In December of 2011, Philadelphia Water finalized an agreement to bring green power to the Northeast Water Pollution Control Plant. A new facility was constructed to capture methane generated from the existing wastewater treatment process. The captured biogas is used to meet all of the process heat needs and can produce 85% of the electrical requirements for plant operations when enough organic matter is available. With more organic matter, our digesters can make more biogas and we can use it to make more green power.

How Biogas Cogeneration works

Biogas is produced by the anaerobic decomposition of organic matter in a wastewater treatment plant’s anaerobic sludge digesters. Digester biogas is treated to remove impurities before being used as fuel in large engines that generate electric power. Look on the back of this sheet for an infographic detailing the whole process at our facility.

PWD’s Energy Plan

In alignment with the City’s Greenworks Philadelphia Initiative, Philadelphia Water developed a Utility-Wide Strategic Energy Plan, establishing energy conservation and generation objectives for the Department. This is one of a series of reports on our progress in achieving its strategic energy objectives.
**Biogas Cogeneration Facility**

**Northeast Treatment Plant**

Providing up to 85% of On-Site Electricity Needs with Green Power

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**INPUT**

Wastewater solids are fed to 8 2-million-gallon anaerobic digesters.

**GAS OUTPUT**

1.6 million standard cubic feet per day, 63% methane

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**ANAEROBIC DIGESTERS**

Heat from the co-generation engines is used to warm the digesters to 97°F.

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**BOILER**

If the heat from the engines is not sufficient to warm the digesters, the boiler acts as a back up.

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**COMPRESSION**

The compressed bio-gas fuels 4 20-cylinder engines. Each produces 1,417 kilowatts per hour at 13200 volts and usable heat.

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**PURIFICATION**

- Hydrogen sulphide removal
- Siloxane removal

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**HEAT EXCHANGE**

≤180°

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**SAFETY FLARES**

If there is an emergency, these 4 flares can safely burn off excess gas.

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**ELECTRIC OUTPUT**

The electricity produced by the co-generation engines is used in the entire facility.

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**SOLIDS OUTPUT**

Remaining solids are removed and transported for processing.

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**STORAGE**

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**NATURAL GAS SUPPLEMENT**

If there is not enough biogas available to run the engines and/or the boiler optimally, natural gas can be blended with biogas to make up the difference.