Dairy Cooperative Partnerships for Improved Program Adoption

By The Minnesota Project, GDS Associates, Inc. & Hastings Creamery

Project Goal: This project tested an innovative program approach to delivering energy savings measures to Minnesota’s dairy farm community. The Project Team established a partnership with a Minnesota milk cooperative, Hastings Creamery, to gather dairy energy use data and deliver energy efficiency programming to the dairy cooperative’s patron farms. This project successfully:

- Identified energy savings potential of 30 Minnesota dairies
- Created a dairy energy benchmarking tool for use across the state
- Built relationships between milk producers, electric utilities, and funding programs toward improved CIP programming

Method: Leverage a partnership with a milk cooperative to gather energy use data, share funding opportunities, and facilitate energy efficiency implementation. Milk cooperative staff members hold trusted relationships with their patron dairies in the shared interest of cooperative success. Field officers and milk haulers have daily contact with patron members and relay information regularly. This project tested the “milk cooperative” strategy for information sharing and energy efficiency implementation to learn of dairy producer acceptance, program cost-effectiveness, and potential for replication into other farm industries for future CIP partnerships.

Milking Process & Efficient Tech Opportunities

Benchmarking Dairy Energy Use

Project partner GDS Associates developed a Dairy Energy Benchmarking Tool to help Minnesota dairies determine where on the spectrum of energy use their dairies fall and to spur less efficient dairies to consider technology upgrades. The benchmarking tool estimates dairy cooling energy use normalized by milk production. Equipment calculated in the tool includes:

- Milk tank heat exchangers
- Refrigeration heat recovery units
- Scroll-type refrigeration compressors
- Variable speed vacuum pump controls
- Water heaters, and
- Variable speed milk pumps if a plate cooler is installed

Dairy Energy Spectrum: kWh/lb per Cow per Day

Surveyed Technology Use of 57 Farms – 2013

This project was supported by a grant from the Minnesota Department of Commerce, Division of Energy Resources through the Conservation Applied Research and Development (CARD) program which is funded by Minnesota ratepayers.

Gathering Dairy Producer Data

The Project Team began by developing a dairy farm technology survey and administering the survey to all of Hastings Creamery’s Minnesota dairies. The survey focused on dairy-specific energy savings technologies including variable speed drives (milk pump and vacuum pump), plate coolers, scroll-type refrigeration compressors, refrigeration heat recovery units, low/no water waterers, efficient lighting, and tractor block heater timers. The survey also collected energy behavior data, including herd size, pump run time, space heater use, fuel source (propane, natural gas, or electricity), and average monthly bill size.

On-Farm Energy Audit – Sample Audit Summary

The Minnesota Project, a 36 year-old nonprofit, champions the equitable distribution of food and energy. For decades, TMP has focused on farm-scale renewable energy and efficiency in its Energy Program, managed by Fritz Ebinger. GDS Associates, Inc. has been in the engineering business for 26 years and has administered hundreds of dairy farm audits through the Wisconsin Focus on Energy Agriculture and Rural Business program. Joe Schultz and Jenny Brinker served as consultants on this project.

Hastings Cooperative Creamery Company is a farmer-owned cooperative organized over 90 years ago. Today, approximately 130 MN and WI farmers market their milk through the Coop. Field officer Meghan Romo facilitated project data collection.

Working at the Farm Level

From the baseline survey results and benchmarking tool, the Project Team preliminarily identified 30 dairy operations with significant energy savings potential for on-farm energy audits. Several dairies contacted by the Project Team determined they were not interested in receiving an audit service because they were nearing retirement or exiting the industry in the near future.

Once the 30 dairies were identified, the Project Team audited these farms per the American Society of Agricultural & Biological Engineers – Standard 612. These audits identified specific measures, simple paybacks, cost-effectiveness, kW savings, and environmental benefits and suggested energy behavior changes.

Conclusions

Farmer Acceptance: The “milk cooperative” strategy was effective at gathering data and identifying energy efficiency and savings opportunities. All 57 dairy operations openly shared their energy consumption and use behavior with Hastings Creamery Field Staff and the Project Team.

Efficiency Implementation: Five of thirty dairies installed efficient technologies, applied for funding through the USDA, the MN Dept. of Agriculture Livestock Investment Program, or their electric utility for technology upgrades. Three additional farmers were immediately considering efficiency steps. The remainder indicated project funding was a barrier, they were near retirement, considering a dairy expansion, or were not taking action this year.

"An Innovative Program Approach"

"Why not use an existing network?"

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