



Wisconsin's Farm Biogas Initiative

AgSTAR National Conference

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Wisconsin Focus on Energy

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Wisconsin Program Objectives

Assist large dairy operations (>500 head)

- **Plan, design, build, operate, evaluate farm biogas energy systems**
- **Be economical and environmentally acceptable**
- **Coordinate access to all available resources**

Wisconsin Farm Biogas Resources

- Focus on Energy public benefit program
- Manure management regulations and grants
- Economic development grants
- Utility interest
 - Renewable Portfolio Standard
 - Interest in Green Pricing & Green Technologies
 - Higher buyback rates
- Federal assistance

WI Biogas Development Group



- Started: 2001 by State Ag Agency
- Goal: To coordinate farm biogas activities
- Members: State agencies, contractors, farmers, utilities
- Activities:
 - Meet bi-monthly
 - Held two bio-gas symposiums in Spring, before planting
 - Conclusion: Excellent way to network and disseminate current information & issues

Focus on Energy

Targeted Renewable Energy Technologies

- **Bioenergy**
 - Biogas energy systems on large dairy farms (>500 head)
 - Organic waste for heating
- **Solar electric on existing homes**
- **Solar water Heating**
 - Homes
 - Large commercial hot water users
- **Medium sized wind in rural areas**

Focus on Energy

A Suite of Renewable Energy Initiatives

- Marketing
- Education & Training
- Facilitation
- Infrastructure Development & Barrier Reduction
- Project Financing

Marketing

- Ads in farm papers & magazines
- Farm shows
- Seminars
- Word of mouth

**THERE WAS A TIME WHEN FARMS WERE
POWERED BY THE NATURAL ELEMENTS OF THE EARTH.
THAT TIME HAS COME AGAIN.**



To move forward, it sometimes makes good business sense to learn from our past. The Wisconsin Focus on Energy Renewable Energy program offers technical assistance and assessments for those interested in installing renewable energy systems such as wind turbines, anaerobic digesters, wood energy systems, solar water heating and solar electric systems. Services include site visits to assess your location's renewable energy potential and financial incentives and grants that make it easier to purchase renewable energy equipment. For more information call Focus on Energy at 800.762.7077 or visit focusonenergy.com.

**Come see us at the Renewable Energy & Sustainable Living Fair
Friday, June 20 - Sunday, June 22 in Custer, WI.**



Focus on Energy is a public-private partnership offering energy information and services to energy utility customers throughout Wisconsin. The goals of this program are to encourage energy efficiency and use of renewable energy, enhance the environment, and ensure the future supply of energy for Wisconsin.
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Facilitating USDA Biogas Projects

- WI submitted comments from 6 organizations
- Info to 64 County Ext. agents/ Four farm shows
- NOFA sent to likely projects, utility farm reps, AD contractors/consultants
- Statewide video conference-4 sites at WTCS
- Personal calls to likely projects
- Personal assistance with filling out application

Farm Bill-Section 9006: Anaerobic Digester

Tidy View Dairy	Outagamie Co., WI	\$99,950
Biopower, LLC	Shawano Co., WI	\$179,700
Suring Community Dairy, LLC	Oconto, WI	\$99,950
Eugene and Shawn Smith, Burr Oak Hills Dairy	Rock Co., WI	\$90,000
Schopf's Hilltop Dairy, LLC	Door Co., WI	\$240,589
Pagel's Ponderosa Dairy, LLC	Kewaunee Co., WI	\$99,950
Omro Dairy	Winnebago Co, WI	\$99,950
Gary Boyke, Vir-Clair Farms	Fond du Lac Co., WI	\$299,580
CADC Renewable Energy, LLC	Monroe Co., WI	\$200,000
Quantum Dairy, LLC	Manitowoc Co., WI	\$205,991
Dairy Dreams	Kewaunee Co., WI	\$99,950

Our Funding Philosophy:

Support the early adopters of renewable energy, reduce barriers and transactional costs,

.... don't create a false market with incentives.

- \$10,000 for feasibility
- \$70,000 for equipment & installation

WI Utility Favorable Policies

- Statewide uniform interconnection rules
- Good buyback rates~6 cents/kwh (Alliant/MGE)
- Renewable Energy Collaborative-\$6 million a year on renewable energy (We Energies)
- 25 MW RFP (We Energies)
- \$25 million RFP (Xcel)
- Willingness to purchase (WPS/Dairyland)
- Green Pricing

WI Utility Green Pricing Programs

Alliant Energy - Second Nature

Dairyland Power Cooperative -Evergreen(SM)

WE Energies Energy for Tomorrow

Madison Gas & Electric - Wind Power Green Pricing

Wisconsin Public Power Inc. - Renewable Energy

Wisconsin Public Service (WPS) - NatureWise

Current Status of Farm Biogas in Wisconsin

- 95 dairy farms with >1000 animal units
- 8 biogas systems on line
- 11 projects funded by USDA in 2003
- 8 projects supported by Focus on Energy
- 8-14 projects likely constructed in 2004/05
- 3 R&D and 3 technical evaluation projects

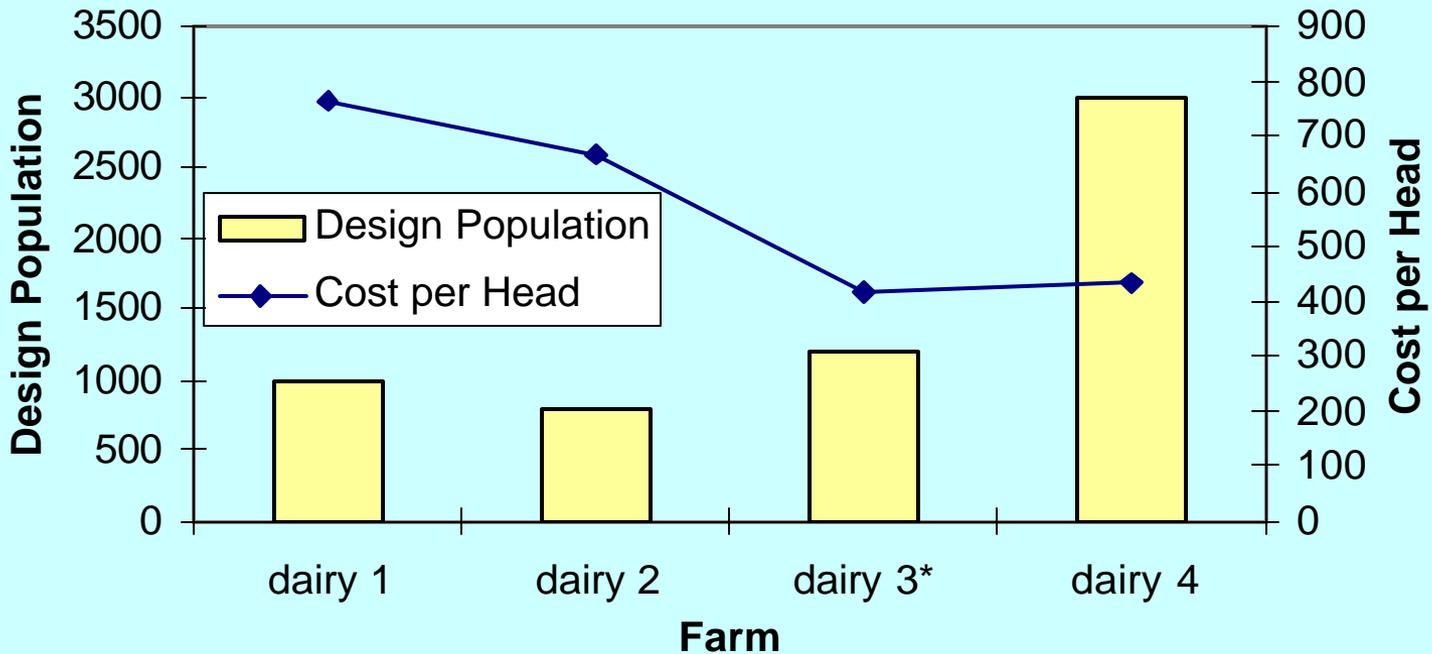
Anaerobic Digesters in the Midwest 2002



State Farms

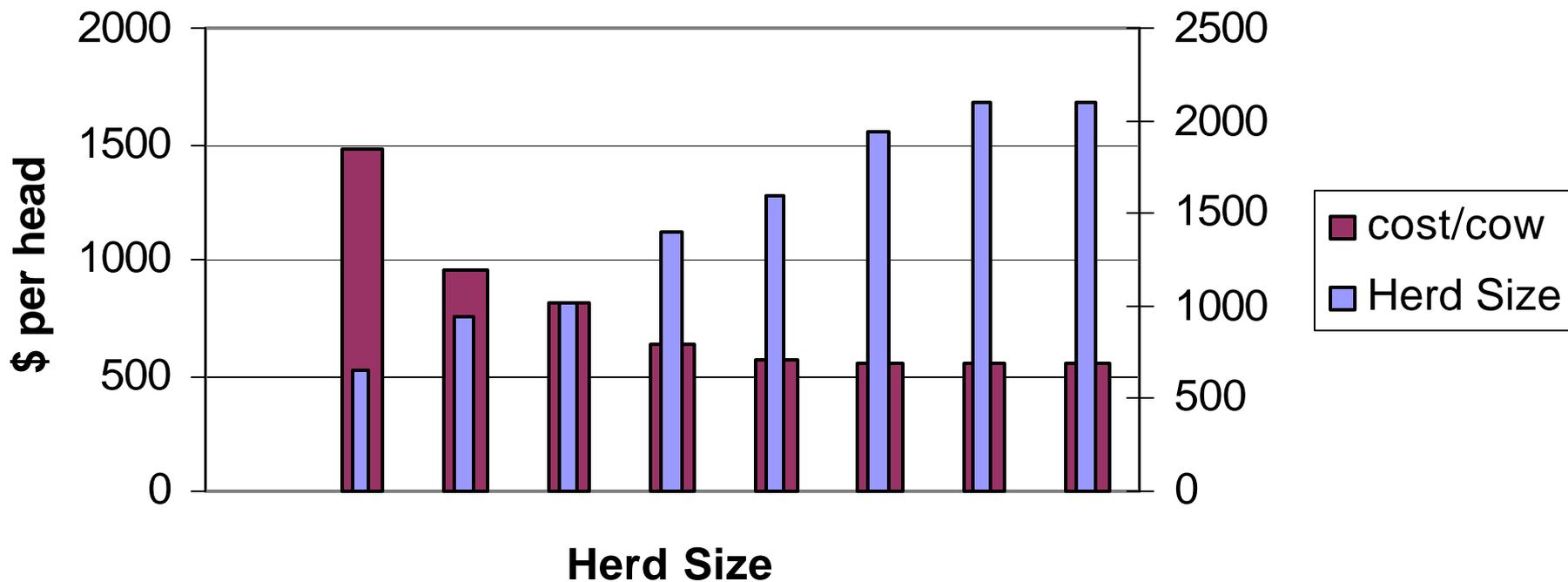
IA	5
IL	2
IN	1
MI	1
MN	2
OH	0
WI	8

System Costs - Wisconsin Digesters



* Dairy 3 is a conventional plug-flow while the others are mixed plug flow.

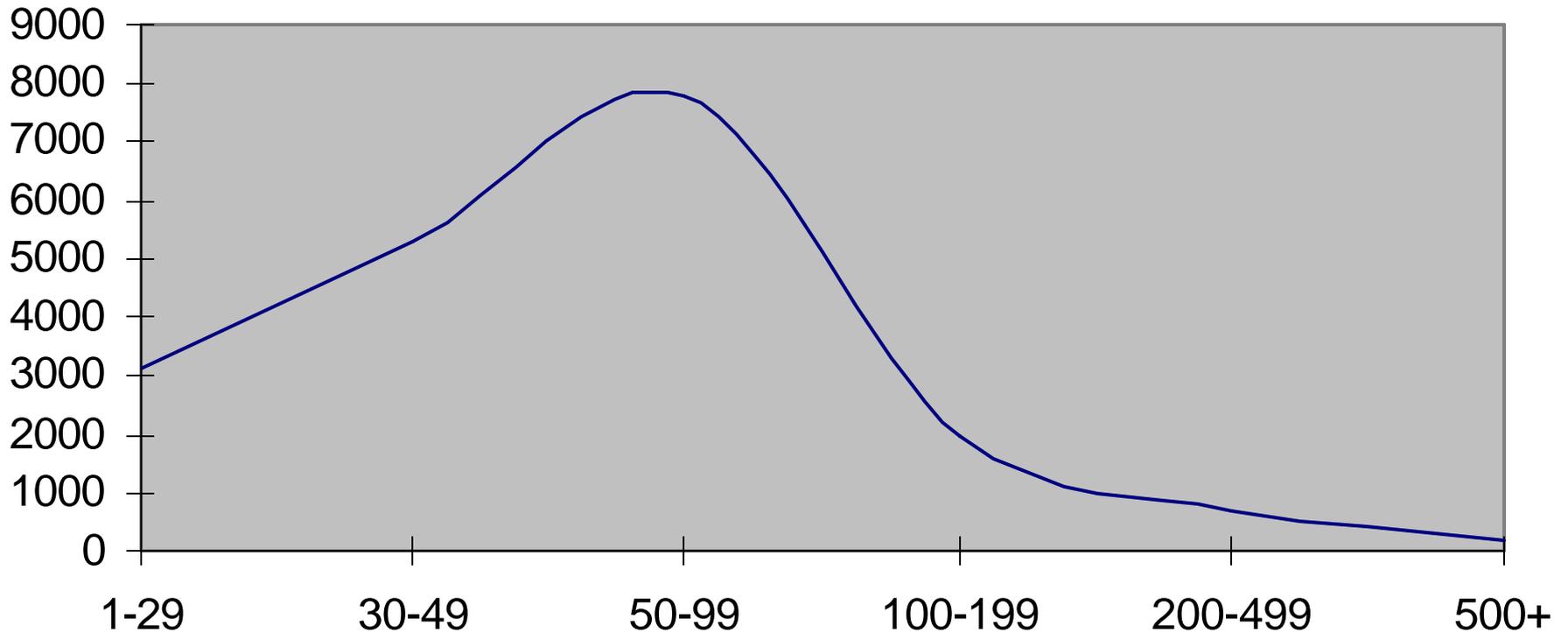
Mixed Plug Flow Digester Costs (2004 Focus Proposals)



Focus Average Cost: \$738/head

Most Dairies in WI are Small

Dairies by Herd Size (2001)



Farm Biogas Research Projects

- **High solids/phased anaerobic digester for small to medium size dairy farms**
- **Application of sonication technology to increase biogas generation**
- **Biogas generation from a Wisconsin dairy farm using anaerobic catalysis and/or photocatalysis.**

Farm Biogas Technical Assessments

- **Central farm manure collection and biogas system feasibility**
- **Dairy pollution control and power from pyrolysis**
- **Evaluation of existing anaerobic digester projects (with EPA AgStar)**
 - **Evaluating all variables including waste heat at one farm, most variables at two other farms**



WI Observations & Future Plans

- **Huge interest, but investment is steep and technologies are still being developed**
- **Use of bedding and decent buyback rate (6 cents/kWh) is key to cost effectiveness**
- **Will continue multi-faceted development approach**
- **Having all players involved and informed is key to synergies**
- **Technologies and more optimization likely in next few years**
- **Farm biogas is one way to keep the dairy industry viable in changing economic farm environment**