

# Automated water meter reading



## Automated Meter Reading (AMR) benefits

- Improved billing accuracy with streamlined meter reading and bill generation
- More timely, accurate and granular data to resolve customer billing, provide insight into usage, and identify conservation violations
- Fewer on-site visits required reducing operating costs, and improving worker safety, and reducing fuel and vehicle maintenance costs
- Reduced number of service calls
- More data enabling staff to plan, construct and optimize water distribution system
- Ability to offer time of use (TOU) water rates to improve reliable water delivery
- Increased revenue from previously unaccounted for water usage
- Water theft detection and location pinpointing
- Customers' online access to their own detailed water usage data
  - Customers can set alerts for unusual consumption patterns enabling them to quickly identify a potential problem
  - Customers can set water usage goals and get automatic notifications when they exceed a threshold
- Water conservation affects the utility's bottom line by reducing energy consumption; significant since ~1/3 of their total costs are for energy to treat and pump water

## Advanced Metering Infrastructure (AMI) benefits

- AMR benefits plus...
- Ability to identify leaks or other waste issues quickly
- Remote turn on/off service providing faster response for customers; ability to quickly respond in an emergency

## ABB Wireless technology 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 of NAN and FAN, simplifying operations and troubleshooting
- Multi-application – capacity, security, scalability aggregate support for multiple smart water applications concurrently

**As water utilities modernize their metering infrastructure, many are adopting AMR or AMI to enable remote meter reading to help reduce operating costs, improve conservation and overall customer satisfaction.**

## AMR or AMI?

AMR and AMI both use communications networks to send data from water meters to a remote metering head-end and offer many of the same benefits. While both include use of a digital smart water meter, the fundamental communications network difference between the two is that AMR offers unidirectional communications to meters and AMI bidirectional communications to meters. With AMR, metering data is sent in regularly scheduled bursts to the metering or is queried as meter readers walk by. AMI offers the

same features as AMR, plus enables some additional applications and benefits. In particular, AMI typically includes collection of meter data more frequently. The data can be used by the utility for billing, usage analysis, prepay service tracking, etc.) and meter control (remote service connect/disconnect, appliance connect/disconnect, etc.). In addition it offers the utility the ability to turn service on or off from a central location. Water AMR/AMI delivers a host of benefits to both the utility and utility customers:

- More accurate and timely meter reading – With more readily available access to accurate meter data, billing accuracy is improved. Billing disputes can more readily be resolved with ready accessibility to meter data.
- Faster leak detection - Faster awareness of a leak and pinpointing its location can reduce water waste and potential damage while saving money and improving resource conservation.
- Utility operational efficiencies – Elimination of truck rolls for reading meters reduces fuel cost, vehicle maintenance and insurance costs, and personnel allocated to this role.
- 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 it can be enabled in just minutes vs days, improving customer satisfaction.

#### Multi-use network

ABB Wireless offers a breadth of communications network technologies and products that operate synergistically and are managed by a single network management system. By offering a range of technologies, ABB enables customers to select the product that best fits current and future application needs, including budget.

In addition to the water AMR/AMI 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:

- SCADA – The ability to monitor and control SCADA devices in the water storage and distribution network from a central location, can significantly improve utility operational efficiencies and reduce costs. Examples of SCADA applications include monitoring and control of valve positions, flow rates, pressure valves, water reservoir levels and usage, etc.
- Video surveillance – Video cameras can be monitored and share the communications network for transmission of video data to a location where it can be monitored and viewed. Areas that may be monitored include remote watersheds and reservoirs, SCADA devices, and water storage tanks.
- Asset tracking – Enables centralized monitoring of fixed and mobile assets within the utility's coverage area. May include mobile entities such as utility vehicles as well as fixed equipment such as SCADA and AMI endpoints.

#### AMR/AMI communications network building blocks

Many water utilities have embraced AMR/AMI to improve operational efficiencies and reduce costs, while enhancing services to customers. Both AMR and AMI require a customer premise-based meter with wireless communications that builds a communications path between the meter and utility head end.

The choice of wireless communications technology for a smart meter needs to consider end-to-end communications: between the meters and to the collector (NAN); from the collectors with wireless backhaul (FAN) to head-end utility operations. In most instances, 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 total cost of ownership.

ABB Wireless uniquely offers a full range of technologies and professional services for utilities deploying water AMR/AMI applications ensuring the optimal solution for NANs and FANs. With ABB, management of both the NAN and FAN is aggregated in a single network management system simplifying management and troubleshooting.

For NANs, sub-GHz wireless mesh is a popular choice due to its superior propagation characteristics, long-range performance, and 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 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 narrow-band/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](mailto:wireless.sales@nam.abb.com)  
[www.abb.com/unwired](http://www.abb.com/unwired)

