OVERVIEW:
Renewable Natural Gas (RNG) & Policy Impact on RNG Production

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PRESENTATION OVERVIEW

**RNG Coalition**: Mission, Philosophy, Position & Priority

**RNG 101**: Product, Application & Feedstock Sources

**Policy Impacts on RNG Markets**: Past, Present & Potential

**Markets Needing Policy Support**: TBD
RNG COALITION - INTRO

• Non-Profit Organization (501 c6)
• Federal & State Policy Platform, Advocacy & Education Voice for Renewable Natural Gas Industry in North America

• Each Industry Sector & Academia Represented (180+)
• Members Produce 95%+ of RNG in North America
• 98%+ of RFS-Qualified Cellulosic Biofuel

• Industry Competitors Collaborating for Common Good
RNG COALITION – MEMBERS (not all pictured)
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MISSION

We advocate for increased development, deployment and utilization of renewable natural gas, so that present and future generations have access to domestic, renewable, clean fuel & energy supply.
Advocacy & Education informs Public Policy.

Public Policies influence Markets.

Markets drive Demand.

Demand determines Value.

Value impacts Revenue.

Revenue affects Sustainability.
We support development, deployment and utilization of RNG from a diversity of FEEDSTOCKS, using competing TECHNOLOGIES, for all sustainable END-USE APPLICATIONS.
*Enable the RNG industry to – through effective advocacy & education – develop & double the number of operating RNG projects in North America by 2025.

*Target = 100 projects by 2025 (based on 47 RNG projects operating in 2015)
What is RNG?
Renewable Natural Gas is commonly referred to as: **RNG** or **Biogas-derived Biomethane**.

*(Industry definitions available for: biogas, conditioned biogas, biomethane, RNG, R-CNG, R-LNG)*
Renewable Natural Gas is a product gas derived from the natural decomposition of organic materials in renewable waste streams.
RNG: Interchangeable substitute or replacement for Natural Gas.

RNG (Renewable)
Natural Gas (Geologic)
What is RNG produced from?
RNG FEEDSTOCK SOURCES (US)

POTENTIAL SOURCES OF ORGANICS USED TO PRODUCE RNG INCLUDE:

- **FOOD WASTE**: 66.5 MILLION TONS / YEAR
- **WASTEWATER**: 17,000 FACILITIES
- **AGRICULTURE WASTE**: 8,000 LARGE FARMS AND DAIRIES
- **LANDFILL GAS**: 1,750 LANDFILLS

WWTP / MSW (100,000 residents); head of cattle or as low as 150 when mixing with organics); Forestry Biomass and Forest Product Residue, FOGS, etc.

AD (500) Other sources include
BETTER UNDERSTANDING RNG

RNG ACADEMY
RENEWABLE NATURAL GAS CONTINUING EDUCATION PROGRAM
RNG TECHNICAL WORKSHOP & EXPO

Technical Workshop & Trade Expo
Sept. 11-12, 2019 • Nashville, TN
Music City Center
Policy Impacts on RNG Markets & Production
1982

1st RNG Project Developed (Still Operating):
Fresh Kills Landfill (Staten Island, NY)
From 2005-2014, state RPS programs stimulated production of RNG as a clean, renewable, electric power to displace coal and replace geologic natural gas.
30 Years Industry History:
31 RNG Projects Developed

(Nearly 100% of RNG = Off-Site Electricity Generation)
2011-2018

2011: RNGC Founded (Policy Advocacy) = 60+ New RNG Projects Developed
Increasingly, federal & state policy programs *(RFS, LCFS, CFP)* are driving production of RNG as an ultra-low carbon fuel for a new generation of medium- and heavy-duty Natural Gas Vehicles.
Due to favorable policies, RNG production for transportation fuel has increased 10x since 2013.
RNG TODAY

2019

96+ RNG Projects Now Operating*
69+ RNG to Transportation Fuel
17 RNG to Electricity or Heat

(72% Transportation Fuel & 28% Power Generation)

*85% growth compared to projects built between 1982 and 2014
2019

22+ New RNG Projects under Construction
40+ Projects in Development
(US:32, CA:8)
RNG POTENTIAL (CA)

CALIFORNIA NEEDS
RENEWABLE ELECTRICITY AND
RENEWABLE GAS

60% of CNG trucks run on renewable gas.

socalgas.com/rg | RNGcoalition.com | cngvc.org

Represented by Mercury.
RNG POTENTIAL (CA)

2018-2030

200 Dairies + 100 WWTP + 50 Landfills = + 1 – 2 billion DGEs of RNG

Enough RNG to displace 15-60%+ of Diesel consumption or power 2-3 million homes annually (CA)
RNG POTENTIAL (US)

637 LFG Projects; 398 Candidates:
(US EPA Landfill Methane Outreach Program)
RNG POTENTIAL (US)

265 Livestock AD Projects:
(EPA AgStar – Beef, Dairy, Hog, Poultry)
RNG Markets Needing Policy Support
RNG IS SATURATING EXISTING VEHICLE DEMAND IN CALIFORNIA

Notes: Values in LHV
Source: https://www.arb.ca.gov/fuels/lcfs/dashboard/quarterlysummary/quarterlysummary_013119.xlsx
OTHER SECTORS REPRESENT GREATER DEMAND, BUT CURRENTLY LACK SIMILAR POLICY SUPPORT

Notes: Demand values in LHV
Source for demand data in other sectors: EIA Natural Gas Consumption by End Use
https://www.eia.gov/dnav/ng/ng_cons_sum_dcu_sca_m.htm
STUDIES THAT PREDICT HEAVY ELECTRIFICATION ALSO REQUIRE DRAMATIC GROWTH IN RNG

0.5 EJ = 474 Million MMBtu of RNG

We need at least 30x current CA RNG use!
SOME HELPFUL SUGGESTIONS FOR POLICYMAKERS (REGULATORY WISH LIST!)

- **CPUC**
  - Establish a world-leading strategy to decarbonize the gas pipeline system
  - Implement a Renewable Natural Gas Standard (in line with legislative direction from SB 1440, Hueso - CA), or similar policy. Consider aligning the accounting with the Low Carbon Fuel Standard.
  - Set the stage for the comprehensive policy by encouraging voluntary programs for RNG—such as the one recently proposed by Southern California Gas Company
  - Communicate with other leading jurisdictions, such as Canada, about how to apply GHG intensity standards in non-transport sectors

- **CalRecycle**
  - Finish the Proposed Organic Waste Reduction Regulation
  - Consider allowing non-transport RNG use to count toward jurisdictional organic waste product procurement targets

- **CARB and CEC**
  - Continue successful existing programs (including the LCFS)
  - Be mindful of signals sent to the RNG community related to push for electrification in the transport sector
  - Consider programs to incent RNG use from non-core gas buyers
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