

PPL Renewable Energy | Lycoming County Landfill

PPL Renewable Energy designed, constructed, owns and operates two co-located 3-megawatt landfill gas-to-energy plants at the Lycoming County Landfill in Montgomery, Pa. The project supports the government's plan to reduce its environmental impact, improve its energy efficiency, create jobs and control costs.

PPL uses methane gas from the landfill to power four Caterpillar engine generators. The engines are expected to produce approximately 50 million kilowatt-hours per year, enough electricity to power approximately 4,000 homes.

Landfill gas-to-energy systems at landfills have a dual benefit for the environment — they generate electricity from renewable fuel while also eliminating emissions of methane.

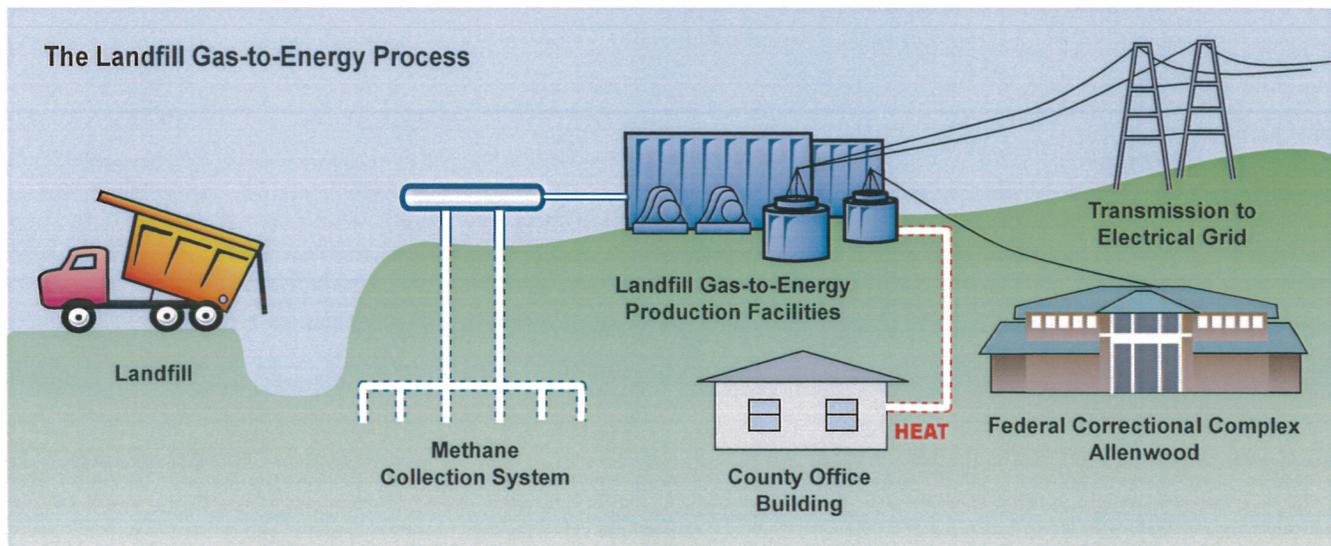
Additionally, the county uses heat produced by the generators to heat county facilities.

These plants prevent the equivalent of 34,000 tons of carbon dioxide emissions each year. According to the EPA, the reduction of emissions is equivalent to any one of these annual environmental benefits:

- Removing 6,700 cars from the road.
- Planting 7,300 acres of pine forest.
- Reducing the import of 80,000 barrels of oil.



Location:	Lycoming County, Pa.
Operational:	October 2012
Equipment:	Four Caterpillar 3520 engines
Capacity:	Two 3-MW plants
Input:	Landfill methane gas
Output:	Around the clock, baseload power. Heat will be used to heat county buildings.



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<http://www.epa.gov/lmop/partners/award/2012.html>

Landfill Methane Outreach Program

EPA Recognizes Partners for Economic and Environmental Successes in Landfill Gas Energy (2012)

Each year, EPA's Landfill Methane Outreach Program (LMOP) recognizes select Partners for excellence in innovation and creativity, success in promoting landfill gas (LFG) energy, and achieving both environmental and economic benefits. These award-winning LFG energy projects and companies contribute to job creation and provide energy savings and green power generation. On January 30, 2013, Partners accepted the following awards at LMOP's 16th Annual Conference and Project Expo in Baltimore, Maryland.

2012 Projects of the Year: LMOP was pleased to recognize seven projects that generate renewable energy from a local source while also protecting the climate and strengthening the economy. These projects will avoid the emissions of 269,770 metric tons of carbon dioxide equivalent per year, which is the equivalent of the annual greenhouse gas emissions from nearly 52,900 passenger vehicles or the carbon dioxide emissions from more than 627,000 barrels of oil consumed. The electricity-generating projects total approximately 50 megawatts of generation capacity, and the direct-use project utilizes 50 standard cubic feet per minute of LFG.

Award Winners

- 2012
- 2011
- 2010
- 2009
- 2008
- 2007
- 2006
- 2005

- **Anne Arundel County's Millersville Landfill Electricity Project, Maryland** — After more than 12 years of exploring options and negotiating agreements only to come to a dead end every time, Anne Arundel County's persistence paid off with a 3.2-megawatt (MW) LFG electricity project brought to fruition by a team of numerous government agencies and private companies. Independent state agency Northeast Maryland Waste Disposal Authority contributed oversight and management for design, engineering and construction of the project while Landfill Energy Systems built, operates and maintains it. The first LFG energy project located in the county, it generates green power for the local grid while providing revenue for county-wide energy efficiency and solid waste projects. A combination of local bond sales and \$2 million in American Recovery and Reinvestment Act (ARRA) funding, and cooperation among local, state, and federal government determined this project's success.
- **Hickory Ridge Landfill and Coca-Cola CCHP Project, Georgia** — Constructing a 6-mile, dedicated LFG pipeline, permitting three engines in a severe ozone non-attainment area, and meeting a deadline to receive a U.S. Treasury Section 1603 grant did not deter Mas Energy from developing a unique project that provides Coca-Cola's Atlanta Syrup Branch facility with a continuous supply of renewable electricity, steam, and chilled water. This combined cooling, heat and power (CCHP) project will annually generate at least 48 million kilowatt-hours of on-site green power and provide nearly all of the plant's energy needs, providing Coca-Cola real energy savings. Coca-Cola's corporate strategy to advance the use of alternative energy and grow its business sustainably through economically and environmentally beneficial ventures led to the development of this award-winning project.
- **La Crosse County Landfill and Gundersen Health System CHP Project, Wisconsin** — Its Onalaska Campus is 100 percent energy independent and Gundersen Health System is well on its way to meeting its 2014 total energy independence goal thanks to a public/private partnership with La Crosse County. A 2-mile pipeline brings LFG under Interstate 90 from the county landfill to create green power for the local grid and heat both buildings and water on the health system's campus. This combined heat and power (CHP) project serves as an excellent example of cost savings combined with environmental stewardship for other health systems nationwide that struggle with rising energy costs. The county benefits from a new revenue stream and its landfill is the first in the state to receive "Green Tier" status from the Wisconsin Department of Natural Resources.
- **Lycoming County Landfill Dual Cogeneration and Electricity Project, Pennsylvania** — Creative permit and power purchase agreement structuring contributed to the success of this project. Eighty percent of the Federal Bureau of Prisons' (FBOP) Allenwood Correctional Complex's electricity is supplied and 90 percent of the power and thermal needs of the Lycoming County Landfill complex are met through the combustion of LFG in four internal combustion engines (6.2 MW total). The FBOP gains long-term power price stability and clean energy (toward meeting federal renewable energy requirements), and the county receives funding for updating its gas collection system and revenue for the LFG without having to pay anything since PPL Renewable Energy developed, owns, and operates the project.
- **Orange County's Olinda Alpha Landfill Combined Cycle Project, California** — Employing creative financing and innovative emission controls, Broadrock Renewables, DCO Energy, and Orange County implemented the second-largest LFG-fueled power plant (32.5 MW) in the country. Financing included a \$10 million ARRA grant from the Department of Energy and a Section 1603 grant from the U.S. Treasury. Pre-treatment of LFG includes a two-stage siloxane removal system while NOx is controlled via an innovative post-combustion selective catalytic reduction (SCR) process. Positive impacts on the local, regional, and national economy stem from local green power usage by the City of Anaheim, annual county LFG revenues of \$2.75 million, and manufacture of all major equipment components in the United States (including the four gas turbines which were built only 100 miles away from the power plant). The project's combined cycle process is more efficient than a standard gas turbine project with a 45 percent gross electrical efficiency, and the plant's wastewater is used to control dust at the landfill in place of potable water supplies.
- **St. Landry Parish Landfill CNG Project, Louisiana** — Converting just 50 cubic feet per minute of LFG into 250 gallons of gasoline equivalent per day of compressed natural gas, St. Landry Parish Solid Waste Disposal District found a cleaner, greener way of destroying methane and fueling government vehicles including District cars and trucks, and vans and cars at the Sheriff's office. To save on costs, the District self-developed the project with help from several contracting companies to site the project, overcome permitting hurdles, obtain grant funding, construct the clean-up, compression, storage, and fueling facility, and modify vehicles for CNG use. The end results are significant air quality benefits, unique environmental education opportunities for the local community, and an invitation to discuss their success story during a trade mission to France.
- **Watauga County Landfill Small Electricity Project, North Carolina** — Watauga County's 186-kilowatt (kW) model project gives hope to landfill owners of other small, closed landfills across the country and world that beneficial, cost-effective electricity generation from a small amount of LFG is not only achievable, but can provide benefits far beyond the local community. By self-developing the project — with assistance from local businesses and the Appalachian State University (ASU) Energy Center — and creatively using modified automotive engines, the county was able to keep costs low enough to make the project financially viable. Employing a technology previously used only to destroy methane from coal mine gas, this first instance of an LFG-fired application has led to four additional planned projects in the state through the ASU Energy Center's CommunityTIES project. Not only does the project provide one-of-a-kind research opportunities for ASU students and faculty, but it will also turn an annual profit of \$72,000 and reduce the landfill's electricity bill by 80 percent.

2012 Industry Partner of the Year: Landfill Energy Systems, Michigan — Landfill Energy Systems (LES) operates and maintains 38 LFG energy projects across the country, including electrical generation, direct-use, and high-Btu facilities. In 2012, LES added two independently owned facilities to its operational fleet, including the LMOP Award-winning 3.2-MW project at Anne Arundel County's Millersville Landfill in Maryland. Formed in 1986, LES is one of the LFG industry's oldest and largest privately owned developers of LFG energy projects. Since 1987, LES has developed 49 projects in 18 states, processing more than 141 million cubic feet of LFG per day, generating 1.46 million British thermal units (Btu) of renewable natural gas and 2 million MWh of renewable electricity per year. LES has built plants under strict air permitting regulations from New Jersey to southern California, and has worked with both public and private landfill owners and 25 utilities.

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