

CenterPoint Energy Links Electricity and Communications to Create a Smart Grid

"The Advanced Metering System is our first step in developing a smart grid – comprised of technology, automation and electrical infrastructure integration."
Kenny Mercado, Senior Vice President of Advanced Metering Deployment,
CenterPoint Energy

"We selected WiMAX technology for our AMS because it enables the rugged, secure, scalable, two-way, high-speed private communications infrastructure necessary to achieve the Smart Grid outcomes desired." - Don Cortez, Division Senior Vice President Technology, CenterPoint Energy

CenterPoint Energy announced its Energy InSightSM program in early 2009. Energy InSight highlights CenterPoint's Energy Smart Grid initiatives and will integrate the technologies necessary to transform the way energy is bought, delivered, and used by consumers, retail electric providers (REPs), and the electric utility.

As the first step in deploying a Smart Grid for Houston, Texas, CenterPoint Energy's electric transmission and distribution subsidiary embarked on an effort to create an Advanced Metering System (AMS) of more than 2 million electric meters, over five years, across its electric service territory.

Establishing a Communications Infrastructure for the AMS

The key to any AMS is the retrieval and collection of meter data. The challenge for CenterPoint Energy was how to connect the 7,000 Itron OpenWay meter data collection devices to be located throughout the 5,000 square mile territory, needed to collect meter data and communicate with the meters being deployed into its private network.

CenterPoint Energy considered a number of different communications technologies. Critical to the selection of a technology and a vendor were the following minimum requirements:

- support for cyber security standards and support of open networking standards and protocols
- ability to provide high reliability and system availability
- ability to provide the bandwidth for network loading and future network capacity
- robust network management tools and processes
- a proven track record satisfying the needs of utility communication systems
- scalable to support the build-out over a five-year period
- rugged enough to withstand Houston's harsh weather conditions including heat, humidity, and hurricanes



Company:

CenterPoint Energy - Electrical Transmission & Distribution
Subsidiary

www.centerpointenergy.com

Headquarters:

Houston, Texas

Overview:

CenterPoint Energy, Inc. is a domestic energy delivery company that includes electric transmission & distribution, natural gas distribution, competitive natural gas sales and services, interstate pipelines, and field services operations. The company serves more than five million metered customers primarily in Arkansas, Louisiana, Minnesota, Mississippi, Oklahoma and Texas.

GE Products and Services:

- MDS Mercury 3650
- Engineering Services
- Network Design
- Project Management
- Support Services

Project Scope:

- Create and deploy an Advanced Metering System (AMS) for more than 2 million meters over five years
- Total capital expenditure of approximately \$640 Million
- Installation and complete integration of the Itron OpenWay meters and data collection devices
- Installation and complete integration of communications technologies including GE Digital Energy's MDS Mercury 3650 WiMAX radios and wireless access points
- Installation and complete integration of back office systems including a meter data management system

AMS Benefits:

- Help consumers achieve energy efficiency & facilitate faster transactions
- Allow Retail Electrical Providers (REPs) to expand service offerings
- Create operational efficiencies for CenterPoint Energy

CenterPoint Energy chose GE Digital Energy's MDS Mercury 3650 radios for its AMS communications network to provide network connectivity from the meter data collection devices to the existing CenterPoint Energy private network. In addition, GE Digital Energy will be providing the engineering, program management, and support services that will map out the WiMAX network and make it a reality.

How the AMS Communications Will Work

The AMS network will collect the data from the meters and pass it to the meter data collection devices over a wireless mesh network. Each of these 7,000 meter data collection devices will connect to a MDS Mercury 3650 WiMAX radio, which will transmit the meter information to one of approximately 100 MDS Mercury 3650 radio access points. The meter information will then be transmitted to CenterPoint Energy's data center, where the meter information will be stored and processed.

The Deployment

The AMS deployment started in January 2009 and the first meter was installed by March 1, 2009. By August 1, 2009, CenterPoint Energy had a functioning AMS and had deployed over 45,000 meters, over 300 meter data collection devices, 300 associated MDS Mercury 3650 WiMax radios, 11 MDS Mercury 3650 Radio access points, and the Itron and eMeter systems necessary to manage the meter information.

By the end of 2009, CenterPoint Energy's AMS deployment will have expanded to include more than 145,000 meters, 773 meter data collection devices, 773 MDS Mercury 3650 radios, and 26 MDS Mercury 3650 radio access points across Houston.

The Benefits of CenterPoint Energy's AMS

CenterPoint Energy's AMS, through its Energy InSight program, will help transform the purchase, delivery, and use of energy and will enable a business and electric market transformation. On-demand transactions and near real-time services - such as automated outage notification, remote meter reading, and remote connect/disconnect - will require new business processes.

CenterPoint Energy's goals of the AMS are to help Houston-area consumers achieve energy efficiency and cost savings by enabling user friendly access to detailed consumption information.

For REPs, the AMS will expand their ability to develop new service offerings including time-of-use rates and critical peak pricing, and establish a platform to offer future home appliance monitoring and control.

For the future Smart Grid, the AMS will enable more effective loading of utility assets, increased proactive monitoring and diagnostics to enhance the life of utility assets such as lines and transformers, and improve line fault detection and diagnostics.

AMS is also an environmentally friendly solution that will enable demand-side management, facilitate integration of solar and wind generation into the grid, and promote energy efficiency through greater awareness of energy consumption by consumers.



AMS Data collection point with MDS Mercury 3650 Radio