

# Biogas West Coast 2016

Gas to Grid Interconnection

Dan McLafferty





# About PG&E

## Company Facts

- Fortune 200 company located in San Francisco, CA
- \$16.8B in operating revenues in 2015
- Over 22,000 employees

## Energy Supply

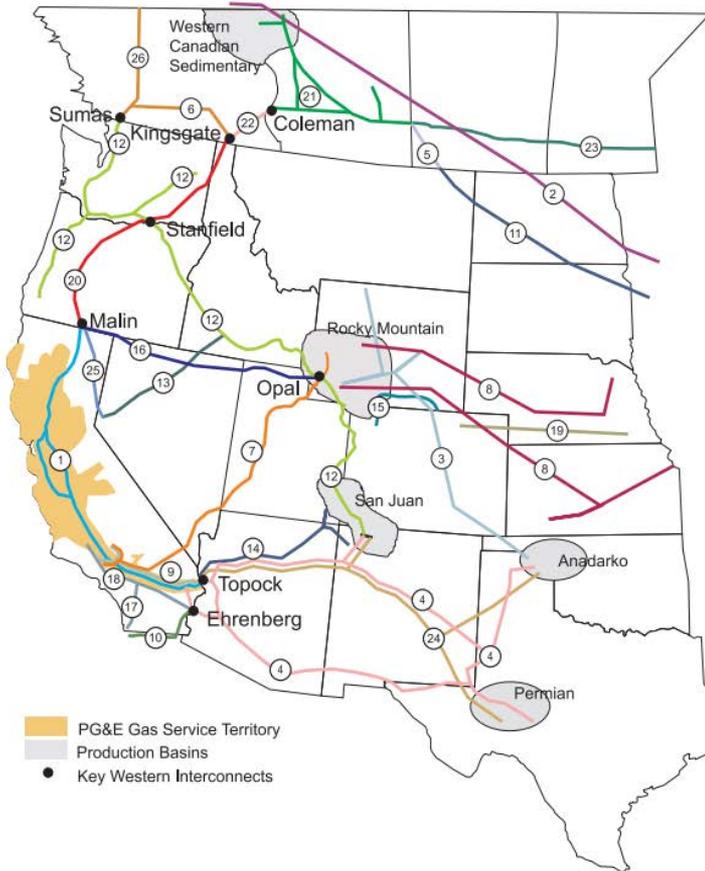
- Services to 16M people:
  - 4.3M Natural Gas accounts
  - 5.4M Electric accounts
- Peak gas demand: 4.8 billion cubic feet per day (12/9/13)
- Approx. 58% of PG&E's electric supply comes from non-greenhouse gas emitting facilities

## Service Territory

- 70,000 sq. miles with diverse topography
- 49,000 miles of natural gas transmission and distribution pipelines
- 160,000 circuit miles of electric transmission and distribution lines



# PG&E Natural Gas Supply Sources



## WESTERN NORTH AMERICAN NATURAL GAS PIPELINES (Not to Scale)

- ① Pacific Gas and Electric Company - California Gas Transmission
- ② Alliance Pipeline L.P.
- ③ Colorado Interstate Gas Company
- ④ El Paso Natural Gas Company
- ⑤ Foothills Pipe Lines Ltd.
- ⑥ FortisBC
- ⑦ Kern River Gas Transmission Company
- ⑧ Kinder Morgan Interstate Gas Transmission
- ⑨ Mojave Pipeline Company
- ⑩ North Baja Pipeline, LLC
- ⑪ Northern Border Pipeline Company
- ⑫ Northwest Pipeline (Williams)
- ⑬ Paiute Pipeline Company
- ⑭ Questar Southern Trails Pipeline Company
- ⑮ Rockies Express
- ⑯ Ruby Pipeline
- ⑰ San Diego Gas & Electric
- ⑱ Southern California Gas Company
- ⑲ Trailblazer Pipeline Company
- ⑳ TransCanada - GTN System
- ㉑ TransCanada - Alberta System
- ㉒ TransCanada - B.C. System
- ㉓ TransCanada - Canadian Mainline
- ㉔ Transwestern Pipeline Company
- ㉕ Tuscarora Gas Transmission Company
- ㉖ Westcoast Pipeline



# California Pipeline/Storage Facilities





## Bioenergy Portfolio

**As of January 31, 2016, PG&E's bioenergy portfolio (biomass, digester gas, landfill gas, and muni solid waste) consisted of 31 contracts representing ~530MW of bioenergy capacity.**

**PG&E purchases more than three times the bioenergy of all the other California electric Investor Owned Utilities (IOUs) combined.**



## **PG&E's Biomethane Project Experience**

- **PG&E was the first utility in California and third in the nation to accept renewable biomethane into its pipeline system.**
- **PG&E promoted the use of dairy biomethane whether for injection into the pipeline system or for use in power generation.**
- **In cooperation with a Fresno County dairy, PG&E was able to accept biomethane safely into a transmission-level pipeline.**



# Definitions

## Biogas

- **Gas that is produced from the anaerobic decomposition of organic material**
- **Is a mixture of methane, carbon dioxide, and other constituents**
- **Must be conditioned into Biomethane prior to receipt into the natural gas pipeline system.**



# Definitions

## Biomethane

- **Biogas that meets the standards adopted in California's Health Safety Code**
- **Must be free from bacteria, pathogens and any other substances injurious to utility facilities, or other constituents that would cause the gas to be unmarketable**
- **Must conform to the gas quality specifications identified in PG&E's Gas Rule 21**



# PG&E's Gas Rule 21

[http://www.pge.com/notes/rates/tariffs/tm2/pdf/GAS\\_RULES\\_21.pdf](http://www.pge.com/notes/rates/tariffs/tm2/pdf/GAS_RULES_21.pdf)

**(See sections “C”, Quality of Gas, and section “H”, Open Access Interconnection of New Gas Supply)**



## Key Factors to Assess Interconnection Potential

1. **Location** of a biomethane plant relative to gas lines
2. Whether gas lines have the **capacity** to receive biomethane amounts produced by developers
3. Pipeline **pressure** at site of potential injection point
4. Whether customer **gas demands (or load)** near points of injection are sufficient.



# Key Factors to Assess Interconnection Potential

## Project Distance to Gas Main

**Developer's distance to gas main could cause increased costs and permitting difficulties.**



# Key Factors to Assess Interconnection Potential

## Pipeline Capacity to Receive Supplies

**Is there sufficient room in the pipeline at point of injection to receive the biomethane?**



# Key Factors to Assess Interconnection Potential

## Pressure “headroom” on Gas Main

**Pipeline pressure at a potential interconnection point might already be operating at or near the maximum.**



# Key Factors to Assess Interconnection Potential

## Inadequate Customer Demand on Pipeline

**Inadequate base load throughput to accept continuous supply of injected biomethane.**



# PG&E's 3-Stage Process

**PG&E uses a 3-stage process for interconnecting gas transmission customers**

- 1. Informational Review**
- 2. Preliminary Application for Gas Service**
- 3. Formal Application for Gas Service**



# PG&E's 3-Stage Process

## Stage 1 Informational Review

**We provide high-level scoping information on the ability of our system to accommodate a gas interconnection at a given location; this can often be done within 3 weeks.**



# PG&E's 3-Stage Process

## Stage 2 Preliminary Application For Gas Service

**We provide rough order-of-magnitude job cost estimates and possible options to help customers narrow down their economics; this stage requires a deposit from the project developer of up to \$50 thousand.**



# PG&E's 3-Stage Process

## Stage 3 Formal Application for Service

**At this stage, the developer decides to go forward with the project and requests PG&E to finalize design and construction; this stage requires a deposit to cover PG&E's costs (design, lead-time material, construction) in consideration of project complexity.**



## Contact PG&E

**Customers wanting to inquire about biomethane interconnections with PG&E can contact us at:**

**[Biomethane@pge.com](mailto:Biomethane@pge.com) Or [mdm8@pge.com](mailto:mdm8@pge.com) (Dan McLafferty)**

# Biogas West Coast 2016

**Thank You**  
**Dan McLafferty**

