

Talquin Electric Cooperative

SmartGrid Program

Abstract

The Talquin Electric Cooperative's (TEC) SmartGrid Program involves the installation of advanced metering, communications infrastructure, distribution automation equipment, load control devices, and other customer systems. The project implements two-way communications to: (1) enable customers to view their energy consumption at their convenience through customer systems and Web portals, (2) provide time-based rate programs to customers, (3) provide information and tools to improve outage management, and (4) reduce operations and maintenance costs. The project also installs automated distribution grid equipment expected to: (1) enhance the reliability and quality of electric delivery, and (2) reduce operations and maintenance costs.

Smart Grid Features

Communications infrastructure includes a microwave backhaul system that enables wireless two-way communication between the meters and the central control office. Meter communications include a wireless radio frequency network that utilizes spectrum licensed by the Federal Communication Commission. This scalable infrastructure provides opportunities to add future service offerings and functionality to optimize energy delivery, system reliability, and customer participation.

Advanced metering infrastructure (AMI) includes 56,000 smart meters and provides AMI coverage for all TEC customers. The AMI deployment allows for time-based rate programs and other electric service options for interested customers such as prepay and home area networking. TEC expects lower operations costs from remote meter reading and less costly identification of electricity theft. New AMI features such as outage and restoration notification and a remote service switch enable TEC to respond to outages and customer requests more efficiently.

Advanced electricity service options offered through the project include a Web portal for all 56,000 customers and a demonstration pilot of in-home displays and programmable communicating thermostats. Two-way information exchange is available to all customers through a Web portal, which provides customers with

At-A-Glance

Recipient: Talquin Electric Cooperative

State: Florida

NERC Region: SERC Reliability Corporation

Total Budget: \$16,200,000

Federal Share: \$8,100,000

Project Type: Advanced Metering Infrastructure and
Customer Systems
Electric Distribution Systems

Equipment

- 56,000 Smart Meters
- AMI Communication Systems
 - Meter Communications Network
 - Backhaul Communications
- Customer Web Portal for 56,000 Customers
- 1,000 Direct Load Control Devices
- 2,000 In-Home Displays
- 1,000 Programmable Communicating Thermostats
- Distribution Automation Equipment for 46 out of 86 Circuits*
 - SCADA Communications Network
 - Automated Distribution Circuit Switches
 - Automated Capacitors

* This distribution automation equipment will affect 23 substations and 46 circuits within TEC's service territory.

Time-Based Rate Programs under Consideration

- Time of Use
- Critical Peak
- Peak-Time Rebate

Key Targeted Benefits

- Reduced Meter Reading Costs
- Reduced Operating and Maintenance Costs
- Increased Electric Service Reliability
- Reduced Electricity Costs for Customers
- Reduced Costs from Distribution Line Losses, Equipment Failures, and Theft
- Deferred Investment in Distribution Capacity Expansion
- Reduced Truck Fleet Fuel Usage
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

Talquin Electric Cooperative *(continued)*

account balance and electricity usage information. In-home displays are part of a pilot project and allow participating customers to view account and usage information. Programmable communicating thermostats allow customers to better manage their central air conditioning and heating equipment. TEC expects these information feedback systems to provide customers with greater control over their electricity costs and bills.

Direct load control devices deployed by the project include equipment for up to 1,000 customers participating in a load management pilot. These devices provide the utility with the ability to remotely manage appliances such as air conditioners and water heaters to reduce peak demand and lower electricity costs.

Time-based rate programs under consideration include time-of-use rates, critical peak pricing, and critical peak rebates for customers receiving smart meters. TEC intends to use time-based rate programs, Web portals, in-home displays, and advanced metering to encourage consumers to shift their consumption from on- to off-peak periods. Customers gain increased control over their electric costs and bills through the use of these programs and enabling technologies.

Distribution automation systems include automated feeder switches, sensor equipment, and centrally controlled capacitor banks in the TEC service territory. The distribution automation systems allow TEC to check circuit recloser and regulator status and implement an alarm function for fault detection and outage prevention. The distribution automation equipment helps to improve reliability, reduce line losses, and operations and maintenance costs.

Distribution system energy efficiency improvements involve the integration of automated capacitors with a power quality monitoring system. The capacitors improve voltage and volt ampere reactive control, power quality, and distribution capacity by reducing energy losses on the distribution system.

Timeline

Key Milestones	Target Dates
AMI/customer system asset deployment begins	Q4 2010
Distribution automation deployment begins	Q4 2011
Distribution automation deployment ends	Q4 2012
AMI/customer system asset deployment ends	Q1 2013
Data collection ends	Q2 2013

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