

South Kentucky Rural Electric Cooperative Corporation

Advanced Metering Infrastructure Deployment

Scope of Work

The South Kentucky Rural Electric Cooperative Corporation (SKRECC) installed a fully integrated advanced metering infrastructure (AMI) system across the service territory. The deployment included 69,065 smart meters, a meter data management system (MDMS), enhanced communications infrastructure, an energy management web portal, and 2,000 direct load control devices.

Objectives

The project leverages the two-way communication capabilities of the AMI system and various utility applications to 1) provide customers with new online energy management tools, 2) allow SKRECC to manage, measure, and verify targeted demand reduction, 3) provide SKRECC with outage verification indicating the scope and location of customer outages, and 4) reduce costs through improved operational efficiency.

Deployed Smart Grid Technologies

- **Communications infrastructure:** SKRECC utilizes a two-way power line carrier communications network across the SKRECC service territory. Forty substations were upgraded with AMI communications equipment to relay data and control signals between customer meters and the utility.
- **Advanced metering infrastructure:** SKRECC installed 69,065 smart meters across their service territory, 15,000 of which have remote connect/disconnect collars. A new meter data management system provides a software platform for organization and analysis of the meter data, and enables validated presentment of electricity usage information to customers via the web portal.
- **Advanced electricity service options:** AMI deployment has enabled SKRECC to offer customer services such as online access to interval consumption data and trending information, pre-pay accounts, load control programs during periods of peak demand, and remote service connections and disconnections. Furthermore, with the AMI system fully installed and operational, SKRECC is equipped to implement time-base rate programs for its members, pending regulatory approval.

At-a-Glance

Recipient: South Kentucky Rural Electric Cooperative Corporation

State: Kentucky

NERC Region: SERC Reliability Corporation

Total Budget: \$19,636,215

Federal Share: \$9,538,234

Project Type: Advanced Metering Infrastructure
Customer Systems

Equipment Installed

- 69,065 Smart Meters
- AMI Communications Systems
 - Two Way Power Line Carrier Meter Communications Network
 - Backhaul Communications
- Meter Data Management System
- Customer Web Portal Access
- 2,000 Direct Load Control Devices

Time-Based Rate Programs Available for 69,065 Customers*

- Time of Use

** Pending Kentucky Public Service Commission approval*

Key Benefits

- Reduced Meter Reading Costs
- Reduced Operating and Maintenance Costs
- Reduced Costs from Theft
- Improved Electric Service Reliability
- Reduced Truck Fleet Fuel Usage
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

Benefits Realized

- **Reduced operating and maintenance costs:** SKRECC realized cost savings by using AMI's remote meter reading capabilities and reduced the need for meter reading contracts. Operational costs were further lowered through automation of customer service requests for remotely connecting and disconnecting services. AMI integration with an outage management system (OMS) provides the OMS with more accurate outage information, enables more efficient deployment of field crews, and reduces trucks rolls. Finally, daily reports were generated from the meter data, allowing SKRECC to remotely detect theft of energy.
- **Reduced truck fleet fuel usage:** Fleet fuel usage was reduced as a result of fewer truck rolls for connect/disconnect requests and improved outage management capabilities, such as outage verification and more efficient crew assignments.
- **Improved operational efficiency:** The AMI system is reducing the number of estimated meter readings, which provides more accurate and timely bills for members and reduces the number of bill-related complaints. Also, the smart meters' voltage-monitoring capability allows SKRECC to locate and address any faults causing power quality issues.

Lessons Learned

Prior to installation of their AMI system, SKRECC was proactive in reaching out to other operational AMI projects to understand lessons learned, common challenges, and best practices. This approach strengthened their vendor selection process and enabled them to avoid some common project issues.

To better facilitate customer acceptance of the AMI deployment, SKRECC conducted a focused effort to communicate with members and inform them of the benefits of the planned AMI system. By proactively leveraging various outreach avenues such as community meetings, the monthly magazine, radio, and newspapers, SKRECC was able to obtain 100% participation from its members.

Future Plans

In the future, SKRECC aims to leverage the system's core capabilities to introduce functionality such as remote connection and disconnection of security lights. In addition, pending Kentucky Public Service Commission approval, SKRECC will be able to introduce AMI-enabled time-based rate programs to its members. SKRECC would also like to expand the load control program to include commercial and industrial customers once the technology options have been fully evaluated.

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