Cogeneration Facility

In 2006, Johnson Controls Inc. and DPW entered into an energy savings performance contract designed to maximize the energy efficiency of the Back River Wastewater Treatment Plant (WWTP). The facility upgrades were completed in October 2008.

Project Details:

The project included a variety of energy efficient improvements and featured the development of a cogeneration facility at Back River WWTP.

- Installed a cogeneration facility to reduce the purchase of electrical power by $1.4 million annually by effectively using the methane gas produced at Back River WWTP (current annual savings are estimated at $2.4 million since power costs are now 10.6 cents). The cogeneration facility is a key part of the project that will enable substantial energy savings for the city of Baltimore.
- Installed a gas conditioning system which generates annual operational savings by improving the efficiency of existing gas burning equipment.
- Implemented a generator waste heat recovery system that delivers annual savings, as a result of heightened electricity production made possible by an increase of digester gas available for cogeneration.
- Upgraded the digester recirculation pumps, which deliver annual savings by reducing power consumption for maintaining recirculation of the digested sludge.
- Made energy efficient lighting improvements to increase the lighting quality throughout the plant and reduce the cost of energy annually.

- Continued service is also provided for the upgraded facilities.

Additional Benefits:

The facility upgrades at Back River WWTP offer a variety of additional annual benefits, including:

- $1.8 million minimum in reliable energy and operational savings.
- Reduction of 19.4 million kWh of electricity.
- Effective utilization of methane gas, reducing the amount of purchased power and the need for 20-foot methane flares which were visible across town.
- Reduction of 12.9 million pounds of carbon monoxide and,
- $14 million in energy savings and plant improvement projects over the next 10 years.

Questions

What is a performance contract and what does it mean for the city of Baltimore?

A performance contract provides guaranteed benefits from energy, operational, environmental and infrastructure improvements that can pay for upgrades and renovations. Over time, the performance contract will fund itself. The cumulative savings are expected to exceed the initial cost of the facility upgrades.

How was the performance contract developed?

As part of a comprehensive energy audit for the Back River WWTP, our contractor identified the facility's flared digester gas as a renewable energy opportunity. Initial data and cost assessments confirmed this, and the City decided to move forward. While Johnson Controls brought the opportunity to the City, the wastewater treatment plant personnel were instrumental in shaping the project.

City of Baltimore

City Hall - Room 250
100 N. Holliday St, Baltimore, MD 21202
City Operator: (410) 396-3100

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