Renewable Bio-gas:
An Opportunity for Substantial Carbon Reduction

Producing renewable gas (RG) and using it at the site of production or distributing it through the country's existing natural gas infrastructure is one of the most efficient ways to utilize a variety of U.S. renewable resources.

RENEWABLE GAS FACTS

- Bio-gas from renewable sources including animal manure, forest residues and agricultural wastes can be produced at efficiencies ranging from 60–70%.
  - This compares to biomass-to-liquid-fuels efficiencies of 45–60% and biomass-to-electricity efficiencies of 20–35%[1].
  - Additionally, all of the technology components to produce renewable gas from this variety of sources exist today.
- RG is the most versatile form of bio-energy, since it can be used directly at the site of production, in residential commercial or industrial applications, to produce electricity, or used in the transportation sector as compressed gas, which already is a major transportation fuel throughout the world.
- Another benefit of generating RG is that it can be delivered to customers via an existing U.S. pipeline infrastructure instead of over the road, which creates additional greenhouse gas emissions.

- In 2001, biomass accounted for 3-4% of the total primary energy consumption within the European Union. Four of the fifteen European Union member states have bio-energy shares of more than 10%; Finland (16%), Sweden (14%), Portugal (13%), and Austria (11%).[2]

RECOMMENDATIONS

Congress and policy makers should consider creating an incentive for renewable bio-gas similar to the one that exists for renewable electricity and renewable liquid transportation fuels.

Waste Nut Shells
Photo courtesy of DOE/NREL

This will create a level playing field for investors in the renewable energy industry and generate a renewable source that can be used by residential, commercial and industrial customers throughout the United States.

Renewable pipeline quality gas provides industries like steel, aluminum, chemical and heat treating a renewable option for production without any changes to their operations.

RESOURCES FOR RENEWABLE BIO-GAS

- If the U.S. used half of this biomass source to create RG, or one quad per year*, then about 5% of natural gas can be displaced by RG, **reducing CO_2 emissions by another 45–70 million metric tons per year.**
- Utilizing major dairy farms, swine and cattle feedlots to create pipeline quality gas (and simultaneously reducing methane emissions from the manure) **can add another 10 million metric tons of CO_2 displacement to this number.**

*Based on the United States Department of Energy's recently completed scenario analysis[3] for an RPS standard of 15% renewables for electricity generation, an incremental 2 quads equivalent of biomass energy are used to help achieve this goal.

1 http://www.sgc.se/Rapporter/resources/seminar_screen.pdf, pl 305.
2 http://www.ec-asean-greenippnetwork.net/dsp_page.cfm?view=page&select=146
3 http://www.eia.doe.gov/oiaf/servicerpt/prps/rps.html,

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