



Great River Energy Offers Reliable Utility Services with Cisco IoT

Optimizing energy operations with industrial IoT solutions

Overview

Great River Energy, the second largest electric power supplier in Minnesota, is a not-for-profit electric cooperative that provides wholesale electric service to 28 member-owner distribution cooperatives serving customers across the state and parts of Wisconsin. They needed to replace aging equipment on a mass scale without disrupting service. Cisco IoT-enabled routers and switches help ensure always-on connectivity for field communications to increase operational efficiency and improve customer experience.

Who is Great River Energy?

Industry:
Utility

Location:
Maple Grove, Minnesota (HQ)

Company size:
800 employees

“During a state-wide systems upgrade, having backup LTE was key. In one month alone, we gained an additional 10,000 hours of availability system-wide while electrical gear was being replaced.”

Eric Rupp

Principal network engineer at Great River Energy

Delivering reliable power is a top priority for any utility company, but it can be especially challenging in regions with extreme climates. Throughout blistering hot summers and long subzero winters, [Great River Energy](#) keeps their bulk electric services running smoothly across Minnesota, North Dakota and Wisconsin with a sophisticated IP network of Cisco industrial routers and switches.

Great River Energy, the second largest electric power supplier in Minnesota, is a not-for-profit cooperative that provides wholesale electric service to 28 member-owner distribution cooperatives that serve 700,000 families, farms and businesses across the state of Minnesota and parts of Wisconsin. The cooperative is owned and operated by the members it serves, and together they work for the benefit of all. Reliable communications for Great River Energy and all its member-owners is critical. With so much at stake, Great River Energy’s biggest challenge came when they needed to replace aging equipment on a mass scale.

Maximizing uptime during a large-scale migration

With a 56,000 square-mile service area encompassing more than 600 distribution and transmission substations, Great River Energy needed a robust, cost-effective and stable communications solution to support their hardware and technology refresh for the entire state of Minnesota.

“As hardware was being replaced, both old and new technologies could not co-exist in the same geographical area,” said Eric Rupp, principal network engineer at Great River Energy. “The challenge was keeping critical communications up to all substations during a multi-year project.”

Launching the effort in 2016, Great River Energy’s engineering team did a review and vetting of vendors offering compact industrial routers that are hardened for rough environments, and most importantly, have built-in LTE wireless connectivity. Having the backup LTE connection was vital for the hardware refresh as it would help provide a secure, reliable failover path during times field crews were replacing the primary 700 MHz point-to-multipoint solution.

Great River Energy chose the [Cisco IR829](#) industrial integrated services routers, with easy-to-manage 3G/4G LTE WAN cellular and wireless LAN connectivity, and Cisco Industrial Ethernet [IE 2000](#) switches to deliver superior communications services to industrial applications in the field. By mid-2018, Great River Energy had successfully deployed nearly 525 IR829 routers and up to 400 IE2000 switches – enabling Great River Energy to shut down nearly one-third of the network while crews across the state operated solely on LTE to upgrade the licensed 700 MHz equipment.

Allowing a substation to operate on backup LTE for a short time until repairs can be better coordinated has helped time management and field coordination.



“We basically needed to fuel the plane while it was in the air – and that would not have been possible without LTE,” Rupp said. “We calculated that in August alone, the backup LTE service gave us an additional 10,000 hours of availability system-wide while RF gear was being replaced.”

Increasing efficiency with flexible, always-on control

Cisco IR829 routers enable Great River Energy to meet nearly all of their requirements in a single device. Most notably, the LTE connectivity helps optimize service reliability for everyday business. “Our member-owners can have some pretty unique requirements, which sometimes meant outages for hours while we implemented changes. With these Cisco routers, we can give members an enterprise-grade backup link and guarantee 100 percent availability on all communications,” Rupp said.

Always-on connectivity also helps Great River Energy lower maintenance costs and improve operations. Previously, any communications outage meant dispatching technicians 24/7, including on weekends and holidays. It also meant scheduled construction work might be delayed since recovery efforts take priority.

“Allowing a substation to operate on backup LTE for a short time until repairs can be better coordinated has helped time management and field coordination,” Rupp said. “Most importantly, it has increased overall availability for our system operations team.”

Resources

[Cisco IR 829 Series Routers](#)

[Cisco IE 2000 Series Switches](#)

[Cisco IE 3000 Series Switches](#)

Great River Energy has been able to leverage LTE to get ahead of fiber installations. When building new or retrofitting existing substations, they have deployed Cisco IR829s using LTE to allow the metering and SCADA teams to complete their work while fiber is still being installed.

The easy-to-manage Cisco products also enable Great River Energy to provide field crews with a consistent control console across numerous sites, and use their own customized script to automate fast over-the-air updates. Great River Energy also helps drive success with guidance from Cisco. “Being able to stay tight with the support team was huge for us,” Rupp said.

Driving the future of the energy industry

While the Internet of Things (IoT) is rapidly transforming many industries, the energy industry has been slow to adopt the latest technologies because the cost of failure is too great, according to Rupp. When a substation goes down, it could be a catastrophic problem, and new solutions are needed to increase the viability of IoT for utilities.

Click here for more on [Cisco IoT solutions](#).