

Saving Money through On-Farm Energy Efficiency and Conservation

Quick Facts

- A milk pump variable speed drive can cut electricity usage up to 67 percent.

Source: EnSave, Inc.

- Electronic ballasts in fluorescent lamps have many benefits over older magnetic ballasts: less noise, minimal flickering, better color rendering, more light per watt, cooler operation and lower energy use.

Source: EnSave, Inc.

- Incandescent light bulbs convert only 10 percent of the energy they use to light. Compact fluorescent lamps (CFLs), cold cathode fluorescent lamps (CCFLs), or T-8 and T-5 fluorescent lamps deliver the same light using less electricity.

Source: EnSave, Inc.

- Proper ventilation helps maintain both herd health and profitability, since heat stress causes cows to decrease food intake, which in turn lowers milk production. Cows start to experience heat stress at temperatures above 77°F, or lower if the relative humidity is above 90 percent.

Sources: Virginia State University publication 442-763, www.ext.vt.edu; University of Vermont Extension publication BR-869, www.uvm.edu/extension.

Tools and Resources

- Federal incentives may be available through USDA Natural Resources Conservation Service Environmental Quality Incentives Program (EQIP).
- Some audit programs offer reimbursements and energy savings incentives if recommendations are implemented. Check with EnSave for opportunities in your area.

Simple Return

Even smaller scale upgrades and efficiencies can provide lasting savings

A typical energy audit includes a phone interview and a two-hour farm visit. The farm provides one year's worth of energy-use information prior to the audit, and receives a detailed audit report and recommendations in six to eight weeks. In the report, energy efficiency upgrade opportunities and processes are outlined for farmers, as well as information about resource conservation and renewable energy.

While some energy efficiency upgrades require large upfront capital investment and a few years to complete, many recommendations can be as simple as changing a light bulb. Below are some examples of short-term farm upgrades with almost immediate impacts.

S&S Farm, Modesto, Calif.

S&S Farm, which produces 70,000 to 80,000 pounds of milk per day, decreased the energy consumption of its vacuum system by replacing an oversized pump and installing a variable frequency drive on the new pump that provides vacuum to the milk collection equipment. The project resulted in annual energy savings of \$3,700 and 55,000 kWh, which represents 72 percent of the electricity used by that pump. With a total cost of \$8,200, and a rebate from the dairy's utility of \$1,455, the simple payback was just 1.6 years. The project also decreased the pump's long-term maintenance costs.

Palmyra Farm, Hagerstown, Md.

Owner Ralph Shank has 140 cows producing 2.7 million pounds of fluid milk annually. After completing an energy audit in 2007, Ralph replaced multiple small old ventilation fans with six 52-inch or 60-inch high-efficiency fans on timers. The new fans provided the same cooling effectiveness while reducing the farm's daily energy use and lowering noise levels. Adequate ventilation reduces heat and moisture build-up and is vital for the health of animals and people. Efficient ventilation helps ensure proper temperature maintenance in barns, which is shown to enable optimum milk production.

Rickreall Dairy, Rickreall, Ore.

With a 1,500-cow operation, owner Louie Kazemier was committed to making smart changes for sustainability without making large upfront investments. Louie found that relatively simple changes to operation wide systems like lighting can yield significant energy savings. At Rickreall Dairy, upgrading lighting from old 400-Watt metal halide fixtures with a combination of T-5, T-8 and T-12 fluorescent lamps saved approximately 214,840 kWh in one year, translating to a savings of \$1,100 per month in utility costs.

How might your farm benefit from investigating your energy efficiency?

	Estimated Annual Electricity Bill ¹	Potential Annual Energy Savings ²
100 head	\$4,032	\$403 - \$1,411
135 head ³	\$5,443	\$544 - \$1,905
250 head	\$10,080	\$1,008 - \$3,528
500 head	\$20,160	\$2,016 - \$7,056
750 head	\$30,240	\$3,024 - \$10,584
1,000 head	\$40,320	\$4,032 - \$14,112
1,500 head	\$60,480	\$6,048 - \$21,168
3,000 head	\$120,960	\$12,096 - \$42,336

Notes

¹ Assumes 504 kWh hours per cow per year

² Based on a savings range of 10%-35% (source: EnSave) and an electricity cost of \$0.08/kWh

³ Industry average

Whom should I contact about having an energy audit conducted?

Audits may be available through USDA-NRCS, USDA-Rural Development, your state energy or environment office, and/or your local utility provider. We suggest contacting your milk cooperative for more information, and also contacting individuals at the offices mentioned above:

- USDA NRCS office locator: <http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>
- Rural Development office locator: <http://www.rurdev.usda.gov/StateOfficeAddresses.html>
- State Energy Office locator: <http://www.naseo.org/members/states/default.aspx>

Or contact EnSave at 1-800-732-1399 for more information