

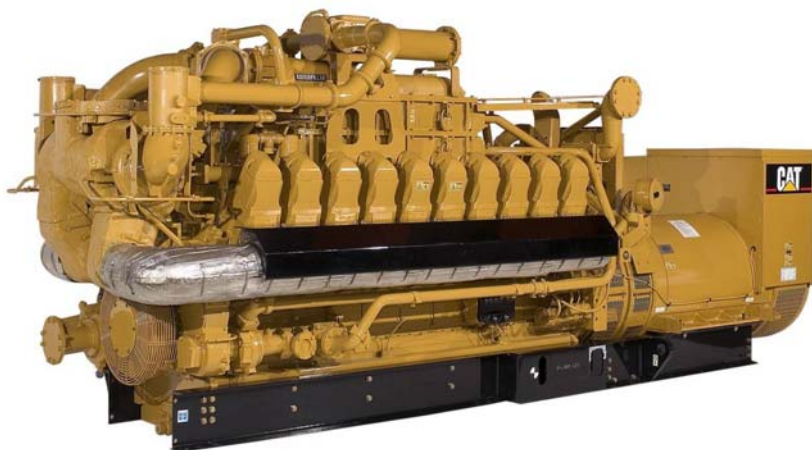
## CCSWA & Granger Energy of Honey Brook, LLC

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An extraordinary alliance between the state and county governments and the private sector brought this direct-use project at the Lanchester Landfill in Narvon, Pennsylvania to fruition. Groundbreaking for this project occurred in the fall of 2003, and the first customers were brought on-line in December of 2004. A 12.77-mile pipeline delivers 3,500 scfm of landfill gas to four customers—Dart, Advanced Food Products, L & S Sweeteners, and New Holland Concrete. In order to serve multiple customers, Granger worked with the state of Pennsylvania to establish regulatory approvals for landfill gas that prevented it from being regulated like a natural gas utility. After months of negotiation, Granger proved itself as a non-utility. Precedent set from this collaboration has determined the regulatory approval process for landfill gas utilization projects in the state. Granger's work with the government on this issue allowed Granger to develop the Lanchester project as the first multiple-customer landfill gas pipeline project in the state. The pipeline from the Lanchester Landfill was connected to the pipeline for the Conestoga Landfill which allowed for the fourth customer, New Holland Concrete, to be brought on-line in December 2008. Furthermore, Tyson Foods, Case New Holland, and H.R. Ewell also receive landfill gas from the joint pipeline.



The second phase of development at the Lanchester facility expanded to include electrical generation in December 2006, with the second engine beginning commercial operation in 2010. This portion of the project generates 3.2 MW of electricity from two Caterpillar 3520 engine generators. A grant awarded by the Pennsylvania Department of Energy helped purchase the original engine generator. The engines provide power for the direct-use processing facility so it is able to power its own production, making it a self-sufficient plant. Additional electricity is sold to the PPL Corporation, a utility. The combined Lanchester project has been honored with many awards. It received the Governor's Award for Environmental Excellence and the EPA's Landfill Methane Outreach Program recognized the project's success with the Project of the Year award and by naming Granger the Industry Partner of the Year in 2005. The Solid Waste Association of North America awarded Granger the Landfill Gas Utilization Silver Award for this project in 2006.



### ***Energy Value***

Landfill gas generally consists of approximately 50 percent methane, 45 percent carbon dioxide and small amounts of nitrogen, oxygen, hydrogen, and non-methane organic compounds. The gas is produced continuously as waste decomposes in the oxygen-starved conditions created within the modern-day, highly engineered landfill. The methane content

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within the gas has a heating value that is approximately half that of natural gas; therefore, the continuous generation of gas is an opportunity for a renewable energy source.

The landfill's continuous generation of gas provides a 24-7 fuel source that has proven to be very reliable. The high rate of availability brings value to our utility customers who appreciate the reliability as compared to other renewable energy sources that tend to provide cyclical loads to the electrical grid. Using the energy value of the gas to operate reciprocating engine generators is a creative and reliable way to manage the landfill gas. The 24-7 nature of the landfill gas does not require us to supplement the generators with conventional engine fuels such as diesel, oil or natural gas whose use could impact the respective market of each.

The landfill gas produced at the Lanchester Landfill provides the equivalent of one of the following annual energy benefits (calculations based on *USEPA Landfill Methane Outreach Program*):

- Ability to **heat nearly 12,000 homes.**
- Offsetting the equivalent of consuming approximately **46.6 million gallons of gasoline.**



The electricity generated by this project is distributed to PPL through net-metering provisions established by the existing Pennsylvania-New Jersey-Maryland (PJM) Tariff for small quantity generators.



*Secretary McGinty and Joel Zylstra at Granger Energy of Honey Brook's Ribbon Cutting Ceremony on October 18, 2005, in Narvon, Pennsylvania*



**Combined Lanchester and Conestoga customer summary:**

<b>Boilers</b>	<b>25</b>
<b>Hot Oil Heaters</b>	<b>4</b>
<b>Ovens</b>	<b>4</b>
<b>Indirect Fired Heaters</b>	<b>3</b>
<b>Direct Fired Heaters</b>	<b>2</b>
<b>Remote Thermal Oxidizers</b>	<b>2</b>
<b>Process Water Heaters</b>	<b><u>2</u></b>

**Total to Date: 42 separate pieces of combustion equipment**