



# Gas to Energy – Prairie View Recycling and Disposal Facility

## Will County

### The problem

When waste decomposes in landfills, a gas is produced which is composed primarily of methane (the primary component of natural gas) and carbon dioxide. If uncontrolled, these emissions can contribute to local smog and climate change, and may cause health and safety concerns. Methane, which represents half of the volume of landfill gas, is of particular concern, as its climate changing potential is over 20 times that of carbon dioxide. In 2009, landfills were the third largest human-made source of methane emissions in the US in 2009 ([United States Environmental Protection Agency](#), 2009).

### The solution

Instead of escaping into the air, landfill gas (LFG) can be captured and converted as a renewable, reliable green power source that destroys methane and other organic compounds. By offsetting the use of non-renewable resources such as coal, oil and gas, use of this energy reduces emissions of sulfur dioxide, nitrous oxide, particulate matter, and carbon dioxide. In addition to greenhouse gas reductions, the capture and use of landfill gas provides the ancillary benefits of limiting odors, controlling damage to vegetation, reducing owner liability, risk from explosions, fire and asphyxiation, and smog while providing a potential source of revenue and profit.

According to the United States Environmental Protection Agency (USEPA), LFG is extracted from landfills using a series of wells and a blower/flare (or vacuum) system. This system directs the collected gas to a central point where it can be processed and treated depending upon the ultimate use for the gas. From this point, the gas can be flared, used to generate electricity, replace fossil fuels in industrial and manufacturing operations, or upgraded to pipeline-quality gas where the gas may be used directly or processed into an alternative vehicle fuel.

### The process

By federal regulation, methane gas must be collected and flared (burned) off. This methane gas flare operates from the opening of a landfill until decades after its closure to prevent the potent greenhouse gas from escaping into the atmosphere.

According to Dean Olson, Director of Will County’s Resource Recovery and Energy Division, when the County first envisioned building a landfill at the former Joliet Arsenal site, a gas-to-energy plant was a distant goal. However, thanks to a grant through the American Recovery and Reinvestment Act of 2009, and subsequent Department of Energy Efficiency and Conservation Block Grant (EECBG) funds, the County’s contractor, Waste Management, broke ground on the building of Prairie View Recycling and Disposal Facility, a gas-to-energy plant, in the fall of 2010.

Partnering with Waste Management to fund the approximately \$9 million cost of the plant, the County put \$1 million of the EECBG funds towards the project. As owner of the landfill, the County receives revenue from the sale of gas which in turn, generates electricity. Waste Management provides monthly payments to the county based on the amount of gas generated from the landfill and flowing through the facility. As market conditions evolve, the County will share in additional revenue with Waste Management in addition to the gas payments.

### Overview

Will County opened the Prairie View Recycling and Disposal Facility, a gas-to-energy plant, in December 2011. By the end of 2012, it will have generated about \$450,000, which will go to a special account for energy efficiency initiatives. From an environmental standpoint, the plant will have removed the greenhouse gas emission equivalent of 104,124 cars from the road for one year.

### CMAP Resources

- [Climate Change and Energy Strategy Paper](#)
- [Waste Disposal Strategy Paper](#)

### GO TO 2040

#### Recommendation:

#### Livable Communities -

*Manage and conserve water and energy resources.*



*Will County’s Prairie View Recycling and Disposal Facility*

### For more information

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The landfill gas-to-energy plant will pull the majority of methane gas generated by the landfill through three to eight generators that will turn the gas into electricity. This facility is expected to generate enough power in 2012 to provide all the energy needs of 3,000 homes. By the time the plant is complete (which takes several years as the landfill continues to take in more waste), the gas to energy plant is projected to power up to 8,000 homes annually.

## Community concerns

The Will County Board approved a Gas Purchase Agreement with Waste Management after several publicly held meetings. The Agreement was then finalized and negotiated with input from Board members. The landfill has operated since 2004 with very few complaints, which has helped when projects such as this one need to be approved. Will County & Waste Management have received much national attention for their public-private partnership due to the agreement providing both revenue and an alternative energy source.

## Outcomes

Prairie View opened in December 2011, and started generating revenue in January. The County collects between \$35,000 and \$45,000 each month. The expected total for 2012, \$450,000, is anticipated to grow to between one and one and a half million dollars per year over the next ten years. There is a revenue sharing clause which allows Will County to share in the revenue from the sale of electricity and related credits 50/50, once certain thresholds are reached. The plan is that the revenue from the facility will go to a special account that the County will use for energy efficiency initiatives.

Using the [USEPA's benefit calculator](#), the County estimates the plant will yield the following environmental benefits:

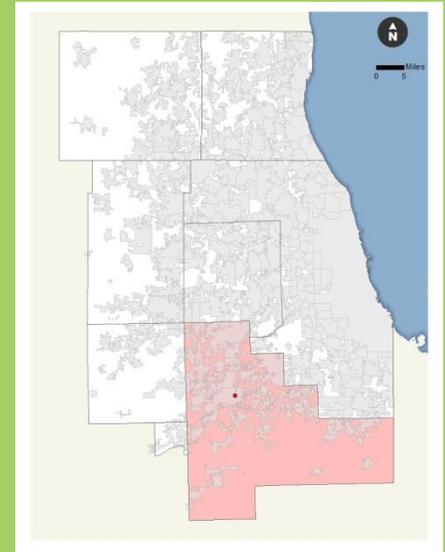
- Removing the greenhouse gas emission equivalent of 104,124 cars from the road for one year, or
- Sequestering the carbon equivalent of planting 116,113 acres of pine trees for one year, or
- Avoiding the carbon dioxide (CO<sub>2</sub>) emissions equivalent to burning 2,844 railcars' worth of coal for one year.

## Lessons learned

Mr. Olson advises the selection of an experienced, financially solvent operator to weather any low points in energy prices, credits, etc. An experienced operator can help move the project through hurdles, and anticipate problems. He said some delays may be expected depending on weather, utilities, and permitting. He notes that if the project is structured in the right manner, everyone can benefit in the long term.

Contact Lindsay Bayley ([lbayley@cmap.illinois.gov](mailto:lbayley@cmap.illinois.gov)) to submit a case study.

## Location Map:



## Additional Resources

- [USEPA Landfill Methane Outreach](#)
- [U.S. Geological Survey](#)
- [Renewable Energy World](#)



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