

13th Annual LMOP Conference & Project Expo



Your LMOP... Rachel Goldstein, Victoria Ludwig, Swarupa Ganguli, Tom Frankiewicz, & Chris Godlove



*U.S. Environmental Protection Agency
Landfill Methane Outreach Program (LMOP)*



Conference Highlights

- Yet another RECORD breaking year – 600 pre-registered attendees!!!

Thanks!!!

- Happenings

- *U.S. Coast Guard Yard's LFGE Facility Tour*
- *Awards Luncheon*

- Reception at the Maryland Science Center



Thank Our Sponsors!

LMOP Capitol Club



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Exhibits and Expo

Be sure and visit the 85 Exhibits (record) and 6 Project Expo Landfills!!!





Project Expo Landfills

California

- *Cummings Road Landfill*

Hawaii

- *South Hilo Landfill*

Indiana

- *Monroe County Landfill*

Kansas

- *Ford County Landfill*

North Carolina

- *Rowan County Landfill*

Wisconsin

- *La Crosse County Landfill*



State of the LFGE Industry

(December 2009)

- **509 operational projects currently**
 - 12.8 billion kWh of electricity produced and 102 billion cubic feet of gas delivered in '09
- **At least 45 projects under construction for '09/10 & more in the advanced planning stages**
- **At least 530 candidate landfills with 1,170 MW of potential capacity *or* 220 billion cubic feet/yr of LFG for direct use AND ~13.5 MMTCE in potential emission reductions!**



Estimated 2009 Environmental and Energy Benefits

- **Environmental:**

- Carbon sequestered annually by **19,700,000 acres of pine or fir forests**, or
- CO₂ emissions from more than **215,000,000 barrels of oil consumed**, or
- Annual greenhouse gas emissions from **17,700,000 passenger vehicles**, or
- CO₂ emissions from burning nearly **484,000 railcars' worth of coal**.

- **Energy:**

- Powering more than **926,000 homes** and heating more than **736,000 homes**



'09 New LFGE Projects and Expansions Online

- * Altamont SLF, CA
- * Keller Canyon LF, CA
- * Ox Mountain SLF, CA
- * Baseline LF, FL
- * Highlands Co. SWMC, FL
- * Live Oak LF, GA
- * Oak Grove/Speedway LFs, GA
- * Superior LF & RC, GA
- * **Veolia ES Zion Landfill, IL**
- * Laubscher Meadows LF, IN
- * **Liberty Landfill, IN**
- South Side Landfill, IN
- * **Twin Bridges RDF, IN**
- * Veolia ES Blackfoot LF, IN
- * Maysville/Mason Co. LF, KY
- * **Woolworth Road LF, LA**
- Quarry Hills Soils LF, MA
- * Gude LF, MD
- * Oaks SLF, MD
- * Quarantine Road SLF, MD
- * Crossroads LF, ME
- * Glen's Sanitary LF, MI
- * South Kent LF, MI
- * Whitefeather LF, MI
- * Courtney Ridge LF, MO
- **Fred Weber SLF, MO**
- * Jefferson City SLF, MO
- * Veolia ES Oak Ridge LF, MO

Orange = project expansion

* = LMOP-assisted



'09 New LFGE Projects and Expansions Online (cont.)

- Prairie Bluff SL, MS
- * Flathead County SWD LF, MT
- * City of Durham LF, NC
- * **North Wake LF, NC**
- * Colebrook LF, NH
- * Turnkey (TREE), NH
- * **Chaffee LF, NY**
- * Madison County LF, NY
- * **Mill Seat LF, NY**
- * Cherokee Run LF, OH
- * Lake County LF, OH
- * Quarry LF, OK
- * Arden LF, PA
- * CES LF, PA
- * Cumberland County LF, PA
- * **Northern Tier LF #2, PA**
- * Greenwood Co. LFs, SC
- * **Lee County LF, SC**
- * Sioux Falls Reg. SLF, SD
- * Carter Valley LF, TN
- * **DFW R&DF, TX**
- * Greenwood Farms LF, TX
- * McCarty Road LF, TX
- * Trinity Oaks LF, TX
- * Trans-Jordan LF, UT
- * Middle Peninsula, VA
- * Stafford Co. LF, VA
- * **Coventry LF, VT**
- * Brown Co. East LF, WI



'10 Under Construction Projects & Expansions

- * Magnolia Subtitle D LF, AL
- * Calabasas SLF, CA
- * Central Disp. Site (Sonoma), CA
- * Chiquita Canyon SLF, CA
- * City of Santa Clara LF, CA
- Lamb Canyon Disposal Site, CA
- * Santa Cruz City SLF, CA
- * Larimer County LF, CO
- * **SSWMC LF, DE**
- * Bee Ridge LF, FL
- PBCSWA RRF Site #7, FL
- Des Moines County SLF, IA
- Livingston LF, IL
- Wheatland Prairie RDF, IL
- * **Clark-Floyd LF, IN**
- * Newton County Landfill, IN
- Rolling Meadows LF, KS
- * River Birch Landfill, LA
- * Reichs Ford SLF, MD
- * SE Berrien County LF, MI
- Lamar LF/Prairie View RWF, MO
- * Sarpy County LF, NE
- * Salem County SLF, NJ
- * Auburn SLFs, NY
- * Bath LF, NY
- * Chautauqua County LF, NY
- * Erie County SLF, OH

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'10 Under Construction Projects & Expansions (cont.)

- * Hancock County SL, OH
- * Hoffman Road SLF, OH
- Columbia Ridge LF, OR
- Riverbend LF Company, OR
- * Alliance SLF, PA
- * Greenridge Reclamation, PA
- * Lanchester LF, PA
- * Mostoller LF, Inc., PA
- * Seccra LF, PA
- Seneca LF, PA
- * Veolia ES Greentree LF, PA
- * Berkeley Co. LFs, SC
- * Georgetown Co. LFs, SC
- * Palmetto LF, SC
- * Wellford LF, SC (2 projects)
- * Blue Ridge LF, TX
- * Montgomery RSWA LF, VA
- * Newport News SWDF No. 2, VA
- * Rockingham County LF, VA
- * Springfield Road LF, VA
- * Brattleboro, VT
- Chittenden Co. LF, VT
- * Cedar Hills LF, WA
- * Roosevelt Reg. MSWL, WA
- Dane Co. #2-Rodefeld, WI
- Veolia ES Hickory Meadows LF, WI



LMOP Partner and Endorser Update

- **Currently 887 Partners and Endorsers**
 - 605 Industry Partners
 - 103 Energy Partners
 - 39 State Partners
 - 112 Community Partners
 - 28 Endorsers
- **118 new Partners joined in 2009**
 - 99 Industry Partners
 - 8 Energy Partners
 - 0 State Partners
 - 9 Community Partners
 - 2 Endorsers



LMOP 2009 Accomplishments

- Updated website**
- New cost data for LFG Cost**
- New jobs created section for LFG Cost**
- MSW insert**
- Fact sheet for Stimulus Bill incentives**
- Sent 75 listservs for RFPs/ RFQs,
funding announcements**

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- [International Activities](#)
- [Frequent Questions](#)



The U.S. Environmental Protection Agency's Landfill Methane Outreach Program (LMOP) is a voluntary assistance program that helps to reduce methane emissions from landfills by encouraging the recovery and beneficial use of landfill gas (LFG) as an energy resource. LFG contains methane, a potent greenhouse gas that can be captured and used to fuel power plants, manufacturing facilities, vehicles, homes, and more. By joining LMOP, companies, state agencies, organizations, landfills, and communities gain access to a vast network of industry experts and practitioners, as well as to various technical and marketing resources that can help with LFG energy project development.

Basic Information

- [About LMOP](#)
- [Methane Emissions From Landfills](#)
- [Converting Landfill Gas to Energy](#)
- [Benefits of Landfill Gas Energy](#)
- [Frequent Questions](#)

What's New [RSS Feeds](#)

- [What's new](#)
- [Gazette](#)

Landfill Gas Energy Projects and Candidate Landfills



Project Development Handbook

Partners

Landfill Methane Outreach Program

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Operational Projects

Creative use of landfill gas (LFG) includes heating greenhouses, producing electricity and heat in cogeneration applications, firing brick kilns, supplying high-Btu pipeline-quality gas, fueling garbage trucks, and providing fuel to chemical and automobile manufacturing. Projects range from small-scale community-driven initiatives to multi-million-dollar private investments.

The Excel spreadsheets linked below contain the latest version of the LMOP database of operational and under-construction LFG energy projects. This Excel version of the database is updated and posted to the Web site each month. The information contained in the LMOP database is compiled from a variety of sources, including annual voluntary submissions by LMOP Partners and industry publications. Due to the limitations of voluntary reporting, LMOP cannot guarantee the accuracy of these data.

[Download a free Excel spreadsheet viewer.](#) [EXIT Disclaimer](#)

- [Operational LFG energy projects, sorted by state and landfill name \(XLS\)](#) (223 K, [About MS Excel](#) [EXIT Disclaimer](#))
- [Electricity \(XLS\)](#) (163 K, [About MS Excel](#) [EXIT Disclaimer](#))
- [Direct use \(XLS\)](#) (68 K, [About MS Excel](#) [EXIT Disclaimer](#))
- [Cogeneration \(XLS\)](#) (37 K, [About MS Excel](#) [EXIT Disclaimer](#))
- [Other \(XLS\)](#) (43 K, [About MS Excel](#) [EXIT Disclaimer](#))

Tools

- [LFG Benefits Calculator](#)
- [Interactive Conversion Tool](#)
- [LFGcost-Web—Landfill Gas Energy Cost Model](#)
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Candidate Landfills

- [Candidate landfills, sorted by state and landfill name \(XLS\)](#) (156 K, About MS Excel [EXIT Disclaimer](#))
Download a free Excel spreadsheet viewer. [EXIT Disclaimer](#)

LMOP has developed a variety of analyses profiling specific landfill sites that LMOP considers candidates for the development of landfill gas (LFG) use projects. Included in the list of analyses are:

- [Project expo landfill presentations.](#)
- Gas generation and recovery estimates, which were produced with EPA's LandGEM software.
- Feasibility assessments conducted to evaluate the LFG generation and recovery potential at specific landfills, potential end uses, and the approximate costs of using the gas for energy.

These analyses are based on engineering judgment and represent the standard of care that would be exercised by a reasonable professional experienced in the field of LFG projections. LMOP does not guarantee the quantity of available LFG, nor any other site characteristic presented in these documents. The information used to conduct these analyses was obtained from, compiled, or provided by other parties. LMOP has made this information publicly available, with the permission of the subject landfills, to promote further development of environmentally beneficial LFG use projects.

Tools

- [LFGE Benefits Calculator](#)
- [Interactive Conversion Tool](#)
- [LFGcost-Web—Landfill Gas Energy Cost Model](#) [EXIT Disclaimer](#)

Corporate Resources

Are you a business interested in using LFG to power your facility?

- [Resources LMOP offers end users](#)

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[State LFG Primers](#)

[Project Development Handbook](#)

[Newsroom](#)

[Workshops / Conferences](#)

[International Activities](#)

[Frequent Questions](#)

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Publications/Tools

LMOP offers a wide array of free technical, promotional, and informational tools as well as services to assist with the development of landfill gas (LFG) energy projects. This page is a compilation of the various publications, brochures, and fact sheets referenced throughout the site. As with any of the tools and services offered by LMOP, if you have any questions you should feel free to contact one of the [LMOP team members](#).

A number of the documents listed below can be accessed on line for immediate viewing, and some items can be ordered from NSCEP/NEPIS, EPA's gateway to free digital and paper publications. There are instructions below for items orderable from NSCEP/NEPIS.

You will need Adobe Reader to view some of the files on this page. See [EPA's PDF page](#) to learn more.

- [Technical Documents](#)
- [Informational Brochures and Fact Sheets](#)

Technical Documents

[Draft Clean Energy Strategies Guide: Landfill Gas to Energy \(PDF\)](#) (34 pp, 483K)

LMOP teamed with EPA's Local Government Climate and Clean Energy Program to produce a chapter on LFG energy for its larger publication: *Local Government Clean Energy Strategies*. This document details strategies local governments can use to meet their energy demand in clean, reliable, and low-cost ways.

» [Webcast: Landfill Gas to Energy](#)

[Funding Landfill Gas Energy Projects: State, Federal, and Foundation Resources](#)

This funding guide offers detailed information on innovative state, federal, and foundation funding resources available for LFG energy projects.

[Landfill Gas Energy Project Development Handbook](#)

This handbook provides LFG energy project development guidance, with individual chapters about the basics of LFG energy, gas modeling, technology options, economic

183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211

Economic Benefits and Job Creation Summary

LFG energy projects generate benefits for the communities and states in which they are located, as well as for the United States. These benefits include new jobs and expenditures directly impacting the local and state-wide economies as a result of the construction and operation of an LFG energy project. In addition, there are indirect economic benefits when the direct expenditures on an LFG energy project flow through the economy resulting in increased overall economic production and economic activity within the local, state, and national economies.

The total employment and output impacts summarized below represent the state-wide impacts considering ripple effects of the expenditures and employment directly related to the LFG energy project. The economic "ripple" effect has three components: direct, indirect, and induced. Direct effects result from on-site jobs and new purchases from local businesses that are required to build and operate the project. Indirect effects occur as those local businesses spend their new revenue to re-stock and pay their employees. Induced effects result when employees spend their paychecks within the state. Each layer of spending generates new income to firms and families in the state, and eventually to the overall national economy.

The cost of large or specialized components, or specialized engineering and design labor likely to be manufactured or hired outside of the state is not included in the state-wide impacts estimates.

While in the construction phase, an LFG energy project provides a one-time boost to the local and state economies, and the operation and maintenance of the project generates ongoing economic activity throughout the lifetime of the project. The annual impacts use the estimated expenditures during the first year of the project operation to estimate the annual economic benefits during the O&M phase.

State of Project

California

Construction Phase (one-time impacts)

Number of jobs created within the state directly from project:	5.8
Total number of jobs created within the state including economic ripple effects:	25.1
Direct state-wide expenditures on project (\$000):	1,551
Total state-wide economic output resulting from ripple effects (\$000):	4,510

Operation and Maintenance (O&M) Phase (annual impacts)

Number of jobs created within the state directly from project:	1.7
Total number of jobs created within the state including economic ripple effects:	5.1
Direct state-wide expenditures on project (\$000):	266
Total state-wide economic output resulting from ripple effects (\$000):	720



Methane to Markets '09 Landfill Accomplishments

- Reductions- India, Colombia, Ukraine
- Prepared 7 desktop studies/reviews; 1 Pre-feasibility Study; 13 Assessment Reports; two direct use studies, three study tours (US and in-country)
- Conducted 11 Workshops covering over 600 people trained
- Country specific LandGEM models- China, Ukraine, Mexico update
- Contributions to IEA Methane Report
- ILD has over 600 LFs



Methane to Markets Partnership Expo

New Delhi, India • 2–5 March 2010



- Premier international forum for promoting methane recovery and use project opportunities and technologies.
- Provides participants with opportunities to:
 - o Showcase and learn about methane mitigation projects and technologies.
 - o Meet with potential project partners and financiers.
 - o Explore key technical, financial, and policy issues.
 - o Interact with high-level government agencies from 30 countries.

For more information please visit: www.methanetomarkets.org/expo



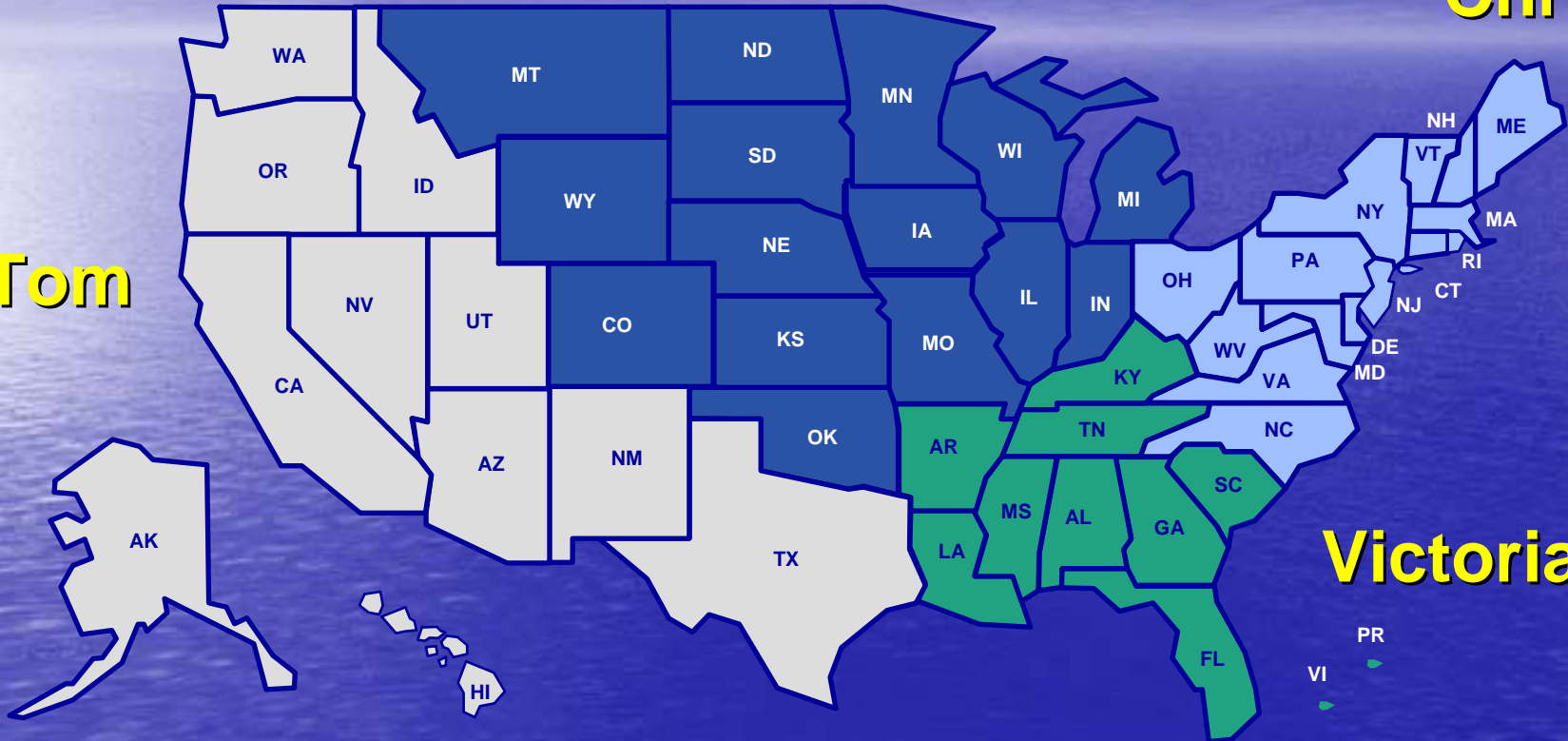
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