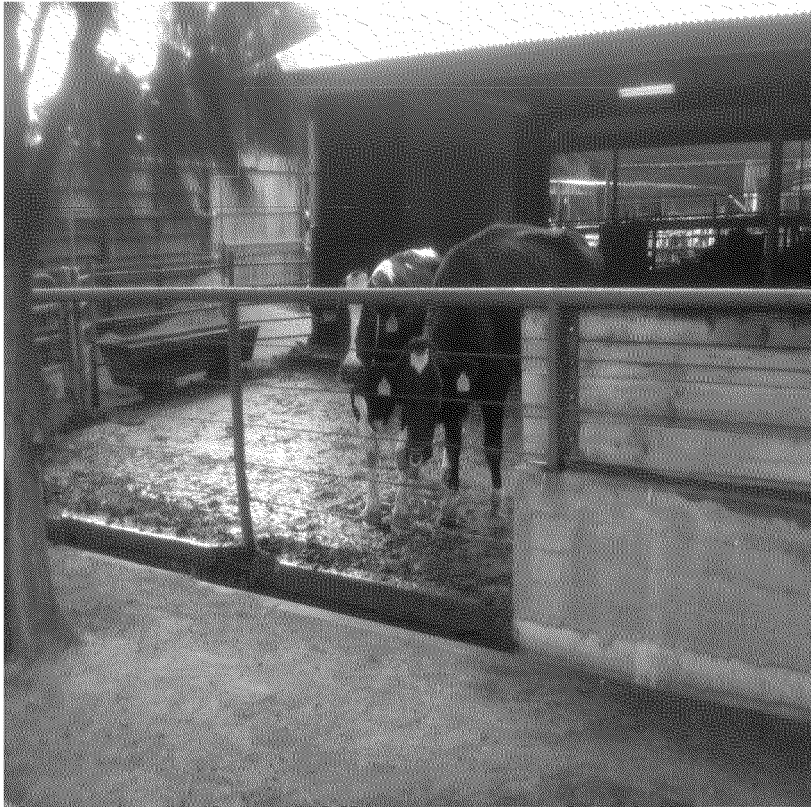# PG&E's Biomethane Experience

Dairy Biogas

March 27, 2013
Biomethane OIR Workshop I

PG&E®

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
    - CO_2, H_2S, O_2, Heating Value, etc.
  - Configured to automatically shut-in gas supply if constituents were detected outside of the acceptable range

Results/Conclusions
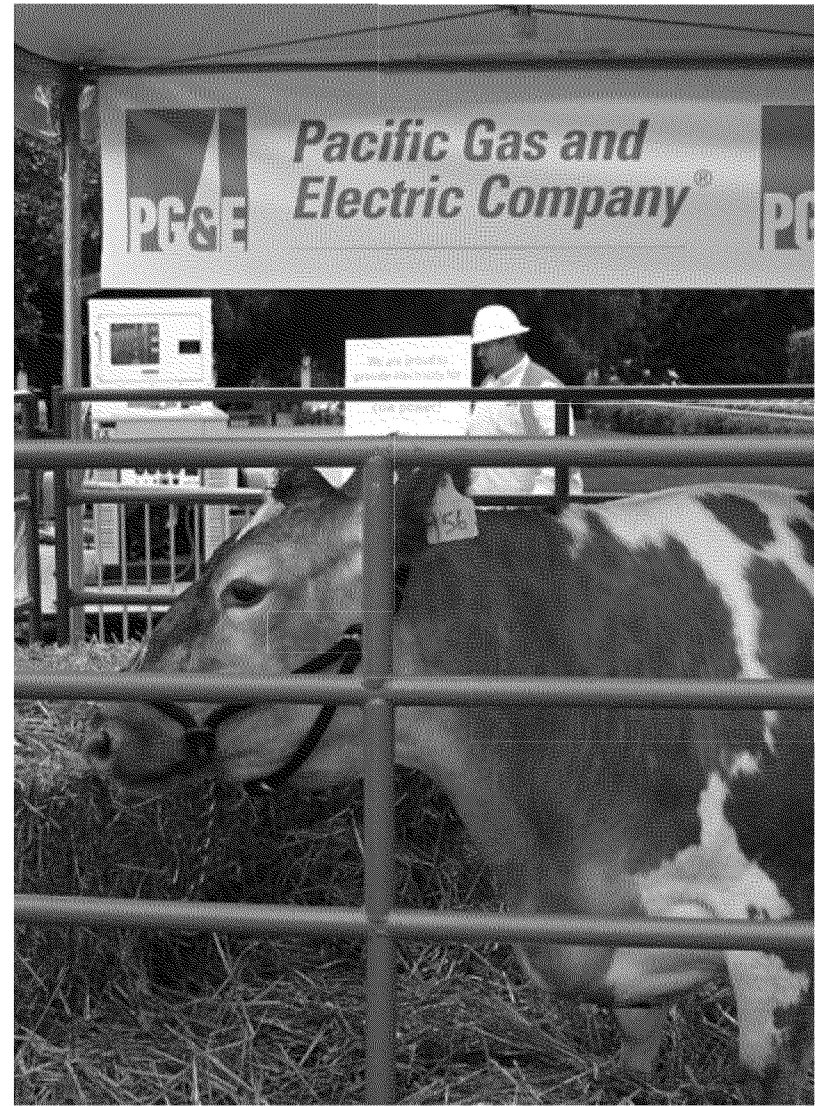
Dairy gas results

- Various constituents were identified in biomethane from the dairy that are not found in traditional gas supply, such as:

  o Acetic acid

  o Lactic acid

  o Chlortetracycline

- Oxygen limit was difficult to regularly meet

Future projects

- Valuable experience gained
  - o Cost of gas quality research and testing
  - o Variability of potential constituents of concern
  - o Potential of digester and gas conditioning equipment failure

- Risk of equipment failure elevates the need for stringent monitoring criteria for biomethane projects
  - o 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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