

LOWER YOUR DAIRY'S ENERGY AND UTILITY BILLS

An audit may help identify energy savings of 10% to 35% annually.

By Robert Madeja

Dairy producers looking to squeeze cash from every corner of their budget may simply need to “flip” a light switch. With energy costs climbing, that light fixture could be wasting energy and contributing to higher-than-necessary utility bills each month.

Saving energy directly translates to cost savings and improved profitability. On average, dairy producers spend \$40/cow/year on electricity. Increased energy efficiency can lead to \$4 to \$14 in annual savings per cow resulting in thousands of dollars.



FYI

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Now is a good time to get started. Environmental Quality Incentives Program (EQIP) funding is available through USDA's Natural Resources Conservation Service (NRCS) for farm energy audits. An on-farm energy audit, also known as an Agricultural Energy Management Plan (AgEMP), is a vital decision-making tool. When performed by trained professionals, an energy audit typically documents potential savings of 10% to 35%.

“Making the most efficient use of all natural resources – including energy – improves the profitability and productivity of a dairy farm and helps reduce greenhouse gas emissions,” said Barbara O’Brien, president of the Innovation Center for U.S. Dairy and senior executive vice president of Dairy Management Inc.™, which manages the dairy checkoff on behalf of the dairy industry. “Through its sustainability initiative, the Innovation Center is working with state and local resources to simplify the process of conducting energy audits, implementing updates, and finding financial assistance programs to make energy



An energy audit conducted on Susan and Ryan Anglin's 300-cow dairy, Bentonville, Ark., identified \$3,779 in potential annual energy cost savings.

efficiency more affordable.”

Dairy producers must act quickly to secure their AgEMP for 2012. National deadlines for AgEMP applications are Feb. 3, March 30 and June 1. Also, funding may be available through EQIP to install equipment upgrades to producers with qualifying audits. Dairy producers should check with their local NRCS field office for details.

“A farm energy audit or AgEMP is always a good investment for the farm, but the funding available through EQIP makes this great service affordable to many more farms,” said Craig Metz, CEO of EnSave a farm energy efficiency firm and technical service provider for AgEMPs.

Inside an audit: top energy savers

Most dairy facilities – regardless of age, size and structure – can benefit from energy-saving technologies. Whether a producer is doing regular maintenance, seeking opportunities to make an older facility more efficient or contemplating a new building, changes can often result in significant and immediate cost and energy savings. And, many improvements come with a one- to five-year payback on installation cost.

The top five most common energy audit recommendations, identified by EnSave, are based on technologies providing energy savings with a short payback period. The list includes:

- **Lighting** – Fluorescent or high-pressure sodium lights are far more efficient than incandescent light bulbs, which convert only 10% of energy used for light; the rest is wasted as heat. High-pressure sodium lights for barnyards are long lasting and energy efficient and produce more lumens per watt than mercury vapor bulbs, with an expected life of about 24,000 burning hours, or six years, for photo-controlled fixtures.

- **Plate coolers** – Milk-cooling costs account for some of the greatest energy expenses on a dairy. In operations without precooling, milk typically comes from the cow at about 98° F, flows into a receiver and is pumped into the bulk tank, where compressors cool it to a temperature of about 38° F. Well water passes through the plate cooler in one direction and absorbs heat from the warm milk pumped through the plate cooler in the opposite direction before going into the bulk tank.

- **Variable speed drives** – A variable

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speed drive (VSD) is a digital controller that regulates the speed of a pump motor and can result in substantial energy savings. When a VSD-controlled milk pump is coupled with a milk plate cooler, producers have witnessed an average energy savings of 30% on the run time of the bulk tank compressor.

- **Scroll compressor** – Scroll compressors for cooling milk in bulk tanks use significantly less energy than reciprocating compressors, which are inefficient and noisy and require regular maintenance. One study found that a 3-hp scroll compressor saved 41% more electricity than a 3-hp reciprocating compressor. With only four moving parts and no metal-on-metal contact, there are no seals to tear and no lubrication required.

- **Compressor heat recovery** – When cooling milk in a bulk tank or with a chiller, compressors are used to remove the heat from the milk. The heat removed usually is released back into the air by condenser fans. By installing a compressor heat recovery unit, this otherwise wasted heat can be reused to heat water. A compressor heat recovery unit can raise water to temperatures as high as 110° F.

Since the incoming water is preheated, the water heater has less work to do and likely will last longer. A dairy farm using 225 gallons of heated water every day, for example, can save as much as \$1,300 annually on electricity costs.

Energy savings create real value

Supported by NRCS, the Innovation Center is focused on accelerating energy conservation and building awareness for on-farm energy audits by collecting and sharing success stories from dairy farms across the U.S. As an example, Ryan Anglin, a producer from Bentonville, Ark., and chair of the National Dairy Promotion and Research Board, completed an energy audit on his family's 300-cow dairy.

Although the Anglins had previously installed an energy-efficient vacuum pump VSD, the audit identified an additional \$3,779 in potential annual energy cost savings. Recommendations included changes to the milk cooling system and continued replacements of lighting fixtures.

Anglin said the audit process was painless and the results invaluable.

"Our EnSave energy auditor was very knowledgeable. The entire audit took no more than an hour and a half, and the report is very detailed," said Anglin. "In our farm plan, we



Dan Rice, Firth, Neb., said an upgrade to LED incandescent fixtures will save Prairieland Dairy an estimated \$9,191 per year.

look at cause and effect or cost and income – that is the bottom line. An energy audit is an excellent decision-making tool for us."

'Lighting up' efficiencies

This past fall, the 1,500-cow Prairieland Dairy near Firth, Neb., discovered immediate energy savings with lighting changes. Dan Rice, dairy producer and member of the Innovation Center's Sustainability Council, said an upgrade to LED incandescent fixtures will save the dairy farm 131,000 kWh of energy and an estimated \$9,191 per year.

Rice said farm energy efficiency is a natural extension of the farm's ultimate self-sustaining mission established by the four dairy farm families who jointly own and operate Prairieland Dairy – Cliff and Dave Obbink; Bill, Mike and Andy Goossen; Al and Harvey Eickhoff; and Dan Rice.

"Our families plan to do everything possible to maximize energy use and efficiency," said Rice. "Our management philosophy is, there are always areas for improvement. As an industry, we must do everything we can to maximize energy use and capture related savings."

Prairieland Dairy recently completed an AgEMP. The facility features an eco-friendly/low-impact design developed for cattle comfort and self-sustaining systems like composting. Even though the facility is state-of-the-art, the audit "has helped us to identify further areas for reduction of energy use and related utility bills. This will be vital in our farm's planning process," said Rice.

Cash on the table

While all dairy farms differ, one thing

is universally true – saving energy directly translates into cost savings and improved efficiencies.

"A good first step in saving energy is to get a farm energy audit," said Rice. "Receiving detailed information about how much energy is used – and recommendations on how to conserve – provides you with a guide to making improvements that most benefits your farm."

Producers have three ways to learn more. They can: 1) contact their local NRCS field office, 2) call an energy expert toll-free (800-732-1399) or 3) visit the Innovation Center's SaveEnergy Web resource at www.USDA.gov/SaveEnergy to learn about farm efficiency and use the interactive map to connect with and compare financial assistance options in their states. □

SCORE YOUR DAIRY: TAKE ONLINE AUDIT RANKING GUIDE

Could an on-farm energy audit really reduce your dairy farm's energy use and utility bills? Find out. Take the eight-question survey, developed by EnSave Inc., a leading and approved technical service provider of on-farm energy audits.

To take the survey, visit www.usdairy.com/SaveEnergy and click on Step 2 to use the quiz in an interactive Excel format.

If the dairy farm's score is greater than 3, your farm may benefit from an energy audit.