



RNG – Victor Valley Wastewater Reclamation Authority (VVWRA)



Presenter – Christopher Baker, SCA Engineering Manager

- Sustainability In Action
- About Southwest Gas
- RNG Basics
- Victor Valley Wastewater Reclamation Authority (VWVRA)
- VWVRA RNG Process
- Current State and Lessons Learned
- Future Opportunities



VISION

Being an energy service provider of choice that positively impacts everyone.



MISSION

Enriching the lives of our employees, customers, and communities by safely providing affordable, reliable, and sustainable energy service while cultivating meaningful relationships.

CORE VALUES



SAFETY FIRST

Ensure the safety and well-being of our employees, customers, and communities.



INTEGRITY IN ALL THAT WE DO

Do the right thing every time. Act with honesty, transparency, and accountability.



RELATIONSHIPS MATTER

People and relationships are at the core of everything we do. We listen and treat everyone with respect, working together to accomplish more.



SUSTAINABILITY IN ACTION

We are committed to the environment and to helping build equitable, inclusive, and prosperous communities for the benefit of future generations.

KEY STATISTICS

Serve 2.2 Million Customers

- Founded in Barstow, CA 1931
- Corporate Office Las Vegas, NV
- 3 States – 5 Operating Areas
- 2,400 Employees
- JD Power, ranked SWG #1 - Four years in a row for customer satisfaction (West)

RNG LOCATIONS

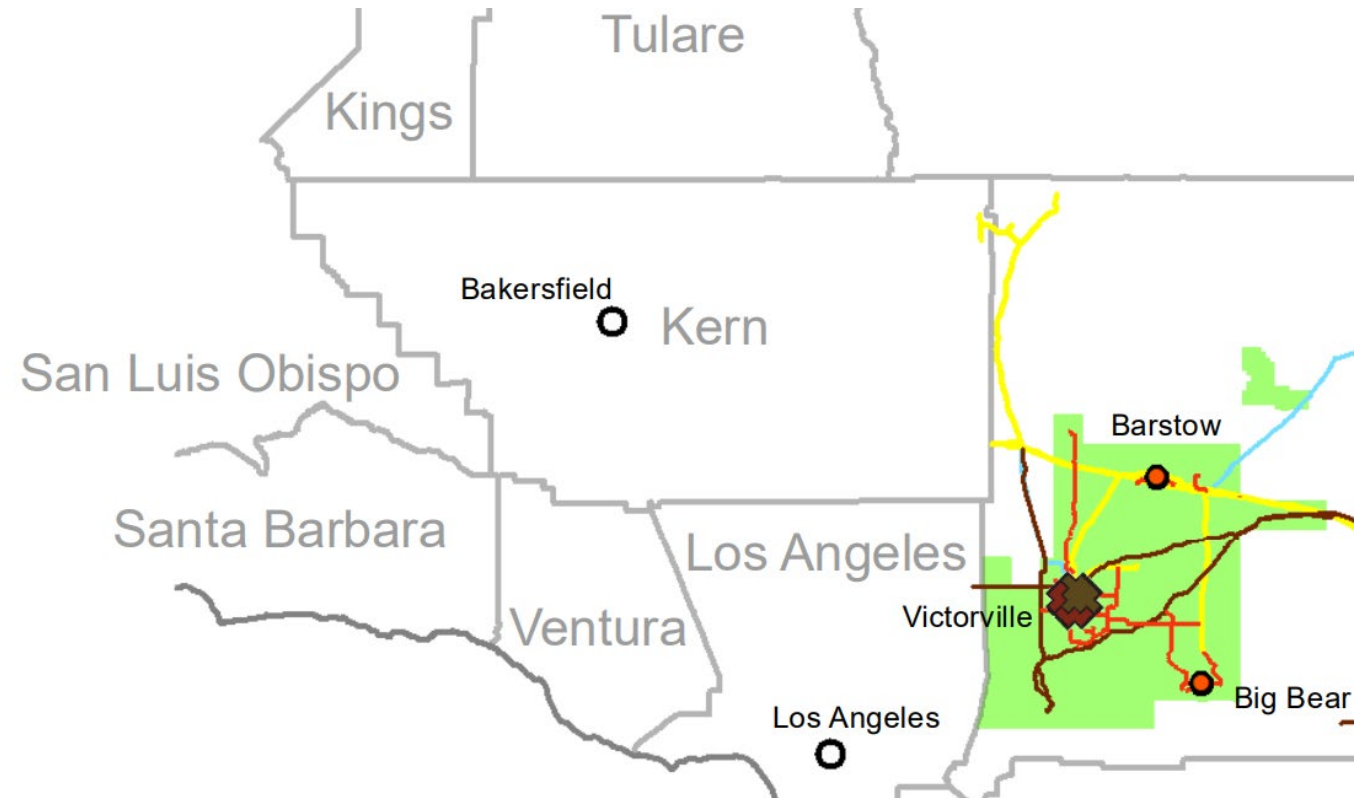
Procured Over 230,000 Dth from:

- VVWRA - Victorville
- Paloma Dairy - Arizona
- Butterfield Dairy - Arizona
- Pima County Wastewater Rec - Arizona
- Milky Way Dairy - Arizona
- Regional Transportation SNV - Nevada

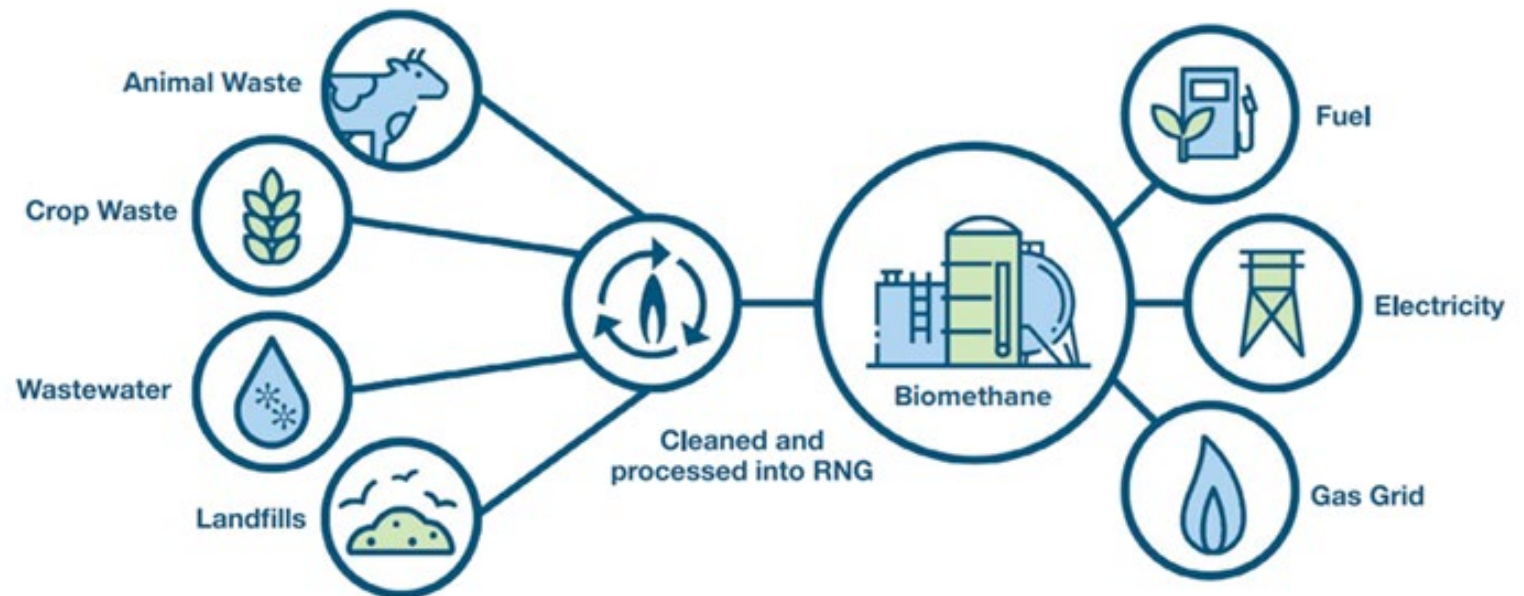


Southern California Division Overview

- Customers – 155,000 Meters serving over 400,000 people in the High Desert and Big Bear Communities
- Miles of Distribution – 4,380 and 630' of Transmission
- Up to 1,000 Dth/d can be delivered from the VVWRA RNG facility



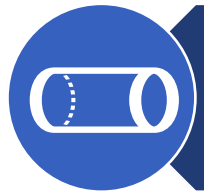
- RNG is a low-carbon fuel that's chemically **identical** to fossil natural gas but is derived from renewable sources like landfills, wastewater treatment facilities, and livestock operations





Abundant Supply

- RNG resources can be produced from a diverse range of technologies and feedstocks



Leverages Existing Infrastructure

- Natural gas infrastructure can be used for the storage and delivery of RNG



Convert Unavoidable Waste to Energy

- RNG transforms unavoidable waste into valuable and reliable domestic energy sources



Cost-Effective Emissions Reductions

- RNG delivers greenhouse gas reductions without forcing households to purchase more expensive

Abundant Sources of RNG



FOOD WASTE

66.5 MILLION TONS/YEAR



WASTEWATER

17,000 FACILITIES



AGRICULTURAL WASTE

8,000 LARGE FARMS AND DAIRIES



LANDFILL GAS

1,750 LANDFILLS

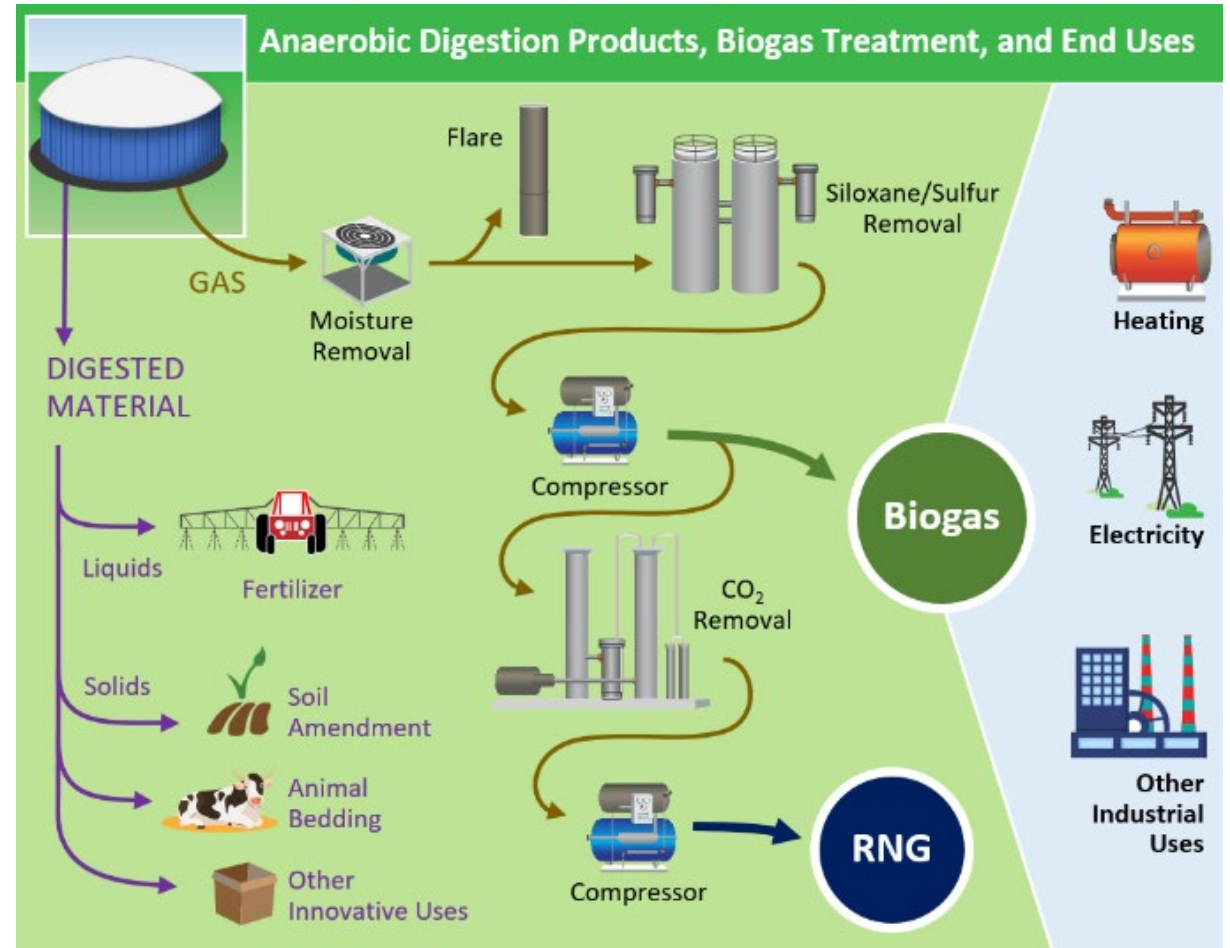
VWRA serves a 279 square mile area that includes Apple Valley, Hesperia, Victorville, Spring Valley Lake and Oro Grande

Treatment Per Day:

- 12 million gallons of wastewater
- 65k gallons of food waste
- One of the first RNG facilities in CA to turn both wastewater and food waste into RNG



- The solids treated in large anaerobic digesters, where the resulting methane gas is collected and scrubbed before becoming renewable natural gas (RNG)
- Wastewater goes through an extensive cleaning and disinfection process before being returned to the Mojave River as recycled water
- The finished RNG is injected into a Southwest Gas pipeline



- Provides up to 30 MCFH of cleaned and upgraded gas from the RNG facility, enough to supply 2,000 Homes each year. Operates 24/7
- Facility has the capability of diverting more than 6,000 metric tons of methane, equivalent to 1.5 million CO2 tons, per year
- VWRA Plant Operators monitor gas quality composition real-time
- SWG provides regular maintenance to minimize uninterrupted operations



Continuous Improvement

- Due to increase in Solid Waste Processing gas injections from the RNG facility have increased 8 MCFH
- VVWRA has improved adhering to SWG gas quality injection specifications, thus reducing the likelihood of a shut-in
- SWG has partnered with IOUs to develop a common tariff for RNG interconnection and quality (SWG Rule No. 22) and worked with VVWRA to inform them of acceptable gas composition requirements to enhance continuous operation



- Station requires on-site maintenance every 2-3 days on part of SWG
- Gas composition is monitored closely to extend the life of filters and prevention of downstream corrosion
- Site installation and operations experience was useful in helping bring online similar RNG Projects in the Company's other operating areas
- Improvements in plant operations are needed to minimize current flaring processes and capture more RNG for pipeline use



- Receiving interest from other companies planning to convert food and waste into RNG to interconnect with SWG facilities
- Existing natural gas infrastructure, can be used for storage and delivery, leading to lower costs for producers
- California alone discards six million tons of food annually, RNG can significantly reduce greenhouse gas (GHG) emissions
- Public Support is needed to expand the use of RNG
- RNG supports California's energy landscape with a balance of renewable sources; solar, wind and biogas





SOUTHWEST GAS



Clean.
Affordable.
Natural Gas.

Questions?



Thank You

