
Case Study: Struthers Water Pollution Control Facility Powers Up with Methane Gas

The City of Struthers received \$5.4 million in American Recovery and Reinvestment Act (ARRA) funding from the Ohio Environmental Protection Agency's Clean Water State Revolving Fund program for a project that will use methane gas produced at the Struthers Water Pollution Control Facility to power unit treatment processes and significantly offset the facility's energy footprint. The project received ARRA Green Project Reserve (GPR) funding under the Energy Efficiency category, and the entire amount of loan principal will be forgiven.

The Struthers Water Pollution Control Facility serves a population of over 25,000 people in the cities of Struthers and Poland and portions of Boardman Township, and treats an average of 4.5 million gallons of wastewater per day. Anaerobic digestion generates approximately 94.9 thousand cubic feet of methane gas per day as a by-product of the treatment process, some of which was already being used to generate the heat required for the sludge treatment process, offsetting some of its natural gas consumption. However, the excess methane was being flared off into the atmosphere. The ARRA-funded project allows Struthers to make use of this energy source to provide power for the treatment facility's operations through the implementation of a combined heat and power (CHP) system.

The City of Struthers took advantage of ARRA funding to capitalize on the opportunity to significantly reduce its energy footprint and realize substantial operating cost savings. The project is anticipated to save Struthers and nearby Mahoning County, which subsidizes 64.5 percent of the cost of treating flows from unincorporated areas, about \$17,000 per month in electricity costs and \$9,000 per month in natural gas costs – over \$300,000 in annual energy cost savings. At the same time, the facility's carbon footprint will be significantly reduced. Methane is a potent greenhouse gas capable of trapping 20 times more heat in the atmosphere than carbon dioxide, which makes CHP technology an attractive energy option for wastewater treatment facilities as it extracts methane gas out of waste, keeping it out of the open air environment. The energy that it produces is considered carbon neutral. A CHP system can produce green power at costs below the retail market rate and enhance the reliability of a facility's power source.

ARRA funds were used to construct a filtered methane cogeneration system designed to capture and utilize the excess methane gas to generate electricity and heat for the treatment facility. This project incorporates two 500 kW methane gas



generators that will be sufficient to supply between 60 to 70 percent of the treatment facility's power demand. A sludge thickener and upgrades to the gas compressor will make additional methane gas available for conversion. Two buildings were constructed to house the methane gas generators and the sludge thickener. Struthers' utility managers hope to eventually power 100 percent of the facility with CHP technology. In all, this project will increase the volume of volatile solids destruction by at least 30 percent, and the total amount of methane that will be captured will be sufficient to generate approximately 1000 kWh of electricity per day.

At a groundbreaking ceremony held on June 4, 2010 for the Struthers Water Pollution Control Facility CHP project, County Commissioner Anthony Traficanti commented, "This project saves the county and city hundreds of thousands of dollars in operating, maintenance, and utility costs." Indeed, the financial assistance afforded to the city of Struthers through ARRA has not only provided a financial benefit, but it created between 30 and 40 jobs, and set a precedent for other green projects in the future in Struthers.

For more information please contact the Ohio Water Pollution Control Loan Fund Program
http://www.epa.ohio.gov/defa/wpclf_new.aspx