

PG&E's Biomethane Experience

Dairy Biogas

March 27, 2013
Biomethane OIR Workshop I



PG&E's dairy biogas project



Background

- Beginning in 2007, PG&E was involved in studying and promoting the use of dairy biomethane, either for injection into the pipeline system, or for use as the fuel in power generation.
- Specific experience was at a Fresno County dairy, where biogas was produced and treated prior to pipeline injection.
- Biomethane peak flow was maximum of 5% of flow of natural gas in the receiving pipeline.



Steps taken to ensure safety & protect pipeline system

Before gas delivery:

- Extensive testing of contaminants which may be present, such as intermediary products of anaerobic digestion, bacteria and viruses, and pharmaceuticals used to treat cows.

After gas delivery:

- Data monitoring
 - SCADA and remote monitoring
- Alarm levels
 - Established for each monitored parameter
 - CO₂, H₂S, O₂, Heating Value, etc.
 - Configured to automatically shut-in gas supply if constituents were detected outside of the acceptable range



Results/Conclusions

Dairy gas results

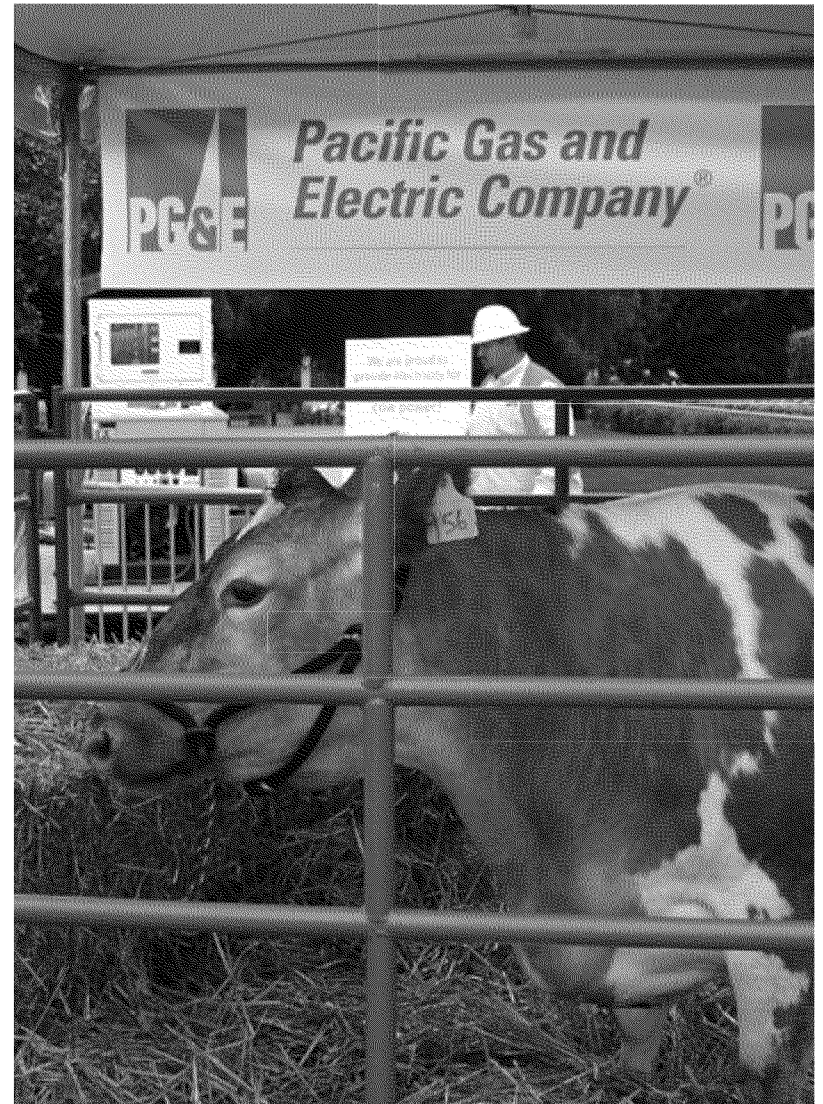
- Various constituents were identified in biomethane from the dairy that are not found in traditional gas supply, such as:
 - Acetic acid
 - Lactic acid
 - Chlortetracycline
- Oxygen limit was difficult to regularly meet

Future projects

- Valuable experience gained
 - Cost of gas quality research and testing
 - Variability of potential constituents of concern
 - Potential of digester and gas conditioning equipment failure
- Risk of equipment failure elevates the need for stringent monitoring criteria for biomethane projects
 - Especially projects involving complex gas feedstocks, such as landfills or dairy manure mixed with other wastes



Cal Ag Day @ State Capitol



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