Application Data Sheet

Advanced Metering Infrastructure

Benefits

- Improved billing accuracy
- Faster outage detection and problem location isolation via an Outage Management System (OMS), reducing service restoration time
- Reduced meter reading costs vs manual or drive-by meter reading
- Remote service connect/disconnect reducing truck rolls and improving worker safety
- Reduced unaccounted for energy
- Customers have access to their own usage data enabling informed decision making and helping improve conservation
- Ability to offer time of use (TOU) and other power resource management programs such as automated peak demand load shedding
- Improved customer satisfaction

ABB Wireless differentiators

- Broad range of narrowband and broadband wireless solutions for meeting requirements of tier 3 neighborhood area network (NAN) and tier 2 field area network (FAN)
- Reliable – multiple features that enhance overall system reliability including automatic band and channel management; mesh topology for seamless node failover; per packet power control; intelligent congestion management
- Secure – defense-in-depth, multi-layered industry standards-based security distributed into each network device
- Management – comprehensive centralized management NAN and FAN, simplifying operations and troubleshooting
- Multi-application – capacity, security, scalability aggregate support for multiple smart grid applications concurrently

Many distribution utilities are upgrading their aging metering infrastructure to Advanced Metering Infrastructure (AMI), which enables centralized monitoring and control of smart meters, improving operational efficiencies and customer service while reducing costs.

AMI requires real-time bidirectional communication between meters and head-end utility operations to facilitate sending data (for billing, usage analysis, prepay service tracking, etc.) and meter control (remote service connect/disconnect, appliance connect/disconnect, etc.).

Benefits of AMI are realized by both the utility and utility customers:

- More accurate and timely meter reading – Meter reads can take place on a more frequent basis helping to quickly identify and pinpoint outages. Improved meter reading accuracy and recording means that billing is more accurate, thereby reducing the number of customer disputes. Operational efficiencies and cost savings are realized from eliminating truck rolls for reading meters, reducing fuel and vehicle maintenance costs and personnel in this role. Unaccounted for energy usage can quickly be identified, improving revenue capture. Customers are often offered access to their own power usage data via a web portal facilitating conservation and improving their understanding of usage/bills.

– Remote meter control – With the ability to connect/disconnect services remotely, new customers don't have to wait days for a utility truck roll; oftentimes service can be enabled in just minutes vs days, improving customer satisfaction. This also saves the utility money on vehicle, gas and personnel costs and improves customer satisfaction. Automation of peak demand load shedding can reduce risk of a power outage.

Multi-use network

ABB Wireless offers a breadth of network technologies that can seamlessly be deployed and managed to creating bidirectional connectivity between field area devices to utility head end, including the NAN and FAN. In addition to the utility meter reading application, a single ABB Wireless network can be designed to support multiple applications concurrently, simplifying management and reducing costs. For example, a single network can support:

– Distribution automation – Distribution automation enables remote monitoring and control of Intelligent Electronic Devices (IEDs) such as switches, transformers, capacitor banks and DERs. With the telemetry data, IEDs can take action to reduce the risk of or minimize areas affected by outages by rerouting power. They can automatically isolate faults to enable upstream and downstream restoration of power, increasing system reliability and reducing outage duration.

– Substation automation – Substation automation requires bidirectional communications between IEDs and computers in the substation or utility operations center. Modernizing existing substations to add IEDs can be costly and cost prohibitive if trenching is needed for communications cabling, making wireless broadband a cost-effective alternative.

– Substation physical security – Substation physical security is becoming more commonplace with the increase in physical attacks, which have the potential for causing significant harm to utility equipment and personnel. Centralized monitoring of video cameras, access control (keypads, biometrics) and sensors (motion, light, contact) provides early awareness and visibility enabling timely and appropriate response. Adding physical security to existing substations can be costly if trenching is needed to lay cable; wireless broadband offers a viable alternative.

AMI communications network building blocks

Most utilities are moving towards deploying multiple smart grid applications, including AMI. The choice of wireless communications technology for a smart meter needs to take into account end-to-end communications, including between the meter and collector (NAN); from the collector to substations; and substations to head-end utility operations. It many mid to large size utilities it is typical that a single communications technology for NAN and FAN does not make sense given the variances in geographic meter density and distances between groups of users; geographic topology which may include mountains as well as flat lands; and of course, total cost of ownership.

ABB Wireless uniquely offers a full range of technologies and professional services for utilities deploying smart grid applications ensuring the optimal solution for NANs and FANs. Management of both the NAN and FAN can be aggregated in a single wireless network management product, SuprOS.

For NANs, RF mesh is a popular choice due to its superior propagation characteristics, long-range performance, low power consumption. Cellular modems are also a popular choice especially in less dense areas where meters may not be closely co-located.

For FANs, ABB Wireless also offers multiple solutions enabling design of a backhaul network that best meets utility requirements for AMI and other smart grid applications. Solutions include wireless broadband mesh, ideal for urban areas; point-to-point/point-to-multipoint (PTP/PTMP) and cellular for longer distance links.

Uniquely, ABB Wireless offers utilities the option of hybrid narrowband/broadband mesh routers. In a single enclosure, connectivity for the NAN and the FAN are integrated, offering the benefit of reducing the number of field assets deployed, maintained and managed, simplifying installation, and reducing operational costs.

For more information please contact:

ABB Wireless
3055 Orchard Drive.
San Jose, CA 95134

Phone: 408-331-6800
E-Mail: **wireless.sales@nam.abb.com**
www.abb.com/unwired

1KHA - 001 281 - SEN - 1003- 03.2017