



Wireless Connectivity Solutions for Electric Utilities

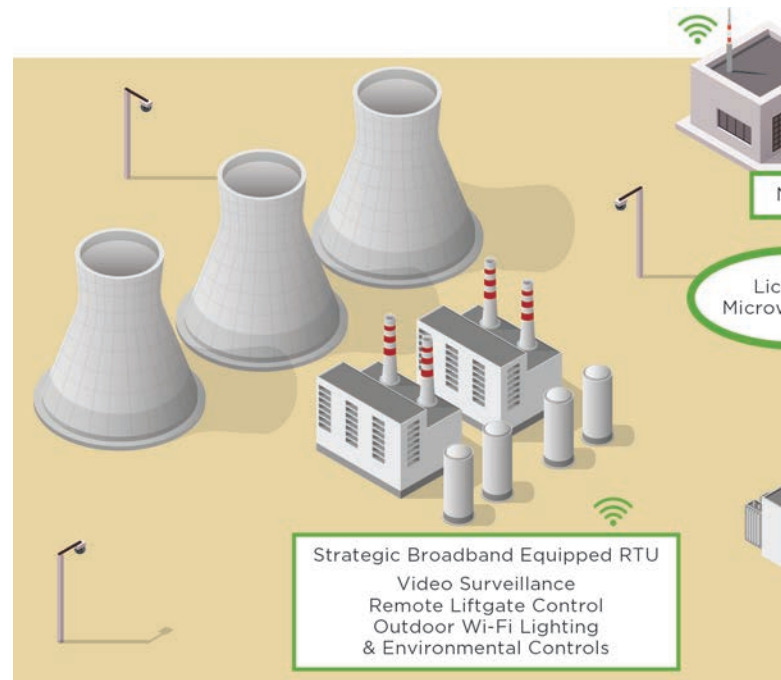
THE ELECTRIC GRID IS CHANGING RAPIDLY AND APPLICATIONS FOR REAL-TIME COMMUNICATIONS, PROCESS CONTROL, VIDEO SURVEILLANCE AND WORKFORCE AUTOMATION ARE INCREASING.

Distributed energy resources, distribution automation, and microgrids are expanding the scope and geographic area covered by the field area network.

Security requirements, such as NERC-CIP and NISTIR 7628, continue to increase in reaction to ever-present cyber-security threats. Intelligent sensors with communications capabilities are being deployed to assist in fault location isolation and service restoration (FLISR).

The sun setting of 2G and 3G data services is an opportunity for electric utility operators to consider private networks with low OPEX often using licensed spectrum options.

The modern smart grid requires reliable secure communications that can be delivered into both legacy and greenfield environments. While no single wireless technology can address all requirements, the broad 'wireless fabric' from Cambium Networks provides a deep toolbox of capabilities all managed from a 'single pane of glass' with the cnMaestro element management system.



Smart Grid Applications:

- Distribution Automation for process control and monitoring
- Fast, accurate monitoring of DER (Distributed Energy Resources)
- Video surveillance for asset and personnel security
- Sub-station Wi-Fi connectivity for workforce automation
- AMI (Automatic Metering Infrastructure) backhaul
- Low OPEX alternative to cellular and leased-line services

Benefits:

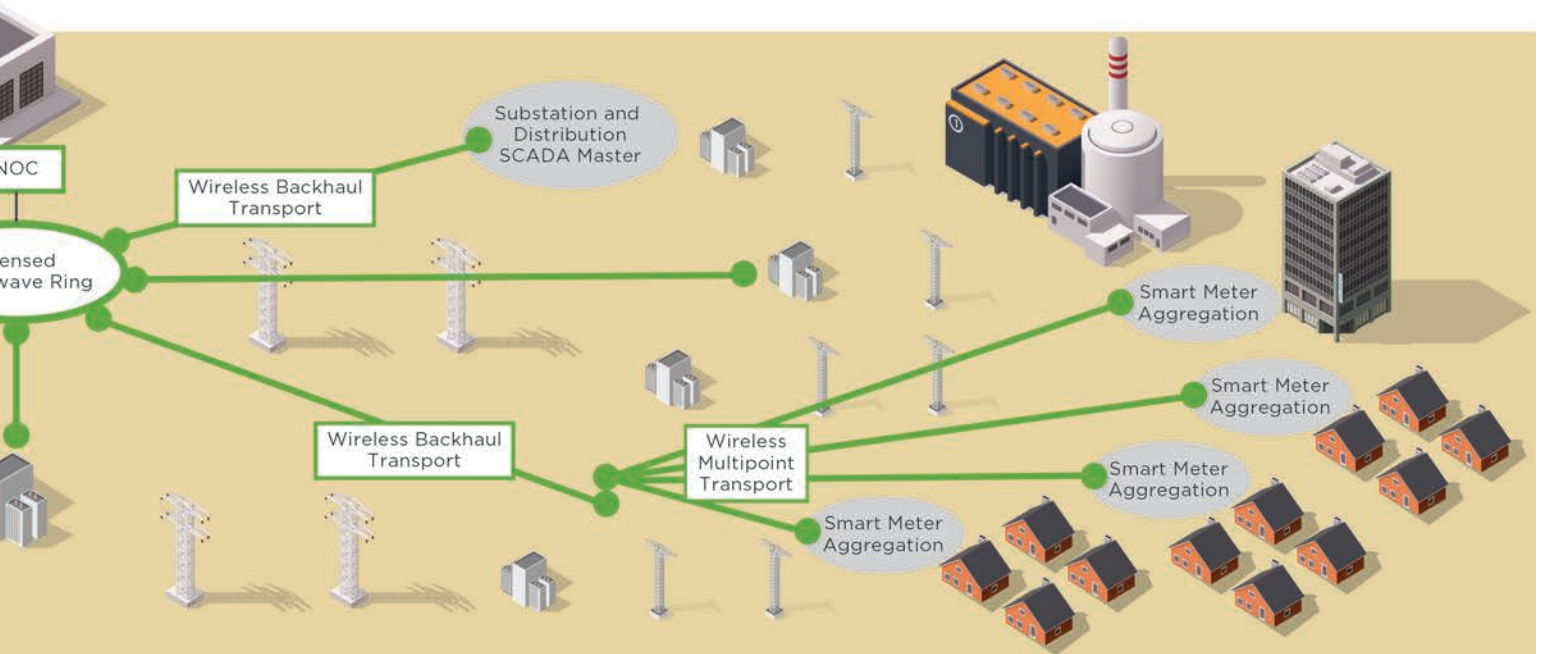
Reliable – With millions of wireless modules deployed around the world, Cambium Networks solutions are proven to work in any climate or application with the uptime required for critical infrastructure.

Low OPEX – Private wireless networks are deployed where coverage is required and with the capacity required to serve the mission with low on-going expense.

Low-touch provisioning and centralized management – Cambium Networks software solutions ensure accurate planning, low-cost deployments and real-time monitoring of the network.

Secure – Communications are encrypted and can be aligned to corporate IT security policies including easy over-the-upgrades of security parameters and centralized monitoring.





Cambium Networks Intelligent Edge Technology Ensures Reliable and Secure Critical Infrastructure Communications

- Wide range of Spectrum Options – Licensed (220, 450, 700 and 900 MHz Narrow-band and 6-38 GHz Microwave) and Un-licensed (900 MHz and 3.65, 4.9, 5 GHz)
- Ease migration from legacy networks with serial and general-purpose IO options seamlessly integrated with IP traffic
- High-availability master base station for process control applications
- Spectral efficiency for high-density deployments – adaptive modulation, high coding rates and synchronization to maximize channel re-use and minimize self-interference
- Easy-to-use planning (LINKPlanner), provisioning (cnArcher™) and management (cnMaestro™) software for the complete service life cycle.
- Rugged Hardware – IP 67 housings and wide-temperature range performance protect against solar radiation, hurricane speed winds, dust and water ingress, and other harsh environments

Proven Solutions

Licensed and unlicensed narrowband connectivity for SCADA process control and monitoring including:

- Seamless blend of Serial, IP, and General Purpose I/O traffic
- Multiple licensed frequencies (220/450/700/900 MHz) and 900 MHz unlicensed

Ruggedized Wi-Fi access for workforce automation

- Outdoor hotspot and Wi-Fi networks

Wide-Area Point-to-Multipoint

- Video surveillance for physical security
- SCADA master aggregation and backhaul
- AMI backhaul

High capacity long range Point-to-Point backhaul

- Licensed microwave and unlicensed backhaul

Single pane of glass network management

- Bird's eye view of field network
- Rapid on-boarding and provisioning of new nodes
- End-to-end performance and fault management
- Centralized password management and firmware updates

The Cambium Difference

- **Reliability** – Deploy wireless broadband with confidence that it will work right the first time and continue to work 24/7 over the long haul.
- **Scalability** – Connect thousands of individual locations with a synchronized network that enables RF frequencies to be re-used throughout the network to provide the highest level of connectivity in the least total amount of spectrum.
- **Planning Software** – End-to-end network design using LINKPlanner for prediction of capacity and availability.
- **Sustainability** – Solutions designed to operate for years from a supplier with a proven track record of stability and sustainable product evolution.
- **Spectral Efficiency** – Provide the highest amount of information transfer in the least amount of scarce spectrum with industry award winning throughput.

ABOUT CAMBIUM NETWORKS

Cambium Networks is a leading global provider of wireless connectivity solutions that strengthen connections between people, places and things. Specializing in providing an end-to-end wireless fabric of reliable, scalable, secure, cloud-managed platforms that perform under demanding conditions, Cambium Networks empowers service providers and enterprise, industrial and government network operators to build intelligent edge connectivity. Headquartered outside Chicago and with R&D centers in the U.S., U.K. and India, Cambium Networks sells through a range of trusted global distributors.

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