

Energy Systems Group Case Study

The Town of Niskayuna, New York

Background

Constructed in the 1960s, the Town of Niskayuna's wastewater treatment plant (WWTP) had not undergone any major upgrades in almost 40 years, and it had become clear that improvements were needed in order for the facility to continue fulfilling its mission of protecting the local environment and community.

The Problem

In 2010 the New York State Department of Environmental Conservation (NYSDEC) issued the Town of Niskayuna's WWTP a consent order for wet weather management. The consent order included an agreed-upon moratorium restricting any new connections to the Town's sewer system until the mandated improvements were completed, meaning that no new homes or businesses could connect to the sewer system. This moratorium in turn directly impeded economic growth. In addition to the primary issue of the consent order, the WWTP had several pieces of aging equipment that required replacement to ensure that the plant would be operationally sound over the long term.

The Solution

The Town needed to act quickly to address the moratorium, and it partnered with Energy Systems Group (ESG) in 2016 to develop a project that would address the consent order promptly and tackle the aging infrastructure at the facility. The project was divided into three phases. Phase 1 of the project centered on satisfying the NYSDEC wet weather management obligations to ensure that the plant effectively manages influent during storms and other high flow events. Phase 2 focused on aging equipment on both the liquids and solids side of the plant. Phase 3 included the construction of a high strength organic waste (HSOW) receiving station and the installation of a cogeneration system to produce renewable energy from biogas. The plant's ability to produce energy on-site will make it an energy net zero facility. The receiving station allows the plant to accept organic materials from regional suppliers, providing the Town a new source of revenue.



Above: The Town of Niskayuna's 3.5 million gallons per day (MGD) wastewater treatment facility.



Above: ESG constructed two new secondary clarifiers at the Town of Niskayuna's wastewater treatment plant in addition to carrying out other major improvements.

Energy Systems Group Case Study

The Town of Niskayuna, New York

Phase 1: Consent Order and Plant Expansion

- Two New Secondary Clarifiers
- UV Disinfection
- Wet Weather Equalization Tank and Primary Tank Baffles
- New Plant Electric Service and Standby System
- Underground Piping

Phase 2: Aging Infrastructure Renewal

- Aeration System
- Electrical Systems
- Headworks and Grit Removal
- SCADA
- Gravity Thickener and Belt Press
- Digester Complex (Cover, Mixing System, Boilers, Heat Exchangers, etc.)
- Dewatering Building System Improvements
- Sitework

Phase 3: Efficiency and Green Energy

- 150 kW Biogas Cogeneration System
- Dryer Biogas Oil Heater
- HSOW Receiving Station
- HSOW Storage and Digested Sludge Storage Tanks
- Gas Collection and Cleaning Equipment

Results

ESG moved quickly to address the Town's challenges. The first phase of the project, which dealt with addressing the consent order issued by NYSDEC, was completed only 15 months from the time the Town began discussing the project with ESG. Soon after construction was completed, the consent order was lifted and the moratorium on new sewer interconnections was lifted as well. The Town is currently in full compliance with its permit.

The final phase of improvements at the facility centered on HSOW and renewable energy. ESG installed an HSOW receiving station, storage, and a cogeneration



Above: For the Town of Niskayuna, New York, which was under a DEC consent order for stormwater management, ESG fast-tracked a three phase project that addressed the consent order requirements, upgraded nearly every system of the treatment plant, expanded its capacity, and made it energy net zero.

Energy Systems Group Case Study

The Town of Niskayuna, New York

system that allows the facility to accept HSOW from regional suppliers and generate revenue through tipping fees paid by the suppliers. The resulting biogas produced through the co-digestion of the HSOW is utilized to produce electricity by the cogeneration unit.

The HSOW revenue is significant because it represents a new revenue stream for the Town. The revenue will allow the Town to temper rate increases for its ratepayers. In addition, the revenue offset the cost of construction for the project. ESG carried out extensive improvements to the facility — essentially providing the Town a “new” plant. Because a significant portion of the project’s cost was offset by new revenue generated from the monetization of the Town’s wastewater assets, the Town was able to carry out more extensive improvements than it would have been able to do otherwise.

Why ESG?

The Town of Niskayuna decided to partner with ESG because of its ability to implement the project quickly and because of its approach to offsetting capital costs through the acceptance of HSOW and an accompanying revenue guarantee.

The Town had been under a consent order issued by NYSDEC, and it needed to take action in order to lift the accompanying moratorium on sewer interconnections that was impeding economic growth. The traditional municipal bidding process would have unfolded over a long period of time that the Town just didn’t have, so it decided to partner with ESG, which is experienced in the alternative project delivery model available under New York State Energy Law Article 9. Article 9 eliminates the requirement of Section 135 of the New York State Finance Law for Multiple Prime Contracts, commonly known as “Wicks Law, which allowed the Town to execute the contract with one company that could serve as its single point of accountability for the entire project. Partnering with ESG allowed the Town to speed up the project delivery process and minimize the time spent under consent order.

Another reason the Town selected ESG was because of its experience in co-digestion, particularly using revenue from accepting HSOW to offset the capital costs associated with infrastructure improvements. ESG has a track record of creating new revenue opportunities for customers that offset the costs of capital projects and provide customers greater value for the money they spend. Using its expertise and knowledge of the HSOW market, as well as its relationships with suppliers, ESG was able to arrange contracts for HSOW that will provide guaranteed revenue to the Town over the long term.