



\$SMART DOLLARS\$

Cooperatives put stimulus grants to work

By Erin Huntimer

It's about 6 p.m., and a refrigerator hums away in the kitchen, satisfied at a good day's work of storing leftovers and soda pop. The time comes to defrost, but first the fridge calls up his buddy, the smart meter: "Hey, I need to defrost." The meter says, "Wait a minute, electricity's spendy right now. But your electric cooperative says the price will go down in four hours. Can you wait?" The fridge says, "Sure."

The next morning, the fridge is happily defrosted and the consumer smiles because he saved money on his power bill. The electric cooperative is happy, too, because that smart choice, multiplied over many meters, helps reduce its peak load.

A vision for the future? Yes, but sooner than one might think. A concept called Smart Grid could make a scene like this (minus the talking appliances) a reality in less than five years. Advanced metering and communications technologies will put the power of choice in the hands of consumers, while helping utilities run a more efficient, reliable power supply system.

To spur development, the U.S. Department of Energy offered Smart Grid Investment Grants

through the American Recovery and Reinvestment Act of 2009. In October 2009, DOE awarded \$3.4 billion in grants. Of this, about \$215 million went to more than 50 electric cooperatives and public power districts in 15 states. DOE awarded 100 grants in all, selecting them from a pool of about 400 applicants.

Among the recipients are Sioux Valley Energy and Powder River Energy Corporation. Each cooperative is applying funds to different kinds of projects, but both are building the framework for a smarter, more efficient power supply system.

Taking PRIDE *Powder River Energy Corporation* *Sundance, WY*

Powder River Energy Corporation (PRECorp) received a \$2.5-million grant to implement a substation monitoring and control system, including a secure communications and data network throughout its service territory in northeastern Wyoming. Called Project PRIDE, it will cost about \$5.1 million and take about two years to complete.

Doug Wilson, PRECorp's vice president of Information Technology

and Services, says the project has three goals. The first: implementing a SCADA system. SCADA stands for Supervisory Control and Data Acquisition.

"We'll start with 17 of our critical substations in the part of our service territory that serves key coal mines and coal bed methane wells. It'll allow for remote monitoring and control of substation equipment from a central master control station in our Gillette office," he says. Eventually, the SCADA system will be extended to additional PRECorp substations.

For the SCADA system to retrieve and transmit data with the substations, PRECorp needs to expand its microwave data backhaul network, which is goal number two. The current network reaches across PRECorp's southern region. "We'll complete the full ring of data communications by extending the network across the northern part of our service territory so we can reach these critical substations."

The third goal involves developing a secondary network of radios to extend the backhaul data network to 30 substations in PRECorp's territory. "This network will enable multi-directional communications to substations that may not have

any connectivity today, or only have one-way radio, dial-up or Turtle connectivity over the power lines,” he says. (Turtle refers to a brand of meter reading technology.)

Mike Easley, PRECorp CEO, says PRECorp was very pleased to be able to accelerate its work on enhancing its data communications and distribution control systems through the grant program. “We very much appreciate the continuing support we receive from our federal delegation, our governor, the PRECorp board and our team of committed employees whose hard work will bring the numerous benefits of this project to our member-owners,” Easley says.

Wilson says Project PRIDE provides a foundation for other Smart Grid initiatives in the future, including smart meters and Automated Metering Infrastructure, or AMI.

“This project is so important to us because of the nature of the territory we serve – more than 16,000 square miles that gets into some pretty remote territory. The fact that this data network will be able to reach across a good part of that territory is a key advantage for us,” Wilson says. In addition to better system reliability, he also projects cost savings for the cooperative down the road.

Getting Smart Sioux Valley Energy Colman, SD

Sioux Valley Energy received a \$4 million grant for the installation of a Smart Grid network across their entire member base – 23,000 smart meters in all. Ted Smith, Sioux Valley Energy director of Operations and Engineering, says the new meters replace their Turtle System, which at 14 years old has reached the end of its projected life. The project will cost \$8 million. Smith says the grant money will help speed the time to implement, from five years to two and a half.

The new digital smart meters contain a device that allows for two-way communication to and from the utility. Sioux Valley Energy’s ultimate goal is to implement dynamic pricing models such as critical peak pricing and time-of-use rates. The cooperative would send price signals to consumers via the smart meters and provide them with individualized energy use information.

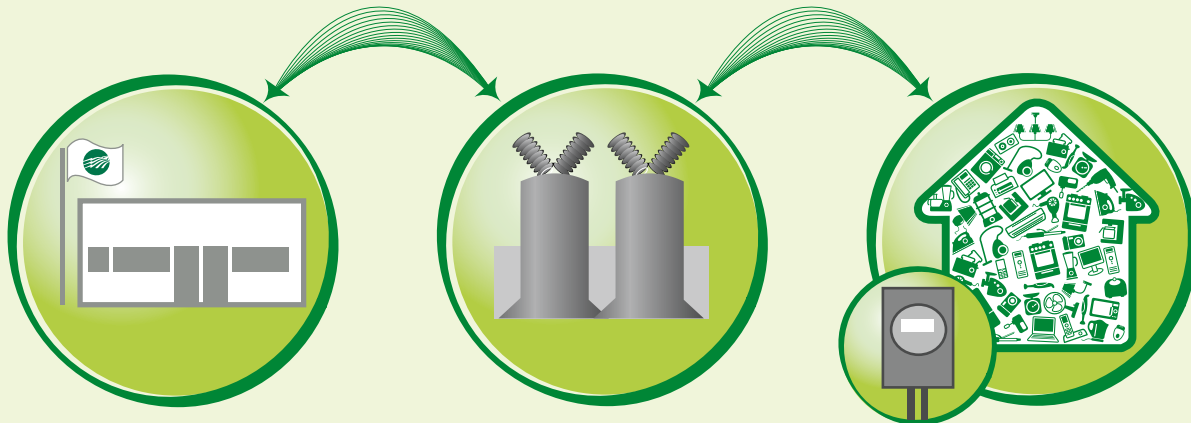
“The meter we’ve chosen will communicate with in-home devices, whether that’s a smart thermostat or an in-home display that tells the customer what the cost of power is at that time,” Smith says.

Information like this helps members make informed choices. “It allows them to have the power in their hands to conserve energy, and conserve at the right times,” Smith says. Sioux Valley Energy hopes to do a pilot project of price signals to a small number of members within the next two years.

Smith sees Smart Grid technologies being built directly into appliances within the next two to three years. Smith says these technologies can lead to reduced individual member electrical use and peak demand, which may help offset the need to build additional generation in the future. “That’s where the big dollars come in,” he says.

In the near term, Smith says the project will help reduce metering costs. Many tasks crews previously would need to do in person will now be done remotely. “If somebody calls in and says they don’t have power, we should be able to – on a moment’s notice from the office – see what the voltage is at that meter, and decide if it’s on our side or the customer’s side, and not have to roll a truck after hours,” he says.

Sioux Valley Energy estimates avoided generation and infrastructure costs could result in cost savings of up to \$4 million a year.



“Smart” substations enable utilities to remotely monitor breakers, transformers, etc., at the substation site. This can increase reliability, security and employee safety.

“Smart” meters send data to the utility for tracking outages and analyzing usage. Alerts can be sent through the meter to advanced appliances when power use should be limited.