

Renewable Natural Gas

Benefits of Adoption

2018 Natural Gas STAR and Methane Challenge
Renewable Natural Gas Workshop

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- Policy, Contracts, Markets



RNG Coalition

- RNG Industry in North America
- 501(c)6 Non-Profit
- Each Industry Sector Represented
- Members Produce 90%+ of RNG in North America
- 95% of RFS-Qualified Cellulosic Biofuel
- Industry Competitors Collaborating for Common Good



You are in good company when you embrace RNG



Don't confuse us with our feedstock

- **Biogas**

- a mixture of CO₂ and hydrocarbons
- captured from the biological decomposition of organic materials
- raw gas, on-site electricity, no transportation fuel, no pipeline injection

- **Renewable Natural Gas**

- biogas-derived biomethane
- refined to meet natural gas quality standards
- transportation fuel, electricity, pipeline injection



RNG isn't new, it is newly popular

- Decades old technology, natural gas treating
- First RNG Project, Fresh Kills, Staten Island, NY, 1982
- 31 RNG Pipeline Projects 1982 – 2011, Off-Site Electricity
- Two decades of strong consistent LFGTE growth.
- 2011 RNG Coalition formed
- 2014 RFS – Cellulosic Biofuel designation
- CA LCFS 2020 (now 2030) GHG Goals

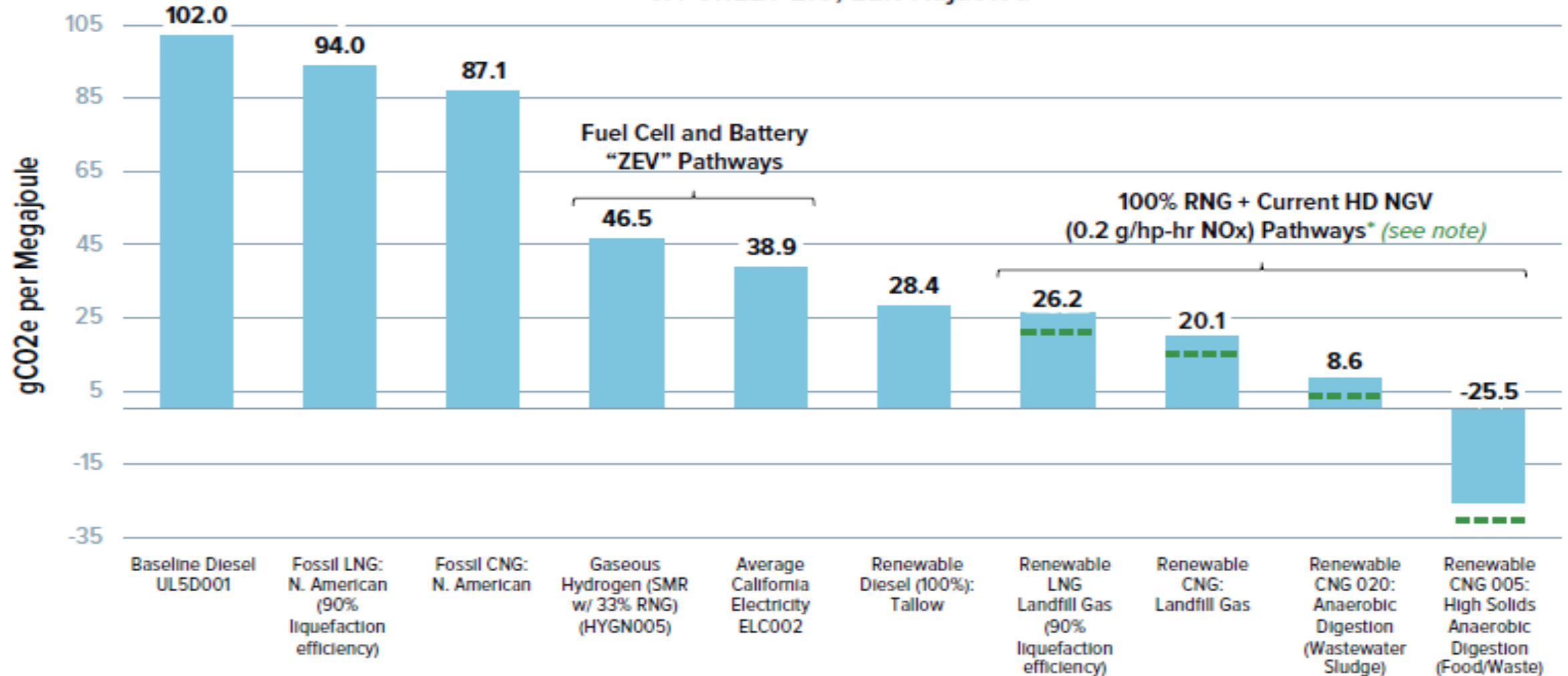


We're just getting started

- More RNG projects in the last 5 years, than the previous 25 years
- 83 RNG Projects now operating
- 67 RNG to Transportation Fuel
- 17 RNG to Electricity or Heat
- 20 New RNG Projects under Construction
- 38+ RNG Projects in Development (pre-construction)
- 10x increase in RNG Fuel Gallons since 2014



Carbon Intensity Scores for Heavy-Duty Truck Pathways
 Final California Low-Carbon Fuel Standard, 2015
 CA-GREET 2.0, EER-Adjusted



----- * Note: using the new "NZ" NG engine (0.02 g/hp-hr) will further reduce the CI scores of these RNG pathways by about 4 gCO₂e/MJ (closed crankcase ventilation reduces methane by 70%).

Methane is Methane

- Every RNG project must meet local Natural Gas Quality standards
- RNG is a drop in fuel – Interchangeable, Comingle, Substitute
- Use RNG in any natural gas application – Fuel, Heat, Power, etc.
- RNG has the same Storage and Transport Capabilities as geologic natural gas
- RNG has the same Clean Air Benefits as geologic natural gas (Nox, Sox, PM) when replacing alternatives like coal or diesel

Adding value by subtracting GHG emissions

- RNG has Ultra-Low to Negative lifecycle carbon emissions
 - Drastically lowering and even sequestering CO₂
- RNG is derived from Domestic Resources
 - Anywhere organic waste is concentrated
 - Every Municipality, Rural America
 - Esp. landfills, WWTPs, livestock manure AD
 - Create jobs and spur local economic development
- RNG helps mitigate the problems of waste
 - There is no such place as AWAY

Why should electricity have all the fun?

- RNG is Renewable and Sustainable
 - The public and policy makers are increasingly calling for renewable options
 - RNG is widely accepted in our laws and regulations
- RNG qualifies for Regulatory Credits
 - Meet your compliance obligations
 - Monetize your good work and investments
- It is the right thing to do - for our planet and future generations

An aerial photograph of the Monarch Beach Resort during a golden sunset. The resort features a large, multi-story white building with a terracotta roof, several swimming pools, and numerous palm trees. In the foreground, two large, striped umbrellas are visible. The background shows a golf course and the ocean under a cloudy sky.

RNG 2018

The Renewable Natural Gas Conference
For North America's Industry Executives
December 3-6, 2018 • Monarch Beach Resort

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