U.S. EPA Landfill Methane Outreach Program and Landfill Gas Energy

Creating partnerships and renewable energy across the country

www.epa.gov/lmop

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What is LFG?

Much of the waste we generate ends up in municipal solid waste (MSW) landfills. Landfill gas (LFG) is a natural byproduct of the decomposition of organic material within landfills and contains about 50 percent methane (CH_4) and 50 percent carbon dioxide (CO_2). MSW landfills are the third-largest source of human-related methane emissions in the United States, accounting for approximately 14.4 percent of these emissions in 2022.[1] Methane is a potent greenhouse gas (GHG) at least 28 times more effective than CO_2 at trapping heat in the atmosphere over a 100-year period.[2] Learn more about landfill methane at epa.gov/lmop/basic-information-about-landfill-gas.

What is LMOP?

LMOP is a voluntary program that works cooperatively with industry stakeholders and waste officials to reduce or avoid methane emissions from landfills. LMOP encourages the recovery and beneficial use of biogas generated from organic MSW as it contains methane, a potent GHG and the primary component of natural gas. LMOP forms partnerships with communities, landfill owners and operators, utilities, energy users, states, project developers, Tribes and nonprofit organizations to overcome barriers to project development. LMOP Partners are listed at epa.gov/lmop/about-partners-landfill-methane-outreach-program.

For more information about LMOP, program resources and LFG energy, see epa.gov/lmop.

What is LFG Energy?

Many cost-effective options exist to capture and destroy LFG by converting it into energy, thereby reducing methane emissions. LFG can fuel internal combustion engines, turbines, microturbines or other technologies to produce electricity. LFG is also used directly as an alternative to fossil fuels in equipment such as boilers, heaters and kilns, or is refined for use in vehicles or injection into natural gas pipelines. See LFG energy project examples at epa.gov/lmop/lmop-landfill-and-project-database.

What are the Benefits of LFG Energy?

Communities with an LFG energy project enjoy a variety of benefits, including:

- Job creation, revenue and cost savings.
- Improved local air quality and reduced GHG emissions.
- Reliable local fuel source and less fossil fuel usage.
- Enhanced image as an innovative community.

Read more about the benefits of LFG energy at epa.gov/lmop/benefits-landfill-gas-energy-projects.

For information about renewable natural gas, see epa.gov/lmop/renewable-natural-gas.

LMOP Assistance and Resources

Project Development Process.

LMOP offers several resource options, including:

- LFG Energy Project Development Handbook
- Landfill and LFG Energy Project Database
- LFGcost-Web (cost model)
- Considering Environmental Justice in LFG Energy Project Development
- Feasibility assessments
- Environmental benefits calculator

Financing LFG Energy Projects.

Securing funding can be a barrier to LFG energy project development. LMOP directs stakeholders to resources with information about pertinent funding mechanisms through its Resources for Funding LFG Energy Projects webpage at epa.gov/lmop/resources-funding-landfill-gas-energy-projects.

Networking and Information.

LMOP's partnerships create a vital network of landfills, states, communities and companies. LMOP provides information through:

- Partner listings
- Listserv email messages
- Webinars

1. U.S. EPA. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. April 2024. epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022.
2. U.S. EPA. Understanding Global Warming Potentials. epa.gov/ghgemissions/understanding-global-warming-potentials. LMOP uses a CH_4 global warming potential of 28 in program calculations to be consistent with key Agency emission quantification programs such as the U.S. GHG Inventory.