



Case Study

TWACS Power Line Communication

Runestone Electric Association, Alexandria, MN

Runestone Electric Association (REA) is a Touchstone Energy® Cooperative. Located in west central Minnesota, REA has approximately 18,000 meters installed over 2900 line miles, averaging four meters per mile of line. The REA customer base consists of agriculture, residential and seasonal members as well as several large commercial and industrial accounts.

“We selected TWACS PLC because it meets our requirements, the technology is proven and extremely reliable, plus the system provides real-time communication.

Upon completing our deployment, we are very pleased with our decision.”

SCOTT KRUEGER
Billing/IT Supervisor
Runestone Electric Association

BUSINESS CHALLENGE

Upon learning that support for its existing power line carrier system would end in 2014, REA began to search for a new advanced metering infrastructure (AMI) solution. Although its system was deemed state-of-the-art in the late 1990s, REA knew that there had been advancements made not only in AMI communications, but also in headend software and meter technology.

REA had several key capabilities that it wanted a new AMI solution to support. Because a large portion of its member base was seasonal, remote connect/disconnect features were very important. REA also wanted to ensure that a new system would be able to integrate with its customer information system (CIS)

Each alternative was evaluated not only for its relative strengths, weaknesses, and ability to meet future requirements, but also for the cost to deploy, support, and maintain over time. Any system selected needed to operate in parallel with REA's existing system over the period the migration/deployment would occur.

SOLUTION OVERVIEW

REA considered several factors in making its AMI system decision. As the cooperative is owned and governed by its members, a prime consideration was how each member would benefit from the new system. Cost was also a primary consideration, as well as the expected recurring cost for maintenance and infrastructure. The REA service area is spread out over 1443 square miles and 2900 miles of line.

Since REA is a rural system, the use of an RF solution presented challenges when considering the geographic area to be covered and the low meter density per square mile. When determining the number of towers required for 100% coverage, REA considered the cost for multiple tower sites and the fact that, in many cases, RF

access points would be required to serve a single member.

There were also cost volatility issues associated with tower leases as well as potential FCC licensing. Moreover, an additional layer of support and maintenance for the technology would be necessary.

Ultimately, REA selected the TWACS® power line communication (PLC) system. The TWACS solution met all REA's requirements for on-demand reads, remote connect/disconnect, and interval data as well as demand response and load control capabilities. Moreover, the TWACS system easily connected with its CIS and OMS systems through standard MultiSpeak® interfaces.

What also made the TWACS PLC system attractive to REA was the fact that it utilized its existing distribution grid, representing an investment of millions of dollars. This meant that the communications network could be deployed, managed, and maintained by the REA staff. No additional layer for management or maintenance personnel was needed, nor was a new layer of AMI communication technology required.



Fig. 1 - The rural nature of the Runestone Electric Association service area, with low meter density per square mile, made TWACS the best choice for the utility because it operates on existing power line infrastructure.

BUSINESS JUSTIFICATION

The TWACS PLC system is proven and reliable, providing real-time communications technology that Aclara continues to invest in and improve. Plus, REA can operate the TWACS solution over the distribution network simultaneously with the older power line carrier system during the three-year changeover period.

REA can also migrate and integrate other Aclara RF and cellular communications alternatives into its current system for a hybrid solution if the utility chooses to do so in the future. This alternative is made more attractive because Aclara utilizes a single headend across all its technologies.

The older system that was replaced required 27 hours to receive a single read for a single meter. Using TWACS technology, all 18,000 REA meters can be read in less than 30 minutes. REA also has seen a reduction in line loss from 6.4% at the beginning of the project to 5.8% today, due to the completion of more reads in a shorter amount of time and because there are fewer disparities between meter register reads and AMI module read rates.

In addition, the utility is now collecting 99% of all meter reads via the TWACS AMI system. Previously, the percentage of reads collected was lower, which meant the utility had to spend a lot of time figuring out why meters were not being read.



Fig. 2- Runestone Electric Association managed the changeover from its previous AMI system to TWACS with internal resources.

REA expects benefits beyond meter reading from its new AMI system. Most significantly, the utility can ping meters to determine which are out and the extent of outages. Reducing the amount of time it takes to determine exactly which meters are out allows the utility to restore service to customers faster.

The utility completed the changeover to the Aclara TWACS system on a streamlined schedule using its own internal resources. Using internal resources for the changeover simplified the process because the utility staff knew their distribution system, the location of every meter, and which services would need to be rebuilt.

Because of this upgrade to the TWACS PLC system, REA now operates a state of the art AMI system, which meets its needs now and into the future, with the knowledge that alternative communication technologies can be added to augment functionality at any time should the need arise.