

## City of Fulton, Missouri

### Smart Grid Project

#### Scope of Work

The City of Fulton, Missouri, (Fulton) Smart Grid Project installed smart meters for all residential and commercial electric customers inside city limits and deployed supporting two-way communications infrastructure. Through the project, Fulton has been able to offer advanced electricity services to customers across the city's entire customer base. These services including the launch of a new energy management web portal to engage customers and help them analyze and reduce electricity usage and monthly bills.

#### Objectives

The advanced metering infrastructure (AMI) system enables remote connect/disconnect functionality, automated meter reading, and near-real time information exchange between the meters and utility back office systems. The AMI system also improves Fulton's outage management capabilities by providing dispatchers with more accurate outage location and restoration information from the meters. Through the implementation of new AMI-enabled energy management tools, customers are empowered to exercise more control over their monthly bills.

#### Deployed Smart Grid Technologies

- **Communications infrastructure:** The project deployed a radio-frequency-based meter communications network and a fiber optic backhaul network.
- **Advanced metering infrastructure:** The project deployed residential, commercial, and industrial AMI meters system-wide for a total of 5,505 meters. The smart meters support remote meter reading, generate hourly interval and event data, provide outage notification, and enable remote connect/disconnect operations. The meters also provide voltage monitoring capabilities that can be leveraged for future deployment of distribution voltage control devices.

#### Benefits Realized

- **Reduced fuel usage and pollutant emissions:** The project has saved fuel and avoided pollutant emissions, thanks to both more efficient crew dispatching and the elimination of manual meter reading.
- **Improved outage management:** The AMI system has improved Fulton's outage management capabilities by providing dispatchers with more accurate outage location and restoration information.
- **Enhanced interactions:** Fulton will leverage the capability of the AMI meters to interact with the city's supervisory control and data acquisition (SCADA) and Midwest Independent System Operator (MISO) systems.

#### Lessons Learned

August 2014

#### At-A-Glance

Recipient: City of Fulton

State: Missouri

NERC Region: SERC Reliability Corporation

Total Project Cost: \$3,055,282

Total Federal Share: \$1,527,641

Project Type: Advanced Metering Infrastructure  
Customer Systems

#### Equipment

- 5,505 Smart Meters
- AMI Communications Systems
  - Meter Communications Network (Radio Frequency)
  - Backhaul Communications (Fiber Optic Cable)
  - 107 Collectors
- Customer Web Portal

#### Key Benefits

- Reduced Meter Reading Costs
- Reduced Operating and Maintenance Costs
- Reduced Costs from Equipment Failures and Theft
- Reduced Truck Fleet Fuel Usage

**City of Fulton, Missouri** *(continued)*

- Fulton found it necessary to invest significant time and effort in vetting the various AMI system vendors to determine how each technology solution would integrate and operate with existing utility systems such as billing and SCADA.
- Project teams undertaking a major smart grid implementation should divide up the total scope into manageable, smaller projects, making sure each component is operational before moving to the next piece of scope. Regression test after each new release to ensure previously deployed systems are still working as designed.
- When non-utility project personnel are dealing with customers or working on customer property, the utility should have a representative present whenever possible. Customers are more comfortable with a utility employee.

**Future Plans**

Fulton plans to leverage the AMI system's voltage monitoring capabilities to improve voltage quality across the system. In addition, AMI meters will be connected to traffic control devices (i.e., stoplights) to automatically report outages to the police department so that an officer can be dispatched quickly to the outage site. This idea has inspired the monitoring of other grouped meters (similar to those connected to traffic lights). Currently, all wastewater electric meters for lift stations and other wastewater facilities are being monitored. The aim is to determine the effectiveness of group meter monitoring for possible system-wide deployment in the future.

**Contact Information**

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