

## Atlantic City Electric Company

### Smart Grid Project

#### Abstract

The Atlantic City Electric Company's (ACE) SGIG Distribution Automation project is deploying distribution automation assets, direct load control devices, and a wireless communications network. Direct load control devices are being offered that provide financial incentives for customers for allowing ACE to cycle air-conditioners or control thermostats during peak periods. Distribution automation devices, which include substation smart devices, equipment condition monitors, and automated feeder reclosers/switches and capacitors, improve the reliability and power quality of the distribution system. These systems also reduce operation and maintenance costs as well as distribution line losses.

#### Smart Grid Features

**Communications infrastructure** includes a radio mesh network supporting both the distribution automation and the direct load control devices. The network includes data collectors (access points), mesh repeaters, and end devices. The data collectors connect via a point-to-multipoint network to radio towers on a fiber-optic network, which transmits the data to the head end system.

**Direct load control devices** include 42,000 air-conditioning load control switches. Participating customers can choose from a switch mounted outside near the air conditioning unit, or a programmable communicating thermostat installed in the home. Both devices cycle air conditioning units off and on during peak load times or system emergencies, in response to a wireless radio signal sent by ACE. The direct load control program includes a bill credit for participating customers.

**Distribution automation systems** include new automated feeder reclosers/switches and associated controllers, capacitor controllers, substation transformer monitors, electronic substation relays, substation Distributed Remote Terminal Units (DRTU), and Automatic Sectionalizing and Restoration (ASR) programs. Automated feeder reclosers/switches, electronic relays, DRTUs, and the ASR programs work together to detect and isolate faults more precisely, and reduce the number of customers affected by the power outage. Substation transformer monitors analyze the gasses in the transformer insulating oil to help ACE know when to perform maintenance and avoid equipment failure before it causes a power outage. Together, these distribution automation technologies help improve reliability and operational efficiency.

#### At-A-Glance

**Recipient:** Atlantic City Electric Company

**State:** New Jersey

**NERC Region:** ReliabilityFirst Corporation

**Total Budget:** \$37,804,712

**Federal Share:** \$18,700,000

**Key Partner:** Pepco Holdings

**Project Type:** Electric Distribution Systems

#### Equipment

- 42,000 Air Conditioner Direct Load Control Devices
  - Programmable Communicating Thermostats
  - Outdoor Cycling Switches
- Distribution Automation Equipment for 27 out of 345 Circuits (300 are 12KV and below)
  - Distribution Automation Communications Network
  - Control of 163 Automated Distribution Circuit Reclosers / Switches
  - 150 Automated Capacitors
  - 21 Transformer Health Sensors/Monitors
  - Upgrading 8 Substations with smart devices

#### Key Targeted Benefits

- Improved Electric Service Reliability and Power Quality
- Reduced Operating and Maintenance Costs
- Reduced Costs from Equipment Failures and Distribution Line Losses
- Reduced Greenhouse Gas and Criteria Pollutant

**Atlantic City Electric Company** *(continued)*

**Distribution system energy efficiency improvements** involve the addition of automated controls on capacitor banks that are centrally controlled. These devices help ACE better regulate reactive power in the distribution system and manage power factors and voltages to tighter tolerances, improving power quality while reducing energy losses.

**Timeline**

Key Milestones	Target Dates
Direct load control asset deployment begins	Q1 2010
Distribution automation asset deployment begins	Q2 2010
Distribution automation asset deployment ends	Q4 2013
Direct load control asset deployment ends	Q4 2013

**Contact Information**

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