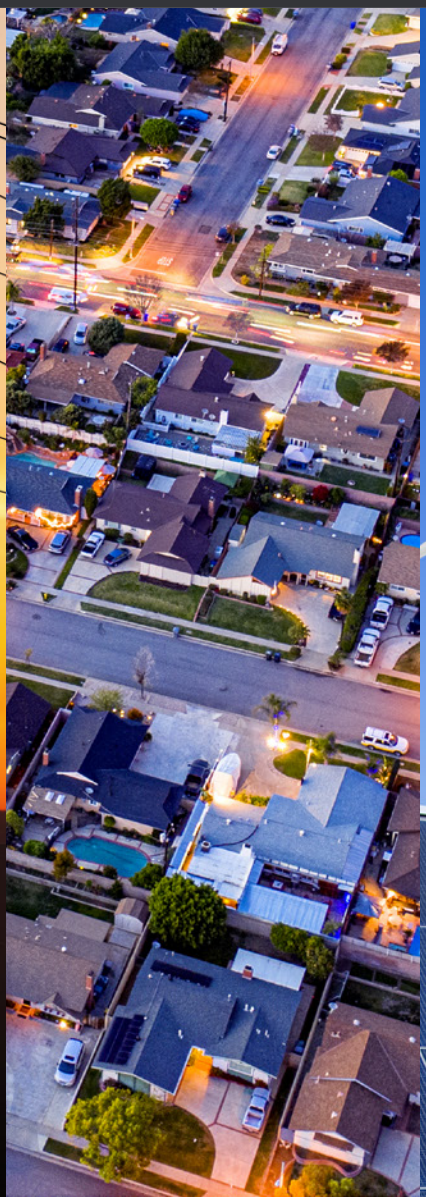
Digi Utility Solutions Guide



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Digi has helped utilities develop and manage connected systems for nearly four decades. From public power utilities to investor-owned utilities and co-operatives, these organizations recognize Digi as an established, trusted partner with industry-leading solutions, best-in-class security, the innovation to support ever-changing requirements, and professional services and support to manage any aspect of their planning and deployment. In this brief, we cover some of the key ways in which utilities today can improve operations and be prepared for what's next.

Reliable Connectivity and Control for Energy Operations

Whether you need to read thousands of customer meters, communicate with distribution automation assets, or support the latest renewable energy infrastructure in the power grid, Digi has both the networking and the embedded solutions to enable your organization to deliver the reliable, cost-effective service customers expect, while embracing the most advanced technology in the marketplace.

Internet of Things solutions help utilities operate more efficiently in four categories:

Smart Grid — Distribution Automation

Grid operators rely on Digi cellular routers, long-range RF radios and serial-to-IP servers to communicate with remote substation equipment, SCADA systems, reclosers, capacitor banks and other transmission equipment.

Demand Response and Consumer Engagement

Intelligent gateways and hubs for bi-directional, smart energy management and demand response systems enable both energy device control and the real-time measurement and verification necessary for demand response applications.

Commercial and Industrial (C&I) Metering

Connectivity solutions for commercial and industrial meter device management systems, including cellular routers and RF radios, provide metering engineers and meter shop managers with performance, reliability and industry-leading security.

Renewable Energy

Wind, solar, and hydro power installations depend on Digi solutions to support a wide range of initiatives for sustainable energy. Digi helps provide the connectivity to convert the variable power output derived from wind and solar into a reliable, 24-hour system.

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Smart Grid — Distribution Automation

Electrical utilities today are creating “smart grids” by adding a layer of digital intelligence to their electrical grids. Smart grids use sensors, meters, digital controls and analytics tools to automate, monitor and control the flow of energy and data across their operations — from the power plant to the wall plug.

Power companies are using these capabilities to optimize grid performance, prevent outages, and restore outages more quickly when they do occur. They are also enabling their customers, large and small, to manage energy usage down to the individual networked appliance.

Digi is helping them do it. Digi solutions offer industry-leading security and reliability while enabling electric utility professionals to deploy remote connectivity to substation and powerline equipment quickly and cost-effectively. Once network devices are deployed, monitoring solutions allow the utilities to manage and update remote network assets, dramatically improving response time through increased asset visibility.

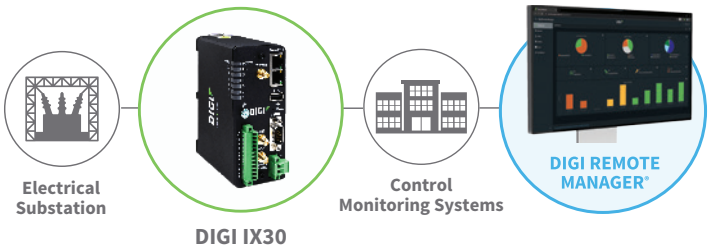
Energy Distribution, Remote Management and Scalability

ELECTRICITIES of NORTH CAROLINA, INC.

ElectriCities of North Carolina faced several business challenges, including the ability to provide the most reliable service to their customers — given the vulnerability of power networks to issues such as weather events — and the ability to scale and grow their coverage area and service offerings. To do so, they needed robust solutions with excellent reliability and fallback, as well as the critical visibility and management tools to remotely monitor and manage their deployment.

Their search for the right technology led them to cellular solutions from Digi, paired with Digi Remote Manager®, which serves as the command center of the network. Today, the networks are expansive, the costs of deploying cellular are minimal, and the reliability is excellent, noted the company’s lead systems coordinator. Additionally, with the costs of cellular data decreasing, ElectriCities determined that switching to cellular networks would provide the future proofing they needed to move forward. Most importantly, Digi Remote Manager solved the challenge of gaining insights into trouble spots for predictive and proactive maintenance, along with the ability to keep the entire network up-to-date with security and other firmware updates.

> "LTE offered enormous cost savings over our legacy copper connections. Digi was the logical choice for secure, reliable communication with our members’ meters and generators."
>
> EMS Application Engineer, ElectriCities of North Carolina



An additional critical aspect of the deployment was the Digi SureLink® feature which enables Digi LTE routers to monitor the health of the connection through active techniques (e.g., pings) or passive techniques (via stateful firewall), then initiate corrective action such as a cellular module reset or router reboot to ensure maximum uptime. This allows for a consistent connection during the periods when cellular networks go through maintenance and upgrades and check for inactive devices, either of which can result in a device losing its network connection.

The router also includes an IP traffic analyzer to inspect virtually any interface or protocol on the router. This can be an invaluable tool when debugging complex configuration scenarios and verifying secure passage of data from one point to another.

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Commercial and Industrial (C&I) Metering

Connected solutions for commercial and industrial (C&I) metering not only help utilities with accurate and timely billing to track costs and predict revenues, they also serve as a foundation for advanced metering infrastructure and smart grid initiatives. Advanced C&I metering solutions also benefit customers by delivering useful metrics and actionable insights into their own consumption trends and patterns.

Wireless connectivity for meters eliminates unnecessary wiring costs and reduces installation times. In addition, remote monitoring and management solutions make it possible for IT teams to update software and troubleshoot devices without the cost of a truck roll. Metering engineers, meter shop managers and other utility professionals have relied on the performance and best-in-class security of Digi solutions for decades. The robust design and long service life of Digi industrial IoT solutions helps utilities get the maximum value from their infrastructure investments.

Digi XBee Connects Meters for Utilities in Brazil

As one of the largest energy solution providers in Brazil, CAS Tecnologia needed a way for its clients to remotely monitor and control their meters, which are widely distributed across the largest country in South America. To add the necessary layer of connectivity and access, CAS needed a communication module in each meter. They selected Digi XBee® PRO Zigbee modules to provide reliable wireless connectivity.

The CAS Tecnologia module, including the Digi XBee, helps CAS's utility customers identify incidents of fraud and collect data on energy losses, helping them reduce costs. Today, more than 40,000 CAS products have been produced and delivered to utilities in Brazil.

> "Digi XBee modules were incorporated into our products because they are reliable and easy to test and use. The engineering team had to take very few steps to get a Zigbee network set up and working with very reliable operation."
>
> Production Director, CAS Tecnologia

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Demand Response and Consumer Engagement

Supplying steady power during peak demand periods is one of the biggest challenges for electric utilities, in terms of both cost and physical strain on the electrical grid. Intelligent gateways and hubs that allow bi-directional, smart energy management and demand response can help utilities cope with peak demand effectively and engage their customers in helping to moderate demand when the weather is very hot or very cold. Wireless connectivity solutions from Digi play a key role in facilitating demand response programs.

Renewable Energy

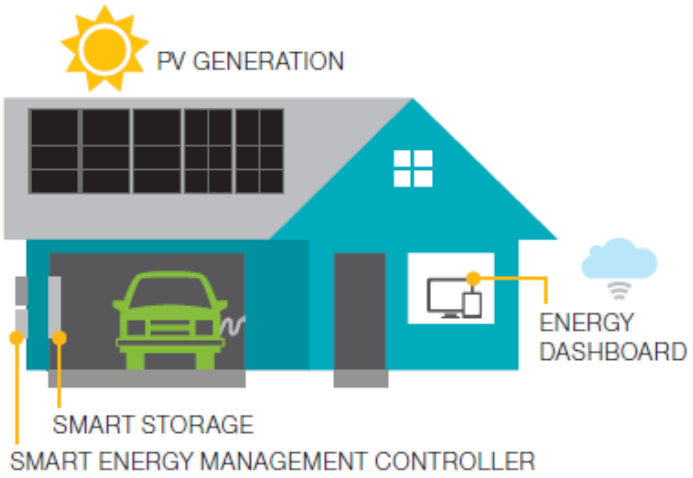
From wind farms, solar panel installations and hydroelectric plants to new electric vehicle (EV) infrastructure, Digi solutions help make renewable energy a practical reality. Digi offers a suite of technologies to support the growing role of renewables in the electrical grid. Our solutions can connect multiple renewable energy systems to one take-out point for remote monitoring and data collection. With wireless solutions that easily scale from tens to millions of nodes, Digi solutions enable utilities to support wind and solar farms widely distributed across hundreds of acres of land.

E-GEAR Optimizes Solar Power Generation, Storage, Usage and Movement of Power onto the Grid

E-GEAR™ With help from Digi Wireless Design Services, E-GEAR developed the Energy Management Controller (EMC), a device that helps homeowners, businesses and utilities in Hawaii optimize the storage and transmission of energy captured from photovoltaic cells and other alternative energy sources.

The EMC device calculates energy flow and compensates for real-time variations in solar generation and home consumption, to either capture excess energy or send power to the grid to smooth out fluctuations in generation and consumption. With this smoothing function, entire neighborhoods can act as distributed generation and storage sources for the electrical utility, reducing the need for excess generation capacity and mitigating variances in voltage on the grid.

> "Digi helped us identify the best wireless components, microprocessor, electrical monitoring components and cloud technology to bring the system from the drawing board to reality."
>
> Co-Founder/Managing Partner, E-GEAR



In addition to design assistance from Digi Wireless Design Services (WDS), E-GEAR used Digi Remote Manager® as a cloud interface and Digi embedded system-on-modules in its solution.

With the E-GEAR EMC energy service, companies enjoy real-time visibility, control and data collection, while utilities can leverage real-world, edge-of-grid data for modeling and demand response. The result is a smarter, more efficient way to provide clean, reliable, renewable energy.

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Featured Products:

Digi Remote Manager®

As the command center of an intelligent network, Digi Remote Manager enables utilities to monitor and manage their devices in widely dispersed renewable energy installations.

Digi Connect® EZ

Digi Connect® EZ offers modern, secure serial-to-Ethernet connectivity that boots in seconds, configures in minutes and runs for years.

Digi IX30 Industrial Cellular Router

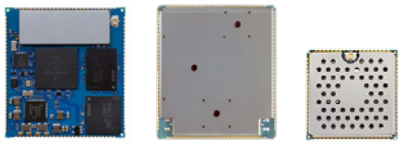
Digi IX30 is an intelligent C1D2-rated 4G LTE cellular router designed for critical infrastructure and industrial applications, with a hardened exterior and industrial components.

Digi XBee Ecosystem

Digi XBee® is an ecosystem of wireless communication modules that integrates a full suite of development tools and supports a wide range of protocols.

Digi IX15 Gateway and Cellular Router

Digi IX15 is a programmable industrial IoT gateway and cellular router that connects Digi XBee-enabled devices to remote applications over cellular and Ethernet.



Digi ConnectCore SOM Family

The Digi ConnectCore® family of system-on-modules offers an integrated developer platform for building secure, robust solutions.

CONTACT US FOR HELP IDENTIFYING THE RIGHT SOLUTION FOR YOUR NEEDS.

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