Getting the Most Out of Biogas – Biogas Derived Transportation Fuels

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Retail Fuel Prices as of Fall 2013
(on energy equivalent basis)

National Average
CNG=$2.12
Gasoline=$3.82

West Coast
CNG=$2.41
Gasoline=$4.26

Rocky Mountain
CNG=$1.71
Gasoline=$3.74

Midwest
CNG=$1.95
Gasoline=$3.77

Gulf Coast
CNG=$2.14
Gasoline=$3.53

New England
CNG=$2.47
Gasoline=$3.93

Central Atlantic
CNG=$2.15
Gasoline=$3.90

Lower Atlantic
CNG=$1.86
Gasoline=$3.66

Source: October 2013 DOE Clean Cities Alternative Fuel Price Report
Trans. Sector Biogas Trends

- More adoption of CNG/LNG vehicles
  - 60% of trash trucks sold in 2013 were NG trucks
  - By 2017 33% of Class 8 heavy duty trucks
- Environmental attributes and demand are increasing the value of biogas
Lots of biogas to be had

- Biogas potential
  - 7.9 million metric tons per year
  - If all of this was converted to CNG/LNG and used in the transportation sector it would represent ~5 Billion RINs
Waste derived fuels are low-carbon fuels
Methane is more efficient and renewable natural gas is even better

- California Low Carbon Fuel Standard (LCFS) GHG emissions calculations (g/MJ)
An approved “pathway” consists of the unique combination of an approved feedstock, conversion process, and fuel.
For any approved feedstock there may be many approved conversion processes and approved fuels associated with it.

### Feedstock
- Biogas from landfills, municipal wastewater treatment plant digesters, agricultural digesters (and other waste digesters)

### Process
- Any

### Fuel
- CNG, LNG, and electricity
The Value Proposition for Transportation Fuels is Clear

- Average electric power price for NG in 2014 has been $5.07 per thousand cubic feet