



Eaton's advanced metering solutions empower St. Clairsville with real-time utility intelligence

Location:

St. Clairsville, Ohio

Challenge:

Upgrade electric and water monitoring systems with two-way advanced metering infrastructure to create operational efficiencies and improve overall municipal utility service

Solution:

Turnkey implementation of Eaton's Cooper Power™ series Advanced Metering Infrastructure (AMI) and Yukon™ enterprise software platform, enabling enhanced customer service, outage management and demand response

Results:

Accurate, real-time electric and water consumption information along with extensive tools to save energy, reduce costs and increase reliability—allowing the City of St. Clairsville to better anticipate and respond to system disturbances, improving customer service

"The system not only frees up our personnel to perform other critical tasks, but also translates to annual savings of more than \$200,000."

*Dennis Bigler, service director,
City of St. Clairsville*

Background

St. Clairsville, a city in Belmont County, Ohio, is nicknamed "Paradise on the Hilltop." The City provides utility services for its residents and, with a population of over 5,000, operates approximately 3,000 electric and 2,400 water meter points.

The City's Light & Power department, now celebrating its 125th anniversary, has been lauded by American Municipal Power, Inc. (AMP), a major municipal power supplier, for its dedication to improvements for community utility systems. It received a 2014 AMP Safety Award in the transmission/distribution category, and was also awarded for Public Power Promotion and Environmental Stewardship in 2013 and for System Improvement in 2012 and 2010. The municipal water system was formed in 1922.

Challenge

In alignment with its efforts to continually enhance service for its community, St. Clairsville decided to transition to a fully functional two-way smart grid network. The project would require a large initial investment, but would ultimately enable a wide range of cost-saving opportunities that would better prepare the City to meet future demands.

St. Clairsville used a thorough process to evaluate available solutions that would meet its goals of increasing operational efficiencies, improving customer service and providing tools for customers to better make decisions with regard to energy and water consumption.

The decision was made to proceed with a two-way radio frequency (RF) network across its service territory to facilitate advanced metering infrastructure (AMI), outage response and distribution automation capabilities. Upon completion of a detailed vendor analysis, St. Clairsville chose to move forward with Eaton's Cooper Power series AMI and Smart Grid solution.



Powering Business Worldwide

Eaton was selected to support the project because of its large feature set, compatibility with multiple meter manufacturers, industry-leading application support and the flexibility to ensure the needs of all departments were met, from billing to operations.

“Following our detailed analysis, we realized very few vendors could offer a comprehensive system that met our goals for both electric and water monitoring,” said Dennis Bigler, service director for the City of St. Clairsville. “However, the largest selling point was the implementation support Eaton was able to provide, which would help make the system-wide upgrades as painless as possible for our staff and residents.”

Solution

The City of St. Clairsville contracted Eaton to begin the transition by installing the RF infrastructure and electric nodes in February 2014. Water meter change-outs followed in March 2014.

The new meters would serve as the point of communication between customers and St. Clairsville, providing accurate consumption data, outage information and system engineering data.

Eaton’s solution for St. Clairsville featured a self-configuring, self-healing, self-managing RF mesh network that provides bi-directional connectivity to intelligent endpoints and the back office. This enables real-time support for electric and water meters and provides capability to deploy load control switches and distribution automation controls all on one network.

Eaton’s RF mesh network solution is a secure mesh-networking architecture of robust and intelligent meter nodes. The license-free 900-megahertz mesh network provides an integrated solution for meter reading, as well as demand response and distribution automation.

St. Clairsville uses the RF mesh network to filter information into Eaton’s powerful Yukon AMI software platform for real-time data acquisition, logging and management. Yukon software is an innovative, flexible and intelligent platform that is scalable for all types of deployments and supported by a full-time team of dedicated personnel.

The browser-based client software platform allows users across all areas of the utility to take advantage of data acquisition and analysis capabilities. Specific features of the AMI software allows St. Clairsville to:

- Improve accuracy and punctuality of billing and collections
- Quickly identify outages or unusual usage patterns
- Monitor voltage conditions in real-time
- Conduct research and other day-to-day processing of AMI data in an energy-based business

By using the Yukon platform, St. Clairsville could leverage its new advanced metering infrastructure for outage response, intelligent control and distribution automation—all within a single dashboard.

This functionality gives customer service representatives the information they need to efficiently handle customer inquiries. The solution also empowers customer service agents with accurate, near real-time information about consumption, enabling informed energy usage decisions as well as a more uniform billing cycle.

In addition, the platform provides St. Clairsville with the unique ability to easily expand in the future to support advanced functionality and Smart Grid applications.

Results

Municipal electric and water services for St. Clairsville were greatly enhanced by using Eaton’s Cooper Power series AMI technology for real-time monitoring and control of its distribution systems. The technology is also providing the tools necessary to improve productivity and create efficiencies that improve customer service.

With detailed real-time information on usage, demand, voltage and momentary and sustained outages versus monthly reads of consumption information, the system provides the analytics needed by St. Clairsville to plan for future system improvements.

“We’ve estimated that by automating our readings, the AMI system provides the labor equivalent of more than two people over the course of the year,” said Bigler. “The system not only frees up our personnel to perform other critical tasks, but also translates to annual savings of more than \$200,000.”

In addition, the new system is providing the electric and water departments with real-time alarm system detection, so St. Clairsville can be immediately made aware of system outages, voltage fluctuations or issues like water line breaks. This capability helps customers avoid the cost associated with wasted water and allows the utility to troubleshoot issues before sending maintenance teams to customer sites.

“The platform allows us to pull a report each morning that indicates unusual or continuous usage,” explained Bigler. “We’ve already been able to inform several customers who were completely unaware of their water system issues, which were then addressed before they became a major billing concern or led to costly structural damage.”

“We’ve also had instances where a house with continuous water usage was found to be vacant,” Bigler continued. “In these cases, the ability to detect abnormal water usage, and notify our customer, has prevented significant damage and countless headaches for homeowners.”



To summarize, Eaton is helping the City of St. Clairsville realize the following benefits:

Advanced reliability

The intelligent system immediately lets users and City departments identify outages and unusual consumption rates. Its advanced capabilities can be used to prevent many outages before they occur, and restore service faster when they do.

Reduced costs

In the long term, St. Clairsville’s investment in Eaton’s Cooper Power series AMI technology helps the City achieve much higher efficiency throughout its electrical and water systems. Notably, the ability to immediately detect issues such as water line breaks prevents the wasting of resources.

Improved customer service

Instead of having to deploy service personnel to read customer meters each month, St. Clairsville’s utility office can take fully automated, hourly reads that are logged for future analysis. This capability enables customer support staff to easily handle billing complaints and power quality issues.

Additionally, the platform facilitates remote disconnects and reconnects that minimize collection issues, increase the safety of utility personnel and translate into quicker service for customers.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

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