South Mississippi Electric Power Association

Advanced Metering Infrastructure and Associated Smart Grid Investments for Rural Mississippi

Abstract

South Mississippi Electric Power Association's (SMEPA) smart grid project involves the deployment of advanced metering infrastructure (AMI) and covers the Generation & Transmission (G&T) Cooperative and five of its member distribution cooperatives: Coast Electric Power Association, Magnolia Electric Power Association, Pearl River Valley Electric Power Association, Southern Pine Electric Power Association, and Southwest Mississippi Electric Power Association. AMI enables two-way communication between SMEPA and its member cooperatives' substation meters and between the member cooperatives and their customers' meters for more detailed electric usage information as well as improved outage detection. Automated meter reading enables the SMEPA collaborative to improve operational efficiencies and reduce costs. Additionally, three of the member cooperatives (Magnolia, Southwest, and Pearl River Valley) are implementing supervisory control and data acquisition (SCADA) systems to enable improved reliability through increased visibility of distribution substations and circuits.

Smart Grid Features

Communications infrastructure includes microwave, radio, digital subscriber line, cellular and power line carrier equipment to support two-way backhaul and meter communications between the customers and utility. Stand-alone backhaul technologies and SCADA equipment enables remote monitoring and control of substation equipment.

Advanced metering infrastructure includes the deployment of 225,779 smart meters throughout the service territories of the five participating member cooperatives. The smart meters offer two-way communication between the customer and the distribution cooperatives as well as providing aggregate substation load information to the G&T Cooperative. Operational cost savings are derived from the automation of meter reading and customer services activities through the AMI system. The new AMI system provides building blocks for future programs that help customers understand and manage their electricity use and costs.

At-A-Glance

Recipient: South Mississippi Electric Power Association

State: Mississippi

NERC Region: SERC Reliability Corporation

Total Budget: $61,318,005

Federal Share: $30,563,967

Key Partners: Coast Electric Power Association, Magnolia Electric Power Association, Pearl River Valley Electric Power Association, Southern Pine Electric Power Association, and Southwest Mississippi Electric Power Association

Project Type: Advanced Metering Infrastructure

Equipment

- 225,779 Smart Meters
- AMI Communication Systems
  - Meter Communications Network
  - Backhaul Communications
- Meter Data Management System
- Substation Automation Equipment for 20 out of 135 Substations
  - SCADA Communications Network

Time-Based Rate Programs

- Time of Use

Key Targeted Benefits

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

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Time-based rate programs include a trial rollout of time-of-use rates offered by the five member distribution cooperatives. TOU rates are intended to be available to the members' industrial customers.

Substation automation systems include the implementation of SCADA systems in three distribution cooperatives. The Magnolia Electric Power Association and Southwest Mississippi Electric Power Association are installing SCADA systems and a communication backhaul system to relay data from substations back to main offices. Pearl River Valley Electric Power Association is installing geographic information systems (GIS) and SCADA systems. The combination of AMI, GIS, and SCADA systems enable the electric cooperatives to monitor and document outages and develop systems for responding to downed lines and restoring services more rapidly.

Timeline

Key Milestones	Target Dates
AMI asset deployment begins	Q2 2010
Distribution automation asset deployment begins	Q2 2010
AMI asset deployment ends	Q4 2012
Distribution automation asset deployment ends	Q4 2012

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