

POWER DELIVERY

Utility Telecommunications

DESIGN SERVICES

- > Utility telecommunication network planning and design
- > Ethernet design
- > SONET design
- > Design-build specifications
- > Communication studies
- > Microwave planning and design
- > Fiber optic design
- > Power line carrier design
- > Wide, metro and local area networks
- > IEC 61850
- > Migration planning
- > OPGW specification
- > Fiber-optic regenerator specification
- > Substation local area networks
- > NERC CIP security compliance

RELATED SERVICES

- > Owner's engineering
- > Long-range planning
- > System planning and analysis
- > System protection and control
- > SCADA automation and integration
- > Network engineering and design
- > Cybersecurity
- > Protective relay design and settings
- > Microwave path and line-of-sight surveys
- > FCC and FAA regulatory clearance
- > NERC/WECC reliability analysis
- > Vendor management and installation supervision
- > Communication towers
- > Radio interference studies (AM, FM, VORTAC, microwave)
- > Cost estimates



Save time, money

Communications systems are a critical link in your utility's operations today. They are vital to enabling emerging technologies in transmission, substation and distribution automation. They're also essential to achieving higher reliability and security standards.

Your decisions about communications systems can affect your current operations and future growth. POWER can take you through the maze of choices and challenges. We will help you avoid common pitfalls and head off potential issues, ultimately saving you time and money.

Systems for your needs

With expertise in SCADA design, substation automation and integration, protective relay system design and substation design and operation,

we can design systems that work best for you.

Our designs address today's challenges and provide flexibility that looks ahead to coming changes. This approach allows you to adapt your system to emerging technologies and future performance requirements.

You gain reliability

We actively engage vendors, monitor industry developments and perform system tests with vendor equipment in our NexStation Lab. We stay ahead of the trends that will affect your system's future.

Our experience encompasses a wide variety of communication media, protocols and equipment. You gain a secure and reliable system created using current industry standards and technology.

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We use senior-level engineers for project oversight, while relying on experienced dedicated design teams to perform the work. As a result, you gain high quality, but cost-effective solutions.

HARDWARE AND SOFTWARE EXPERIENCE

- > Nokia microwave radios
- > Nokia optical multiplexers
- > Aviat microwave radios
- > RFL IMUX 2000
- > Frame relay
- > GE JungleMUX multiplexers
- > SEL ICON
- > Cisco SONET WAN
- > Cisco routers and switches
- > Cisco DWDM equipment
- > Ciena routers and switches
- > Siemens, RuggedCom routers and switches
- > Hirschmann switches
- > Moxa switches
- > GE MDS radios
- > Siemens, Ruggedcom radios
- > ESTeem radios
- > CalAmp radios
- > Motorola radios
- > Motorola and MACOM 2-way radios
- > RLH fiber optic links
- > Pulsecam channel banks
- > EXFO's OTDR software
- > Pathloss 5.1
- > MapInfo

Project Highlights

Enbridge Inc.

An OC-3 SONET network and power line carrier system enabled connection of four substations to a 214-mile, 230 kV transmission line between Canada and the United States. Provided fiber and equipment specifications, design, configuration and commissioning for the redundant communication system. Provided support for Ethernet networking, voice, protective relaying, SCADA and remote engineering access.

Michels Power

New solar plant required two microwave point-to-point links in 6 and 11 GHz bands for relay protection and for such IT traffic as emails, data, voice and more. Provided turnkey engineering, including microwave path design, new tower specification, FCC and FAA permits, and testing supervision.

NV Energy

Provided design to replace fiber loop converter modules at 27 substations. Work included documenting removal of existing ADC fiber loop converters and installation of either new ADC or Larus Quad fiber loop converters. Provided on-site engineering and channel records prior to substation commissioning.

Otter Tail Power Company, Montana Dakota Utilities

Helped utilities maintain critical path scheduling for permitting to ensure timely and cost effective completion of the 165-mile, 345 kV project, the companies' biggest transmission project to date. Responsible for

redundant protection communication system study and developing the fiber-optic regenerator shelter design criteria. Also designed power line carrier system for a 165-mile-long transmission line.

U.S. Department of Energy

Performed a communications study to support a 500 kV transmission project. Reviewed NERC and WECC redundancy and reliability related to protective relaying requirements and SCADA interfaces. Conducted microwave feasibility study and a power line carrier system considered as the backup to the primary OPGW system.

East Texas Electric Cooperative

Cooperative had been collecting metering data from its member cooperatives through electronic and manual methods. ETEC needed a communication infrastructure to support the new, real-time monitoring system. Prepared a long-range strategic plan to meet this goal. Plan analyzed the capabilities and reliability of systems available on the market and provided alternatives and recommendations for a system that will be flexible enough for future technologies.