

Central Lincoln People's Utility District

Smart Grid Team 2020 Program

Abstract

Central Lincoln People's Utility District (Central Lincoln PUD) is deploying advanced metering infrastructure (AMI) and distribution automation assets as part of their Smart Grid Team 2020. The AMI project consists of a system-wide deployment of smart meters to its customers as well as a communications infrastructure to gather the smart meter data. The two-way communication provided by the AMI will allow Central Lincoln PUD to deploy direct load control devices and pricing programs in the future and a customer energy management web portal in the near term. In addition to the AMI, Central Lincoln PUD is also upgrading its electric infrastructure with an enhanced SCADA system, installation of an Outage Management System, fiber optic cable, and automated distribution feeder controls, regulators and fault indicators. The enhancements improve power quality, system reliability and system efficiency.

Smart Grid Features

Communications infrastructure includes a mesh radio frequency and fiber optic cable network connecting the system-wide deployment of smart meters. The network provides the necessary communication to enable smart grid features such as customer energy management tools and advanced pricing programs. The distribution automation deployment is being supported by a fiber optic network connecting all substations to the control center. Distribution automation devices located on the feeders are connected back to the substations via a high-speed wireless connection.

Advanced metering infrastructure includes the system-wide deployment of 38,500 smart meters to residential, commercial and industrial customers. The smart meters enable two-way data transfer between the end users and the utility, providing the necessary functionality for smart grid programs. Residential meters are equipped with remote service disconnect and wireless home area network capability.

At-A-Glance

Recipient: Central Lincoln People's Utility District

State: Oregon

NERC Region: Western Electricity Coordinating Council

Total Budget: \$19,873,900

Federal Share: \$9,936,950

Project Type: Integrated and/or Crosscutting Systems

Equipment

- 38,500 Smart Meters with Zigbee Module
- AMI Communication Systems
 - Meter Communications Network
 - Backhaul Communications
- Meter Data Management System
- Web Portal Access for All Customers
- Distribution System Automation
 - Communications Equipment/SCADA
 - Outage Management System (OMS)
 - Conservation Voltage Regulation
 - Automated Feeder Switches
 - Automated Reclosers
 - Regulator Automation Equipment
 - Fault Indicators
 - Transformer Monitors
 - Investigation of-Home Devices

Technology for Future Programs

- Time-of-Use and Critical Peak Pricing
- In Home energy monitors and Load Control Devices

Targeted Benefits

- Improved Electric Service Reliability and Power Quality
 - Reduced Costs from Distribution Line Losses and Theft
 - Reduced Electricity Costs for Customers
 - Reduced Greenhouse Gas and Criteria Pollutant Emissions
 - Reduced Meter Reading Costs
 - Reduced Operating and Maintenance Costs
 - Reduced Truck Fuel Usage
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Advanced electricity service options include a customer web portal for all customers receiving smart meters and in-home displays for those customers without internet access. The information exchange between the customers and the utility provided by the web portal and in-home displays will enable customers to better manage their electricity use and costs.

Distribution automation systems include the deployment of automated feeder line sectionalizing switches which allow feeders to be reconfigured remotely to reduce the affected area in the event of a fault or to handle unexpected changes in electricity demand. These assets working together improve distribution system reliability, stability, and operational efficiency.

Distribution system energy efficiency improvements include the implementation of conservation voltage regulation. Automated regulators deployed at the substation enable the conservation voltage regulation and allow for more efficient power distribution and improved power quality delivered to the customers.

Timeline

Key Milestones	Target Dates
AMI asset deployment begins	Q2 2010
Distribution automation asset deployment begins	Q4 2010
Distribution automation asset deployment complete	Q4 2013
AMI asset deployment complete	Q4 2012

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