



CEC Staff Workshop on Challenges to
Procuring Biomethane in California

May 31, 2013

■ Point Loma Wastewater
■ Treatment Plant (PLWTP)

■ Gas Flares

■ Proposed
■ BUDG Site

■ Digesters

■ GUF



Point Loma Project Status

- City Issues RFQ for Digester Gas Jan. 2007
- BUDG Biogas Agreements Executed Oct. 2007
- Completed Project Financing..... Nov. 2, 2010
- Initiated Construction Dec. 2010
- Fuel Cells Delivery August 2011
- Complete Construction Nov. 2011
- Operation/Maintenance NTP Jan. 2012
(started 10 year term)

BUDG Site



Southside PLWTP



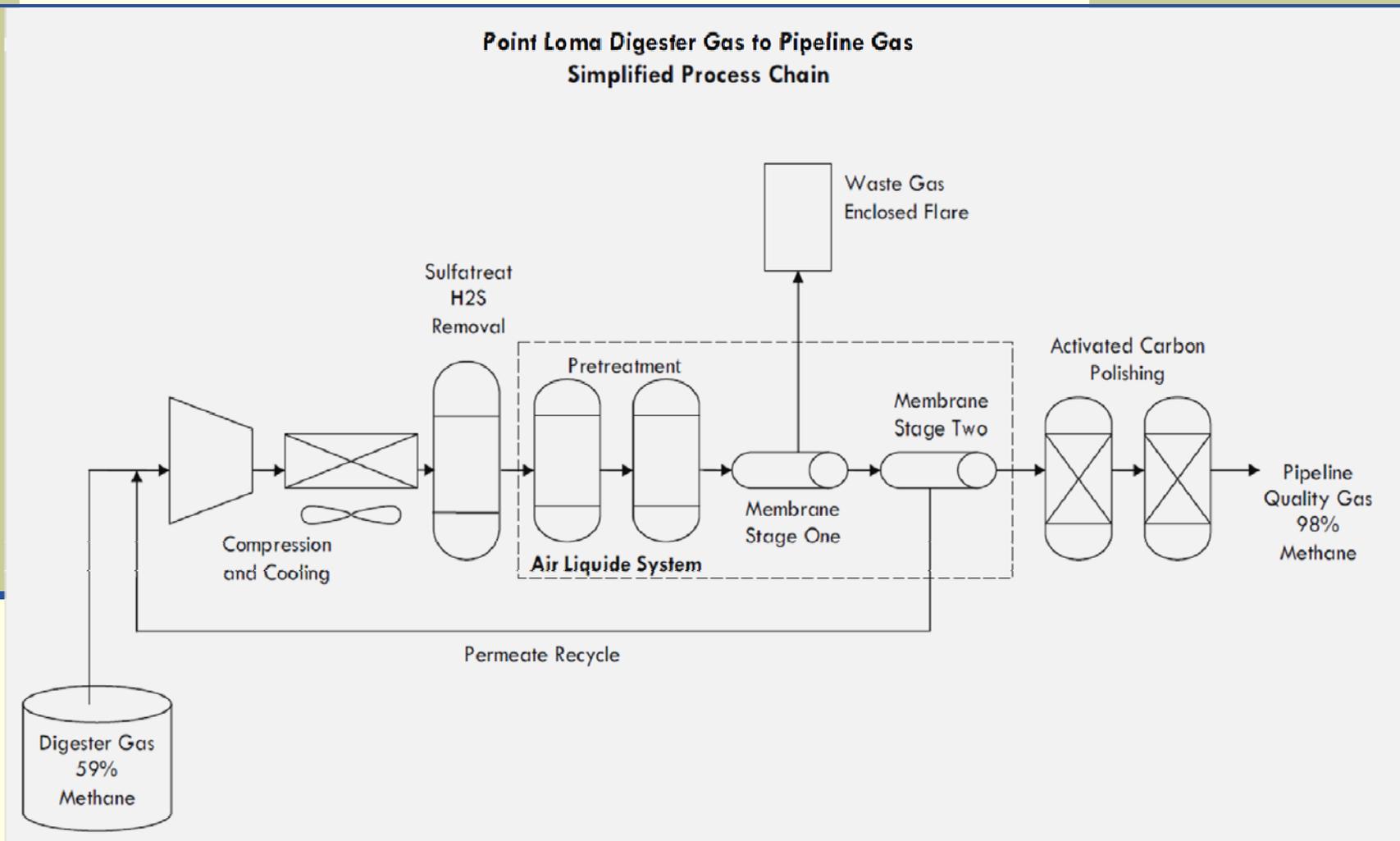


BioFuels

energy, LLC.

- BioFuels Energy, LLC (“BFE”) has secured long term bio-gas rights from the Point Loma Wastewater Treatment Facility. (By-product of competitive RFQ/RFP Process)
- BFE purifies the digester gas such that the end product meets the new SDG&E pipeline injection standards (Rule 30) [First project in the State of California to do so]
- BFE nominates the cleaned biogas (“directed biogas”) to the BioFuels customers and provides renewable energy under a long term Power Purchase Agreement:
 - University of California San Diego (2.8 MW)
 - City of San Diego South Bay Water Reclamation Plant (1.4 MW)
- New Energy Capital provided the necessary equity capital to implement the project (\$45 M Total Capital Cost)

BUDG SIMPLIFIED PROCESS CHAIN



BioFuels Energy's Pt. Loma Biogas Facility



San Diego Gas & Electric Rule 30 Biomethane Gas Delivery Specification

- PUC Approved and Issued August 27, 2009
- Approval of subsequent SDG&E Advise Filing defines “biogas” as being derived from renewable organic sources.
- Specifically excludes California landfill gas from definition
- 98% methane requirement (98.1% avg. actual)
- Water Vapor 7 lb/MMscf or less
- Oxygen .2% or less (.1%)
- Total Sulfur .75 gr. S/100 scf
- Others- CO2 (.5%)
- N2 (1.3%)

Continuous Biogas Monitoring Equipment

- Moisture & CO2 Analyzer
- O2 Analyzer
- Gas Chromatograph
- Sulfur Chromatograph
- H2S Monitor
- Flow Measurement
- Temperature/Pressure
- Heat Content (every few minutes)

South Bay 1.4 MW Fuel Cell



UCSD 2.8 MW Fuel Cell



Significant Biogas Project Issues

- Variability of Digester Gas Supply in establishing Plant Capacity (Design for swings vs average)
- Interface with existing site flares
- Responsibility for installation of utility gas interconnection
- Location of Gas Extraction Location (impact on digester dome pressure)

Challenges to Expanding/Developing Biogas Projects

- Cost of Biogas interconnect too high and installation is provided on a cost plus basis from the utility
Interconnect \$1.084M/\$8.119M – actual \$ 1.99M
- Uncertainty over requirement for new BTU District
- Challenge of matching significantly reduced natural gas prices; renewable premium not sufficient to cover price differential
- No long term market for RINS
- Impact on operation of continuous siloxane monitoring
- Changing Biogas Quality Injection Requirements
- Difficulty of securing a guarantee to meet Rule 30
- Reduced SGIP/Grant Incentives

Alternate Uses for Renewable Biogas

- Renewable CNG as a Transportation Fuel
- As “Directed Biogas” for use in new Energy Generation Facilities
- For Sale to Investor Owned Utilities as Fuel in existing generation units to meet RPS goals
- For Sale to Commercial, Industrial, & Institutional Customers (boiler or generation applications)

Thank You,



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