

PECO

Smart Future Greater Philadelphia

Abstract

PECO's Smart Future Greater Philadelphia project includes deployment of advanced metering infrastructure (AMI) and distribution automation assets. AMI supports new electricity pricing programs for customers and pilot programs, such as in-home devices that provide energy information and energy usage control. Distribution automation helps PECO improve service to customers and reduce energy loss by managing circuit voltages. These systems help PECO improve operational efficiency and service quality for customers.

Smart Grid Features

Communications infrastructure is multi-tiered and includes a high-bandwidth fiber optics and microwave "core" network for Tier 1; a medium-bandwidth radio frequency "backhaul" for Tier 2; a low-bandwidth radio frequency "field area network" for Tier 3; and supports home area networks for Tier 4. The project includes installing 340 miles of fiber optic cable connecting 61 substations for the Tier 1 core network and providing new digital communications for existing system telemetry, voice, and protection applications; the Tier 2 wireless backhaul network connecting Tier 3 to Tier 1; and a Tier 3 network providing system-wide communications for AMI and distribution automation. The new communications infrastructure supports more flexible and reliable operation of the distribution system while providing PECO the ability to add future programs and functionality for its customers.

Advanced metering infrastructure includes an accelerated deployment of 600,000 smart meters, a meter data management system, and the integration of AMI with existing back-office systems. PECO's AMI supports outage and restoration notifications and a remote service switch that enables PECO to respond to outages and customer requests more efficiently.

Advanced electricity service options include the deployment of in-home displays and programmable communicating thermostats. These devices, in conjunction with customer Web portal access, facilitate two-way information exchange and enable customers to better manage their electricity bills through improved understanding of electricity consumption patterns of appliances and equipment. In addition, PECO will engage in

At-A-Glance

Recipient: PECO

State: Pennsylvania

NERC Region: ReliabilityFirst Corporation

Total Budget: \$415,119,000

Federal Share: \$200,000,000

Project Type: Integrated and/or Crosscutting
Systems

Equipment

- 600,000 Smart Meters
- AMI Communication Systems
- Web Portal Access
- In-Home Displays
- Programmable Communicating Thermostats
- Distribution System Automation/Upgrades for 75 of 2,278 Circuits
 - Distribution Management System/SCADA
 - Intelligent Substation Upgrades
 - Feeder Monitors/Indicators
 - Automated Feeder Switches
 - Capacitor Automation Equipment

Dynamic Pricing Programs

- Time of Use
- Dynamic Pricing (Critical Peak Pricing)

Key Targeted Benefits

- Reduced Electricity Costs for Customers
- Improved Electric Service Reliability and Power Quality
- Reduced Costs from Equipment Failures, Distribution Line Losses, and Theft
- Deferred Investment in Distribution Capacity Expansion
- Reduced Truck Fleet Fuel Usage
- Reduced Greenhouse Gas and Criteria Pollutant Emissions

PECO (continued)

customer education and outreach to the public on availability and benefits of these in-home technologies, as well as other components of the project, including the basics on smart meters and dynamic pricing options.

Advanced pricing programs educate customers about dynamic pricing options and encourage them to take action during times of high electricity prices. Dynamic pricing options include critical peak pricing and time-of-use rates plus technologies such as programmable communicating thermostats and in home displays. PECO’s plan has been developed involving input from stakeholders and the Pennsylvania Public Utility Commission (PAPUC). PECO also plans to conduct pilot demonstrations with a limited number of low-income (customer assistance programs, or CAP) customers provided with smart meters and in-home displays. The pilot is designed to help CAP customers understand how much energy they use and how their usage compares to their CAP rate monthly allowance. This information and the accompanying educational materials are designed to help these customers more effectively manage their energy consumption. PECO has already filed its dynamic pricing plan with the PAPUC and an order is expected no later than April 28, 2011. Details of the dynamic pricing options may change as a result of the Commission order.

Distribution automation systems include more than 100 new reclosers and communications upgrades for 300 existing reclosers. These devices will help reduce sustained outages and restoration times and improve operational efficiency. Systems also include intelligent substation upgrades with disturbance monitoring capabilities.

Distribution system energy efficiency improvements involve the integration of automated capacitor banks installed at two substations and a power quality monitoring system. The capacitors improve voltage and VAR control, power quality, and increase distribution capacity by reducing energy losses on the distribution system. Furthermore, the integration of distribution management system involves integration with the other distribution automation assets to enable PECO to manage power distribution to better match customer demand.

Timeline

Key Milestones	Target Dates
Distribution asset deployment begins	Q3 2011
AMI asset deployment begins	Q2 2012
AMI and distribution asset deployment ends	Q2 2013

Contact Information

Lawrence Grant
Smart Grid/Smart Meter Compliance Reporting Lead
PECO Energy Company
Lawrence.Grant@exeloncorp.com
Recipient Team Project Web Site: www.peco.com/aboutpeco/smartmeterssmartfuture/