Ed Rogers, Director

15th Annual LMOP Conference
January 19, 2012
Baltimore, MD
Clean Energy R&D Center
Tazewell County (VA) Landfill
Tazewell County LFG

- 325 scfm
- Peaking at 550 scfm in 2038
- LMOP Project Expo 2009
Tazewell County LFG

• 325 scfm

• Peaking at 550 scfm in 2038

• LMOP Project Expo 2009

• Electricity project didn’t pencil out
• No viable users of low/med-Btu gas
• Closest gas line is ~8 miles away
Appalachian Natural Gas Dist.
Pipeline-Grade LFG Project

Bluefield, VA/WV

Landfill Gas

Elem. School

New Industrial Park
LFG Purification Process

• “AdvanSorb™”: PSA purification of LFG to gas pipeline specs

• Key innovations:
  • \( \text{O}_2 \) reduced from 1-4% to <0.2%
  • \( \text{N}_2 \) reduced from 6-15% to <2.0%
  • \( \text{CO}_2 \) reduced to <2.0%
  • High \( \text{CH}_4 \) purity: >96%+
  • High \( \text{CH}_4 \) yield: >90%
Renewable Natural Gas Production

325 scfm @ Tazewell County Landfill

\[ x \times 60 \times 24 \times 365 \times 90\% \times 50\% \]

= 75 million cubic feet/year

... of pipeline-grade natural gas

600,000 GGE
Project Partners

- Tazewell LFG Development, LLC
- Tazewell County IDA
- SWVA Higher Ed. Center Foundation
- Renew Fuels, Inc.

Civil engineers:
- Thompson & Litton (Tazewell, VA)
- Draper Aden Associates (Blacksburg, VA)
Economic Development

• Gas Collection and Control System @ no cost to County

• Expanded natural gas service

• Regional supply chain

• Revenue for County and non-profit

• Possible CNG station
Regional Job Creation

• Company HQ

• Regional supply chain:
  • pressure vessels, control systems, skid fabrication, adsorbent

• O&M

• Opportunities at abandoned underground coal mines (gob gas)
Revenue

- Carbon credits
- Green gas premium
- **Renewable Fuel Standards and Renewable Identification Numbers (RINs)**
- **Visibility into project ROI ...**
Renewable Fuel Standards: RINs

EPA says:

“all oil companies that market petroleum in the U.S. are required to produce a given quantity of renewable fuel or to purchase credits, called [RINs]”
Renewable Fuel Standards: RINs

• “Only biogas that is used as renewable fuel can generate RINs. Biogas includes ... landfill gas, manure digester gas, and sewage waste treatment gas.” 40 CFR §80.1401.

• Inject into the pipeline at one point ... and withdraw at another point. 40 CFR §80.1426(f)(11)(ii)
let nothing be wasted