



## Michigan Electric Utility

by Dan Belmont and Tim Valin

**Industry and communication network expertise help build a plan for accelerating adoption and deployment of Smart Grid technologies.**

### The client.

The client is a regulated Investor Owned Utility (IOU) that provides electric service to approximately 60,000 customers in Michigan's Upper Peninsula. The utility's small customer base is spread over 6,000 square miles and across 10 of the state's 15 counties.

### A mandate to improve efficiency.

This utility currently sends employees to read meters manually—a labor- and time-intensive process given the company's large service area. To improve efficiency and productivity, the utility sought to develop a plan for building a communication network that will enable automated meter reading, Time-of-Use (TOU) rates, and home energy displays (HED), as well as remote disconnect and reconnect functionality. One of the keys to enabling this functionality will be the ability to transmit data between Advanced Metering Infrastructure (AMI) enabled meters and the utility's back-office equipment. The communication system not only must be cost effective; it must be able to operate reliably in the area's extreme weather conditions and rough topography.

In addition, the utility wanted the new network to:

- ◆ Accelerate the deployment and adoption of Smart Grid technologies and enable utility customers to better manage their energy usage.
- ◆ Reduce operating expenses.
- ◆ Improve its overall safety record.
- ◆ Improve key customer service metrics as well as the overall customer experience.
- ◆ Reduce greenhouse gas emissions.

For assistance evaluating the requirements for building a communication network to support AMI implementation, the utility turned to West Monroe Partners. West Monroe Partners demonstrated extensive experience planning, designing, and implementing large-scale wired and wireless IP networks for Smart Grid applications.

### A cost-effective, dual-network design.

West Monroe Partners worked with the utility to:

- ◆ Create a business case and document the benefits associated with its proposed project.
- ◆ Design a communications network that meets all of the security standards inherent in the operation of the electrical grid and integrates seamlessly with all of the back-end systems supporting the utility and its customers.

Because the utility wanted to pursue the most cost-effective approach for enabling AMI, the project team designed a solution utilizing two networks: a higher-bandwidth backhaul network and a lower-bandwidth point to multipoint network. The project team also considered a variety of potential technologies, including wired, licensed wireless, and unlicensed wireless—evaluating each for up-front capital cost, ongoing maintenance cost, and available bandwidth. Because the initial network bandwidth requirements were such that a 45-60 Mbps backhaul solution could be combined with a 2 Mbps point to multi-point solution, the utility ultimately selected an unlicensed wireless ring network backhaul configuration and licensed low-frequency point to multipoint solution.

Finally, West Monroe Partners drew on its internal infrastructure and networking expertise to ensure that the design would work as promised.

### A solid plan and sound grant application.

Through its extensive analysis and development of a communications network design, West Monroe Partners not only helped the utility prepare for taking the next steps in moving toward AMI capabilities. It also supported the utility in filing an application for a Smart Grid Investment Grant opportunity as part of the American Recovery and Reinvestment Act—funding that the utility hopes to use to put its plans in motion.

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