

Advancing RNG Programs to Align with Decarbonization Goals:

Connecting RNG with PGE

Western Gas Measurement Short Course – May 2026



Agenda

- PG&E Gas system
- Benefits of RNG
- A brief History of Production Gas at PG&E
- Biogas upgrading process
- Biomethane Interconnections
- The Interconnection process
 - Gathering Line Connections
 - Virtual Pipeline (Trucked Gas)
- Historical RNG Production and Forecasting
- Coordinated Effort is key to success





PG&E GAS SYSTEM

Service Population
16 million Californians

Service Area
70,000 Square Miles

Natural Gas Meters
4.5 Million

~ 6,438 Miles
Gas Transmission Pipeline

~ 43,000 Miles
Gas Distribution pipeline



Benefits of RNG



- Displace Fossil Fuels
- In-State Production
- Created from a variety of sources
- Income for the Producers
- Reduced GHG
- Improved Air Quality
- Local Jobs
- Uses existing infrastructure for transportation.

A Brief history of production gas at PG&E

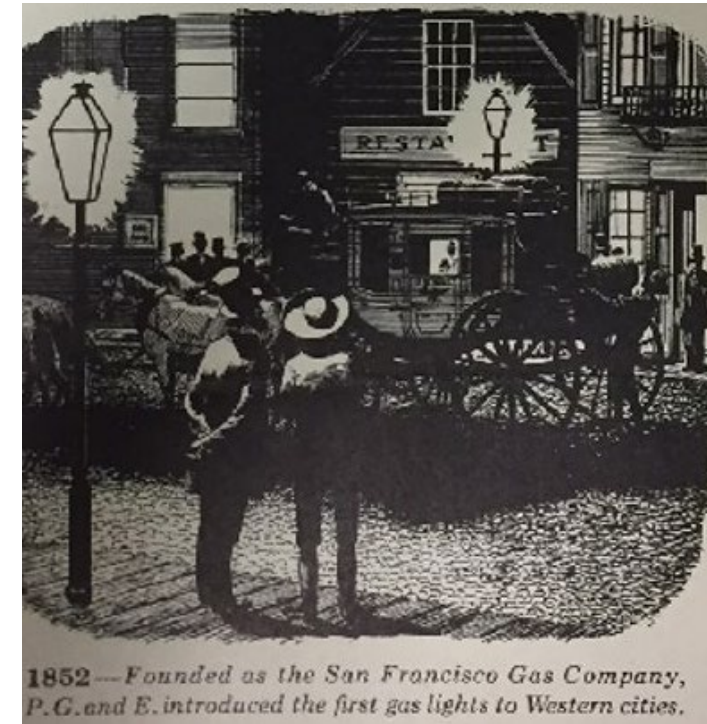
Gas Lighting (not to be confused with *gaslighting*...) for the City

- In 1852, the San Francisco Gas Company, which later became PG&E and was known as the “*first utility in the west*,” started delivering manufactured gas—produced from coal at Manufactured Gas Plants (MGPs)—to illuminate streets and residences.



Left: The Old Gas Works, 1st & Howard, San Francisco circa 1853

Right: Gas lights in downtown SF circa 1852



1852—Founded as the San Francisco Gas Company, P.G. and E. introduced the first gas lights to Western cities.

A brief history continued...

Manufactured Gas Plants and “Holders” in CA

Low-pressure buried pipelines were utilized to move gas from the MGP to the gas lamps, relying on large “holder” tanks to generate the necessary pressure to distribute the gas throughout the system.

California operated more than 250 of these MGPs statewide between 1852 and the 1920s.





RNG Project Showcase – San Francisco Public Utility Commission (SFPUC)



Credit: San Francisco Public Utilities Commission.

San Francisco Waste-Water Treatment Plant (Q2-2027)

- The biomethane project was initiated to convert digester gas from waste-water treatment operations into pipe-quality RNG for injection into the PG&E transmission system.
- Handles 80% of the City's combined stormwater and wastewater.
- Enables 100% beneficial use of the biogas generated at the plant.
- .75 BCF annually when at full production

RNG Production Process



Organic
Waste

Anaerobic
Digestion

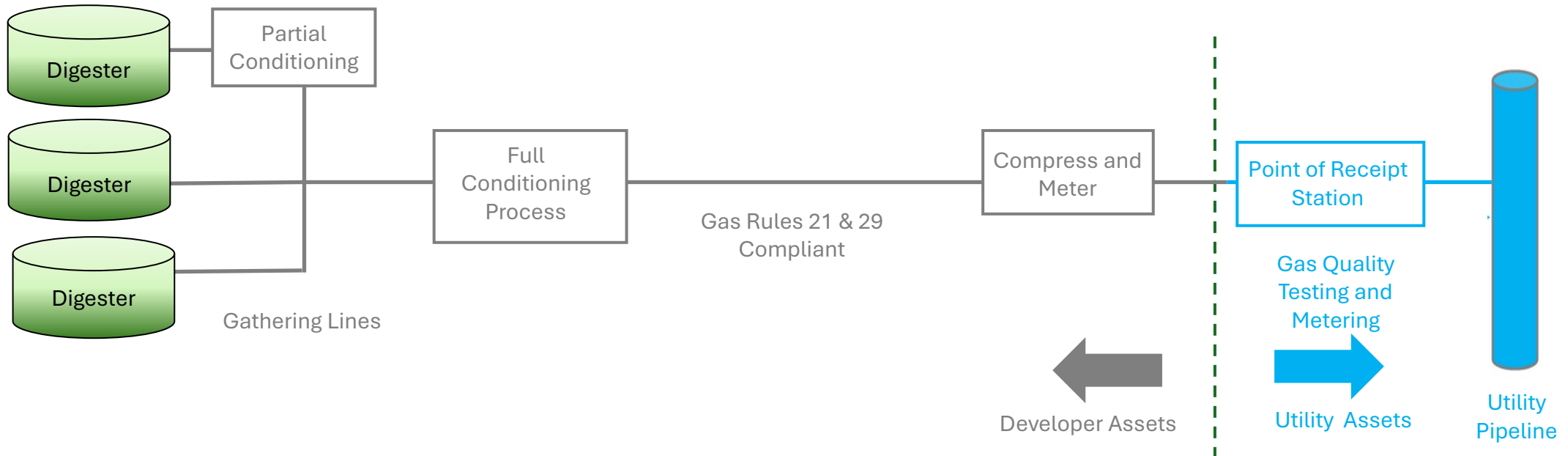
Biogas

Purification

Biomethane

Typical Cluster Interconnection

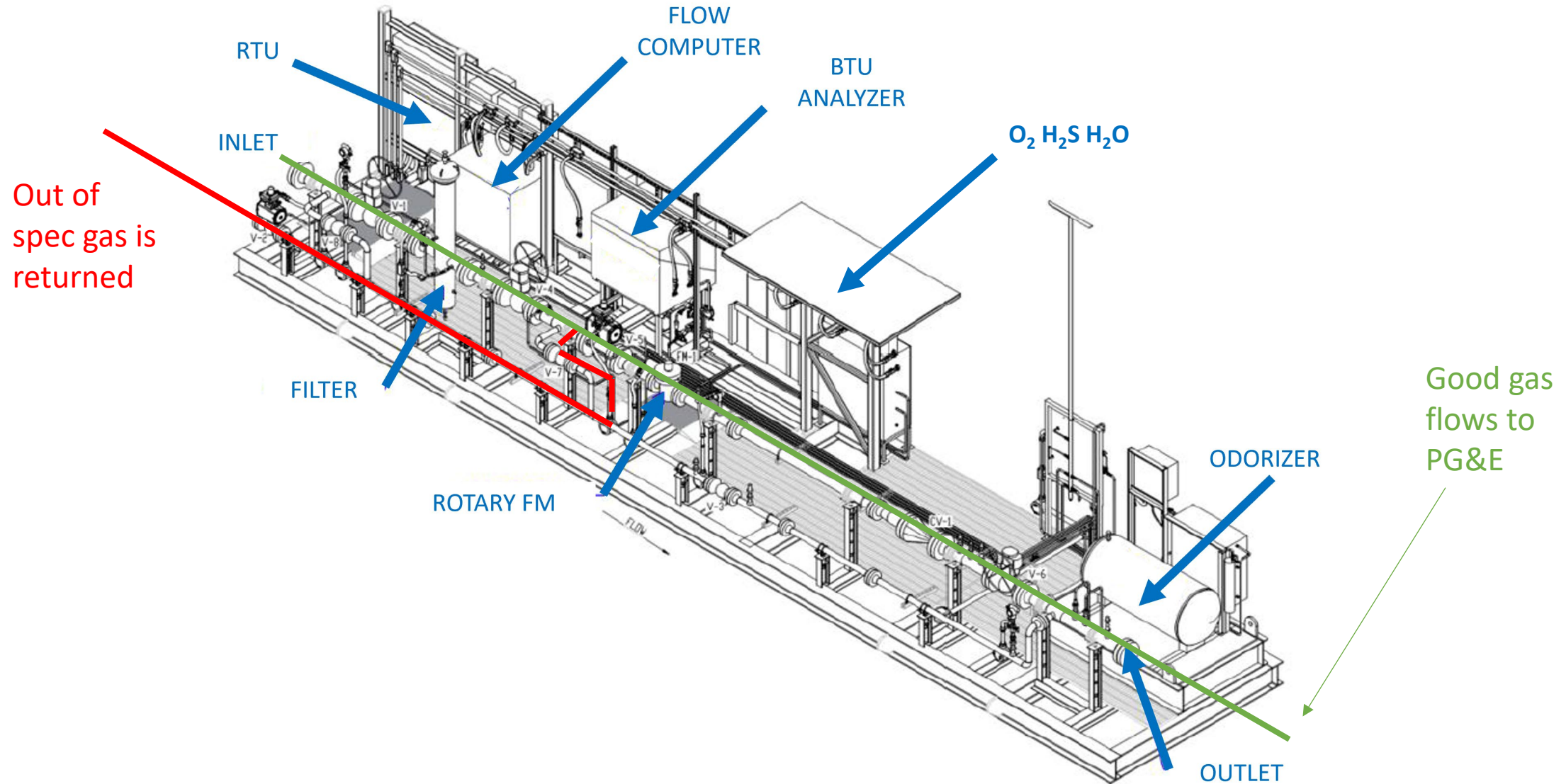
Biogas production transported by pipeline to conditioning facility and to the utility





The diagram illustrates the RNG production and distribution process. It begins with a **Digester** (green cylinder) connected to **Partial Conditioning** (purple box). From **Partial Conditioning**, a solid line leads to a tanker truck icon, which then connects to the **Full Conditioning Process** (purple box). A dashed line labeled **Gas Rule Compliant RNG** connects the **Full Conditioning Process** to a **Compress and meter** box (purple). Above this dashed line is the label **3rd Party Receipt point**. From **Compress and meter**, a solid line leads to the **Point of Receipt Station** (blue box). Below this line is the label **Gas Quality Testing and Metering**. A vertical dashed green line separates the production side from the distribution side. To the right of this line, a solid blue line connects the **Point of Receipt Station** to a blue cylinder icon. Below this line is the label **Utility Assets**. A large blue arrow points right towards the **Utility Assets**, and a large grey arrow points left towards the **Developer Assets** (labeled below the grey arrow).

Biomethane skid





Interconnection Process and Timelines

Step-by-Step Guide to Connecting RNG Projects

PHASE	DESCRIPTION	DURATION	COST
Screening Study	Assess pipeline capacity, route, pressures	~15 business days	No cost
Preliminary Engineering Study (PES)	Confirm route, initial design, cost estimate	~90 business days	\$50K advance
Detailed Engineering Study (DES)	Final design and refined cost estimates	~180 business days	Customer funded
Construction & Commissioning	Build facilities, test gas quality, place in service	Variable	Customer funded



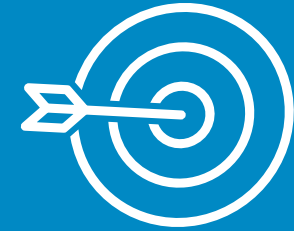
RNG Volumes

Current producers will deliver increased volumes through existing connections.

New projects applications will continue into development phase, from a variety of feedstocks.

There are 4-5 new interconnections planned to operate between 2026 and end of year 2027.

BD&I Target
For 30 Bcf by 2030

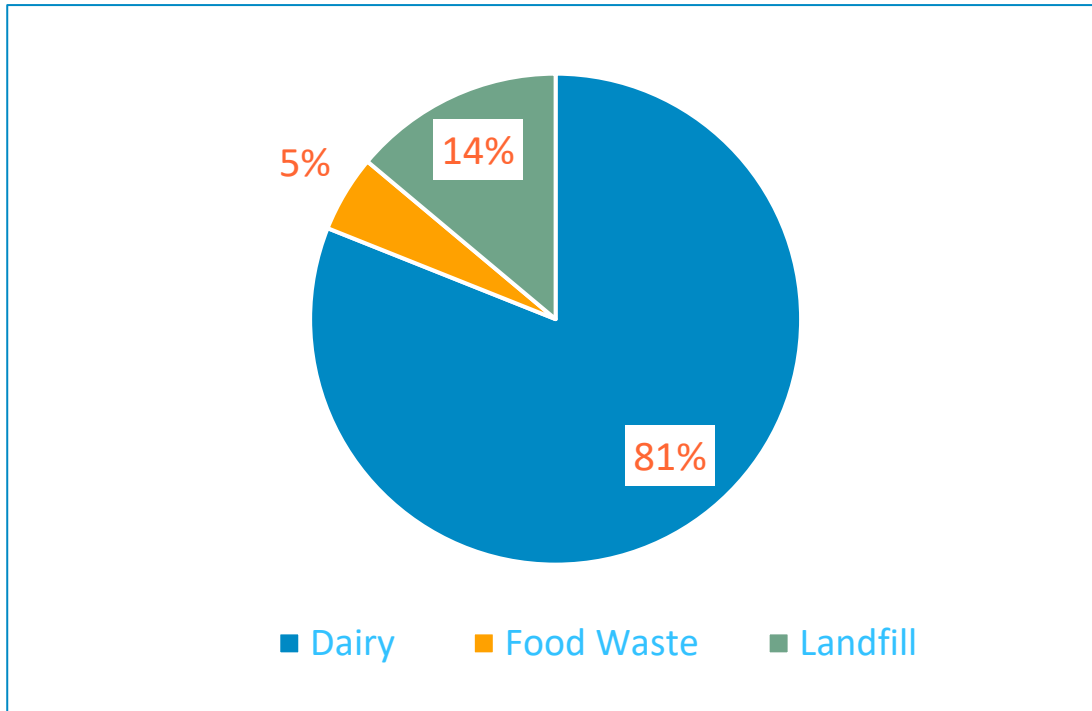


0.6 2022
1.2 2023
1.9 2024
2.7 2025

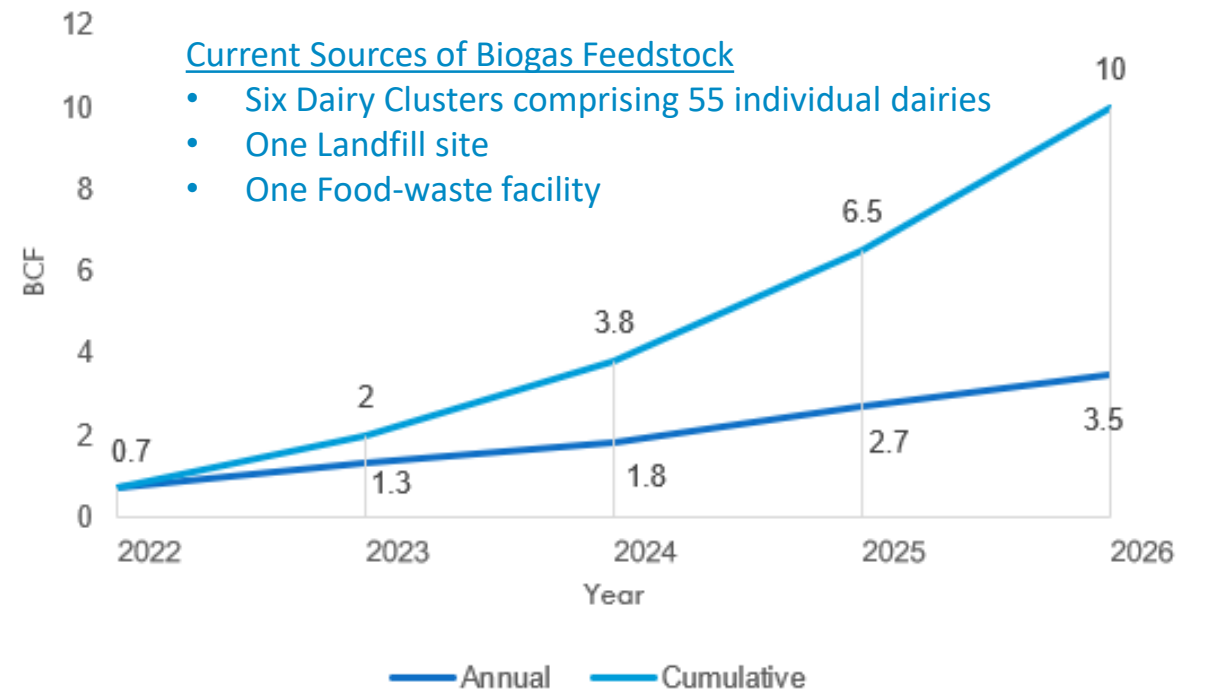
7.5 Bcf is Today's Grand Total

Interconnections By The Numbers

Biomethane by Feedstock 2026



Volume of Biomethane delivered in PG&E pipeline (BcF)

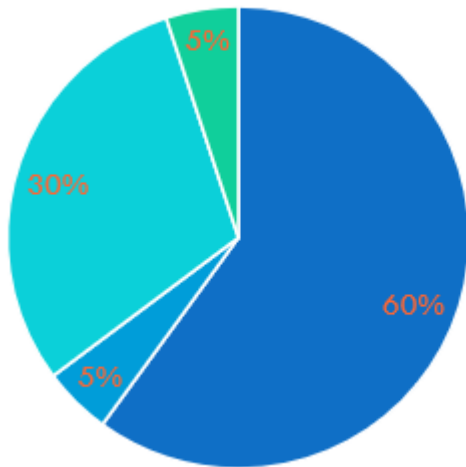




2030 RNG projections

Current projects in development

Biomethane by Feedstock 2030

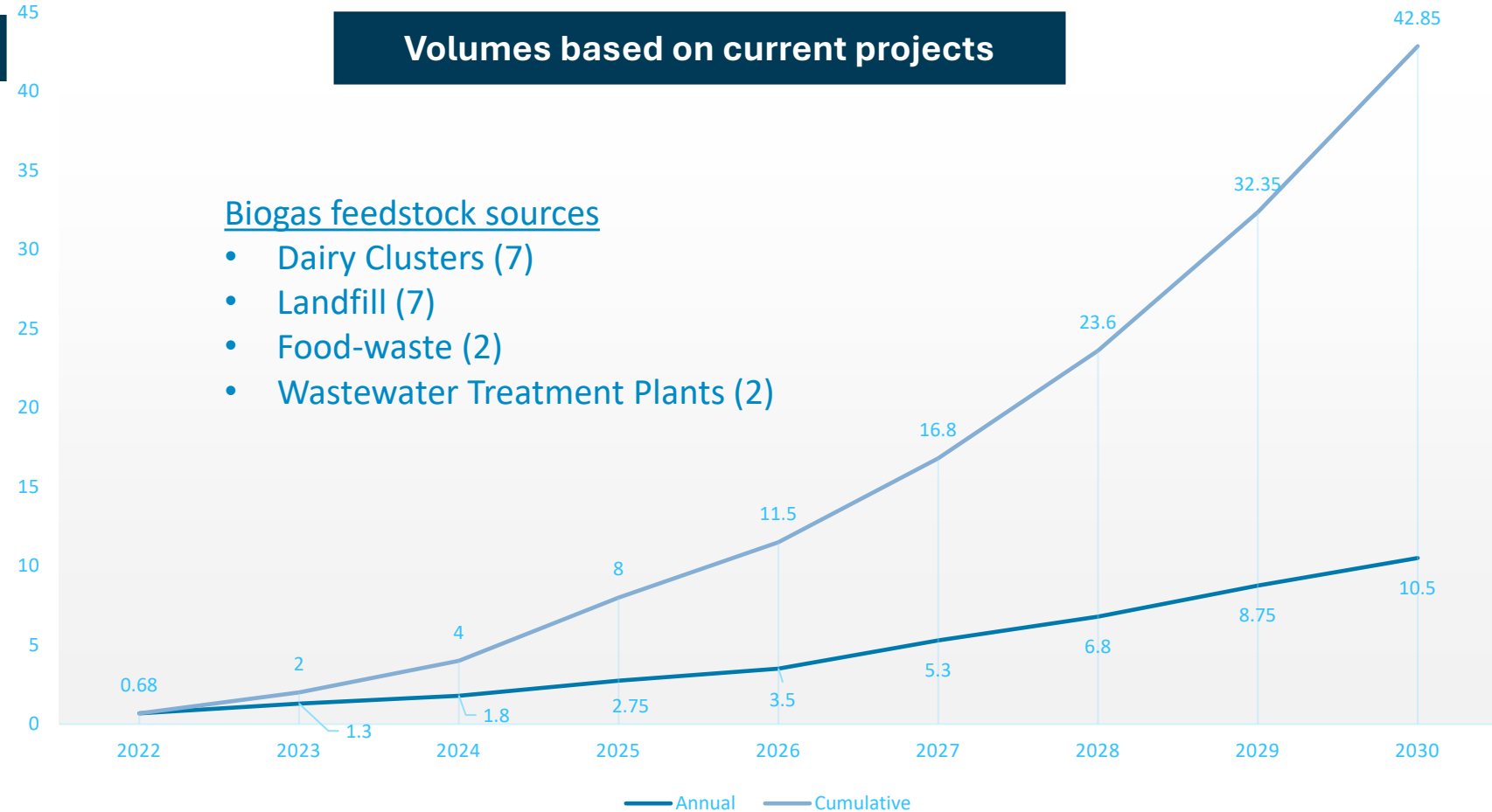


■ Dairy ■ Food Waste ■ Landfill ■ WWTP

Volumes based on current projects

Biogas feedstock sources

- Dairy Clusters (7)
- Landfill (7)
- Food-waste (2)
- Wastewater Treatment Plants (2)

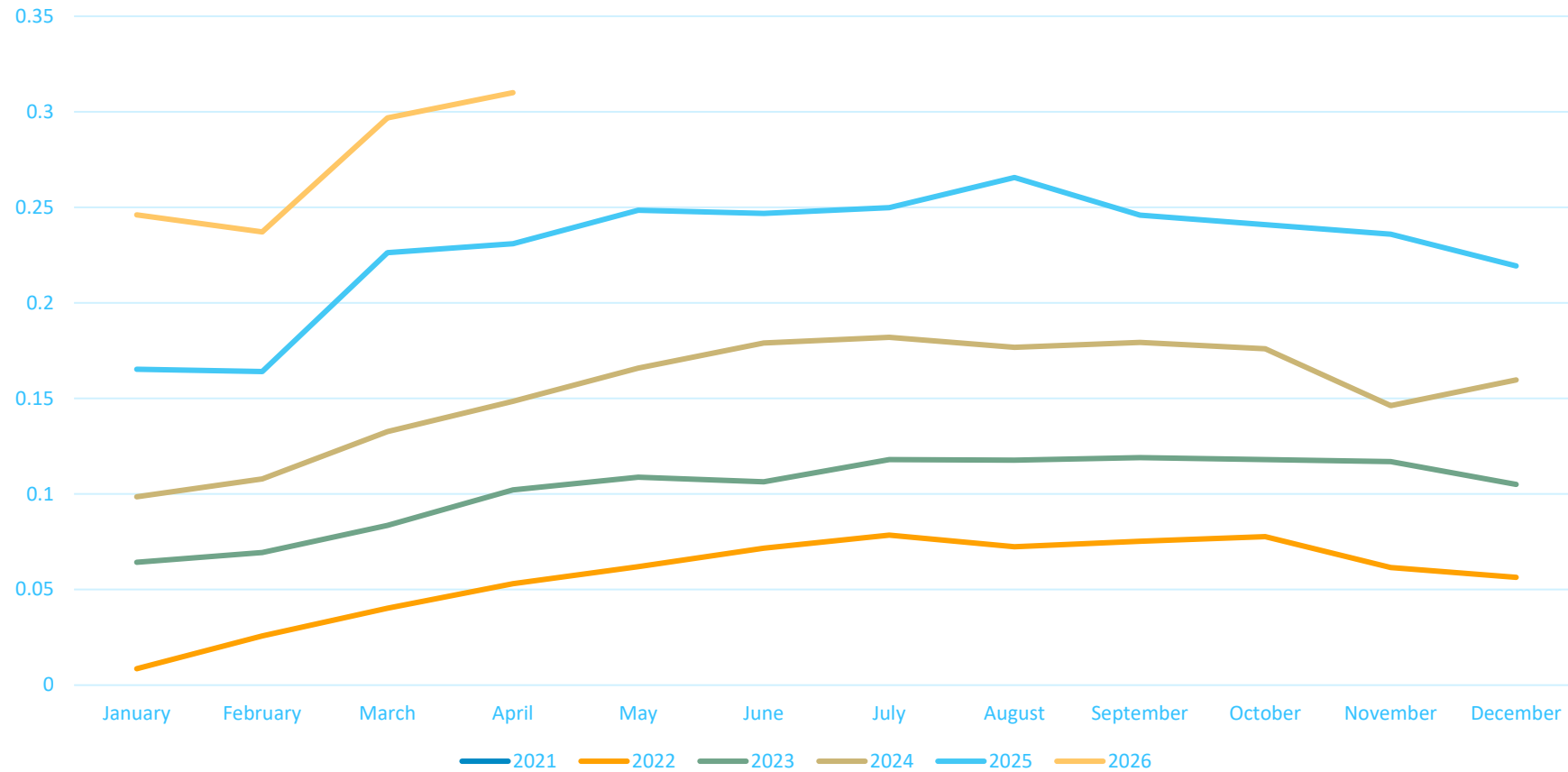




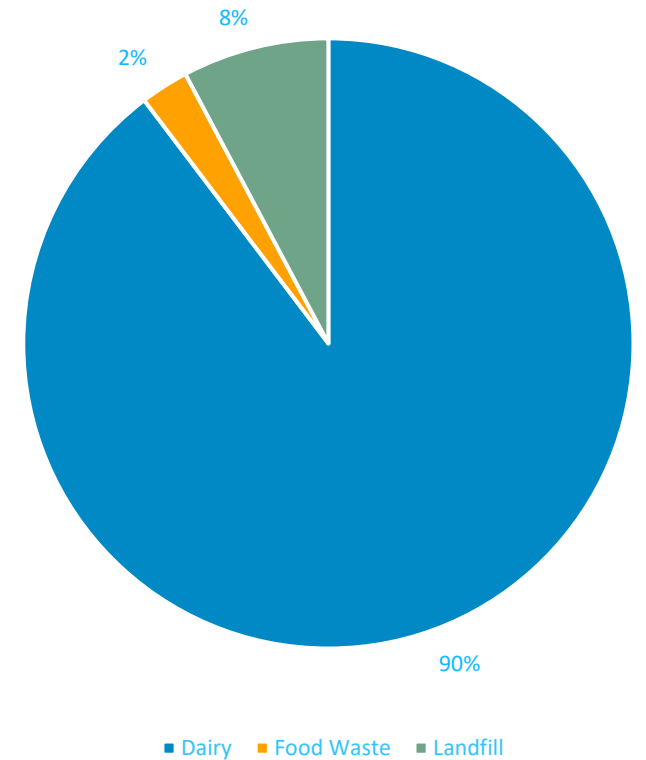
2022 – 2026 Overview

Insights

Biomethane Performance 2022-2026 Year-Date Trend in BCF



Biomethane by Feedstock Over Time





Coordinated Effort – Key to success

Business Development Strategies

Increase interconnections
Educate regulators, businesses, and public
Increase demand
(transportation, large industrial, data centers)

System Master Plans

Optimize absorption capacity
Target zones for future interconnections

Interconnection O&M

Specialized maintenance program
Improve availability of long lead materials

Prioritize Biomethane

Public Utility Commission decisions,
State and federal legislation
Advocate for additional external incentives

RNG Biomethane Tech Team

Dedicated SMEs from stakeholder groups meeting quarterly to provide updates

Thank You – Questions?

