



From member to co-op to power plant ...

EFFICIENT CHOICES SAVE MONEY & MEGAWATTS

By Erin Huntimer

Steve Schuster, Schuster Trucking

The thought of Iowa evokes certain sights, sounds and smells – corn fields, combines, red barns with white trim. But from North West REC’s parking lot in LeMars, one experiences a different side of Iowa – modern, efficient businesses; powerful tractor-trailer rigs; and the sweet smell of something surprising. It’s chocolate.

The electric co-op is surrounded by and serves much of the infrastructure that makes LeMars the “Ice Cream Capital of the World.” The chocolate aroma drifts in from a nearby factory that makes the cookie pieces for ice cream sandwiches.

The red, white and blue tractor-trailer rigs that run by North West REC belong to Schuster Trucking, and they’re one piece in the ice cream pie. They haul a good chunk of the sweet stuff produced around LeMars for distribution across the region.

Schuster Trucking is not only North West REC’s neighbor, they’re a member. The company moved in to a new facility across from North

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West REC in 2005. Long before the first tractor-trailer pulled into the driveway, owner Steve Schuster and North West REC’s Steve Kolker started working together, making smart energy choices that are making a difference.

Monolithic solutions

As a member energy advisor at North West REC, it’s Kolker’s job to help members make wise energy choices. Schuster needed efficient, affordable heating and cooling options for his new headquarters office, wash bay, and 31,000-square-foot maintenance shop. Together, they identified systems that would fit Schuster’s

needs: air-source heat pumps for the office, floor heat with an electric Marathon® boiler in the wash bay, and floor heat with a waste oil-burning boiler in the shop.

While floor heat could be considered a nice-to-have option in a house, it’s a practical part of doing business for Schuster Trucking. The shop floor consists of a 300-foot-by-110-foot concrete slab that’s eight inches thick; it’s kept at 70 to 75 degrees from November through March. The radiant heat helps dry water and snow from the concrete and keeps the mechanics comfortable as they maintain 300 trucks and 500 trailers.

“It just does a fantastic job. It’s like a big monolith that you heat, and it keeps radiating the heat. Eight inches of concrete takes a while to cool off,” Schuster says.

The floor heat system in the wash bay is all electric, but the floor heat system in the shop is not. It’s powered by three waste oil-burning boilers that

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North West REC employees Mike Berkenpas (left) and Chris Lanphear (right) work hard to ensure reliable service to members like Schuster Trucking.



heat the antifreeze solution that runs through 10 miles of tubing embedded in the concrete.

The waste oil system is common in the trucking industry, but not something you see an electric co-op advocating every day. Kolker says, “We wanted an all-electric facility; that’s what our rates are designed for. But the more Steve (Schuster) talked with us, we came to a good understanding.”

The waste oil system was the best choice for the trucking operation: it not only provides heat, it allows them to recycle and capture some value from the used engine oil. Schuster did commit to an electric backup system, though. If the time ever comes where they can’t burn oil anymore, North West REC will be prepared.

Across from the massive shop fit for the kings of the road lies the stylish yet sensible headquarters building. The climate-controlled offices house about 35 employees and use air-source heat pumps to meet their heating and cooling needs. Schuster can monitor the temperature in different zones throughout the building and adjust them remotely via the Internet.

Schuster’s seen significant energy savings using the floor heat and heat pumps. In their old shop in town, they were on an investor-owned utility’s lines. “We had natural gas for heat and everything. It was expensive. It was volatile.”

Schuster figures he’s heating twice as much real estate for the same price, essentially cutting his potential power bill in half.

Switch Makes Cents

Such a reasonable power bill would not be possible for a facility of this size without Schuster Trucking’s voluntary participation in a program that’s a good deal all the way up the line, from the member to the power plant. They’re part of the Switch Makes Cents program, run by Northwest Iowa Power Cooperative (NIPCO) of LeMars and marketed by its member cooperatives, like North West REC.

The program was launched in 1983 by NIPCO to encourage the wise use of electricity. Members receive rebates on new equipment and special electric rates in exchange for allowing this equipment to be interrupted during system peak use to shed load.

This essentially shaves the peak off system demand.

Chuck Soderberg, vice president of planning and legislative services at NIPCO, says each month the co-op sets a point at which the load shedding will begin, using past history, budgeted load and weather conditions. “Once that set point is hit, then the computer starts sending load management signals out, which starts shedding load.” The signal goes out from NIPCO’s control center in LeMars to substation towers and ultimately to the members’ switches in their homes and businesses.

The load is shed randomly, so no preference is shown to any one member; however, NIPCO can identify the type of load to shed first, depending on the season and the time of day. For example, in the summertime, they may send water heater signals out first, and then air conditioning, and cycle them in 15- to 30-minute increments. Or irrigation loads may be shed starting at 4 p.m., and cycled in 1-hour increments. At Schuster Trucking, the air-source heat pumps are controlled in the summer, and the floor heat in the wash bay can be controlled in the winter.

Kolker says the special rate for load management at North West REC is about 3.2 cents per kilowatt-hour. "There are not any demand charges in that rate, so we're able to pass that rate directly on to Schuster since they're not operating during the peak." The regular service rate averages around 8 cents per kilowatt-hour.

Soderberg says NIPCO co-ops like North West REC have done a great job in being active in the Switch Makes Cents program. "They know the more switches they can get out there, the less demand they have to pay for, and the less demand we (NIPCO) have to pay for, and ultimately the more demand that Basin Electric can use elsewhere."

Soderberg sees the load management program increasing in value as time goes on. "The demand rate is going to be increasing. That's a direct signal from Basin Electric as they put new facilities in. The benefit to us (NIPCO) is the demand we do not have to pay for, the avoided demand," Soderberg says.

For example, from a NIPCO perspective, if the demand rate is \$10 per kilowatt-month, that comes out to \$10,000 per megawatt-month. In July 2008, Soderberg says they shed about 16 megawatts, resulting in a savings of about \$160,000. "That's no chump change. That's a pretty significant savings to the REC and ultimately to the consumer. So it's a savings to everybody."

About 50 percent of NIPCO's end-of-the-line members are on the program, which allows for about 15 percent of NIPCO's peak load to be shed. To date, more than 16,000 switches have been installed in members' homes, saving more than \$30 million through wise energy use.

Basin Electric's perspective

Dave Raatz loves to hear success stories like the one with NIPCO, Northwest REC and Schuster Trucking. It's Raatz's job as Basin Electric's manager of marketing and power supply planning to project member load and plan for generating resources accordingly.

"By the members controlling during those peak periods of time, that helps Basin Electric so we don't have to build as many peaking resources. It helps us to know what level of peak load to expect during really hot or

“I can't emphasize enough the value of the members' load management systems.”

Dave Raatz

really cold periods of time. I can't emphasize enough the value of the members' load management

systems to support Basin Electric's power supply plan," Raatz says.

Basin Electric's members control about 200 MW. The four co-ops with the biggest load management programs are NIPCO, East River in South Dakota, L&O in Iowa, and Central Power in North Dakota, all of which are on the east side of the transmission grid and have predominantly residential loads with low load factors and weather-sensitive peaks.

Raatz says Basin Electric could benefit from even more load management within the membership. However, the control periods of some existing members are getting so long, they can't add on more load management.

This is where Basin Electric is looking at trying something new. Raatz says Basin Electric has an opportunity to control additional load through its own limited load management program.

"We're not trying to displace or take away from the members load management systems. We see tremendous value in what the members are doing. But there's a certain amount of load control that Basin Electric could incorporate into our power supply operations," he says.

Basin Electric tested the program during the summer of 2008 by successfully controlling about 12 MW. Raatz says Basin Electric will focus on controlling standby diesel generation and irrigation loads that reside on member systems that aren't using load management. The Basin Electric board passed a modified load management rate in January to encourage participation in the program.

Raatz expects Basin Electric can pick up an additional 50 MW of load control for the summer of 2009. That's 50 MW of generation that doesn't have to be built or bought to meet growing member demand, a sweet proposition for Raatz as he plans for future power supply.



Steve Kolker of North West REC helps members make wise energy choices.