Beach (V), Saltaire (V), Riverhead (T), Shelter Island (T), Smithtown (T), Nissequoque (V), Southampton (T), Quogue (V), Sag Harbor (V), West Hampton Dunes (V), Westhampton Beach (V), Southold (T), Unkechaug Tribal Nation, PSEG Long Island, Stony Brook Hospital, NYSDHSES, FEMA, and Tetra Tech
July 1, 2020	1b, 2, 3, 4, 5	Suffolk County Planning Commission Meeting	Refer to Appendix C (Meeting Documentation)
July 10, 2020	5	County Review of Plan Maintenance Procedures	Suffolk County FRES
August 19, 2020	5	Steering Committee #4 Review of Maintenance Procedures and draft plan review	Suffolk County FRES, Suffolk County Dept. of Public Works, Babylon (T), Huntington (T), Riverhead (T), Smithtown (T), Southold (T), PSEG Long Island, and Tetra Tech
October 2, 2020	1b, 2, 3, 4, 5	Review of public feedback received on the draft plan	Suffolk County FRES and Tetra Tech <i>*Individual jurisdictions were contacted if comments were received specific to their mitigation strategy</i>

Note: TBD = to be determined.  
T = Town; V = Village

Each number in column 2 identifies specific DMA 2000 requirements, as follows:

- 1a – Prerequisite – Adoption by the Local Governing Body
- 1b – Public Participation
- 2 – Planning Process – Documentation of the Planning Process
- 3a – Risk Assessment – Identifying Hazards
- 3b – Risk Assessment – Profiling Hazard Events
- 3c – Risk Assessment – Assessing Vulnerability: Identifying Assets
- 3d – Risk Assessment – Assessing Vulnerability: Estimating Potential Losses
- 3e – Risk Assessment – Assessing Vulnerability: Analyzing Development Trends
- 4a – Mitigation Strategy – Local Hazard Mitigation Goals
- 4b – Mitigation Strategy – Identification and Analysis of Mitigation Measures
- 4c – Mitigation Strategy – Implementation of Mitigation Measures
- 5a – Plan Maintenance Procedures – Monitoring, Evaluating, and Updating the Plan
- 5b – Plan Maintenance Procedures – Implementation through Existing Programs
- 5c – Plan Maintenance Procedures – Continued Public Involvement



### 3.3 STAKEHOLDER OUTREACH AND INVOLVEMENT

Stakeholders are the individuals, agencies, and jurisdictions that have a vested interest in the recommendations of the hazard mitigation plan, including all planning partners. Diligent efforts were made to assure broad regional, County, and local representation in this planning process. To that end, a comprehensive list of stakeholders was developed with the support of the Steering Committee and Planning Partnership. Stakeholder outreach was performed early and throughout the planning process. This HMP update includes information and input provided by these stakeholders where appropriate, as identified in the references.

The following is a list of the various stakeholders that were invited to participate in the development of this plan, along with a summary of how these stakeholders participated and contributed. This summary listing does not represent the total of stakeholders that were aware of and contributed to this HMP update, as outreach efforts were being made, both formally and informally, throughout the process by the many planning partners involved in the effort, and documentation of all such efforts is impossible. Instead, this summary is intended to demonstrate the scope and breadth of the stakeholder outreach efforts made during the plan update process.

#### 3.3.1 FEDERAL AGENCIES

**FEMA Region II:** Provided updated planning guidance, provided summary and detailed data from the NFIP (including repetitive loss information), and conducted plan review.

Information regarding hazard identification and the risk assessment for this HMP update was requested and received or incorporated by reference from the following agencies and organizations:

- National Climatic Data Center (NCDC)
- National Hurricane Center (NHC)
- National Oceanic and Atmospheric Administration (NOAA)
- National Weather Service (NWS)
- Storm Prediction Center (SPC)
- U.S. Army Corps of Engineers (USACE)
- U.S. Census Bureau

#### 3.3.2 STATE AGENCIES

**NYS DHSES: Headquarters and Region I:** Administered planning grant and facilitated FEMA review, provided updated planning guidance, and provided review of draft and final HMP.

**New York State Department of Environmental Conservation (NYSDEC):** Provided data and information.

#### 3.3.3 SUFFOLK COUNTY DEPARTMENTS

Several County departments were represented on the Steering Committee and involved in the HMP update planning process. Appendix B (Participation Matrix) provides further details regarding regional and local stakeholder agencies. All responses to the stakeholder surveys are in Appendix D (Public and Stakeholder Outreach).

**Suffolk County Fire, Rescue and Emergency Services (FRES):** In Suffolk County, FRES provides the leadership for the hazard mitigation planning process, acting as co-chair of the Steering Committee, providing data, facilitating communication with plan participants, and enabling public outreach. FRES is committed to serving both the 1.5 million residents of Suffolk County and the over 10,000 emergency responders who are





dedicated to saving lives and protecting property. In addition to hazard mitigation planning, FRES leads comprehensive emergency management planning for the County.

Jeanne Lenz, PDM Project Manager, served as the ongoing Suffolk County HMP Coordinator in Section 7 (Plan Maintenance) and remained in this role throughout the planning process. FRES provided critical data, assisted with the update of events and losses in the count, updated the previous mitigation strategy, facilitated outreach to jurisdictions and stakeholders, contributed to the County's capability assessment and updated mitigation strategy, and reviewed draft sections of the HMP.

The Director and staff served on the Steering Committee, provided information on hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

**Suffolk County Department of Public Works:** The Department of Public Works constructs, maintains and operates County properties and designs, constructs and maintains County roads, sewerage systems, buildings and other facilities, such as waterways, bridges, docks and marinas. In addition, the department is responsible for operating the Suffolk County Transit System and controlling mosquitoes that transmit disease and impact the enjoyment of outdoor activities.

The Acting Commissioner served on the Steering Committee, provided information regarding hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

**Suffolk County Department of Economic Development and Planning:** The Department of Economic Development and Planning assists and promotes the development, growth and retention of a broad mix of industry clusters that facilitate job opportunities and private capital investment. Through implementation of various technical and financing programs, the department acts as a one-stop resource for all type of business sectors and their respective needs.

The Department can support long-term recovery from hazard events in the County through the proficiency of planners and GIS staff. Expertise in grant funding, community engagement, and technology enables the Department of Economic Development and Planning to identify the best potential impacts of funding and projects. The Department acts as a data hub post-disaster event to collect information for FEMA, NY State, and other stakeholders during disaster response phases.

The Deputy Commissioner and staff served on the Steering Committee, provided information regarding hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

**Suffolk County Parks Department:** The Parks Department is responsible for 60,000 acres of parkland, the largest amount of County-owned parkland in the Suffolk County. Staff are responsible for maintenance of spillways, culverts, and weirs in County Parks. The Suffolk County Parks Department Maintenance Division removes trees if they are dangers to frequented areas (paths and such). The Environmental Division often responds to erosion control and endangered species related issues. The Environmental Division can be tasked with stream clearing when necessary.

The Commissioner and staff provided information regarding hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

**Suffolk County Soil & Water Conservation District (SWCD):** The SWCD supports the County's goal to protect and preserve natural resources. The District's dedication has been established by increased assistance provided to the agricultural community, private landowners and municipalities, and by the many partnerships established with various local, County, NY State, and federal governmental agencies.



The District Manager served on the Steering Committee, provided information regarding hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

**Suffolk County Department of Health Services:** The Suffolk County Department of Health Services promotes wellness and protects the public's health and environment.

The director and staff provided information regarding hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

**Suffolk County Police Department:** The Suffolk County Police Department responds to various hazard related emergencies. The Department is able to coordinate with various County, NY State, and federal agencies and has a standalone emergency operations center that coordinates with the County emergency operations center.

Staff provided information regarding hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

**Suffolk County Sheriff's Department:** The Suffolk County Sheriff's Department is primarily a response agency. The Department provides security at shelters, aids in evacuations, and provides traffic control. The Department supports agencies, such as FRES and DPW, in hazard mitigation projects.

Staff provided information regarding hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

**Suffolk County Department of Information Technology:** The Department of Information Technology supports computer services and applications for Suffolk County's Departments. The Department of Information Technology supported the recent conversion to socially distanced work environments (e.g., VPN, video conferencing), establishment of a platform for the Department of Health to handle the increased load created by the coronavirus outbreak, and the eventual transfer of data to the NY State system.

Staff provided information regarding hazards in the County, reviewed sections of the plan, attended meetings, and provided input on the mitigation strategy.

### 3.3.4 REGIONAL AND LOCAL STAKEHOLDERS

Appendix B (Participation Matrix) provides further details regarding regional and local stakeholder agencies. The stakeholders listed below were directly contacted by Suffolk County to take a stakeholder survey, which included the identification of specific mitigation strategies, review of the draft HMP, or both. Results of the surveys are in Appendix D (Public and Stakeholder Outreach). Feedback was reviewed by the Steering Committee and planning partnership and integrated in the plan, where appropriate.

#### Academia

All colleges, private schools, and school districts in the County were provided with the Academic Stakeholder survey, invited to provide input, and notified of the draft HMP review period via email by Suffolk County FRES. Longwood Central School District, Hampton Bays UFSD, Three Village Central School District, Middle Country Central School District, and Montauk UFSD provided input to the planning process via the County online stakeholder survey.

#### Business and Commercial Interests

Businesses and commercial industries in Suffolk County were notified of the stakeholder survey and invited to provide input on the draft HMP. The Suffolk County Department of Economic Development and Planning



conducted outreach regarding the HMP to the Planning Commission and Council on Environmental Quality. Members of the Planning Commission and Council on Environmental Quality include representatives of the following organizations and businesses:

- Citizens Campaign for the Environment
- Edgewise Energy
- Damianos Realty Group, LLC
- Gershow Recycling
- Thomas J. McCarthy Real Estate, Inc.
- Iron Workers Local 361
- Anderson Farm Stand
- Condzella Farms
- South Ferry Company
- Kelly Development Group
- LI Farm Bureau

### **Emergency Services**

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All County and local emergency service providers (police, fire, EMS) were notified of the Emergency Services stakeholder survey and invited to provide input on the draft HMP by Suffolk County FRES via email. The following provided input to the planning process via the County online stakeholder survey:

- Bayport Fire Rescue
- Commack Ambulance
- Community Ambulance
- Cold Springs Harbor Fire Department
- Copiague Fire Department
- East Brentwood Fire Department
- Emergency Ambulance Service
- Fair Harbor Fire Department
- Farmingville Fire Department
- Huntington Bay Village Police Department
- Jamesport Fire Department
- Kings Park Fire Department
- Manorville Community Ambulance
- Mastic Beach Ambulance Company
- Medford Volunteer Ambulance, Inc.
- Nesconset Fire Department
- Nissequogue Fire Department
- North Amityville Fire Company
- Ocean Beach Village Police Department
- Quogue Fire Department
- Quogue Police Department
- Ridge Fire Department
- Riverhead Volunteer Ambulance Corps
- Saint James Fire District
- Selden Fire Department
- South Country Ambulance
- Southold Fire Department
- Suffolk County Department of Health/Emergency Medical Services
- Suffolk County Police Department
- Suffolk County Police Department Marine Bureau
- Suffolk County Sheriff's Office
- Wading River Fire Department
- West Babylon Fire Department

### **Hospitals and Healthcare Facilities**

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All hospitals and major healthcare facilities located in Suffolk County were invited to take the stakeholder survey and provide input to the planning process. Major facilities were notified of HMP meetings and Stony Brook University Hospital provided input to the planning process via the County online stakeholder survey. In addition,



a representative from Stony Brook University Hospital served on the Steering Committee and provided mitigation actions.

### **Highway and Public Works**

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All County, and local highway and public works departments were notified of the Highway and Public Work's stakeholder survey and invited to provide input on the draft HMP by Suffolk County FRES via email. In addition, many of the participating municipalities had representatives from their highway and public works departments representing them on the Planning Partnership, or were invited to annex development meetings, contribute mitigation actions and asked to review the annexes.

### **Social Services**

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Suffolk County Social Services were invited to take the stakeholder survey and provide input to the planning process.

### **Utilities**

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Utility providers in the County were notified of the utility stakeholder survey and invited to provide input on the draft HMP. PSEG Long Island attended Steering Committee meetings and provided input to the planning process. In addition, individual meetings with PSEG took place regarding capabilities, to discuss risk, and provide input on the mitigation strategy.

### **Additional Stakeholders**

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The following stakeholders were identified by the Suffolk County Steering Committee to reach out to during the planning process and hold a meeting, as well as inform that the draft HMP was available for public review and comment:

- Central Pine Barrens Joint Commission – meeting held; draft plan comments provided
- New York Sea Grant (SUNY Stonybrook)
- The Nature Conservancy – Long Island Chapter
- U.S. Geological Survey (USGS) – Coram Office
- Peconic Estuary Program – meeting held
- Cornell Cooperative Extension
- Brookhaven National Lab

In addition to review of the draft HMP, representatives of the Peconic Estuary Program and the Central Pine Barrens Joint Commission met individually with the project team to discuss hazards impacting the natural environment, the impact of hazards on built infrastructure, planning processes that are underway or complete, and potential mitigation actions.

### **3.3.5 ADJACENT COUNTIES**

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Suffolk County maintained communications with neighboring Nassau County to keep them apprised of the project and to allow them the opportunity to provide input to this planning process. Specifically, Nassau County representatives were first contacted in October 2018 and updated throughout the planning process to inform them about the kickoff of the planning process, availability of the project website, draft plan documents, and surveys, and to invite them to provide input to the planning process. In addition, Nassau County was invited to all Planning Partnership meetings and attended the kickoff meeting.



### 3.3.6 PUBLIC OUTREACH

The Steering Committee and Planning Partnership made the following public outreach efforts during the development and review of the HMP:

- Suffolk County FRES maintains a public website to facilitate communication between the Steering Committee, planning partnership, stakeholders, and the public. The public website provides a project overview, County and local contact information, access to the citizen's survey and various stakeholder surveys, the Story Map and Hazard Mapping Tool, and sections of the HMP for public review and comment. Figure 3-1 provides a screenshot of the current website homepage. (<https://fres.suffolkcountyny.gov/RESPOND/HazardMitigation.aspx>)
- The contract consultant presented at the public Suffolk County Planning Commission meeting in July 2020.
- An online natural hazards preparedness citizen survey was developed to gauge household preparedness relevant to hazards in Suffolk County and to assess the level of knowledge of tools and techniques to assist in reducing risk and loss of those hazards. The questionnaire asks quantifiable questions about citizen perception of risk, knowledge of mitigation, and support of community programs, as well as several demographic questions to help analyze trends. The questionnaire was posted on the County public website in March 2020 and advertised via social media by the County and participating jurisdictions. The survey was available for over four months to facilitate public input garnering 535 responses. The survey results were sorted by municipality and provided to the Steering Committee and Planning Partnership members to use to identify vulnerabilities and develop mitigation strategies. A summary of survey results is provided in Appendix D (Public and Stakeholder Outreach).
- All participating jurisdictions were encouraged to distribute the multi-lingual project brochure (English, Spanish and Mandarin) and post the links to the project webpage and citizen and stakeholder surveys. In addition, all participating jurisdictions were requested to advertise the availability of the project website via local homepage links and other available public announcement methods (e.g., Facebook, Twitter, email blasts). Figure 3-2 provides screenshots of example announcements and the following are examples of outreach provided.
- In August 2020, a Story Map to provide additional information regarding the Suffolk County HMP update. The Story Map summarizes the planning process, provides links to the citizen and stakeholder surveys and had individual pages for each hazard of concern. The pages for each hazard of concern provide a brief overview of each hazard and hyperlinks to additional resources, when available. For the spatial hazards, residents can dynamically pan a map to view the hazard area relevant to areas in the County. In addition, a custom interactive Hazard Mapping Tool was launched to allow residents to screen their properties for hazards. This Tool enables residents to download a report that summarizes the hazards present on the area of interest identified.
- Beginning in August 2020, draft sections of the plan were posted on the project website for public review and comment. In addition, links were provided to the participating jurisdictions to post on their respective websites and multi-lingual social media posts were provided for greater distribution as well. In total, seven respondents provided comments on a survey included as part of the draft plan review to identify suggestions and edits to the draft.
- Once approved by NYS DHSES/FEMA, the final HMP will be available on the Suffolk County and municipal websites. In addition, Suffolk County will be maintaining and updating the Story Map to provide additional opportunity for continued public engagement.



Figure 3-1. Suffolk County HMP Website Homepage

## RESPOND

A community planning committee, along with the support of county, state and federal agencies and stakeholders, has addressed natural disasters that may occur within our Towns and County and developed strategies to

- [Home](#)
- [Hazard Mitigation](#)
- [Resources](#)
- [Mitigation Planning Committee](#)
- [Contact Information](#)
- [Public Outreach](#)
- [FEMA Approved Plan](#)
- [Fire Rescue and Emergency Services](#)
- [Preparing for a Hurricane](#)
- [Are You Aware and Prepared?](#)
- [Suffolk County Government Main Site](#)

### Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 (DMA 2000) is federal legislation that establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). DMA 2000 encourages and rewards local and state pre-disaster planning, promotes sustainability, and seeks to integrate State and local planning with an overall goal of strengthening statewide hazard mitigation planning. This enhanced planning approach enables local, tribal, and state governments to articulate accurate and specific needs for hazard mitigation, which results in faster, more efficient allocation of funding and more effective risk reduction projects.

### What is hazard mitigation?

Hazard Mitigation is any action taken to reduce the loss of life and property by lessening the impact of disasters (natural, technological and man-made) ([www.fema.gov](http://www.fema.gov)). It is often considered the first of the four phases of emergency management; mitigation, preparedness, response and recovery.

Mitigation measures fall into the following six general categories:

- Prevention: Measures such as planning and zoning, open space preservation, and development regulations, building codes, storm water management, fire fuel reduction, soil erosion, and sediment control.
- Property Protection: Measures such as acquisition, relocation, storm shutters, rebuilding, barriers, floodproofing, insurance, and structural retrofits for high winds and earthquake hazards.
- Public Education and Awareness: Measures such as outreach projects, real estate disclosure, hazard information centers, technical assistance, and school age and adult education programs.
- Natural Resource Protection: Measures such as erosion and sediment control, stream corridor protection, vegetative management, and wetlands preservation.
- Emergency Services: Measures such as hazard threat recognition, hazard warning systems, emergency response, protection of critical facilities, and health and safety maintenance.



Figure 3-2. Suffolk County HMP Website Homepage After Draft Posting

# RESPOND

A community planning committee, along with the support of county, state and federal agencies and stakeholders, has addressed natural disasters that may occur within our Towns and County and developed strategies to

- Home
- HMP Story Map
- Hazard Mitigation
- Resources
- Mitigation Planning Committee
- Contact Information
- Public Outreach
- FEMA Approved Plan
- Fire Rescue and Emergency Services
- Preparing for a Hurricane
- Are You Aware and Prepared?
- Suffolk County Government Main Site

## RESPOND

A Municipal Planning Committee, along with the support of local, county, state and federal agencies and stakeholders, has addressed natural disasters that may occur within our communities and developed strategies to mitigate against losses.

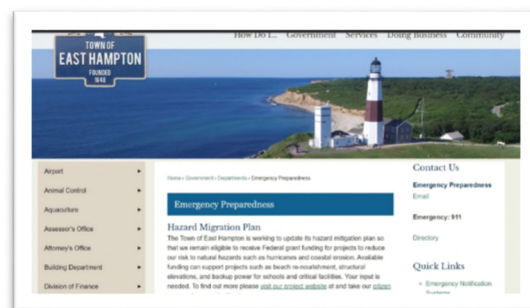
Suffolk County is pleased to post the **draft 2020 Multi-Jurisdictional Multi-Hazard Mitigation Plan update** for public review and comment through September 30, 2020. Please use this form to submit your plan review comments to the County

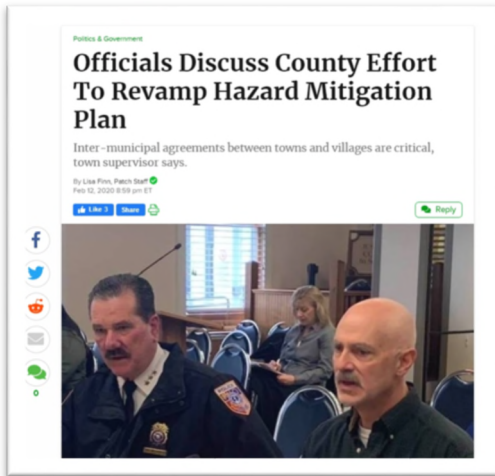
### Hazard Mitigation Plan Story Map

Be part of the process and provide your input:

- Public Service Provider Surveys
- Citizen Survey
- April 2020 Newsletter

Figure 3-3. County and Municipal Outreach Posts





### 3.4 INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The Suffolk County HMP update strives to use the best available technical information, plans, studies, and reports throughout the planning process to support hazard profiling; risk and vulnerability assessment; review and evaluation of mitigation capabilities; and the identification, development, and prioritization of Suffolk County and local mitigation strategies.

The asset and inventory data used for the risk and vulnerability assessments are presented in the County Profile (Section 4). Details of the source of this data, along with technical information on how the data were used to develop the risk and vulnerability assessment, are presented in the Hazard Profiling and Risk Assessment Section (Section 5), specifically within Section 5.1 (Methodology), as well as throughout the hazard profiles in Section 5.3 (Hazard Profiles). Further, the sources of technical data and information used can be found within Volume I under *References*.

Plans, reports, and other technical information were identified and provided directly by the County, participating jurisdictions, and numerous stakeholders involved in the planning effort, as well as through independent research by the planning consultant. The County and participating jurisdictions were tasked with updating the inventory of their Planning and Regulatory capabilities in Section 9 (Jurisdictional Annexes) and providing relevant planning and regulatory documents, as applicable. Relevant documents, including plans, reports, and ordinances were reviewed to identify the following:

- Existing municipal capabilities.
- Needs and opportunities to develop or enhance capabilities, which are identified within the County or local mitigation strategies.
- Mitigation-related goals or objectives considered in the review and update of the overall Goals and Objectives in Section 6 (Mitigation Strategy).
- Proposed, in-progress, or potential mitigation projects, actions, and initiatives to be incorporated into the updated County and local mitigation strategies.





The following local regulations, codes, ordinances, and plans were reviewed during this process to develop mitigation planning goals, objectives, and strategies that are consistent across local and regional planning and regulatory mechanisms to accomplish complementary and mutually supportive strategies:

- Comprehensive/Master Plans
- Building Codes
- Zoning and Subdivision Ordinances
- NFIP Flood Damage Prevention Ordinances
- Site Plan Requirements
- Local Waterfront Revitalization Plans
- Stormwater Management Plans
- Emergency Management and Response Plans
- Land Use and Open Space Plans
- Capital Plans
- New York State Standard Multi-Hazard Mitigation Plan, 2019

Appendix G documents the review and integration of plans and ordinances in Suffolk County. In total, 463 plans and ordinances were reviewed to identify relevant goals, responsible parties, plan integration and potential mitigation actions identified.

### 3.5 INTEGRATION WITH EXISTING PLANNING MECHANISMS AND PROGRAMS

Effective mitigation is achieved when hazard awareness and risk management approaches and strategies become an integral part of public activities and decision-making. Within Suffolk County, many existing plans and programs support hazard risk management, and thus it is critical that this hazard mitigation plan integrate, coordinate with, and complement, those existing plans and programs.

The Capability Assessment section of Section 6 (Mitigation Strategy) provides a summary and description of the existing plans, programs, and regulatory mechanisms at all levels of government (federal, NYS, County, and local) that support hazard mitigation within Suffolk County. Within each jurisdictional annex in Section 9, the County and each participating jurisdiction identified how they integrated hazard risk management into their existing planning, regulatory, and operational/administrative framework (*integration capabilities*) and how they intend to promote this integration (*integration actions*).

A further summary of these continued efforts to develop and promote a comprehensive and holistic approach to hazard risk management and mitigation is presented in Section 7 (Plan Maintenance).

### 3.6 CONTINUED PUBLIC INVOLVEMENT

Suffolk County and participating jurisdictions are committed to the continued involvement of the public in the hazard mitigation process. This HMP update will be posted online at <https://fres.suffolkcountyny.gov/RESPOND/HazardMitigation.aspx> and jurisdictions will be encouraged to maintain links to the plan website. Further, Suffolk County will make hard copies of the HMP available for review at public locations, as identified on the website.

A notice regarding annual updates of the plan and the location of plan copies will be publicized annually after the Planning Partnership's annual evaluation and posted on the public website at <https://fres.suffolkcountyny.gov/RESPOND/HazardMitigation.aspx>.



Each jurisdiction's governing body shall be responsible for receiving, tracking, and filing public comments regarding this plan.

The public will have an opportunity to comment on the plan as a part of the annual mitigation planning evaluation process and the next five-year mitigation plan update. The HMP Coordinator is responsible for coordinating the plan evaluation portion of the meeting, soliciting feedback, collecting and reviewing the comments, and ensuring their incorporation in the five-year plan update as appropriate; however, members of the Planning Partnership will assist the HMP Coordinator. Additional meetings may be held as deemed necessary by the Planning Committee to provide the public an opportunity to express concerns, opinions, and ideas about the plan.

Further details regarding continued public involvement are provided in Section 7 (Plan Maintenance).

After completion of this plan, implementation and ongoing maintenance will continue to be a function of the Planning Partnership, as currently identified in Table 3-3. The Planning Partnership will review the plan and accept public comments as part of an annual review and as part of five-year mitigation plan updates.

A notice regarding annual updates of the plan and the location of plan copies will be publicized annually after the HMP annual evaluation and posted on the public website.

Ms. Jeanne Lenz is identified as the Suffolk County HMP Coordinator in Section 7 (Plan Maintenance) and is responsible for receiving, tracking, and filing public comments regarding this plan. Contact information is:

Jeanne Lenz, PDM Project Manager  
Suffolk County Fire, Rescue and Emergency Services  
102 East Avenue Yaphank, NY 11980  
631-852-4909  
Email: [jeanne.lenz@suffolkcountyny.gov](mailto:jeanne.lenz@suffolkcountyny.gov)



## SECTION 4. COUNTY PROFILE

Profile information is presented and analyzed to develop an understanding of a study area, including the economic, structural, and population assets at risk and the particular concerns that may be present related to hazards analyzed later in this plan (e.g., significant coastal areas or low lying areas prone to flooding or a high percentage of vulnerable persons in an area). This profile describes the general information of the County (government, physical setting, population and demographics, general building stock, and land use and population trends) and critical facilities located within Suffolk County.

### 4.1 GENERAL INFORMATION

Suffolk County was established on November 1, 1683, as one of the ten original counties in New York State. Suffolk County was named after the County of Suffolk in England, from where many of its earliest settlers originated (Suffolk County Government 2020). Suffolk County's western border is approximately 15 miles from the eastern border of New York City. According to the U.S. Census data, the Suffolk County estimated population in 2019 was 1,476,601. Suffolk County is one of 57 counties in New York State and is comprised of 10 towns and 31 incorporated villages. Within each town and village, there are incorporated and unincorporated areas. The population of Suffolk County is larger than 10 states and ranks as the 24<sup>th</sup> most populated county in the United States (U.S. Census Bureau 2020). Suffolk County is bordered by Nassau County to the west and major water bodies to the north, south, and east.

#### 4.1.1 PHYSICAL SETTING

This section presents location, topography and geology, hydrology and hydrography, climate, land use and land cover.

##### Location

Suffolk County is part of the Long Island Region, located at the southern tip of New York State and east of New York City. Suffolk County's land area is approximately 911 square miles. The County is 86 miles long and approximately 15 miles wide. The County is bordered by Nassau County to the west, by the Long Island Sound to the north, the south shore bays and the Atlantic Ocean to the south, and the Peconic Bay System and Gardiner's Bay to the east. The eastern end of Suffolk County is divided into two peninsulas, the North Fork and the South Fork, and contains large bays. The County itself is divided into 10 towns, which contain many villages and hamlets (Figure 4-1).

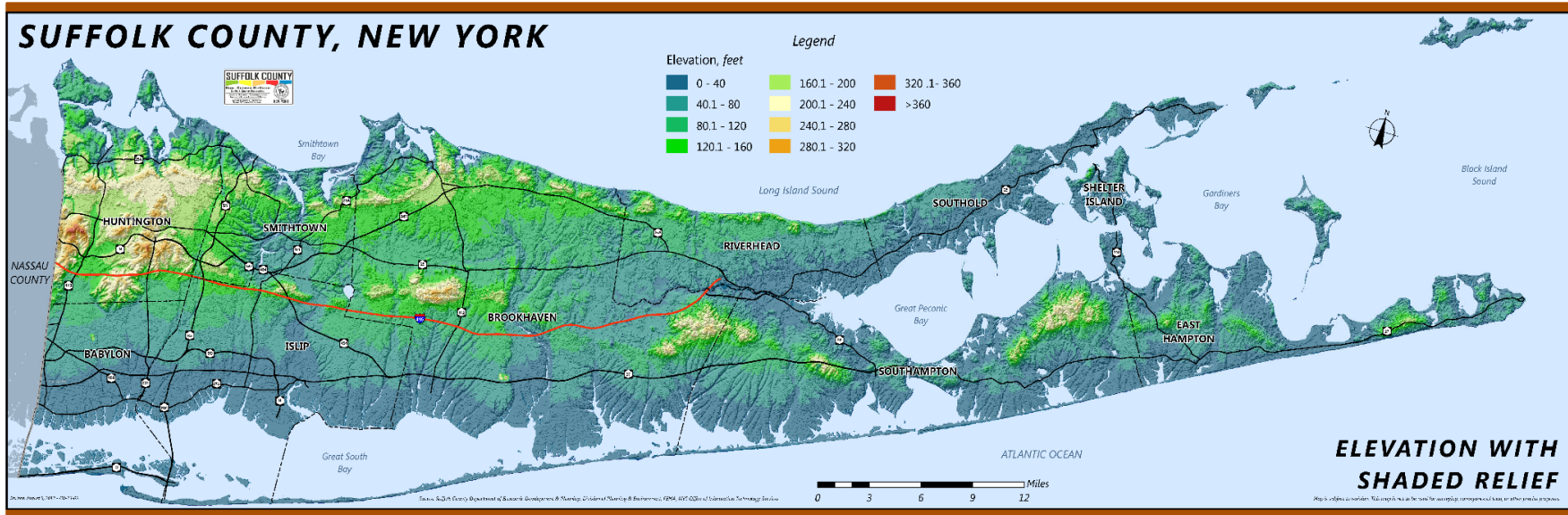
Long Island's southern coastline faces the open waters of the Atlantic Ocean. Due to its geographic location, Suffolk County is exposed and vulnerable to numerous natural hazards, especially the unobstructed path of coastal storms traveling up the Atlantic coast and accompanying wind and surge, stormwater and tidal flooding, and sea level rise.

##### Topography and Geology

Long Island is located within the Atlantic Coastal Plain, one of the eight major physiographic regions of New York State. The region is underlain by poorly consolidated sedimentary formations of Cretaceous, Tertiary, and Quaternary age formations that gently dip seaward. Suffolk County is underlain by predominantly by Quaternary age sedimentary rocks. Wisconsin Glacial Till is apparent everywhere on Long Island. This type of glacial till consists of an unstratified mix of clay, silt, and sand within a mix of rock material ranging from pebbles to giant boulders (Stoffer & Messina 1996).



Figure 4-1. Suffolk County, New York



Source: Suffolk County Planning 2014.





The present landscape of Suffolk County was formed approximately 11,000 years ago. As the glaciers receded, deposits of moraine were left behind on the island. The terminal moraine is represented by two ridges that extend the length of Long Island. The southern portion of Long Island consists of an older moraine, the Ronkonkoma moraine. The northern portion of Long Island consists of a younger moraine, Harbor Hill moraine, found along Long Island Sound. Outwash sand and gravel deposits cover much of southern Long Island. Varved lake clays and swamp peat cover areas flooded by lakes that formed in lowland regions shortly after the glaciers receded (Suffolk County Government 2020).

The topography of Suffolk County and Long Island is relatively flat. Elevations in Suffolk County range from 0 feet above sea level along the south shore coast of the Atlantic Ocean to nearly 400 feet above sea level in the central and northern parts of Suffolk County. The coast provides approximately 1,000 miles of shoreline. The North Shore is characterized by headlands that have been steeply eroded into nearly vertical bluffs that reach almost 100 feet high in certain locations. Along the South Shore, waves and ocean currents reworked the deposits to form barrier beaches (USGS New York Water Science Center 2020).

### **Hydrography and Hydrology**

Numerous ponds, lakes, creeks, extensive bays, and frontages on the Long Island Sound and Atlantic Ocean make up the waterscape of Suffolk County. The major waterways within Suffolk County include the: Peconic River, Nissequogue River, Carlls River, Patchogue River, Swan River, Wading River, Carmans River, Great Peconic Bay, Little Peconic Bay, Napeague Bay, Gardiners Bay, Shinnecock Bay, Narrow Bay, Great South Bay, Smithtown Bay, Shelter Island Sound, Long Island Sound, Block Island Sound, and the Atlantic Ocean. All of these water bodies and the whole of Suffolk County are a part of the Long Island Watershed.

The Long Island Watershed covers more than 16,000 square miles in six different states and a small portion of Quebec, Canada. An estimated 8 million people live within this watershed (Zhai et al. 2016). In Suffolk County, the Long Island Sound Watershed is broken into the North and South. The South Long Island Watershed consists of 8 named watersheds, 625 miles of streams, and a drainage area of 1,961 square miles. Eighteen major water bodies comprise this watershed in both Nassau and Suffolk Counties. The North Long Island Watershed consists of 4 named watersheds, 52 miles of streams and, has a drainage area of 912 square miles (New York State-DEC n.d.).

Precipitation is the source of all naturally occurring fresh groundwater and surface water in Suffolk County. All drinking water on Long Island comes from underground sources and is the single source of water available to meet the needs of Suffolk and Nausau County's populations. The groundwater reservoir is made up of three major aquifers found beneath Suffolk County – the upper glacial aquifer (water table) and the underlying Magothy and Lloyd aquifers. The deepest aquifer is the Lloyd Aquifer, and it contains water that is up to several thousand years old. The middle aquifer is called the Magothy Aquifer, and it contains water that is up to 1,000 years old in its deepest layers underlying the South Shore. This is the largest aquifer and the primary source of public water supply for Suffolk County. The shallowest aquifer is called the Upper Glacial Aquifer. The majority of Long Island is entirely dependent on the EPA-designated underlying sole-source aquifer system, which currently supplies over 400 million gallons a day (MGD) of freshwater from more than 1,500 public-supply wells to over 2.8 million people in Nassau and Suffolk Counties (Long Island Commission for Aquifer Protection (LICAP) 2017).

In some areas of Long Island, freshwater pumping has resulted in saltwater intrusion into the aquifer system and has impacted streams, ponds, coastal wetlands, and estuaries that rely on groundwater discharge to sustain them. Additional human related activities, such as urban runoff and septic systems, have also affected the water quality of the aquifer system. Therefore, development and use of groundwater on Long Island is constrained by ecohydrological (i.e., the interactions between groundwater and surface-water ecosystems) and water-quality



concerns (USGS, n.d.). At the same time, the relative abundance of fresh groundwater on Long Island has allowed extensive growth and development (Nemickas et al. 1989).

Suffolk County contains the highest density of onsite septic systems within the tri-state area with approximately 360,000 homes currently using onsite sewage disposal systems. Meaning, the vast majority of Suffolk County residents rely on on-site wastewater disposal systems that discharge to groundwater. Of particular concern are the on-site septic systems located in the groundwater contributing areas of potable supply wells and estuarine surface waters. As a region with a federally-designated sole source aquifer (deriving its drinking water from the ground), it is important to pay particular attention to the septic systems and cesspools damaged by Superstorm Sandy, as well as the septic systems and cesspools that are negatively impacting natural marshland habitats that act as a second line of defense during storm events like Sandy. Septic and cesspool systems are particularly problematic in areas with high water tables and in close proximity to surface waters. When flooded or submerged in groundwater, septic systems do not function as designed, and they fail to adequately treat pathogens. Excess nitrogen from sewage threatens valuable natural resources, coastal defenses, and human health (Peconic Estuary Partnership 2017). As discussed later in this plan, Suffolk County is leading a coastal resilience initiative using federal and state grant funding to eliminate nearly 7,000 cesspools and septic systems that have been identified as sources of pollution to the region and connect these parcels to sewers (Suffolk County 2020).

## Climate

The climate of New York State is very similar to most of the Northeast United States and is classified as Humid Continental. Differences in latitude, character of topography, and proximity to large bodies of water all have an effect on the climate across New York State. Precipitation during the warm, growing season (April through September) is characterized by convective storms that generally form in advance of an eastward moving cold front or during periods of local atmospheric instability. Occasionally, tropical cyclones will move up from southern coastal areas and produce large quantities of rain. Both types of storms typically are characterized by relatively short periods of intense precipitation that produce large amounts of surface runoff and little recharge (Cornell, n.d.).

The cool season (October through March) is characterized by large, low-pressure systems that move northeastward along the Atlantic coast or the western side of the Appalachian Mountains. Storms that form in these systems are characterized by long periods of steady precipitation in the form of rain, snow, or ice, and tend to produce less surface runoff and more recharge than the summer storms because they have a longer duration and occasionally result in snowmelt (Cornell, n.d.).

Long Island's climate is similar to other coastal areas of the Northeast. Summers are typically warm, with an occasional thunderstorm. Sea breezes off the Atlantic Ocean temper the heat and limit the frequency and severity of thunderstorms. During the winter, temperatures are usually warmer than inland areas, sometimes bringing rain instead of snow. Measurable snow falls every winter, including Nor'easters which produce blizzard conditions. These Nor'easters can bring 1 to 2 feet of snow with near-hurricane force winds (LongIsland.com, n.d.).

According to an article published by the Weather Channel on February 25, 2013, scientists say the Long Island of the future will have shorter, wetter winters and oppressively hot summers, with seas rising and storm surges so strong they will threaten beaches, saltwater marshes, and infrastructure. The warnings are familiar, but after Superstorm Sandy, policymakers are listening, and the experts' predictions are helping define what needs to be done.

"Sandy is the tipping point of response to climate change in our region," said Cynthia Rosenzweig, senior research scientist with the NASA Goddard Institute for Space Studies at Columbia University. "It's like we were



in low gear and now we've moved to high gear." Gov. Andrew M. Cuomo has named three commissions to "rethink and redesign" infrastructure. President Barack Obama, in his State of the Union address, said the nation should heed "the overwhelming judgment of science and act before it's too late."

Children born this century will see and feel a significant shift in the region in their lifetime, according to a 26-member panel in their October 2011 ClimAID Report. The document -- commissioned by the New York State Energy Research and Development Authority -- was crafted by scientists and researchers from the NASA Goddard Institute, Columbia University, the Institute for Sustainable Cities at the City University of New York, the Northeast Regional Climate Center at Cornell University, the New York State Water Resources Institute, MIT, New York University, and Rutgers University, among others. They used 16 global climate models for their temperature and precipitation projections and seven for sea level rise. Among their findings, New York State could see a 1- to 5-inch sea level rise by the 2020s, 5 to 12 inches by the 2050s and 8 to 23 inches by the 2080s, compared with a 2000-2004 base period, depending on how much greenhouse gas emissions are limited in the meantime (ClimAID 2011).

In 2014, an update to the original ClimAID Report was released that took results and analysis informed by Hurricanes Irene and Sandy into account. The 2014 update didn't necessarily identify anything significantly different from the original but rather amplified some of the most important messages. The ClimAID Report organizes the state of New York into seven geographic regions: Western New York and the Great Lakes Plain (Region 1), Catskill Mountains and the West Hudson River Valley (Region 2), the Southern Tier (Region 3), the coastal plain composed of the New York City metropolitan area and Long Island (Region 4), the East Hudson and Mohawk River Valleys (Region 5), the Tug Hill Plateau (Region 6), and the Adirondack Mountains (Region 7). Suffolk County is represented in Region 4, alongside New York City and Nausau County.

Some of the most important data for Suffolk County (located in Region 4) in the 2014 update include:

### **Sea Level Rise**

- 4-8 inches by the 2020s
- 11-21 inches by the 2050s
- 18-39 inches by the 2080s
- The high-end estimate for sea level rise by the 2080s is 58 inches
- 21-50 inches by 2100 (ClimAID 2014)

The projected rise in Suffolk County would leave low-lying places such as parts of Freeport and Mastic underwater near the end of the century, according to Jay Tanski, a Stony Brook University scientist. Even a moderate Nor'easter would bring significant surges because the ocean would already be swollen, ClimAID scientists said.

The East Coast of the United States will experience some of the greatest sea level rise in the world because its land is sinking by about a millimeter per year -- about 3 inches by 2080 -- from both human and natural geologic causes. Rising tides will mean more coastal erosion and further endanger wetlands, which help buffer the region from severe storms and filter out certain pollutants as water moves from the land to the sea. "If high tides become higher, they cause some of the wetlands to become open bodies of water," said Paul Kirshen, research professor at the Institute for the Study of Earth, Oceans and Space at the University of New Hampshire. More saltwater intrusion would bring a higher threat of flooding and contamination (ClimAID, 2011). Average annual precipitation is projected to increase up to 10 percent by the 2020s, up to 13 percent by the 2050s and up to 19 percent by the 2080s (ClimAID 2014).



### **Temperature Extremes**

- 26 to 31 days over 90 degrees F by the 2020s
- 39 to 52 days over 90 degrees F by the 2050s
- 44 to 76 days over 90 degrees F by the 2080s
- 52 to 58 days below 32 degrees F by the 2020s
- 42 to 48 days below 32 degrees F by the 2050s
- 30 to 42 days below 32 degrees F by the 2080s (ClimAID 2014)

The mean temperature in Upton, monitored by Brookhaven National Laboratory, was 54.22 degrees Fahrenheit in 2010, the warmest in 63 years of data collection (ClimAID 2011). At the same time, as the century progresses, snowfall is likely to become less frequent, with the snow season decreasing in length (IPCC 2007).

Most recently, a Suffolk County Climate Action Plan was developed to outline a regional strategy to address the latest climate change projections likely to impact Suffolk County. The plan is a part of the larger New York State Climate Smart Communities program, sponsored by the New York State Energy Research and Development Authority (NYSERDA) and builds upon prior climate change action in County like the 2005 Clean Energy Action Plan. The plan is divided into four major sections and references the same set of climate change data from the 2011 ClimAID report to inform its actions: a. Municipal Facilities and Operations; b. Suffolk County Community College Facilities and Operations; c. Community-wide Policies and Initiatives; and d. Climate Change Adaptation and Resiliency. One of the leading actions found in the Plan is Suffolk County's 20-percent GHG emissions reduction target by 2020 (from 2005 baseline) for government operations (New York State March 2015).

In February 2020 Suffolk County North Fork Legislator Al Krupski initiated a coastal erosion and sea level rise task force to study the most immediate and important impacts of sea level rise and climate change in Suffolk County. The task force has one year to conduct a comprehensive study on the challenges created by sea level rise and issue a written report recommending regional coastal resiliency policies that will help protect the county's coastlines and to assist municipalities with decision-making. Scientists now predict that sea level rise impacts felt in Suffolk County will be between 2 feet to 6 feet by the year 2100 above current levels. "There's a lot going on and things are changing kind of quickly," Krupski said, stressing the urgent need for immediate action to deal with erosion and flooding. He also said the county needs to have emergency evacuation plans and routes in place (Civiletti, D. 2020).

### **Land Use and Land Cover**

Land uses in Suffolk County include: low density residential ( $\leq 1$  unit per acre), medium density residential ( $>1$  to  $<5$  units per acre), high density residential ( $\geq 5$  units per acre), commercial, industrial, institutional, recreation and open space, agriculture, vacant, transportation, utilities, waste management, and surface waters. The total number of upland (non-water) parcels in Suffolk County is 581,742 and the total land acreage of Suffolk County is 583,370 acres. The updated land use data indicates that there are 30,554 vacant parcels in Suffolk County, comprising 35,161 acres of vacant land. This number amounts to 6.0 percent of the entire land area of Suffolk County. The majority of the vacant land in the County is located in three towns: Brookhaven (10,874 vacant acres), Southampton (6,505 vacant acres), and East Hampton (6,211 vacant acres). The Town of Babylon has the smallest amount of vacant land (635 vacant acres), followed by Shelter Island (773 vacant acres). According to data provided by the Suffolk County Department of Economic Development and Planning, 25.8 percent of the land in Suffolk County is used for recreational purposes: 21.4 percent for medium density residential, 13.0 percent for transportation (nearly a 10 percent increase from 2009), 12.6 percent for low density residential, 6.5 percent for agricultural land, 6 percent for vacant land, 4.3 percent for institutional, 3.9 percent for high density residential, 3 percent for commercial, 2.2 percent for industrial, 0.9 percent for utilities, and 0.3 percent for waste





management (Suffolk County Department of Economic Development and Planning 2016). In Suffolk County, residential development totals 220,868 acres (including the three separate residential categories). This total is larger than any other single land use category, comprising 37.9 percent of the land acreage in the County. The 2016 Land Use Suffolk County Report provides for large-scale maps of land use type by parcel for each municipality (Suffolk County Department of Economic Development and Planning 2018).



Table 4-1. Land Use Summary for Suffolk County

Jurisdiction	Low Density Residential		Medium Density Residential		High Density Residential		Commercial		Industrial		Institutional	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Babylon	84	0%	6,039	18%	5,650	17%	1,738	5%	2,036	6%	1,238	4%
Brookhaven	13,110	8%	40,766	25%	6,732	4%	4,893	3%	3,311	2%	11,664	7%
East Hampton	9,193	20%	6,728	14%	363	1%	706	2%	290	1%	387	1%
Huntington	14,703	24%	15,376	26%	3,006	5%	2,590	4%	1,000	2%	2,943	5%
Islip	1,860	3%	21,506	32%	4,532	7%	2,784	4%	3,082	5%	3,631	5%
Riverhead	2,528	6%	4,025	9%	846	2%	1,309	3%	945	2%	608	1%
Shelter Island	1,849	24%	996	13%	11	0%	149	2%	12	0%	95	1%
Smithtown	5,218	15%	11,254	33%	595	2%	1,620	5%	1,227	4%	1,226	4%
Southampton	18,533	21%	13,062	15%	771	1%	1,477	2%	1,035	1%	2,302	3%
Southold	6,188	18%	5,092	15%	251	1%	750	2%	114	0%	1,218	4%
<b>Suffolk County</b>	<b>73,268</b>	<b>13%</b>	<b>124,843</b>	<b>21%</b>	<b>22,757</b>	<b>4%</b>	<b>18,017</b>	<b>3%</b>	<b>13,051</b>	<b>2%</b>	<b>25,312</b>	<b>4%</b>

Source: Suffolk County Department of Planning 2016

Note: Area is calculated in acres; percent is of total land area in Suffolk County.



**Table 4-1. Land Use Summary for Suffolk County (Concluded)**

Jurisdiction	Recreation and Open Space		Agriculture		Vacant		Transportation		Utilities		Waste Handling	
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
Babylon	11,216	34%	26	0%	635	2%	4,499	13%	139	0%	172	1%
Brookhaven	44,932	27%	4,289	3%	10,874	7%	22,844	14%	1,996	1%	606	0%
East Hampton	17,305	37%	1,462	3%	6,211	13%	3,977	8%	184	0%	111	0%
Huntington	8,588	14%	581	1%	1,815	3%	8,626	14%	851	1%	81	0%
Islip	14,710	22%	69	0%	2,029	3%	12,371	18%	502	1%	250	0%
Riverhead	11,260	26%	14,945	34%	1,994	5%	4,446	10%	312	1%	110	0%
Shelter Island	2,976	38%	216	3%	773	10%	646	8%	5	0%	16	0%
Smithtown	5,820	17%	244	1%	1,132	3%	5,534	16%	286	1%	142	0%
Southampton	28,850	32%	6,430	7%	6,505	7%	10,046	11%	478	1%	239	0%
Southold	4,925	14%	9,423	27%	3,194	9%	2,892	8%	220	1%	116	0%
<b>Suffolk County</b>	<b>150,581</b>	<b>26%</b>	<b>37,682</b>	<b>6%</b>	<b>35,161</b>	<b>6%</b>	<b>75,880</b>	<b>13%</b>	<b>4,972</b>	<b>1%</b>	<b>1,843</b>	<b>0%</b>

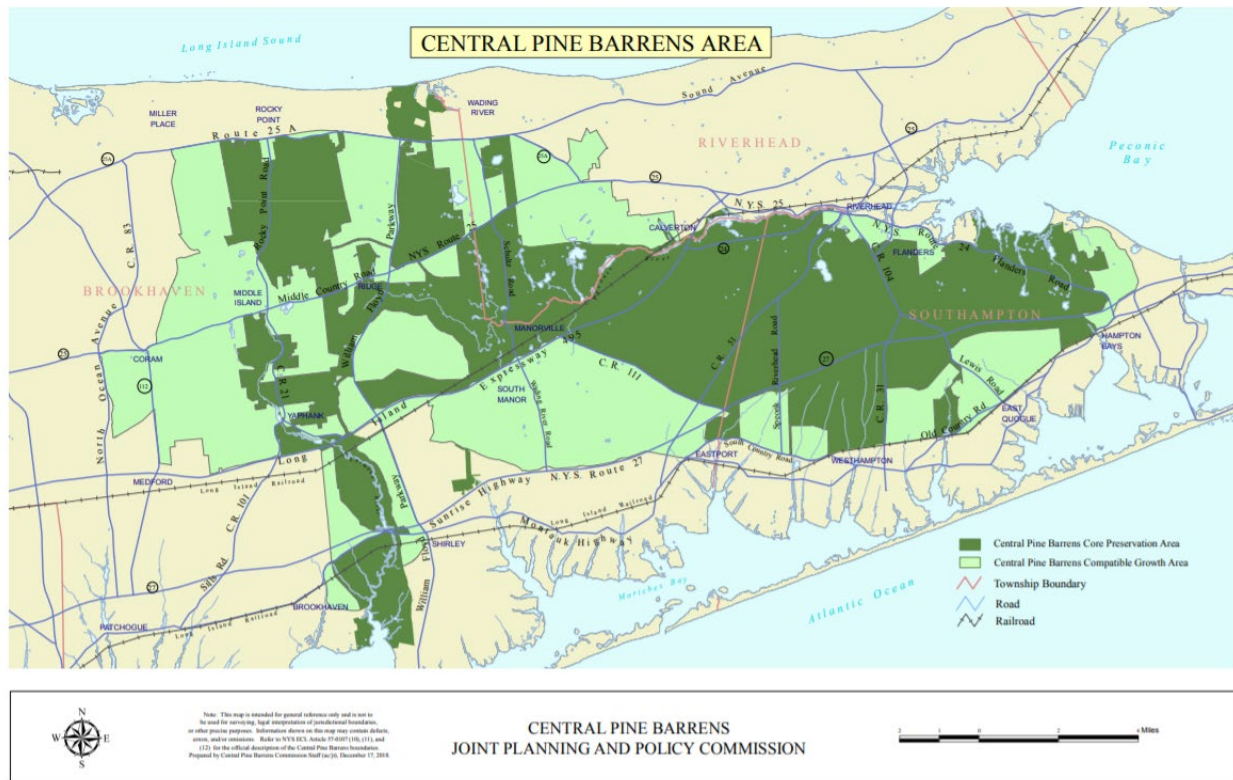
Source: Suffolk County Department of Planning 2016

Note: Area is calculated in acres; percent is of total land area in Suffolk County.



The Long Island Pine Barrens Protection Act was signed into law in 1993, creating the Central Pine Barrens region. The Central Pine contains vast areas of undeveloped, vegetated and protected public and private lands, as well as farmland, communities, and other active areas, as shown in Figure 4-2. The main goals of the Act were the protection of ground, surface, and drinking water and preservation of the area’s significant vast ecological resources. The five-member Central Pine Barrens Joint Planning and Policy Commission has joint land use review and regulation, permitting, and enforcement authority along with local municipalities and oversees the implementation of the Central Pine Barrens Comprehensive Land Use Plan. The Act also created a transfer of development rights and conservation easement program, which is also overseen and managed by the Commission, and assigned the Commission stewardship and protected land management and ecological management responsibilities. Additionally, the Act delineated two major regions within the 100,000-acre area: a 53,000-acre Core Preservation Area, where no new development is permitted, and a 47,000 acre Compatible Growth Area, where limited, environmentally compatible development is allowed (Long Island Pine Barrens Society, n.d.).

Figure 4-2. Central Pine Barrens Area in Suffolk County



Source: Central Pine Barrens Joint Planning and Policy Commission 2020

### 4.1.2 GOVERNMENT

The counties of New York State began as entities established by the State Legislature to carry out specified functions at the local level on behalf of the State. During the 20<sup>th</sup> century, county government in New York State underwent major changes in function, form, and basic nature (Suffolk County Department of Planning 2007).



Today, the counties of New York State are no longer a subdivision of the state that primarily exists to perform state functions. Counties are now a municipal corporation with geographical jurisdictions, home rule powers, and fiscal capacities to provide a wide range of services to their residents. To some extent, counties have evolved into a form of "regional" government that performs specified functions and which encompasses, but does not supersede, the jurisdictions of cities, towns and villages within its borders (Suffolk County Department of Planning 2007).

### County Charter

Until 1960, Suffolk County, consisting of the ten towns of Babylon, Brookhaven, East Hampton, Huntington, Islip, Riverhead, Shelter Island, Smithtown, Southampton, and Southold, was governed by a Board of Supervisors, with each town represented by its elected supervisor. This Board was responsible for County business, and each supervisor was accountable for the affairs of their individual town government. In 1954, the Board of Supervisors appointed a committee to study alternative forms of government for the rapidly growing County. After several attempts to write a charter in 1956 and 1957 proved unsatisfactory, a group of citizens formed the Suffolk County Citizens Charter Committee in the summer of 1957. The document that was drafted became the basis for the Charter approved Suffolk County voters in 1958. Approval by the New York State Legislature followed, and the Charter went into effect on January 1, 1960. The 1960 Charter provided for a new administrative officer, the County Executive, while retaining the Board of Supervisors as the legislative body. County administration was centralized and streamlined, and a County police department was created (Suffolk County Department of Planning 2007).

In 1967, the Board of Supervisors enacted resolutions establishing the Suffolk County Charter Revision Commission, a group of private citizens appointed by the presiding officer of the Board of Supervisors and the County Executive. The Commission was to update the Charter so that it would meet the needs of the rapidly expanding County. The U.S. Supreme Court mandated, in 1968, that the one-man one-vote principle be applied to the County government. Therefore, the Charter Revision Commission proposed the apportionment of the County into 18 districts of equal population, and the election of one representative from each of the districts to constitute the County Legislature, replacing the Board of Supervisors (Suffolk County Department of Planning 2007).

Other important revisions accepted by the voters in 1970 included delineated and separated functions of the County Legislature and County Executive and changes in the budget and capital programs. With voter approval of the Environmental Preservation Act in 1970, it became the County's basic policy to conserve and protect its natural resources, the quality of its environment, and its natural scenic beauty, to encourage conservation of its agricultural lands, and to acquire land and waters for the County nature preserves and Historic Trust. Amendments in 1976 and subsequent years have updated this act (Suffolk County Department of Planning 2007).

In 1972, voters approved an amendment that gave the County Planning Department the power to review and approve or deny zoning changes, variances, special permits or subdivision plans on property within 500 feet of the shoreline. In addition to those Amendments, every Local Law that is passed becomes part of the Charter. The *Laws of Suffolk County* includes the Charter, Administrative Code, Local Laws, Acts, Resolutions, Rules and Regulations, and Codes (Suffolk County Department of Planning 2007).

### Executive Branch of County Government

#### Eligibility and Terms of Office

The County Executive is the chief administrative officer of County government and is elected directly by the voters of Suffolk County. The term of office is 4 years, from and including the first day of January following



election. The County Executive must: (1) be a citizen of the United States; (2) be a resident of the County for at least one year prior to election; (3) reside in Suffolk County during the entire term of office; and (4) devote full time to the office (Suffolk County Department of Planning 2007).

The Governor of New York State may remove the County Executive from office in accordance with New York State Law. A vacancy in the office of the County Executive is filled by special election within 90 days after the vacancy occurs. The Chief Deputy County Executive becomes Acting County Executive, serving in the interim with full powers, should the office of the Executive become vacant (Suffolk County Department of Planning 2007).

### **Appointments**

The County Executive has the power to appoint Deputy County Executives, who assist the Executive with major responsibilities. The County Executive designates one deputy, typically the Chief Deputy, to perform the administrative duties of the County Executive during their temporary absence or disability. If the Office of the County Executive becomes vacant other than by expiration of the term, the Chief Deputy shall become Acting County Executive with the full powers of the office until the vacancy is filled. Legislative approval is not required for Deputy appointments. Additionally, the County Executive appoints the majority of the County's departmental directors and members of County boards and commissions, some with and some without Suffolk County Legislature approval (Suffolk County Department of Planning 2007).

### **Duties**

The County Executive serves as budget officer of the County and is responsible for the preparation and submission of an annual Operating Budget, a Community College Budget, and a three-year Capital Budget and Program (Suffolk County Department of Planning 2007).

The County Executive reports to the County Legislature annually, at the close of the fiscal year (January 1 to December 31), on the financial and other affairs of the County. The County Executive may submit legislation to the County Legislature for review and approval and, as Executive Officer, has the power to veto resolutions. The County Executive is charged with ensuring that Federal and State laws applicable to the County, as well as local laws and resolutions of the County, are enforced (Suffolk County Department of Planning 2007).

### **Local Laws and Resolutions**

No County law or resolution may take effect until it has been submitted to the County Executive for approval; if approved, it is then considered to be adopted. The County Executive may veto and return a local law to the County Legislature with a statement of reasons for not approving it. If not returned to the Legislature within 30 days, it becomes law. The County Legislature can over-ride an Executive Veto by a vote of two-thirds of the Legislature.

## **Legislative Branch of County Government**

### **Background**

The Suffolk County Legislature was established in January 1970 in response to the U.S. Supreme Court's "one-man, one-vote" decision, replacing the 200-year-old Board of Supervisors. On the Board of Supervisors, the Supervisor of each of the County's 10 towns had one vote. With the establishment of the Suffolk County Legislature, the County was divided into 18 Legislative Districts, having substantially equal populations. Each Legislative District elects one member to the Legislature every two years. The Suffolk County Charter provides



that, after each census, the boundaries of the Legislative Districts be re-drawn, if necessary, to maintain a substantially equal distribution of population (Suffolk County Department of Planning 2007).

### Qualifications of Legislators

To qualify as a legislator, one must (1) be a citizen of the United States, (2) be a resident of Suffolk County for at least one year immediately preceding the election, and (3) reside in the district represented at the time of the nomination and throughout the entire two-year term of office. The exception to these qualifications would come in a year when redistricting took place. A sitting legislator who is redistricted out of their district could run for reelection but would have to establish a permanent residence in the new district prior to running in the next general election. Other qualifications are determined by the Legislature and are subject to judicial review. In the case of a vacancy, a special election will be held within 90 days to fill the vacancy. Mayors of villages, supervisors of towns and members of the legislative bodies of towns and villages are not eligible to serve as members of the Suffolk County Legislature (Suffolk County Department of Planning 2007).

### Power

The Suffolk County Legislature has the power to (1) organize and alter County government in accordance with the Suffolk County Charter; (2) adopt local laws and regulations for the residents of Suffolk County; (3) make appropriations, levy taxes, and incur debts; (4) investigate the functioning of government; and (5) fix their own salaries. The Legislature approves the County Executive's major administrative appointments and has certain appointment powers of its own (Suffolk County Department of Planning 2007).

### Presiding Officer

The Presiding Officer presides over and acts as Chair of all meetings of the Legislature and is empowered to call special sessions of the Legislature. The Presiding Officer also assigns each resolution or local law to a Standing or Special Committee of the Legislature for its review. It is the Presiding Officer's exclusive responsibility to set up the various committees of the Legislature, to define each committee's responsibilities, and appoint each committee's members and chairperson (Suffolk County Department of Planning 2007).

### Legislative Committees

In 2020, the following legislative standing committees were named: (1) Budget and Finance; (2) Economic Development, Planning, and Housing; (3) Education and Labor; (4) Environment, Parks, and Agriculture; (5) Fire, Rescue, EMS, and Emergency Preparedness; (6) Government Operations, Personnel, Information Technology, and Diversity; (7) Health; (8) Public Safety; (9) Public Works, Transportation, and Energy; (10) Seniors and Human Services; (11) Veterans and Consumer Affairs; (12) Ways and Means. The number of committees, their responsibilities, and chairpersons may change annually (Suffolk County Legislature 2020).

The Chair of each committee is appointed by the Presiding Officer. Each standing committee generally is composed of seven members. Although committee assignments are made by the Presiding Officer, a legislator may request assignment to a particular committee. Most standing committees meet at least once a month. Special committees are appointed by the Presiding Officer as deemed necessary, serving only for time necessary to complete their work (Suffolk County Department of Planning 2007).

### Historic Timeline

Table 4-2 below displays the historic timeline of Suffolk County.

**Table 4-2. Historic Timeline of Suffolk County**

Year	Historic Event
1665	“Hempstead Convention” combines Long Island and Staten Island into a shire, called Yorkshire, thus ending Connecticut’s jurisdiction over the area.
1683	Suffolk County is organized as one of the 12 original counties in the Province of New York.
1683	Suffolk County towns send representatives to the first Provincial Assembly, which adopts the “Charter of Liberties and Privileges,” laying the foundation for the State’s present political subdivisions and governmental structure.
1777	Suffolk County representatives participate in founding New York State.
1778	Act of State Legislature provides for annual meeting of Supervisors of a County to apportion county court expenses among the towns. This is the origin of the Board of Supervisors.
1829 - 1838	State laws are passed giving specific powers to a Board of Supervisors, leading to development of the Board into a local government with legislative and administrative functions.
1938	State Constitution permits counties outside New York City to draft and adopt their own charters subject to the approval of voters.
1954	Board of Supervisors appoints a committee to study alternative forms of government for Suffolk County.
1958	Suffolk County Charter is drafted and ratified by County voters.
1959	Suffolk County elects its first County Executive, H. Lee Dennison.
1960	Suffolk County Charter goes into effect and first County Executive takes office.
1967	Board of Supervisors establishes the Suffolk County Charter Revision Commission.
1970	Suffolk County legislative body is changed from 10-person Board of Supervisors to County Legislature with 18 representatives – one elected from each of the County’s new Legislative Districts, with a County Executive elected at-large.
1979	Local Law enacted provides for voter initiative to change County Law through the ballot. To date, this provision of the Law has never been used.

Source: Suffolk County Department of Planning 2007

## 4.2 POPULATION AND DEMOGRAPHICS

Knowledge of the composition of the population, how it has changed in the past, and how it may change in the future is needed to make informed decisions. Information about population is a critical part of planning because it directly relates to needs such as housing, industry, stores, public facilities and services, and transportation.

Suffolk County is one of the most populated counties in New York State. According to the 2018 American Community Survey (ACS) Census data, Suffolk County had a population of 1,487,901. Table 4-3 presents the population statistics for the County based on the ACS 2018 and the 2010 Census data. The overall population of Suffolk County has decreased by approximately less than 1 percent. Considerations of long-term growth and seasonal population fluctuations are discussed later in this subsection.

### 4.2.1 POPULATION DENSITY

The population density of Suffolk County was 1,624 persons per square mile in 2018. The ten towns of Suffolk County vary in population size and density. Huntington, Babylon, Smithtown, Islip, and Brookhaven, located in western Suffolk County, contain 91 percent of the County’s population; yet only cover 62 percent of the County. Figure 4-3 through Figure 4-5 show the distribution of the general population density (persons per square mile) by Census tracts.





## 4.2.2 VULNERABLE POPULATIONS

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Research has shown that some populations, while they might not have more hazard exposure, might experience exacerbated impacts and prolonged recovery if/when impacted. This is due to many factors including their physical and financial ability to react or respond during a hazard. Identifying concentrations of vulnerable populations can assist communities in targeting preparedness, response, and mitigation actions. For the purposes of this planning process, vulnerable populations in Suffolk County include children, elderly, low-income, the physically or mentally disabled, non-English speakers and the medically or chemically dependent (refer to Table 4-3 and Table 4-4).

### Age

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Children are considered vulnerable because they are dependent on others to safely access resources during emergencies. Elderly populations are more apt to lack the physical and economic resources necessary for response to hazard events and are more likely to suffer health-related consequences making recovery slower. Those living on their own may have more difficulty evacuating their homes. Elderly residents are more likely to live in senior care and living facilities, where emergency preparedness occurs at the discretion of facility operators. Senior care and living facilities are most vulnerable to hazards like pandemics in light of the close living arrangements combined with older populations with potentially weakened immune systems or pre-existing health issues that can be accentuated during this type of hazard event.

According to the 2018 ACS, Suffolk County included 239,139 persons 65 years of age and above (16 percent of total population) and 80,239 persons under the age of 5 (5.4 percent of total population). Figure 4-6 shows the distribution of persons under the age of 5 and over 65 in Suffolk County, by Census tract.

### Income

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Of the total population, economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions based on the major economic impact to their family (e.g., evacuation). The 2018 ACS indicates a total of 104,660 persons living in households below the poverty level (7 percent of the total population).

### Non-English Speakers

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Individuals who are not fluent or have a working proficiency in English may have difficulty understanding hazard-related information. Cultural differences can also add complexity to how information is being conveyed to populations with limited English proficiency (Centers for Disease Control, 2015). According to the 2018 ACS, 8.2 percent of County residents speak a language other than English at home.

### Physically or Mentally Disabled

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“Persons with a disability include those who have physical, sensory, or cognitive impairment that might limit a major life activity” (Center for Disease Control, 2015). These impairments may increase the level of difficulty that individuals face during an emergency. Cognitive impairments may reduce an individual’s capacity to receive, process, and respond to emergency information or warnings. Individuals with a physical or sensory disability may face issues of mobility, sight, hearing, or reliance on specialized medical equipment. According to the 2018 ACS, 9.5 percent percent residents of Suffolk County are living with a disability. Figure 4-6 shows the geographic distribution of disabled individuals including individuals with hearing, vision, cognitive, ambulatory, self-care, and independent living difficulties by Census tract. There are 679 locations identified by the County as Offices for People with Developmental Disabilities (Figure 4-7). Appendix E (Risk Assessment Supplement) provides a complete list of the facilities analyzed as critical facilities in this HMP.



Table 4-3. Suffolk County Population and Demographic Statistics (2010 Census)

Jurisdiction	U.S. Census 2010 Population								
	Total	Pop. 65+	% Pop. 65+	Pop. Under 5	% Under 5	Low Income Population*	% Low Income Pop.*	Non-English Speaking	% Non-English Speaking
Amityville (V)	9,537	1,736	18.2%	372	3.9%	620	6.5%	916	9.6%
Asharoken (V)	677	163	24.1%	22	3.2%	46	6.8%	16	2.4%
Babylon (T)	164,467	20,558	12.5%	9,704	5.9%	10,032	6.1%	16,118	9.8%
Babylon (V)	12,264	1,374	11.2%	527	4.3%	552	4.5%	466	3.8%
Belle Terre (V)	929	157	16.9%	23	2.5%	87	9.4%	10	1.1%
Bellport (V)	2,283	482	21.1%	107	4.7%	94	4.1%	21	0.9%
Brightwaters (V)	3,131	294	9.4%	163	5.2%	128	4.1%	38	1.2%
Brookhaven (T)	443,461	50,555	11.4%	27,495	6.2%	28,825	6.5%	25,721	5.8%
Dering Harbor (V)	16	6	37.5%	0	0.0%	0	0.0%	0	0.0%
East Hampton (T)	17,993	3,383	18.8%	774	4.3%	1,385	7.7%	2,897	16.1%
East Hampton (V)	1,221	527	43.2%	46	3.8%	70	5.7%	17	1.4%
Greenport (V)	2,346	460	19.6%	103	4.4%	530	22.6%	718	30.6%
Head of the Harbor (V)	1,399	215	15.4%	46	3.3%	41	2.9%	15	1.1%
Huntington (T)	188,963	27,589	14.6%	10,960	5.8%	8,314	4.4%	15,495	8.2%
Huntington Bay (V)	1,433	235	16.4%	52	3.6%	34	2.4%	42	2.9%
Islandia (V)	3,300	314	9.5%	191	5.8%	129	3.9%	485	14.7%
Islip (T)	327,103	35,981	11.0%	20,935	6.4%	17,991	5.5%	49,393	15.1%
Lake Grove (V)	11,018	1,245	11.3%	672	6.1%	540	4.9%	441	4.0%
Lindenhurst (V)	27,386	3,560	13.0%	1,424	5.2%	739	2.7%	1,780	6.5%
Lloyd Harbor (V)	3,667	579	15.8%	150	4.1%	143	3.9%	59	1.6%
Nissequogue (V)	1,590	237	14.9%	45	2.8%	17	1.1%	19	1.2%
North Haven (V)	1,002	180	18.0%	49	4.9%	6	0.6%	13	1.3%
Northport (V)	7,445	1,094	14.7%	275	3.7%	208	2.8%	127	1.7%
Ocean Beach (V)	115	27	23.5%	0	0.0%	20	17.4%	0	0.0%
Old Field (V)	914	100	10.9%	22	2.4%	0	0.0%	17	1.9%
Patchogue (V)	11,836	1,480	12.5%	876	7.4%	2,178	18.4%	1,302	11.0%
Poquott (V)	1,168	141	12.1%	39	3.3%	11	0.9%	68	5.8%



Jurisdiction	U.S. Census 2010 Population								
	Total	Pop. 65+	% Pop. 65+	Pop. Under 5	% Under 5	Low Income Population*	% Low Income Pop.*	Non-English Speaking	% Non-English Speaking
Port Jefferson (V)	7,827	1,096	14.0%	337	4.3%	908	11.6%	376	4.8%
Quogue (V)	714	227	31.8%	6	0.8%	27	3.8%	8	1.1%
Riverhead (T)	32,506	6,241	19.2%	2,145	6.6%	3,056	9.4%	3,381	10.4%
Sag Harbor (V)	1,954	463	23.7%	123	6.3%	149	7.6%	51	2.6%
Sagaponack (V)	256	115	44.9%	0	0.0%	4	1.6%	0	0.0%
Saltaire (V)	58	21	36.2%	5	8.6%	0	0.0%	0	0.0%
Shelter Island (T)	2,744	1,067	38.9%	151	5.5%	47	1.7%	22	0.8%
Shoreham (V)	669	98	14.6%	37	5.5%	39	5.9%	16	2.4%
Smithtown (T)	112,808	16,583	14.7%	6,430	5.7%	3,271	2.9%	3,159	2.8%
Southampton (T)	49,230	9,009	18.3%	2,314	4.7%	3,545	7.2%	4,972	10.1%
Southampton (V)	3,271	782	23.9%	167	5.1%	105	3.2%	265	8.1%
Southold (T)	19,423	5,438	28.0%	583	3.0%	1,010	5.2%	1,010	5.2%
Village of the Branch (V)	1,800	266	14.8%	81	4.5%	104	5.8%	52	2.9%
West Hampton Dunes (V)	43	27	62.8%	0	0.0%	2	4.7%	0	0.0%
Westhampton Beach (V)	2,021	499	24.7%	93	4.6%	107	5.3%	178	8.8%
Shinnecock Tribal Nation	380	97	25.5%	27	7.1%	86	22.6%	0	0.0%
Unkechaug Tribal Nation	336	49	14.6%	0	0.0%	33	9.8%	5	1.5%
<b>Suffolk County (Total)</b>	<b>1,482,704</b>	<b>194,751</b>	<b>13.1%</b>	<b>87,569</b>	<b>5.9%</b>	<b>42,495</b>	<b>2.9%</b>	<b>129,685</b>	<b>8.7%</b>

Source: U.S. Census Bureau, Census 2010; Hazus v4.2.

Note (1): The town populations exclude all associated villages and tribal nations within the town.

Note (2): Tribal Nations vulnerable population statistics were not readily available. Therefore, the categories for under 5, over 65, poverty, disability, and language were estimated using countywide averages.

Pop. = Population, V = Village, T = Town, % = Percent

\* Low income population from HAZUS-MH v4.2 is the total of individuals with income \$0-\$10,000 and \$10,000-\$20,000 and \$20,000-\$30,000/year.

# There is mainly seasonal population in Dering Harbor and homes may not be primary residences and not captured by the Census.



**Table 4-4. Suffolk County Population and Demographic Statistics for the 5-Year 2018 American Community Survey Estimates (2014-2018)**

Jurisdiction	2014-2018 American Community Survey 5-Year Population Estimates										
	Total	Pop. 65+	% Pop. 65+	Pop Under 5	% Under 5	Below Poverty Level*	% Below Poverty Level	Non-English Speaking	% Non-English Speaking	Persons with Disability	% Persons with Disability
Amityville (V)	9,452	1,853	19.6%	606	6.4%	917	9.7%	867	9.2%	1,051	11.1%
Asharoken (V)	443	124	28.0%	15	3.4%	21	4.7%	12	2.7%	34	7.7%
Babylon (T)	162,968	22,847	14.0%	9,830	6.0%	11,897	7.3%	19,189	11.8%	17,220	10.6%
Babylon (V)	12,089	1,776	14.7%	617	5.1%	411	3.4%	386	3.2%	1,124	9.3%
Belle Terre (V)	681	161	23.6%	28	4.1%	27	4.0%	10	1.5%	37	5.4%
Bellport (V)	2,008	578	28.8%	105	5.2%	98	4.9%	25	1.2%	186	9.3%
Brightwaters (V)	3,069	526	17.1%	204	6.6%	21	0.7%	12	0.4%	344	11.2%
Brookhaven (T)	448,342	67,485	15.1%	23,984	5.3%	34,074	7.6%	25,975	5.8%	45,209	10.1%
Dering Harbor (V)	0	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
East Hampton (T)	18,685	4,696	25.1%	628	3.4%	1,682	9.0%	1,931	10.3%	1,897	10.2%
East Hampton (V)	1,034	410	39.7%	12	1.2%	131	12.7%	22	2.1%	115	11.1%
Greenport (V)	1,945	524	26.9%	55	2.8%	307	15.8%	240	12.3%	278	14.3%
Head of the Harbor (V)	1,463	284	19.4%	49	3.3%	85	5.8%	9	0.6%	123	8.4%
Huntington (T)	189,840	34,158	18.0%	9,827	5.2%	11,390	6.0%	13,535	7.1%	14,550	7.7%
Huntington Bay (V)	1,366	392	28.7%	43	3.1%	102	7.5%	0	0.0%	96	7.0%
Islandia (V)	3,345	442	13.2%	213	6.4%	137	4.1%	370	11.1%	235	7.0%
Islip (T)	326,416	42,051	12.9%	19,841	6.1%	25,460	7.8%	41,086	12.6%	30,346	9.3%
Lake Grove (V)	11,130	1,835	16.5%	454	4.1%	534	4.8%	490	4.4%	851	7.6%
Lindenhurst (V)	27,053	3,728	13.8%	1,347	5.0%	1,677	6.2%	2,537	9.4%	3,018	11.2%
Lloyd Harbor (V)	3,676	682	18.6%	102	2.8%	210	5.7%	82	2.2%	227	6.2%
Nissequogue (V)	1,574	327	20.8%	49	3.1%	83	5.3%	19	1.2%	129	8.2%
North Haven (V)	919	228	24.8%	33	3.6%	28	3.0%	2	0.2%	74	8.1%
Northport (V)	7,348	1,604	21.8%	269	3.7%	375	5.1%	155	2.1%	648	8.8%
Ocean Beach (V)	24	5	20.8%	0	0.0%	5	20.8%	0	0.0%	8	33.3%
Old Field (V)	812	176	21.7%	43	5.3%	43	5.3%	37	4.6%	49	6.0%
Patchogue (V)	12,398	1,320	10.6%	685	5.5%	1,277	10.3%	1,191	9.6%	1,100	8.9%
Poquott (V)	992	199	20.1%	35	3.5%	14	1.4%	22	2.2%	56	5.6%



Jurisdiction	2014-2018 American Community Survey 5-Year Population Estimates										
	Total	Pop. 65+	% Pop. 65+	Pop Under 5	% Under 5	Below Poverty Level*	% Below Poverty Level	Non-English Speaking	% Non-English Speaking	Persons with Disability	% Persons with Disability
Port Jefferson (V)	7,871	1,843	23.4%	337	4.3%	409	5.2%	450	5.7%	670	8.5%
Quogue (V)	803	242	30.1%	29	3.6%	66	8.2%	0	0.0%	89	11.1%
Riverhead (T)	33,625	8,183	24.3%	1,433	4.3%	3,531	10.5%	3,000	8.9%	4,469	13.3%
Sag Harbor (V)	2,184	667	30.5%	101	4.6%	332	15.2%	156	7.1%	288	13.2%
Sagaponack (V)	260	105	40.4%	12	4.6%	0	0.0%	5	1.9%	18	6.9%
Saltire (V)	8	4	50.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Shelter Island (T)	2,744	873	31.8%	86	3.1%	96	3.5%	5	0.2%	162	5.9%
Shoreham (V)	437	129	29.5%	32	7.3%	42	9.6%	3	0.7%	21	4.8%
Smithtown (T)	112,224	20,814	18.5%	5,550	4.9%	3,254	2.9%	3,096	2.8%	9,364	8.3%
Southampton (T)	51,008	9,875	19.4%	2,737	5.4%	4,081	8.0%	5,630	11.0%	4,427	8.7%
Southampton (V)	3,263	1,016	31.1%	100	3.1%	170	5.2%	227	7.0%	322	9.9%
Southold (T)	20,202	6,071	30.1%	545	2.7%	1,434	7.1%	1,175	5.8%	2,345	11.6%
Village of the Branch (V)	1,770	316	17.9%	58	3.3%	46	2.6%	16	0.9%	177	10.0%
West Hampton Dunes (V)	69	30	43.5%	8	11.6%	0	0.0%	2	2.9%	3	4.3%
Westhampton Beach (V)	1,653	484	29.3%	86	5.2%	124	7.5%	65	3.9%	229	13.9%
Shinnecock Tribal Nation	662	61	9.2%	14	2.1%	18	2.7%	16	2.4%	21	3.2%
Unkechaug Tribal Nation	324	160	49.4%	37	11.4%	49	15.1%	43	13.3%	71	21.9%
<b>Suffolk County (Total)</b>	<b>1,488,179</b>	<b>239,284</b>	<b>16.1%</b>	<b>80,239</b>	<b>5.4%</b>	<b>104,660</b>	<b>7.0%</b>	<b>122,093</b>	<b>8.2%</b>	<b>141,681</b>	<b>9.5%</b>

Source: American Community Survey 5-year Estimates 2018.

Note (1): The town populations exclude all associated villages and tribal nations within the town. The 2018 ACS population estimates for the towns were calculated by subtracting their village(s) and tribal nation population. The total County population does not include the tribal nations.

Note (2): Tribal Nations vulnerable population statistics were not readily available. Therefore, the categories for under 5, over 65, poverty, disability, and language were estimated using Countywide averages.

Pop. = Population, V = Village, T = Town, % = Percent



Figure 4-3. Distribution of General Population in the Western Portion of Suffolk County by Census Tract – West

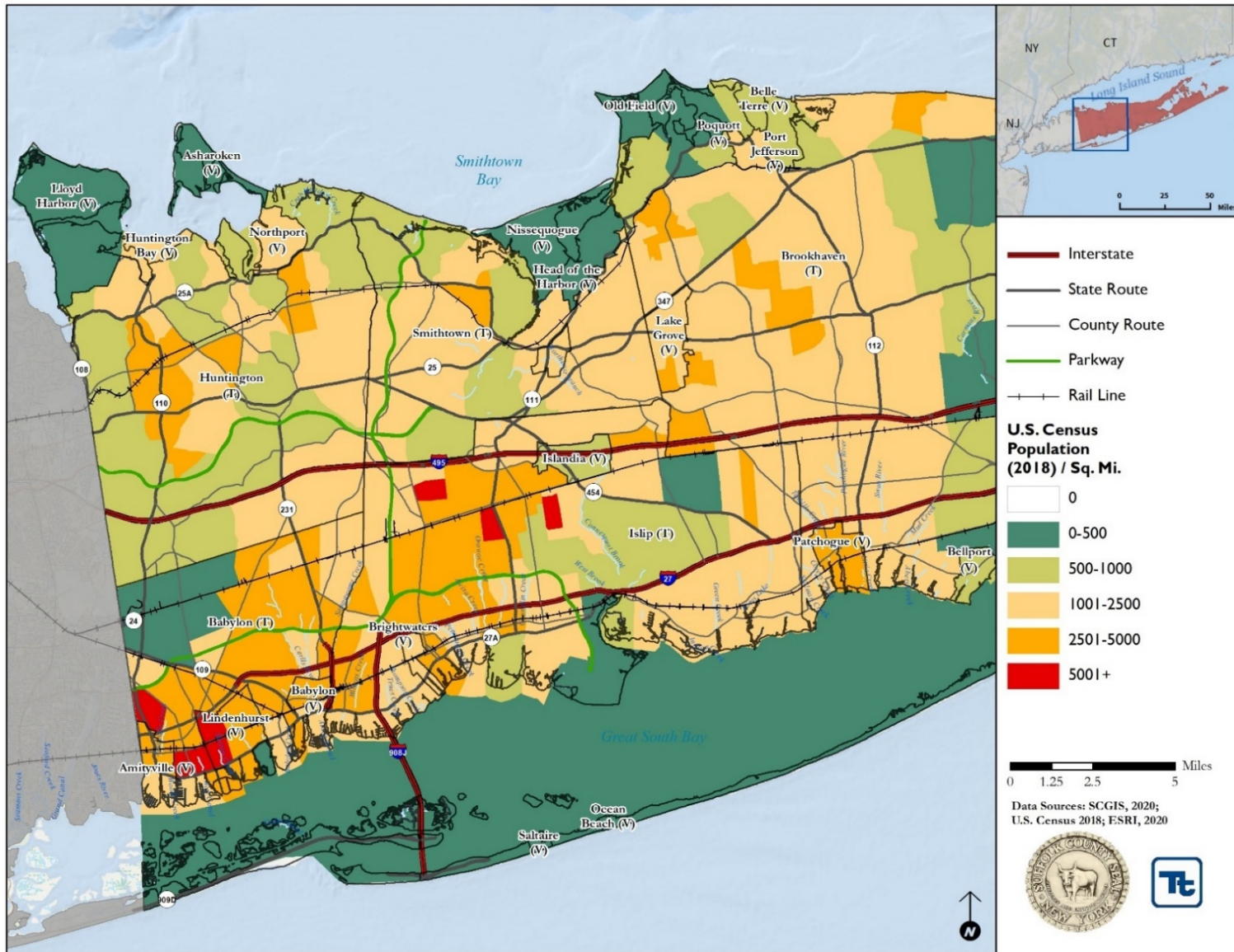




Figure 4-4. Distribution of General Population in the Central Portion of Suffolk County by Census Tract – Central

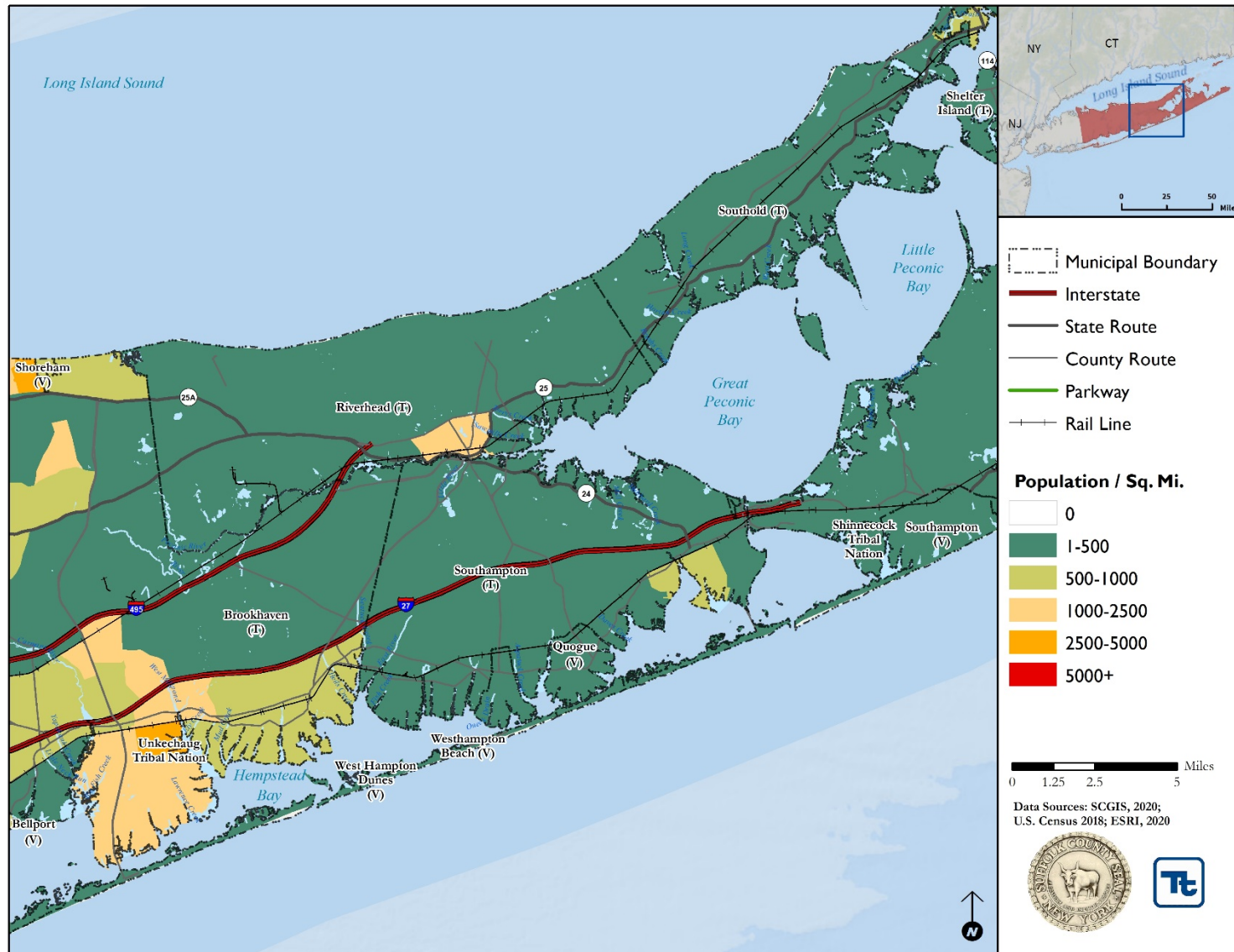




Figure 4-5. Distribution of General Population in the Eastern Portion Suffolk County by Census Tract – East

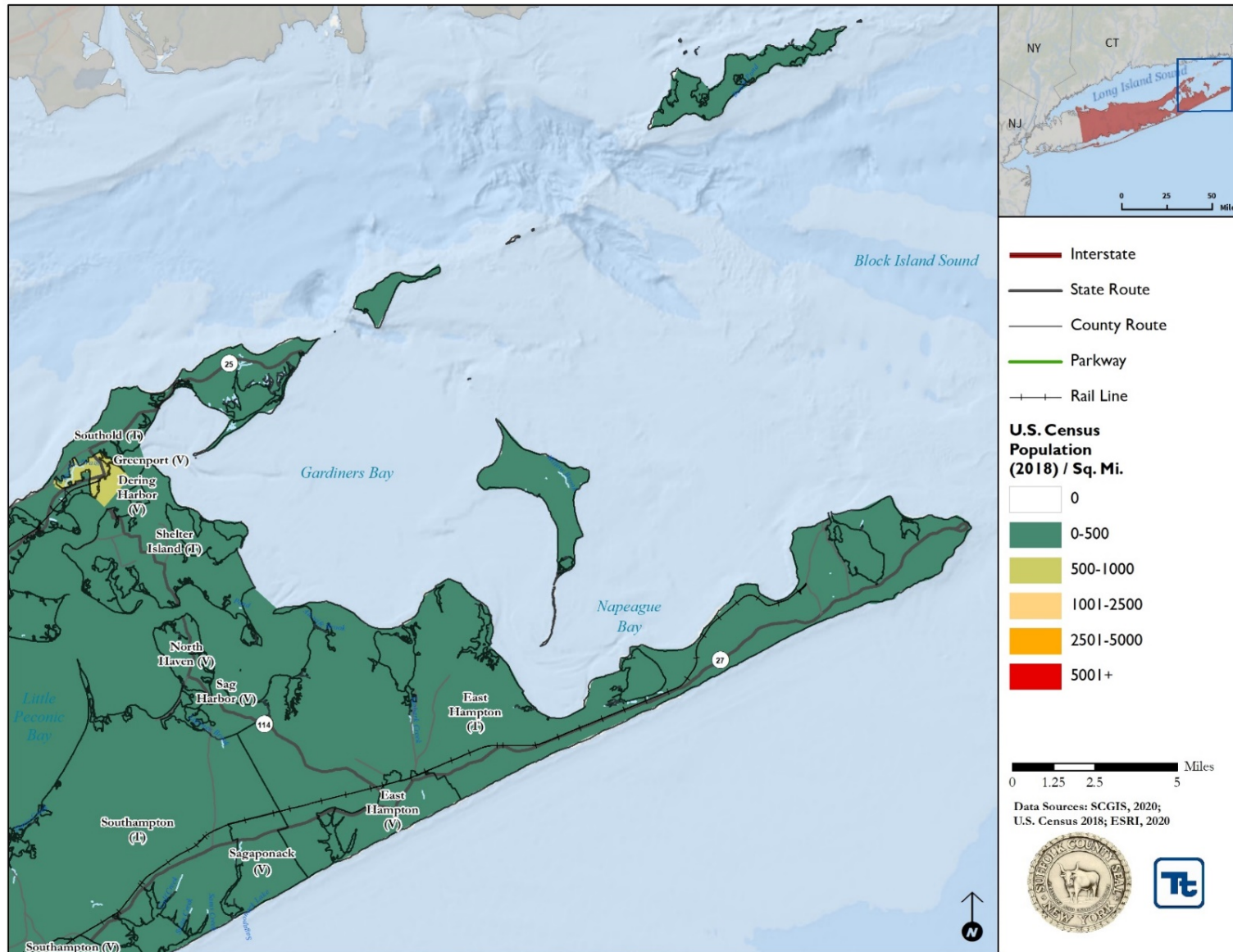






Figure 4-6. Socially Vulnerable Populations in Suffolk County, New York

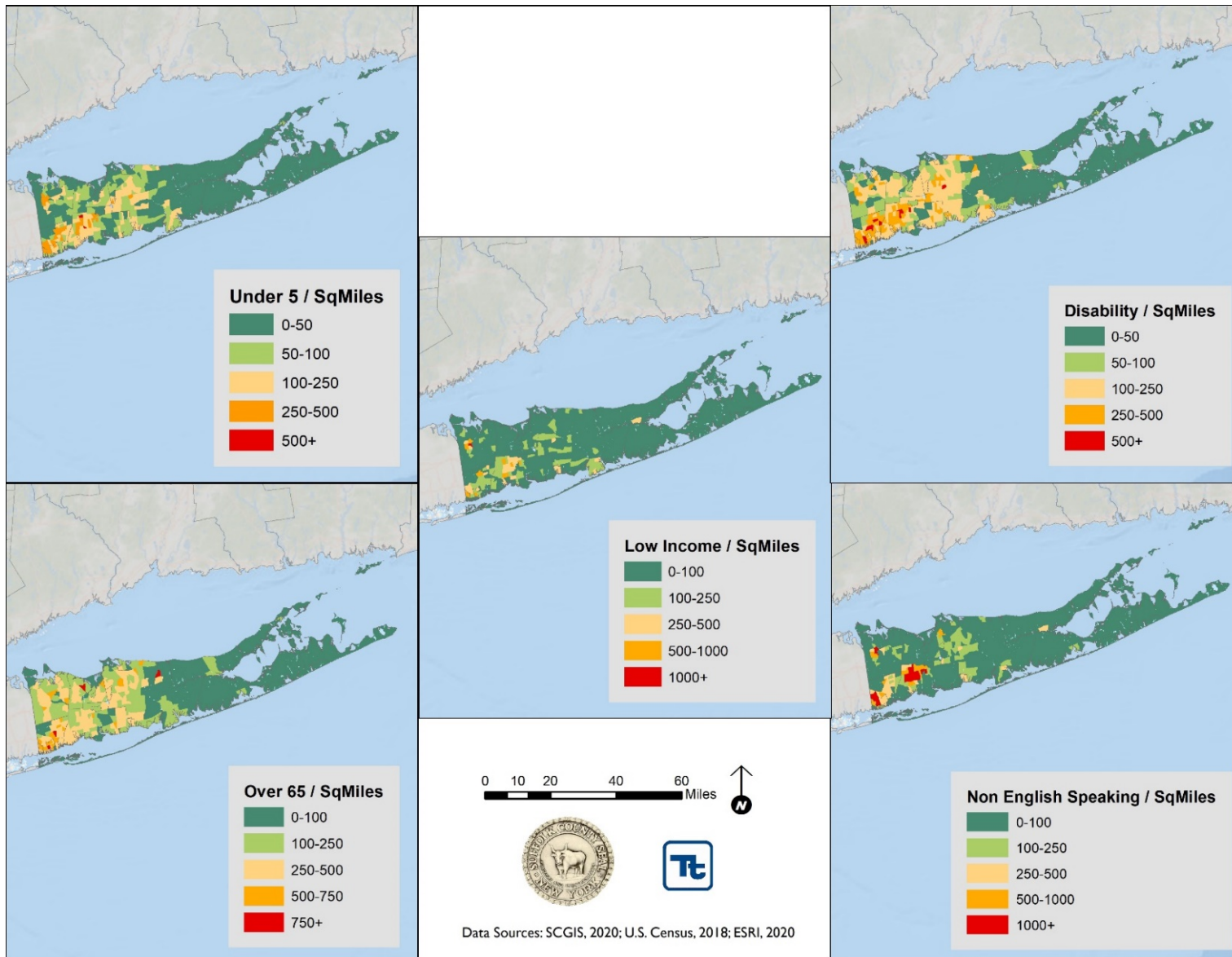
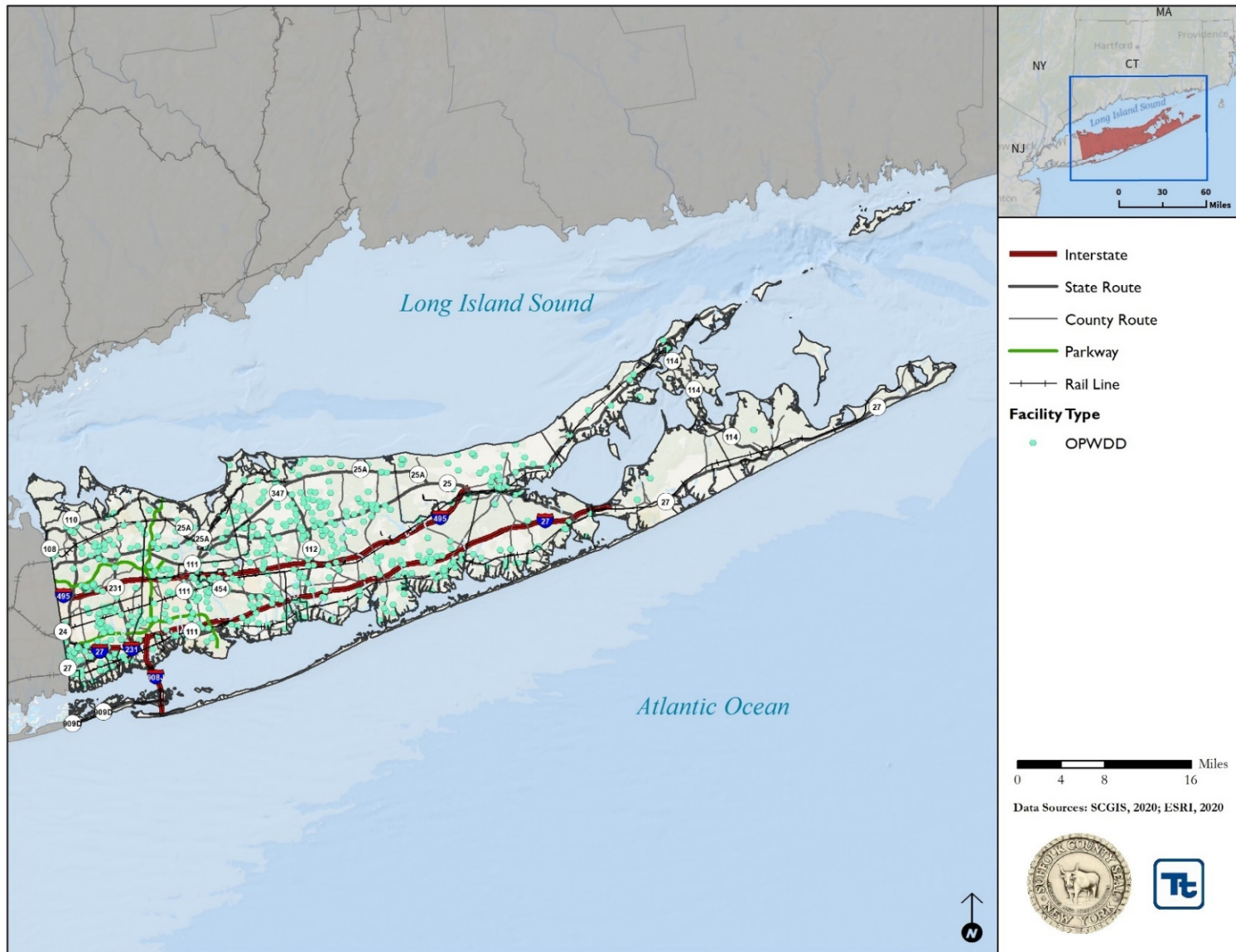




Figure 4-7. Offices for People with Developmental Disabilities (OPWDD) in Suffolk County





## Seasonal Population

The population of eastern Suffolk County substantially increases during the summer months due to miles of coastline, the presence of seasonal homes, and tourism. The Suffolk County Department of Planning has calculated peak seasonal population estimates for the Towns of Riverhead, Southold, Shelter Island, Southampton, and East Hampton. These five towns have approximately 41,932 seasonal homes, which add over 167,000 residents to the year-round population. In addition, seasonal guests in year-round homes are estimated at 20,300 persons. Campers total 4,922, and lodging occupants total 1,894 at peak. The overall seasonal population adds almost 213,878 people to the year-round population during the summer season (July-August) (Suffolk County Department of Economic Development and Planning 2020).

During the summer season, the seasonal population increase differs dramatically among the five towns. In East Hampton, the peak seasonal population is estimated to be 2.9 times larger than the year-round population. East Hampton's population increases 293 percent from 21,935 to 86,180. Of all the villages and hamlets that makeup East Hampton, the hamlet of Napeague experiences the most dramatic increase in its seasonal population, from a year-round population of 129 to 3,797 residents during the summer. The hamlet of Montauk has more seasonal homes and much more lodging than any other single community in East Hampton. Overall, East Hampton experiences the largest seasonal population increase out of all the eastern Suffolk County towns (Suffolk County Department of Economic Development and Planning 2020).

Shelter Island's seasonal population increase is the second largest, at 339 percent. It increases from 2,643 year-round to 11,611 during the summer season. Southampton has a large number of seasonal homes, causing its seasonal population to increase by 166 percent, from 58,083 to 154,596 persons. The North Fork, which includes Southold and Riverhead, has relatively fewer seasonal homes which makes the estimated increases not as dramatic. In Southold, the population increases by 137 percent from 22,241 to 52,774 persons. Riverhead is becoming more of a year-round community, and its seasonal population only increases by 40 percent from 33,839 to 47,459 during peak seasonal times (Suffolk County Department of Economic Development and Planning 2020).

The most dramatic increase of any up-island area occurs in Fire Island, which has 246 year-round residents and an estimated 14,840 people at peak seasonal times. Other significant increases occur in the Fire Island incorporated Villages of Ocean Beach and Saltaire (Suffolk County Department of Economic Development and Planning 2020).

In most communities, seasonal population results primarily from seasonal homes. This is particularly true in such communities as Bridgehampton, North Sea, Sagaponack, Fishers Island, and Fire Island. In Montauk, however, motels account for much of the seasonal population. In other communities, seasonal guests in year-round homes comprise much of the seasonal population (Suffolk County Department of Planning, n.d.).

Long Island's seasonal home concentrations continue to move eastward. The proportion of Long Island's seasonal homes located in the five eastern towns continues to increase, and the number of seasonal homes in eastern Suffolk County has noticeably risen during the past 40 years. Many of the original seasonal homes in western Suffolk County have been converted to use year-round. As recently as 1970, significant seasonal home concentrations existed in Long Beach, Atlantic Beach, Ronkonkoma Sound Beach, Rocky Point, Wading River, Shirley, and Mastic Beach. By 1990, the seasonal home concentrations in these communities had become much less significant (Suffolk County Department of Planning 2011). Table 4-5 shows the seasonal population in 2000 and 2010 for the five eastern Suffolk County towns. Table 4-6 shows the number of seasonal homes in 2000 and 2010 for the five eastern Suffolk County towns. It should be noted that, based on figures reported in the 2010 Census, there has been a significant increase in the number of seasonal homes in the period from 2000



to 2010 over the previous ten years. It is unclear as to whether this is a result in a change in the way the numbers are reported (year round vs. seasonal homes) or whether it is a combination of an increase in the number of homes combined with a decrease in the overall persons per household. This increase may be a combination of all these factors.

**Table 4-5. Eastern Suffolk County Total Seasonal Population Data for 2000 and 2010**

Jurisdiction	Seasonal Population in 2010	Seasonal Population in 2013-2017	Seasonal Population Increase*	% Increase in Seasonal Population*
East Hampton	45,464	47,752	2,288	4.92%
Riverhead	6,912	8,672	1,760	25%
Shelter Island	5,836	7,708	1,845	31%
Southampton	69,664	80,452	10,788	15.49%
Southold	21,980	23,144	1,164	5.29%

Source: Suffolk County Department of Economic Development and Planning 2020.

\* Indicates number was calculated from available data.

Note: Data retrieved from US Census Bureau 2013-2017 American Community Survey and prepared by Suffolk County Planning in January 2019.

**Table 4-6. Eastern Suffolk County Total Seasonal Home Data for 2000 and 2010**

Jurisdiction	Seasonal Homes in 2010	Seasonal Homes in 2013-2017	Seasonal Home Increase*	% Increase in Seasonal Homes*
East Hampton	11,366	11,938	572	88%
Riverhead	1,728	2,168	440	45%
Shelter Island	1,459	1,927	468	99%
Southampton	17,416	20,113	2,697	227%
Southold	5,495	5,786	291	68%

Source: Suffolk County Department of Economic Development and Planning 2020.

\* Indicates number was calculated from available data.

Note: Data retrieved from US Census Bureau 2013-2017 American Community Survey and prepared by Suffolk County Planning in January 2019.

### COVID-19 Impact on Population

As the COVID-19 pandemic heavily impacted New York State, New York City and other metropolitan areas during 2020, many families relocated to more suburban and rural locations to maintain space from infection hotspots, more easily social distance, or have more residential space available during the quarantine period. While exact population statistics are unavailable for this time frame, County and municipal officials have noted many seasonal homes have been occupied more often than usual and school enrollments have seen marked increases. It remains to be seen if this shift in population is temporary in nature and will reverse as the coronavirus pandemic subsides or if changes in population are likely to become permanent.

## 4.3 GENERAL BUILDING STOCK

The 2014–2018 ACS 5-year population estimates identifies 575,162 housing units in Suffolk County, an increase of about 1 percent from 2010. The U.S. Census Bureau defines household as all the persons who occupy a housing unit, and a housing unit as a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Therefore, there may be



more than one household per housing unit. The median price owner occupied housing unit in Suffolk County was estimated at \$409,400 by the 2018 ACS Census data.

Based on the data collected from the Suffolk County Economic Development and Planning Department, and the Suffolk County Real Property Tax Service, there are 533,279 structures in Suffolk County, with a total estimated replacement value (structure and content) of \$510 billion. Approximately 92 percent of the buildings and 68 percent of the replacement cost values are associated with residential housing. Table 4-7 presents the building stock statistics by occupancy class for Suffolk County.



Table 4-7. Building Stock Count and Replacement Cost Value by Occupancy Class

Jurisdiction	Total		Residential		Commercial		Industrial	
	Count	RCV	Count	RCV	Count	RCV	Count	RCV
Amityville (V)	4,161	\$5,519,611,238	3,765	\$2,677,034,715	269	\$1,261,345,017	87	\$1,058,343,118
Asharoken (V)	321	\$379,192,198	306	\$309,723,849	1	\$4,739,792	0	\$0
Babylon (T)	51,514	\$82,740,965,827	47,601	\$37,805,971,445	1,791	\$15,018,313,183	1,646	\$23,343,392,687
Babylon (V)	4,957	\$6,110,029,951	4,674	\$3,721,632,038	224	\$1,240,929,775	8	\$74,238,517
Belle Terre (V)	316	\$680,761,603	308	\$574,382,099	8	\$106,379,504	0	\$0
Bellport (V)	1,206	\$2,358,752,934	1,103	\$1,246,957,322	78	\$829,384,322	0	\$0
Brightwaters (V)	1,162	\$1,932,120,865	1,101	\$1,636,477,851	57	\$280,097,954	0	\$0
Brookhaven (T)	154,866	\$221,811,756,528	145,482	\$131,579,686,012	7,090	\$61,712,084,701	436	\$6,756,820,999
Dering Harbor (V)	41	\$88,595,797	38	\$85,926,597	3	\$2,669,200	0	\$0
East Hampton (T)	18,243	\$26,516,571,402	16,895	\$22,123,305,576	958	\$3,034,436,574	35	\$124,449,116
East Hampton (V)	1,938	\$5,002,346,911	1,664	\$3,775,618,550	235	\$834,078,184	0	\$0
Greenport (V)	982	\$1,316,147,268	792	\$513,424,937	166	\$701,851,072	0	\$0
Head of the Harbor (V)	527	\$1,052,509,872	501	\$994,305,482	7	\$10,751,892	0	\$0
Huntington (T)	62,226	\$82,709,382,979	58,657	\$43,584,264,666	2,557	\$25,445,494,925	148	\$2,690,781,233
Huntington Bay (V)	593	\$642,162,208	571	\$577,036,776	20	\$58,620,484	0	\$0
Islandia (V)	1,039	\$4,798,220,611	836	\$1,115,020,450	174	\$3,133,470,096	17	\$443,587,366
Islip (T)	86,764	\$157,009,867,271	80,759	\$81,703,947,484	4,549	\$49,538,530,623	518	\$11,152,430,987
Lake Grove (V)	3,693	\$4,999,176,933	3,568	\$3,641,103,329	96	\$1,027,429,603	0	\$0
Lindenhurst (V)	9,387	\$9,110,586,538	8,932	\$5,807,736,760	312	\$1,670,814,650	81	\$647,304,401
Lloyd Harbor (V)	1,301	\$2,057,808,899	1,207	\$1,628,119,135	29	\$77,842,811	0	\$0
Nissequogue (V)	638	\$1,430,093,283	594	\$1,175,270,674	22	\$117,742,765	0	\$0
North Haven (V)	772	\$2,221,433,929	765	\$2,188,952,173	5	\$30,992,151	0	\$0
Northport (V)	2,702	\$2,610,724,998	2,538	\$1,766,689,132	122	\$583,997,995	1	\$3,741,955
Ocean Beach (V)	530	\$483,689,958	488	\$355,960,148	29	\$80,277,047	0	\$0
Old Field (V)	391	\$967,667,970	368	\$827,472,696	16	\$55,117,276	0	\$0
Patchogue (V)	3,900	\$11,533,289,631	3,426	\$3,481,727,613	418	\$7,558,168,954	9	\$77,131,880
Poquott (V)	379	\$540,263,069	377	\$538,933,042	0	\$0	0	\$0
Port Jefferson (V)	3,133	\$10,546,648,033	2,828	\$3,526,412,239	264	\$6,375,766,901	0	\$0



Jurisdiction	Total		Residential		Commercial		Industrial	
	Count	RCV	Count	RCV	Count	RCV	Count	RCV
Quogue (V)	1,785	\$5,371,998,365	1,626	\$4,788,523,539	127	\$450,492,359	3	\$9,715,311
Riverhead (T)	16,853	\$27,561,801,284	13,063	\$8,457,162,933	1,503	\$9,640,830,120	90	\$996,909,857
Sag Harbor (V)	1,887	\$3,157,033,580	1,735	\$2,429,954,691	111	\$411,835,278	2	\$6,468,099
Sagaponack (V)	908	\$3,548,811,980	802	\$3,281,675,287	21	\$50,116,312	0	\$0
Saltaire (V)	399	\$406,571,331	389	\$358,584,145	2	\$8,025,182	0	\$0
Shelter Island (T)	2,729	\$3,894,434,021	2,447	\$3,069,859,677	171	\$519,323,458	2	\$8,816,533
Shoreham (V)	216	\$381,052,410	208	\$304,837,132	5	\$26,798,668	0	\$0
Smithtown (T)	35,517	\$62,086,530,012	33,289	\$33,922,545,499	1,814	\$23,425,818,138	61	\$623,392,287
Southampton (T)	33,290	\$69,558,169,929	30,275	\$58,185,295,609	1,857	\$7,153,922,289	73	\$288,152,184
Southampton (V)	3,500	\$13,027,590,722	3,042	\$10,005,287,830	388	\$2,263,001,672	0	\$0
Southold (T)	15,123	\$17,842,698,534	12,724	\$8,887,595,011	1,176	\$4,862,181,714	8	\$34,831,909
Village of the Branch (V)	624	\$1,414,333,647	566	\$620,280,382	42	\$465,714,857	0	\$0
Westhampton Dunes (V)	279	\$766,363,715	276	\$757,346,499	1	\$4,228,248	0	\$0
Westhampton Beach (V)	1,965	\$5,590,458,778	1,717	\$4,360,742,995	207	\$784,539,918	2	\$5,413,895
Shinnecock Tribal Nation	378	\$155,005,274	378	\$155,005,274	0	\$0	0	\$0
Unkechaug Tribal Nation	144	\$55,549,783	144	\$55,549,783	0	\$0	0	\$0
<b>Suffolk Total</b>	<b>533,279</b>	<b>\$861,988,782,069</b>	<b>492,825</b>	<b>\$498,603,339,078</b>	<b>26,925</b>	<b>\$230,858,155,662</b>	<b>3,227</b>	<b>\$48,345,922,332</b>

Source: Suffolk County Economic Development and Planning Department 2020, Suffolk County Real Property Tax Service 2020, RS Means 2019, Microsoft 2018, Open Street Map 2019.

Note: RCV = Replacement value. Exposure value reflects the replacement cost for building structure and contents. Generally, contents for residential structures are valued at about 50 percent of the building's value. For commercial facilities, the value of the content is generally about equal to the building's structural value.



The 2018 ACS identified that the majority of housing units (84.3 percent) in Suffolk County are single family detached or attached units. According to Suffolk County Economic Development and Planning Department's annual report from February 2017, the County identified 51,872 business establishments, with a 5.2 percent increase from 2011, and 744,300 employed people in Suffolk County. The majority (78 percent) of these establishments employed between one and ten employees.

A custom general building stock inventory was generated for Suffolk County using the building footprint spatial layer provided by Suffolk County Department Economic Development and Planning, the parcel spatial layer provided by Suffolk County Real Property Tax Service, and building attributes provided by Town assessor databases, where available. The structure replacement cost value was calculated for each building using the area of the building, occupancy class, and 2019 RS Means values with a regional factor of 1.7 applied.

through show the updated building distribution and exposure density of residential, commercial and industrial buildings in Suffolk County (replacement cost value, structure and contents, per square mile). Generally, contents for residential structures are valued at about 50 percent of the building's value. For commercial facilities, the value of the content is generally about equal to the building's structural value with the exception of the the following facilities which were equal to 125 percent of the building's value: hospitals, medical offices/clinics, industrial facilities pertaining to food, chemicals, metals, and/or mineral processing, emergency response buildings, grade schools, and higher education facilities.

Viewing exposure distribution maps such as Figure 4-8 through Figure 4-16 can assist communities in visualizing areas of high exposure and in evaluating aspects of the study area in relation to the specific hazard risks.





Figure 4-8. Distribution of Residential Building Stock and Value Density in Suffolk County - West

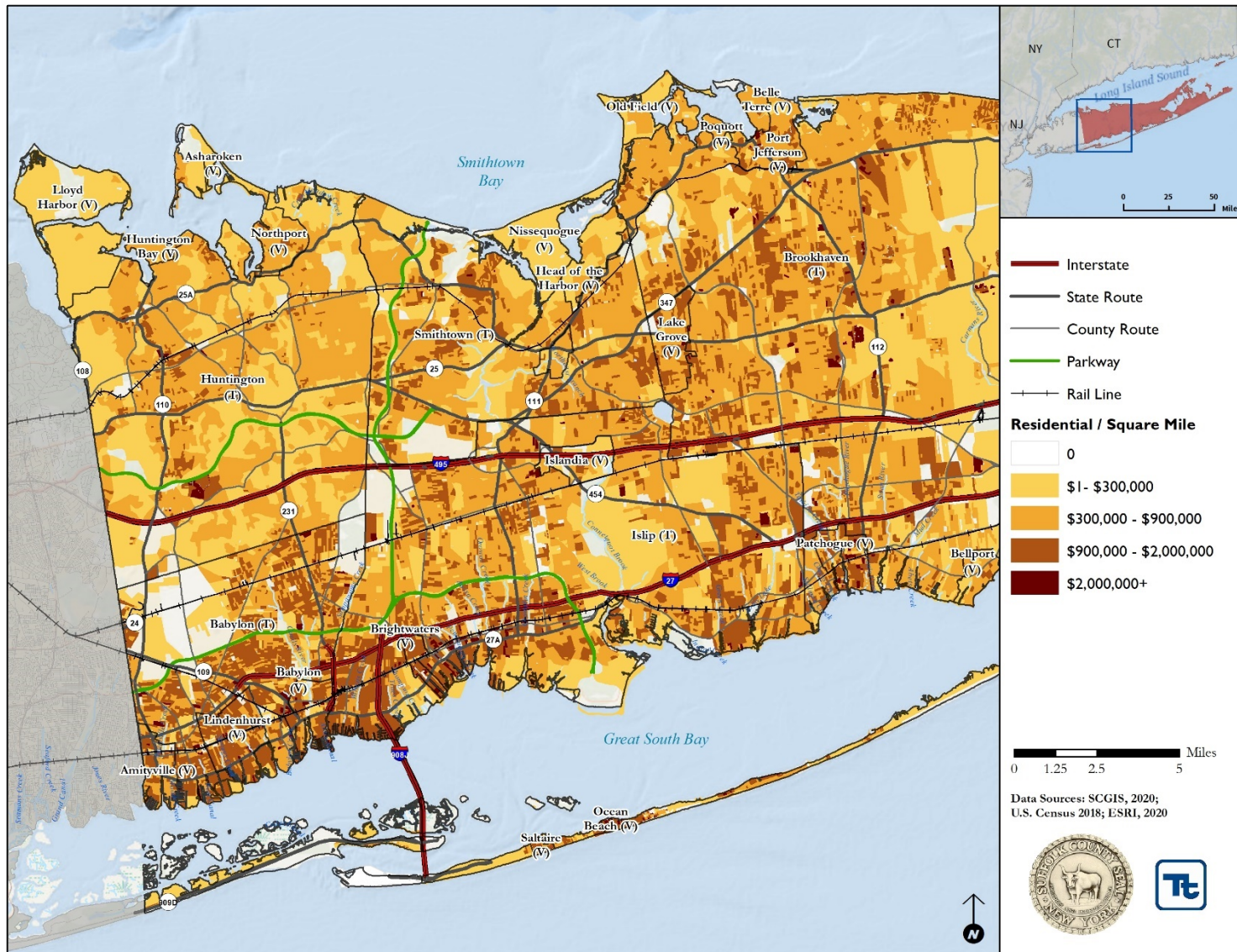




Figure 4-9. Distribution of Residential Building Stock and Value Density in Suffolk County - Central

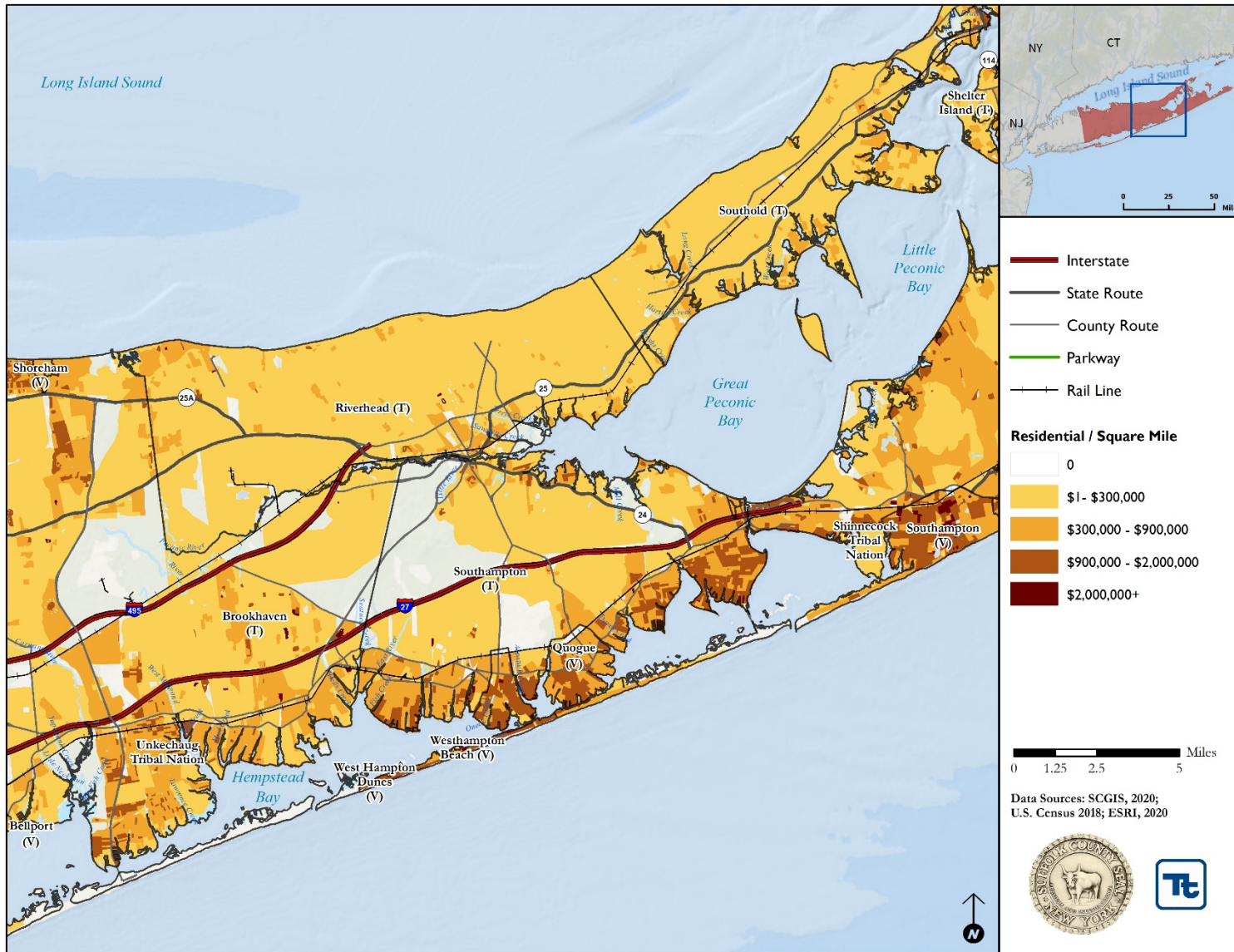




Figure 4-10. Distribution of Residential Building Stock and Value Density in Suffolk County - East

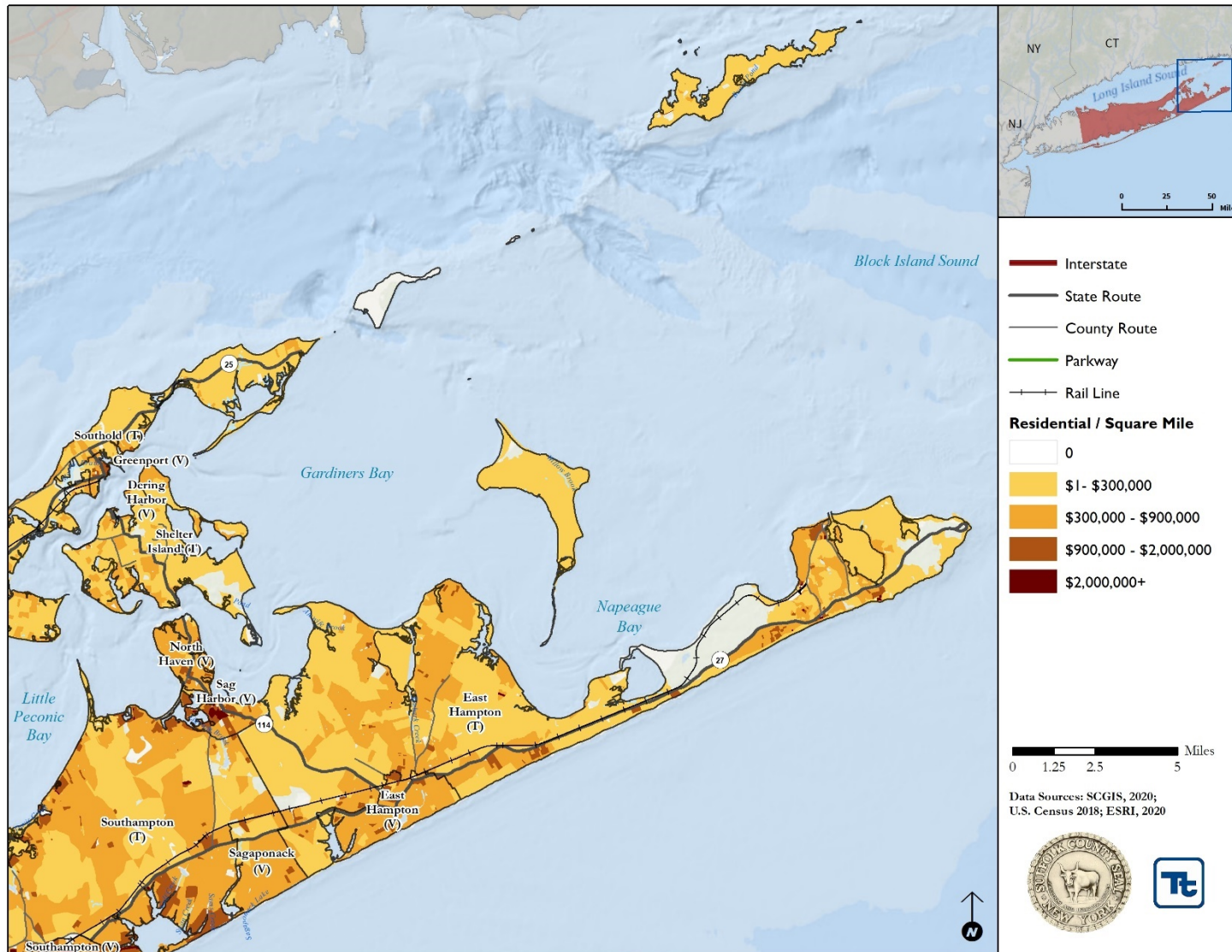




Figure 4-11. Distribution of Commercial Building Stock and Value Density in Suffolk County - West

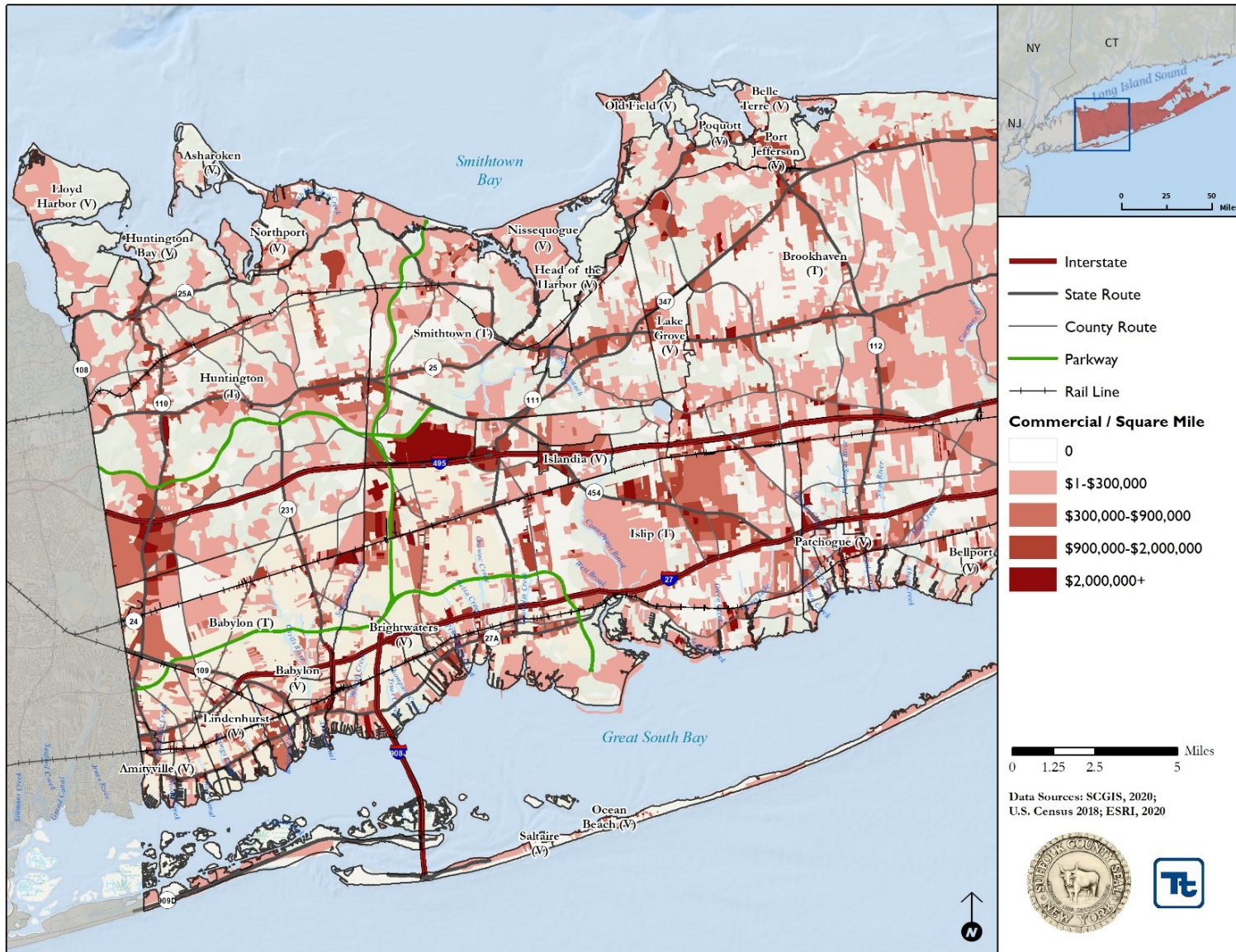




Figure 4-12. Distribution of Commercial Building Stock and Exposure Value in Suffolk County - Central

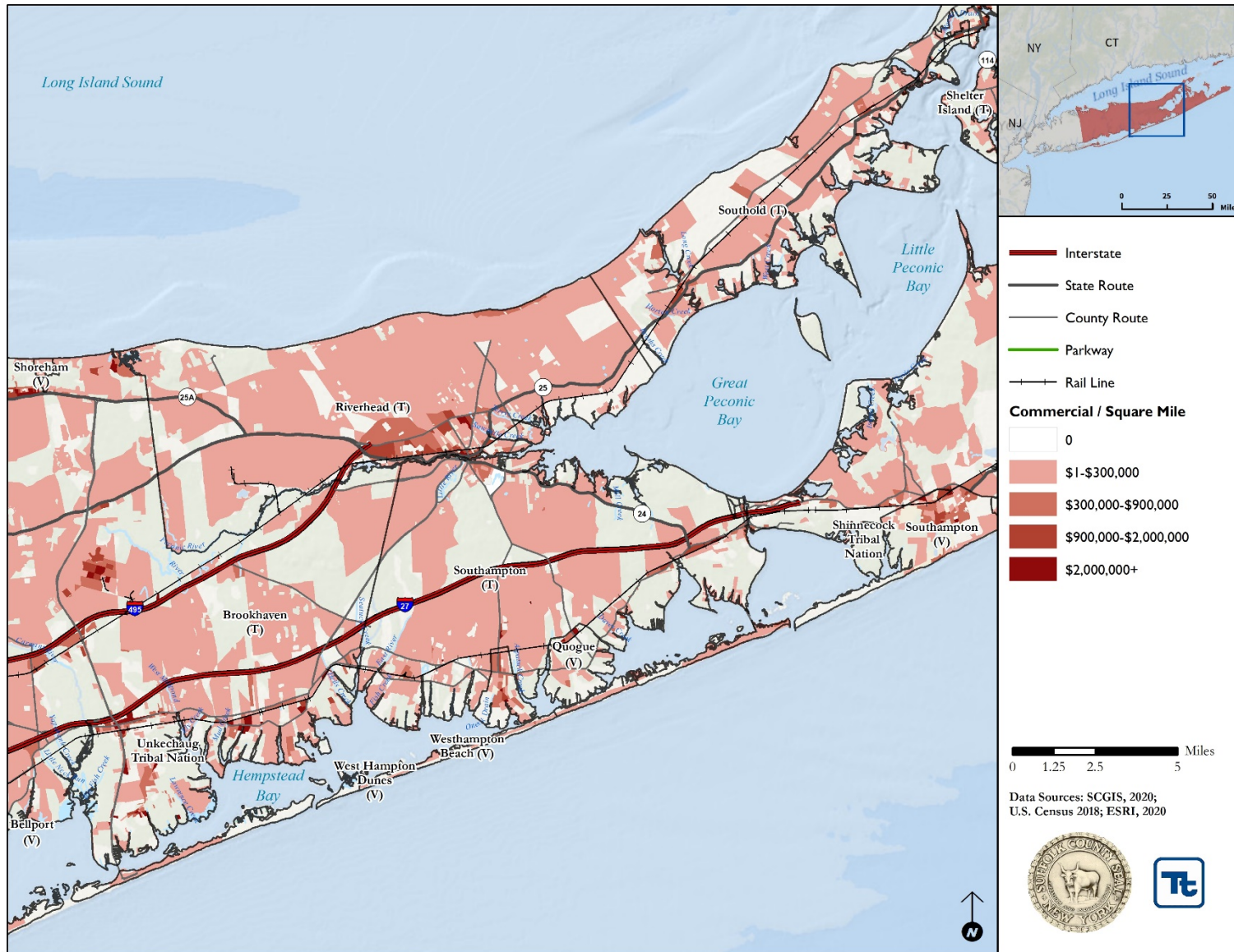




Figure 4-13. Distribution of Commercial Building Stock and Value Density in Suffolk County - East

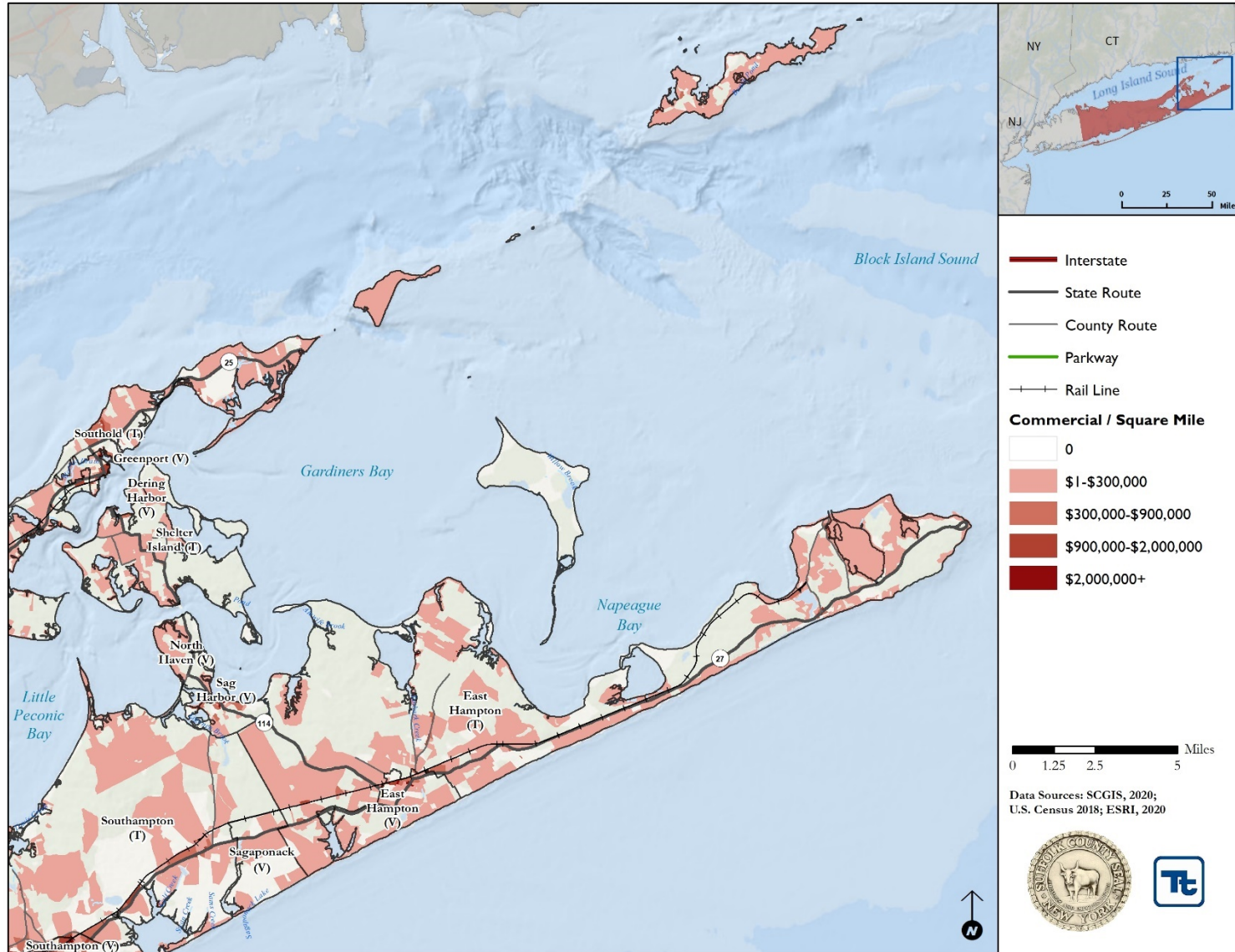




Figure 4-14. Distribution of Industrial Building Stock and Value Density in Suffolk County - West

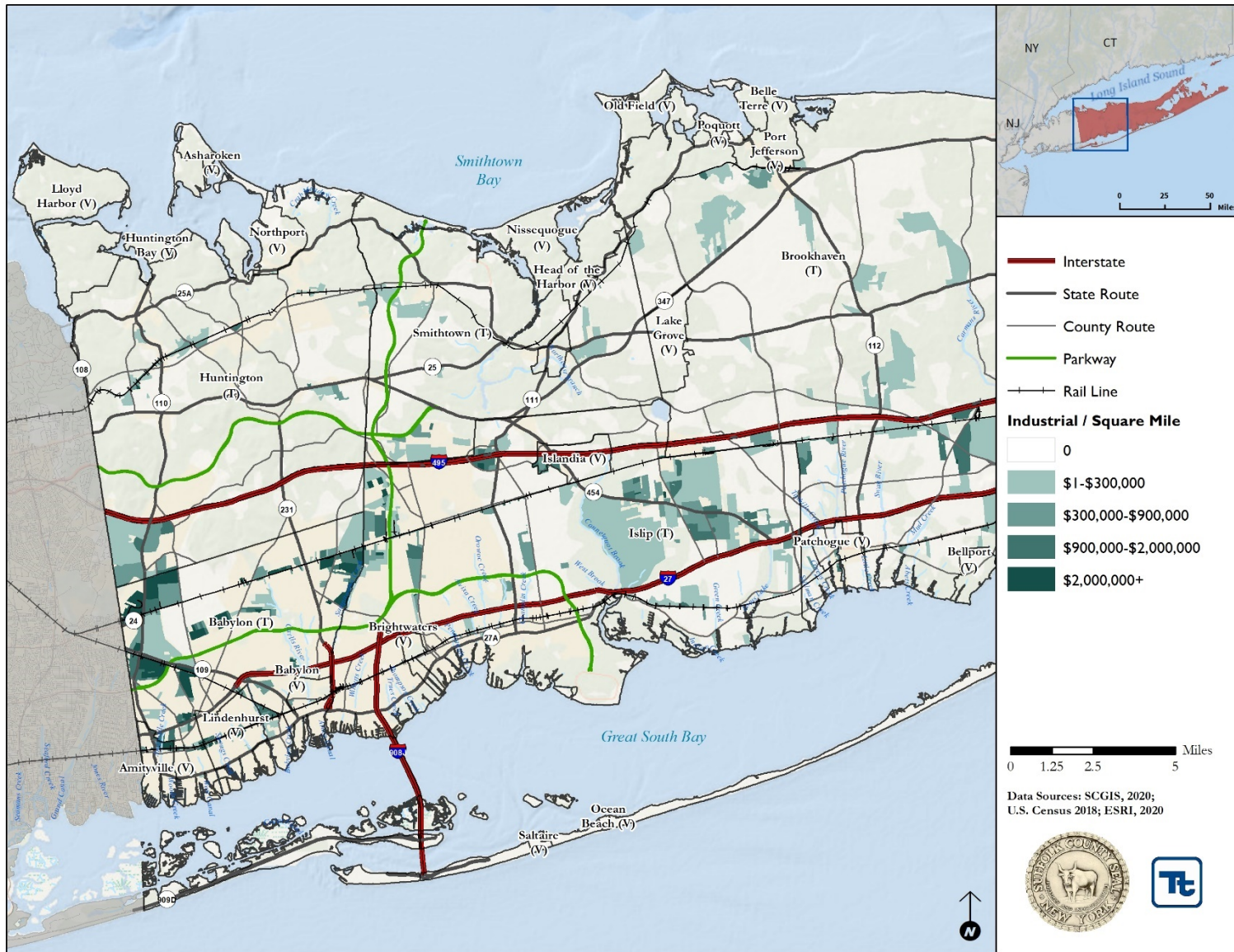




Figure 4-15. Distribution of Industrial Building Stock and Exposure Value in Suffolk County - Central

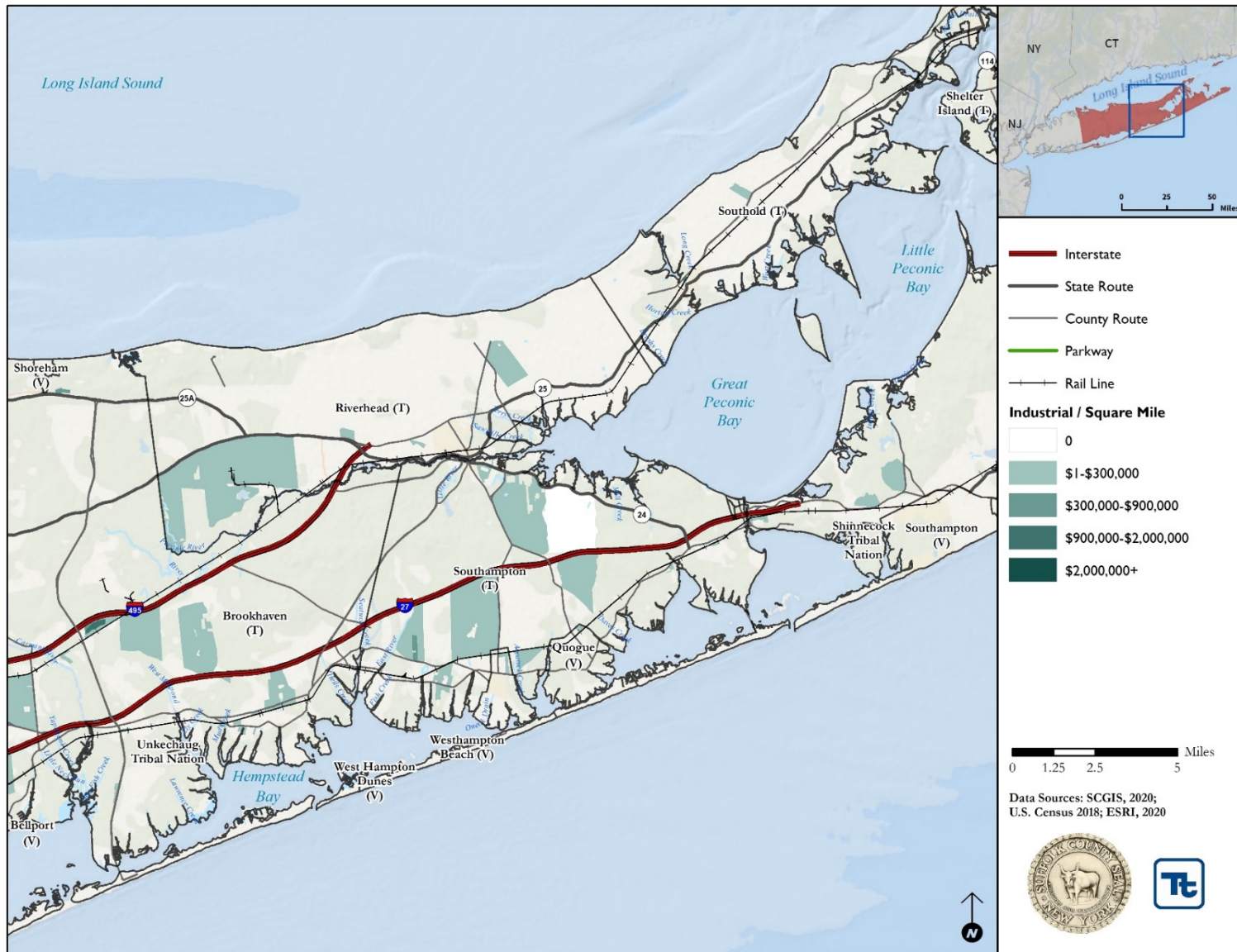
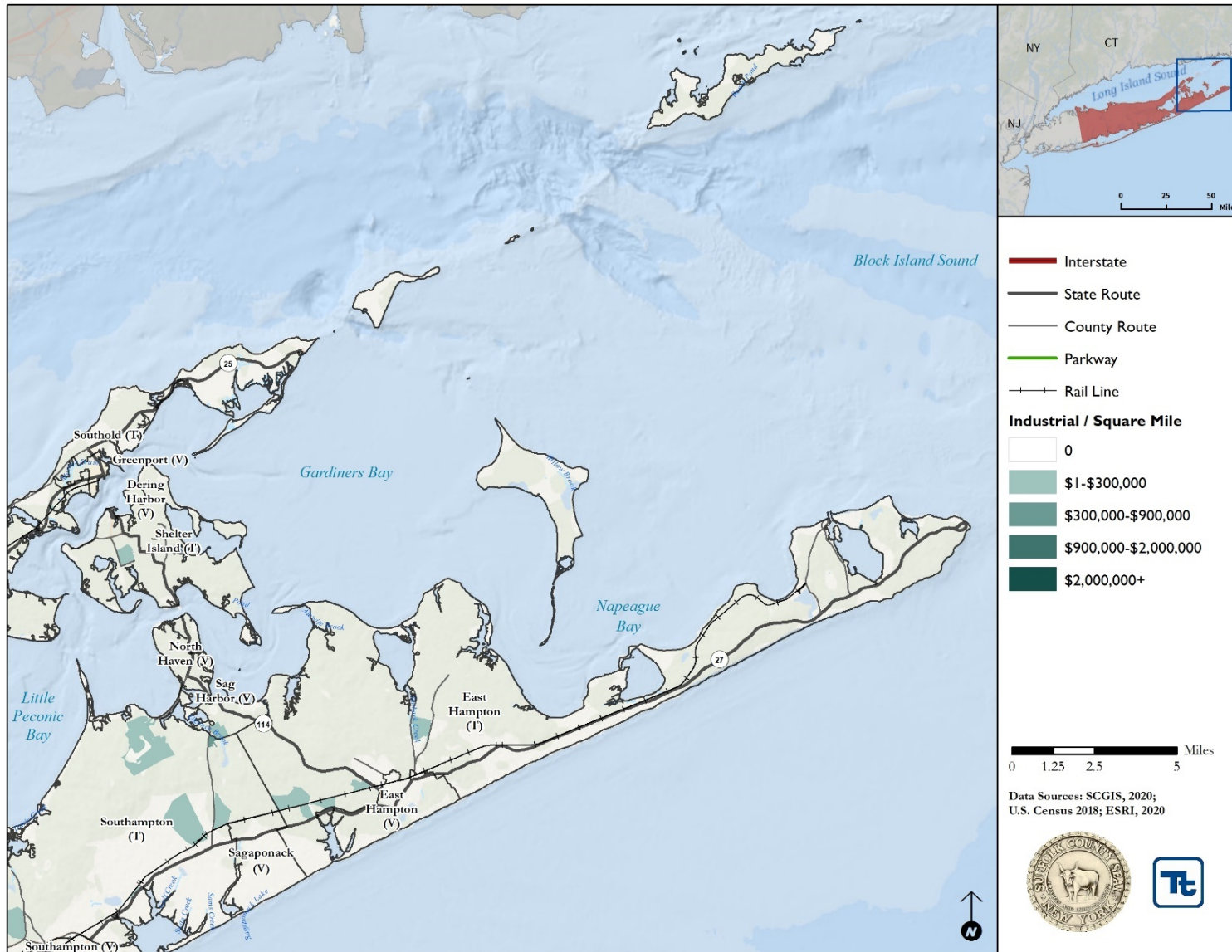






Figure 4-16. Distribution of Industrial Building Stock and Exposure Value in Suffolk County - East





## 4.4 LAND USE AND POPULATION TRENDS

In New York State, land use regulatory authority is vested in towns, villages, and cities. However, many development and preservation issues transcend local political boundaries. In Suffolk County, each town and village is empowered by the Municipal Home Rule Law to plan and zone within its boundaries (Suffolk County Department of Planning 2000). The DMA 2000 requires that communities consider land use trends, which can impact the need for, and priority of, mitigation options over time. Land use trends can significantly impact exposure and vulnerability to various hazards. For example, significant development in a hazard area increases the building stock and population exposed to that hazard.

This HMP provides a general overview of population, land use, economic trends, and types of development occurring within Suffolk County. An understanding of these development trends can assist in planning for further development and ensure that appropriate mitigation, planning, and preparedness measures are in place to protect human health and community infrastructure.

### 4.4.1 DEVELOPMENT AND ECONOMIC TRENDS

In November of 2008, Suffolk County Planning Department released a report entitled Demographic, Economic and Development Trends. Since then, the County has experienced some downward and upward trends related to previously identified 2008 development trends. In 2017, the Suffolk County Planning Commission provided a status update to the County's Legislature and County Executive:

- The Suffolk County office market vacancy rate has been steadily declining since 2014. In 2008 the vacancy rate was 15.8 percent, in 2014 it jumped to 18.8 percent, but by the end of 2019 it had decreased to a decade low of 13.1 percent in more than 26 million square feet of non-government office. Between 2006 and 2017 2.9 million square feet of new office space was constructed. An additional 3 million square feet has been proposed for future development. The hamlet of Melville in the Town of Huntington has the most office space in the County with nearly 10 million square feet. Melville is home to several large corporate headquarters like Newsweek and Henry Schein.
- The Suffolk County industrial market has been steady and very strong with a small vacancy rate decrease trend since 2017. Its early 2020 3.8 percent vacancy rate (Q1 2020) was among the lowest in the nation. According to the Newmark Grubb Knight Frank (a commercial real estate advisory firm), the County has significant industrial space totaling 105.4 million square feet. A large portion of the square footage is categorized as 'warehouse and distribution services.' The largest concentration of industrial space is located in Hauppague and totals more than 13 million square feet. The County is managing a County-owned 58-acre development at Gabreski Airport in Westhampton for light industrial and research & development office space referred to as the "Hampton Business District." This proposed \$43 million, eight building campus-style corporate center will total 439,000 square feet when complete, will include a 145-room hotel, and is expected to employ 1,100 people (Suffolk County Planning Commission 2017).
- According to the 2017 Suffolk County Planning Commission Annual Report, there are a total of 268 hotels, motels, and inns in the County with a total 11,400 rooms. Approximately one-fifth of the rooms are seasonal and only operate during summer months. The summer seasonal hotels and motels are primarily located at the eastern end of the County. According to Smith Travel Research, the occupancy rate of the County's hotels was 70.0 percent in 2015, an improvement over the 68.5 percent figure in 2014 but a decrease from the 74 percent rate recorded in 2006. In the 10 years since 2006, there has been an increase of more than 1,300 lodging rooms in the County, primarily in western Suffolk, increasing the total number of rooms by 12 percent in that period.



- Overall, the Suffolk County retail market experienced slow growth between 2012 and 2017. At the same time, the County is experiencing a relatively new redevelopment trend in its “downtowns” and a prioritization of mixed-use shopping, transit, and living hubs along major transportation corridors. The County’s Comprehensive Plan identifies the smart growth principle of reuse of opportunities at existing underutilized retail clusters for future retail development, to offset the preferred trend over the last decade or two of the preference for large-scale shopping centers and prioritize transit-oriented development (Suffolk County Department of Economic Development and Planning 2015).
- Current and future identified engines of growth in Suffolk County are located in the Pilgrim State Hospital area in Brentwood, Central Islip, Route 58 in Riverhead, Calverton Airport in Riverhead, and Yaphank.
- The 2017 Suffolk County Planning Commission Report identified several projects of regional significance either upcoming or ongoing. Some of those projects are:
  - Construction and redevelopment projects at the former Central Islip Psychiatric Center, a \$4 billion mixed-use development (Heritage Town Square) on a 452-acre surplus portion of the Pilgrim State Psychiatric Center in Brentwood.
  - A \$500 million mixed-use transit-oriented redevelopment project adjacent to the railroad station in the Town of Babylon.
  - Expansion of sanitary sewer service in the County. This project, under the FEMA's Hazard Mitigation Grant Program, represents the first step in instituting extensive measures to mitigate flooding and septic system failure in the County caused by Superstorm Sandy. The initial design and environmental review phase of the project was estimated to be financed through \$22 million in funding from the New York State Environmental Facilities Corporation's State Revolving Fund, which will be providing another \$61 million in low-interest loans. The United States Department of Housing and Urban Development's Community Development Block Grant-Disaster Recovery Program will be providing \$34 million, and \$266 million will come via the Federal Hazard Mitigation Grant Program (Suffolk County Planning Commission 2017).

The 2015 Suffolk County Department of Economic Development and Planning’s latest Comprehensive Plan projected growth, development, and trends through 2035. According to the plan, Suffolk County is at a major turning point in its history particularly as it relates to the nature of development in the County. To date, the County has maintained a relatively low-density pattern of residential development alongside discrete and separate single-use commercial zones. Looking to the future, the County has identified a need to diversify the existing pattern and strengthen the resilience of the region through strategic densification of residential and commercial areas. The County’s experience during Superstorm Sandy highlights the need to think differently about the future development and resilience of the County (Suffolk County Department of Economic Development and Planning 2015).

#### 4.4.2 LAND USE TRENDS

Over the last 20 years, there has been a reduction in the amount of vacant, agricultural land, and open space (otherwise referred to as ‘undeveloped’) and increases in the amount in all other ‘developed’ land use categories. If vacant land, agricultural land, and land used for recreation and open space is excluded, all of the other land uses account for 62 percent of property in Suffolk County.

This is a stark difference to a decade before when developed land accounted for only half of the property in Suffolk County. Today, well over half of Suffolk County land can be classified as developed. Further, the development and land use patterns of western Suffolk County and eastern Suffolk County are different. While the County overall is on an increased urbanization track, the majority of the increased urbanization is taking



place in western Suffolk County. Eastern Suffolk County remains more semi-rural with open space comprising 29 percent of the land area, agricultural comprising 15 percent of the land and over 30 percent of land comprising residential uses (with the majority being low density residential) (Suffolk County Department of Economic Development and Planning 2018).

Residential development totals 220,868 acres and represents the largest single land use category in the County, comprising 37.9 percent of land. Undeveloped recreation and open space categories represent the second-most combined land use categories at 25.8 percent of land. The transportation category has seen an abrupt increase from 3 percent in 2009 to 13 percent in 2016.

Most commercial and industrial development is concentrated in the western Towns of Babylon, Smithtown, Huntington, and Islip. The eastern Towns of Southamptton, East Hampton, Shelter Island, and Southold had the lowest percentage of land used for commercial and industrial purposes. There are a number of wetland areas and significant water bodies, which include the Atlantic Ocean, Long Island Sound, Great South Bay, and Great Peconic Bay. The largest wetland areas are in the Connetquot River State Park Preserve, along the Camans River, in Makamah County Nature Preserve and in Conscience Point National Wildlife Refuge.

### Open Space

Per the Suffolk County Department of Economic Development and Planning, open space includes forests and agricultural land, undeveloped shorelines, undeveloped scenic lands, public and private parks, and preserves. It also includes water bodies, such as bays, lakes, and streams (Suffolk County Department of Planning 2016). In 2016, open space covered 25.8 percent of all Suffolk County land. In 1974, the County implemented the nation's first Farmland Preservation Program, whereby the County would purchase the "development rights" to agricultural land for the purpose of preserving open space and working farms. Under this program, the County pays the landowner an amount equal to the difference between the land's value as farmland and its value as subdivided residential property and also grants the landowner property tax relief. In return, the landowner is required to maintain the agricultural character of the land. To date, the County has purchased the development rights to 10,750 acres of farmland under this program (Suffolk County Planning Commission 2017). In addition, the County has an open space acquisition program, whereby a portion of the County's sales tax is devoted to the acquisition of open space located within the County.

Several Suffolk County jurisdictions utilize transfer of development rights (TDR) programs to preserve much needed open space and protect the County's drinking water source. According to a 2014 EPA review and study of the existing TDR programs in Suffolk County, it was determined that six jurisdictions have active TDR programs. The County has a total of 6 percent of land categorized as vacant and therefore, for the purposes of TDR, could be either a sending or receiving parcel. The majority of the vacant land in the County is located in three Towns: Brookhaven (10,862 vacant acres), Southamptton (7,546 vacant acres), and East Hampton (6,463 vacant acres) (Suffolk County Department of Economic Development and Planning 2014). By using TDR, the development pattern can be condensed, and density can be shifted but not necessarily increased. TDR programs work best when receiving areas can accept additional development. It makes sense to locate higher density projects where infrastructure, such as public sewer, water, and mass transit, is already available. Areas targeted for infrastructure expansion could become designated receiving areas after the completion of necessary infrastructure. TDR programs help locate transferred development in locally designated growth centers near transit hubs or downtown centers and at the same time helps to reduce additional roadway congestion by preventing sprawl development outside of designated growth areas (Suffolk County Department of Economic Development and Planning 2014).



### Vacant Land

In 2016, vacant, undeveloped land comprised 6 percent (35,161 acres) of land use in Suffolk County, which represents a 50 percent reduction since 2006 (Suffolk County Fire, Rescue and Emergency Services 2006, Suffolk County Department of Economic Development and Planning 2018). Vacant land includes any undeveloped residential lots and land, abandoned agricultural land and rural land, vacant land in commercial areas, vacant land in industrial areas, urban renewal or slum clearance, and private and wild forest lands (Suffolk County Department of Economic Development and Planning 2018). The majority of vacant land is located in the eastern part of the County in Towns like East Hampton (13.2 percent) and Shelter Island (10 percent).

### Commercial Land

In 2016, commercial properties comprised approximately 3 percent (18,017 acres) of Suffolk County (Suffolk County Department of Economic Development and Planning 2018). These commercial properties include hotels and motels; camps, cottages, and bungalows; inns, lodges, and rooming houses; dining establishments; motor vehicle services; retail services; bank and office buildings; entertainment businesses; sports assemblies; amusement facilities; indoor and out sports facilities; marinas; resort complexes; and professional associations (Suffolk County Department of Economic Development and Planning 2018). Suffolk County contains more than 26 million square feet of non-government office buildings located in the County. This figure includes 2.9 million square feet of new office space constructed in the 10 years since 2006. An additional 3.0 million square feet of office space has been proposed for future construction. Suffolk County is a major retail market, with \$23.7 billion in sales reported in 2012 not including eating and drinking establishments, according to a recent U.S. Census of Retail trade. The retail sales per household in the County amounted to \$47,750 in 2012, ranking it among the highest markets in the country. According to the Suffolk County Department of Planning, Suffolk County's shopping center space totals 40.6 million square feet (YEAR of citation).

### Industrial Land

Industrial properties comprise 2.2 percent (13,051 acres) of land use in Suffolk County in 2016 (Suffolk County Department of Economic Development and Planning 2018). This is a 1.6 percent, or nearly a 10,000 acre, increase from just 0.6 percent in 2006. Industrial properties include storage, warehouse and distribution facilities; gasoline, fuel, oil, liquid petroleum storage and/or distribution; bottled gas, natural gas facilities; grain and feed elevators, mixers, sales, outlets; lumber yards, sawmills; coal yards, bins; cold storage facilities; trucking terminals; piers, wharves, docks, and related facilities; junkyards; manufacturing and processing; mining and quarrying; and industrial product pipelines.

Suffolk County contains significant industrial space, some of which has been recently added in Yaphank in recent years, including a \$100 million, 400,000 square foot expansion to Amneal Pharmaceuticals' industrial building in Yaphank completed in 2015 and a \$40 million privately funded Brookhaven Rail Terminal in Yaphank (2011) with a proposed expansion of the facility. The facility receives and ships tons of freight (construction aggregate, lumber and other commodities) via a newly constructed 3.4 mile rail spur (Suffolk County Planning Commission 2017). According to Newmark Grubb Knight Frank, a commercial real estate advisory firm, the County has significant industrial space totaling 105.4 million square feet. While most of this space is characterized as general industrial space, a large portion is comprised of warehouse and distribution facilities and a smaller portion is research and development/flex space.

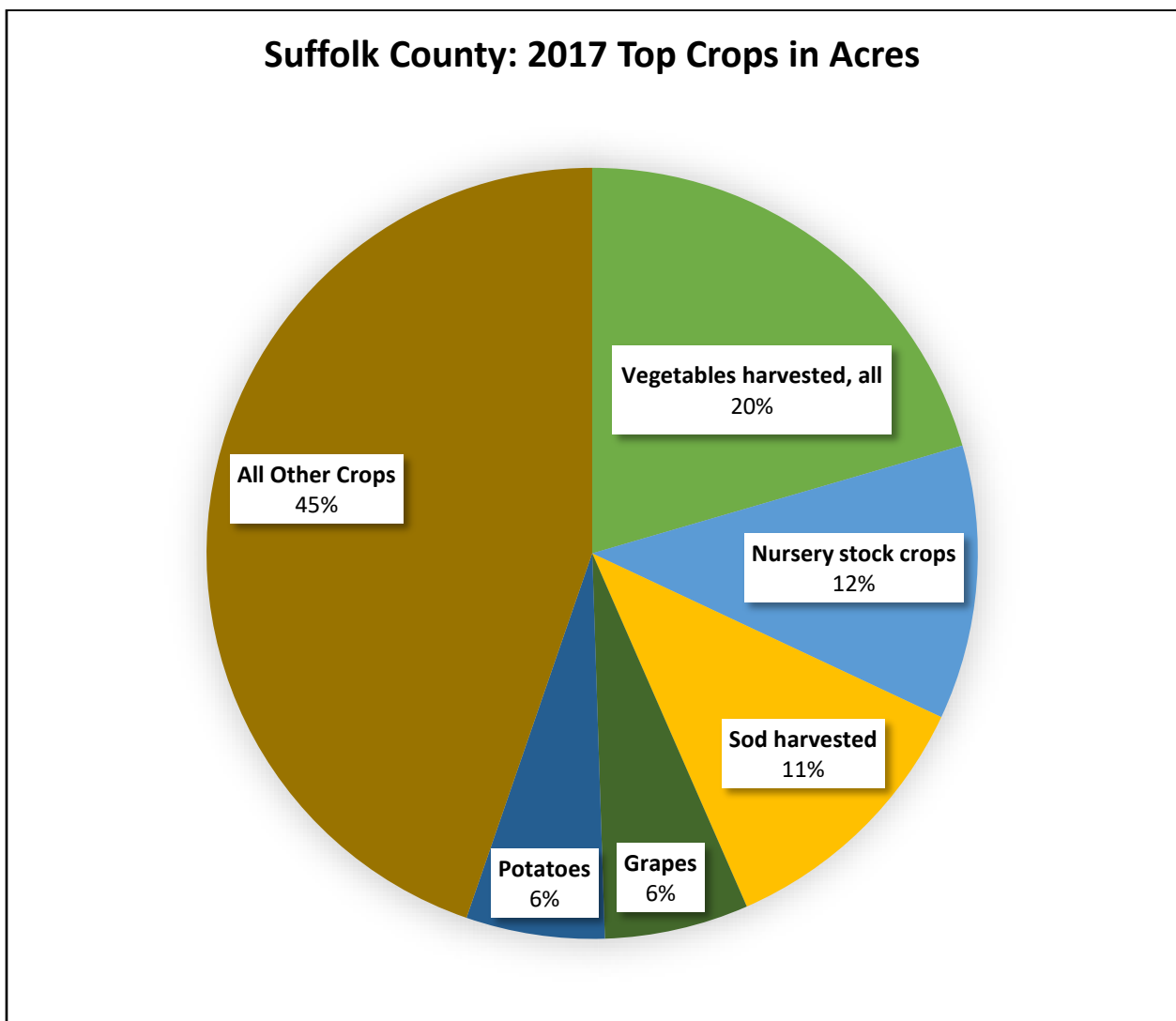
### Agricultural Land

In 2016, Suffolk County is comprised 6.5 percent (37,682 acres) of agricultural land (Suffolk County Department of Economic Development and Planning 2018). This represents a significant increase from 2006, when there was only a little more than 2,000 acres of agricultural land or 0.5 percent. The current percentage includes any



productive agricultural vacant land, livestock and products, field crops, truck crops, orchard crops, nursery and greenhouses, and specialty farms (Suffolk County Department of Economic Development and Planning 2018). According to the USDA’s 2017 National Agricultural Statistical Service, Suffolk County was ranked number four in the State in agricultural sales at \$225,578,000 (down from number one in 2007 and 2002). At the same time, if animals and animal products are removed, Suffolk County comes in first in total crop sales. This includes horticulture, which is by far the County’s largest agriculture industry. In 2017 the County had a record \$160,302,000 in sales in this category (Duffy 2019). The leading crops in acres included vegetables harvested, nursery stock crops, sod harvested, grapes, and potatoes (Figure 4-17) (NY Agricultural Statistics Service 2017). The leading crops in sales included nursery/greenhouse/floriculture/sod, vegetables/ melons/potatoes/sweet potatoes, poultry/eggs, and fruits/tree nuts/berries (Figure 4-18).

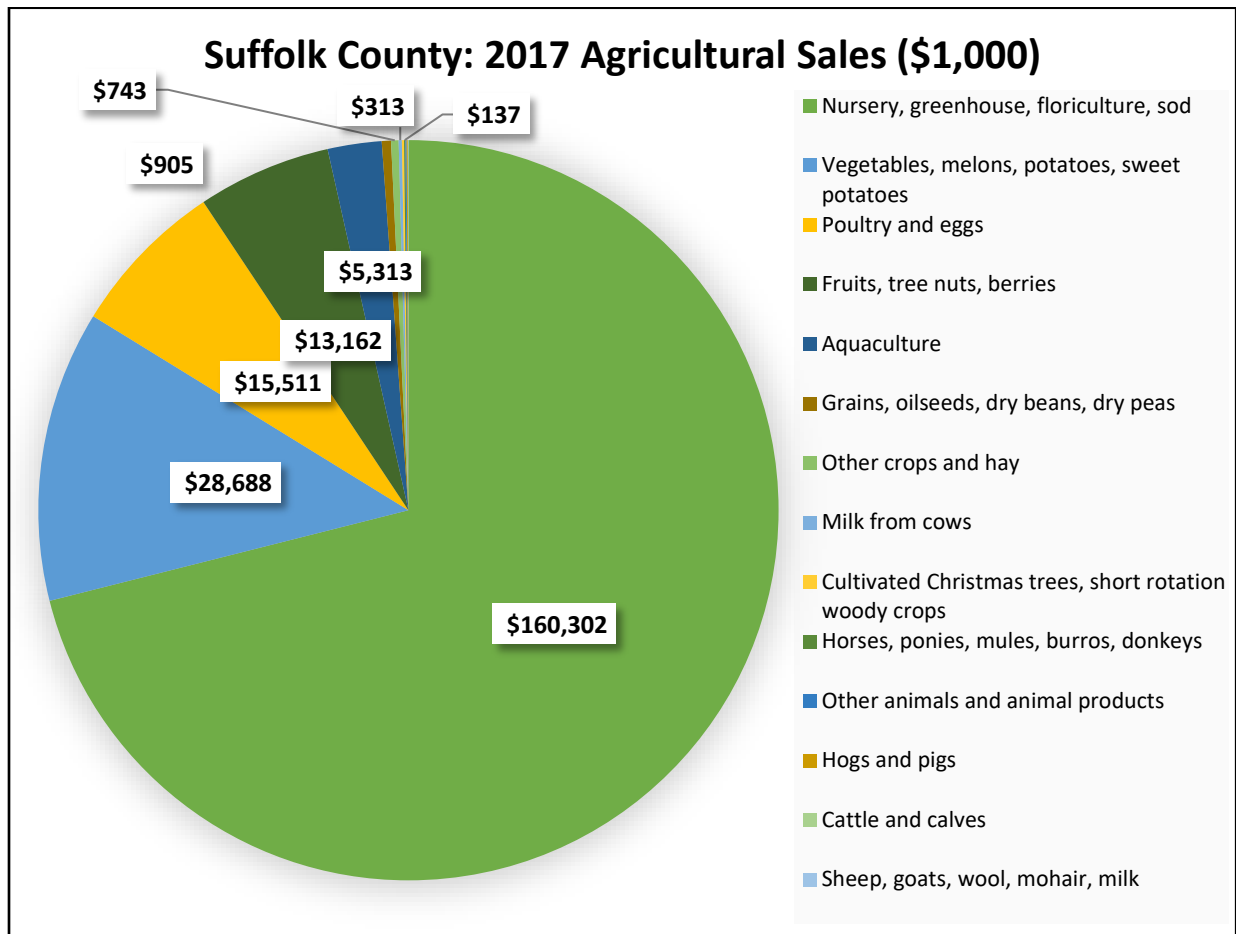
Figure 4-17. Top Crops (Acres) in Suffolk County



Source: 2017 Agricultural Census, Suffolk County



Figure 4-18. Agricultural Sales in Suffolk County



Source: 2017 Agricultural Census, Suffolk County.

Although agriculture in the County leads in sales throughout New York, Suffolk County’s agriculture sales have been on a downward trend since 2007, decreasing from \$242.9 million in 2007 to \$225.5 million. Other decreasing agricultural statistics include fewer number of farms, fewer agricultural acres, smaller average farm sizes (in acres), and average per farm receiving government payments. In 2012, 604 farms (with 35,975 acres) were identified by the USDA, compared to 560 farms (with 30,032 acres) in 2017 (U.S. Census of Agriculture 2017). Suffolk County enjoys a diversity of farming practices that is not frequently seen in either New York or the rest of the country. This diversification will continue to fuel innovation and the adaptation of environmentally friendly practices in Suffolk County agriculture (Suffolk County Department of Planning, Comprehensive Master Plan 2014).

The trend of decreasing farmland in Suffolk County over the last 40 years can be seen in Table 4-8.



**Table 4-8. Agricultural Land Use for 1940 to 2017**

Year	Number of Farms	Lands in Farms (acres)	Total Cropland (acres)	Permanent Pasture (acres)	Total Woodland (acres)	Other Land (acres)
1940	2,344	119,016	NA	NA	22,790	NA
1950	2,187	123,346	83,171	2,183	22,841	15,151
1959	1,258	89,776	66,092	2,142	11,970	9,572
1969	743	61,520	53,557	NA	3,411	NA
1978	777	51,853	44,733	659	2,401	4,613
1982	797	49,898	41,040	835	2,790	5,233
1987	775	43,300	36,900	700	2,300	3,400
1992	690	38,900	32,900	500	1,900	3,600
1997	725	38,500	28,100	1,200	2,000	7,200
1998	715	36,900	29,700	900	1,500	5,500
1999	735	37,400	29,700	900	1,500	5,300
2000	715	34,600	NA	NA	NA	NA
2001	705	32,500	NA	NA	NA	NA
2002	645	34,000	26,616	921	1,849	4,614
2003	645	34,000	NA	NA	NA	NA
2007	585	34,404	26,342	NA	NA	NA
2012	604	35,975	17,259	NA	NA	NA
2017	560	30,032	16,604	NA	NA	NA

Source: New York Agricultural Statistics Service

### 4.4.3 POPULATION TRENDS

This section discusses population trends to use as a basis for estimating future changes that could result from the seasonal character of the population and significantly change the character of the area. Population trends can provide a basis for making decisions on the type of mitigation approaches to consider and the locations in which these approaches should be applied. This information can be used to support planning decisions regarding future development in vulnerable areas.

In 1900, the U.S. Census placed Suffolk County’s population at 77,582 and by 1920, its population reached 110,134. More than 20 years later, during World War II, residential construction came to a standstill. During this time, there were sizable shifts in population. These shifts were largely due to many people who had been mobilized into the Armed Forces. The end of the war brought demobilization and with that, many new families started, leading to a post-war construction boom. Many areas on Long Island, including Suffolk County, saw a rapid increase in population. A steady increase in population was seen through the 1980s. Between 1980 and 1990, the population gain was small compared to previous years. By 1990 and into 2000, the population started to flourish once again. By January 1, 2006, the combined population of Nassau and Suffolk Counties totaled 2.85 million people (LIPA 2006). The U.S. Census 2019 population estimate for Suffolk County alone totaled





1,476,601 million people (U.S. Census 2019). Table 4-4 provides additional population statistics used in the risk assessment.

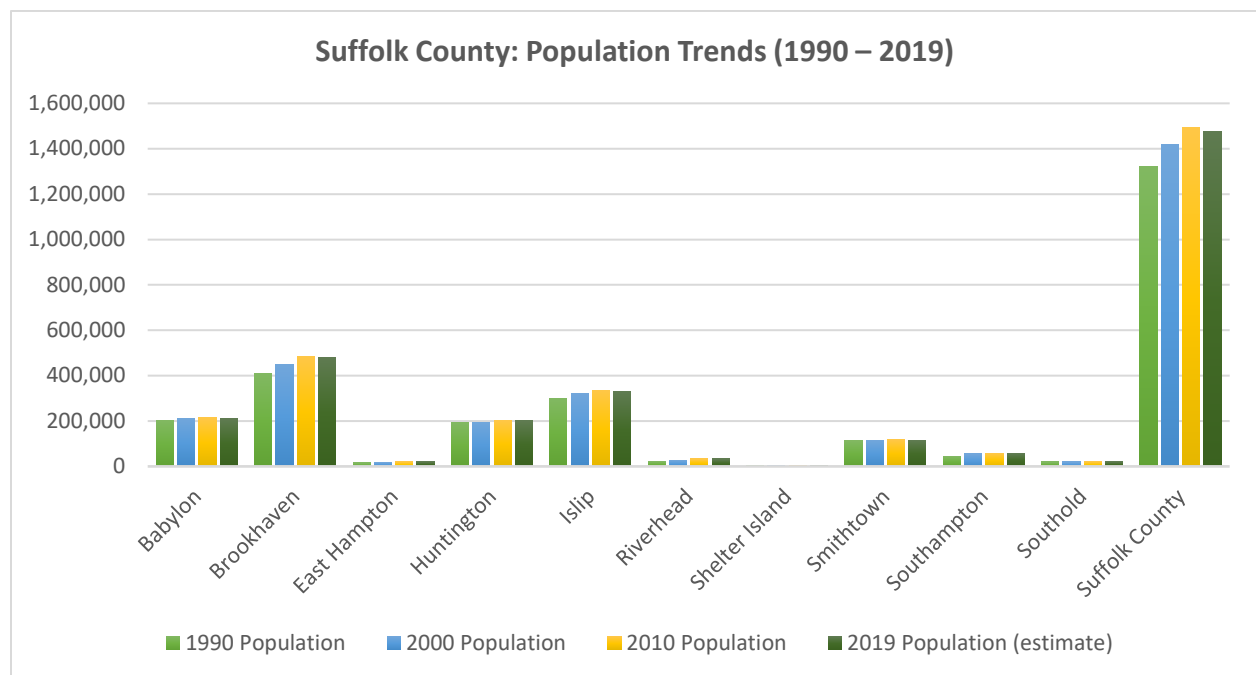
Table 4-9 and Figure 4-19 depict the past, current, and project population statistics/trends for Suffolk County.

**Table 4-9. Suffolk County Population by Jurisdictions, 1990 to 2019**

Jurisdiction	1990 Population	2000 Population	2010 Population	2019 Population (estimates)
Babylon	202,869	211,792	213,603	210,141
Brookhaven	407,779	448,248	486,364	480,763
East Hampton	16,132	19,179	21,457	22,047
Huntington	191,474	195,289	203,264	200,503
Islip	299,587	322,612	335,543	329,610
Riverhead	23,011	27,680	33,506	33,469
Shelter Island	2,263	2,228	2,392	2,744
Smithtown	113,406	115,715	117,801	116,022
Southampton	44,976	54,712	57,452	58,398
Southold	19,836	20,599	21,968	22,170
<b>Suffolk County</b>	<b>1,321,864</b>	<b>1,419,369</b>	<b>1,493,350</b>	<b>1,476,601</b>

Source: U.S. Census 2019.

**Figure 4-19. Suffolk County Population by Jurisdictions, 1990 to 2019**



Source: U.S. Census Bureau 1990-2019.



The U.S. Census Bureau 2019 ACS estimates a decrease of 16,749 in Suffolk County from the 2010 population. Out of ten total Suffolk County jurisdictions, six experienced a decrease from 2010 to 2019 and four experienced an increase. Brookhaven is Suffolk County’s most populated jurisdiction, with a 2019 population of 480,763, which is 32.6 percent of the County’s overall population. Shelter Island experienced the greatest percent increase in its population (12.8 percent). Brookhaven saw the greatest decrease in its population (-11.7 percent).

Per the Suffolk County–Comprehensive Plan 2035, Suffolk County’s population is projected to increase slowly for the next 30 years. Based on current trends and a gradual reduction in the amount of vacant land available for residential development, Suffolk County’s population is projected to increase by 195,000 or 13 percent between 2014 and 2045. At the same time, it is documented that the County experienced some slowing and slight loss of population in the early 2010s. Like the rest of the country, shifts in demographics are changing the composition and population characteristics of Suffolk County. For example, since 1990, Suffolk County has become increasingly more racially diverse. In 1990 the White population was 85 percent, Hispanic population was 7 percent, Black population was 6 percent, and Asian population was 2 percent. By 2010 the White population reduced to 72 percent, the Hispanic population increased to 16 percent, Black population increased slightly to 7 percent, Asian population increased slightly to 3 percent, and a new category of ‘Other’ increased from 0 percent in 1990 to 2 percent in 2010 (2035 Comprehensive Plan YEAR). Table 4-10 and Figure 4-20 detail the expected population growth in each of Suffolk County’s ten towns between 2010 and 2035. The largest numerical increase in population is expected in the Town of Brookhaven, with an addition of 108,000 persons. The largest percentage increase is expected in the Town of Riverhead at 45.9 percent.

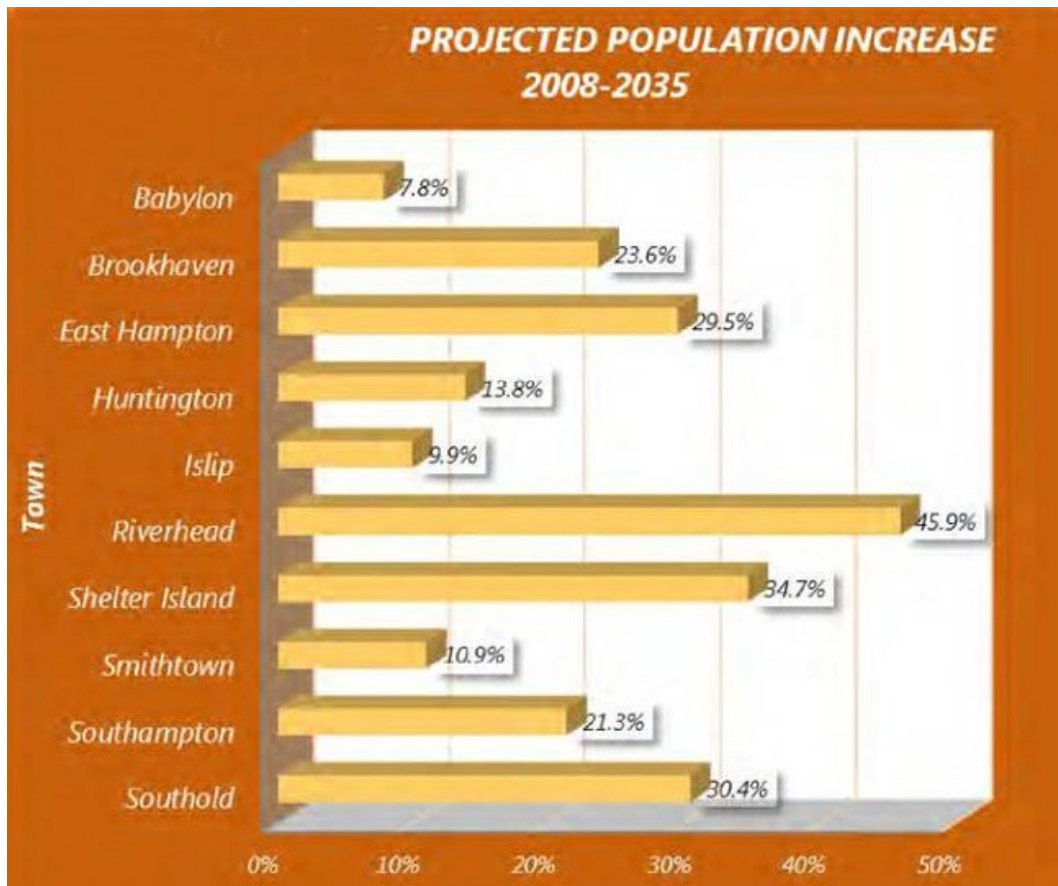
Table 4-10. Projected Population Growth in Suffolk County

Town	2010	2015	2020	2025	2030	2035
Babylon	213,603	223,300	228,100	231,600	233,800	235,300
Brookhaven	486,364	522,400	554,900	579,300	595,500	607,000
East Hampton	21,457	23,700	25,400	26,600	27,500	28,200
Huntington	203,264	212,500	220,100	225,800	229,600	232,100
Islip	335,543	344,200	353,000	359,500	363,700	366,500
Riverhead	33,506	37,800	42,200	45,500	47,700	49,400
Shelter Island	2,392	2,800	3,000	3,200	3,300	3,400
Smithtown	117,801	124,300	127,900	130,600	132,300	133,400
Southampton	57,452	63,900	67,400	69,900	71,700	73,100
Southold	21,968	25,000	26,800	28,200	29,200	29,900
<b>Total</b>	<b>1,493,350</b>	<b>1,580,000</b>	<b>1,648,800</b>	<b>1,700,200</b>	<b>1,734,300</b>	<b>1,758,200</b>

Source: Suffolk County Department of Economic Development and Planning 2020, U.S. Census 2010.



Figure 4-20 Projected Population Change for Suffolk County Between 2008 and 2035



Source: Suffolk County – Comprehensive Plan 2035

Of special note is the fact that persons age 65 and over have been a consistently growing segment of Suffolk County’s population. In 2010, there were 201,000 persons age 65 and over in Suffolk, comprising 14 percent of the population. The 2010 percentage represented a steady increase in percent starting in 1970. In 1990, seniors age 65 represented 11 percent of the population, up from 9 percent in 1980 and 8 percent in 1970. Between 2000 and 2010, the number age 65 and over increased by 20 percent, after increasing by 18 percent in the 1990s, by 22 percent in the 1980s, and by 35 percent in the 1970s. The 2018 Census estimates calculate persons age 65 and over to now be 250,082 or 16.9 percent.

The 2010 U.S. Census revealed that 45,000 or 23 percent of the County’s seniors (age 65 and over) live alone and that 29 percent of Suffolk County households contain a senior citizen. These figures are even more striking in the five eastern Suffolk towns: 19 percent of the population is age 65 or over and 35 percent of all households contain a senior citizen. There are 175 multi-family housing complexes dedicated for seniors in Suffolk County. Suffolk contains more than 25,000 units of senior- dedicated housing units in condos, apartments, and co-ops.

## 4.5 GROWTH AND DEVELOPMENT

Suffolk County is at a turning point in its history of growth and development. The existing pattern of low-density residential development with scattered single-use commercial areas are no longer compatible or sustainable with the transportation, water, and wastewater infrastructure networks. The existing pattern



cannot easily accommodate any additional residential growth or economic development and is not resilient to large-scale disruption, such as that caused by Superstorm Sandy. Planning for the future requires careful balancing of the relationship between land use, the overall economy, traffic and transportation systems, and natural and built resources. Looking forward, development patterns will most likely diverge from the days when regulations and investments in infrastructure favored single-family residences and large, single-use regional stores and shopping centers scattered across the County. One of the most effective means of addressing the variety of issues facing Suffolk County now and into the future will be to support and development sustainable “smart” growth strategies and policies as a part of any and all future planning efforts (Suffolk County Department of Economic Development and Planning 2014b).

According to “A Review of Selected Growth and Development Areas” for Suffolk County, five areas were identified by the Suffolk County Department of Planning and the New York Metropolitan Transportation Council as “major growth and development areas” in the County. These five areas are: 1) Route 110 Office-Industrial Corridor, 2) Sagtikos Regional Development Zone, 3) Yaphank, 4) Town of Riverhead, and 5) Stony Brook High Tech Campus (Suffolk County Department of Planning 2006). Since 2006, leading up to a Housing and Urban Development Sustainable Communities Transfer of Development Rights report, two additional future growth areas were identified by NYMTC and Suffolk County: “Wyandanch Rising” in the Town of Babylon and “Ronkonkoma Hub” in the Town of Brookhaven (Suffolk County Department of Economic Development and Planning 2014).

Since the last HMP of 2014 and Superstorm Sandy, the County and other regional entities have identified a number of transportation and infrastructure projects to increase the resilience of Suffolk County. Some significant projects and developments either studied, scoped, planned, or in-progress are summarized below.

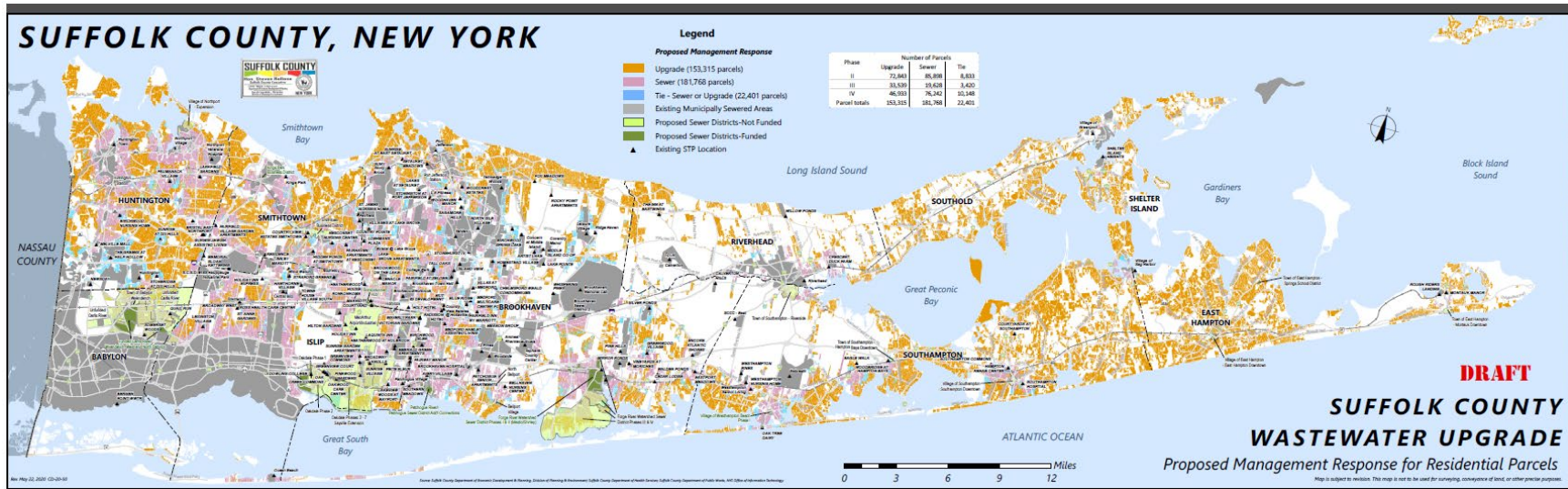
#### **4.5.1 COASTAL RESILIENCE INFRASTRUCTURE PROJECT**

The Suffolk County Department of Public Works received funding through Governor Cuomo’s Governor’s Office of Storm Recovery (GOSR) to build sewer infrastructure in four unsewered river corridor low-lying areas along the County’s south shore that was inundated during Superstorm Sandy. The investment marks the County’s largest water quality infrastructure project in over 40 years. The funds will be used to eliminate over 7,000 cesspools and septic systems. The conversion of cesspools and septic systems to sewer infrastructure will address what is commonly known as the single largest source of nitrogen pollution to the region’s south shore bays (Suffolk County 2020).

The County completed a build-out analysis of its needed sewer infrastructure in 2019. This was a component of the larger monumental Subwatersheds Wastewater Plan, as presented in Figure 4-21 through Figure 4-24. According to the County’s analysis, there is a need for planned sewer infrastructure upgrade projects on over 357,000 parcels in Suffolk County. These projects represent a historic step by the County to better protect both groundwater and surface water. The Plan was released in 2019 by the Suffolk County Department of Health Services and represents a science-based roadmap for transitioning away from reliance on conventional cesspools and septic systems, which are the primary source of nitrogen pollution that has fouled local bays. Additionally, the Plan is a multi-year product that required intensive research, documentation, modeling, and evaluation of all of Suffolk County’s water resources and provides a parcel-specific roadmap on how to address the nitrogen crisis through wastewater upgrades and other nitrogen pollution mitigation strategies. The plan seeks to arrest and reverse the existing trend of degrading water quality over a 10-year period (Suffolk County Department of Health Services 2020).



Figure 4-21. Suffolk County Proposed Wastewater Upgrades



Source: Suffolk County Department of Economic Development and Planning 2020.



Figure 4-22. Proposed Wastewater Upgrades in Suffolk County - West

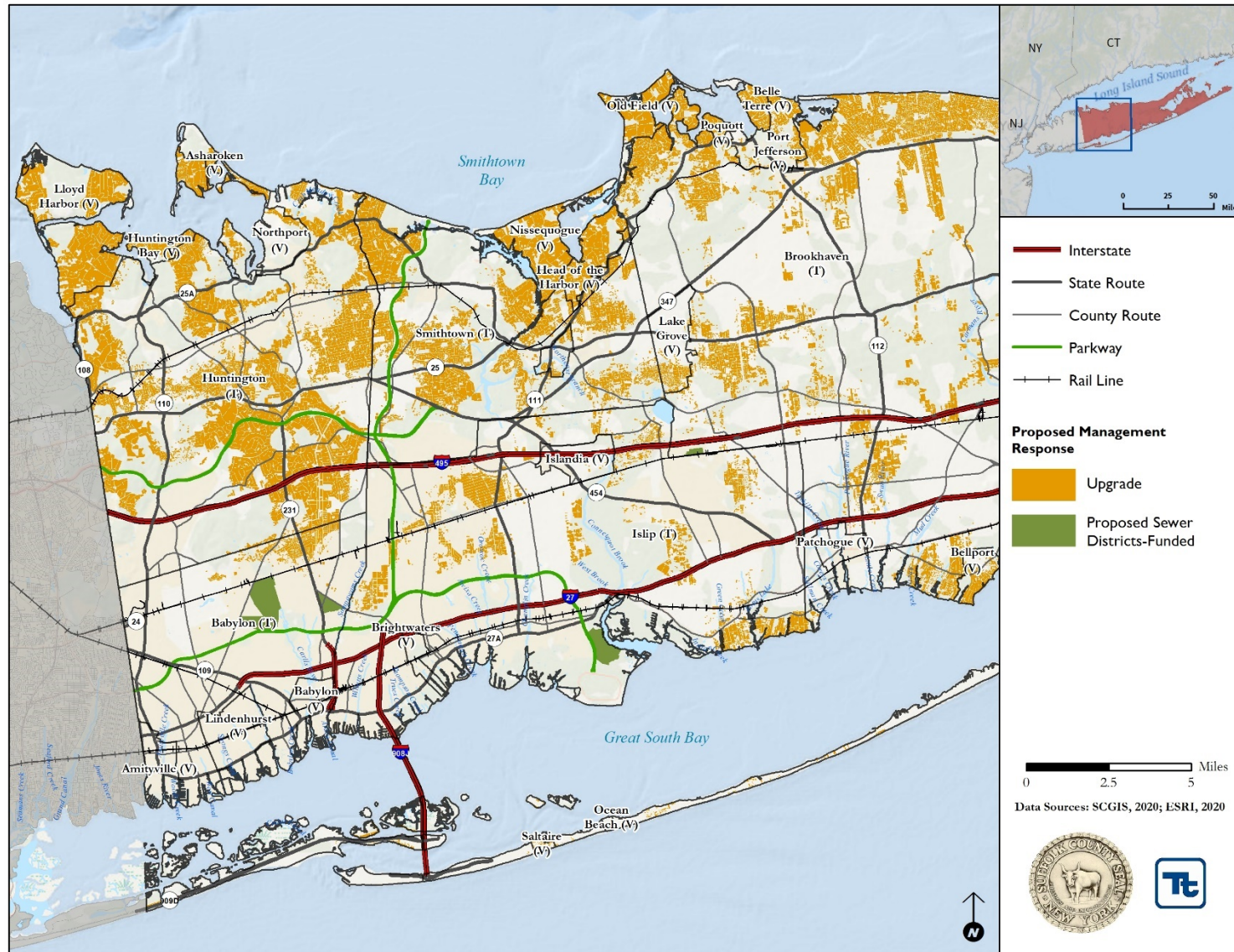




Figure 4-23. Proposed Wastewater Upgrades in Suffolk County - Central

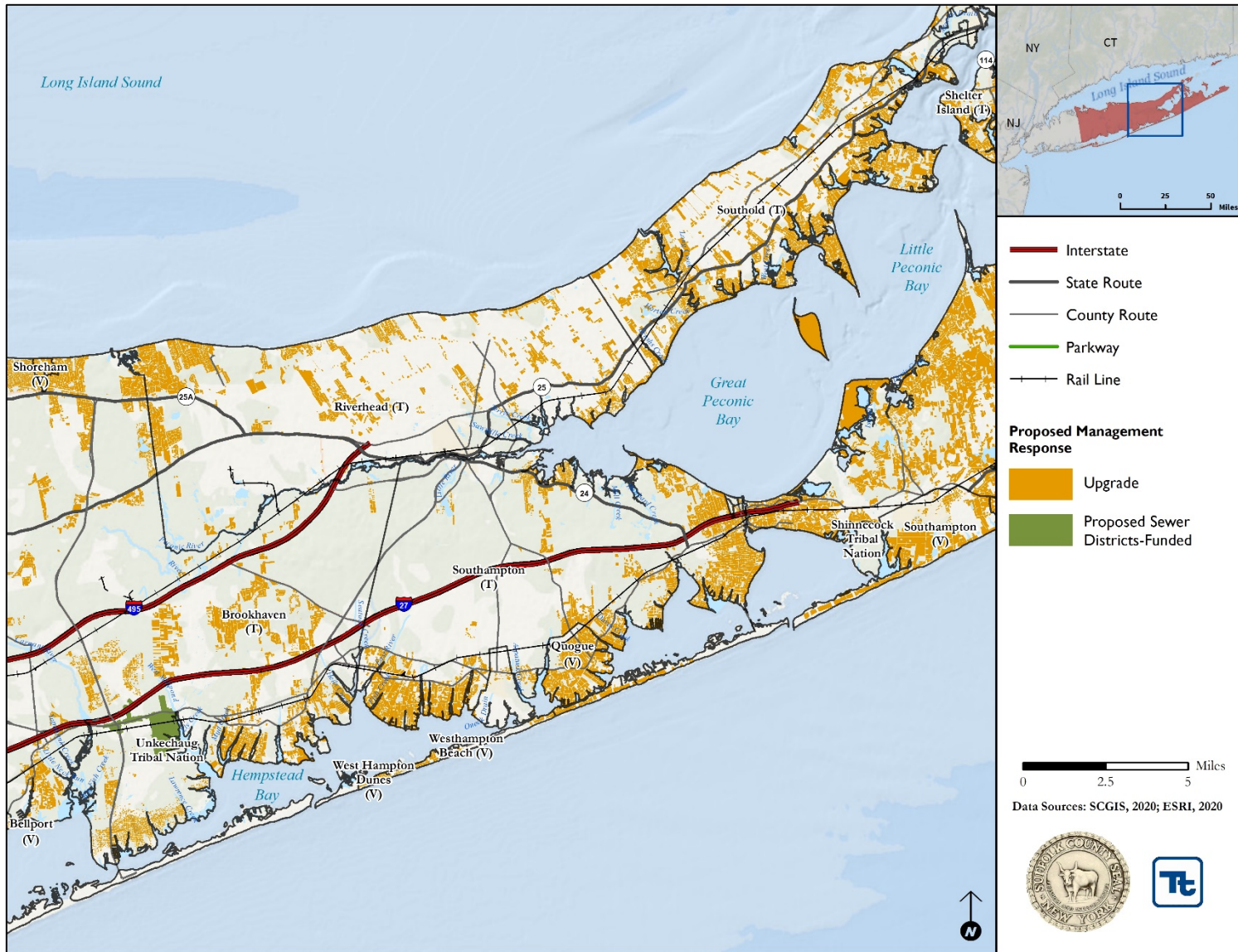
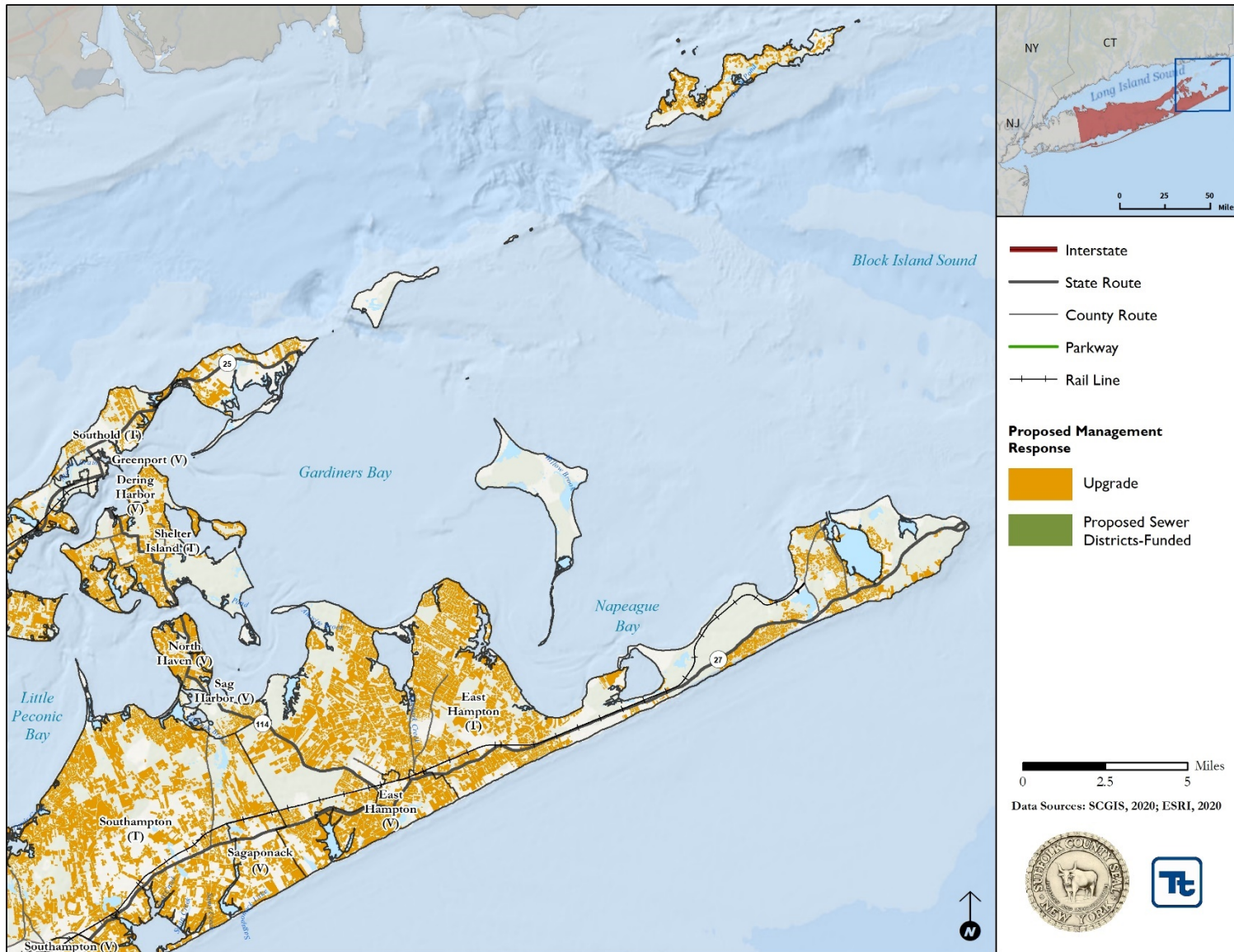




Figure 4-24. Proposed Wastewater Upgrades in Suffolk County - East







#### 4.5.2 THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION'S POST-HURRICANE SANDY TRANSPORTATION RESILIENCE STUDY OF NY, NJ, AND CT (OCTOBER 2017)

Bergen Avenue in West Babylon was completely flooded during Hurricanes Irene and Sandy and routinely experiences flooding during major Nor'easters. The street flooding significantly restricts access to the Bergen Point Wastewater Treatment Plant, residences, and businesses (e.g. Bergen Point Golf Course). In the future, this roadway will be further impacted by sea level rise and other storm surge events. Suffolk County selected various climate change scenarios and projected impacts to be studied informed by a report written by the New York State Energy Research and Development Authority (NYSERDA) titled Climate Change in New York State (ClimAID 2014). This led to the analysis of the Bergen Point Wastewater Treatment Plant and the anticipated future impacts from climate change. The resulting resilience study estimates that Bergen Point will experience 2.5 feet of sea level rise by 2050 and a total of 6.25 feet of sea level rise by 2100. During Hurricane Sandy the Wastewater Treatment Plant experienced 12 feet of storm surge.

The Resilience Study project leads worked with staff from Suffolk County to determine an appropriate planning time horizon. It was, as such, determined that adaptation strategies for the Wastewater Treatment Plant and Bergen Avenue should focus on the mid-century time horizon's anticipated sea level rise estimate. The resulting adaptation strategy and final assessment is based on the creation of an alternative access route through the Bergen Point Golf Course between Kirby Lane and the WWTP, following the path of an existing service road (U.S. Department of Transportation, Federal Highway Administration 2017). This project, while assessed, has not yet been started. The WWTP, however, received 13.6 million from GOSR to implement storm resiliency improvements. This was the first loan Suffolk County received from the State's Storm Mitigation Loan Program (New York Rural Water Association 2014).

New York Metropolitan Transportation Council's Regional Transportation Plan: Plan 2045

NYMTC's Plan 2045 highlights a number of major Suffolk County projects and initiatives that are intended to strengthen the resilience and sustainability of the County over the long term. In particular, the County has serious and tangible vulnerabilities due to storm surge and rising sea levels. Previous storms, like Superstorm Sandy, over the last decade have revealed vulnerabilities throughout Suffolk County and Long Island's transit and transportation infrastructure. Suffolk County projects mentioned in the plan are as follows:

- Long Island Innovation Zone - The Long Island Innovation Zone or the "I-Zone" is a comprehensive plan to integrate Long Island's major innovation and transportation assets. A component of the larger Connect Long Island initiative, the I-Zone serves as part of the solution to the "brain drain" Long Island has been experiencing for several years, enabling the region to once again become a competitive option for the young, highly-skilled workers needed to build and sustain an innovation economy (Suffolk County Department of Economic Development and Planning 2019).
- CONNECT Long Island through Bus Rapid Transit (BRT) - The Suffolk County BRT Feasibility Study, completed in 2014 identified three preferred/priority North/South corridors: Nicolls Road (Patchogue-Stony Brook), Route 110 (Amityville-Huntington), and Sagtikos Parkway (Deer Park-Kings Park). Bus Rapid Transit is a bus-based public transport system with the goal to improve capacity and reliability relative to a conventional bus system. BRT aims to combine the capacity and speed of a train with the flexibility, lower cost and simplicity of a bus system. In Suffolk County, BRT was conceived to be a good fit for nearly all commuters and, at the same time, support the environment and the economy. BRT increases transit access and



decreases travel times by avoiding traffic (New York Metropolitan Transportation Council 2014).

**Table 4-11. Proposed BRT Corridors in Suffolk County 2014**

Corridor	From	To	Key Assets Connected	Route Length (miles)	Number of Stations
Amityville-Huntington ( <i>via NY Route 110</i> )	Amityville Village	Halesite	Amityville Village, Proposed LIRR Republic Station, SUNY Farmingdale, Huntington Village	16	46
Patchogue-Stony Brook ( <i>via Nicolls Road</i> )	Patchogue Village	Stony Brook LIRR	Stony Brook University, Stony Brook University Hospital, Stony Brook LIRR, SCCC, Ronkonkoma LIRR, LIMA, Patchogue Village	15	13
Deer Park-Kings Park ( <i>via Sagtikos Parkway</i> )	Deer Park LIRR	Downtown Kings Park	Proposed Heartland Town Square, Downtown Kings Park, Nissequoque State Park	17	14

Source: New York Metropolitan Transportation Council 2014

### 4.5.3 NY 347 CORRIDOR RECONSTRUCTION AND GREEN ROUTE IMPLEMENTATION (\$565 MILLION)

The NY 347 Green Route projects are intended to improve safety for motorists, bicyclists, and pedestrians and reduce travel delays by transforming NY Route 347 into a modified boulevard and suburban greenway for 15 miles through Brookhaven, Islip, and Smithtown, including separate bike and shared-use pedestrian paths on one side of the road. In some cases, travel lanes will be narrow to reduce speeds. Some of the project funding has come from Governor Cuomo over the last several years to support project implementation. A 2016 announcement allocated \$36.2 million from the Governor to make safety and mobility improvements along a 1.2-mile section of State Route 347 in Smithtown (New York Governor’s Office 2016). The total anticipated cost of the complete set of projects is \$565 million and is anticipated to be completed by 2032 (New York State Department of Transportation 2009).

## 4.6 CRITICAL FACILITIES

A comprehensive inventory of critical facilities in the County was developed from various sources including input from the Planning Committee, Suffolk County and participating municipal departments, utility companies, and HAZUS-MH provided data. The inventory of critical facilities presented in this section represents the current state of this effort at the time of publication of the HMP and was used for the risk assessment in Section 5. The inventory is considered sensitive information. Therefore, individual facility names and addresses are not reported in this HMP. A summary of the facility types used for the risk assessment are presented further in this section.

**Critical Facilities** are those facilities considered critical to the health and welfare of the population and that are especially important following a hazard. As defined for this HMP, critical facilities include essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities, and hazardous material facilities.

**Essential facilities** are a subset of critical facilities that include those facilities that are important to ensure a full recovery following the occurrence of a hazard event. For the County risk assessment, this category was defined to include police, fire, EMS, schools/colleges, shelters, senior facilities, and medical facilities.

An enhancement to the 2020 HMP was the identification of community lifelines across Suffolk County. Suffolk County’s definition for a lifeline aligns with FEMA: “a type of critical facility that provides indispensable service that enables the continuous operation of critical



business and government functions, and is critical to human health and safety or economic security.” Identifying community lifelines will help government officials and stakeholders to prioritize, sequence, and focus response efforts towards maintaining or restoring the most critical services and infrastructure within their respective jurisdiction(s). Identifying potential impacts to lifelines can help to inform the planning process and determining priorities in the event an emergency occurs. Appendix E provides the FEMA fact sheet on lifelines.

Overall, there are 10,486 critical facilities identified in Suffolk County. Out of these critical facilities, 8,117 are identified as lifelines by the Planning Partnership.

**Critical facilities and infrastructure** provide services and functions essential to a community, especially during and after a disaster. As defined for this HMP, critical facilities include essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities, and hazardous material facilities.

A **community lifeline**, a type of critical facility, enables the continuous operation of government functions and critical business and is essential to human health and safety or economic security.

### 4.6.1 ESSENTIAL FACILITIES

This section provides information on emergency facilities, hospital and medical facilities, shelters, schools, and senior care and living facilities. As stated above, these assets provide indispensable services that need to remain in operation before, during, and after natural hazard events. For the purposes of this hazard mitigation plan, detailed information pulled from County resources and critical facility data is summarized in the following sections to describe the essential facilities in the County. The Section 9 (Jurisdictional Annexes) provide mitigation strategies identified by plan participants to reduce future impacts to vulnerable essential facilities and lifelines.

#### Emergency Facilities

##### Suffolk County Police Departments

The Suffolk County Police Department (Suffolk County PD) is made up of over 2,375 sworn officers and 600 civilian members (Suffolk County PD 2018). The workforce is divided into seven (7) precincts that provide police services for the five (5) western towns in Suffolk County (Babylon, Brookhaven, Huntington, Islip, and Smithtown). Each of the precincts provides all police services for their respective areas. A central police headquarters is located in Yaphank, which provides administrative and support services to each of the seven precincts. The training of all police and law enforcement personnel in the county is provided and coordinated by the Suffolk County Police Department in county facilities in the hamlet of Brentwood in the Town of Islip.

**Essential facilities** are a subset of critical facilities that include those facilities that are important to ensure a full recovery following the occurrence of a hazard event. For the County risk assessment, this category was defined to include police, fire, EMS, EOCs, schools, shelters, senior facilities, and medical facilities.

**Emergency Facilities** are, for the purposes of this Plan, emergency facilities that include police, fire, emergency medical services, and emergency operations centers.

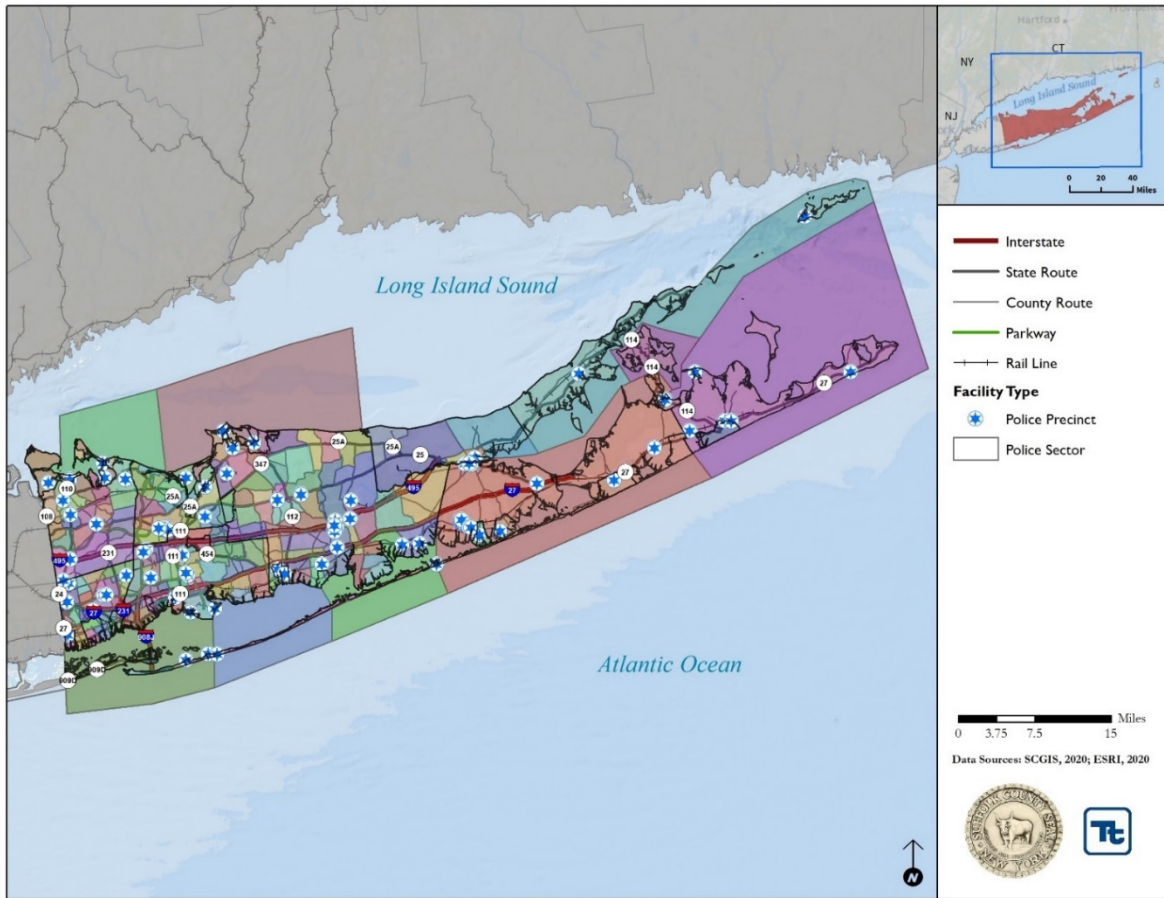
In addition to the Suffolk County PD, law enforcement and police services are provided by 8 incorporated villages within the 5 western towns. Police services in the 5 eastern towns of Suffolk County (East Hampton, Riverhead, Shelter Island, Southampton, and Southold) are provided by 11 independent town and village police forces that work in concert with each other and Suffolk County PD, as required. The working relationships between the all of the different police departments in Suffolk County ensures that the appropriate resources are directed where and when they are needed. The Suffolk County PD has the most capabilities of all of the police forces in the county and makes its resources readily available as particular needs are identified.



The Suffolk County PD trains its officers in EMT-D. It also possesses capabilities for aviation and Med-Evac services for the entire County. The County force has additional capabilities in a wide variety of areas which include emergency services, Haz-Mat requirements, bomb and explosive devices, marine and coastal beach requirements, canine functions, and coordinated regional criminal intelligence needs.

Figure 4-25 illustrates Suffolk County PD precincts and County and municipal police sectors (sectors are a subset of precincts). There are 67 individual critical facilities identified as police facilities in Suffolk County and are also assessed in this HMP.

Figure 4-25. Suffolk County Police Department Precincts and Police Sectors



### Suffolk County Fire Departments

Fire protection in Suffolk County is almost entirely provided by volunteers in 116 fire departments (109 volunteer fire departments, 7 paid fire departments) that operate under and are governed by an area fire district (Suffolk County 2020). Figure 4-26 illustrates the fire districts in Suffolk County. Typically, a fire district is run by five (5) publicly elected unpaid officials. Fire districts, similar to towns and villages, are a local form of government created pursuant to state statutes. They have the power and authority to provide fire protection services within their boundaries and to levy taxes and incur debt to accomplish that responsibility. One fire district has no higher authority over another nor can it be superseded in authority by a village, town, county or the state government.

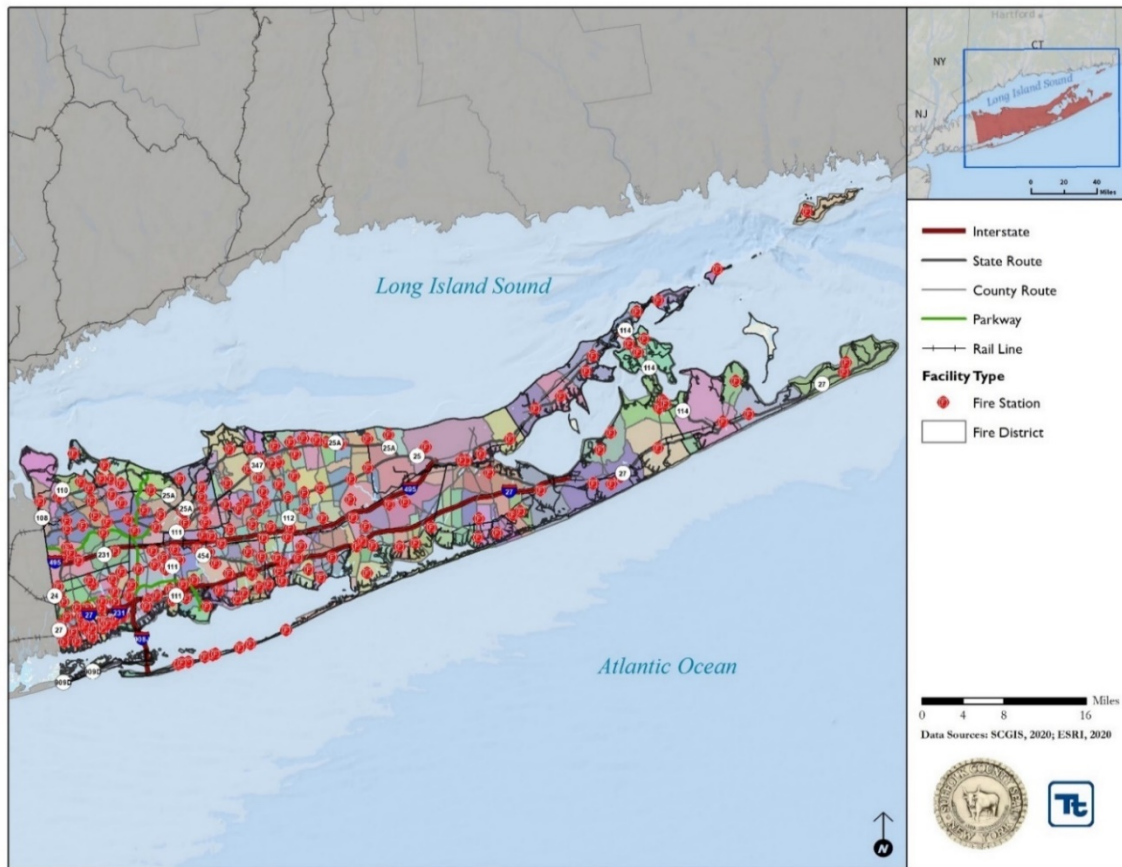




Thousands of volunteer firefighters are in Suffolk County. The equipment used by the firefighters ranges from the typical engine, ladder truck, and rescue vehicle to the more specialized vehicles used for off-road fighting of brush fires, performing technical rescue services, and shoreline travel on boardwalks and beaches.

Basic and advanced firefighting training are offered through the Suffolk County Fire Academy operated by the Vocational Education and Extension Board under contract with the Suffolk County Department of Fire, Rescue, and Emergency Services. The training takes the form of year-round classroom instruction at fire stations and the Fire Academy in Yaphank. Live fire training is conducted at the academy operated training center, also in Yaphank, which operates nearly every weekday evening and on weekends from April 1 through November 30 (Suffolk County Fire Academy 2020).

Figure 4-26. Fire Departments and Fire Districts in Suffolk County



Alarm receipt and dispatch is varied and ranges from individual fire departments handling a call to Public Safety Answering Points or neighboring fire districts providing dispatch services and/or alarm communications. The vast majority of fire departments use tone alert pagers or radios in the low band radio spectrum. Typically, neighboring fire departments share each other’s operating frequencies for interoperability purposes. Additionally, each fire department has at least one portable radio that can operate on Suffolk County’s 800 MHZ trunked radio system for use during local and regional events emergencies and disasters.

The overwhelming majority of alarm calls are handled by the local fire agency having jurisdiction. However, mutual aid agreements exist on the State, County and local levels to provide for additional resources should the agency having jurisdiction require it. In some instances, mutual aid is automatically provided by prior



agreements for structure fires during certain time frames or for high risk facilities. In all instances the highest ranking officer of the agency having jurisdiction is in command of any fire or emergency.

There are 255 critical facilities identified as fire stations/emergency medical services in the County (Figure 4-26).

### Emergency Medical Services

Emergency Medical Services (EMS) in Suffolk County are provided through a number of different entities. There are 65 local fire departments that provide EMS services, 27 independent Volunteer Ambulance Companies, three Municipal Ambulances, and one hospital-based ambulance. There are a total of 96 ambulance companies and 279 ambulances operating in the Suffolk County 911 system among the fire departments and volunteer ambulance companies. Hospital-based and commercial EMS services routinely operate an additional 159 ambulances within the Suffolk and Nassau County region that can be called upon in the event of a disaster or system surge.

The Fire Department based EMS services are a function within the volunteer fire departments and fall under the responsibilities of each fire districts publicly elected unpaid governing Commission. Fire districts, similar to towns and villages, are a local form of government created pursuant to state statutes. They have the power and authority to provide fire protection and emergency medical services within their boundaries and to levy taxes and incur debt to accomplish those responsibilities. One fire district has no higher authority over another nor can it be superseded in authority by a village, town, county or the state government.

An independent volunteer Ambulance Company is typically run by three publicly elected unpaid officials. Ambulance Improvement Districts unlike fire districts cannot levy taxes or incur debt to pay for their responsibilities and needs. Instead, they establish contracts with their local municipalities for funding, and it is the municipality which has the ability to levy taxes and incur debt to provide for the EMS service. The individual Ambulance Companies have responsibility for emergency medical services within their respective boundaries, and work in conjunction with other ambulance companies, fire departments, and police, as necessary, to ensure that the appropriate resources are directed where and when they are needed.

The other dedicated EMS entities are salaried functions unlike the volunteer structure in the fire departments and ambulance companies. This fact does not affect the ability to work in conjunction with the fire departments and independent ambulance companies as particular needs arise.

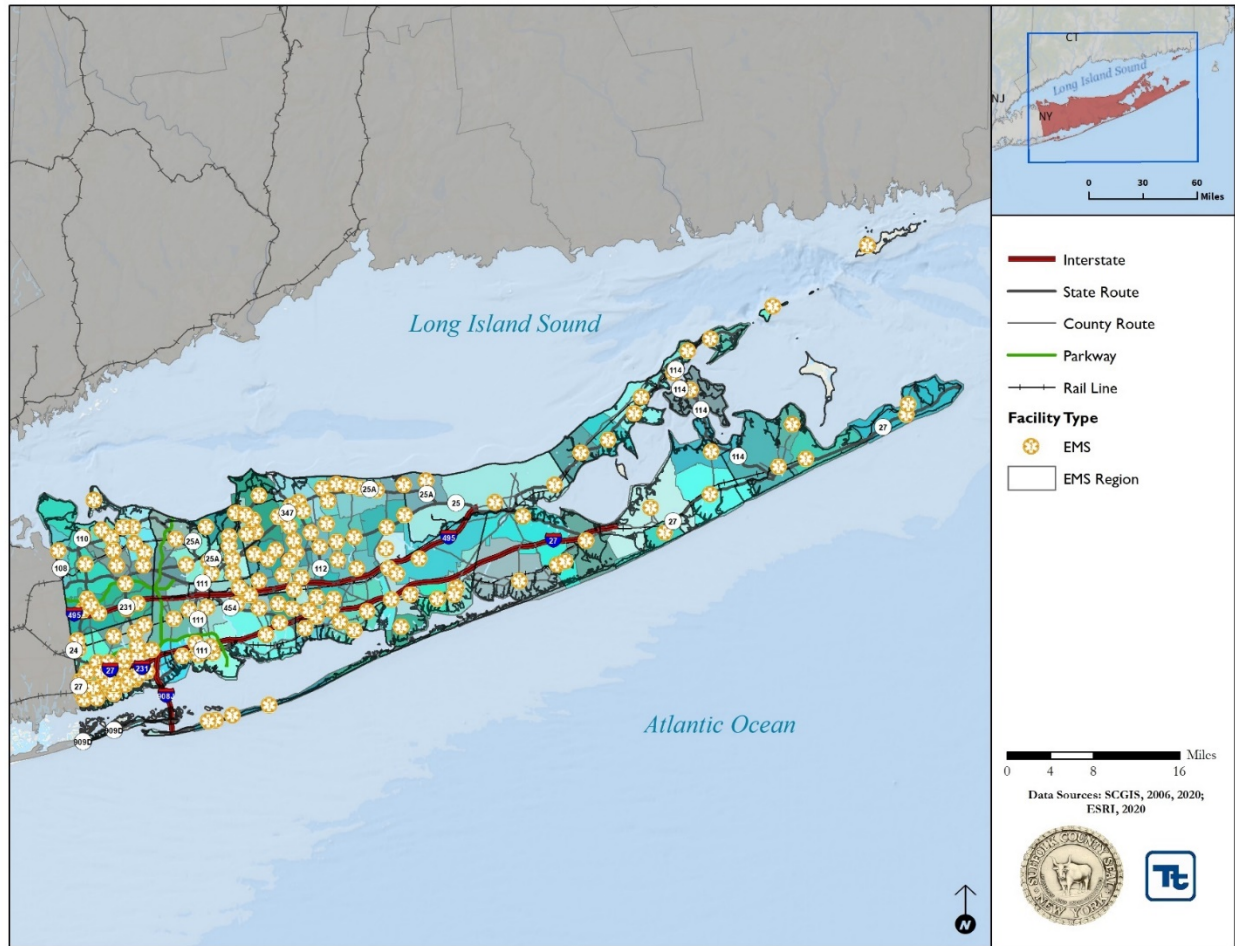
The emergency medical service functions in Suffolk County include both Basic Life Support (BLS) and Advanced Life Support (ALS) capabilities. The advanced life support capability entails specialized training in the administration of medications and the performance of life saving measures in the field. The combined Suffolk County EMS capability consists of 87 EMTP, 2 EMT-CC, 1 AEMT, 6 EMTB Ambulance Services, 3 ALS First Responder Agencies (2 hospital- and 1 municipal-based), 8 BLS First Responder Agencies (5 Fire Department and 3 Police Department), 1 MERV, 2 dedicated medivac helicopters, and 2 additional helicopters for emergency use.

The Suffolk County Division of Emergency Medical Services within the Department of Health Services has the responsibility for the administration and oversight of Suffolk's emergency medical services system and the training and certification of EMS personnel. The Division is responsible for the overall coordination of the emergency system and the development of support services to aid in improving all phases of emergency medical care.

There are 255 critical facilities identified as fire stations/emergency medical services in the County (Figure 4-27).



Figure 4-27. Emergency Medical Service Locations and Regions in Suffolk County

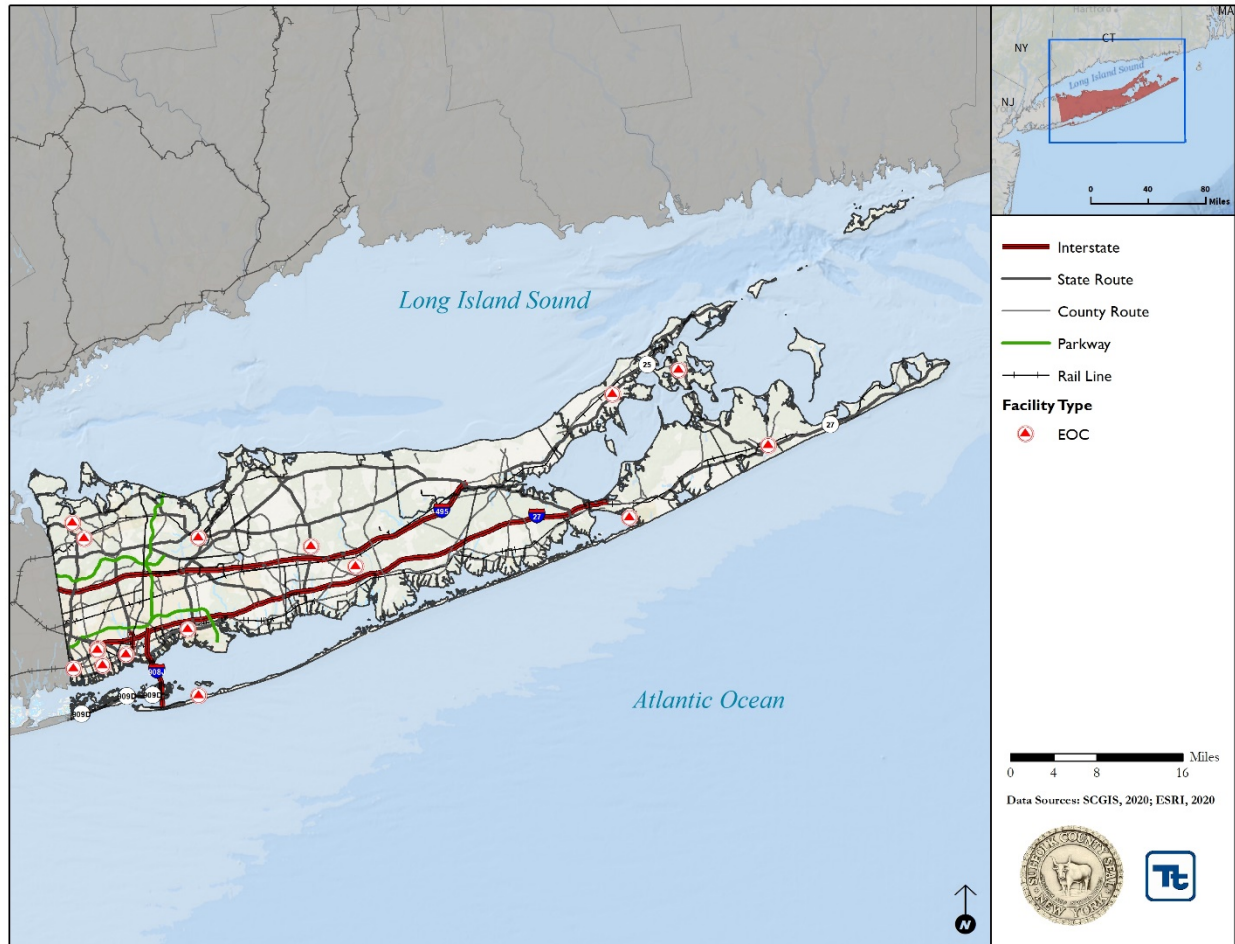


### Emergency Operation Centers

There are 16 emergency operation centers (EOCs) located in Suffolk County (Figure 4-28). Appendix E (Risk Assessment Supplement) provides a complete list of EOCs analyzed in this HMP.



Figure 4-28. Emergency Operation Centers in Suffolk County



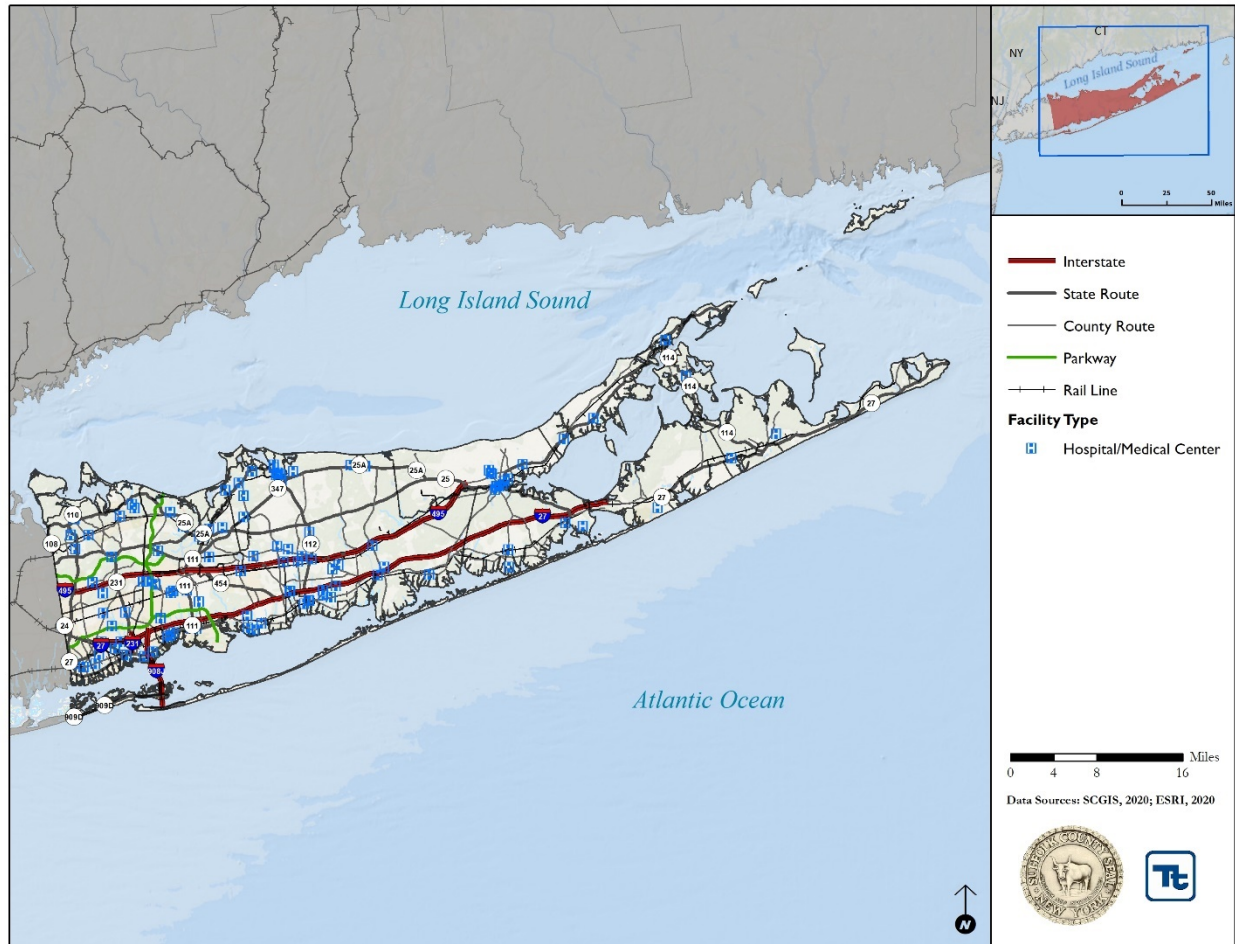
### Hospitals and Medical Facilities

There are 163 hospitals and medical facilities located in Suffolk County (Figure 4-29). Appendix E (Risk Assessment Supplement) provides a complete list of hospital/medical critical facilities analyzed in this HMP.





Figure 4-29. Hospital/Medical Centers in Suffolk County



### Shelters

The American Red Cross (ARC) is recognized as the agency responsible for providing care to persons immediately following a natural disaster. ARC’s headquarters is located in Yaphank, Town of Riverhead, and it maintains three regional offices in Suffolk County, including: (1) Babylon-Islip (2) Huntington-Smithtown, and (3) Hampton Bays.

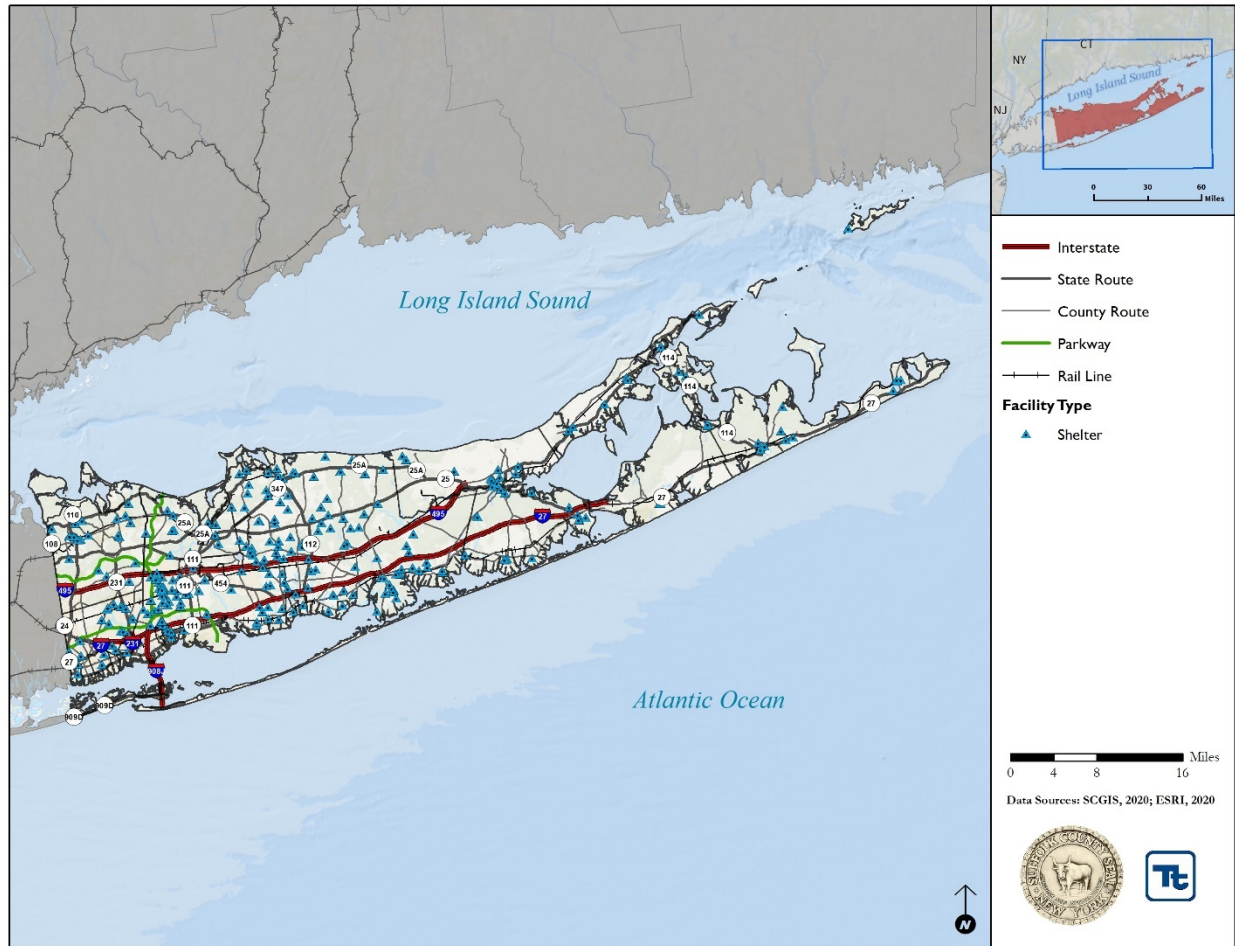
The coronavirus outbreak and the use of social distancing will lead to obvious challenges in the event that a hurricane results in the need for sheltering and large-scale recovery efforts. As such, FEMA has released “COVID-19 Pandemic Operational Guidance for the 2020 Hurricane Season.” Sheltering and response will be influenced by conditions present at the time, but FEMA has identified methods to reduce the potential for the spread of coronavirus for those that require shelter and FEMA staff. This includes reducing the capacity for shelters to allow for social distancing, requiring temperature and health screenings at FEMA run facilities, allowing for the use of hotels and motels as sheltering locations, having FEMA staff use virtual methods for damage surveys and meetings, and various other methods to protect the public and FEMA’s staff (FEMA 2020).

Overall, there are 295 shelters located in Suffolk County analyzed in this HMP (Figure 4-30). Suffolk County has a public tool online that provides residents access to the location of the nearest shelter. It may be accessed at <https://www.suffolkcountyny.gov/Departments/FRES/Storm-Surge-Zone-and-Shelter-Locator-Map>.





Figure 4-30. Shelters in Suffolk County

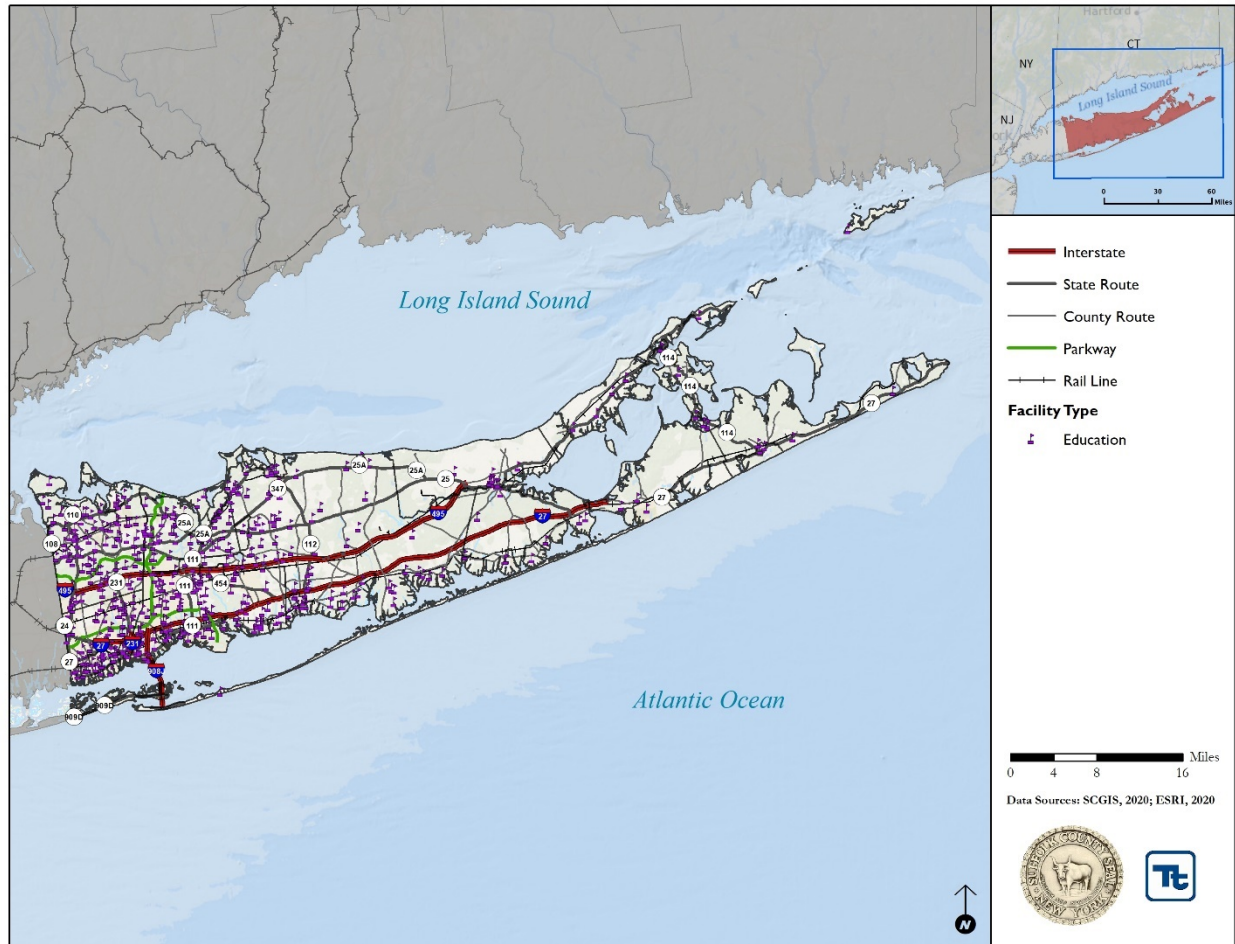


**Schools**

There are 142 school districts, 410 primary education facilities, and 24 secondary education facilities in Suffolk County (Figure 4-31).



Figure 4-31. Education Facilities in Suffolk County

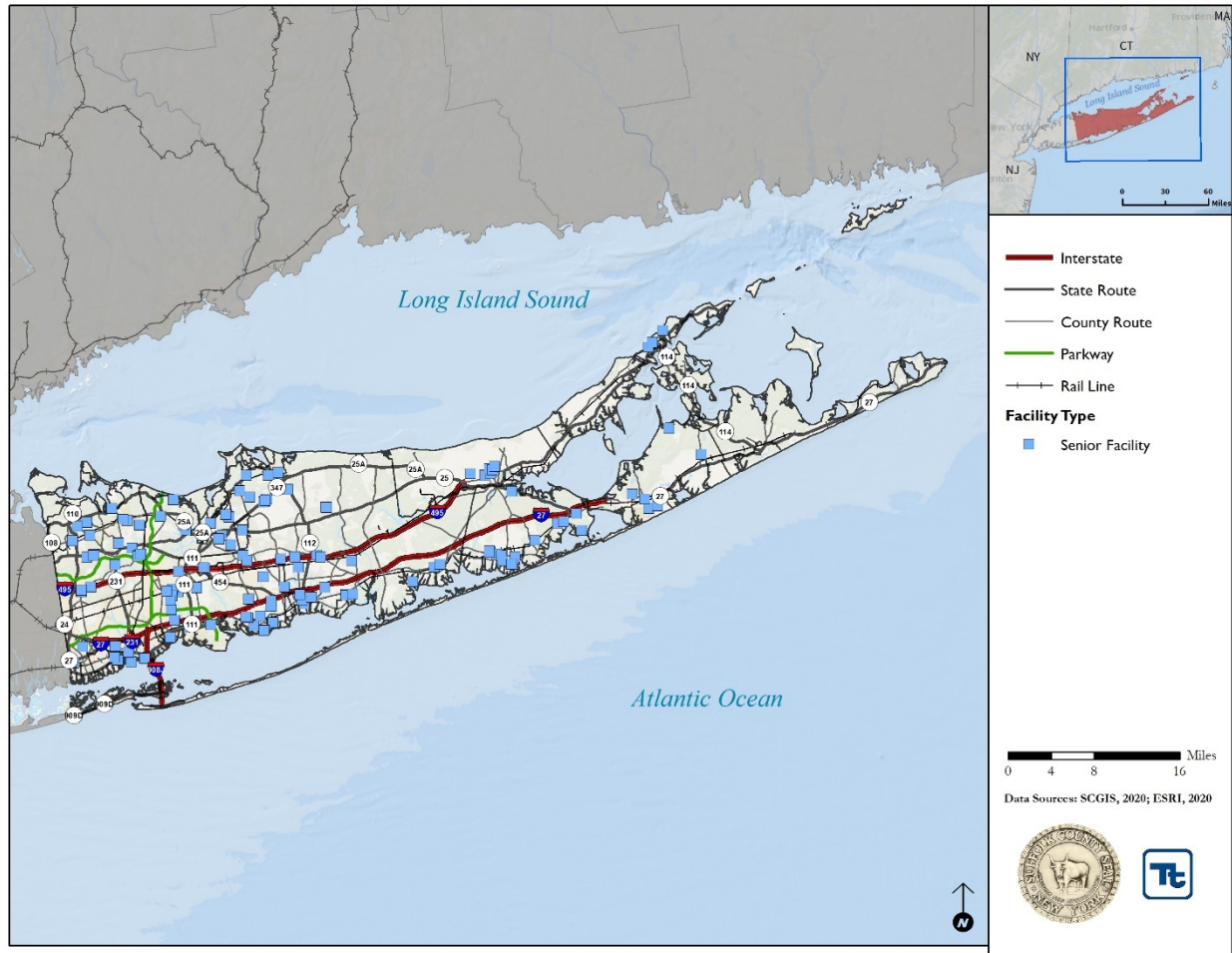


**Senior Care and Senior Living Facilities**

There are 169 senior facilities identified in the County (Figure 4-32).



Figure 4-32. Senior Facilities in Suffolk County

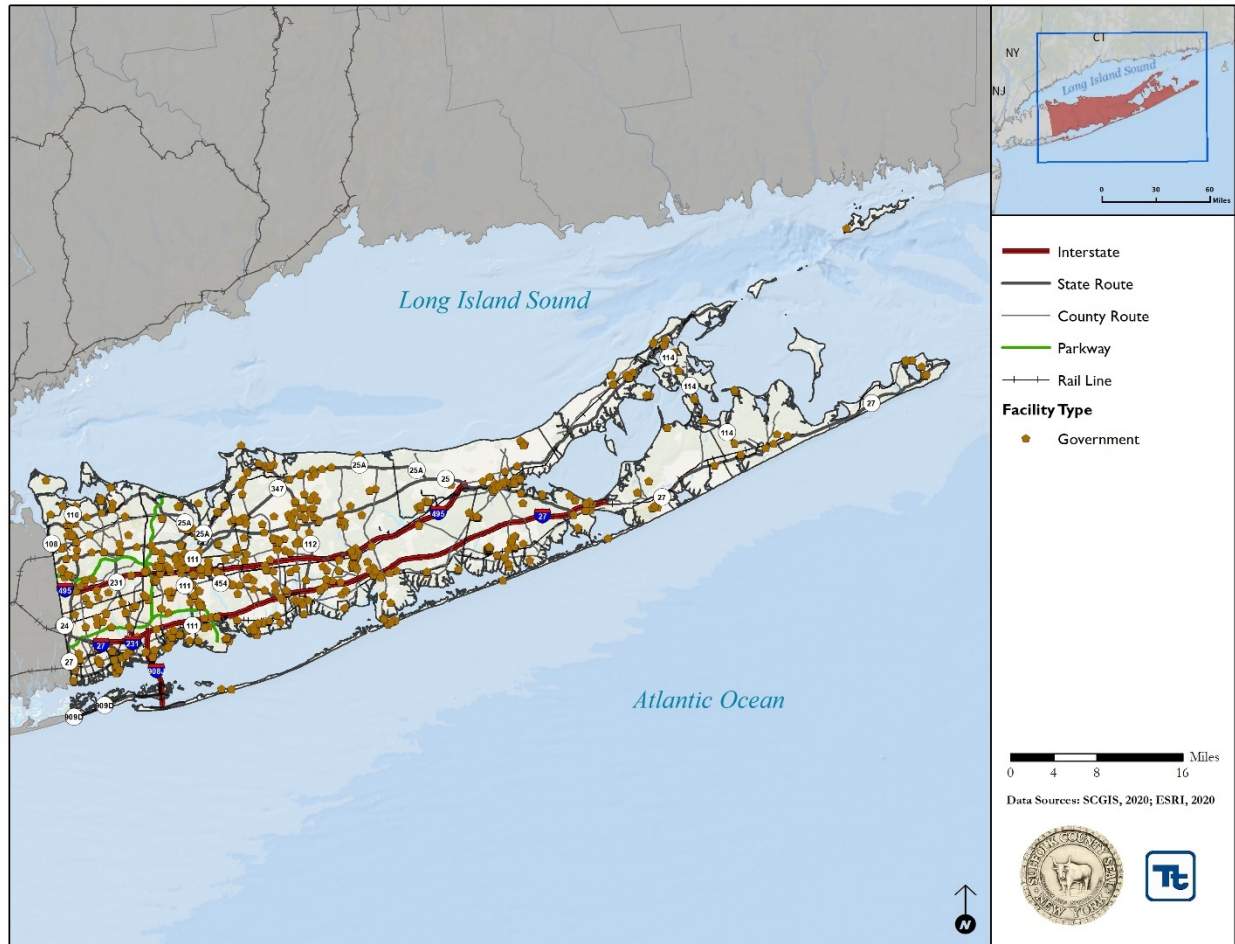


### Government Facilities

In addition to the facilities discussed, county and municipal buildings, department of public works facilities, and public health departments are essential to the continuity of operations pre-, during, and post-disasters. These facilities are included in the risk assessment. There are approximately 1,297 county facilities and 144 municipal buildings within Suffolk County (Figure 4-33).



Figure 4-33. Government Facilities in Suffolk County



### 4.6.2 TRANSPORTATION SYSTEMS

This section discusses transportation systems, including highways and highway bridges, bus services, railroads, airports, and marine services. It is essential that the transportation network in Suffolk County remains accessible and operational before, during, and after natural hazard events to ensure safe evacuation, continuity of essential services, and maintain economic activity in the County. Hurricane Sandy is one recent example of the immediate and long-term significant impacts on mobility in Suffolk County. Section 9 (Jurisdictional Annexes) for mitigation strategies identified by the plan participants to increase the resilience of transportation assets in which they have jurisdiction.

#### Highways, Roadways and Associated Systems

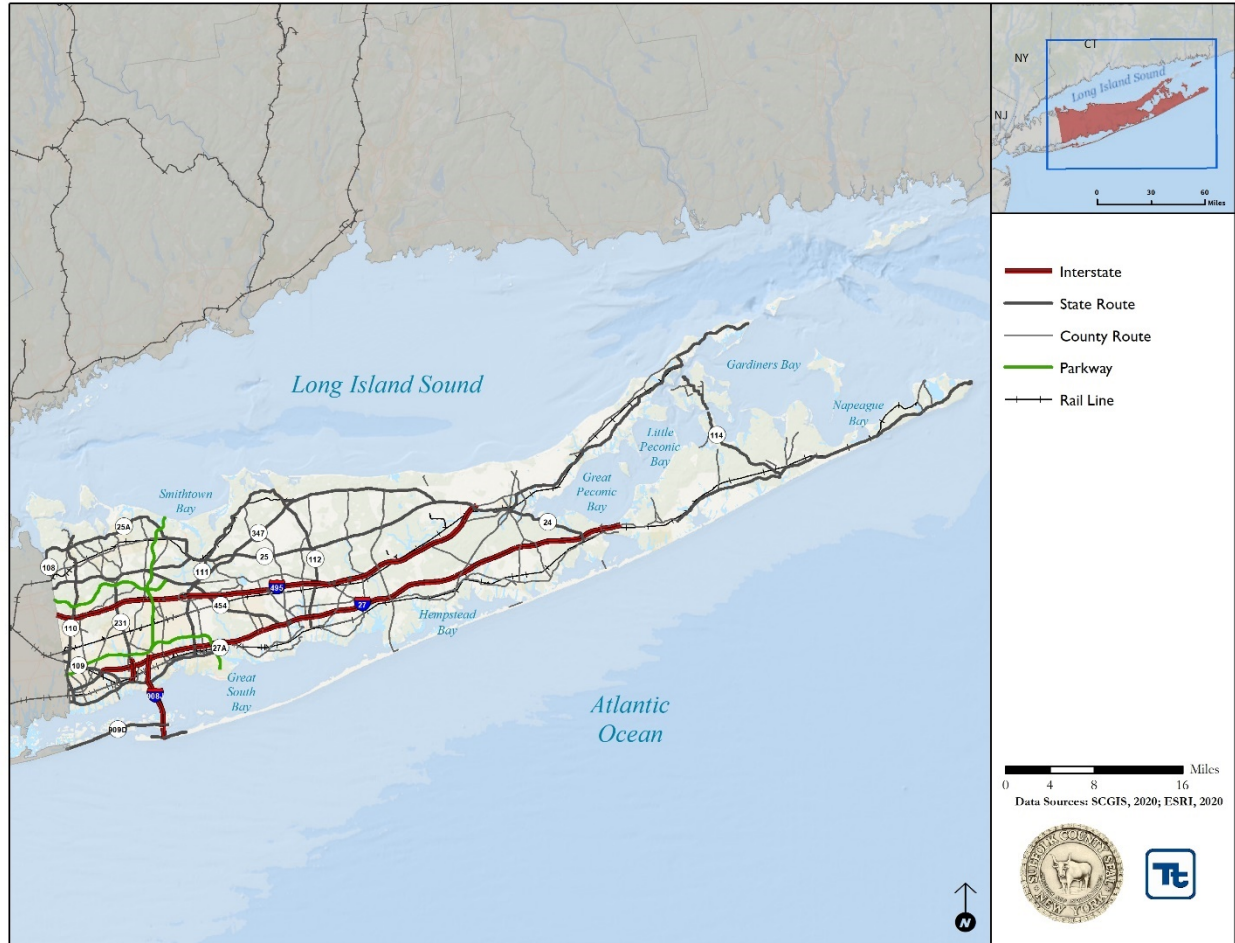
Suffolk County is located within New York State Department of Transportation Region 10 area, which encompasses both Nassau and Suffolk Counties. Suffolk County maintains over 420 miles of County roads, 140 bridges, culverts and miscellaneous structures, and 300 waterways and operates 730 traffic signals. Suffolk County is responsible for snow removal on County roads only. The Suffolk County Department of Public Works constructs, maintains, and operates County properties and designs, constructs, and maintains County roads, sewerage systems, buildings and other facilities, such as waterways, bridges, docks, and marinas (Suffolk County Public Works 2007). Based on input from Suffolk County GIS and the Planning Committee, there are over 600





highway bridges in the County. This HMP analysis only assessed 138 bridges as critical facilities in the County. Furthermore, this HMP assessed 76 Department of Public Works/Department of Transportation critical facilities. Figure 4-34 shows major transportation roadways in Suffolk County.

Figure 4-34. Transportation Map of Suffolk County



Interstate 495, also referred to as the Long Island Expressway, runs west to east across Long Island from Queens to Riverhead in Suffolk County. There are six State Parkways that traverse the County, which include Heckscher, Northern State, Robert Moses, Saktigos, Southern State, and Sunken Meadow. According to Suffolk County GIS Department roads data, there are 450.1 miles of County roadway, 197.2 miles of highway, 8,032.6 miles of local roadway, 83.7 miles or parkway roads, and 310.4 miles of state roadway in the County (YEAR). Additionally, the Ram Island First, Ram Island Second, and Shell Beach Causeways are critical to Shelter Island’s highway infrastructure.

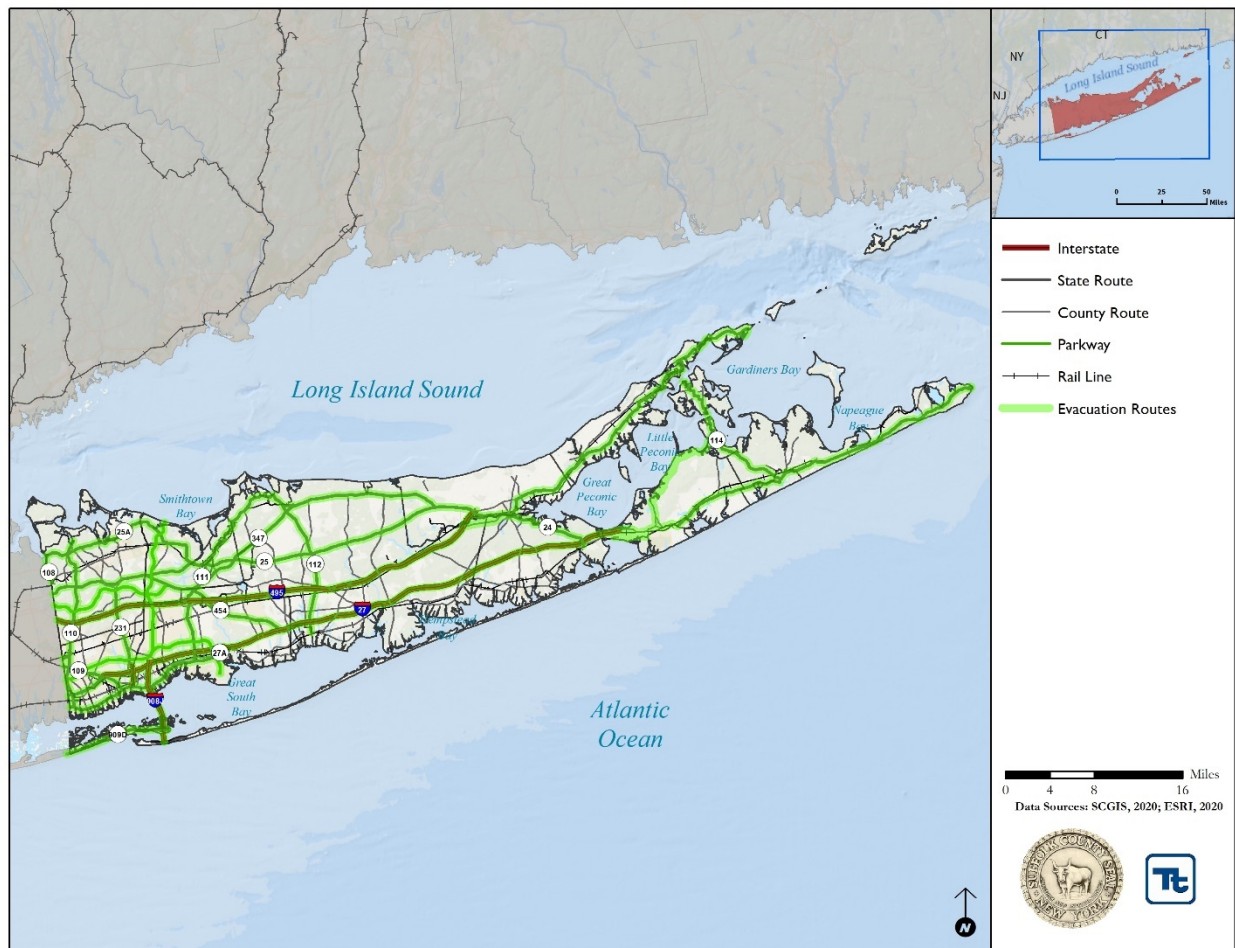
The Comprehensive All-Hazards Emergency Management Plan for Suffolk County (March 2005, updated January 2018) identifies the most essential routes for evacuating vulnerable populations. These routes are: (1) Route 25 and Cross River Drive intersection, east of Riverhead; (2) Sunrise Highway (Route 27) and North Sea Road intersection, Southampton; (3) Route 111 (Islip Avenue) and Southern State Parkway interchange; (4) Nugent Road and West Main Street interchanges with Long Island Expressway, west of Riverhead; (5) Montauk Highway (Route 27), east of Southampton; (6) Wellwood Avenue and Sunrise Highway (Route 27), north of





Lindenhurst; and Ferry service out of Fire Island. Additionally, according to the Town of Babylon, the Town of Babylon’s evacuation routes, which run from south to north, are: (1) Broadway/New York State Route 110; (2) Great Neck Road (CR 47); (3) Straight Path (CR2); (4) Little East Neck Road; and (5) Deer Park Avenue/New York State Route 231 (refer to Figure 4-35). It is important to note that Montauk Highway and Sunrise Highway are both within a geographical area at risk to coastal storms.

Figure 4-35. Evacuation Routes in Suffolk County



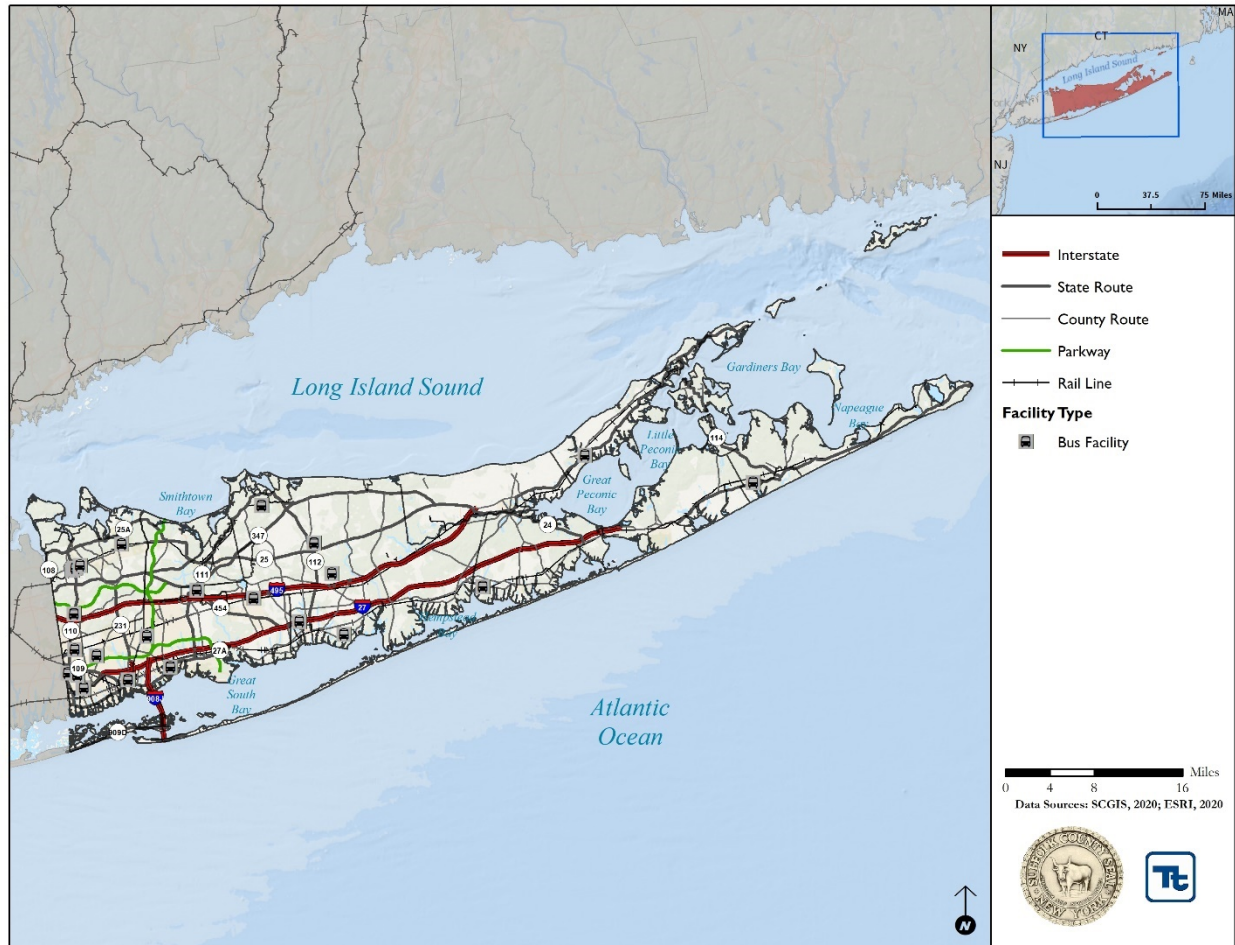
### Bus Services

Long Island Bus, a part of the Metropolitan Transportation Authority (MTA), provides bus service throughout western Suffolk County. Suffolk County Transit also provides public bus service throughout Suffolk County. Additionally, Suffolk County Accessible Transportation provides curb-to-curb service to individuals with disabilities and the Huntington Area Rapid Transit also provides public bus service. There are 25 bus facilities and 2,821 bus stops identified in the County for this HMP (Figure 4-36).





Figure 4-36. Bus Facilities in Suffolk County



Note: This figure does not include the bus stops in the County.

### Railway Facilities

The MTA Long Island Rail Road (LIRR), a subsidiary of New York State’ MTA, is the busiest commuter railroad in North America, carrying an average of 301,000 customers each weekday on 735 daily trains throughout Long Island (MTA online 2020). Third-rail electric service is offered on the lines to Babylon, Huntington, Port Washington, and Ronkonkoma, and diesel service is provided on the lines to Port Jefferson, Montauk and Greenport (MTA online accessed 2007). The LIRR Babylon Branch, within the Town of Babylon, is elevated an average of 20 feet above surrounding grade. From the Babylon/Islip Town boundary to the Village of Lindenhurst, the tracks sit on a solid earthen structure (Feitner 2007). There are 42 rail stations identified in the County for this HMP (Figure 4-37).

### Air and Heliports

There are 38 aviation facilities identified in Suffolk County, including airports, heliports, and runways (Figure 4-37).





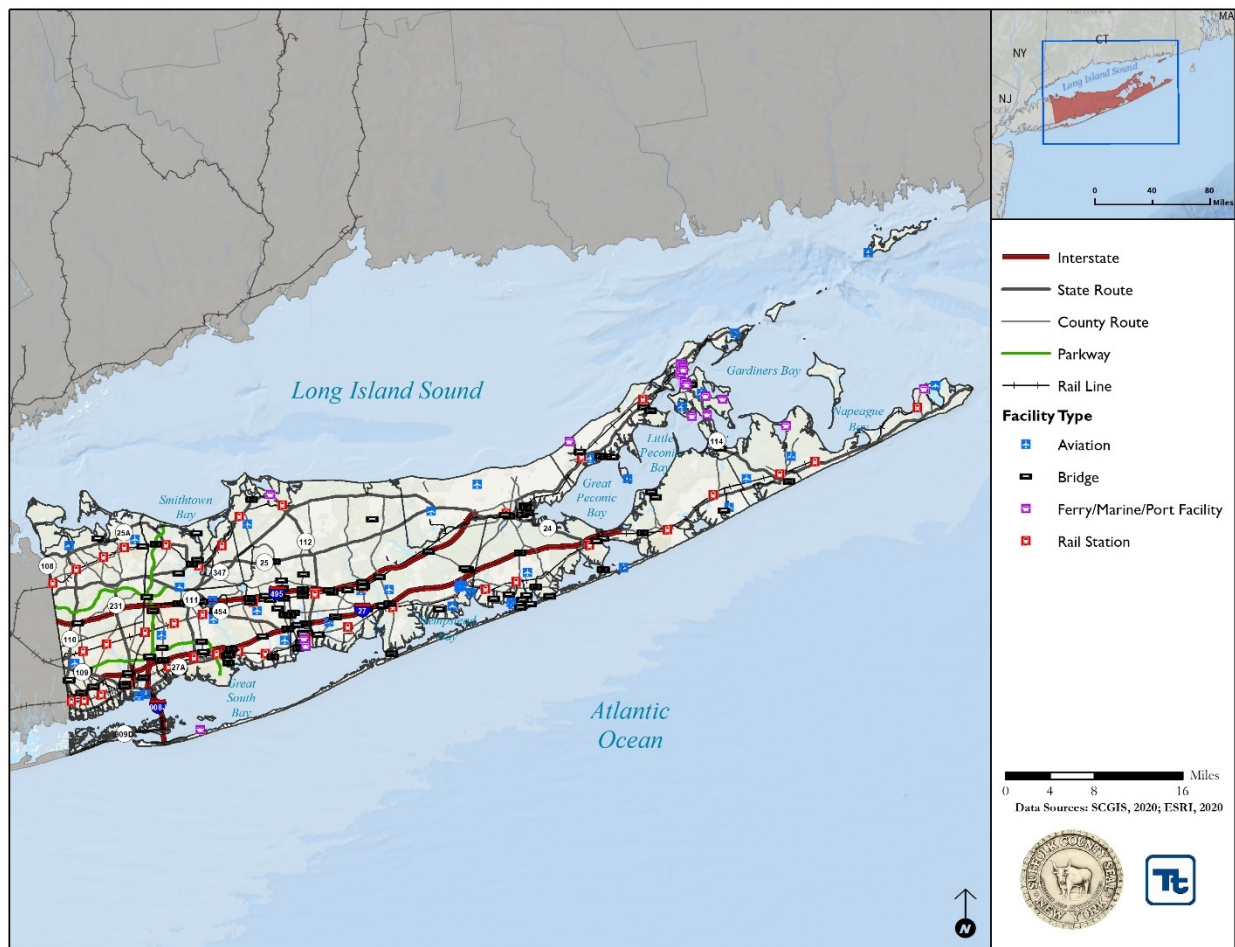


### Ferry, Marina, and Port Facilities

Access to Shelter Island is limited to transportation by ferry, private boat, or private airplane. According to the Shelter Island Comprehensive Plan, its two private air strips do not accommodate commercial service, and only a small amount of the population accesses the island via air. The North and South Ferries provide the main transportation link to Shelter Island. North Ferry runs from Shelter Island Heights to Greenport in the Town of Southold, and South Ferry runs from Shelter Island to North Haven in the Town of Southampton. These are private ferries that are publicly regulated; these firms transport both passengers and automobiles. Ferry traffic increased 40 percent from 1982 to 1992, transporting nearly one million automobiles on/off the island in 1992 (Shelter Island 1994). Because Shelter Island relies so heavily on marine transportation, anchorages and dockage were identified as crucial to their transportation inventory.

There are 15 ferry/marine critical facilities and 6 port facilities identified in Suffolk County (Figure 4-37).

Figure 4-37. Additional Transportation Facilities of Suffolk County



### 4.6.3 LIFELINE UTILITY SYSTEMS

Lifelines include utility services and infrastructure that provide water, power, and other necessary services to residents. Due to heightened security concerns, some location information for lifelines is not provided in this HMP, although the number of facilities and their general location are considered (as data are available). Additionally, because the majority of power supply lines are privately held, this information is generally difficult





to obtain and is not for public release. However, consideration of the utilities in the area is presented below to support the risk assessment in Section 5.

### Potable Water Supply

As discussed above in section 4.1.1, Long Island's groundwater system is a federally-designated "sole source" aquifer. Additionally, the area is identified as a Primary Water Supply Aquifer by New York State Department of Health (1981) and New York State Department of Environmental Conservation (1987) (EPA 2007). EPA defines a sole-source aquifer as an aquifer that supplies 50-percent or more of the drinking water for an area. The recharge in the area is 990 million gallons per day (MGD). The total capacity of the aquifers underlying Suffolk County is about 70 trillion gallons. Most of this water is returned to the aquifer with consumptive loss estimated at 95 MGD. The consumptive loss is through pumping, personal use, sewage systems, marine discharges and evapotranspiration associated with irrigation and lawn sprinkling (Earth Science Educational Resource Center, n.d.).

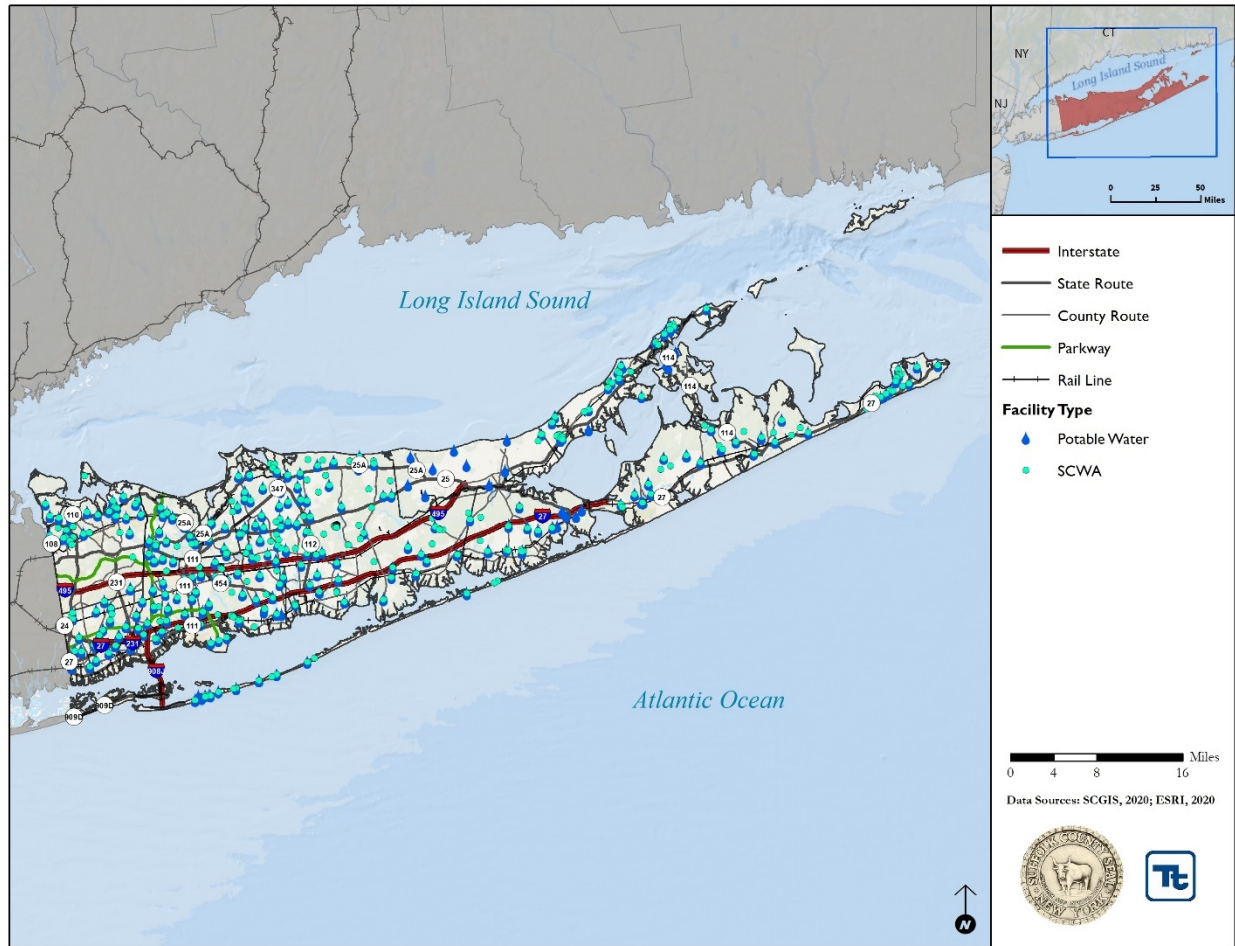
The SCWA services a majority of Suffolk County's population. According to the 2007 Annual Drinking Water Quality Report, SCWA serves over 1.1 million customers in the County. SCWA maintains 621 wells that pump water from the Long Island Aquifer (SCWA 2007). In addition to SCWA, a portion of the Town of Babylon (7,500 people) is serviced by the East Farmingdale Water District (Feitner and Hanse 2006, LI Water Conference 2007). The Riverhead Water District services the Town of Riverhead. The Riverhead Water District maintains 13 wells that are drilled into the Glacial and Magothy aquifers (Riverhead Water District 2006). The Town of Huntington is served by SCWA, Dix Hills Water District, Greenlawn Water District, and South Huntington Water District. The Town of Smithtown is served by SCWA, Brentwood Water District, St. James Water District, and Smithtown Water District (LI Water Conference 2007). There are 3 public water supply systems on Shelter Island: Shelter Island Heights, West Neck (approximately 60 homes), and Dering Harbor (approximately 20 homes). The remainder of the population relies upon "on-site facilities" (Shelter Island 1994, Card 2007). The Harbor Bays Water District is located within the Town of Southampton and maintains 7,219 services for roughly 15,500 residents. A significant percentage of the residents of Hampton Bays are seasonal and are only present for the summer months (Hampton Bays Water District 2020).

There are approximately 50,000 individual private wells serving over 200,000 people in Suffolk County. The Suffolk County Department of Health Services operates an extensive water testing program to help residents with private wells determine the quality of their drinking (Suffolk County 2020).

Overall, there are 682 potable water supply facilities and 481 SCWA facilities in the County assessed in this HMP (Figure 4-38, Figure 4-39).



Figure 4-38. Potable Water Facilities and Suffolk County Water Authority (SCWA) Facilities in Suffolk County



### Wastewater Facilities

According to Suffolk County GIS data, there are 25 sewer districts in Suffolk County. Several of the pump/lift stations have identical names (e.g., there are two Pump Station #2's in the Town of Southampton). Although they are assigned the same name, each station has a different physical address.

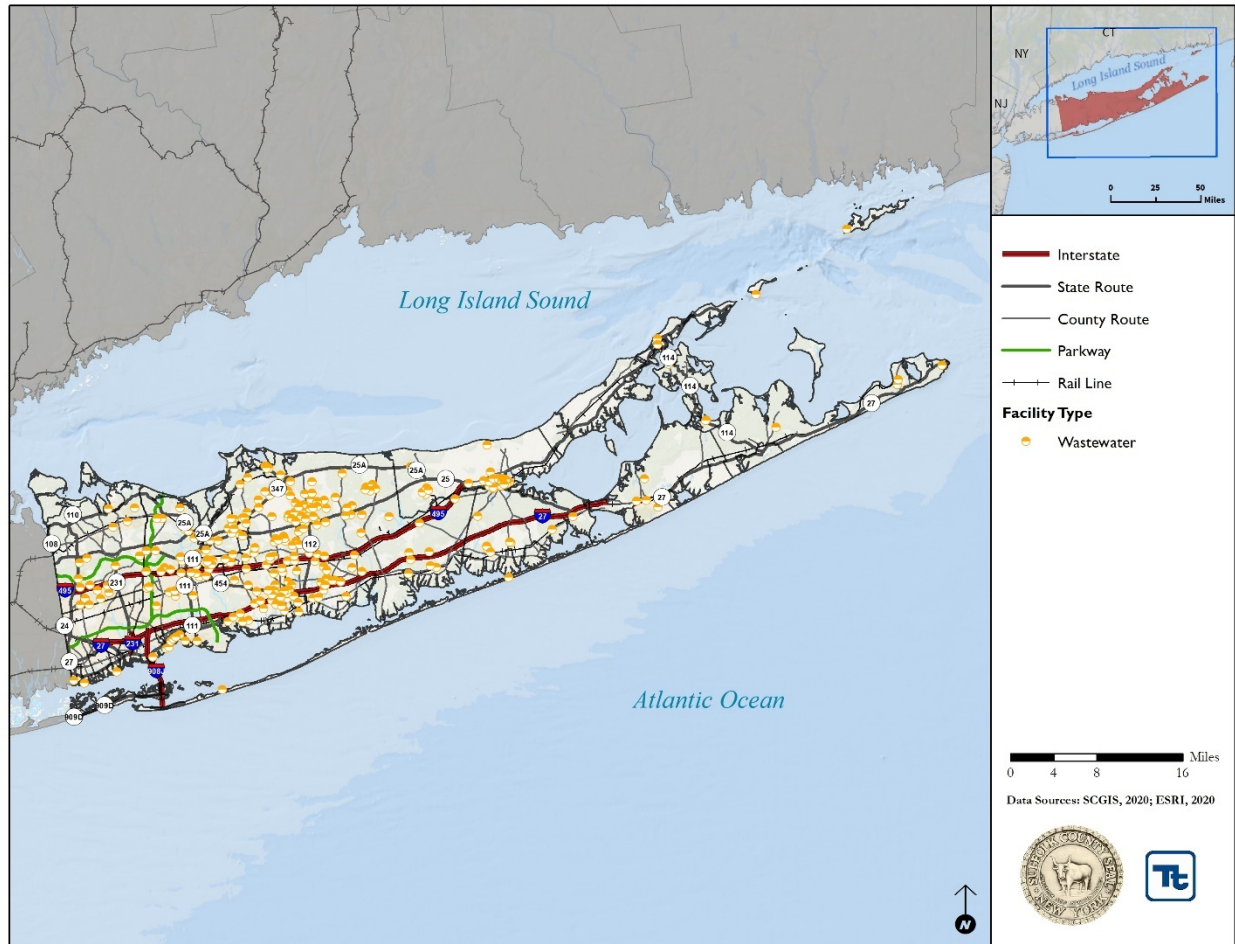
In Sewer District 3, in southwestern Suffolk County, the Suffolk County Department of Public Works maintains a 72-inch ocean outfall that disposes treated sewage from the Towns of Babylon and Islip 2.5 miles into the Atlantic Ocean. The outfall route is from Bergen Point (Fleet Point) through Cedar Island to the ocean and its construction is vulnerable to storm activity and coastal erosion (Wright 2007). The original construction of the outfall required a cover over the pipe at the shoreline of approximately 17 feet. Storms have reduced that cover to 8 feet at the shoreline and less to the south. In 1992, a project was implemented (\$3.5 million) to install 700 feet of sheeting with a rehabilitated cathodic protection system at the shoreline.

Overall, there are 291 wastewater facilities in the County (Figure 4-39).





Figure 4-39. Wastewater Utilities of Suffolk County



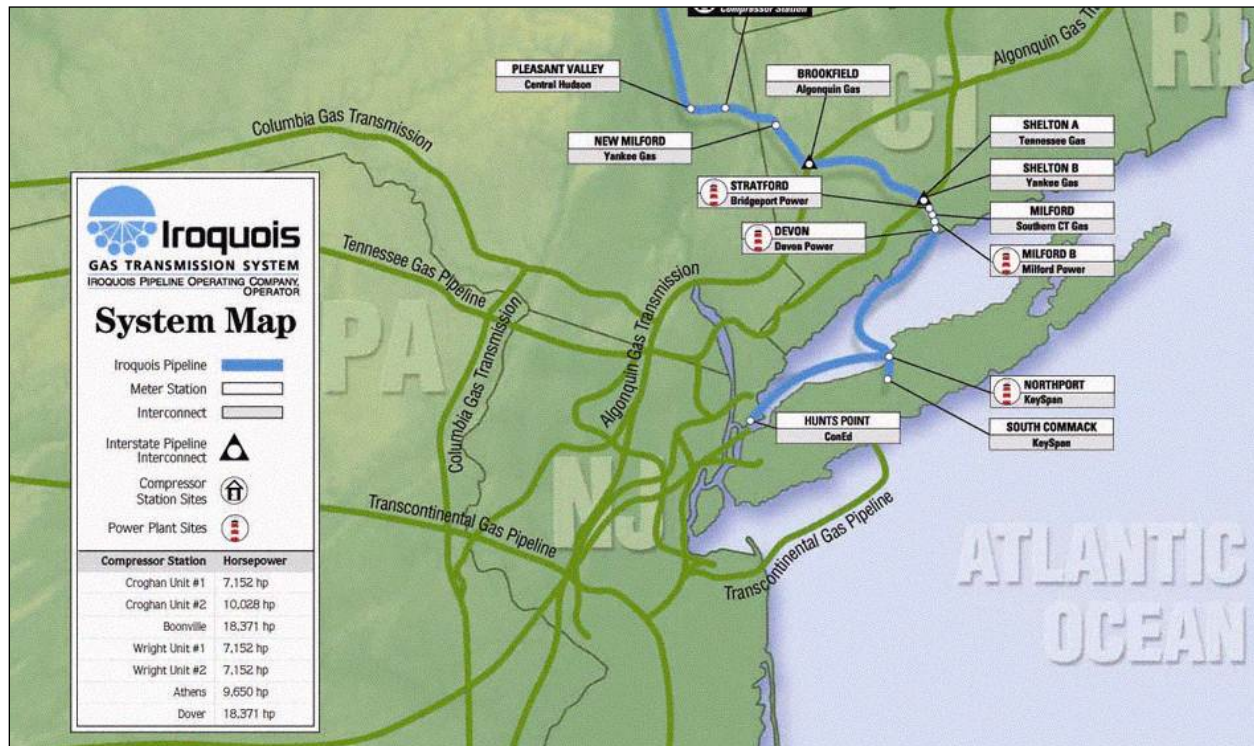
### Utilities

Electric power is transmitted and distributed by the LIPA. The Iroquois Gas Pipeline supplies natural gas to Keyspan, and Keyspan provides natural gas to residents and businesses in Suffolk County. Figure 4-40 illustrates the general location of the Iroquois Gas Pipeline.

Electric, telephone and cable utility lines cross Shelter Island Sound to Shelter Island. The power line is a connecting line to the south fork from the north fork, so they can route power in case of a line failure (Card 2007).



Figure 4-40. Iroquois Gas Transmission Pipeline



Source: Iroquois Gas Transmission System.

Keyspan also identified “gas turbine sites” presented in Table 4-12. Additionally, there are two natural gas plants in Suffolk County: 1) Holtsville LNG Plant in the Town of Brookhaven and 2) Riverhead Gas Plant in the Town of Riverhead.

Table 4-12. Keyspan Gas Turbine Sites in Suffolk County

Name	Town	Owner
West Babylon Generating Station	Babylon	Keyspan
Holtsville Generating Station	Brookhaven	Keyspan
East Hampton Generating Station	East Hampton	Keyspan
Montauk Generating Station	East Hampton	Keyspan
Shoreham Gas Turbine Site	Riverhead	Keyspan
Wading River Generating Station	Riverhead	Keyspan
Southampton Generating Station	Southampton	Keyspan
Southold Generating Station	Southold	Keyspan

Source: Keyspan

Overall, there are 106 electric/power critical facilities identified in Suffolk County for this HMP.

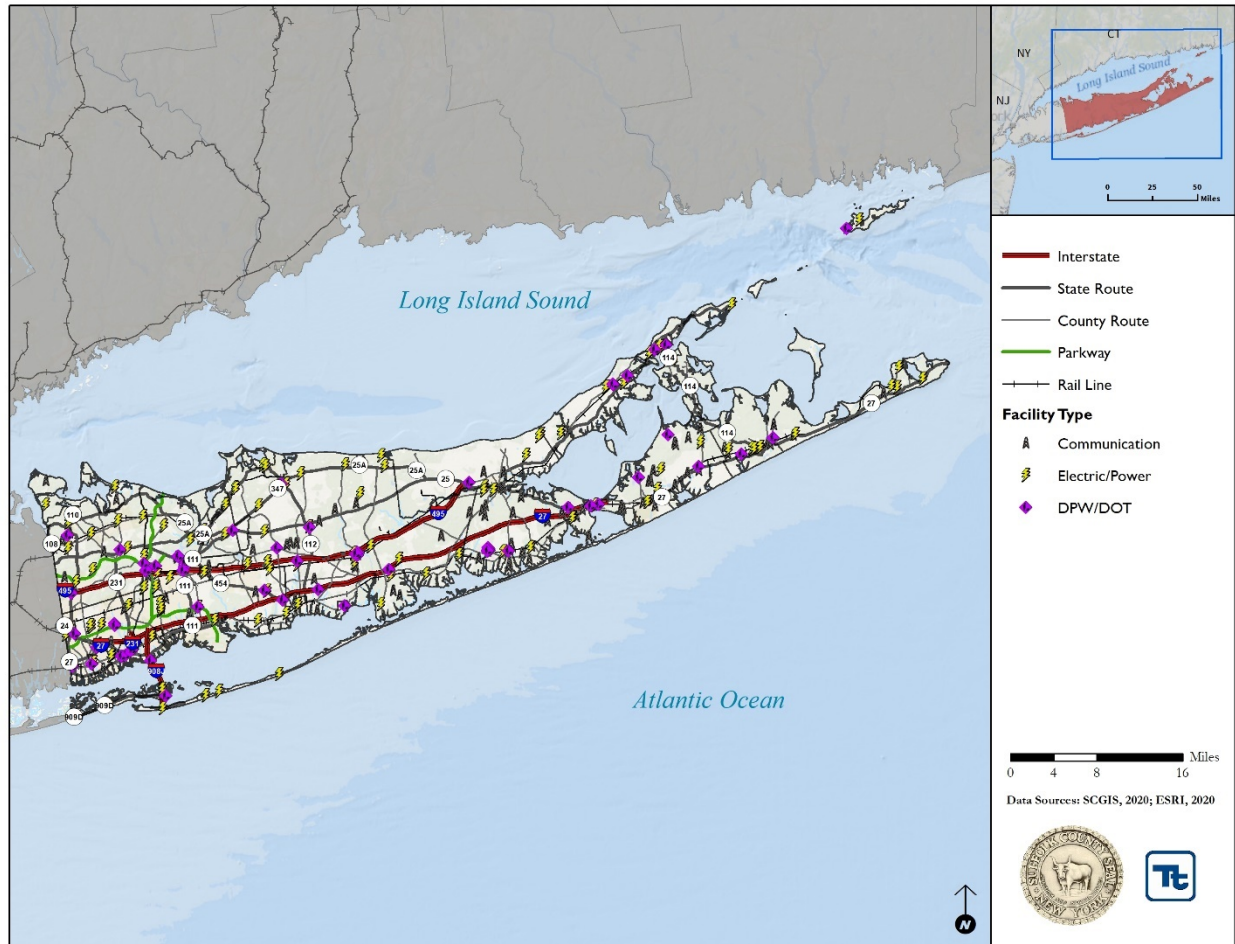
### Communications

There are 126 communication facilities included in the risk assessment (Figure 4-41).





Figure 4-41. Utilities of Suffolk County



#### 4.6.4 HIGH-POTENTIAL LOSS FACILITIES

High-potential loss facilities include dams, levees, nuclear power plants, and military installations. Due to the sensitivity of these facilities, they are not mapped in this HMP.

##### Dams

According to the National Inventory of Dams (NID), and input from the Planning Committee, there are twenty-three (23) dams in the County. A dam is included in the NID if: (1) it is a “high” or “significant” hazard potential class dam, (2) it is a “low” hazard potential class dam that exceeds 25 feet in height and 15 acre-feet storage, or (3) it is a “low” hazard potential class dam that exceeds 50 acre-feet storage and 6 feet height. No dams have been identified as “high” hazard dams in the County. The dam hazard classification is unknown for dams provided by the Planning Committee that are not on the NID. Table 4-13 defines the hazard potential classification, as accepted by the NID Interagency Committee on Dam Safety.



Table 4-13. Dam Hazard Potential Classifications

Hazard Potential Classification	Loss of Human Life	Economic, Environmental, and Lifeline Losses
Low	None expected	Low and generally limited to owner
Significant	None expected	Yes
High	Probable. One or more expected	Yes (but not necessary for this classification)

Source: NID, 2007

**Military Facilities**

A total of 16 military facilities were assessed in this HMP.

**HAZMAT and Tier 2 Facilities**

Suffolk County FRES identified hazardous materials (HAZMAT) facilities in the County. Updated jurisdiction-specific data on HAZMAT facilities is not currently available. Furthermore, tier 2 facilities were identified in the County. The EPA Toxics Release Inventory (TRI) database identifies 36 TRI facilities in the County. TRI facilities are those required to report on chemical storage and use based on particular volumes of specified chemicals stored and used. Tier 2 facilities also include EPA’s Comprehensive Environmental Response Compensation and Liability Information System Facilities (CERCLA). There were 266 tier 2 facilities assessed in this HMP.

**4.6.5 USER-DEFINED FACILITIES**

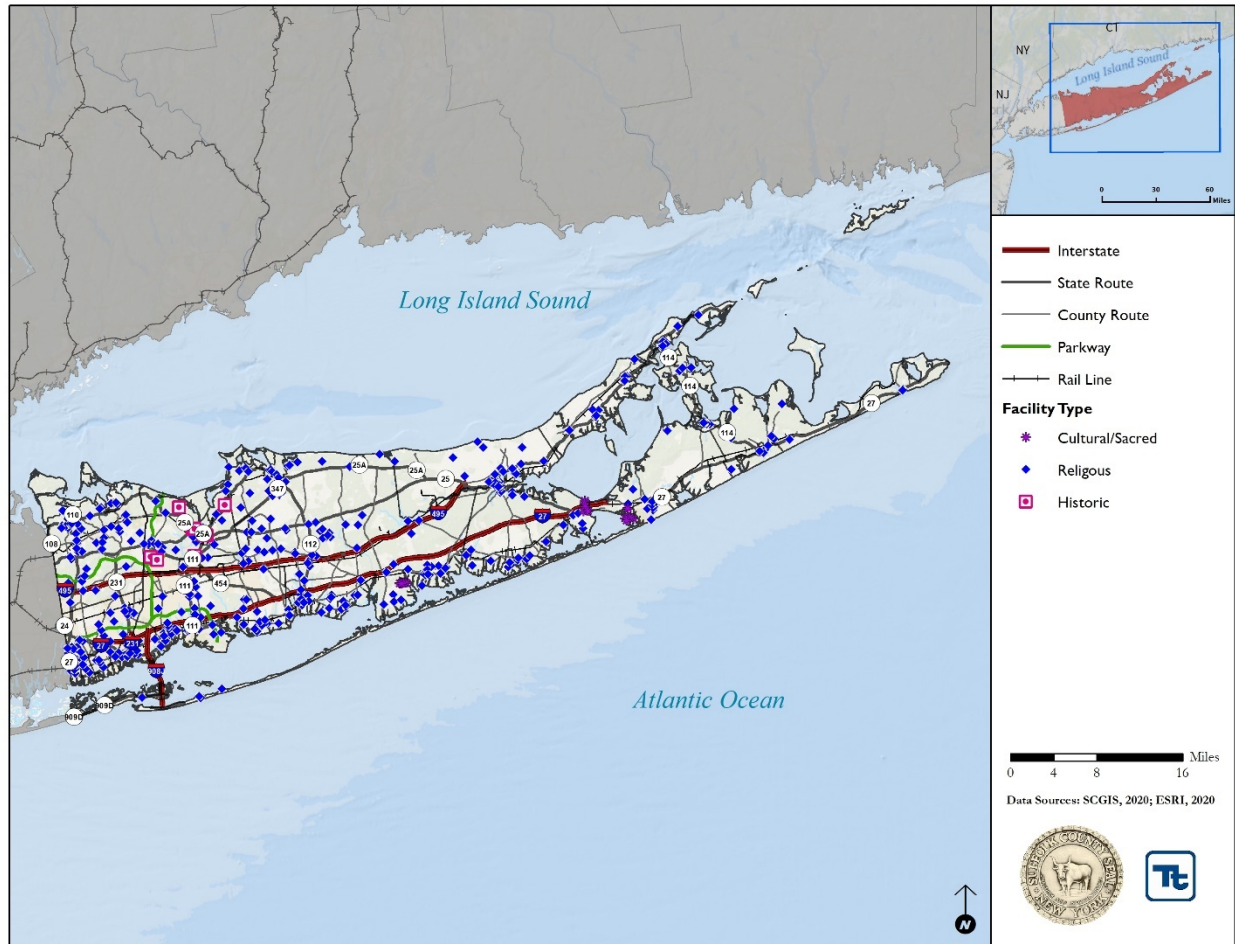
The Planning Committee identified additional facilities as critical including historic, religious, cultural and sacred sites, Department of Public Works facilities and yards, Department of Transportation facilities, points of distribution (PODs), major businesses, libraries, polling locations, day care facilities, post offices, and additional government services. These facilities were included in the risk assessment conducted for the County.

**Historic, Religious, Cultural and Sacred Sites**

The two participating Tribal Nations identified cultural and sacred sites that are significant to their Tribe and culture. Due to the sensitive nature of this data, only the total number of cultural and sacred site locations per Tribal Nation is listed: Shinnecock Tribal Nation = 25, Unkechaug Tribal Nation = 11. Furthermore, there are 11 historic sites and 466 religious institution facilities analyzed in this HMP (Figure 4-42).



Figure 4-42. Historic, Religious, Cultural and Sacred Sites Suffolk County



**Library**

There are 59 libraries identified in Suffolk County for this HMP (Figure 4-43).

**Major Businesses**

There are 5 major businesses identified in Suffolk County for this HMP (Figure 4-44).

**Polling Locations**

There are 335 polling locations identified in Suffolk County for this HMP (Figure 4-43).

**Post Office**

There are 92 locations identified as post offices in the County (Figure 4-43).

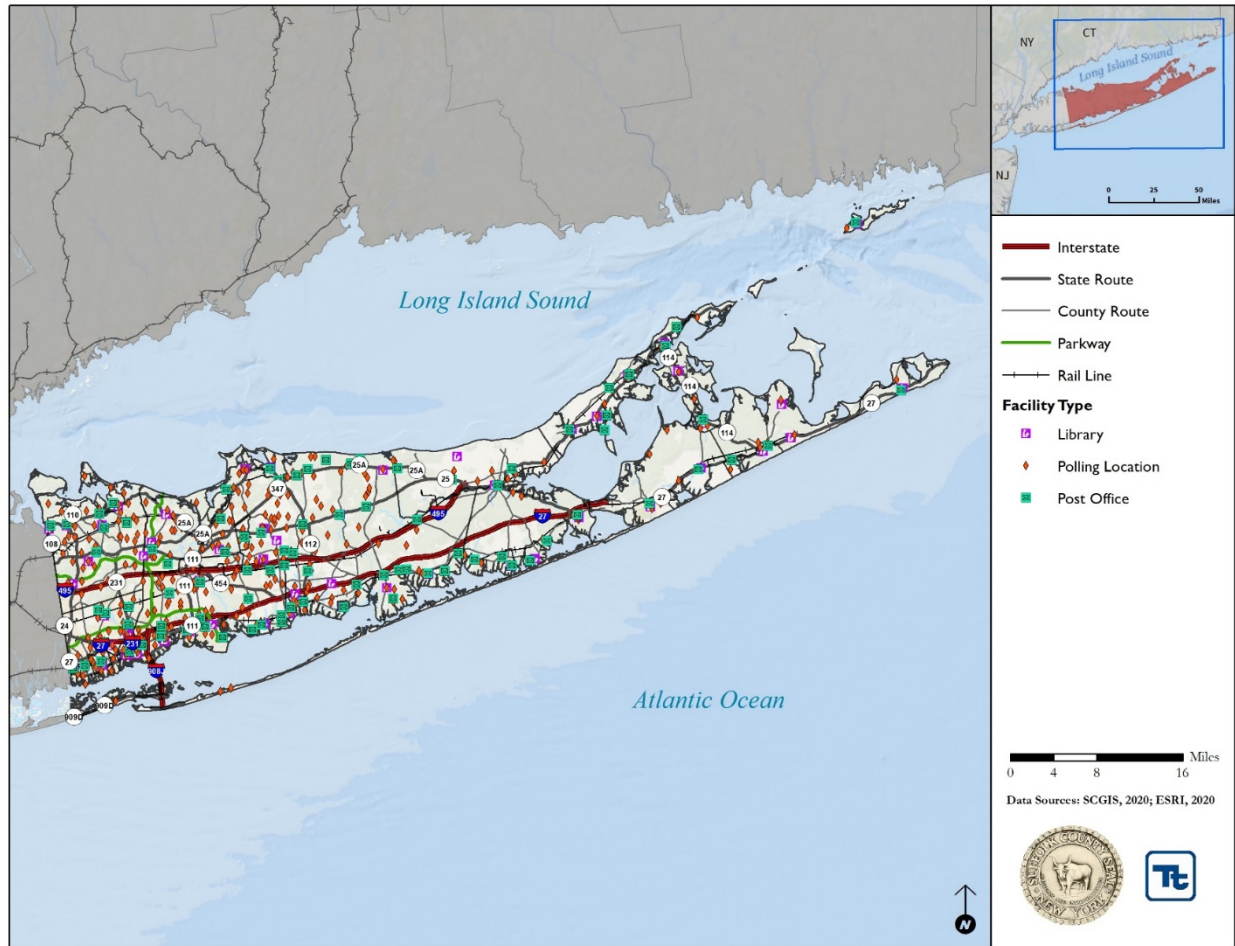
**Day Care**

There are 789 locations identified as day care facilities in the County (Figure 4-44).





**Figure 4-43. Libraries, Polling Locations, and Post Offices in Suffolk County**



**Figure 4-45. Major Businesses, Day Cares, and PODs in Suffolk County**

