LMOP Workshop: Introduction & Program Overview

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EPA’s Landfill Methane Outreach Program

- Established in 1994
- Voluntary program that creates alliances among states, energy users/providers, the landfill gas industry, and communities

Mission: To reduce methane emissions by lowering barriers and promoting the development of cost-effective and environmentally beneficial landfill gas (LFG) energy projects.
Currently over 1,050 Partners:

- 737 Industry Partners
- 114 Energy Partners
- 39 State Partners
- 135 Community Partners
- 37 Endorsers

54 new Partners joined in 2012

- 37 Industry Partners
- 2 Energy Partners
- 13 Community Partners
- 2 Endorsers
Why EPA is Concerned about Landfill Gas

- Why is methane a greenhouse gas?
  - Methane absorbs terrestrial infrared radiation (heat) that would otherwise escape to space (GHG characteristic)

- Methane as a GHG is over 20x more potent by weight than CO₂

- Landfills are the third largest human-made source of methane in the United States

- Methane is more abundant in the atmosphere now than anytime in the past 400,000 years and 150% higher than in the year 1750
Targeting Methane…
Producing Measurable Results

Since 1990, U.S. methane emissions have decreased by 7% while GDP increased by 65%.

Benefits of LFG Energy Projects

- Dual benefit ➔
  - Destroys methane and other organic compounds in LFG
  - Offsets use of nonrenewable resources (coal, oil, gas) reducing emissions of $\text{SO}_2$, $\text{NO}_x$, PM, CO$_2$
- Produces energy 24/7 and projects have online reliability of over 90%
- Local, renewable source of energy
- Creates jobs during construction and continued operation
- Fosters collaboration among private and public entities
Jobs and Revenue Creation

- A typical 3 MW LFG electricity project is estimated to have the following economic & job creation benefits during the construction year:
  - Add more than $1.5 million in new project expenditures for the purchase of generators, and gas compression, treatment skid, and auxiliary equipment
  - Directly create at least 5 jobs for the construction and installation of the equipment
  - Ripple effect: increase the state-wide economic output by $4.3 million & employ 20-26 people throughout the state & local economies
A typical 1,040 scfm LFG direct-use project is estimated to have the following economic & job creation benefits during the construction year:

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<tr>
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<th>5-mile pipeline</th>
<th>10-mile pipeline</th>
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<tbody>
<tr>
<td>New project expenditures</td>
<td>$1.1 million +</td>
<td>$2.2 million +</td>
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<tr>
<td>Direct installation jobs</td>
<td>At least 7</td>
<td>At least 14</td>
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<tr>
<td>Ripple effect – economic output &amp; employed people</td>
<td>$2.9 million &amp; 17-22 people</td>
<td>$5.3 million &amp; 32 to 41 people</td>
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LFG Energy Projects and Candidate Landfills

Nationwide Summary

605 OPERATIONAL Projects
(1,858 MW and 307 mmscfd)

~445 CANDIDATE Landfills
(845 MW or 475 mmscfd, 10 MMTCE Potential)

These data are from LMOP's database as of October 2012.

* Landfill is accepting waste or has been closed for 5 years or less, has at least 1 mmtons of waste, and does not have an operational/under construction LFG energy project; or is designated based on actual interest/planning.

** LMOP does not have any information on candidate landfills in this state.
Project Snapshot
(October 2012)

- 605 operational projects
- 15 billion kWh of electricity produced and 101 billion cubic feet of LFG delivered in ’12
- At least 35 projects under construction for ’13 and more in the advanced planning stages
- At least 445 candidate landfills with 840 MW of potential capacity or 155 billion cubic feet/yr of LFG for direct use – either way, ~10 MMTCE in potential emission reductions!
Estimated 2012 Environmental and Energy Benefits

- Environmental:
  - Carbon sequestered annually by 22,000,000 acres of pine or fir forests, or
  - CO₂ emissions from 241,000,000 barrels of oil consumed, or
  - Annual greenhouse gas emissions from 20,000,000 passenger vehicles, or
  - CO₂ emissions from burning 565,000 railcars’ worth of coal

- Energy:
  - Powering 1,097,000 homes and heating 724,000 homes
Market Overview

- 300% increase in LFG energy project counts from 1995 to 2012
- Electricity projects continue to dominate
  - 37 states, DC & 4 territories have an RPS or RPG
  - Production tax credit extension – now if construction begins prior to January 1, 2014
- Direct use of LFG has slowed since 2011, mainly due to LOW natural gas prices
- Alternative Vehicle Fuel taking off
  - CNG: $2.12/GGE v. diesel $4.13/gal in mid-2012
- Carbon markets not active for LFG
LFG Energy and Opportunities in Texas

- 33 operational projects
  - 101 megawatts (MW) of electrical generation from 24 LFG energy projects in Texas
  - 35 million standard cubic feet per day of LFG is utilized in 9 direct-use projects (6 are highBTU)
- 2 projects under construction:
  - Ft. Bend Regional Landfill (highBTU)
  - Nelson Gardens LF (electricity)
- Over 50 Candidate Landfills in Texas
Conclusion

Let’s work together to increase those numbers for Texas!