

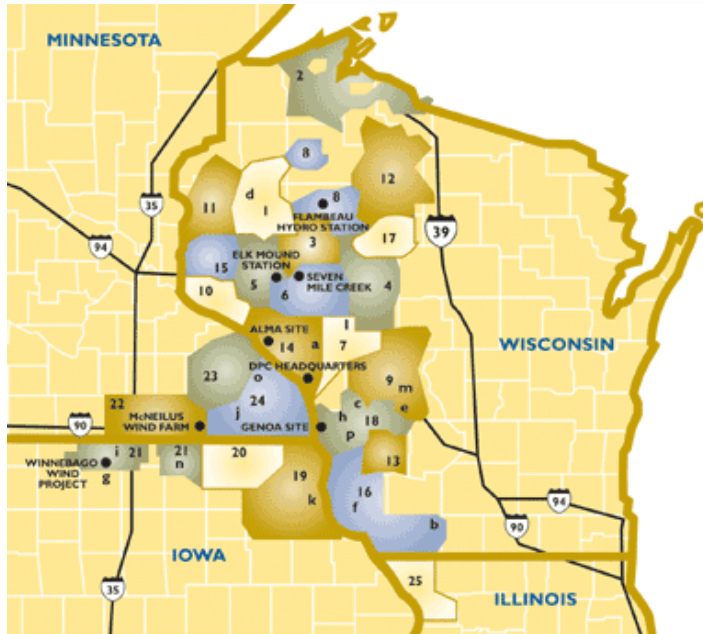
Utility Programs for On-Farm Energy Efficiency

Clean Energy Resource Team
2015 Conference
St. Cloud, Minnesota



A Touchstone Energy® Cooperative 

Dairyland System of Electric Cooperatives



25 Member Cooperatives
256,000 Accounts
17 Municipal Systems
1,372 MW Generation

2015 EE & Tech.
Services Staff Photo
“The Energy Hogs”



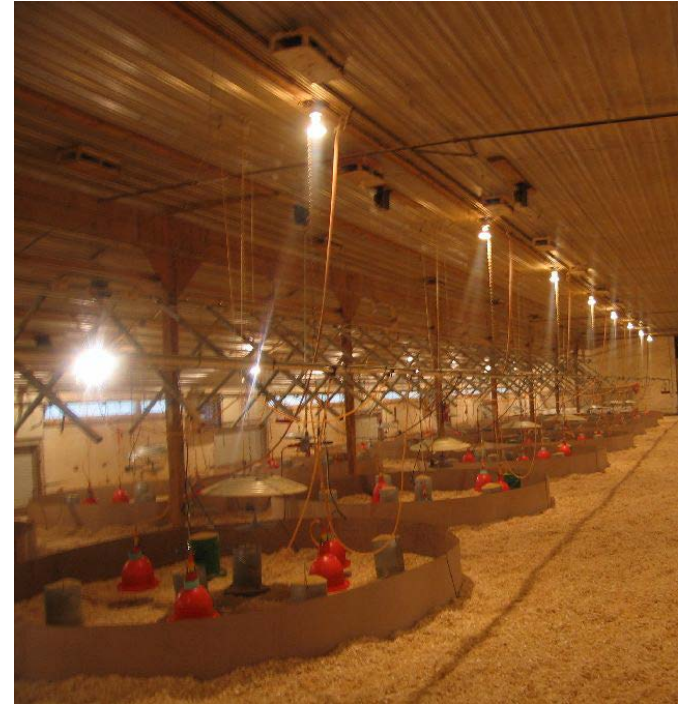
Dairyland's 3-Pronged Approach

- **Efficiency Programs** reduce the amount of energy used in homes, farms and businesses
- **Load Management** reduces the need for future power plants
- **Renewable Energy** sources help meet electrical demand and maintain our commitment to protecting the environment



Findings - Ag Energy Efficiency

- Turning equipment OFF saves the most energy. If it is never ON, it doesn't need to be efficient
- Target energy saving measures for equipment that is used the most -or- when replacing failed equipment
- Farmers will sacrifice EE to reach production goals
- Hilltops are windy & poop runs downhill – use natural ventilation & gravity instead of fans & pumps
- No two farms are the same
- Don't believe everything you read on the Internet



Findings - Ag Energy Efficiency

You can't save more energy than you consume

Example – milk cooling



$$50\% + 10\% + 15\% + 50\% =$$



125% Savings
Holy Cow!



Dairy Automation & Energy Intensity

- Large Herds
 - Decreased kWh/cwt milk
 - More throughput
 - Natural ventilation
 - Gravity flow waste handling
 - Tractor driven equipment
- Trend is Reversing
 - 3X milking
 - Direct load out vs. bulk storage
 - Robotic milking - labor savings
 - Long daylighting
 - Tunnel & cross ventilation
 - Waste handling - larger pumps
 - Composters and digesters – value added byproducts
 - Quality of life



Dairyland Prescriptive EE Rebates

- Started in 1995 – dropped load building programs
 - Participation in Wisconsin Advance Plan process
 - Utility working groups
 - In-house load research - dairy, grain drying, poultry, water heating, etc.
- Address goals, requirements, and/or filings for:
 - Minnesota CIP
 - Iowa Utility Board – electric cooperatives file as one
 - Illinois DCEO
 - Wisconsin Public Benefits
 - EIA 861 & RUS
- Look at what the neighbor's are doing



Dairyland EE Prescriptive Rebates

- Umbrella program for 25 distribution cooperatives
 - Provides system benefit regardless of where the measure is implemented
 - Funded through customer service charges (per kWh) in the wholesale power rate
 - Measures - \$ spent per kW or kWh deemed savings
 - Weighted towards residential & farm EE measures
- Each cooperative offers their own programs
 - Offer “as is” or enhance base program offerings
 - Can stack rebates with other incentive programs
 - WI Focus on Energy participants
 - Farm wiring programs
 - USDA / NRCS grants & loans



Ag Programs - Prescriptive Rebates

- Lighting – new & retrofit
 - LED, CFL, fluorescent, HID
- Ventilation fans – 3 types
- Milk harvesting/cooling
 - Dairy plate cooler
 - Dairy heat recovery
 - Scroll compressor
- Motors and drives - VFDs
- Energy Star appliances / recycling
- HVAC – heat pumps & air conditioners
- Water heating - High EF, controlled
- Low / zero energy livestock waterers
- Energy audit / reimbursement
 - Audit base cost is \$200
 - Reimbursed 50% of implemented measures up to \$500



Ag Programs - Audit/Assessment

- Energy efficiency, renewables, feasibility
- Level 1 and Level 2 audits & assessments
 - ASABE Std. 612 - Performing On-farm Energy Audits
 - Certified Energy Managers (CEMs)
 - Meet requirements for USDA & NRCS grants/funding
 - Rural Energy for America Program (REAP)
 - Environmental Quality Incentives Program (EQIP)
- Elements
 - Baseline of existing practices
 - Suggest EE improvements
 - Estimate savings & payback
 - Environmental benefits



Ag Programs - Custom Rebates

- Based on avoided wholesale power costs
 - Determine deemed savings
 - Certain limits apply



- Examples

- Large LED fixtures
- Compressed air
- Large motors, VFDs, HP reduction
- Grain drying and lumber drying
- Environmental controls
- Other applications – request evaluation



Other Tools / Resources

- Load management
 - About 90,000 controlled accounts
 - Load control required to receive certain types of incentives
- Program analysis (cost/benefit) of cooperatives' EE programs
- On-line residential & commercial EE services





Questions?

