new year brings a renewed focus on the challenges facing our water supply. In 2011, many states across the country faced abnormally dry conditions, and 2012 promises to bring similar circumstances. Less than 1% of the Earth’s water is available for use by humans, and only an approximate 0.08% of the Earth’s water is available for domestic use. Furthermore, these resources are being strained by industry, environmental changes and a growing global population.

While the challenges facing the nation’s water supply are complex, water utility executives across the country are shaping the future of water. Many water utilities already are taking strides to update aging infrastructure and gather data from distribution networks—data that will empower customers to be active participants in managing their own water use.

Along with the growing necessity to conserve water, utilities implementing intelligent water management solutions have economic, operational and customer service goals. As these utilities consider how to respect and preserve water resources while continuing to meet the needs of their customer base, technologies such as two-way communication networks, smart water meters and analytic software offer the opportunity to maintain or increase revenue and enhance operational efficiencies while supporting conservation efforts.

Technologies deployed to build the electric smart grid are being used to build a water smart grid in various communities, including Garden City, Kan., Santa Maria, Calif., and Gresham, Ore. These communities are improving operational efficiency, identifying leaks and gathering unprecedented business intelligence. The supporting technologies help utilities go beyond traditional water metering applications to create a smarter, more efficient infrastructure.

**Operational Efficiency in Kansas**

Water utility officials in Garden City, Kan., searched for two years for a solution to their monthly manual meter reads before partnering with Sensus to implement intelligent water management solutions from the company’s AquaSense suite, including a two-way advanced metering infrastructure (AMI) network and smart meters. Garden City sought improvements in operational efficiency and water conservation.

Prior to implementing an AMI network, Garden City had outsourced meter reading to a contractor. The city now has eliminated those costs and reduced the number of trucks on the road. It also eliminated the need to estimate usage during winter months, when meters often are inaccessible due to snow and ice. Other benefits of the intelligent water management program include notification of theft of service and freeing up staff time once spent on billing corrections.

Water customers have given positive feedback about receiving timely information about leaks, and the utility has been able to use the information to identify and repair leaks throughout the entire distribution system. Garden City also leveraged the network to support a smart grid program for its electric utility, shortening the time to achieve a return on investment in the technology.

**Conservation in California**

In 2007, the Santa Maria, Calif., water utility was one-quarter of the way through installing an advanced meter reading system when an extensive life-cycle cost analysis showed that upgrading to a fixed-base AMI system ultimately would provide greater benefits.

Utility officials partnered with Sensus on a pilot project to learn how two-way communications and smart meters could benefit their customers. They anticipated the system would help achieve savings and improve customer service through reduction in staff time and vehicle costs spent on drive-by readings and through greater accuracy in measuring and billing.

In the three-month pilot program, the intelligent water management system identified leaks in nearly 3% of homes in the test area, saving almost a half-million gallons of water. Less than a year after system deployment, conservative estimates found that the system had helped save more than 2.6 million gal of water.

Smart water meters enable utilities to continuously measure water usage. With a fixed-base AMI system, meters provide real-time, accurate data about water consumption and alerts that enable utilities to detect problems (e.g., leaks) quickly.

Wireless utility communications systems and integrated technologies are critical for utilities to manage their entire infrastructure remotely to detect leaks rapidly. In Santa Maria, the average leak detection time has been reduced from one month to days. In the early stages of system deployment, one Santa Maria customer complained of a too-high water bill a few days after installing a fixed-base meter, the city confirmed that the customer's sprinkler system was running twice overnight. With this information, the customer made irrigation schedule changes to lower billing costs and conserve water.

**Empowering Customers in Oregon**

The future of water is not just in the hands of utility executives, but their customers as well. The water utility in Gresham, Ore., invested in a fixed-base AMI system and smart meters in part due to its community’s commitment to living and working sustainably as part of a larger conservation effort.

Gresham implemented an AMI system from Sensus with the goals of improving operational efficiency and bringing intelligent water management to all its customers—a goal now within reach. In addition to providing real-time data to customers with the implementation of a two-way communications network, Gresham deployed residential and commercial smart water meters. The usage data provided by the city’s software enables the utility to share real-time data with its customers, empowering customers to understand their usage patterns and change behaviors accordingly to enable conservation.

Some water utilities are using these intelligent water management programs to provide customer Web portals in which users can access real-time meter data to monitor their water usage.

**Intelligent Water Management Systems**

The future of water is here today. A 2010 Oracle study found that one in three water utilities was in some phase of implementing a smart water program. In addition to leak detection, these utilities cited reasons such as providing more accurate

**Challenge:** Abnormally dry conditions, aging infrastructure and a growing global population are issues that will continue to plague water utility executives.

**Solution:** Empowering customers to manage their own water use is the central idea surrounding setup of new AMI networks and smart meters. These systems have been implemented across the country.

**Conclusion:** Utilities cited leak detection, more accurate water pricing rates and better ability to conduct preventive maintenance as benefits of smart water management.
Leaks eventually tell you where they are... but can you afford to wait?

A geyser caused by the rupture of a water main is a big, expensive problem to fix. Find leaks before they erupt with Adara’s STAR® ZoneScan leak-detection solution. Jointly developed by Adara and Zurich-based Gutermann International, the STAR ZoneScan locates leaks while they are still underground. The solution employs data loggers placed on gate or hydrant valves to sample the sound waves generated by leaks along the main, and automatically sends this data to the utility over the Adara STAR® Network. There, the system’s software correlates the data, pinpointing any leaks to within a few feet.

The STAR ZoneScan solution saves time by automating the process of collecting and transmitting data about the water system. It also encourages practical water conservation by helping utilities identify and fix leaks before they become costly, water-wasting emergencies. For more information, please contact us at STARZoneScan@aclara.com or visit us at bit.ly/STARZoneScan.

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