The link to make comments is at the bottom of the page

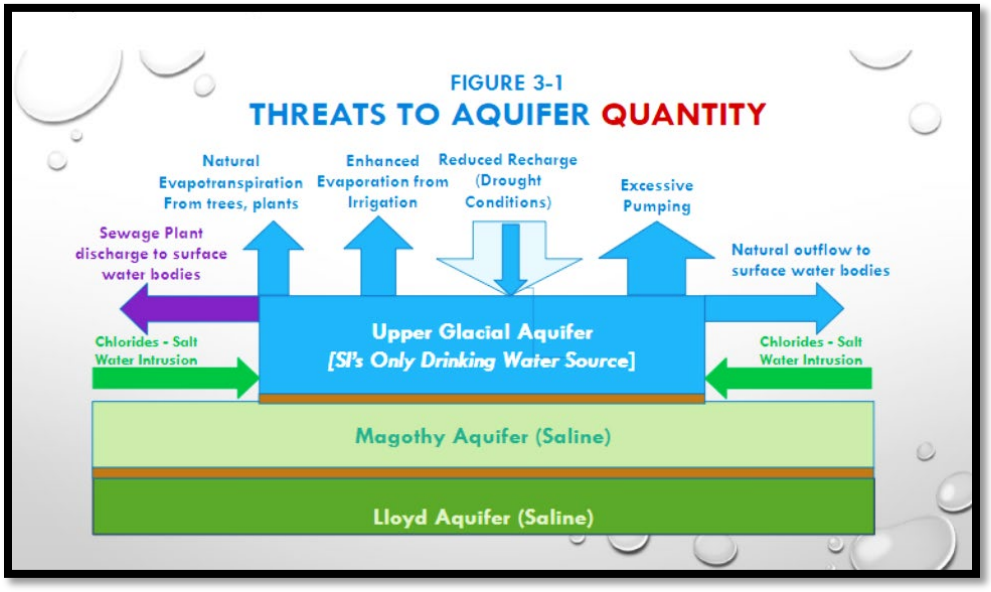
Chapter 10

UTILITIES INFRASTRUCTURE

(Penultimate Draft)

Water Supply

All of Shelter Island's potable water supply is sourced from wells that draw from the Upper Glacial aquifer. There is no use of surface water for water supply. The Magothy aquifer, often used as a source off-Island, is too saline for use on Shelter Island. The Lloyd aquifer that underlies the Magothy on Shelter Island is also saline. Information (including the graphic reprinted below) regarding the Shelter Island aquifer is from the Ground and Surface Water Management Plan Study conducted in 2020 by the Water Advisory Committee.



The Upper Glacial aquifer water quality is challenged in certain areas of the Island, specifically by nitrate levels in the Island's center and saltwater intrusion on the peninsulas and parts of the Ram Islands. The overall water balance for Shelter Island suggests an ample quantity of groundwater in most areas of the island, with an annual withdrawal of 260 million gallons vs an estimated recharge of 4 billion gallons. *Of vital importance is the fact that ongoing development and land use*

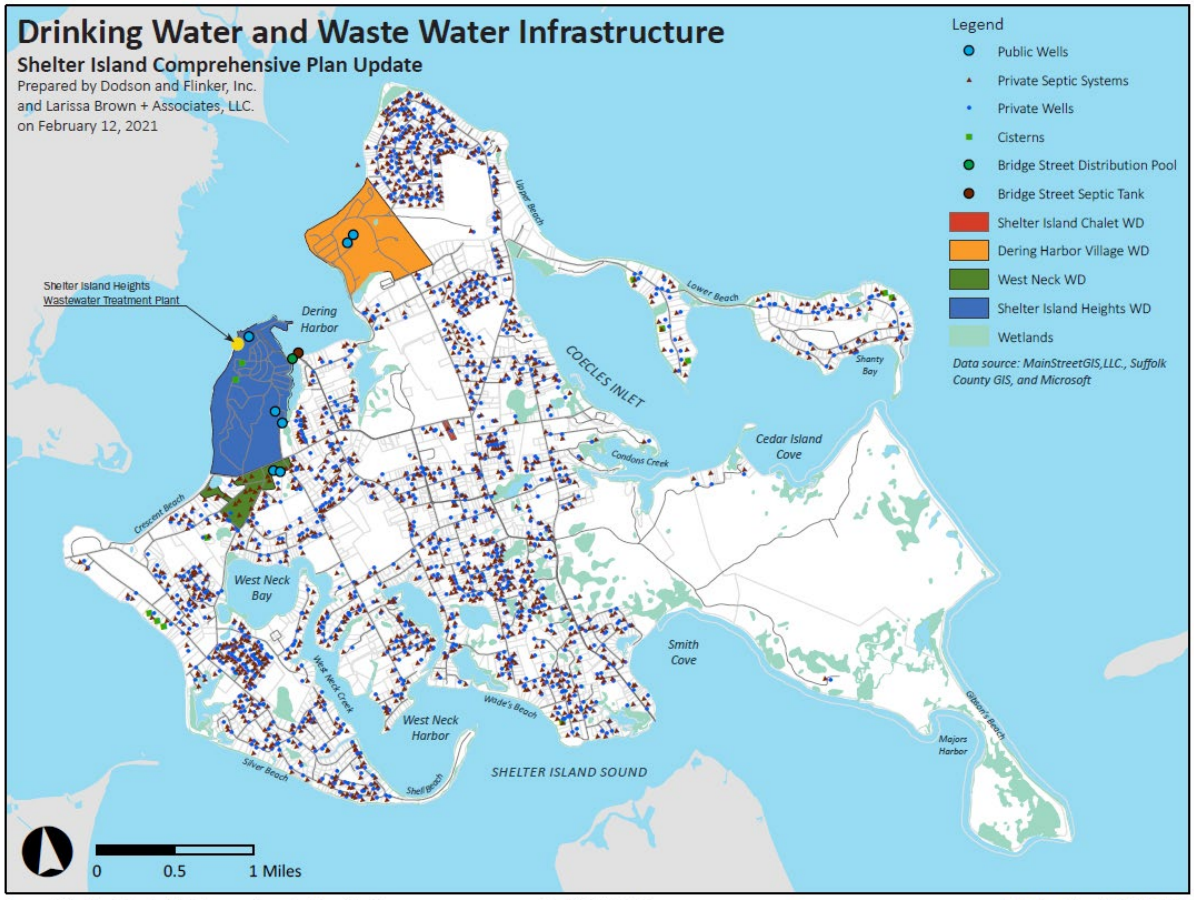
change is presumed to reduce recharge through increases in impervious surface, the loss of natural kettle holes and other depressions that promote recharge, planting of plant varieties that require a lot of water, and use of irrigation systems. In addition, a crucial issue is the contamination of the aquifer with nitrates and other pollutants, largely due to recharge from individual wastewater systems, including antiquated cesspools lacking septic tanks. There are also areas that are impacted with MTBE and other man-made and natural elements in concentrations that render the aquifer in the affected areas unusable without treatment.

The engineering department has been working to better understand the aquifer, identify pollution sources and leverage county and federal programs that can aid in the effort. The Town has mapped onto GIS the Island's wells and septic systems (source for the maps in this report) and the department has been working with Sylvester Manor to assess the effects of farm irrigation. Lawn maintenance that is conducted on both golf courses as well as on private property is thought to be an overall negative in terms of both quality and quantity impact. The department has applied for participation in the NYSDEC's Drinking Water Source Protection Program and continues to participate with the County in the US Geological Survey (USGS) Solute Transport Modeling. In 2022, the USGS embarked on a pilot project for real-time data collection from the Shelter Island aquifer. The potential for the new USGS data to inform our understanding of the aquifer is tremendous.

Private Wells

There are approximately 2,300 private wells on Shelter Island, estimated to meet 90% of the total water demand. These small-capacity well pumps are typically located on private property. They draw supplies from the Upper Glacial aquifer. An increasing inability to source potable water on private property in some locations has led the Town, in special cases, to permit a homeowner to move his/her well onto adjacent Town property. Many residents have found the need to install water treatment systems to attain acceptable water quality.

Public Water Supply



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Four water supply systems on the Island provide approximately 10% of the estimated total water demand. Their ownership, number of users and their estimated percentage of total demand are described in the table below (12-A). In 2022, the Town signed a 40-year lease with the Suffolk County Water Authority (SCWA) to operate the West Neck Water Systems which had been operated by a volunteer board of homeowners and maintained by a sole provider. The SCWA will not only operate the system but will also upgrade the infrastructure to comply with regulations and reduce water waste.

There are also 3 sites where multiple residences share 1 well – these sites pre-date zoning. They are listed in the table below for informational purposes.

System	Approximate Number of Users	Total Water Demand

		(Gallons)
Owned & Operated by Shelter Island Heights Property Owners' Corporation	196 Residential & Commercial	17,000,000
Town Owned Operated by SCWA Oversight by the West Neck Water Volunteer Board	63 Residential 7 Commercial	4,000,000
Informal Business Co-op	Unknown	<1,000,000
Owned by the Village Operated by (SCWA)	23 Residences	3,000,000
3 Privately Owned Properties Multiple Homes Sharing a Well	25 Residences	Usage #'s Not Available

Sanitary Wastewater Disposal

The level of nitrates in the environment has become a focus for planning and legislation in Suffolk County because excess nitrates in drinking water have been linked to health issues and the excess in the surface waters surrounding Long Island is believed to have caused numerous fish and shellfish dieoffs. Human sewage is the primary source of nitrogen pollution and the disposal of untreated waste to the groundwater (which eventually flows into the surrounding surface waters) has been a focus of several studies, and has led to County legislation and programs to reduce nitrate levels in the environment.

In October 2020, Suffolk County passed legislation that, as of July 2021, requires all new construction and some expansion/renovation projects to install Innovative/Alternative Onsite Wastewater Treatment System, or I/A OWTS. In 2017, the County launched a septic improvement program that created grants for property owners to replace aging sanitary systems with I/A systems. New York State also provided funds for this program. Approximately 150 I/A OWTS have been installed on Shelter Island between 2018-2022. In addition to these residential I/A OWTS systems, a pilot commercial-scale non-proprietary gravel filter

constructed wetland treatment system was installed in 2017 at Sylvester Manor Educational Farm, serving resident staff and public restrooms; this system is the subject of ongoing study by the NYS Center for Clean Water Technology at SUNY Stony Brook, which is developing and installing innovative treatment systems across the County.

On-site Systems

As is the case on much of Long Island, the majority residential and commercial sanitary wastewater disposal is through the use of privately owned, on-site septic or disposal systems. There are approximately 2,400 on-site disposal systems on Shelter Island. System types include cesspools, septic systems (septic tank with leaching pools), or Innovative/ advanced wastewater treatment systems (I/A OWTS). There are several composting systems on the Island as well. While cesspool-only systems were banned in Suffolk County in 1973, many homes built before then likely have cesspools since Suffolk County Department of Health Services did not require septic systems prior to that time. Given the age of the Shelter Island housing stock, there are likely many cesspool-only systems on the Island. The Town created a local I/A OWTS grant program that will provide local funding to supplement the County and State grants. In many cases the combination of these grants will cover 100% of the cost of installing the new I/A OWTS.

Existing and Potential Sewer Districts

Shelter Island Heights is the only area of the Island that has a sewer system and sewage treatment plant. The plant uses a sequencing batch reactor system, originally installed in 1987 and upgraded in 2005 and 2015. The plant has a permitted flow rate of approximately 53,000 gallons per day of treated sanitary effluent. Upgrades to the treatment plant, which discharges its effluent in to Shelter Island Sound between Shelter Island and Greenport, are being studied – as is the potential for use of the treated effluent to be recycled to irrigate the Shelter Island Country Club golf course or other areas.

The town engineering department has studied the possibility of consolidating wastewater treatment for municipal buildings in the Center and grant funding is in place for a study. This led to a proposal in 2022 for a new wastewater treatment plant to be sited on Manwaring Road. The Shelter Island School delayed its plans to upgrade their old septic system independently and is partnering with the Town.

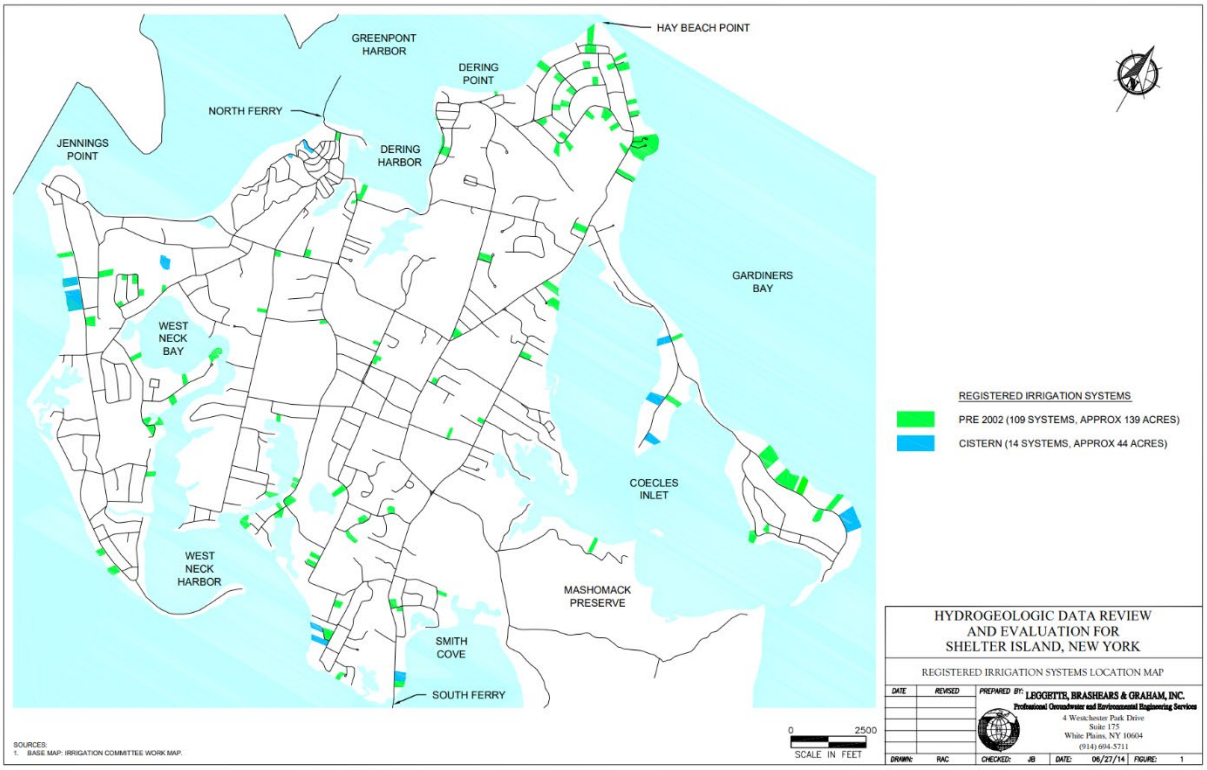
As of late 2022, the plans for this treatment plant were being challenged and the outcome was uncertain.

Three of the marinas on the island use pump out systems to collect the black tank contents from resident and transient boaters and dispose of it on site.

Irrigation

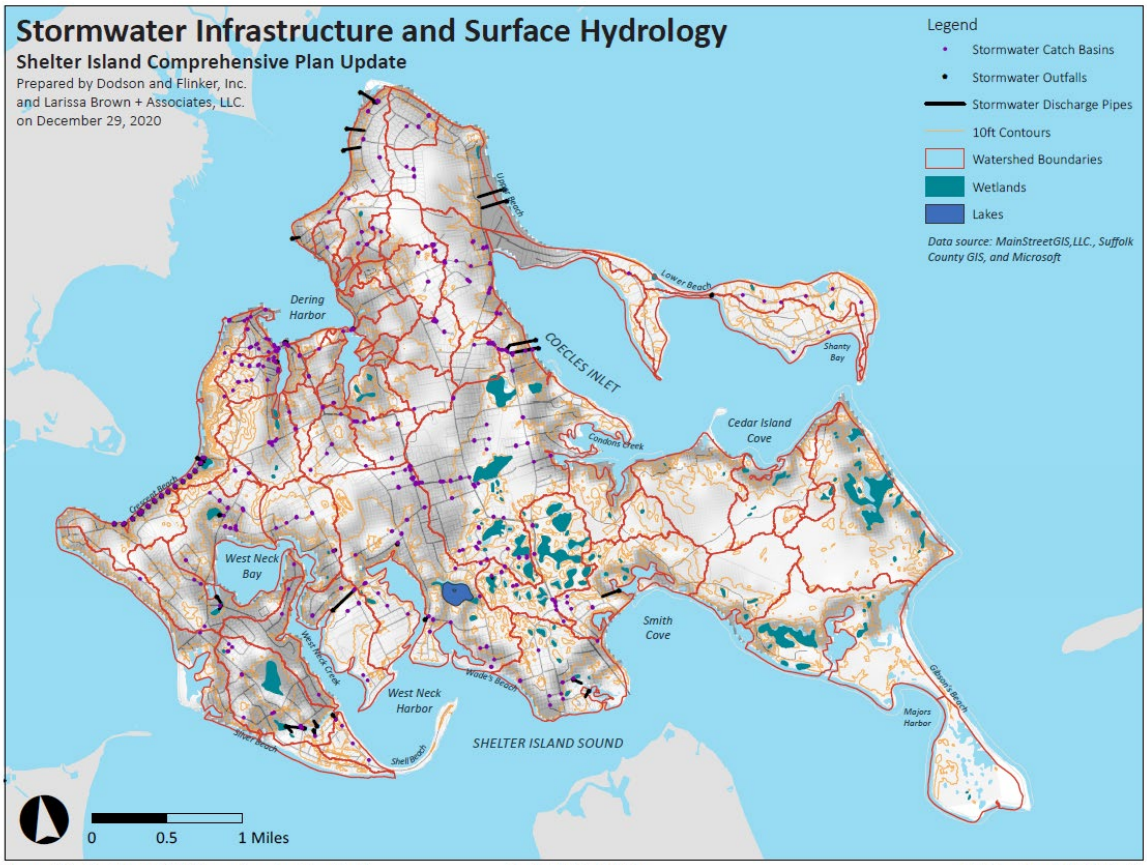
Because of the limited water supply on Shelter Island, the town adopted a local law in 2015 that regulates irrigation systems (Town Code Chapter 82). All irrigation systems require an annual permit. Grandfathered irrigation systems can continue to withdraw from the aquifer as can hand watering systems or one sprinkler. Most new irrigation systems require a cistern and may have additional requirements depending on location and type.

The map below was prepared in 2014 for the *Hydrogeologic Data Review and Evaluation for Shelter Island, NY* prepared by Leggette, Brashears, and Graham, Inc. Since this was published, another 178 irrigation systems have been permitted along with cisterns. The system permits need to be renewed each year along with proof of water delivery. As of 2022, there is not an effective enforcement program in effect.



Storm Water Management

Much of the stormwater that falls on Shelter Island is absorbed into the ground. However, stormwater that falls on impervious surfaces like roads and parking lots can runoff into sensitive areas and needs to be managed. Climate change will likely increase both yearly rainfall and the intensity of individual storms, necessitating further changes to stormwater management systems. A *M*unicipal *S*eparate *S*tormwater *S*ystem (MS4) is "a publicly owned conveyance or system of conveyances (including but not limited to streets, ditches, catch basins, curbs, gutters, and storm drains) that is designed or used for collecting or conveying stormwater that discharges to surface waters of the state" (NYDEC). A 1990 federal law established the National Pollutant Discharge Elimination System (NPDES) which requires every community to maintain an MS4 permit showing how it will protect water bodies from polluted stormwater runoff. Under Phase II of the regulations, adopted in 1999, smaller communities like Shelter Island were brought into the system.



On Shelter Island, the MS4 consists of approximately 400 catch basins designed to capture runoff and guide it away from roadways and parking areas (see map showing structures that have been digitized to date). Many of these are fed into leaching catch basins that prevent the water from running off into the bays and creeks, but many others still connect to outfalls. Maintenance of catch basins can be a challenge, especially for Route 114, where the NYS Dept. of Transportation rarely services them.

For example, water from Route 114 runs into Lily Pond because the drains are rarely serviced, and runoff that previously collected in low points along 114 is diverted to the street due to curbing.

The loss of natural low points to development and site improvements has reduced the amount of natural filtration and recharge that is occurring. As part of its Municipal MS4 compliance program, the town is working to eliminate all outfalls into the Peconic Estuary. This will allow the town to qualify for an exemption to

MS4. This could include installation of bioretention systems that use biological mitigation to reduce runoff pollution.

In addition to piped outfalls, stormwater controls need to be installed at the foot of roads that terminate at the water's edge, at boat ramps and town landings. The engineering department has completed a conceptual design for control of runoff from the town golf course onto West Neck Road, but much more engineering is needed. The department also assisted with assessment of the town's salt storage barn and improvements have been made that will ensure that stormwater will not wash salt contamination into the aquifer from the storage area.

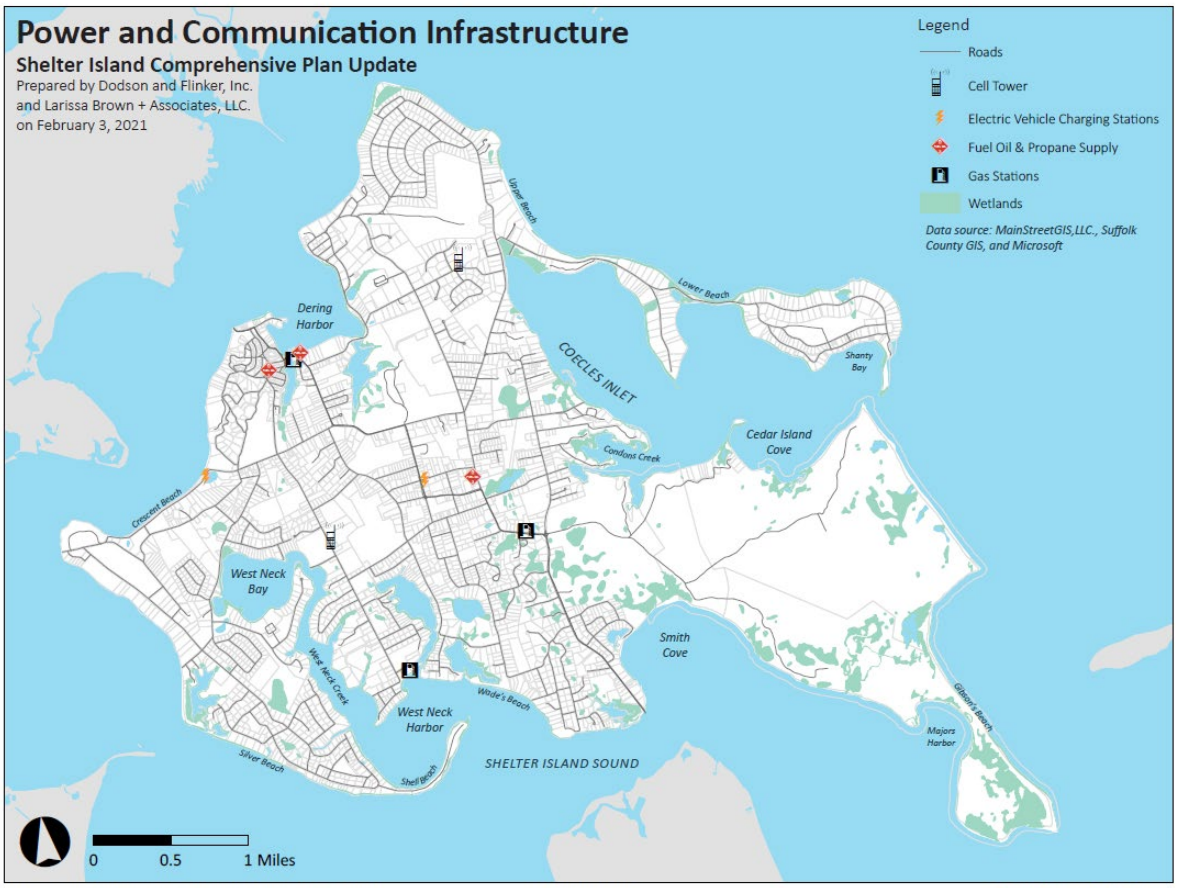
Electrical Infrastructure

Power Feeds and Distribution System

Shelter Island's electric power is supplied from the Long Island Power Authority grid by underwater cables that run from Greenport to Shelter Island on the north side and from North Haven to Shelter Island on the south side. Long Island Power Authority utilizes a public-private partnership model and contracts with PSEG to operate the electrical grid.

Prior to Superstorm Sandy, Shelter Island was served by three distribution feeder lines, two from the North Fork and one from the South Fork. During the storm, one of the North Fork feeders was damaged and failed. A replacement cable was laid from Greenport in 2018 in one of three new underground conduits, leaving two for future backup.

The engineering department completed the engineering specifications for standby generators at the Town Hall complex and Medical Center under a FEMA grant. All town buildings now have emergency generators. To help deal with compromised power during the cable project, an island-wide emergency generator hook-up was installed at the old highway department facility at 12 South Ferry Road. The generators have since been removed but the wiring remains, so we have the option of installing new generators and switches - providing another potential option for emergency back-up power.



Green Energy and Initiatives

Green energy is a priority for Shelter Island. Research and planning recommendations are carried out by the Town's Green Options Committee. Construction on the Island is governed by the New York State Energy Conservation Code. To date, a small percentage of homeowners have installed residential solar. There has been no development of central station solar or wind energy generating plants on the Island. Many residents have purchased electric or hybrid vehicles. There are two charging stations for electric vehicles adjacent to Police Headquarters, two at the Nature Conservancy's Mashomack Preserve Visitor Center and a destination charger at Sunset Beach Hotel. The library is currently pursuing a grant that will allow them to install a charging station on their property. When at all feasible the Town is opting to purchase electric vehicles for town use.

Shelter Island should support the New York State goals of 70% of electricity from renewable energy by 2030 and 100% renewable electricity by 2040 through the

promotion, installation, and use of renewable technologies. We should also support the Federal goal of net zero emissions by 2050. Long Island Power Authority/PSEG LI has installed an off-shore wind farm, built New York's three largest utility-scale solar farms, and developed the state's first utility-scale battery project. Concurrently with the emissions goals, we want to ensure we maintain or enhance electric system reliability on both an individual customer and Island wide basis while maintaining downward pressure on resident and business energy costs.

The town was hoping to construct a solar power project at the capped landfill, but necessary modifications to the cap were rejected by NYDEC. However, all is not lost as the town is currently planning to install solar panels on the new roof at the Recycling Center to power the recycling equipment.

Communications

Shelter Island has traditional phone service supplied by Verizon. Optimum provides cable, internet, and internet-based phone service. Underwater cables from both forks of Long Island bring these utilities to the Island to be distributed via a cable network. In addition to traditional land-line telephone service, Verizon offers DSL internet service over the same lines. The Town negotiates a franchise fee for Optimum's cable and internet service which is without any competition, and some residents have found the service to be lackluster. To characterize Optimum as being without competition is, however, slightly misleading as the streaming services continue to eat into cable TV subscriptions and cell companies such as T-Mobile add internet capability to their networks.

There are two cell towers utilized by various carriers to provide service to the island, one at the recycling center and a second, installed in 2018, at the Potato House Fire Station on Cobbetts Lane. Both cellphone and internet service are said to be slow and uneven on parts of the Island especially during the summer months, and expensive.

Household Fuel Supply

Fuel oil and propane, the primary household fuels, are delivered in bulk to Shelter Island homes and businesses by two Shelter Island vendors: J.W. Piccozzi's Fuel Oil and Propane and John's Gas Service. Their storage facilities are located on Bridge Street and St. Mary's Road, respectively. Some households utilize off-

Island vendors. Small propane tanks (for example, for BBQ grills) are refilled at the Bridge Street gas station, Shelter Island (ACE) Hardware and John's Gas Service.

Vehicular Fuel Supply

There is one active gas station for road vehicles on the Island and that is Piccozzi's Mobil Station on Bridge Street. Boaters can get gas and diesel at the Island Boatyard on the south side of the Island and at Piccozzi's on the north side. Coecles Harbor Marina only sells diesel.

Findings:

- The Island's sole-source aquifer has the capacity to meet the population's water needs for the foreseeable future – but only if it is protected from contamination.
- Our water 'system' is almost completely dependent on the availability of electric power for pumping as are communications; reliability is unknown.
- Shelter Island has an adequate drinking water supply system, provided for the most part by individual private wells, but water quality is an issue in some parts of the island, most notably elevated nitrates in the center, saltwater intrusion along the coast, and spot chemical contamination from old gas stations and other sources.
- Antiquated septic systems are contributing nitrogen and other pollutants that are impacting both drinking water and surface water.
- The Island has only one internet provider leading to higher monthly costs for residents
- Discharge of stormwater through outfall pipes is affecting water quality in the Peconic Estuary.
- There are a limited number of green energy installations.

Challenges:

- Securing reliable drinking water for the future will require careful management of a system made up of over a thousand private wells and a

thousand private wastewater systems – making changes will take time and diligent effort.

- Changing the suburban pattern encoded in zoning and encouraging revitalization of village centers may require a transition from private wells and wastewater systems to community wells or wastewater treatment in some situations.
- Improving stormwater management to reduce impacts on waterways and to increase aquifer recharge will require consistent effort and funding.
- Reaching the public and educating homeowners on water conservation, wetland protection and the fragile nature of the Island's sole- source aquifer.
- Climate change will likely increase precipitation and extreme storms, taxing stormwater systems, while sea level rise will impact coastal roads, harbors and the ferry terminals.
- Transitioning to more renewable energy will require participation by individuals, institutions and the town.

Goals & Objectives:

The primary goal to be achieved with our Island's utilities is the assurance of robust, renewable, and reliable services to the population and businesses, done with fiscal efficiency and environmental responsibility.

Action Items:

1. The Town should explore establishing municipal internet service. The upfront costs may be daunting but cellular based service should be explored as a way of lowering/eliminating these costs.

2. Explore the creation of a wastewater management district potentially having dual roles: assisting in undertaking extension of sewerage into now unserved areas, such as Bridge Street, and assisting homeowners and businesses in unsewered portions of the Island in managing their on-site disposal systems including installation of I/A OWTS in addition to maintenance education of traditional septic systems.

3. Heights Property Owners Corporation should consider working with the town to upgrade the existing aging sewage treatment plant. By partnering with the town, they become eligible for municipal grant funding and hooking bridge street into the system should be a priority/ requirement.

4. Consider connecting Bridge Street businesses to the Heights WWTP. This would eliminate several current non-conforming septic systems, all of which contribute to surface water contamination of Chase Creek and Dering Harbor. This is beneficial for the following reasons:
    a. Eliminate the surface water contamination from old septic systems currently leaching into Chase Creek and Dering Harbor.
    b. Connection of Bridge Street properties may allow for the installation of several accessory apartments in current second and third stories.
    c. Connection of bridge street would require an upgrade to the Heights wastewater treatment plant that would bring it up to a tertiary level of treatment and possibly include recharge, eliminating the need to pump the treated wastewater effluent overboard into the Peconic Bay.
    d. A municipal sewer district will be eligible for grants and other funds that are not accessible to the existing plant.

5. Examine the ability of recharge to be incorporated into irrigation needs at Goat Hill Golf Course.

6. Properties that can maintain the minimum sanitary radius required for municipal wells should be cataloged and, if not owned by the town or municipal water provider, given priority status for purchase.

7. Establish a small group to investigate means of creating greater energy independence and resiliency for the island. This group should be in contact with PESG/LIPA and look into programs like the Federal Energy Transitions Initiative Partnership Project (ETIPP) for island communities, Membership should include representatives from the Green Options Committee, the Public Works Department and the Town Engineer and 1 Town Councilman. Energy resiliency questions that need to be asked and answered in a way that reassures Islanders are:
    a. What are the contingency plans for a failure of the transmission line(S)?
    b. For demand side planning purposes, what is the peak Summer demand

and its rate of growth.

c. For reliability enhancement, the outage profile (number and duration) over the recent past (10-15 years) will be helpful in targeting these efforts.
d. Reliability will not just be about spare transmission capacity TO the island but where might there be weak points ON the island?
e. While the Town buildings have emergency power, most homes and businesses at this point don't. Is that the best use of our resources (public and private) going forward?

8. Meeting the Goal of having renewable and environmentally responsible utilities:
    a. *Stage 1* will be the Town Government implementing the following:

        i. Conducting energy audits of all Town owned buildings, reviewing those audits and, where appropriate, implementing their recommendations.
        ii. Obtain cost estimates in order to evaluate the installation of solar on Town buildings as well as a heat pump system for district heating and cooling of Town buildings.
        iii. Develop and put in place an effective method for communicating more directly with our residents both to inform and motivate them to step up.

    b. Direct the Green Options Committee to draft and present to the Town Board a plan for *Stage 2* which will include tactics to support the above objectives Island wide within the time frame specified.
    c. Meet with LIPA/PSEG to identify relevant data to aid in the development of the Stage 2 plan so that it is consistent with above objectives while maximizing the value to Town residents.

9. Community Choice Aggregation (CCA) for renewable energy purchase is being evaluated by the Green Options Committee. Approved by the NYS Public Service Commission in 2016, CCA allows individual communities to aggregate their demand and negotiate a fixed-rate energy supply with multiple vendors. CCAs can lower costs and allow communities to channel their energy dollars towards renewable sources. There have been recent updates to the program and the Green Options Committee is following them

closely and will present recommendations to the Town Board as appropriate.

10. Allow the maps below to be both linkable and expandable.

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