Potential of Renewable Natural Gas

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Significant gross potential

Large distribution on economic potential

Co-products/benefits are important to improve economics
Recent growth in RNG

- **RINS generated (millions)**
  - RLNG
  - RCNG
  - Biogas

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<tr>
<th>Year</th>
<th>RLNG</th>
<th>RCNG</th>
<th>Biogas</th>
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part I: Gross Potential for RNG
Animal manures

Waste water biogas

Food & green waste

Landfill gas
**Gross RNG Potential in U.S.A.**

- **740 BCF/yr RNG potential**
  - Landfill Gas
  - Waste Water Biogas
  - Manure
  - Food/green waste

- 2014 natural gas consumption in transportation = 35 BCF

**Source:** NREL (2014) Renewable Hydrogen Potential from Biogas in the United States. NREL/TP-5400-60283.
Available U.S. RNG Potential

290 BCF/yr
RNG available

Landfill gas

Waste Water Biogas

Manure

Food/green waste

2014 natural gas consumption in transportation = 35 BCF

Landfill Gas

Waste Water

Biogas

Manure

Food/green waste

RNG Potential in U.S.A.

Refuse Trucks

2 billion gallons of diesel per year

Transit Buses

1.5 billion gallons of diesel per year
RNG Potential in U.S.A.

- Long Haul Trucks
  - 25 billion gallons of diesel per year
- Refuse Trucks
- Transit Buses
- Waste Water
- Biogas
- Manure
- Food/green waste
- Landfill Gas
This analysis illustrates the methane generation potential by county from the following biogas sources: landfills; animal manure; wastewater treatment; and industrial, institutional, and commercial organic waste (IIC).
part II: Economic potential
Factors in Economic Potential

- Size of resources
- Distance to infrastructure
- Local value of co-products/benefits
- Quality requirements
California RNG Supply Curves

Landfill gas

Cost of Production ($/mmBtu)

RNG Potential (BCF/yr)

Food/green waste

Marginal Cost ($/mmBtu)

RNG Potential (BCF/yr)
RNG can be produced as part of waste management schemes.

RNG resource potential in the United States is roughly 20% of long haul truck demand.

In California, 25% of the gross resource were estimated to be available below $10/mmBtu.
Questions/Comments
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