



South Monmouth Regional Sewerage Authority

PROJECT INFORMATION

Organization

- **South Monmouth Regional Sewerage Authority**

Location

- **Belmar, Monmouth County, NJ**

Project Contact

- **Michael Ruppel, Executive Director**

Technologies

- **Combined Heat and Power System**

NJCEP Incentive

- **\$490,000**

Total Project Cost

- **\$2.17 million**

PROJECT SAVINGS

Estimated Annual Savings

- **\$270,000 electrical savings**
- **\$33,600 natural gas savings**

Environmental Benefits

- **The equivalent of powering approximately 176 houses based on the CHP system producing an estimated 1.5 million kWh of electricity.**
- **The equivalent of saving an estimated 81,000 therms/year for approximately 68 houses.**
- **Taking approximately 50-150 cars off the road depending on outside ambient temperature.**

Project information, savings and environmental benefits were provided by the project contact.



The South Monmouth Regional Sewerage Authority's combined heat and power system utilizes biogas to produce electricity and heat energy for on-site use.

"The SMRSA is pleased to have commissioned its co-generation system which creates both electric and heat energy. We strongly believe that despite economic turmoil and volatility, this new energy project, which is only the second of its kind and size in the state, will reduce the Authority's dependency on outside energy sources, and will stabilize sewage rates for area residents of southern Monmouth County. With a grant from the *New Jersey Clean Energy Program™*, the Authority's return on investment will be just under six years due to electrical and natural gas savings. This forward thinking energy reducing project is another tangible example of the benefits that can be derived when state and local agencies cooperate in the best interest of the ratepayers."

Michael J. Ruppel,
Executive Director, SMRSA

Background

The South Monmouth Regional Sewerage Authority (SMRSA) is an award-winning, 9.1 million gallon per day tertiary wastewater treatment facility and collection system. SMRSA was founded in May of 1970 for the purpose of protecting and preserving the area's vital environment for current and future generations, ensuring a healthy ecology, a robust economy and a high quality of life for its residents. SMRSA serves eight municipalities: Belmar, Brielle, Lake Como, Manasquan, Sea Girt, Spring Lake, Spring Lake Heights and Wall Township.

Challenge

SMRSA was faced with continuously rising energy costs, aging infrastructure, and a strained budget. The organization opted to research ways they could become more energy efficient and reduce their carbon footprint. They conducted research and piloted a microturbine technology project using anaerobic digestion. The production of digester gases had increased significantly and it was clear to SMRSA that it was time to move from a microturbine pilot scale generation to a full scale operation.



The gas conditioning equipment includes hydrogen sulfide removal through the use of H₂S scrubbers.



Siloxane is removed and the gas is dried and compressed.



Gas is converted into power using two 140 kW internal combustion engines.

Solution

After careful evaluation of technology and comparative life-cycle costs, SMRSA installed a combined heat and power system. The system includes two 140 kW biogas fueled internal combustion engines and associated generators and controls. The gas conditioning equipment includes hydrogen sulfide removal, siloxane removal, gas booster skid, gas chiller, gas compression control panel and transformer, pre-cast concrete chamber, a condensate accumulator, sump pump system and instrumentation. The combined heat and power system, which uses all available digester gas for the production of electrical and heat energy, met emission rates as it did not require flaring of excess digester gas.

Benefits

SMRSA's combined heat and power system produces on-site heat and power to offset the plant's energy use, as well as significantly reducing the amount of greenhouse gas emissions. The system produces up to 60% of the plant's monthly electrical energy demand and 100% heat energy, reducing natural gas dependency. Estimated annual electrical savings are \$270,000 and estimated annual natural gas savings are \$33,600.

New Jersey's Clean Energy Program provided SMRSA with a \$490,000 rebate for the \$2.17 million project. SMRSA is on track for paying off the project in approximately 5.5 years as a result of electric and natural gas savings. The cost savings will keep sewerage rates stable, and the money saved can be used for other essential infrastructure projects. SMRSA was honored with the 2012 Association of Environmental Authorities' Wave Award in the category of Energy Savers.



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