

LANDFILL GAS RENEWABLE ENERGY FACT SHEET

WHAT IS LANDFILL GAS?

Landfill gas is the product of the anaerobic decomposition of organic materials in a landfill. Methane comprises approximately half of this gas and can be converted into a renewable energy product.

The EPA established the Landfill Methane Outreach Program to promote landfill gas beneficial use projects by partnering with states, local governments and the private sector. This program is a cornerstone of federal renewable energy initiatives.

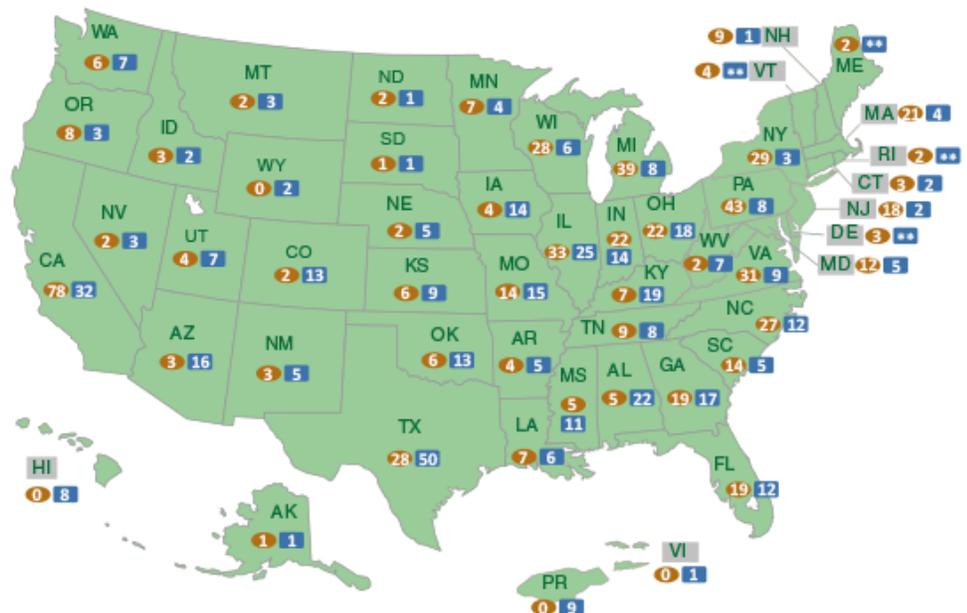
WHAT KIND OF ENERGY CAN LANDFILL GAS PRODUCE?

Landfill gas can be converted into electricity. It can also offset the use of another fuel such as natural gas, coal or fuel oil, it can be turned into an alternative fuel for transportation and other uses and it can be used in a cogeneration project to generate both electricity and thermal power.

Electricity generation is the most common energy recovery use, with two-thirds of existing projects producing this form of renewable energy. One third of the projects directly use landfill gas in boilers, dryers, kilns, etc. Industries such as auto manufacturing, chemical production, food processing, pharmaceuticals, cement and brick manufacturing, wastewater treatment, consumer electronics and products, paper and steel production, prisons, and hospitals, use energy from landfill gas.¹ Companies using landfill gas include BMW, SC Johnson, Tropicana, Ford, Dupont, Honeywell, Sunoco, General Motors, Fujifilm, Dart, Stouffers, Anheuser Busch, Frito-Lay, and many more.² The use of landfill gas as an transportation fuel is growing and provides a renewable option for the increasing number of trucks and other vehicles that operate on natural gas.

HOW MANY LANDFILLS CONVERT GAS TO ENERGY?

According to EPA's Landfill Methane Outreach program, as of July 2013, 621 landfill gas energy recovery programs are operating in the United States and approximately 450 other landfills are good candidates for these projects.³



Nationwide Summary
621 OPERATIONAL Projects (1,978 MW and 311 mmscfd)
~450 CANDIDATE Landfills (850 MW or 470 mmscfd, 36 MMTCO ₂ e/yr Potential)

- OPERATIONAL PROJECTS
- CANDIDATE LANDFILLS*

*Landfill is accepting waste or has been closed 5 years or less, has at least 1 mm tons of waste, and does not have an operational, under-construction, or planned project; can also be designated based on actual interest by the site.

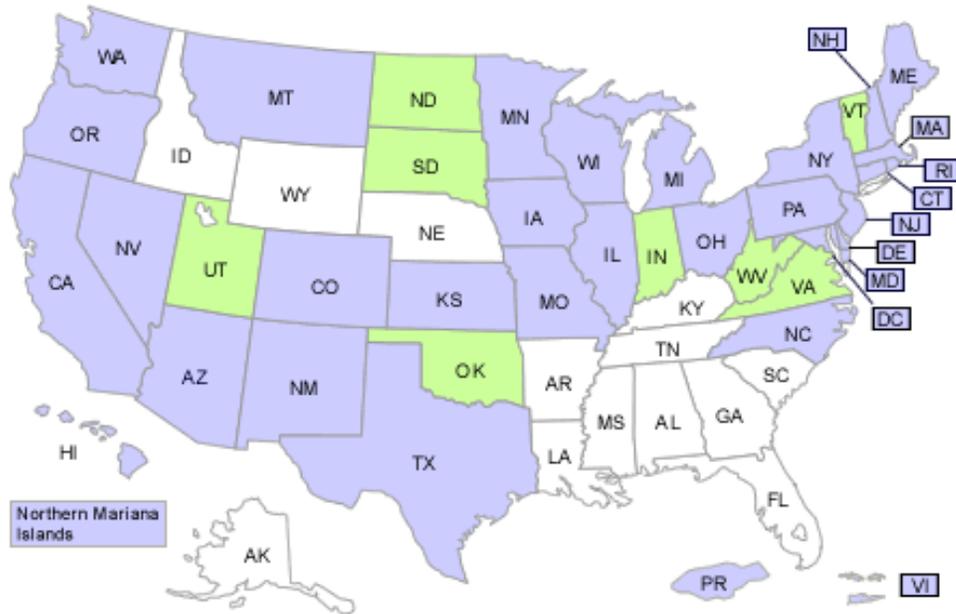
These data are from LMOP's database as of July 16, 2013.

** LMOP does not have any information on candidate landfills in this state.

WHAT ARE THE ENERGY BENEFITS OF USING LANDFILL GAS AS A RENEWABLE ENERGY SOURCE?

As of October, 2012, existing recovery projects produced annual amounts of 14.8 billion kilowatt-hours of electricity and 102 billion cubic feet of landfill gas for direct use.⁴ EPA estimates these products provide annual energy benefits of powering 1 million homes – a little fewer than in the state of Nevada and heating 736,000 homes – about the number of homes in Maine.⁴

WHAT ARE THE ENVIRONMENTAL BENEFITS OF USING LANDFILL GAS AS A RENEWABLE ENERGY?



In addition to the energy conservation benefits provided by converting landfill gas into a renewable energy product, reduces greenhouse gases produced by fossil fuels such as natural gas, coal, diesel or other fuel oil. EPA estimated for 2012 that landfill gas recovery projects had an annual environmental benefit of carbon sequestered annually by more than 21 million acres of pine or fir forests OR carbon-dioxide equivalent emissions from 238 million barrels of oil consumed OR annual greenhouse gas emissions from 20 million passenger vehicles.⁴

Landfill gas recovery is recognized by EPA's Green Power Partnership and 37 states as a source of green, renewable energy.⁴

- States with renewable portfolio standards that include landfill gas
- States with renewable portfolio guidelines (i.e., non-mandated) that include landfill gas

WHAT ARE THE ADDITIONAL BENEFITS OF LANDFILL GAS AS A RENEWABLE ENERGY?

Landfill gas is generated 24 hours a day, seven days a week. Its generation is not dependent on environmental factors such as the amount of sunlight or wind. In fact, landfill gas supplies more renewable energy in the United States than solar power.⁵ Landfill gas recovery has an on-line reliability of more than 90 percent.⁴

1 USEPA Landfill Methane Outreach Program (LMOP), Basic Information, <http://www.epa.gov/lmop/basic-info/index.html> screen shot July 18, 2013.

2 Innovative Uses of LFG Energy, Brent Dieleman, April 2013.

3 "Fact Sheet: Landfill Methane", Environmental and Energy Study Institute, Washington DC, May 2013.

4 An Overview of Landfill Gas Energy in the United States, USEPA, June 2012.

5 Trends in Renewable Energy Consumption and Electricity 2010, Table 1, US Energy Information Administration, 2012.



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