Consolidated Edison Company of New York, Inc.

Smart Grid Deployment Project

Abstract

The Consolidated Edison Company of New York, Inc. (Con Edison) Smart Grid Deployment project involves the deployment of smart grid systems and components to enhance electric distribution planning and operations. It is aimed at reducing operations and maintenance costs and deferring distribution capacity investments while increasing distribution system efficiency, reliability, and power quality. The project is deploying various types of distribution automation equipment such as substation and feeder monitors, automated switches, and capacitor automation devices on 1,388 feeder lines to improve operational efficiency and control. When combined with the integration of distribution management systems and supervisory control and data acquisition (SCADA) systems, the automated devices allow Con Edison to better control its distribution system and improve the reliability of its electricity service.

At-A-Glance

Recipient: Consolidated Edison Company of New York, Inc.

State: New York and New Jersey

NERC Region: Northeast Power Coordinating Council

Total Budget: $272,341,798

Federal Share: $136,170,899

Key Partner: Orange and Rockland Electric Utilities, Inc.

Project Type: Electric Distribution Systems

Equipment

- **Distribution Automation Equipment for 938 out of 2,297 Circuits**
  - **New Distribution Management System**
  - **SCADA Communications Network**
  - **758 Automated Distribution Circuit Switches**
  - **450 Automated Capacitors**
  - **17,000 Equipment Condition Monitors**
- **Distributed Energy Resources Interface Capability**

Key Targeted Benefits

- **Deferred Investment in Distribution Capacity Expansion**
- **Improved Electric Service Reliability and Power Quality**
- **Reduced Costs from Equipment Failures and Distribution Line Losses**
- **Reduced Operating and Maintenance Costs**
- **Reduced Truck Fleet Fuel Usage**
- **Reduced Greenhouse Gas and Criteria Pollutant Emissions**

Smart Grid Features

Communications infrastructure includes an upgrade of existing radio sites for the SCADA system. The upgrade enables increased capacity and enhanced security through encryption and allows for automated communication and control of the auto loop reclosers. The project upgrades existing radio sites and complies with the North American Electric Reliability Council Critical Infrastructure Protection Requirements for data authentication and encryption.

Distribution automation systems include the deployment of automated sectionalizing switches with SCADA control. The switches allow for rapid restoration of electricity loss to sections of the grid affected by an outage as well as reduced restoration time as faults are easier to locate. Additionally, Con Edison is deploying approximately 17,000 transformer condition-monitoring devices that use the power line communications infrastructure to alert Con Edison of any problems with the distribution equipment. The sensors enable maintenance crews to perform targeted preventative maintenance, thus reducing the number of equipment failures and outages. The automated sectionalizing switches and the equipment condition monitors help to increase reliability while reducing operations and maintenance costs.

Distribution system energy efficiency improvements involve the integration of capacitor automation and a power quality monitoring system. The enhancements are being made to the 4kV portion of the grid (the 4kV portion of the grid consists of the primary feeders that deliver power to homes, such as the overhead wires seen in residential

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neighborhoods) and are aimed at improving the power quality of the grid and reducing operations and maintenance costs. The capacitors improve voltage control, power quality, and increase distribution capacity through grid efficiency.

Distributed energy resources interface capability involves the deployment of secure two-way wireless communication to approximately 180 network type underground distribution transformers. The cyber secure communication system will allow for distributed generation to be fed into the grid without causing safety issues, reliability issues, or damage to the grid. When the project is completed, the communication infrastructure will be used to implement flexible monitoring and control of the distribution system to enhance efficiency, reliability, power quality, and enable integration of distributed generation such as solar and combined heat and power (CHP) in the future.

Timeline

Key Milestones	Target Dates
Distribution automation asset deployment begins	Q2 2010
Distribution automation asset deployment ends	Q1 2014

Contact Information

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