

**DOCKETED**

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# PG&E progress on RNG

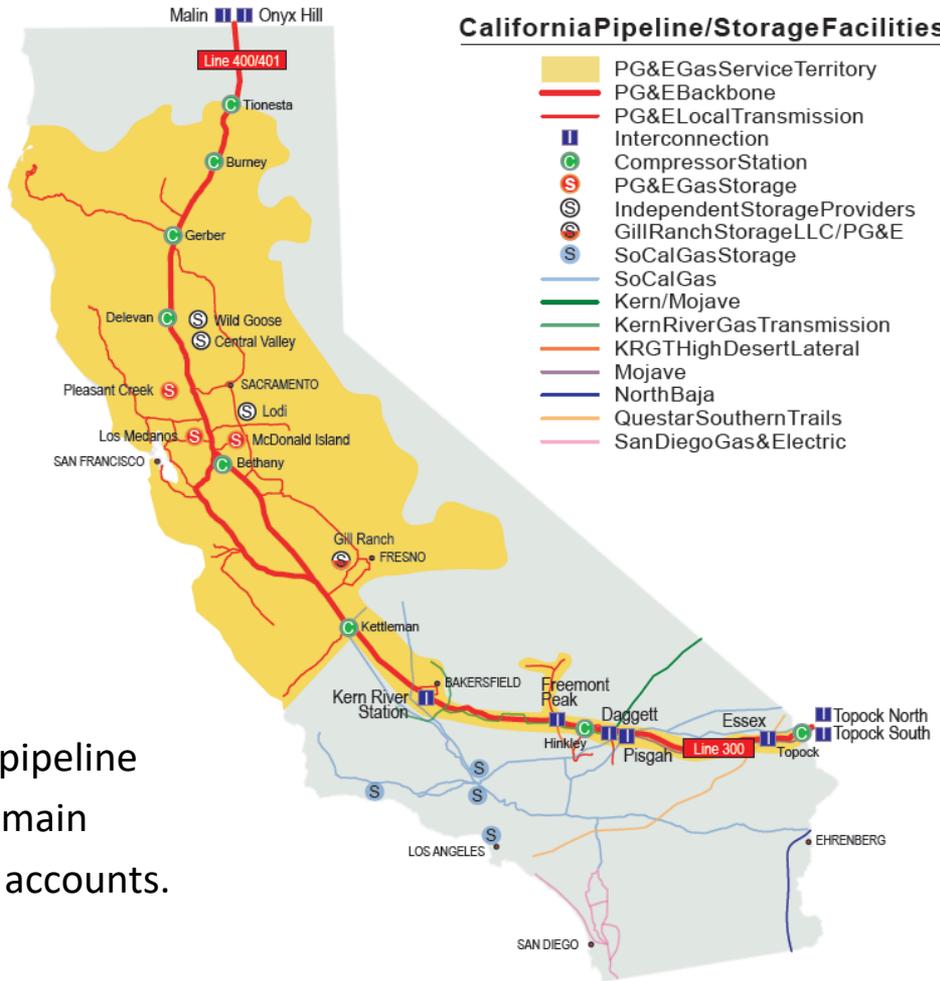
François Rongere Sr Manager R&D and Innovation

CEC IEPR RNG Workshop, August 31<sup>st</sup> 2021





# PG&E Gas System



- Key Statistics

- 6,600 miles of gas transmission pipeline
- 43,300 miles of gas distribution main
- 4.6 million natural gas customer accounts.
- Throughput of 894 BCF in 2020



# Up-coming Bio-methane projects

- Initially planned for the end of 2020, delayed about a year
- Project activity has picked up in 2021

Project	Mcf/d	Online
Dairy	3,240	2021 Q4
Dairy	1,870	2021 Q4
Dairy	13,075	2021 Q4 *
Wastewater	9,342	2022 Q2 *
Wastewater	2,496	Q4 2021 or Q1 2022
Landfill	2,590	2022
Landfill	2,640	2022
Dairy	475	2022
<b>Total</b>	<b>35,728</b>	

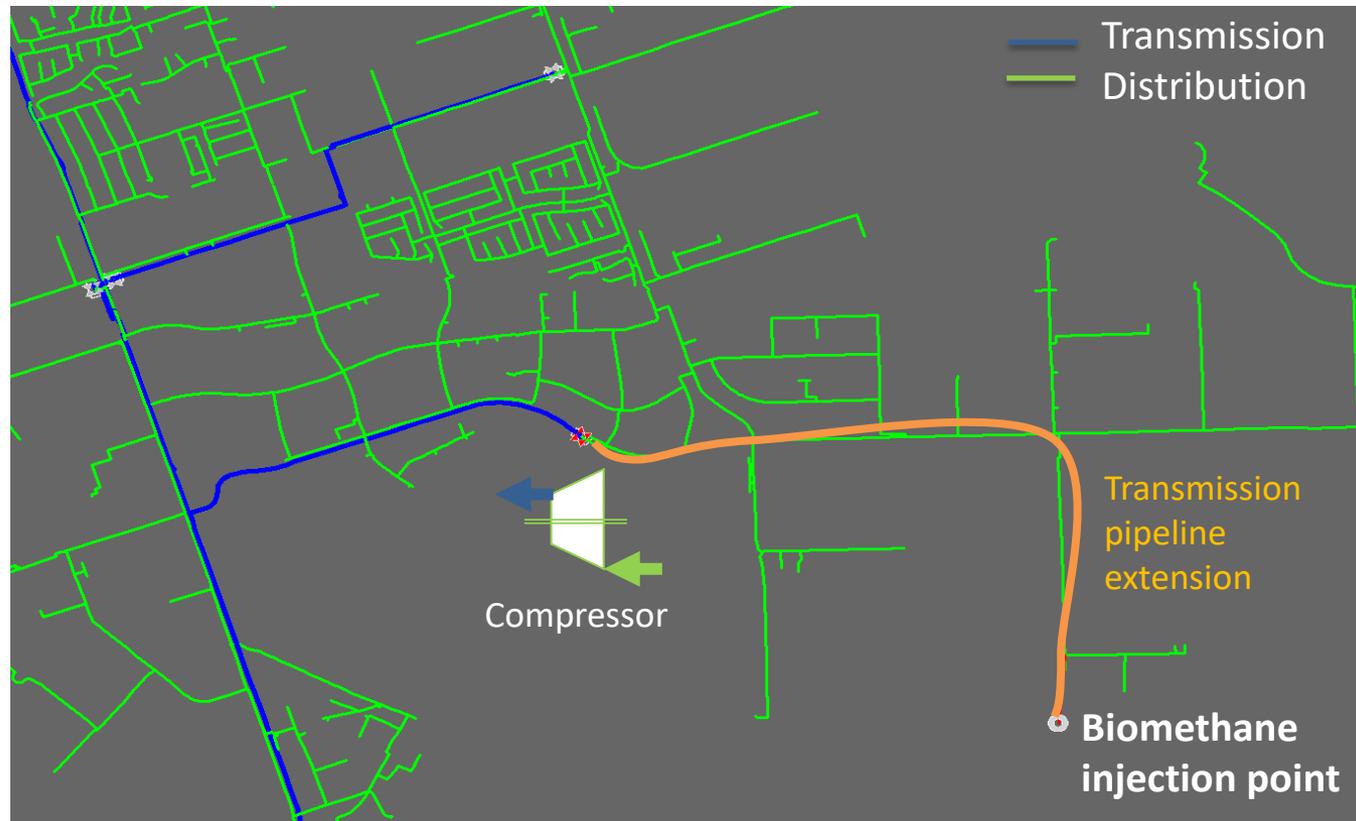


- PG&E focus:
  - Facilitating interconnection
    - Standard interconnection skid
    - Online gas quality measurements
    - Reverse compression to transmission pipelines

[PG&E's RNG R&D Roadmap](#)

# Reverse Compression

- Alternative to costly transmission pipeline construction when load capacity of local distribution system is too low.



# CO<sub>2</sub> capture and methanation

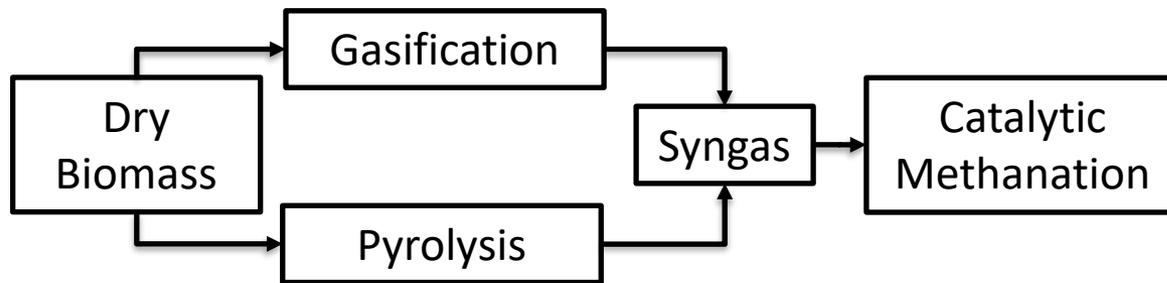


Opus 12/Twelve is a startup in Berkeley that aims to transform waste CO<sub>2</sub> emissions (from biogas) into green synthetic methane.

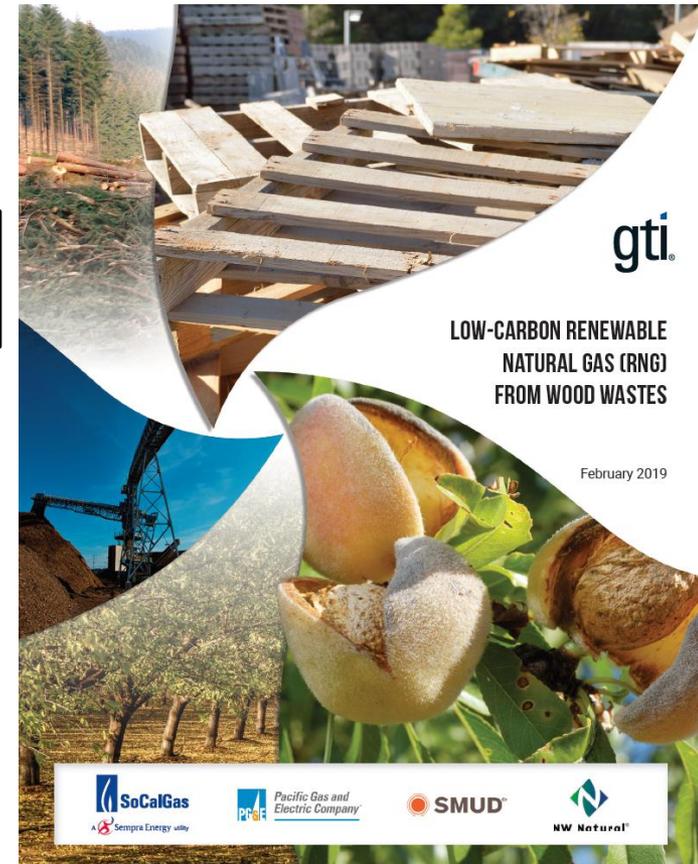


Prof. Spormann at Stanford University is developing microbes that ingest CO<sub>2</sub> and produce methane and oxygen.

- Larger feedstock than biogas
- Process:



- Technology in transition from pilot to commercial
- Brown field study by GTI:
  - Stockton DTE-Energy site
  - 3 BCF/y of RNG from 945 tons/day of wood
  - All in capital cost of \$340 million  $\pm$  30%.
  - Cost of RNG Production of \$13-15/MMBtu



# Thank you!

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