

Renewable Natural Gas (RNG)

PUC Workshop
Case No. 22-2230-PET
August 11, 2022



VGS Path Forward to Achieve State Goals

Global Warming Solutions Act:

40% GHG Reduction by 2030

80% GHG Reduction by 2050



In-Home Innovation:
Installation of heat pump water heaters, CCHPs, hybrid heating systems, home geothermal.



Alternative Supply:
Adding new sources of low- and no-carbon alternative energy, e.g., RNG, H2, utility geothermal, DES.

Weatherization & Energy Efficiency:
Accelerating access to affordable weatherization services.



Portfolio Approach to Alternative Supply

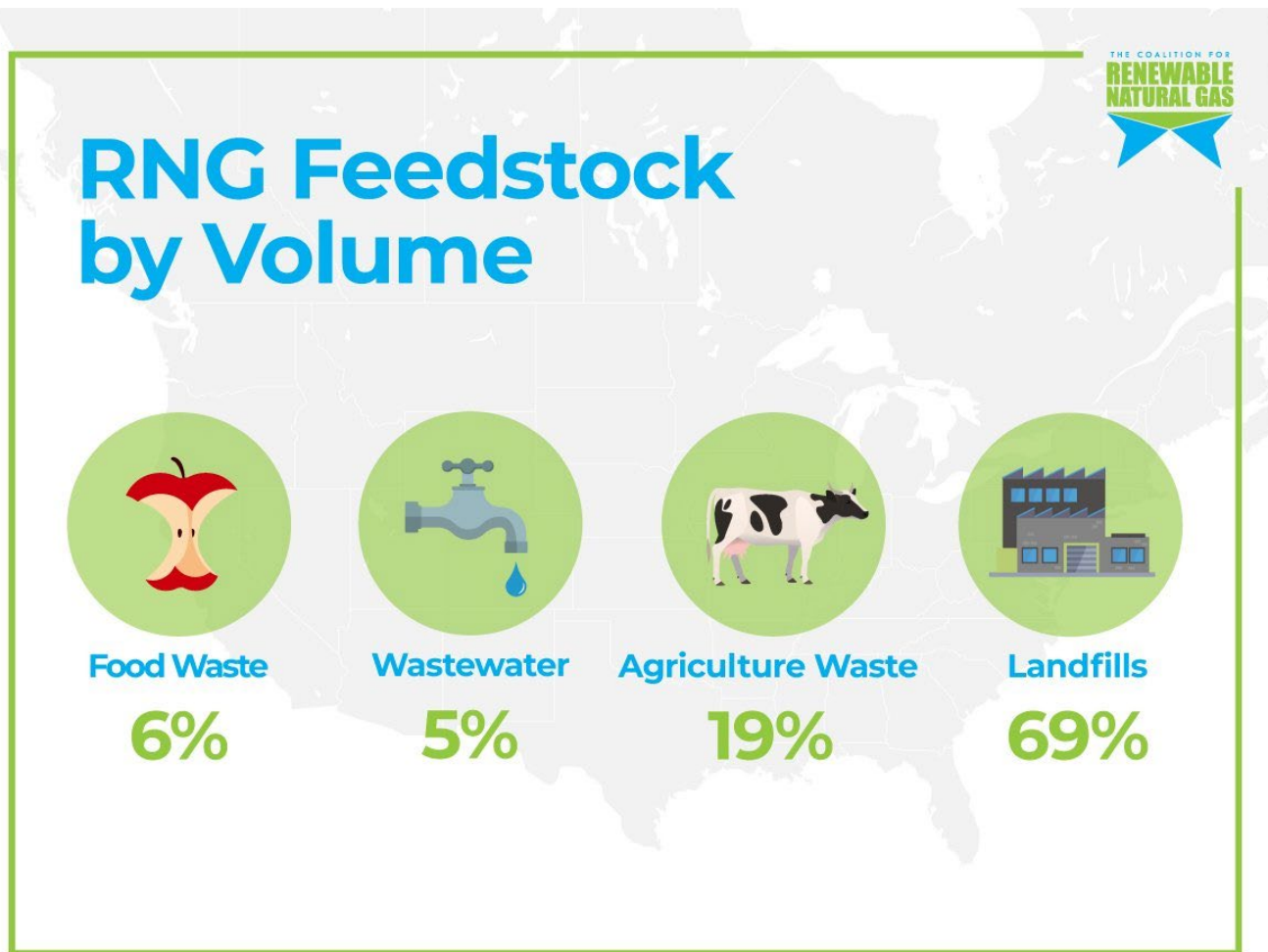
VGS Target:

- 20% of energy delivered from Alternative Supply by 2030

Strategies:

- Immediate deployment of RNG as “drop-in” fuel
 - Blend of in-state and out-of-state RNG contracts
- Pilot non-gas alternatives
 - District energy systems (e.g., Burlington District Energy)
 - Utility-scale networked geothermal
- Explore innovative alternatives for commercial deployment
 - Green hydrogen (may also serve as long-duration electric renewable storage)
 - Synthesis gas (green hydrogen plus captured carbon)
 - Carbon capture and sequestration

North American RNG Supply



Source: Coalition for Renewable Natural Gas; Aug 5, 2022

RNG as a thermal fuel is still a nascent marketplace

- No commoditization
 - Unique feedstocks, technologies, carbon value
 - Low fungibility
- Low liquidity market
 - Bespoke transactions
 - Provenance required
- Disparate interconnection standards
 - Physical transactions not possible in some locations

RNG Marketplace is Robust

Climate policy and markets drive growth:

- Renewable Transportation Fuels (RTF)
 - Federal Renewable Fuel Standard (RFS)
 - State-level Low Carbon Fuel Standard (LCFS) programs
- Compliance markets
 - Utilities respond to regulation
 - Foreign markets
- Voluntary Markets
 - Utilities offering optional programs
 - Academia/industry targeting ESG, carbon reduction goals



Source: Coalition for Renewable Natural Gas; Aug 5, 2022

RNG Procurement Challenges

- Proliferation of new developers
 - Credit challenges
 - Execution/funding concerns
- Increasing demand-side competition
 - Voluntary and compliance buyers competing directly
 - Challenging price discovery



Source: American Biogas Council

VGS RNG Program History

Sept 2017

- RNG Program approved in Docket 8667

April 2018

- Voluntary Program Launched

April 2020

- VGS begins regular RNG blending in PGA

Aug 2021

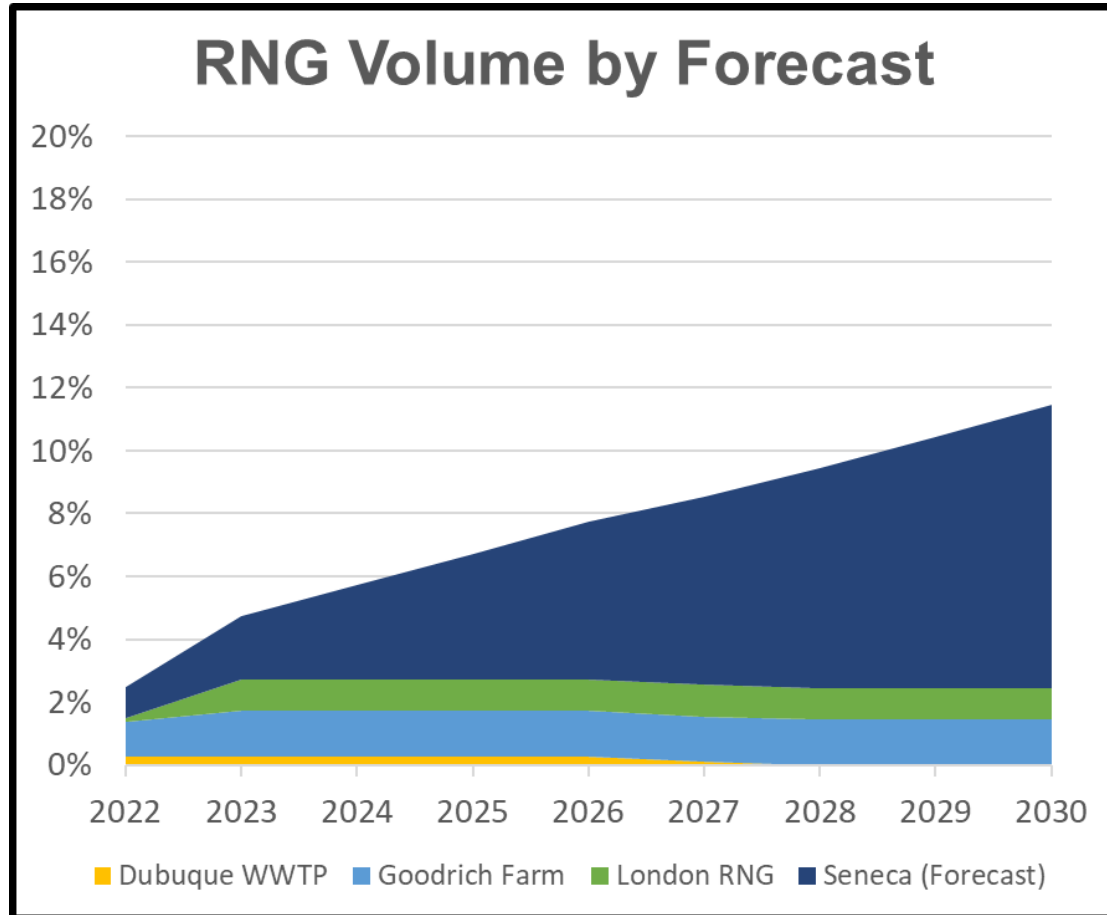
- Alternative Regulation Plan approved allowing RNG up to 2%/yr

July 2021

- First in-state RNG project online at Goodrich Farm



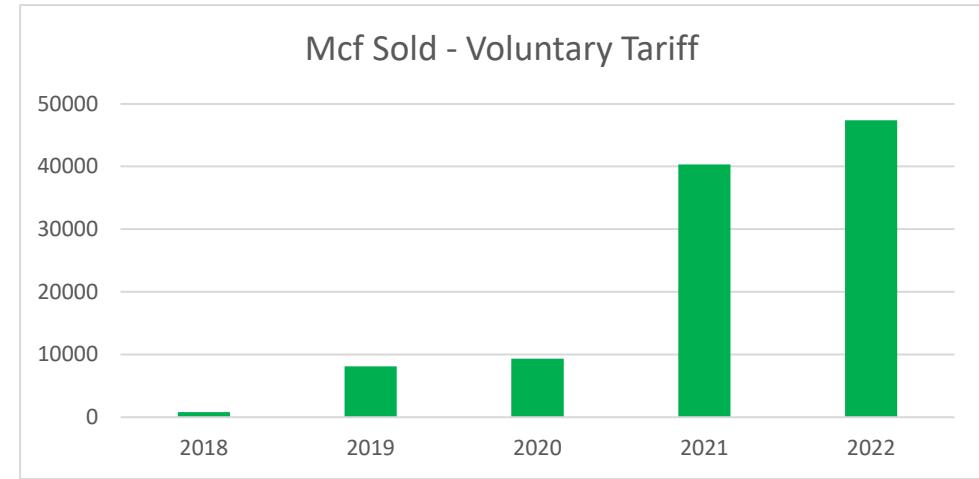
VGS RNG Supply History



- 1st supply contract: Québec Landfill (short-term)
- 2nd supply contract: Dubuque, Iowa Wastewater Treatment Plant
- 3rd supply contract: Salisbury, VT Goodrich Farm digester (first in-state supply)
- 4th supply contract: London, Ontario food waste digester
- 5th supply contract: Seneca, NY Landfill

VGS Voluntary RNG Program

- Allows customers to purchase RNG attributes associated with our supply contracts. Customers select:
 - a percentage of their gas usage
 - Blended RNG or Locally Sourced RNG
- Current Subscribers ~180 buying 40,000 Mcf per year
- Interest is increasing, particularly among commercial customers focused on climate solutions
- Voluntary RNG sales further climate goals without any rate impact on firm customers



VGS RNG Supply Management Principles



Engage consistently with the RNG marketplace to identify partners that share VGS's long-term, lower-cost vision



Support local production and use of RNG, while continuing to evaluate cost-effective supply out-of-state



Balance annual RNG blending with a focus on rate impact near- and long-term



Expand flexibility to respond in a dynamic market

Source: Coalition for Renewable Natural Gas

VGS RNG Supply Procurement Process

- **Price:**
 - Target sources priced equal to or lower than current RNG supply contracts
 - Exception for in-state RNG, which is expected to be priced higher
 - Respond to market dynamics as prices fluctuate
- **Counterparties:**
 - Maintain a wide, diverse network within the RNG industry (market evaluation)
 - Continually evaluate multiple projects from all suppliers (price discovery)
 - Favor under-construction or in-service projects (execution risk)
- **Term:**
 - Seek long-term, fixed priced supply
- **Optionality:**
 - Include volume management tools where possible
 - Utilize alternative markets (i.e., RTF) when favorable for customers

Archaea Contract Benefits

GWSA/VGS Goals:

- Provides substantial portion low/zero carbon fuels to meet alt. supply targets
- Equivalent to over 12,000 homes or 24% of VGS customers supplied by RNG at 1Bcf

Attractive price: Comparable to VGS's other RNG contracts

Long-term: 15 years

Volume optionality: 300,000 MMBtu in first year of contract, with option to increase

- Allows VGS to respond to future market development
- VGS capable of incorporating emerging policy obligations

Resale optionality: option to sell RNG volumes into wholesale markets

- Maximize value when market opportunity is present
- Facilitates volume balancing as VGS brings new decarbonization projects into portfolio
- Smooths rate impact of RNG ramp-up

Additional benefit: Carbon Capture

- Seneca landfill scheduled for installation of Carbon Sequestration system

Potential Rate Impact

- VGS's annual rates are comprised of numerous dynamic inputs, including cost of service, cost of supply, and climate goals
- VGS has evaluated a variety of scenarios and provided modeling that illustrate three potential dynamics of the contract and their comparative impact on rates:
 - **Low Scenario:** No volume increase; exit resale after two years
 - Rate impact: -3.5% to 4.8% per year, averaging **0.4%***
 - **High Scenario:** Increase volume by 100k Mcf/yr; exit resale after two years
 - Rate impact range: -3.5% to 4.8% per year, averaging **1.2%***
 - **High Scenario with Rate Smoothing:** Same volume as High Scenario; resale continues though year 11
 - Rate impact range: -3.5% to 2.2% per year, averaging **1.2%***

Conclusion: Rate impacts from this contract are in line with VGS's projections and plans as outlined in our IRP and Alternative Regulation Plan. Resale revenue smooths rate impacts over life of contract.

** Overall rate impact over the 15-year contract term*

Discussion

