North Central Texas Council of Governments

Dallas-Fort Worth CLEAN CITIES

Renewable Natural Gas Adoption Roundtable

North Central Texas Council of Governments

2.04.2025

Agenda

North Central Texas Council of Governments (NCTCOG) Kickoff

Panelist Introduction:

- Atmos Energy
- Dallas Area Rapid Transit (DART)
- Dallas-Fort Worth International Airport (DFWIA)

Attendee Introductions

Q & A with Atmos Energy, DART, DFWIA

North Central Texas Council of Governments (NCTCOG) Resources

What is Natural Gas?

Mixture of hydrocarbons, predominantly methane (CH_4)

Conventional natural gas

- Extracted from domestic gas and oil wells
- Uses existing pipeline distribution system

Can be used in any use-case (light-duty, medium- and heavy-duty)

What is Renewable Natural Gas?

Produced from decomposing organic matter

Process to create Renewable Natural Gas (RNG):

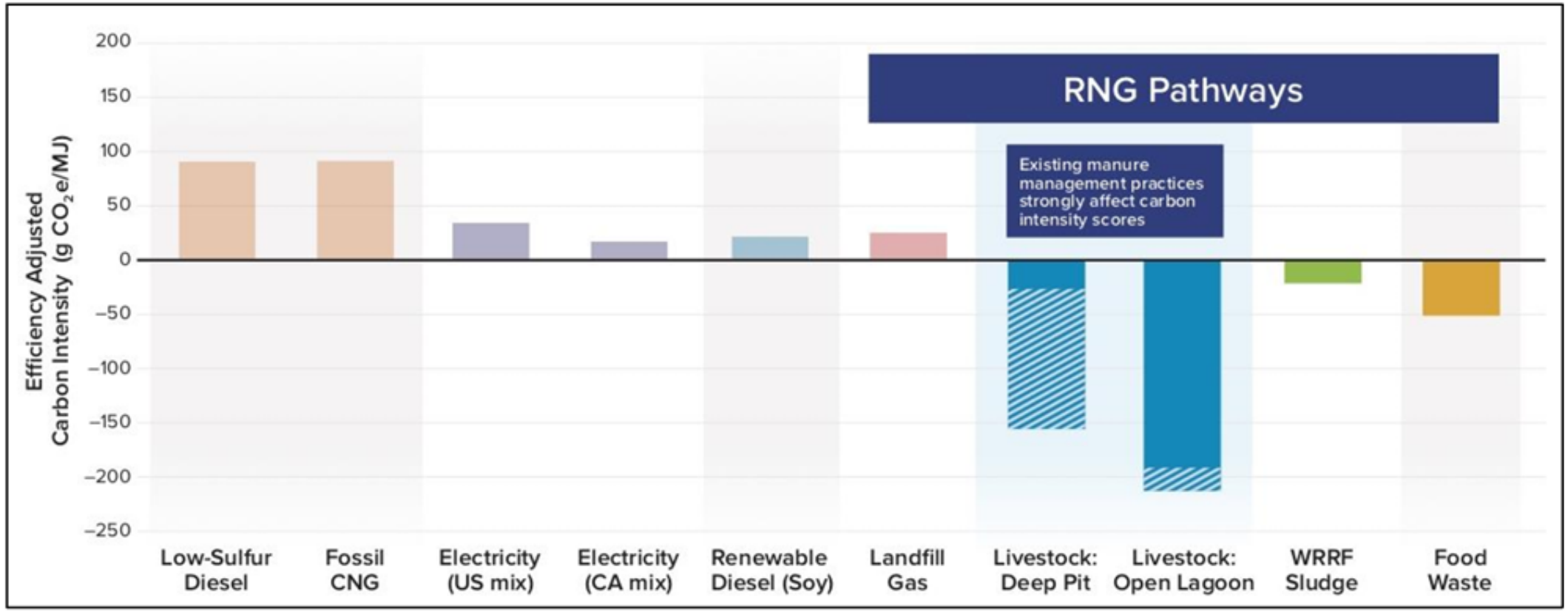
1. Biogas is captured
2. Biogas is conditioned
3. Upgraded biogas is sent to pipeline

RNG is chemically identical to conventional compress natural gas

RNG Feedstocks

Source: Renewable Natural Gas | US EPA

Renewable Natural Gas (RNG) Pathways



Some RNG pathways have very low carbon intensity (CI) scores because they capture emissions that would otherwise be released to the atmosphere. For farms with manure lagoons that currently emit high levels of methane, RNG production can yield negative CI scores. The diagonal-line overlays on bars represent the *range* of carbon intensity scores that can be achieved with corresponding RNG projects. (CA = California; CNG = compressed natural gas; CO_2e = carbon dioxide equivalent; g = gram; MJ = megajoule; RD = renewable diesel; WRRF = water resource recovery facility.) (ANL GREET)

Source: [Argonne National Laboratory's Renewable Natural Gas (RNG) for Transportation Frequently Asked Questions]

Renewable Natural Gas Benefits

Fuel Diversity

Enhances domestic energy production through using existing infrastructure and diverse feedstocks

Economic Impacts

Boosts the local economy by incentivizing production for feedstock owners

Air Quality Improvement

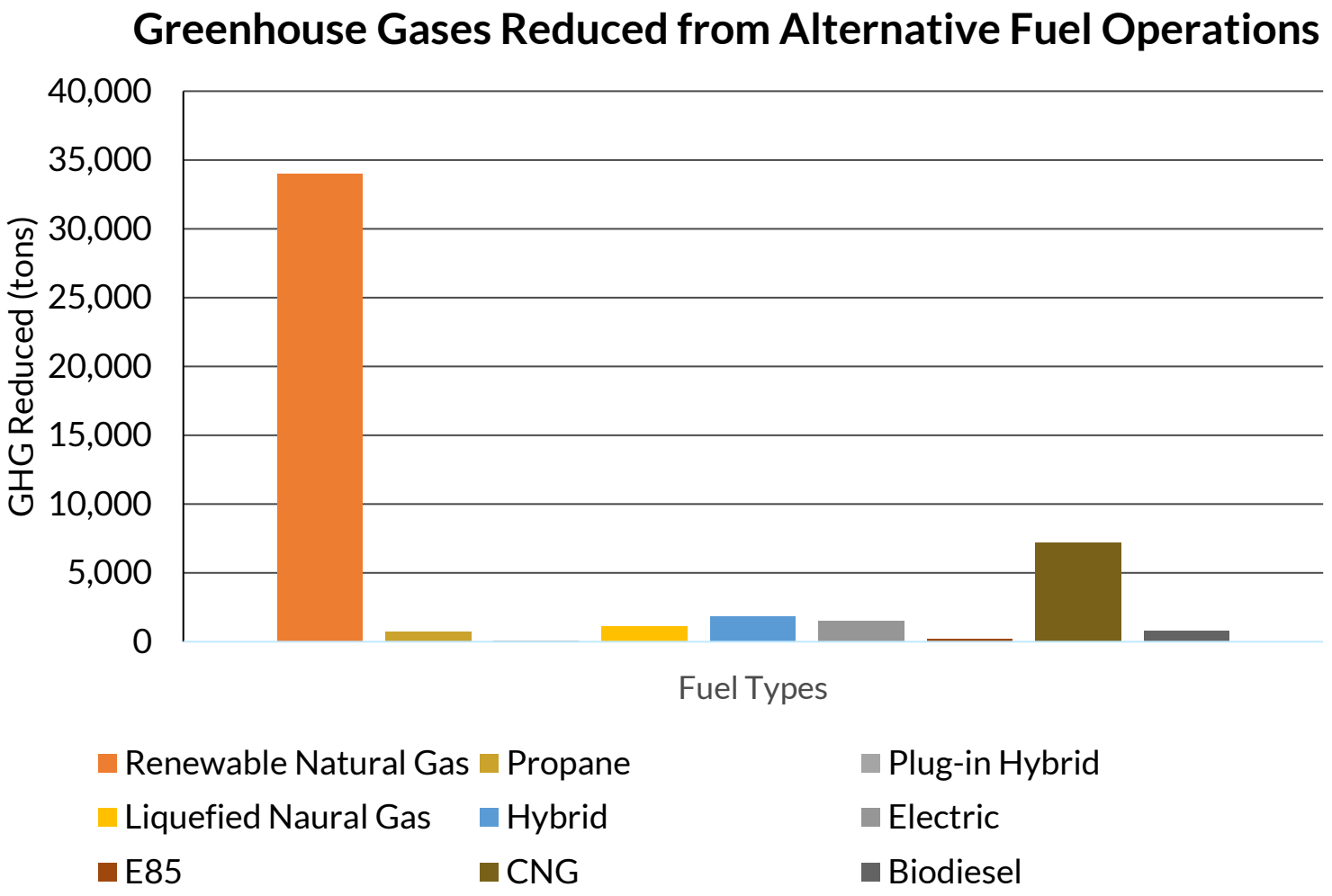
Reduces criteria pollutants from vehicle operations when replacing diesel or gasoline with CNG/RNG

Greenhouse Gas Reductions

RNG projects capture methane from landfills or digesters, reducing greenhouse gas emissions and offering climate benefits.

Source: Renewable Natural Gas | US EPA

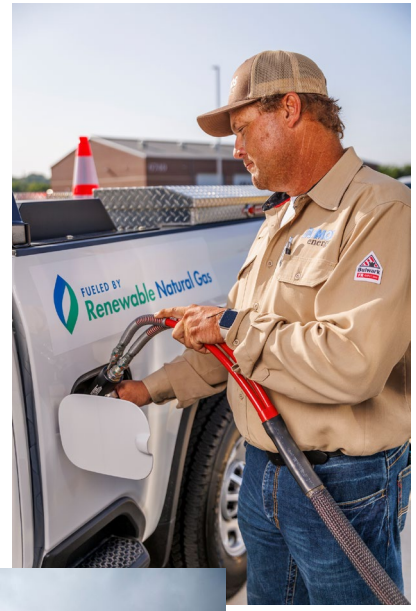
RNG Local Impacts



Source: www.dfwcleancities.org/annualreport

www.dfwcleancities.org/successstories

Environmental Strategy: Fleet/RNG



Process to Transition to RNG:
- Atmos has had varying numbers of CNG vehicles in our fleet for more than a decade
- As part of our comprehensive environmental strategy, in 2022 we completed construction on the first CNG Refueling Station at one of our offices, utilizing RNG for fuel, and taking delivery of CNG bi-fuel vehicles
- We now have five private-use CNG refueling stations in Texas, and one under construction in Louisiana
- Gas is pipeline connected; we utilize a supply partner for RNG
- We purchase RNG unbundled and do not hold Environmental Attributes

Why You Chose to Adopt RNG:
- Reliability of supply; lower cost on an un-bundled fuel equivalent as compared to gasoline for light and medium-duty vehicles
- Utilizing RNG allows us to drive CO2e down by 90% compared to gasoline alternative

RNG Source:
- Mix

Any Operational or Other Issues with RNG:
- Experienced some delays in vehicle ordering (post-COVID supply chain)
- Learning curve on initial CNG station operations
- No issues with vehicles once delivered, or the physical gas for fueling

CNG and RNG Cost Difference:
- Our laid-in RNG cost is significantly lower than gasoline

DART – Renewable Natural Gas (RNG)

Process to Transition to RNG:

- CNG introduced in DART fleet in 2012
  - Cummins ISL-G engines reduced NOx from ~16 grams/mile to 0.4 g/mi
  - Newest Cummins L9N engines reduce NOx to near zero.
  - Carbon emissions have not changed
- Answer: Renewable natural gas
  - First procured in 2018

Why You Chose to Adopt RNG:

- RNG was procured through competitive bid
- Benefits: Environmental, renewable
- DART has a mandate to reduce harmful emissions.

RNG Source:

- RNG source is primarily landfill gas dispensed by Anew

Any Operational or Other Issues with RNG:

- Use of RNG is transparent – no difference between sources of natural gas

CNG and RNG Cost Difference:

- DART's RNG comes through the existing ATMOS pipeline – no difference in cost
- Through the Federal RIN program, DART gets revenue back

Turning our clean buses greener

DFW Airport – Renewable Natural Gas

Process to Transition to RNG:

- 2000 – Bus fleet conversion from diesel to CNG began
- 2017 – Transition to RNG

Why we chose to adopt RNG:

- CNG – Local Air Quality
- RNG – Carbon Footprint

RNG Source:

- Landfill biogas (methane)

Operational or Other Issues with RNG:

- Drop-in change

CNG and RNG Cost Difference:

- Avg. price reduced by ~$0.29/DGE upon implementation in 2017
- ~$1M in annual O&M savings (on "margin" price per gallon for operation and maintenance of our two stations)

CNG/RNG Station

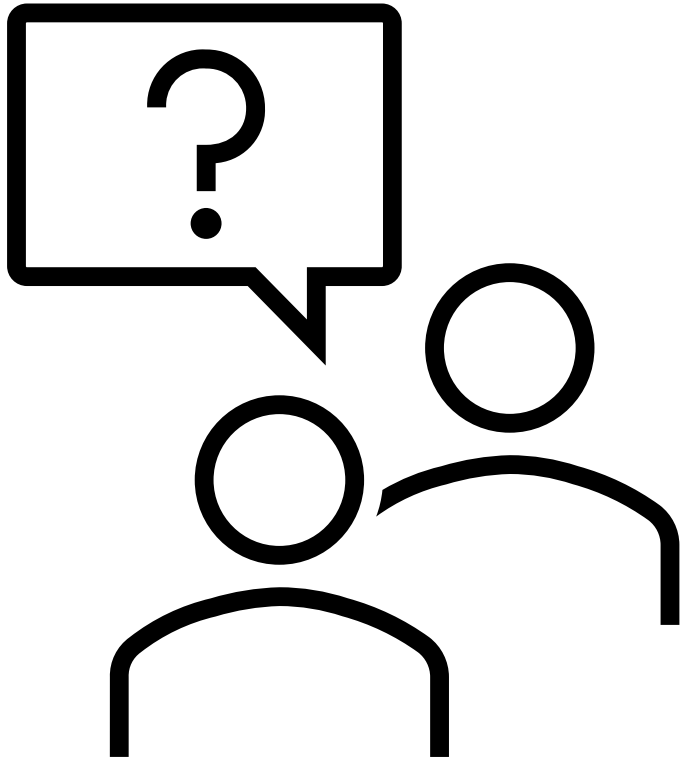
Attendee Introductions

Name

Organization

Why are you interested in Renewable Natural Gas?

Q & A: Atmos Energy, DART, and DFW Airport



CNG/RNG Funding Opportunities

Grants	Deadline
Texas Clean Fleet Program (TCFP)	March 21, 2025
Governmental Alternative Fuel Fleet Grant Program (GAFF)	February 5, 2025
Texas Natural Gas Vehicle Grant Program (TNGVGP)	March 4, 2025
North Texas Diesel Emissions Reduction Call for Projects	March 14, 2025
Department of Energy's Advanced Vehicle Technologies Office Program	April 1, 2025

For more information go to www.nctcog.org/aqfunding

Natural Gas Resources

- Alternative Fuels Data Center: Natural Gas
- Alternative Fuels Data Center: Renewable Natural Gas
- Argonne National Laboratory's Renewable Natural Gas Database
- Guideline for Determining Modifications Required for Adding CNG and LNG Vehicles to Existing Maintenance Facilities (CVEF)
- Compressed Natural Gas Vehicle Maintenance Facility Modification (AFDC)
- Facilities Modification for Natural Gas Vehicles (Natural Gas Vehicle Institute)
- NCTCOG - North Central Texas Organic Waste to Fuel Feasibility Study

North Central Texas Organic Waste to Fuel Feasibility Study

Developed by North Central Texas Council of Governments and University of Texas at Arlington

Funded through Environmental Protection Agency Grant

Study Includes:

- Analyses of current state of feedstocks, collection networks, and fuel demand
- Identification of pilot projects to divert biosolids
- Potential use cases for natural gas vehicles
- CNG to RNG Contract Guide **(Appendix E)**
- Funding Opportunity Memorandum **(Appendix F)**

North Central Texas Organic Waste to Fuel Feasibility Study – Key Takeaways

Need for regional sludge management solutions

Growth expected for natural gas vehicle and distributors

Potential for hydrogen generation and utilization at facilities

Stakeholder Feedback

Priority Feedstocks:
Food Waste Fats, Oils, and Grease (FOG)

Priority Collection Network:
Commercial and High-Density Residential

Priority Vehicles:
Buses, Freight, Refuse

Priority Counties:
Collin, Denton, Tarrant, Dallas, and Erath

Data Analysis and Prioritization Evaluation

10 short listed facility locations in region

City of Dallas Wastewater Treatment Plant and City of Denton Landfill Complex identified as highest readiness

Pilot Project Evaluation

Upcoming Events and Engagement Opportunities

Dallas-Fort Worth Clean Cities Stakeholder Input Session	Date: Wednesday, February 26 Time: 1:00 pm to 3:00 pm
Webinar on Heavy-Duty Zero Emission Vehicles	Dates: March 25, 26, & 27 Time: 10:30 am to 11:30 am
Fleet Manager Roundtable	Date: Wednesday, February 26 Time: 10:00 am – 11:00 am

Go to www.dfwcleancities.org/events to RSVP

DFWCC Annual Survey: Accepting responses through February
www.dfwcleancities.org/annualreport

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