

# Challenges & Opportunities for Increased Production of Renewable Natural Gas (RNG)

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THE COALITION FOR  
**RENEWABLE  
NATURAL GAS**



# PRESENTATION OVERVIEW

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- u RNG Coalition Intro: Members, Mission & Priority
- u RNG Overview: Product, Feedstock Sources
- u RNG Production: Past, Present & Future
- u Increased RNG Production: Impediments & Solutions



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# RNG COALITION - INTRO

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- u Policy Platform, Advocacy & Education Voice for RNG Industry in North America
- u Non-Profit Organization
- u Each Industry Sector Represented
- u Members Produce 90%+ of RNG in North America
- u 98% of RFS-Qualified Cellulosic Biofuel
- u Industry Competitors Collaborating for Common Good



# RNG COALITION - LEADERSHIP



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# RNG COALITION - GENERAL MEMBERS



**Akin Gump**  
STRAUSS HAUER & FELD LLP



**CALYSTA**

Comerica Bank



cornerstone  
environmental



**Westport**



Clear Gas Solutions



**DTE Energy**



Cynthia Obadia Consulting



EVERSHEDS  
SUTHERLAND



FORTISTAR

GENSCAPE™



McGUIREWOODS



SCS ENGINEERS

SCS ENERGY



# RNG COALITION - NON PROFIT MEMBERS



# MISSION

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*The RNG Coalition advocates for increased renewable natural gas development and deployment so that present and future generations will have access to domestic, renewable, clean fuel and energy supply.*





# ADVOCACY & EDUCATION PHILOSOPHY

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***Advocacy & Education informs Public Policy.***

***Public Policies influence Markets.***

***Markets drive Demand.***

***Demand determines Value.***

***Value impacts Revenue.***

***Revenue affects Sustainability.***



# PRIORITY

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*\*Enable the RNG industry to develop & double the number of operating RNG projects in North America by 2025.*

*\*based on number of RNG projects operating in 2015*



# What is RNG?



# RNG OVERVIEW

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



**Renewable Natural Gas**  
is commonly referred to as:

**RNG or  
Biomethane or  
Upgraded Biogas.**

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



**RNG**

is completely interchangeable with  
**Natural Gas.**

**RNG (Renewable)**  
**Natural Gas (Geologic)**



# What is RNG produced from?



THE COA  
PREN  
NATI

# RNG OVERVIEW – FEEDSTOCKS

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**

u 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





# RNG Production: Past, Present, Future



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# RNG PRODUCTION - PAST

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



# 1982

**1st RNG Project Developed (Still Operating):**  
Fresh Kills Landfill (NY)



# 1982-2011

**RNG Coalition Founded in 2011:**  
31 RNG Projects Operating

*(Nearly 100% Off-Site Electric Generation)*



# RNG PRODUCTION - PRESENT

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Increasingly, federal, state/provincial 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.

*(Since 2014, RNG = 98% of RFS-qualified Cellulosic Biofuel)*



# 2011-2017

**26 New RNG Projects Developed:**  
57+ RNG Projects Now Operating



# 2017

**RNG COALITION MEMBERS**

on track to produce =

**375,382,434 EGE of RNG**



# 375,382,434 (EGE):

81,000,000 = Off-Site Power Generation (24%)

**294,382,434 = Transportation Fuel (76%)**





# RNG PRODUCTION – PRESENT / FUTURE

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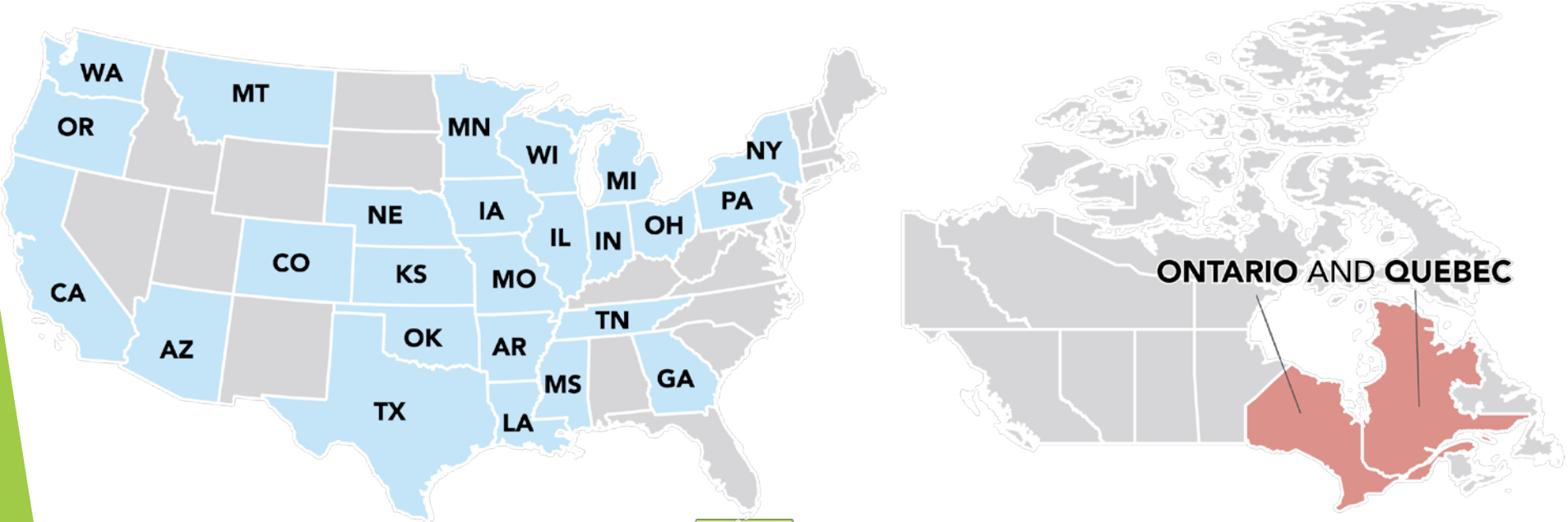
## 2017-2018

**26 New RNG Projects being Developed;**  
16 Other RNG Projects being Expanded



# RNG - NORTH AMERICA

**RNG** PROJECTS OPERATE OR ARE UNDER CONSTRUCTION IN **27 U.S. STATES** AND **2 CANADIAN PROVINCES** INCLUDING:



THE COA  
PREN  
NATI

# 2018

## **RNG COALITION MEMBERS**

on track to develop 26+ new projects =

**622,409,690+ EGE of RNG**



# 622,409,690 (EGE):

81,000,000 = Off-Site Power Generation (13%)

**\*541,409,690 = Transportation Fuel (87%)**

*\*16x the RFS volume (2014)*



# RNG PRODUCTION FOR TRANSPORTATION FUEL

**GREW BY 5X**  
BETWEEN 2013 AND 2015

IS ON PACE TO **TRIPLE** IN VOLUME  
BY 2018

25.9 M EGE

VS

139.8 M EGE

VS

**541.4 M EGE  
PROJECTED**



# 2018-2030

## RNG POTENTIAL (CALIFORNIA):

200 Dairies + 100 WWTP + 50 Landfills =  
**+ 500 million – 2 billion DGEs of RNG**

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



# IN-STATE OPERATING RNG-to-Transportation Fuel Production Facilities (CALIFORNIA)

## 3

*Altamont (Landfill); Sacramento BioDigester (AD);  
Blue Line Biogenic CNG (AD)*



# Increased RNG Production: Impediments & Solutions



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# + RNG PRODUCTION - IMPEDIMENTS

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1. Production Costs (vs. Low NatGas Price)
2. Market Uncertainty
3. Access to Investment Capital
4. Policy Incongruence
5. Pipeline Access
6. Vehicle Demand (vs. Diesel, EVs)



# + RNG PRODUCTION - SOLUTIONS

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1. Advocate for Funding to Advance Technological Developments that Reduce RNG Production & Infrastructure Costs



# + RNG PRODUCTION - SOLUTIONS

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2. Educate Stakeholders (General Public, Industry & Elected Officials) about the Economic & Environmental Benefits realized through increased Development & Deployment of Renewable Natural Gas



# + RNG PRODUCTION - SOLUTIONS

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3. Advocate for greater certainty of Public Policies that shape RNG Markets, determine RNG demand & drive RNG production – this will unlock greater access to investment capital.



# + RNG PRODUCTION - SOLUTIONS

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4. Advocate for Public Policies to recognize the economic value and global environmental benefits associated with increased RNG utilization, regardless of geographic origin of development



# + RNG PRODUCTION - SOLUTIONS

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5. Advocate for monetary incentives and reasonable regulations that enable greater pipeline access for and transportation of RNG



# + RNG PRODUCTION - SOLUTIONS

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6. Advocate for technology neutral funding that will also incentivize and or enable diesel owners to purchase new or otherwise convert their fleets to natural gas engines fueled by RNG



# THANK YOU!

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