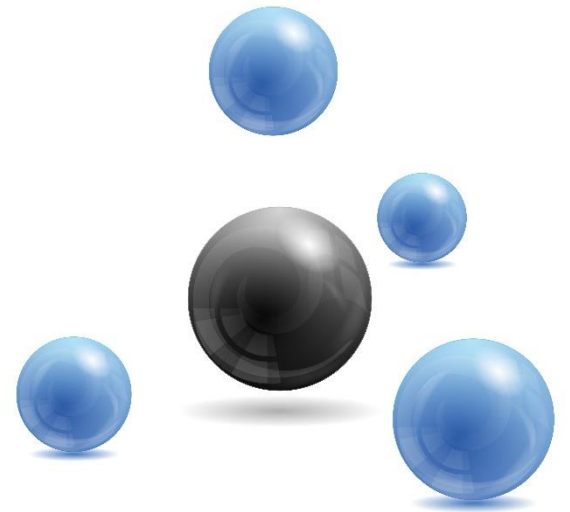


NARUC Summer Policy Summit

Committee on Gas





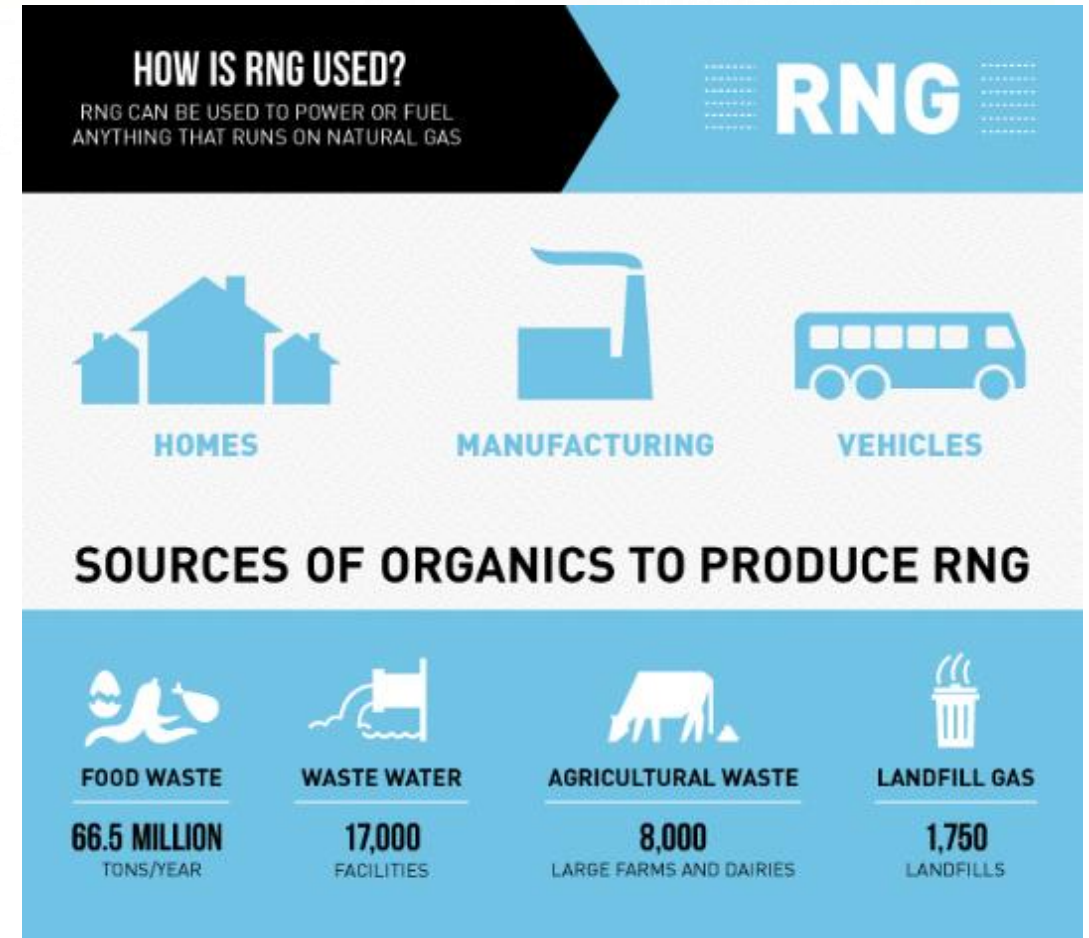
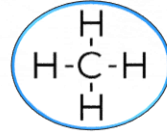
Renewable Natural Gas (RNG) Overview

Daniel S. LeFevers
Director, State & Consumer Programs
NARUC summer meeting - 2019

What is Renewable Natural Gas?

A Substitute for Natural Gas Derived from Renewable Sources

- The same molecular make-up as natural gas (methane)
 - 4 hydrogen atoms and 1 carbon atom
- Cleaned and processed to pipeline quality
- Carbon footprint is lower than natural gas and can be dramatically lower than zero (negative)
- Most often it is derived from biogas that has been processed to remove carbon dioxide and other trace constituents,
 - resulting gas is typically >92% methane
- RNG produced from digesters
 - Animal manure (dairy cows, swine)
 - Waste water treatment facilities
 - Food processing plants
- RNG from Landfills
- RNG can also be produced from thermal chemical processes like gasification utilizing renewable feed-stocks including wood and agricultural wastes.



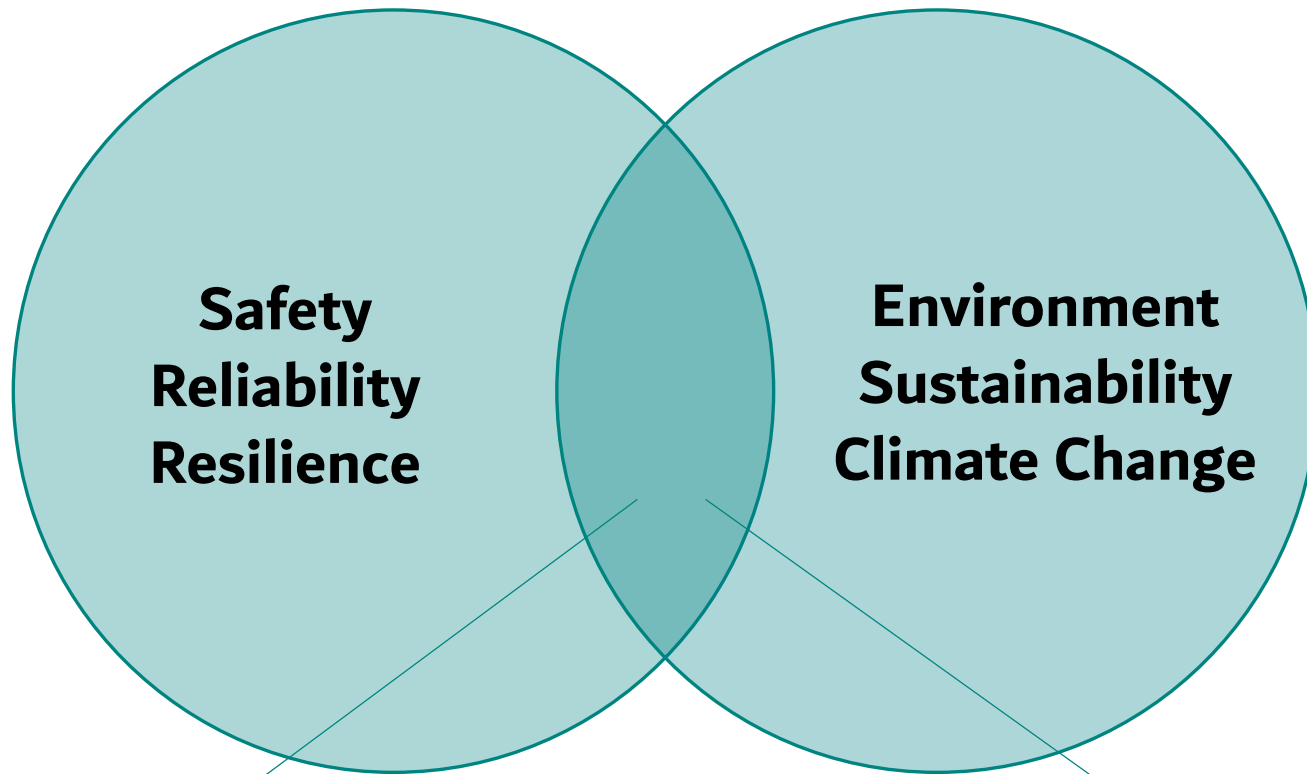
Benefits of Renewable Gas

- > Decarbonization of natural gas end uses
 - Transportation, Heating, Power Generation, Industrial
- > Decarbonization of the pipelines
 - Delivery of renewables through existing infrastructure
- > Reduction in GHG emissions by utilizing waste streams
- > Improved air quality
 - Immediate solution to heavy-duty engine emissions (GHG and conventional)
- > Increased diversity in energy portfolio

Renewable Natural Gas

Opportunity for Innovation at Natural Gas Utilities

Emily O'Connell
July 23, 2019



Examples

Infrastructure Modernization Programs
Gas Utility Efficiency Programs
Renewable Natural Gas Investment and Programs

A TRACKRECORD OF INNOVATION

- Forty-three states & DC have specific rate mechanisms that foster accelerated replacement of pipelines.
- Natural gas distribution system methane emissions declined **73%** since 1990.
- Residential gas customer CO₂ emissions has declined **44%** since 1970.
- Gas utility efficiency program expenditures increased **5X** since 2007.

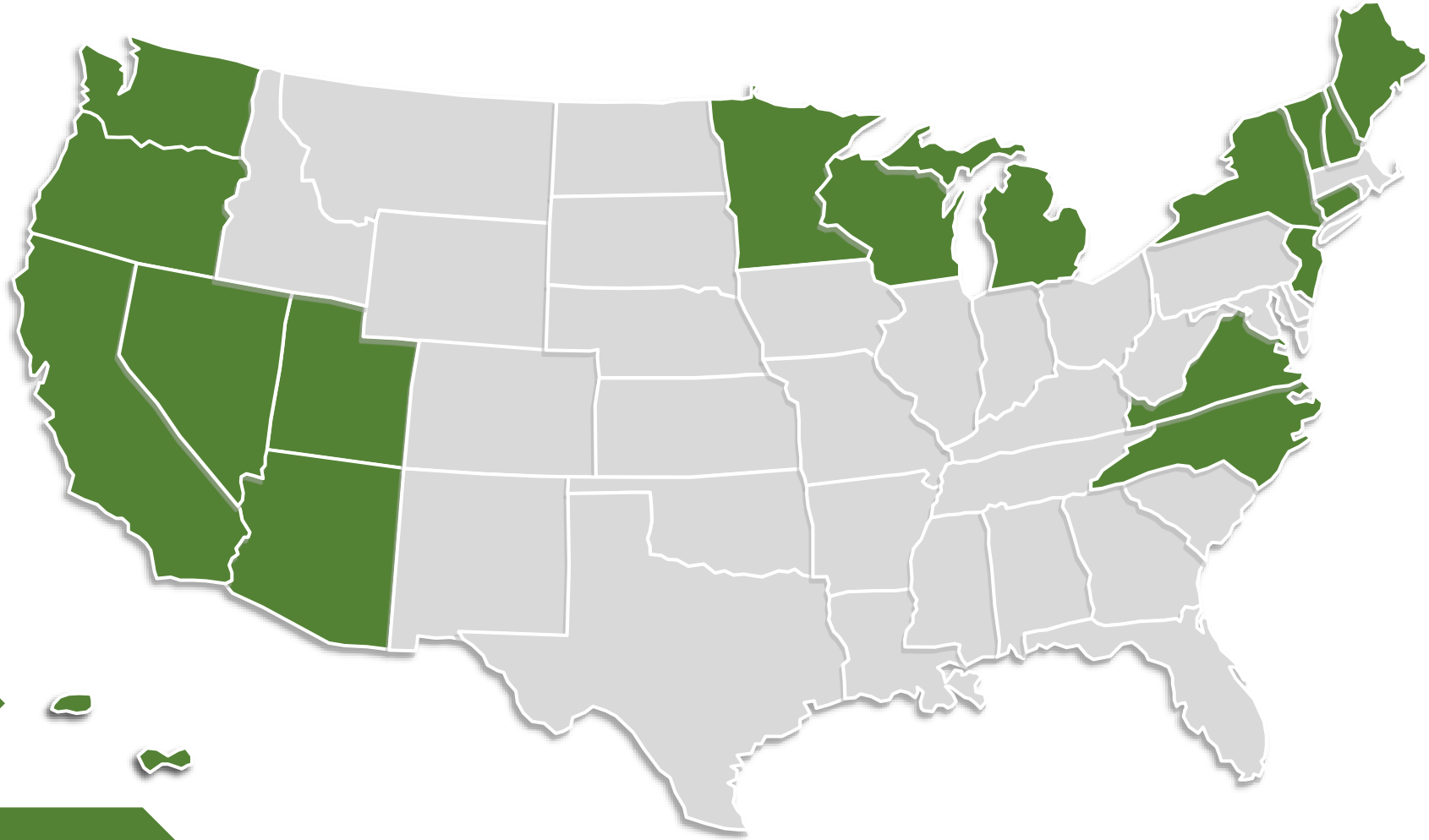
Renewable Natural Gas

“Pipeline compatible gaseous fuel derived from biogenic or other renewable sources that has lower lifecycle CO₂e emissions than geological natural gas.”

**Examples
include pipeline
compatible gas
derived from:**

Wastewater treatment plants
Landfill gas
Anaerobic digestion gas
Power to gas from renewable
electricity
Syngas

Renewable Natural Gas State Activity



16 Bills have been introduced

9 Bills have become law

State Legislative Proposals

15 Natural Gas Utilities have begun developing Voluntary Green Tariffs or similar RNG programs

Utility-Led RNG Programs

13 Applications have been filed with PUCs

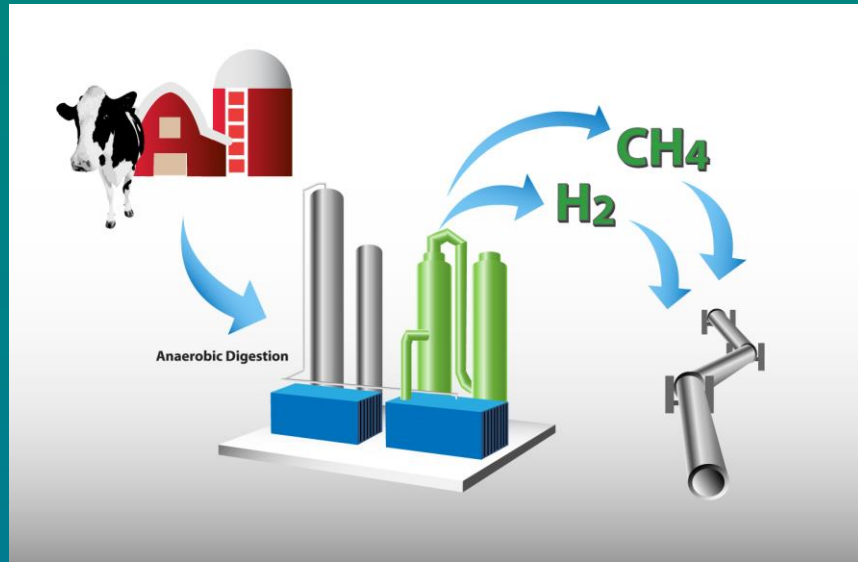
6 Applications have been approved by PUCs

Regulatory Actions Taken

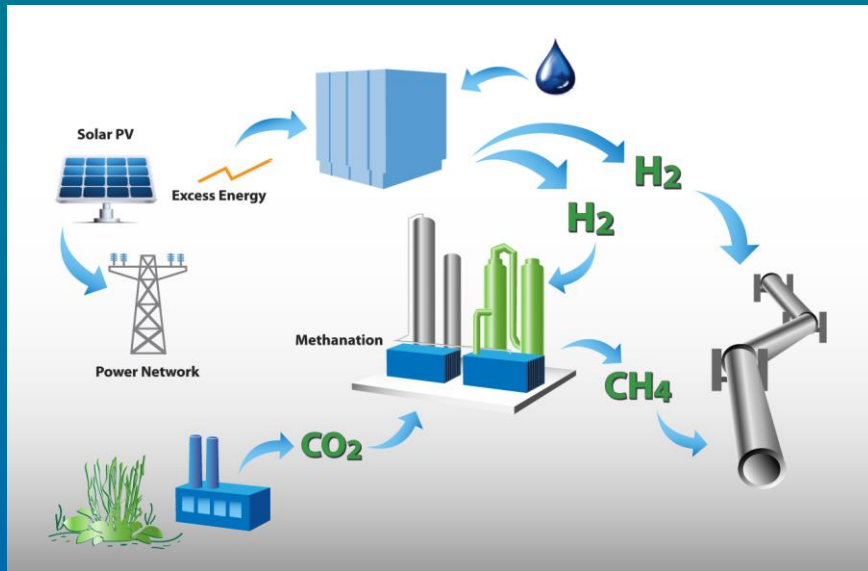
18 states have utility programs, state legislative proposals, or regulatory actions that promote RNG for residential or commercial use

*this data does not include RNG interconnection activity

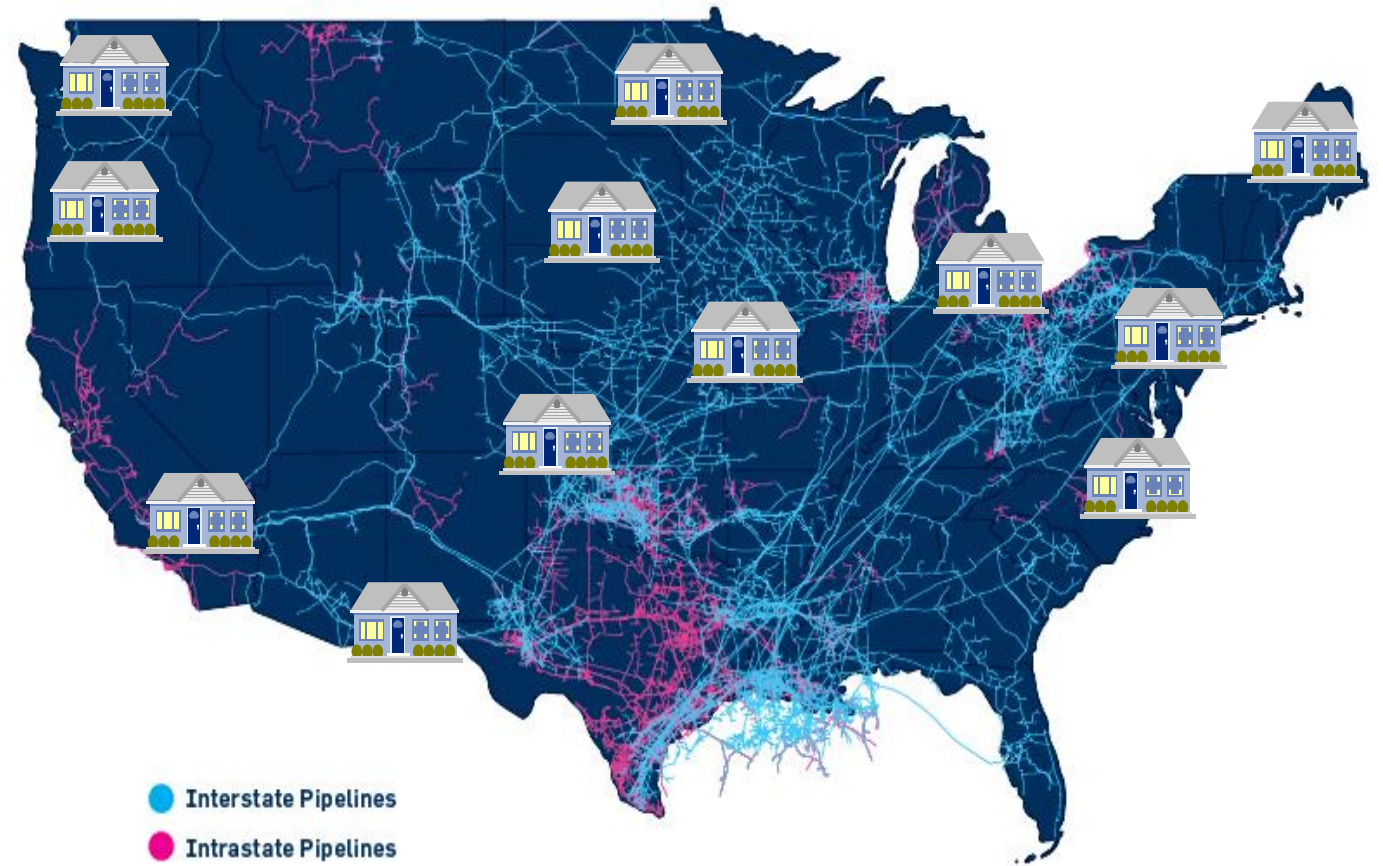
Anerobic Digestion



Power to Gas (P2G)

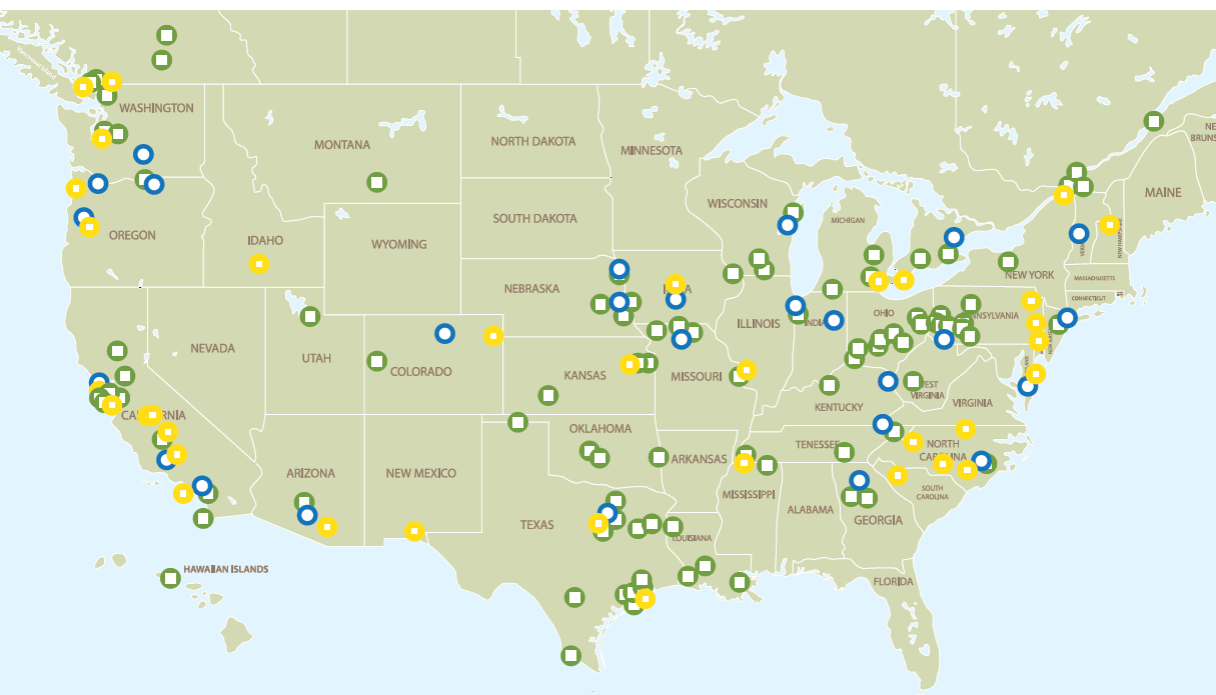


The Future Potential of RNG





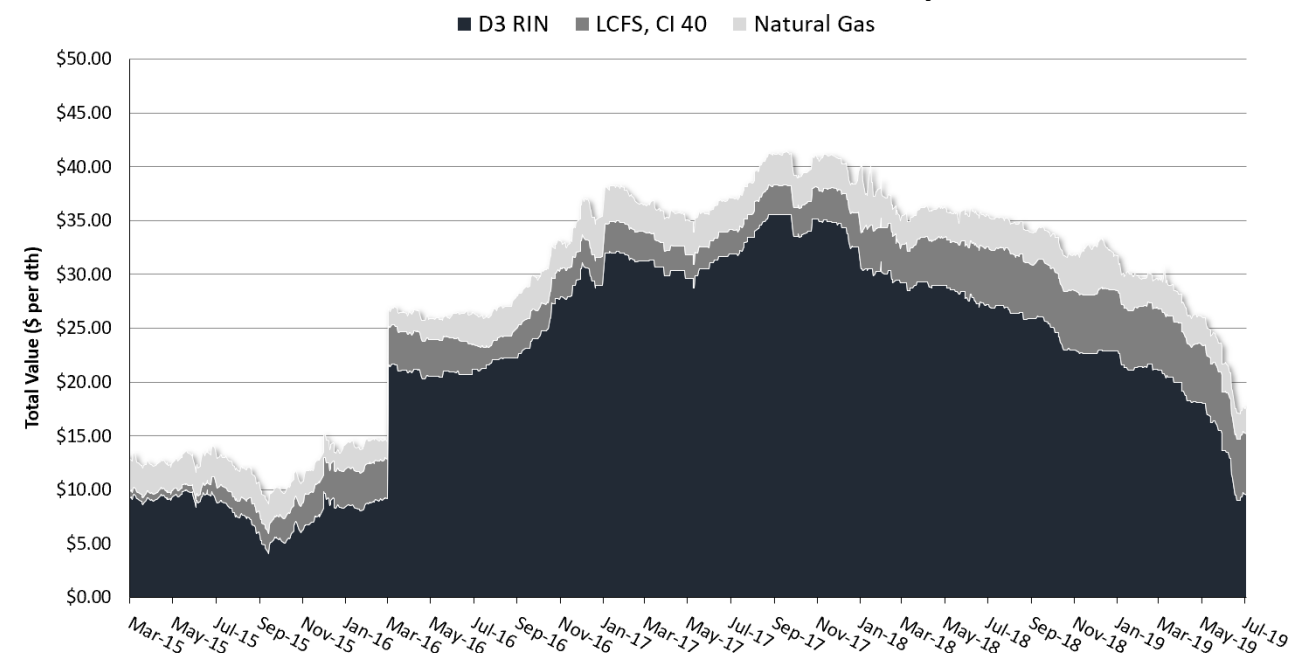
Emily O'Connell
Director, Energy Markets Policy
eoconnell@aga.org









MAP KEY

- 97 Operational / Online (US – 87; Canada – 10)
- 26 Under Construction (US – 25; Canada – 1)
- 39 In Substantial Development (US – 32; Canada – 7)

Combined Value of Biomethane Value, per dth



- RNG production from 2015 through 2018 has more than doubled, to **306 million ethanol gallons equivalent (EGE)** in 2018, with an average annual growth rate of 30 percent.
- The AEO projects U.S. NGV demand for natural gas at approximately **1,800 million EGE** in 2025. A 2017 report by the Fuels Institute projects U.S. NGV demand for natural gas in 2025 at approximately **2,500 million EGE**.


-  Dashboard
-  Accounts
-  Project
-  Generation
-  Help
-  Documentation

Accounts

Active Closed Retirement

1 Accounts

Add New Account


Creation Date 


Reset





Account	Account ID	Created Date	Projects associated	Quantity
Default Active	FA2E77C5-4B5C	07/03/2019	1	0





- 

Dashboard
- 

Accounts
- 

Project
- 

Generation
- 

Help
- 

Documentation

[View All Draft Projects](#)

Editing: Test 12

General Location Owner

Fuel Type

Filter... ▼

Tool Name

Filter... ▼

ed or it will not be accepted.

Save Draft

Submit Project

Exit Editing

Documents Administrator

mitted for approval and status changed to *Pending*

Add

Reset





Injection Point

Filter

Carbon Intensity

Filter... ▼

Document

Generator Fuel

Renewable Natural Gas


Tool

Greet

Name

Biomethane from Anaerobic Digestion of Dairy a

Start Date *

07/16/2019 

End Date

MM/DD/YYYY 

Injection Point *

Albany, Missouri

Carbon Intensity *

-372.35




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