

## El Paso Electric

### *Distribution Automation Project*

#### Abstract

El Paso Electric's (El Paso) Distribution Automation project involves installation of new switches, relays, reclosers, fault locators, and sensors to address two needs: 1) the Van Horne phase involves faster restoration for customers served by a radial transmission line that is subject to outages during bad weather, and 2) the Santa Teresa phase involves improving distribution service to a relatively isolated group of industrial and residential customers. The equipment installed as part of this project provides automated reaction to system outages allowing for more rapid response to grid disturbances. A communications system integrates real-time data from grid monitors with the grid operator's distribution management software platform. El Paso expects these upgrades to improve reliability and power quality and reduce truck rolls for grid maintenance, operating costs, and emissions.

#### Smart Grid Features

**Communications infrastructure** includes deployment of radio devices, remote terminal units, and dedicated phone lines, as well as a supervisory control and data acquisition system (SCADA). Five distribution circuits receive phone, radio, and remote terminal unit equipment to enable remote control of distribution feeder switches. Radio equipment to relay data from new automated feeder switches to grid operators are being installed on a set of four distribution circuits.

**Distribution automation systems** include installation of new automated switches and reclosers for isolated sections of El Paso's distribution grid. The Van Horn phase involves remote controlled switches and capacity upgrades to safely reduce restoration times from hours to minutes and consists of new communication infrastructure and remote terminal unit installations at four major substations. El Paso is retrofitting several existing reclosers with radios and installing three-phase electronic reclosers at normally open points. The Santa Teresa phase consists of installing intelligent feeder switching capabilities to automatically restore service to customers from a central processing unit that automates three feeder lines. It operates by detecting and isolating faults and restoring power to non-faulted portions of the feeder. A total of four distribution switches are being automated with remote monitoring and control capabilities that reside in a remotely connected computer located at El Paso's systems operations control room.

**Distribution system energy efficiency improvements** include the automated distribution operations management improving distribution system reliability by providing rapid and coordinated response to grid outages and disturbances.

#### At-A-Glance

**Recipient:** El Paso Electric

**State:** Texas, New Mexico

**NERC Region:** Western Electricity Coordinating Council

**Total Budget:** \$2,196,187

**Federal Share:** \$1,014,414

**Project Type:** Electric Distribution Systems

#### Equipment

- **Distribution Automation Equipment for 8 out of 250 Circuits**
  - **Distribution Management Systems**
  - **Distribution Automation Communications Network**
  - **SCADA Communications Network**
  - **Automated Distribution Circuit Switches**
  - **Smart Relays**
  - **Equipment Condition Monitors**

#### Key Targeted Benefits

- **Improved Electric Service Reliability**
- **Reduced Costs from Equipment Failures and Distribution Line Losses**
- **Reduced Greenhouse Gas Emissions**
- **Reduced Operating and Maintenance Costs**
- **Reduced Truck Fleet Fuel Usage**

**El Paso Electric** *(continued)*

While El Paso's existing distribution system requires physical truck visits for grid metering and monitoring, the new system provides remote monitoring and automated response capabilities.

**Timeline**

Key Milestones	Target Dates
Distribution automation installation start	Q1 2010
Communications infrastructure installation start	Q1 2010
Distribution automation installation completed	Q4 2010
Communications infrastructure installation completed	Q1 2011

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