

Gas System Long-Term Plan

Technical Session 05.08.24

Focus Topic – Oil to Gas & Low Carbon Fuels

Cases 20-G-0131 & 23-G-0676



Logistics and Background

James Keating
Director, Gas Transformation and Planning



Agenda

- Oil to Gas Conversions
 - Low Carbon Fuels
 - Q&A
-
- Additional Technical Conference - May 15th – Hydraulic Modeling.

Meeting Logistics

- Central Hudson Gas and Electric (CHG&E) is presenting at the Technical Session to provide Stakeholders with a summary discussion of its oil to gas conversion program and its work on low carbon fuels.
- Questions will be taken throughout the presentation. Please use the “raise hand” feature of the meeting platform so that we know when there are questions to address (We will answer questions in the order they are received).

Oil to Gas

Jason Malizia- Director, New Business



Natural Gas Conversions

Recent History

- 2013-2020:
 - Case 12-G-0297: Proceeding to examine policies regarding the expansion of Natural Gas (2013)
 - Active marketing
 - Favorable gas equipment incentives
 - Revenue allowance for large commercial point loads (CIAC, burn agreements)
- 2021 – Current:
 - Reduced gas marketing
 - Tariff entitlement allowance (100ft rule)
 - Awareness of Clean Heat options
- Results:
 - Increased total gas base from 75,000 to 90,000 customers
 - 15,000 additional customers over the last ten years, by conversion and new construction

Natural Gas Conversions Process for our customers

- Customers may request natural gas a few ways at Central Hudson
 - Email into our call center
 - Call into our call center
 - Filling out an application, in advance of speaking with Central Hudson, and submitting directly online

Natural Gas Conversions

Process for our customers (Continued)

- Once Natural Gas Interest Notice Received
 - Review proximity to natural gas main
 - Site visit completed with customer
 - Determination of gas meter location
 - Review of gas incentives & comparison to Clean heat offerings
 - Recovery of gas contractor proposal, signed
 - Submission of project to design for material requisition, permitting, etc.
 - Release to construction
 - Scheduled for installation
 - Wait for customer's contractor to convert equipment onsite, complete a pressure test and submit for a meter installation/turn on

Current Outreach for Natural Gas

- How are customers made aware:
 - Social Media
 - Paper publications
 - Letters (Customers within 100' of natural gas infrastructure or along Distribution Improvement Routes)
 - Radio
 - Website
- Oil to Natural Gas Annual Savings
 - Approximately 70% (According to EIA and Central Hudson Cost Calc) * Current
 - **Heating cost comparison**
 - The chart below shows the total heating season cost for a typical Hudson Valley home during the 2022-23 heating season.



Current Rebates for Natural Gas / Clean Heat

| Type of equipment | Eligibility | Rebate |
|---|--|---------|
| Furnace Tier 1 | AFUE \geq 92% and KBTUH \leq 225 | \$200 |
| Furnace Tier 2 | AFUE \geq 95% and KBTUH \leq 225 | \$400 |
| ECM Boiler Circulator | | \$25 |
| Water boiler | AFUE \geq 90% and KBTUH \leq 300 | \$750 |
| Steam boiler | AFUE \geq 82% and KBTUH \leq 300 | \$250 |
| Combi-boiler | AFUE \geq 90% and KBTUH \leq 300 | \$1,800 |
| Boiler reset control <i>(Not eligible on new boiler installations)</i> | Listed on sales receipt | \$125 |
| Indirect water heater | Listed on sales receipt | \$250 |
| Gas storage water heater | Uniform Energy Factor \geq .67 and \leq 55 gallons | \$75 |
| Instantaneous domestic water heater | Uniform Energy Factor \geq .90 | \$250 |
| Combi-Furnace/On-demand dhw | AFUE \geq 95%; $<$ 225 KBTU/hr | \$675 |
| Programmable WiFi thermostat <i>(Maximum of two per application)</i> | Listed on sales receipt | \$50 |

AIR-SOURCE HEAT PUMP INCENTIVES

Central Hudson / Clean Heat Rebate (whole building):

- Up to \$1,000 per 10,000 Btuh if removing your oil tank or previous fossil fuel heating source.
- Up to \$700 per 10,000 Btuh if installing advanced controls that turn on existing fossil fuel systems as backup or second stage heating.
- Up to \$500 per 10,000 Btuh of heating capacity if not removing your oil tank or previous fossil fuel heating source.

GROUND-SOURCE HEAT PUMP INCENTIVES

Central Hudson / Clean Heat Rebate (whole building):

- Up to \$2,000 per 10,000 Btuh of full load AHRI capacity. \$500 of total incentive may be allocated to the contractor.

Conversion Data and Notable Conversions

Over the last four years (2020 – 2023)

- Total Fuel Conversions to Natural Gas 1811
 - Residential 1677
 - Commercial 134
 - Notable
 - Construction Aggregate (Coal to Natural Gas) 2020
 - Construction Aggregate (Coal to Natural Gas) 2020
 - Educational Institutions 2016 - 2018
 - Correctional Facility 2020

Over the same four years (2020 – 2023)

- Clean Heat, Electric Conversions ~ 9000

Low Carbon Fuels

Mark Castellanos – Assistant Engineer, Gas Transformation



Low Carbon Fuels Overview

- RD&D
 - NYSEARCH
 - LCRI
- RNG Implementation
- Hydrogen Study
- GSLTP Integration

NYSEARCH RD&D

- The NYSEARCH Committee is a voluntary sub-organization within the NGA
- Ability to address specific company needs while working with others in the gas industry with those same needs on a project-by-project basis
- Direct control and input on project activities, specifications, and approach
- Financial leverage of R&D investment through collaboration with other gas companies in NYSEARCH's membership and outside co-funders such as DOT/PHMSA, manufacturers and others

NYSEARCH – RNG

- Study on Impact of Trace Constituents in RNG
- Testing of Residential Appliances for Impact of Siloxanes
- Renewable Natural Gas Interchangeability Research for Residential Appliances
- Common RNG Interconnection Skid Development for Utilities

NYSEARCH – Hydrogen

- Standardized Hydrogen Blending & Injection Skid for LDC's
- Natural Gas Dispersion with Blended Hydrogen
- Impact of H₂ Blending on Threaded Connections
- Hydrogen Blend Impact on Elastomer Materials
- Hydrogen-Natural Gas Living Lab

LCRI MISSION

Achieving **net zero emissions across the economy** by 2050 will require accelerating a safe, affordable, and reliable energy transition through advancements in a **variety of clean energy technologies and options**.

EPRI and GTI Energy have created the LCRI to evaluate pathways for deployment of **low-carbon fuels and energy carriers** in support of decarbonization across the energy economy.

The LCRI is focused on a vision of the future global energy system that is **decarbonized, consumer-focused, sustainable, and resilient**.

LCRI FOCUS



Current Status

60 Sponsors

Electric & Gas Utilities
Energy Producers
Equipment Manufacturers
EPC Firms

\$142M Funding

\$410M
Total
Portfolio

90+
Active R&D
Projects

150+
Technology
Reports &
Assessments

25+
Pilots &
Demonstrations



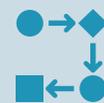
Global collaboration

Addressing common challenges & transferring lessons learned



Technical research

Independent, objective, and technical rigor



Technology demonstration

Validation, scaling, and communicating



Resources and tools

Applying research at the company-level

LCRI Sponsorship



Electric Only



Gas Only



Dual Fuel



OEMs



EPC



Oil & Gas



Renewable Natural Gas Analysis

Prepared for
Central Hudson
Gas & Electric

Executive Summary
May 2024

Disclaimer

This deliverable was prepared by Guidehouse Inc. for the sole use and benefit of, and pursuant to a client relationship exclusively with Central Hudson Gas & Electric ("Client"). The work presented in this deliverable represents Guidehouse's professional judgement based on the information available at the time this report was prepared. Guidehouse is not responsible for a third party's use of, or reliance upon, the deliverable, nor any decisions based on the report. Readers of the report are advised that they assume all liabilities incurred by them, or third parties, as a result of their reliance on the report, or the data, information, findings and opinions contained in the report.

The RNG industry has grown significantly in recent years for landfill, agricultural, and other projects.

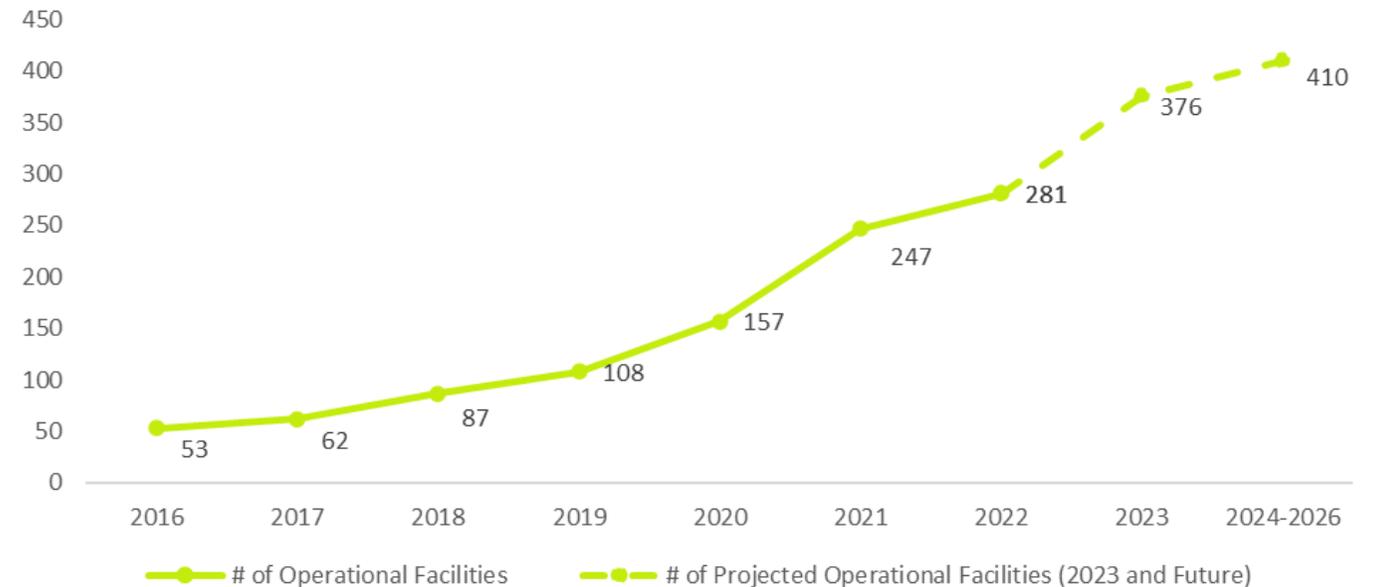
34 new RNG facilities became operational throughout North America between 2022 and 2023, according to the [RNG Coalition](#).

[RNG Coalition data](#) also shows that New York has among the most projects of any state or province, at 45 operational or planned projects.

More facilities are under development today, with over 400 facilities expected to be operating in the United States by the end of 2026, according to [EPA data](#).

Historically, most RNG facilities were constructed at landfills. However, [EPA estimates](#) that agricultural projects made up nearly 60% of operational RNG projects in 2022, up from just 15% in 2012.

RNG Facility Growth in North America over Time



Recent RNG projects and initiatives:

- **Beam Suntory (KY)**, maker of Jim Beam and Maker's Mark, announced plans for a [\\$400 million anaerobic digester](#).
- **PG&E (CA)** recently connected a large [RNG facility](#) to its gas pipeline network.
- **Green Impact Partners (Can.)** was approved to build a [\\$1.2 billion RNG facility](#) outside of Calgary, Canada.
- **Dominion (VA)** is undergoing a joint venture with Smithfield Foods called [Align RNG](#) to develop RNG resources at hog farms in VA, NC, and UT.

RNG Potential in Central Hudson Service Territory

- Guidehouse collected county-level data on feedstock availability supplemented by data provided by Central Hudson and estimated the biomethane energy potentials (dekatherms, DTh) using a series of conversion factors for RNG yield by feedstock.
- The analysis focuses on near-term resources within Central Hudson’s gas service territory including landfill gas, wastewater treatment (WWT), agricultural residues, animal wastes, and food wastes for anaerobic digestion (AD) facilities.
- The analysis results suggest RNG potential exists within Central Hudson’s gas service territory (i.e., 3.3 million Dth per year, 8,926 Dth per day). The analysis found significant potential from agricultural residues (70%), animal wastes (10%), and food wastes (13%) and limited potential from landfill and wastewater treatment facilities in the region.
- Guidehouse’s estimate of 3.3 TBtu/yr (equivalent to million DTh/yr) is in the same range as the NYSERDA estimates of 2.3 to 6.2 TBtu/yr. While it is difficult to directly compare the results of the two analyses, the rough order of magnitude for the estimated RNG potential within and surrounding Central Hudson’s service territory are similar for both studies.

RNG Production Estimates for Central Hudson Gas Service Territory

| Annual (MMDth) | Annual (Dth) | Daily (Dth) | Hourly (Dth) |
|----------------|--------------|-------------|--------------|
| 3.3 | 3,258,160 | 8,926 | 372 |

RNG Implementation

- Developed a Historic Gas Quality Database
- Completed a RNG injection scenario in 2024
- Publish a public facing webpage to showcase Central Hudson's emerging fuel efforts to the public
- Create a new RNG Implementation guide that is readily available

Hydrogen Studies

- Central Hudson completed a Potential Hydrogen study in 2023. Central Hudson will plan to analyze the remaining systems that were not completed during the first phase of the study.
- Central Hudson proposed a more in-depth study in the 2023 rate case targeting industrial and commercial customers.

Low Carbon Fuel Integration - GSLTP

- Appendix B – Dynamic Model Overview
 - Section 2.7 Hydrogen Inputs
 - Includes, blend options, capital and price assumptions
 - Section 2.8 Renewable Natural Gas Inputs
 - Includes blend options, feedstock potential, inclusion percentages, carbon impacts and price assumptions.

Questions

