A. INTRODUCTION

This chapter assesses the existing capacity of potable water, sewage treatment facilities, stormwater management structures, energy supply, and solid waste management along the Direct Route Alternative and at the Southampton and Bridgehampton Substations and describes the Direct Route Alternative demands and probable impacts on these facilities. This section also provides a description of emergency management planning within the Town related to a natural disaster (e.g., hurricanes). Several factors in the region put the area residents and businesses potentially at risk of being affected by a hurricane. Therefore, this chapter will also address the effect that the Direct Route Alternative would have on emergency management facilities, such as roadways and shelters identified as critical during hurricane evacuation.

The Direct Route Alternative also examines the Village underground option, but this option is not the reasonable worst case when considering potential infrastructure impacts. Therefore, the analysis does not focus on this option.

B. EXISTING CONDITIONS

There is an existing distribution line along the majority of the Direct Route Alternative. With the exception of stormwater runoff from the existing substations, the lines and substations do not currently utilize infrastructure systems.

WATER SUPPLY AND TREATMENT

Potable water is supplied to the land uses surrounding the route by the Suffolk County Water Authority (SCWA). The Direct Route Alternative is located within the Eastern Regional Service Area. The SCWA maintains approximately 500 wells located throughout Suffolk County ranging from 100 to 750 feet deep within the various layers of Long Island’s sole source aquifers (see Chapter 12, “Groundwater and Surface Water Resources,” for additional information on the aquifer system). These wells have large electrically driven pumps that draw water from the aquifers as it is needed. The water is then delivered to large pipes (water mains) that serve local residents. There are also individual private wells that supply potable water to area residents. SCWA is not responsible for these wells.

In order to maintain water quality, SCWA is required to routinely monitor its system by testing the water both at the wellhead and within the distribution system for a wide range of parameters, including bacteria, inorganic chemicals such as nitrate, chloride, lead, and volatile organic compounds, including benzene and trichloroethylene. At a minimum, SCWA water quality is expected to meet standards established by New York State and the federal government. See Chapter 12, “Groundwater and Surface Water Resources,” for additional information on water quality in the area.

As stated, the existing substations and distribution line along the Direct Route Alternative do not currently consume potable water. Because the area is not served by municipal sewers, wastewater generated in the area is treated on-site by individual septic systems. There is minimal, if any, wastewater generated at the existing Southampton or Bridgehampton substations.

STORMWATER

Existing conditions and potential impacts from stormwater are discussed in Chapter 12, "Groundwater and Surface Water Resources."

SOLID WASTE

The Town does not provide municipal curbside garbage and recyclables collection service. Instead, Southampton Town and Village residents and small businesses can opt to either arrange for collection through private carters or become a self-hauler by bringing trash and recyclables to a local recycling center. High volume generators of trash and recyclables (such as industrial and commercial operations) are prohibited from using the Town's recycling centers, and must instead hire a private carter to handle refuse removal and recyclables collection. The Town operates four recycling and disposal centers: North Sea, Sag Harbor, Hampton Bays, and Westhampton. Wastes and recyclables received at the Town's disposal centers are transported outside of the Town for final disposal. The existing distribution line does not generate solid waste and the substations generate minimal solid waste, which is handled by commercial carters that transport and dispose of solid waste, and recycle materials, such as metals.

ENERGY

Electric service is provided by LIPA and transmitted/distributed through a series of underground and above ground facilities. Within the immediate vicinity of the Direct Route Alternative, there are two existing substations (Bridgehampton and Southampton Substation) and an existing distribution line along the Direct Route Alternative that provides electric service to residents and businesses in the area. The area surrounding the distribution route and proposed substation is located within LIPA's Eastern Suffolk Division Service Territory, which serves approximately 274,800 customers within a 606-square-mile service territory. The eastern division has 2,799 miles of overhead wire, 1,905 miles of underground cable, and 161,838 utility poles.

Maintaining reliable electrical service and considering the associated costs of operation and maintenance are relevant issues pertaining to this project. Particularly important are the differences between overhead versus underground facilities. Outages caused by wind, storms, and other natural events are a separate but related issue discussed in the "Emergency Management" section of this chapter.

Several reports, some of which were published by LIPA, provide maintenance and cost assessments of underground and overhead transmission lines. For the purposes of this EIS, the studies that assess this issue have been summarized below.

According to *A Review of Electric Utility Underground Policies and Practices*, published in June 1999 by Resource Management International for LIPA, although there are benefits inherent to an underground electrical system, the costs associated with construction and operation of such a system far outweigh the benefits. Therefore, the potential use of underground cables must be considered on a case-by-case basis. The high cost of underground facilities is due to the relatively higher cost of construction, difficulty of installation, longer construction and therefore longer disruption to the environment, costlier repairs due to difficulty in locating failures within the system and longer duration of interruption, increased need for easements, and susceptibility to dig-ins, faults, and contaminants such as salt water. However, underground facilities were found to provide better reliability than overhead lines but overhead lines have historically been reliable as evidenced by system-wide reliability metrics discussed below. System-wide for the LIPA network, sustained interruptions of service (more than 5 minutes) to a customer occurred on average about every 63 months for underground circuits and about every 17 months for overhead circuits. Aesthetics were, in most cases, the primary factor for placing systems underground. The report found that the cost of construction was typically funded through increased rates within the service area.

With regard to reliability, the report recognized that overhead facilities are subject to interruptions from accidents and fallen trees, but electrical service in an underground system may also experience outages due to moisture and salt water seepage into the lines, as well as accidental contact (e.g., accidents due to the general public digging into underground circuits). Over the last 7 years on Long Island, the outage rate has been 33 percent higher with underground facilities. This history is with older oil-cooled cables. The newer, solid dielectric cables are supposed to be more reliable than the oil-cooled cables. However, LIPA and Keyspan do not have enough working experience with the solid dielectric cables to confirm their overall reliability.

LIPA Transmission System Expansion Overhead versus Underground Analysis, published on May 23, 2003 by KeySpan discusses construction, maintenance, and reliability issues pertaining to underground and overhead transmission lines. Issues relevant to electric service include maintenance, rates, and reliability. According to the report, the 5-year annual average of maintenance costs for underground facilities from 1998 to 2002 was $700,000 higher than those of above-ground facilities. However, these costs are for oil cooled lines which have mechanical equipment to pump the oil around the underground cables. The newer solid, dielectric cables, such as proposed here, do not use oil for cooling, and do not need the mechanical equipment. Therefore, it is expected that the maintenance costs in the future for the new type of underground cables will be substantially lower than for the oil-cooled cables and somewhat less than for overhead cables. The report discusses reliability issues by making comparisons of some of the most common system reliability indicators. LIPA measures the reliability of its electric transmission and distribution system by using the nationally accepted frequency and duration indices endorsed by the Institute of Electrical and Electronics Engineers, Inc. (IEEE), Edison Electric Institute (EEI), and the New York State Public Service Commission. The following indices measure reliability of both transmission and distribution circuits[1]:

- System Average Interruption Frequency Index (SAIFI). SAIFI represents the number of sustained interruptions (more than 5 minutes) that the average customer experiences in a given time period. SAIFI is typically used to calculate the proportion of the customer population experiencing interruptions within a 12-month period. It is derived by dividing the total number of sustained interruptions during the year by the total number of customers served.

[1] KeySpan, 2003

- Customer Average Interruption Duration Index (CAIDI). CAIDI represents the average time to restore an interruption or the average number of minutes a customer is without electric service due to a sustained outage. It is derived by dividing the total number of customer hour duration of interruptions during the year by the total number of customers affected.
- System Average Interruption Duration Index (SAIDI). SAIDI measures the average length of time (in minutes) that a customer experiences sustained power outages in a year. It is derived by multiplying SAIFI by CAIDI.
- Momentary Average Interruption Frequency Index (MAIFI). MAIFI represents the number of momentary interruptions (less than 5 minutes) that the average customer experiences in a year. It is derived by dividing the total number of momentary customer interruptions in a year by the total number of customers served.
- Failure Rates (non-scheduled circuit outages per circuit mile). Failure Rate is the likelihood of having a transmission line failure due to a non-scheduled event. It measures the number of forced circuit outages (both momentary and sustained) per circuit mile.
- Restoration time (minutes per interrupted customer). This is the average length of time (minutes) it takes to restore a customer's service due to a transmission outage (momentary and sustained).

Table 11-1 provides reliability data on major energy providers in New York State. The values represent averages for a 14-year period occurring between 1993 through 2007.

Table 11-1
Reliability Measures: New York State Providers

Energy Provider	SAIFI*	CAIDI**	SAIDI***
Long Island Power Authority	15.4	80	62
Central Hudson Gas and Electric	8.3	154	No Data
Niagara Mohawk Power Corporation	11.1	124	134
New York State Electric and Gas	10.5	131	150
Orange and Rockland	11.4	89	93
Rochester Gas and Electric	12.5	110	106
Total Average	11.5	114.6	85

Notes: *Months Between Interruptions
**Average Restoration Time in Minutes
***Total Annual Power Outage in Minutes
Sources: Long Island Power Authority, 2007

As shown in the table, the LIPA system has outperformed other New York State utilities in all three major reliability indices. Overall, LIPA services were more reliable than other providers in the State, on average, during this time period. The data above does exclude major storm events.

Although the underground lines are more reliable than overhead, as stated in the 2003 report, the estimated costs of underground transmission lines would increase the cost of electric service rates. The installation of underground cables is about 4 to 5 times more expensive than the installation of overhead cables, and the repair costs of underground cables is about 10 times more expensive than overhead cables. The total cost for the Direct Route Alternative includes both the transmission line and the expansion of the substation, and the cost of the substation expansion does not vary with overhead or underground transmission line. Although, the maintenance cost of overhead cables is somewhat more expensive than underground, on a life cycle basis, underground cables remain more expensive than above ground cables.

A recent report entitled *A Review of Electric Utility Undergrounding Policies and Practices* (March 2005), prepared by Navigant Consulting on behalf of LIPA, found that, underground lines do not improve overall system reliability—generally substituting longer outages for repairs in exchange for less frequent interruptions compared with overhead lines, and "the cost of wholesale undergrounding … is prohibitive." The focus of this report was distribution systems and not transmission lines because the distribution system comprises about 90 percent of the line mileage and transmission lines cause about 2 percent of the service interruptions.

EMERGENCY MANAGEMENT

The State, County, and region have been and continue to plan for a possible natural disaster such as a hurricane or tropical storm on Long Island. Recent studies have revealed that the probability that the New York/Long Island region will be hit by a storm or hurricane is relatively higher than was the case in recent years. Studies show that the probability of a major hurricane making landfall this year (2007) in the United States is about 140 percent of the 1950-2000 average.[1] According to historical records, the region has suffered a relatively small number of such disasters in the past, one of the worst being the hurricane of 1938, infamously named the "Great Hurricane" or the "Long Island Express." Since records have been kept on hurricanes within the region, no Category 4 or 5 hurricanes have hit Long Island. In fact, the "Great Hurricane" was the only Category 3 storm that has hit Long Island.

According to the June 1999 study published by Resource Management International, from 1995 to 1998, 45 percent of all interruptions were storm related.

Part of the multi-agency collaborative management strategy to plan for a natural disaster on Long Island includes identifying storm surge locations, planning for evacuation, educating residents, and designating shelters. The New York State Office of Emergency Management has assigned hurricane storm surge inundation zones to the various regions of the State. According to the National Weather Service (NWS), storm surge is defined as water that is pushed toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide, which can increase the mean water level 15 feet or more. In addition, wind driven waves are superimposed on the storm tide. This rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with the normal high tides. Because much of the United States' densely populated Atlantic and Gulf Coast coastlines lie less than 10 feet above mean sea level, the danger from storm tides is high. The inundation zones are computed by SLOSH (Sea, Lake and Overland Surges from Hurricanes), which is a computerized model run by the National Hurricane Center (NHC) that estimates storm surge heights and winds resulting from historical, hypothetical, or predicted hurricanes. Figure 11-1 shows the different inundation zones within the vicinity of the proposed Direct Route Alternative. This figure depicts the predicted hurricane surge inundation values generated in Suffolk County for a northwest-moving hurricane at high tide for storms with intensities of Category 1 through Category 4 on the Saffir-Simpson scale. The Saffir-Simpson Scale can be used to give an estimate of the potential property damage and flooding expected along the coast as a result of hurricane activity. Table 11-2, provided below, describes the

[1] Town of Southampton, http://town.southampton.ny.us/epreplisting.ihtml?myid=2&id=2&cat=EMERGENCY%20PREPAREDNESS

10.24.07

Source: New York State Emergency Management Office, 2005

0 2,500 5,000 10,000 Feet

Direct Route Alternative
Hurricane Storm Surge Zones
Figure 11-1

Long Island Power Authority
Southampton to BridgehamptonTransmission Line

differences between the five hurricane categories used by NWS. Along the Direct Route Alternative, according to Figure 11-1, flooding may occur in the area in and around Mill Pond with a Category 3 or 4 hurricane.

STORMS

Two types of storms are of primary concern for Long Island's coastline:

- Tropical storms that typically impact the area from July to October; and
- Extratropical storms that are primarily winter storms occurring from October to March.

Extratropical storms (northeasters) are usually less intense than hurricanes, but tend to have a much longer duration. These storms often cause high water levels and intense wave conditions, and are responsible for significant erosion and flooding throughout the Long Island coastal region.

Table 11-2
Saffir-Simpson Hurricane Scale

Category	Wind Speed	Effects
One	74 - 95 mph	No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor pier damage.
Two	96 - 110 mph	Some roofing material, door, and window damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.
Three	111 – 130 mph	Some structural damage to small residences and utility buildings with a minor amount of curtain wall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet above sea level (ASL) may be flooded inland 8 miles or more.
Four	131 - 155 mph	More extensive curtain wall failures with some complete roof structure failure on small residences. Major erosion of beach. Major damage to lower floors of structures near the shore. Terrain that is continuously lower than 10 feet ASL may be flooded requiring massive evacuation of residential areas inland as far as 6 miles.
Five	>155 mph	Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet ASL and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5 to 10 miles of the shoreline may be required.

Sources: *U.S. Department of Commerce, NOAA, National Weather Service*

Hurricanes are the most powerful tropical storms to reach the New York area with wind speeds, by definition, in excess of 74 miles per hour (mph). Records show 24 hurricanes having impacted the New York Area in the past century. Table 11-3 lists several of these historical hurricanes; the most severe of which is arguably the Hurricane of 1938. Heavy storm damage usually occurs when high astronomical tides and storm surge coincide with storms approaching the coastline from the south-southwest. These combined factors allow large waves to penetrate inland resulting in extreme erosion and flooding.

Extratropical storms originate outside of the tropics, usually in the mid- to upper-latitudes during winter months. In the New York region, these storms are referred to as "northeasters" due to the predominate direction from which the winds originate. As a storm, northeasters are less intense than hurricanes with sustained wind speeds generally below 50 knots. Localized winds may, however, reach hurricane strength. Extratropical storms cover large areas and are slow moving with typical storm durations lasting for a period of days, thus persisting through several tidal cycles. The extended duration greatly enhances the capability of northeasters to cause damage. About 65 moderate to severe northeasters have impacted the New York coastal region over the 100-year period preceding 1965.[1] More recently, a series of severe northeasters impacted the New York coastal region in October 1991, December 1992, and March 1993 with a number of successive northeasters in the fall/winter 1997/1998 that inflicted significant local damage. Table 11-3 lists several severe extratropical storms that have had significant impacts in the New York area. The two most severe northeasters occurred on March 6-8, 1962 and December 11-12, 1992. The following describes the storm history along the Town's coastline and south shore of Long Island.

Table 11-3
Significant Town of Southampton Coastline Historical Storms

Date	Storm Type	Name	Date	Storm Type
September 14,1904	Hurricane	--	March 3, 1931	Extratropical
September 8, 1934	Hurricane	--	November 17, 1935	Extratropical
September 21,1938	Hurricane	Great Hurricane/ Long Island Express	November 25, 1950	Extratropical
September 14, 1944	Hurricane	Great Atlantic	November 6, 1953	Extratropical
August 31,1954	Hurricane	Carol	March 6, 1962	Extratropical
September 12, 1960	Hurricane	Donna	February 6, 1978	Extratropical
August 6,1976	Hurricane	Belle	March 28, 1984	Extratropical
September 27, 1985	Hurricane	Gloria	October 30, 1991	Extratropical
August 19, 1991	Hurricane	Bob	December 11, 1992	Extratropical
			March 11, 1993	Extratropical

Source: Moffatt & Nichol, Engineers, 1998

- Hurricane of September 21, 1938: This storm was one of the worst in recorded history, and perhaps the worst locally. Its path was northward along the East Coast and then north-northeast directly over Long Island near Moriches Inlet. It had a maximum wind speed of 96 mph recorded near the East End of Long Island and a total rainfall of 10.9 inches between September 17 and 21. It was estimated that storm water levels along the south shore of Long Island approached 8 to 10 feet national geodectic vertical datum (NGVD). As evidence of the extreme water levels during the 1938 hurricane, a high tide of about 8.3 feet NGVD was reported in Shinnecock Bay. According to the NWS, this hurricane struck with little warning and was responsible for 600 deaths and $308 million in damage in the United States. In addition to damaging thousands of structures and taking lives, this storm drastically changed

[1] Supplement No. 1 to General Design Memorandum No. 1: Moriches to Shinnecock Reach. Fire Island to Montauk Point, Long Island, New York, Beach Erosion Control and Hurricane Protection Project, New York District, New York, NY. US Army Corps of Engineers (1969)

shoreline features, causing significant breaching of the barrier islands, and creating new inlets while closing others. This storm formed Shinnecock Inlet, along with nine other barrier breaches. These breaches subsequently closed, but Shinnecock Inlet was kept permanently open by a 1,500-foot bulkhead built after the 1938 storm (in 1939 by Suffolk County) to fortify the inlet's west shore.

- Hurricane of September 14, 1944: This storm passed Cape Hatteras on the morning of September 14th, wielding windspeeds of about 108 mph.[1] The storm center passed eastern Long Island during a falling tide. Wind gusts of up to 99 mph and 5-minute averaged windspeeds of 82 mph were recorded at Block Island. On Fire Island, a maximum wind velocity of 55 mph was reported. Rainfall from the 12 to 14 of September at Setauket was recorded at 7.9 inches. At Jones Inlet, the ocean tide was about 8.4 feet above mean sea level (MSL). The tide level in Moriches Bay at Westhampton was approximately 5 feet above the predicted tide.
- Extratropical Storm of November 25, 1950: This extratropical storm formed over eastern North Carolina, and moved northward before striking the Long Island coast.[2] The average hourly wind velocity at Westhampton Beach was recorded as 68 mph. Ocean tides were 9.4, 9.1, 5.1 and 5.2 feet above MSL at Jones Inlet, Oak Beach, Shinnecock Inlet, and Montauk Point, respectively.[3] Rainfall during this storm was light, generally less than 3 inches along the Town's coastline.
- Hurricane of August 31, 1954 ("Carol"): This Category 3 hurricane hit Long Island east of Westhampton Beach on the morning of August 31. Wind gusts of 135 mph were recorded with a 2.9-inch rainfall measured at Setauket. An average hourly wind velocity of 56 mph with gusts of nearly 96 mph was recorded at Westhampton Beach. At Montauk Point, the reported extreme water level was measured at about 7.9 feet NGVD. The maximum ocean tide at Shinnecock Inlet was approximately 10.4 feet above MSL, and Shinnecock Bay tide levels were reported as high as 5.5 feet above MSL.
- Hurricane of September 12, 1960 ("Donna"): The center of this hurricane brushed the coast of New Jersey and passed over Long Island on September 12. Windspeeds were reported from 60 to 105 mph with gusts up to 120 mph. This storm started as a Category 4 in the tropical Atlantic Ocean and hit Long Island as a Category 3 (winds 111-130 mph). Record tide levels were reported from Fire Island to Montauk Point, with surges ranging from 4.3 to 6.4 feet. Rainfall averaged about 3 inches.
- Northeaster of March 6-8, 1962: Heavy winds and several abnormally high tides characterized this slow moving storm. Windspeeds from 35 to 45 mph were reported with gusts reaching 70 mph. Wave heights from 20 to 30 feet were reported. A nearly continuous storm surge of 3 to 5 feet coupled with spring tide conditions caused near-record tide

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[1] Supplement No. 1 to General Design Memorandum No. 1: Moriches to Shinnecock Reach. Fire Island to Montauk Point, Long Island, New York, Beach Erosion Control and Hurricane Protection Project, New York District, New York, NY. US Army Corps of Engineers (1969)

[2] Supplement No. 1 to General Design Memorandum No. 1: Moriches to Shinnecock Reach. Fire Island to Montauk Point, Long Island, New York, Beach Erosion Control and Hurricane Protection Project, New York District, New York, NY. US Army Corps of Engineers (1969)

[3] U.S. Army Corps of Engineers, 1958, Atlantic Coast of Long Island New York (Fire Island to Montauk Point): U.S. Army Corps of Engineers, New York District, Cooperative Beach Erosion Control and Interim Hurricane Study, 75 p.

elevations. Storm conditions battered the area for three consecutive days, occurring through five successive high tides over a period of 48 hours. Total damages according to a 1994 study by the Governor's Coastal Erosion Task Force were estimated at $16,500,000 (1962 values) from Jones Inlet to Montauk Point.

- Northeaster of March 28-30, 1984: High winds and driving rains accompanied this storm. Near-hurricane winds caused storm tides 5 to 6 feet above normal. Damage estimates from the Governor's Coastal Erosion Task Force due to this storm totaled about $10,000,000 (1984 values) along New York's shoreline.
- Hurricane of September 27, 1985 ("Gloria"): This large, powerful hurricane traveled along the east coast, causing damages along the shoreline. This storm began as a Category 3 hurricane when it hit Cape Hatteras, North Carolina but was considered a Category 1 (winds 74-95 mph) when it reached Long Island. It made landfall at Fire Island on September 27 near the time of predicted low tide. As a result, damages due to windspeeds of up to 70 mph and a storm surge of 5 to 6 feet were greatly reduced by storm coincidence with low tide.
- Northeaster of December 11-12, 1992: This storm formed when a low-pressure system moving to the east encountered a branch of the jet stream near Georgia on Thursday, December 10. On Friday, December 11 a high pressure system from the north collided with the low pressure system causing unusually high winds and tides. The storm stalled over the New York area resulting in an extended period of extreme tides and high waves. Wind gusts of up to 80 mph and heavy rains characterized this storm. Maximum historical water levels were exceeded at Sandy Hook, NJ (8.7 feet NGVD versus 8.6 feet NGVD from September 1960), and storm tides were within 1 foot of record levels at the Battery in New York Harbor. On the south shore, extensive beach and dune erosion occurred over several days, barrier island overwashing was extensive, and structural damages were widespread. Two breaches formed at Westhampton and destroyed numerous residences; each was subsequently closed by the Army Corps of Engineers.

Severe weather and storms may cause damage to transmission poles and electrical lines. Long Island is vulnerable to wind storms, ice storms, hurricanes, lightening storms, heat storms, and flooding. Both LIPA's transmission and distribution system, both underground and above-ground facilities are vulnerable to such events. According to LIPA's website,[1] weather affects the lines in the following way:

Long Island is surrounded by water and has many wooded areas. Many of our established neighborhoods have large trees planted years – even decades – ago that now envelope the power lines. This puts our electric system at risk for storms and damage caused by falling branches and trees.

During late summer and early autumn, we face the full brunt of Atlantic-based hurricanes. From spring to fall, Canadian cold fronts can lead to violent thunderstorms, lightning and high winds. Winter brings the additional threat of heavy snowstorms and icing. Long Island is also vulnerable to "Nor'easter" storms...rain, snow, and high winds. Storms can wreak havoc on our electric system. Because Long Island has so many trees growing near power lines, ice, wind, and heavy rain can make tree branches sag or fall on LIPA wires causing power outages.

LIPA additionally states that:

Placing electric wires underground would reduce the total numbers of outages, but at a very high cost to customers. Such a massive project would take over 30 years to complete at an

[1] http://www.lipower.org/newscenter/

estimated cost of $25 billion. In addition, problems with underground cables take two to three times longer to locate and repair than overhead wires. Where practical, we do install underground cable in new housing developments.

As stated in the June 1999 report, storms with associated coastal flooding problems, especially in low lying areas, would have a detrimental effect on the insulation of associated cable and equipment.

CRITICAL EVACUATION ROUTES

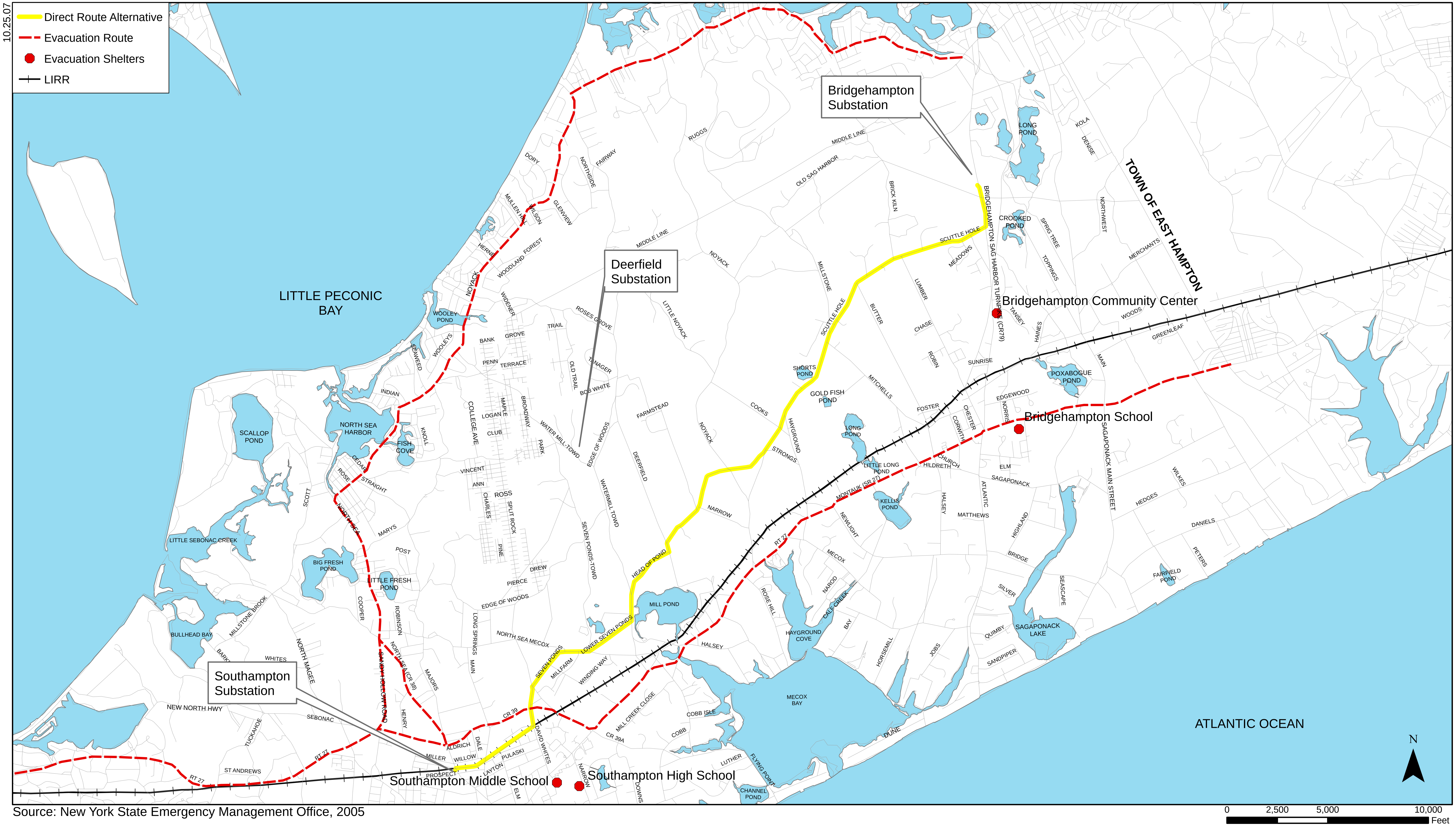
As part of the region's emergency preparedness, the State, County, and Town have identified two critical corridors east of Shinnecock Canal (waterway that cuts across the South Fork of Long Island) that may be used for evacuation purposes (see Figure 11-2). The corridors are intended as outlets for evacuation out of the region in the case of an emergency. Currently these corridors are marked with "coastal evacuation" signs. The southern corridor is located along Montauk Highway (NYS Route 27A) and then merges into County Road 39 and then NYS Route 27 or Sunrise Highway in the west. The northern corridor traverses NYS Route 114 in Northaven Village to County Road 38 west to North Sea Road to Sand Hollow Road and then merges into County Road 39, ending at NYS Route 27. Both routes merge at County Road 39.

Ensuring that these evacuation routes are kept clear is an important and necessary criterion to emergency management in the area. According to the State, a designated emergency evacuation plan for Long Island does not exist. For this reason, that State is currently preparing a Hurricane Impact Study for Long Island which is expected to be complete by 2008.

According to Figure 11-1, in the event that a Category 3 hurricane does hit the area, it is expected that discrete areas of Montauk Highway, one of the two critical corridors east of Shinnecock Canal, would be flooded. The majority of the Direct Route Alternative and immediate vicinity, according to the designated inundation zone, would not be affected due to its location and may feasibly serve as an alternate route for potential evacuation. However, the proposed Direct Route Alternative near Mill Pond would likely be flooded in the event of a Category 3 or 4 hurricane but alternate access egress routes around that discrete location are available.

East of Shinnecock Canal, there are also dedicated American Red Cross Hurricane Shelters. No shelters are located along the proposed Direct Route Alternative (see Figure 11-2). Shelters are opened based on the nature and severity of the emergency and the number of residents to be impacted. Additional shelter sites may be designated depending on the nature, and severity of the emergency. The following are the various shelters dedicated for emergency housing east of Shinnecock Canal:

- Southampton Middle School – 70 Leland Lane, Southampton Village
- Southampton High School – 141 Narrow Lane, Southampton Village
- Bridgehampton School – 2685 Montauk Highway, Bridgehampton
- Bridgehampton Community Center – 585 Bridgehampton Sag Harbor Turnpike, Bridgehampton (not a Red Cross-operated shelter)
- Pierson High School – 200 Jermain Avenue, Sag Harbor



Source: New York State Emergency Management Office, 2005

Direct Route Alternative Evacuation Routes and Shelters
Figure 11-2

C. POTENTIAL IMPACTS OF THE PROPOSED PROJECT

WATER SUPPLY AND TREATMENT

The expansion of the Bridgehampton Substation and installation of a new transmission line along the Direct Route Alternative would not create an additional demand on the existing water supply system, and individual septic systems. The proposed transmission line would be located, either above or below ground, along the sides of roadways and away from existing water mains and wells and would not have a significant adverse impact on those facilities. Individual septic systems would not be affected by the Direct Route Alternative because an existing distribution line is present along this alternative and is located within the right-of-way.

SOLID WASTE

The Direct Route Alternative would generate minimal solid waste, which would be handled by commercial carters and therefore would not have significant affect on solid waste management within the Town.

ENERGY

The Direct Route Alternative would provide 69 kV of electric power to the Town of Southampton and other East End communities. By providing additional reliable electric supplies, the Direct Route Alternative would meet the projected energy demand forecasted for 2008 and beyond. The Direct Route Alternative would not have an adverse effect on the distribution, generation, and maintenance of existing energy facilities nor would it create a demand for additional electric energy. As stated, the Direct Route Alternative would add a new reliable energy supply to the region and therefore meet future energy needs. However, the addition of the proposed transmission line along the Direct Route Alternative would add redundancy to the South Fork system to avoid electric interruptions when the existing double circuit line is out of service.

It is expected that the new transmission line would be equally reliable, whether overhead or underground. According to industry and LIPA's experiences, transmission lines have a low outage rate compared to the distribution system, which supplies electricity to individual buildings. On the LIPA system, failure of transmission lines cause about 2 percent of the system outages. On an overall system basis (both transmission and distribution lines), LIPA has found that underground lines tend to have a lower outage, but take much longer to repair. The delay in repair of underground cables is caused by two factors. The first is the difficulty in finding the locations of the failure. Finding breaks in overhead cables is much easier than a failure in an underground cable. The second factor is that repairing an underground cable often involves digging up the street where the cable is buried in order to reach the failure. Because the transmission line would be new, it is expected to provide long service with few, if any, interruptions in service.

EMERGENCY MANAGEMENT

In accordance with the National Electric Safety Code (NESC), all poles installed on the South Fork must withstand 120 mph winds. However, LIPA has committed to installing poles that withstand 130 mph winds (a Category 3 hurricane). The existing poles were designed to withstand between 74 and 95 mph wind speeds (a Category 1 hurricane), and therefore the Direct Route Alternative would install more stable poles throughout the system than currently exists. As stated in the

Purpose and Need section of Chapter 1, "Project Description," enhancing reliability of the electric system on the East End during storm events is a project purpose. In the event of such a storm, portions of the critical corridors could be flooded. Although the roadways along the Direct Route Alternative are not critical corridors, these roadways could be utilized as an evacuation corridor, since most of the roadways along the Direct Route Alternative would not be affected by storm surge, with the exception of a small portion located in the vicinity of Mill Pond.

The Direct Route Alternative is not expected to have an adverse effect on existing emergency management. As stated, the new line would withstand winds up to 130 mph, the equivalent of a Category 3 hurricane and an improvement over the existing poles, which can only withstand a Category 1 hurricane. A hurricane above Category 3—which has never been recorded in this region—could potentially cause the failure of some of these poles. Additionally, flooding may have an adverse impact on buried or underground lines leading to interruptions in service and potentially permanent damage to the lines. Should poles and/or lines come down during a storm event, LIPA's Restoration Team is a designated specialty trained team that is able to respond to storm emergencies to restore service. In any event, the poles that would be installed would be more stable than the existing distribution poles, and thus an improvement over existing conditions in the areas where poles are replaced.

To address the potential for outages and other damage, LIPA has an electric restoration plan in place entitled Electric Restoration Implementation Procedures (ERIP), which forms a part of the *Electric Restoration Plan*. Specifically ERIP sections 1.1.1 (Storm Anticipation), ERIP 1.1.2 (Mobilization of Personnel), and ERIP 1.2.8 (Assigning Repair Jobs by Priority) relate to, "the actions that may be taken in preparation for a potential system disaster," and "the orderly and effective notification and mobilization of the Emergency Restoration Organization (if necessary)" and, "the procedures or methods for assigning work by priority."

Storm Anticipation provides procedures for the purchase of system restoration materials; tracking hurricanes; and hurricane and ice storm management. The section also provides an official storm anticipation meeting agenda.

Mobilization of Personnel delineates administrative responsibility, precautions, perquisites, and necessary actions that should be taken including notification of specific personnel.

Assigning Repair Jobs by Priority describes responsibilities, precautions, prerequisites, and actions needed for assigning repair work. Two issues considered throughout this section are the labor class that will perform the repair work and the priority order in which the work will be completed within the assigned labor class.

LIPA gives the highest repair priorities to vital public services such as hospitals, police, emergency respondents, and sewage pumping stations. ✷