

# 42<sup>nd</sup> Annual Rural Energy Conference

## Summary of Breakout Sessions

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### **Energy Conservation** (session conducted by Scott Sanford, UW-Madison)

#### **Period #1: Dairy Center Energy Conservation**

This breakout session will cover the different heat recovery and energy saving equipment that is used on modern dairy farms. The technologies include refrigeration heat recovery, scroll refrigeration compressors, well water pre-coolers, variable speed milk pumps, high efficiency water heaters, variable speed vacuum pumps, ventilation, and lighting. The session will briefly review how each technology works to save or recover energy, what some of the important parameters are for maximum performance and what the expected savings can be from each technology. Some important maintenance issues will be reviewed for the different technologies. The attendees will also be introduced to the Dairy Center audit tool that is used by the Focus on Energy program for standardizing dairy farm audits.

#### **Period #2: Thermal Energy Conservation**

This breakout session will cover energy conservation in Grain Drying, Greenhouse production, Maple Syrup production and Water heating. The different types of grain dryers will be described and the possible energy conservation options for the different systems. In-dryer cooling of the grains will be compared to in-bin cooling and dryeration which saves energy and can improve grain quality. Heating costs are the second highest cost for greenhouse production but many things can be done to reduce energy usage. Many maintenance issues will be reviewed along with some of the newer technologies such as thermal screens and high efficiency boilers, to reduce energy consumption. Maple syrup production is an energy intensive process. The type of equipment that are used to increase the efficiency of production process will be introduced and the approximate energy savings discussed.

#### **Period #3: Irrigation and Crop Storage Energy Conservation and High Efficiency Lighting**

Reducing system pressure will reduce pumping energy costs for an irrigation system but before it can be implemented, the effects on the irrigation system performance and the cultivation system need to be considered. The effects and issues that need to be considered for low pressure system can be successful using lower pressures will be discussed. Variable speed drives can be used in crop storage facilities to reduce demand loads and reduce energy consumption. In one study the crop shrinkage during storage was also reduced which increased income and added value to the technology for growers. Lighting is used in many facets of our lives. There are several new technologies that can provide light with better qualities with reduced energy consumption. We will review some energy saving ideas for both indoor and outdoor lighting.

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### **Wind Power** (session conducted by John Seymour, FPL Energy)

This session will address questions from the audience that arise from Mr. Seymour's presentation (at the main session Thursday morning). Topics will include wind energy and FPL's position in the industry. The content will include a high level-level view of the technical, commercial and regulatory issues facing the industry (on national, regional and state levels).

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## Summary of Breakout Sessions (cont.)

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### **Electric Fencers** (session conducted by Tom Cadwallader, UW-Extension, Tom Seidl, We Energies, and Tom Eake, Tom's Fencing and Agriculture Services)

Low-impedance electric fencing is a technology that has helped drive the expansion of management intensive grazing throughout the Midwest. It is a valuable tool that has allowed livestock farmers to not only reduce their cost of production but also to reduce soil erosion and non-point surface water pollution while at the same time building soil organic matter.

The purpose of this session is to learn the suggested best management practices in applying low-impedance fencing, what mistakes are commonly made, and how to trouble shoot and fix possible problems. This session will include:

- Discussion of recommendations conventionally given to customers regarding fencer and trainer installations.
- Discussion of each of those recommendations, the basis for each, and present measurements made on operating farms as improvements are made for each recommendation with the changes that result. (For example, demonstrate how removing the grounding from the panel to a dedicated rod reduces levels, then move rod away from the buildings, and then add rods reduced the voltage levels.)
- Discussion of how fencers are constructed and how they operate.
- Discussion of how the voltage waveform actually changes as the circuit is changed (open circuit vs wire added), and how those waveforms actually are what would be predicted by the circuit design.
- Discuss of the performance of various meters in their ability to detect voltage transients that a fencer would put out.

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### **Residential NEV; update on EPRI Study** (session conducted by Doug Reinemann, UW-Madison)

Dr. Reinemann will present a review of research being conducted by EPRI pertaining to the implications of small contact voltages on human health. He will also review electric code issues and implications for low-level contact voltage exposures in residential and farm wiring.

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### **Making Measurements of the Farm** (session conducted by Chuck Forster, Phasor Labs)

This session will consist of a simplified method of investigation a farm for stray voltage concerns. Using this method, the instructor will show how a large farm managed to maintain good herd health and milk production while meeting all the intended requirements of the National Electric Code and the National Electrical Safety Code.

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## Outline of Breakout Sessions (cont.)

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### **Safe Electricity** (session conducted by Molly Hall, Executive Director of the Illinois Electric Council)

Electrical accidents and fires cause more than 1,000 deaths and more than 10,000 injuries each year. The numbers have been rising. There are more than 100,000 residential fires with electrical causes annually, and more than a billion dollars in losses. *The majority of electrical accidents can be prevented* if people understand the dangers and steps they can take to be safe around electricity. That powerful philosophy has created and now guides Illinois' new electrical safety awareness program.

*Safe Electricity* is the award-winning safety outreach program created by the Illinois Electric Council, a not-for-profit industry forum headquartered at the University of Illinois. This multi-faceted public awareness program is designed to compliment the existing safety education activities of utilities and educators.

Attendees to this session will learn how a diverse group representing electric cooperatives, investor-owned electric utilities and the University of Illinois worked together to leverage their common interest and strong commitment to promote electrical safety, creating a program unlike any in the nation.

Learn how this innovative program utilizes a multitude of communication and outreach tools, including a comprehensive Web site, public service announcements (PSAs), periodic news releases and more. And see how it helped to build relationships with government agencies and other organizations.