



Time for BIOMETHANE

Gail Richardson, PhD

VP for Programs, Energy Vision, NYC

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ENERGY VISION

- Founded in 2006 by Joanna Underwood, President
- A NYC-based non-profit environmental organization that studies and promotes technologies and policies to achieve the sustainable energy and transportation systems needed in the 21st century.
- *Greening Garbage Trucks* report played a key role in launching the shift to natural gas refuse fleets in Smithtown and elsewhere on Long Island.

Biomethane Is Natural Gas (CH₄) Made from Biomass



Highest Biomass-Conversion Efficiency

- Biomethane is the most efficient conversion option for biomass.
Gas Technology Institute (US), 2009
- No other biofuel can compete with biomethane in terms of fuel per tonne of waste or per hectare of cultivated land.
Pål Börjesson, Lund Technical University, Sweden, 2008
- Thermo-chemical and bio-chemical biomass gasification to make biomethane is the key to bringing high shares of biomass efficiently into energy markets.
German Biomass Research Center, 2009



Biomethane Feedstocks and Conversion Technologies

- Landfill gases from municipal solid wastes - Gas drying, separation, and cleanup technologies
- Animal manures, sludge, industrial wastes, energy crops, etc. - Anaerobic digestion
- Woody feedstocks - Gasification



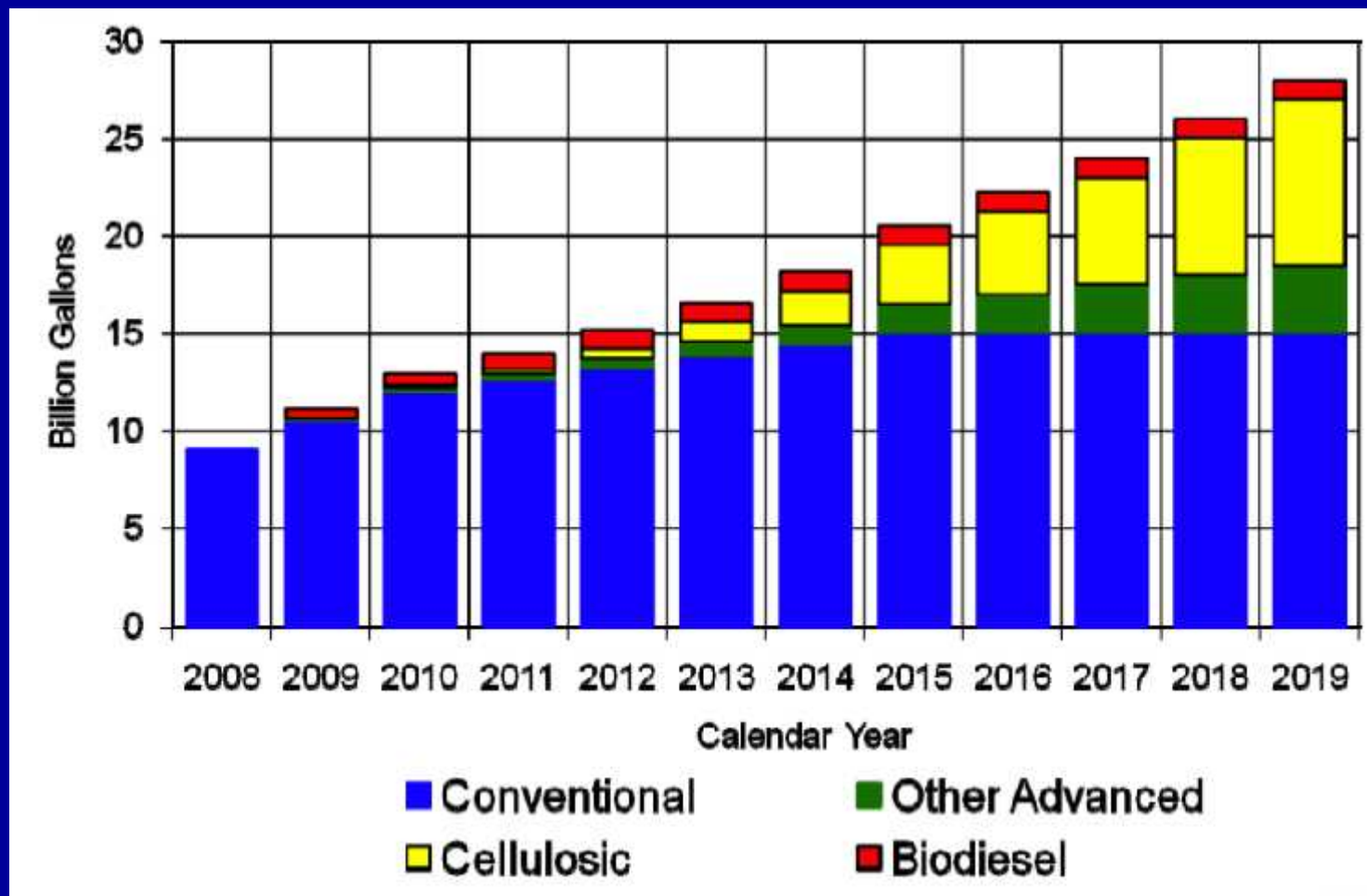
The First Sustainable Fuel for Trucks and Buses

- Biomethane is the **only sustainable commercial alternative** to diesel for years to come.
- Methane/biomethane fuel **reduces soot to nearly 0**.
- Sustainable biomethane made from wastes **reduces GHG by 88% to >100%**. (*CARB; Swedish research*)
- **Vast domestic supply**: EPA-regulated large landfills emit enough biogas to make 9.4 billion diesel gallon equivalents of biomethane = 25% total US highway diesel fuel consumption. (*MSW Management*)



Liquid Biodiesel Potential

1 Billion Gallons by 2019 (US DOE)





US Diesel Trucks & Buses: Big Roles & Impact, Small #'s

Economic & Service Roles

- 69% of freight tonnage (11×10^9 tons); 84% value (ATA)
- Essential community services
- Transportation for 25,000,000 school children

Oil Users & GHG Emitters

- 20% highway fuel consumption
- 25% highway CO₂ emissions
- 7% total GHG emissions

Only 4% of highway vehicles!: ~9 million of 250 million



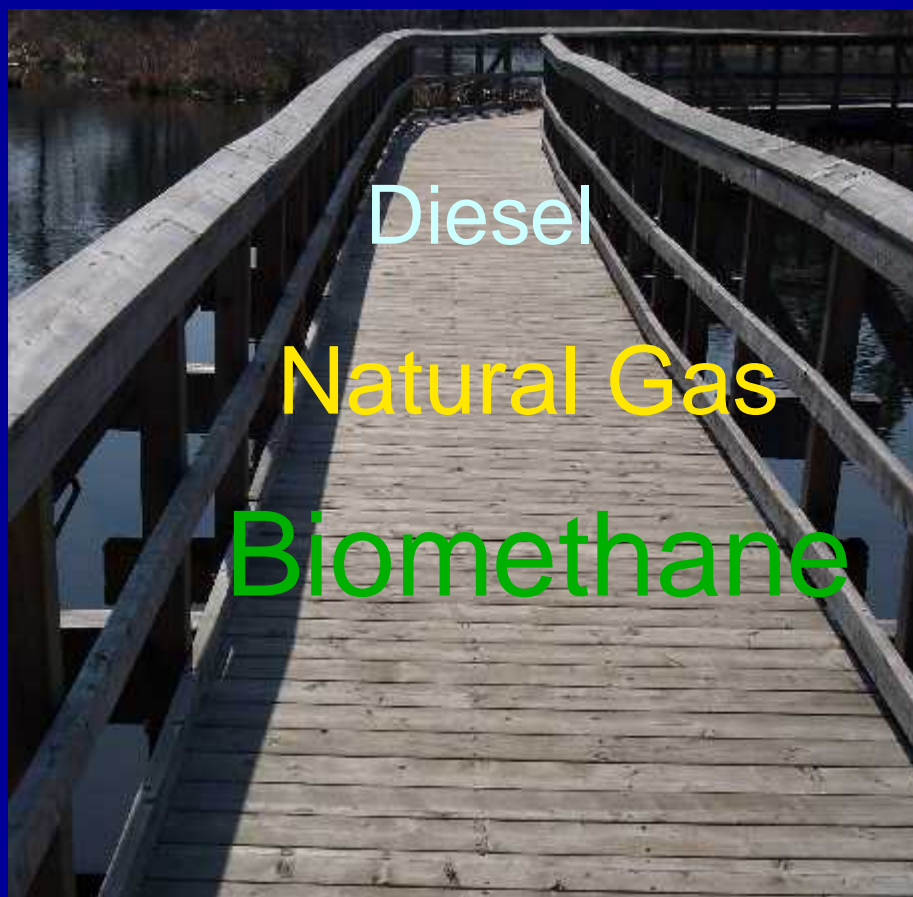
Biomethane Pioneers

- Europe: Sweden, Madrid, Lille, Bern, Oslo
- CA: Altamont Landfill (Waste Management & Linde)
- TX: McCommas Bluffs Landfill (Clean Energy & Shell)
- OH: Franklin County (SWACO & Firm Green)

What about Long Island?



Urban Fleets First: The Bridge to Sustainable Fuel for Trucks & Buses





Long Island Invests in Natural Gas Fleets

Natural Gas Vehicles & Infrastructure

L.I. Bus Company: 330 buses
Smithtown: 22 refuse trucks, others
Brookhaven: 70 refuse trucks
Nassau County: 5 dump trucks
Oyster Bay: 5 refuse trucks
Long Beach PSD: 20 school buses
Hempstead: CNG-Hythane-Hydrogen
fueling station
GLICCC Stimulus award: 87 trucks, 5
fueling stations





Time for Biomethane on L.I.

- “Island” vulnerability = waste is a VITAL ISSUE
- Natural gas infrastructure in Smithtown, Brookhaven, Hempstead, elsewhere
- Strong municipal leadership, world-class scientific community
- Examples to learn from in US & Europe
- Value of the LI model on the regional/national stage

Energy Vision project Drive to Sustainability



ENERGY VISION

www.energy-vision.org

Thank you for your attention.