

Sustainable Gas Systems - Public Policies: Renewable Natural Gas (RNG)

Advanced Energy Conference
March 27, 2018

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THE COALITION FOR
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PRESENTATION OVERVIEW

1. RNG Coalition: Mission, Philosophy, Position & Priority
2. RNG 101: Product, Feedstock Sources & End-Uses
3. RNG Production: Past, Present & Future (Projected)
4. Production Impediments: Policies, Market Realities



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RNG COALITION - INTRO

- u Policy Platform, Advocacy & Education Voice for RNG Industry in North America
- u Non-Profit Organization
- u Each Industry Sector & Academia Represented (125+)

- u Members Produce 90%+ of RNG in North America
- u 95%+ of RFS-Qualified Cellulosic Biofuel

- u Industry Competitors Collaborating for Common Good

RNG COALITION - MEMBERS



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RNG COALITION – ACADEMIA MEMBERS



MICHIGAN STATE
UNIVERSITY



STANFORD
UNIVERSITY



Stony Brook University

UC RIVERSIDE | UNIVERSITY OF CALIFORNIA | **CE-CERT**

UCR

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MISSION

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

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PHILOSOPHY

Advocacy & Education informs Public Policy.

Public Policies influence Markets.

Markets drive Demand.

Demand determines Value.

Value impacts Revenue.

Revenue affects Sustainability.

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POSITION

*We support development, deployment and utilization of RNG from
a diversity of **FEEDSTOCKS**,
using competing **TECHNOLOGIES**,
for sustainable **END-USE APPLICATIONS**.*

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PRIORITY

**Enable the RNG industry to 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)

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What is RNG?

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RNG PRODUCT

Renewable Natural Gas
is a product gas derived from
the natural decomposition of
organic materials
in **renewable waste streams.**

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RNG PRODUCT

Renewable Natural Gas
is commonly referred to as:
RNG or
Biomethane or
Upgraded Biogas.

*(Industry definitions available for:
biogas, conditioned biogas, biomethane, RNG, R-CNG, R-LNG)*

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RNG PRODUCT

RNG:
Interchangeable substitute
or replacement for **Natural Gas.**

RNG (Renewable)
Natural Gas (Geologic)

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What is RNG produced from?

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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**

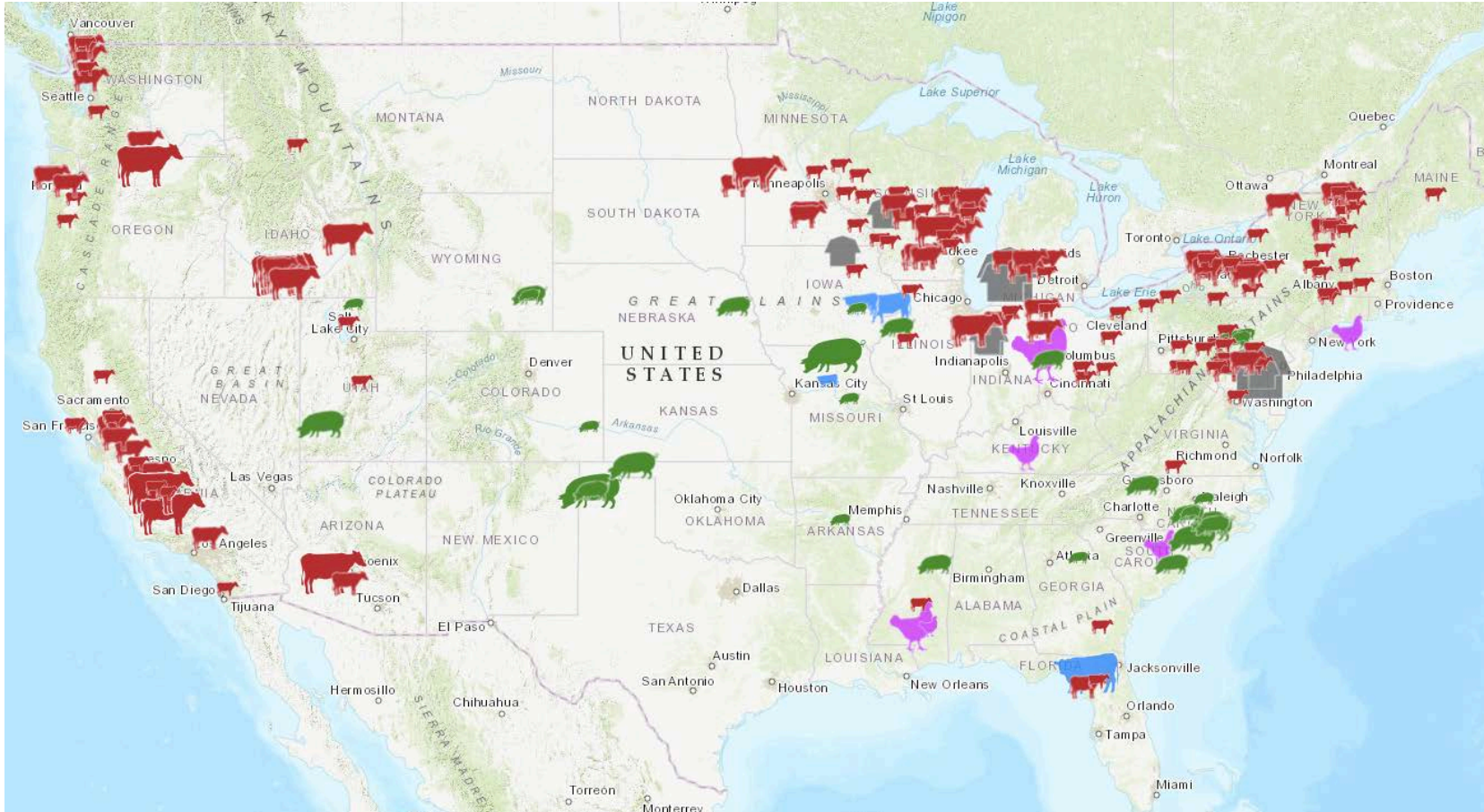
WWTP / MSW (100,000 residents);

AD (500 head of cattle or as low as 150 when mixing with organics);

Other sources include Forestry Biomass and Forest Product Residue, FOGS, etc.

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RNG FEEDSTOCK SOURCES

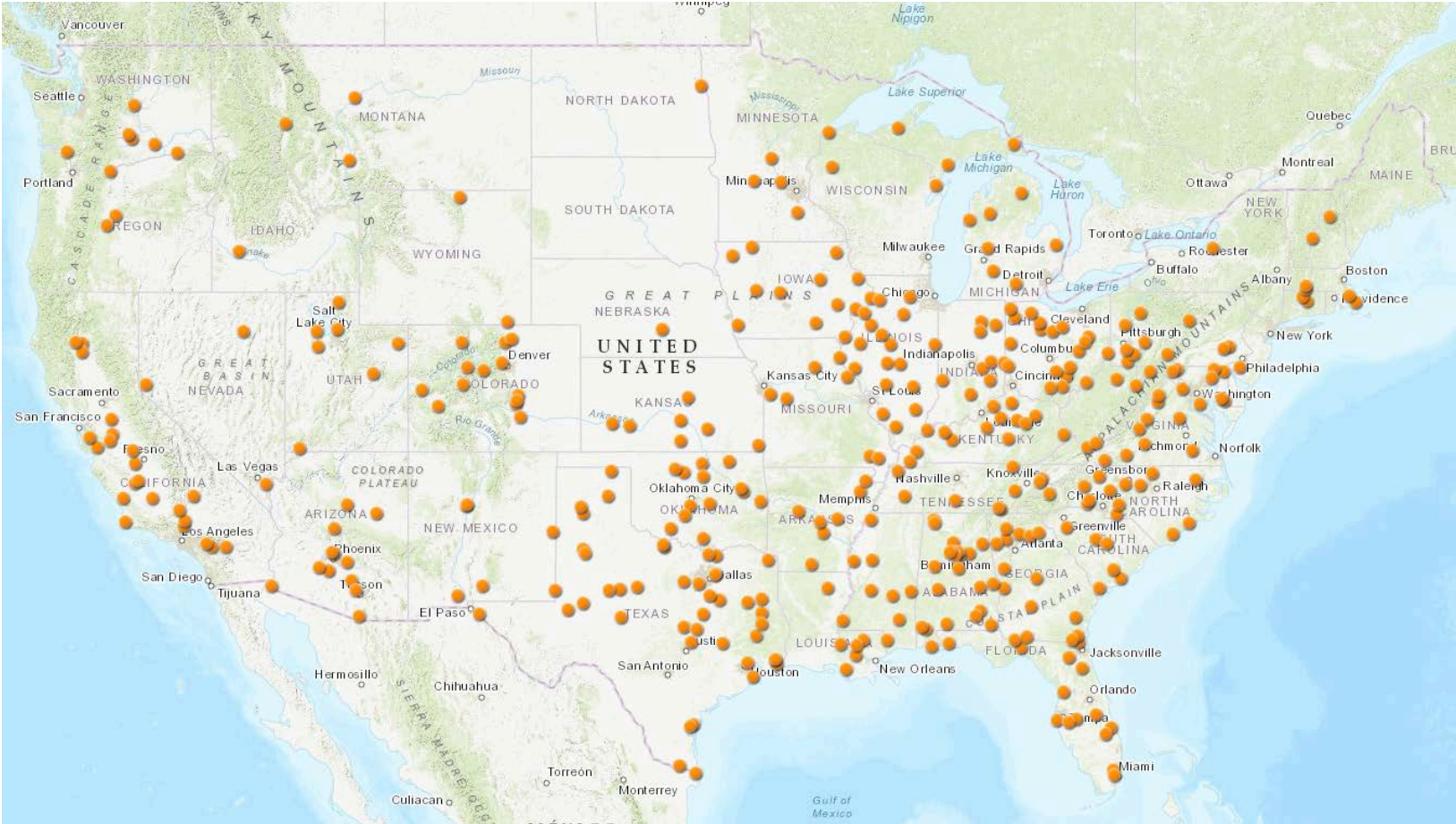


265 Livestock AD Projects:
(EPA AgStar – Beef, Dairy, Hog, Poultry)

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RNG FEEDSTOCK SOURCES



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

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Policies Driving RNG Production

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RNG PAST

Historically, state RPS programs have driven production of **RNG as a clean, renewable, electric power** to displace coal and **replace geologic natural gas.**

RNG PAST

1982

1st RNG Project Developed (Still Operating):
Fresh Kills Landfill (Staten Island, NY)

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RNG PAST

1982-2011

30 Years Industry History:
31 RNG Projects Developed

(Nearly 100% Off-Site Electric Generation)

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RNG RECENT

2011-2017

**6.5 Years Since RNG Coalition Founding:
41 RNG Projects Developed**

(76% Transportation Fuel & 24% Power Generation)

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RNG RECENT / PRESENT

Increasingly, federal, state/provincial policy programs (**RFS, LCFS, CFP**) are driving production of

RNG as ultra-low carbon fuel

for a new generation of medium- and heavy-duty Natural Gas Vehicles.

(Production for transportation fuel = increased 10x since 2014)

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2018

72+ RNG Projects Now Operating

16+ New RNG Projects being Developed

16 Projects undergoing Expansion

RNG PROJECTED

2018-2030

RNG POTENTIAL (CALIFORNIA):

**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)*

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RNG PROJECTED

CALIFORNIA

**ACTUAL IN-STATE OPERATING
RNG-to-Transportation Fuel
Production Facilities**

5

*Altamont (Landfill); Blue Line Biogenic CNG (AD)
City of San Mateo (WWTP); North State BioDigester (AD);
Sacramento BioDigester (AD);*

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PRODUCTION IMPEDIMENTS - CA

WHY ONLY 5?

1. Permitting & Production Costs
2. Market Uncertainty (LCFS, etc.)
3. Pipeline Access
4. Vehicle Demand



CONTACT

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