

Experience with Biodigester Projects on California Dairies

California Registry Workshop

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Western United Dairymen

- Western United Dairymen (WUD) is the largest dairy producer trade association in California representing approximately 60% of the State's milk production.
- WUD assists dairymen with milk pricing, environmental, labor, legislative, and other issues affecting California dairy families.



Western United Resource Development Inc.

- Formed by WUD to handle grants and others issues where WURD could more effectively assist all California dairy families.



California Experience

- CCAR livestock protocol applies nationwide
- Experiences in this presentation apply only to California
 - State agencies
 - State regulations



Dairy Power Production Program (DPPP)

- The California Energy Commission (CEC), acting under authority of the Legislative enactment in 2001 of SB5X funded DPPP.
- Western United Resource Development, Inc. (WURD) was selected by CEC as the Contractor for this program.



Dairy Power Production Program

- 55 applications received and screened
- 14 projects selected for funding
- 10 projects were completed
 - 4 not constructed due to fiscal concerns



Dairy Power Production Program

Round 1

Name	Type	County	kW
Hilarides Dairy	Covered Lagoon	Tulare	500
Cottonwood Dairy	Covered Lagoon	Merced	300
Blakes Landing	Covered Lagoon	Marin	75
Castelanelli	Covered Lagoon	San Joaquin	160

Dairy Power Production Program Round 1

Name	Type	County	kW
Koetsier	Plug Flow	Tulare	260
Van Ommering	Plug Flow	San Diego	130
Meadow brook	Plug Flow	San Bernardino	160



Dairy Power Production Program Round 1

Name	Type	County	kW
Lourenco	Covered Lagoon	Tulare	150
Inland Empire Utilities Agency	Modified Mix Plug Flow	San Bernardino	563
Eden-Vale	Plug Flow	Kings	180

Castelanelli Dairy



Van Ommering Dairy



Round 1 Summary

- Digesting manure from over 20,000 milking cows, not including support stock.
 - Does not include one digester for 6000 heifers.
- Potential to produce over 2.4 Mega Watts of electricity.



Round 1 Obstacles

- Low milk prices late 2001 to mid 2003.
- Obtaining necessary permits
- Interconnection process
 - billing
- Net Metering



Round 1 Example

- Annual electrical cost pre-digester = \$180,000
- Offsets 100% of electrical load
- Exports 25% of generated power to grid
- Flares significant percentage of gas
- Using net metering



Round 1 Example

- Shuts down generator
 - approximately 2 hours per month for minor maintenance
 - 48 hours per year for major maintenance
- Total down time about 3 days per year



Round 1 Example

- Monthly downtime triggers monthly demand charge
- Before digester \$180,000 annual cost
- After digester
 - \$90,000 annual cost ??
- Any excess net generation free to utility
- Flared biomethane unused...



Dairy Power Production Program Round 2

- Funding that was not used in Round 1 was made available to fund additional projects
- Eight additional digester projects currently under construction or recently completed



Round 2 Obstacles

- Permitting an even bigger obstacle for Round 2
 - Water Quality permitting
 - Especially for co-digestion
 - Salt issue
 - Air Quality
 - Limited availability of low NOx engines in sizes typically used on dairies
 - Additional cost and maintenance
 - Prefers gas to pipeline projects
 - CEQA



Power Purchase Agreements

- AB 1969 provided for Power Purchase Agreements (PPAs), PUC decision added dairy biogas projects.
 - Legal challenge is holding issue up
- SB 451 recently vetoed by the Governor would have given all environmental attributes to utility through PPAs
 - Greenhouse Gas Credits
 - Renewable Energy Credits



Additionality

- Concern about loss of additionality if digesters become Best Available Control Technology (BACT)
- CEQA analyses may require BACT review for GHG



Progress

- Secretary level within CalEPA aware of cross media impediments to progress
- Desire to move these types of projects forward in part due to AB32



Progress continued

- Water Board developing General Dairy Digester Permit
 - Individual permits for digester dairies on Water Board agenda for tomorrow
 - Co-digestion
 - Mentions AB 32 and air quality aspects of projects
- San Joaquin Valley Air District writing a white paper on considerations for digester projects



Questions

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www.wurdco.com/DairyPowerProduction.htm

