

TURNING WASTE INTO FUEL

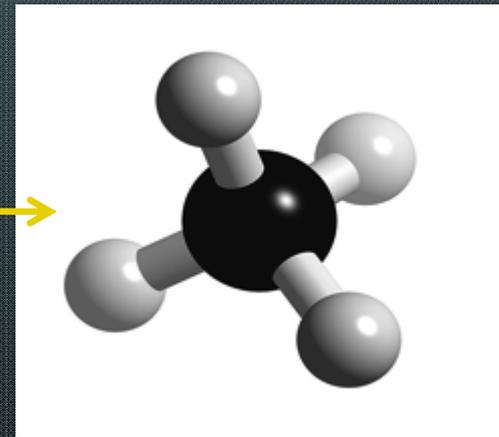
**A MAJOR STEP TOWARD SUSTAINABLE
TRANSPORTATION**



**Joanna D. Underwood
President - Energy Vision**

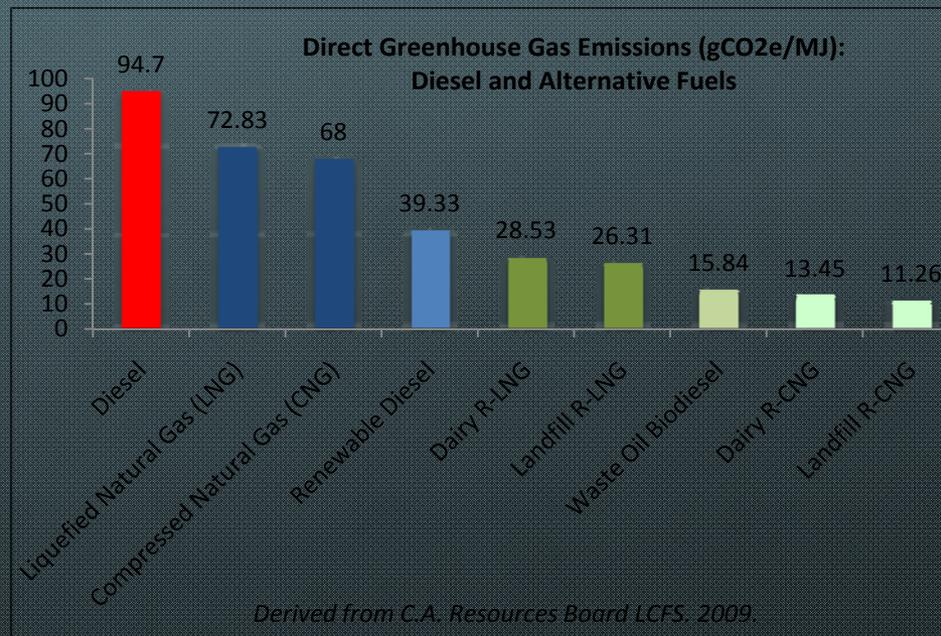
Biomethane (Renewable Natural Gas “RNG”) Just like Fossil Gas but better!

- 🌍 Fossil Gas and RNG are nearly chemically identical (CH_4)
- 🌍 Use the same infrastructure (pipelines, compressors, etc) and engine technology
- 🌍 **Major difference:** RNG is sustainable: made from biogases-emitted as organics decompose in airless environments, virtually no soot, and close to carbon neutral



MERITS OF “RNG” FUEL

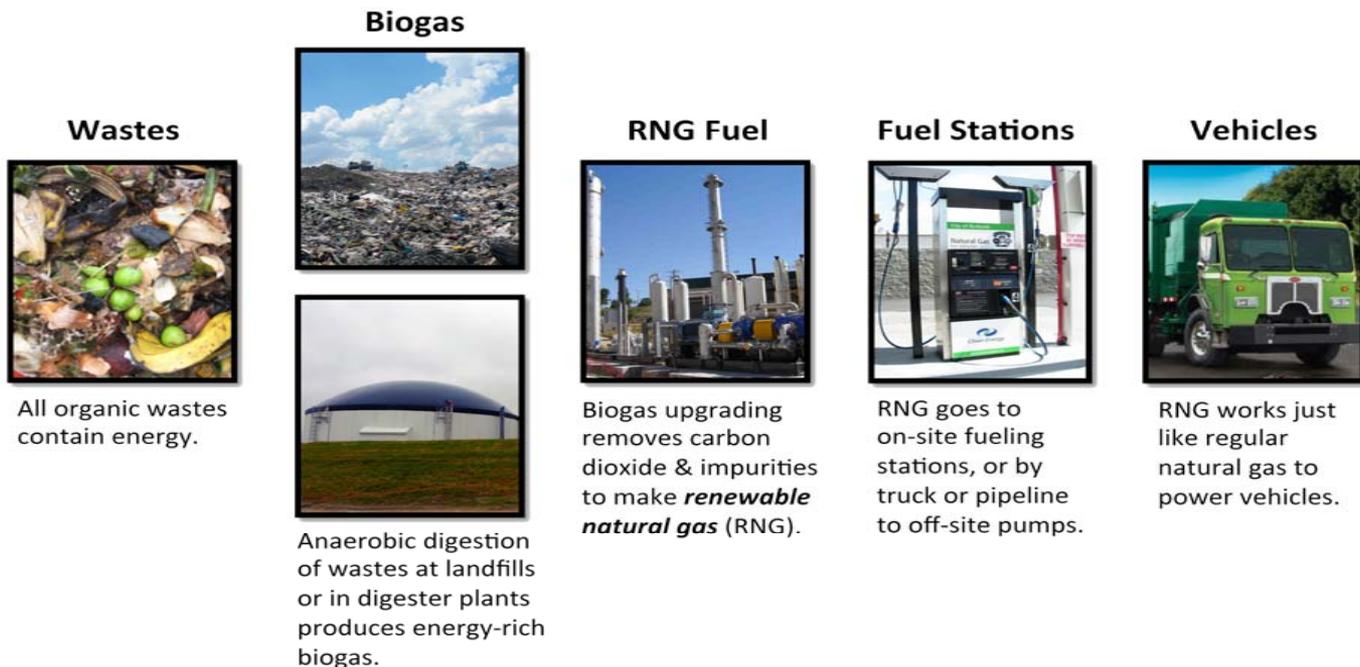
- “Requires less ‘energy in’ to produce each unit of ‘energy out’ than any other biomass-based fuel,” including ethanol and biodiesel - *US Gas Technology Institute*
- LOWEST IN CARBON WELL- TO -WHEELS OF ALL AVAILABLE FUELS TODAY** – *CA Air Resources Board*



FROM WASTE TO “RNG” FUEL

Five Steps in Production

Figure 3. The Pathway from Organic Wastes to RNG Vehicle Fuel



“RNG” - A HIT IN EUROPE

Fuels buses/trucks

- 🌐 SWEDEN -760 buses and trucks in 26 cities
- 🌐 OSLO (NO)- 250 transit buses fueled with sewage sludge!
- 🌐 MADRID (SP)500 refuse trucks
- 🌐 LILLE, (FR) 300 buses



AMPLE U.S. FEEDSTOCK SUPPLY

- Landfills
- Wastewater Treatment Plants
- Farms/Dairies
- Commercial Food Waste
- Residential Organic Waste



Could Replace Significant Quantities of Diesel TODAY

- 🌐 Diesel accounts for 23% of all on-road vehicle fuel
- 🌐 Existing RNG technologies could displace 16% of on-road diesel consumption- 6.4 billion gallons/yr
- 🌐 Emerging technologies could bring this figure close to 50%- 17.4 billion gallons/yr -- a HUGE impact
- 🌐 Use of RNG in the U.S. has begun.



For further information

Joanna D. Underwood
Energy Vision
138 E. 13th St. NY, NY 10003

underwood@energy-vision.org

Tel: 212 228-0225

www.energy-vision.org

Twitter: Energy_Vision