

## City of Leesburg, FL

### Leesburg Smart Grid Investment Grant Project

#### Abstract

The City of Leesburg's (Leesburg) Smart Grid Investment Grant project involves a city-wide deployment of advanced metering infrastructure (AMI), new customer systems, and expansion of distribution automation capabilities. Leesburg is providing consumer education to help customers use the new devices and usage information to their full potential. The project also automates and increases the efficiency of portions of the electric distribution system through the deployment of automated voltage capacitors, fault indicators, and automated reclosers. These devices improve power quality, reduce line losses, and reduce the duration and number of customers affected by power outages.

#### Smart Grid Features

The **communications infrastructure** uses fiber optic networks connecting critical infrastructure to distribution substations for two-way communications and data backhaul. The IP-based smart meter mesh communications network data is also backhauled over the fiber optic networks. Point-to-point radios are used to control of capacitor banks. Additionally, the smart meters are equipped with a ZigBee customer interface enabling two-way communication between the utility and customer premise.

**Advanced metering infrastructure** includes the deployment of 23,000 smart meters with remote service switches, which enable Leesburg to respond to customer requests more efficiently while reducing transaction costs. Outage notification and restoration information provided by the smart meters are integrated with a new outage management system and help reduce the duration and cost to restore service. A portion of the smart meters will be used to obtain voltage and power quality data for distribution planning and operations.

**Advanced electricity service options** offered through the project include providing programmable communicating thermostats to a select number of residential customers. Customer Web portals that display electricity usage information and corresponding billing histories are made available to all customers. In addition, Leesburg is

#### At-A-Glance

Recipient: City of Leesburg

State: Florida

NERC Region: Florida Reliability Coordinating Council

Total Budget: \$19,497,625

Federal Share: \$9,748,812

Project Type: AMI and Customer Systems Electric  
Distribution Systems

#### Equipment

- 23,000 Smart Meters
- AMI Communication Systems
  - Meter Communications Network
  - Backhaul Communications
- Meter Data Management System
- Customer Web Portal Access for All Customers
- 150 Programmable Communicating Thermostats
- Distribution Automation Equipment for 25 of 25 Circuits
  - Distribution Automation Communications Network
  - SCADA Communications Network
  - 2 Substation Transformers
  - 15 Distribution Feeder Breakers w/ IED controls
  - 13 IED controls in existing Feeder Breakers
  - 17 Automated Distribution Reclosers
  - 15 Automated Capacitors
  - 2 Equipment Condition Monitors
- 9 Distributed Energy Resources Interfaces

#### Time-Based Rate Pilot Programs under Consideration

- Time of Use
- Peak Time Rebates

#### Key Targeted Benefits

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

**City of Leesburg, FL (continued)**

considering offering net-metering and pre-payment plans to their customers.

**Time-based rate programs** under consideration include peak time rebates and time-of-use rates to enable customers to lower their electricity costs by managing the times during which they use the most electricity. In addition to lowering customer electricity costs, the new rates are designed to shift and reduce the peak load.

**Distribution automation systems** include voltage and capacitor automation systems, single and three-phase automated recloser switches, and fault indicators. The single and three-phase reclosers improve distribution system reliability by reducing the number of customers affected and the time needed to locate, isolate, and repair faults. Four distribution feeder breakers serving 3,700 customers are integrated in an automated network of ten fiber optic connected reclosers and network a controller designed identify the fault location, isolate the fault, and restore service to unaffected portions of the network (Fault Location, Isolation and Service Restoration, or “FLISR”).

**Distribution system energy efficiency improvements** involve automated capacitor banks with reactive power control functionality on the distribution circuits that have voltage constraints. This equipment provides improved power quality for customers, improved distribution efficiency, and reduced distribution line losses.

**Distributed energy resources interface and control systems** involve new controls and communication interfaces on eight existing standby generators located at municipal facilities. These devices enable the generators to operate more efficiently and effectively when needed during peak demand events.

**Timeline**

Key Milestones	Target Dates
Distribution automation asset deployment begins	Q4 2010
AMI asset deployment begins	Q2 2012
AMI asset deployment ends	Q2 2012
Distribution automation asset deployment ends	Q2 2014

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