☐ GOVERNMENT

Bergen County Utilities Authority

Little Ferry, NJ

CHP Engineering Design for Landfill Gas to Energy Site

CONSTRUCTION COST:
$12 Million

YEAR COMPLETED:
2015

ABOUT THE CLIENT

The Bergen County Utilities Authority (BCUA) is a public utility that provides sewage disposal for forty municipalities as well as solid waste services for seventy municipalities in Bergen County.

COMBINED HEAT AND POWER PLANT

Concord Engineering provided the detailed engineering and design services for this cogeneration facility that utilizes a mixture of natural gas and biogas from the aerobic digesters at the BCUA wastewater treatment complex. The initial cogeneration plant included two 1400 kW GE Jenbacher reciprocating engines with full heat recovery, generating high temperature hot water for the sludge drying process, and heating in the complex. The units generated electricity at 4160V and were interconnected in parallel with the utility electric grid. The electricity generated by the facility displaces power purchased from the grid. The project also included a gas compressor skid for the biogas and an activated carbon system for removal of siloxanes from the gas prior to use in the engines. **Concord Engineering provided the design for the cogeneration building as well as for the electrical distribution system and the biogas supply to the engines.**

SECOND PHASE

In 2013, the BCUA decided to add a third engine for two reasons; the first being that two engines can constantly operate while one can be serviced (redundancy). Secondly, the BCUA set up a receiving station for fats, oils and grease (FOG) to inject into the anaerobic digester and burn biogas. The BCUA planned to receive food wastes, such as whey, to inject into the anaerobic digester to generate additional biogas.

On October 25, 2013, the BCUA was awarded a $2.5 million grant to help fund the installation of the third CHP engine. Also the BCUA was granted a $7.3 million low interest loan from the New Jersey Infrastructure Financing Program (NJEIFP).

Concord also provided the engineering for the third engine of the same capacity to be added to the system. The BCUA's calculations project that the additional gas supply with full utilization will increase the initial successes of the project by another 50%.

- In 2013, the BCUA saved over $1.3 million for electricity and gas that would have been purchased instead of burning biogas to generate electricity and heat.
- This includes $306,000 in thermal savings (natural gas cost), $984,000 in savings from electricity plus an additional $20,500 in Renewable Energy Credits (REC).
- Since June 2008 the BCUA saved a total of $12.9 million for electricity and gas that would have been purchased.

REFERENCE

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