NATURAL SYSTEMS UTILITIES

MUNICIPAL WASTEWATER BIOGAS SYSTEM
DESIGN BUILD OPERATE FINANCE

Ridgewood Water Pollution Control Plant, Village of Ridgewood, New Jersey

In December 2011, Natural Systems Utilities, Middlesex Water Company, and American Refining and Biochemical partnered with the Village of Ridgewood to design, build, operate, and finance upgrades to the water pollution control plant to optimize the anaerobic digestion process and install a new biogas fueled engine generator to convert methane gas to electricity. In addition, Bio-Organic Catalyst, Inc. partnered with NSU to develop the project and currently provides a catalyst product to enhance the production of biogas. The project also incorporates four solar installations located throughout the Village. Together, enough energy is generated to potentially provide all the electricity required to operate the water pollution control plant. To maximize the financial and environmental benefits for the community, the high value Renewable Energy Certificates generated by the plant are being sold and an equivalent number of lower cost Green-e Certified RECs being purchased.

Technology: Anaerobic Digesters, Combined Heat and Power by 240 kW Engine/Generator and 50.4 kW Solar Field.

Triple Bottom Line Impacts

- **Produce potentially 100% of the power needed to run the plant**
- **Financing at no cost to the Village or Taxpayers**
- **Reduced residuals for disposal**
- **Plant operational savings and reduced cost of power**
- **Reduced carbon footprint**

The existing water pollution control plant utilizes two anaerobic digesters for the stabilization of biosolids generated from the wastewater treatment processes. An important byproduct of the anaerobic treatment process is biogas, which contains a significant amount of methane. The existing plant was configured to utilize a portion of the gas to fire boilers that heat the sludge in the digester units and thereby enhance the biological process. The new

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biogas conversion facility now prevents valuable energy from being flared into the atmosphere. With the new upgrades, all the gas will be used to run an engine/generator and the waste heat will be used to heat the sludge to optimize anaerobic digestion.

FOG Receiving Station: Electricity production is enhanced when food wastes such as fats, oils and grease are added to

The existing digester units have significant reserve capacity to treat additional biosolids or other compatible biological waste material. This available capacity presents the opportunity to accept and process additional liquid waste, further increasing the efficiency of the plant and reducing the amount of resulting sludge needing disposal. A 20-year agreement has been finalized to implement the project at no cost to the Village. The plant's operational enhancements will also reduce odor and grease build-up at the plant, reduce the amount of residuals, and eliminate the need to transport byproducts offsite. The enhanced wastewater plant serves 28,000 Ridgewood residents and associated businesses.