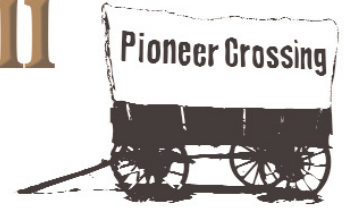


# Pioneer Crossing Landfill

## Gas-to-Energy Plant



Pioneer Crossing Landfill is a state-of-the-art, licensed solid waste sanitary landfill that handles up to 1,975 tons of refuse each day using the most modern methods available. Pioneer recently started a new project to turn its methane gas, a by-product of the decomposition of waste, into a valuable source of energy.

On an average day 1,500 tons of waste enter the landfill. This waste consists of household and commercial refuse and some non-hazardous industrial waste from several counties around Berks County, PA. The site was acquired in 1985 by J.P. Mascaro & Sons, one of the largest waste collection and management companies in the United States. It is now home to a unique gas-to-energy facility that is tucked away on a nicely landscaped parcel.

Engines use the methane collected throughout the site as fuel for the facility. The engines are coupled with generators that produce electricity which is sold to the local utility. The methane gas is collected via a network of horizontal and vertical perforated pipes located throughout the landfill. The gas is drawn through a vacuum from the lined disposal area, filtered, boosted to a higher pressure (5psi), and then used as fuel by the four engines. These engines each produce 1,600 kW (1.6 megawatt) at 4,160 volts for a total of 6.4 MW, which is then exported to the grid.

The four engines run at 1,200 rpm and have averaged 94% uptime. These engines were brought on-line in October of 2008.



## Mutual Cooperation – Achieving Balance

Operating a landfill gas collection system is no simple task. It requires technical know-how, keen observation, and a swift response by those operating the system to ensure it functions properly. A landfill operating without a gas collection system makes for a bad neighbor to the surrounding community. Much like the gas from your stove or gas grill, landfill gas has an unpleasant smell. Landfill gas is made up of approximately 98% carbon dioxide and methane. Both of those compounds are colorless/odorless but often people complain of smelling the methane. In actuality they smell trace amounts of mercaptans, ketones, and the all too familiar rotten egg smell of hydrogen sulfide. Combined, those compounds give landfill gas its unique smell. To be a good neighbor to the community a landfill must control the gas and keep it from escaping into the environment.

Here at Pioneer Crossing Landfill, the staff has been operating a gas collection system for over ten years. We pride ourselves in increasing our knowledge of gas collection methods and learning firsthand ways to increase the gas collection efficiency. Using gas monitoring equipment, the staff routinely searches for areas that can benefit from increased gas collection efforts. Simple odor inspections are also conducted, which are the best method for determining success in our collection efforts. Simply put, the nose knows best. The community also benefits from knowing that there is a full time staff on site daily whose sole responsibility is to manage the gas system; whether it is something as simple as adjusting a well valve or installing a new gas collection point. Experience, commitment to observation, and having all the tools to respond makes Pioneer Crossing Landfill the good neighbor it is today.

Collecting landfill gas and flaring it as discussed above is a difficult task. Taking that landfill gas and using it for the production of electricity requires a mutual cooperation between landfill requirements for controlling odors and the power plant's requirement for creating power. At Pioneer Crossing Landfill, the number one commitment that is mutually understood by both sides is to control the gas which thereby controls odors. The power plant cannot be operated successfully if odors are present. This is the framework that goes into making this project successful. Both Green Gas and Pioneer Crossing Landfill recognize that there can be no odors. This mutual understanding has led to a mutual cooperation between both sides, which have culminated in the ultimate success of this project. At Pioneer Crossing Landfill, both power is being generated and odor is being controlled.

