Redwood City Leverages FlexNet™ Features for Innovative Conservation Program

CS-160

Case Study

BACKGROUND

The logo for Redwood City, California reads: "Building a great community together." Basing their teamwork on an innovative water conservation program, supported by the Sensus FlexNet Advanced Metering Infrastructure (AMI) system, city officials and residents are working hand-in-hand to make sure water usage is consumed thoughtfully for the benefit of all residents.



This rapidly-growing community in northern California felt the effects of a three-year drought that depleted water supplies and stressed the volume of water Redwood buys annually from the San Francisco Public Utilities Commission for its 83,000 water customers. Redwood historically used more water than the PUC was obligated to sell to them every year. Officials knew that unless they took proactive measures, heavy rationing and penalties for overuse were the next steps. Initial attempts at water budgeting, which focused on monthly usage and rate reports, prompted customer complaints because results were released after water was already used.

CHALLENGE

Officials knew if any conservation program would work, it would require access to real-time meter readings, giving customers a reliable method to view their usage on demand to promote proactive changes in consumption. They also knew that educating and supporting customers required a free flow of information between the utility and the customer, and that required an upgrade in information collection, meters and software.

Justin Ezell, Water Superintendent for Redwood City, said planners created a program that would accomplish their goals, called the "Budget-Based Rates Program." Designed for irrigation customers, the program designates a specific amount of water each customer should use in a month. Customers who stay in line with estimates pay the least of three rate tiers. Those who consume more than the budgeted amount pay higher rates, depending on the amount of overuse.

However, because the program was designed to offer changing budget usage depending on the weather, a water meter data collection system was needed that could provide near real-time data from a proven vendor who could offer technologically advanced solutions – something with more flexibility than what the current monthly read technology offered.

SOLUTION

A long-time Sensus customer, Redwood turned to Sensus for the answer, and learned about Advanced Metering Infrastructure (AMI) and the benefits of its FlexNet system. Increased efficiency, reliable delivery of information, flexibility and customer service are just some of the ways Sensus is now helping Redwood City implement its program.

The fixed-base system is delivering hourly readings around the clock, via a FCC primary-use licensed radio frequency available only to Sensus customers. Data is fed from the meter to strategically-placed collectors, which transmit information via the Internet to Redwood City water division computers. The information is transformed into reports that detail usage, time of use, and leak detection via diagnostics. And, because most Redwood meters were already Sensus-made, upgrading to the AMI program was a smooth transition.

SENSUS

FlexNet operates from collectors known as Tower Gateway Basestations (TGBs). The 25-square miles of mixed rural hills and urban flatlands that comprises Redwood City needed just two TGBs to collect the data from the 24,000 meters. That powerful, dedicated licensed radio frequency that Sensus owns for its customers' use allows for this minimal infrastructure, which eases environmental impact and carbon footprints on the land. Ezell said the need for a minimal number of TGBs and the licensed frequency were additional benefits that Redwood officials wanted to take advantage of by using FlexNet.



Tower Gateway Basestation to endpoint communications

The FlexNet system also allows Redwood staff to be used in other capacities now that meter reading has been automated. Ezell said staff is utilized to address leaks quickly and help educate customers about the program or for other customer service and system maintenance projects.

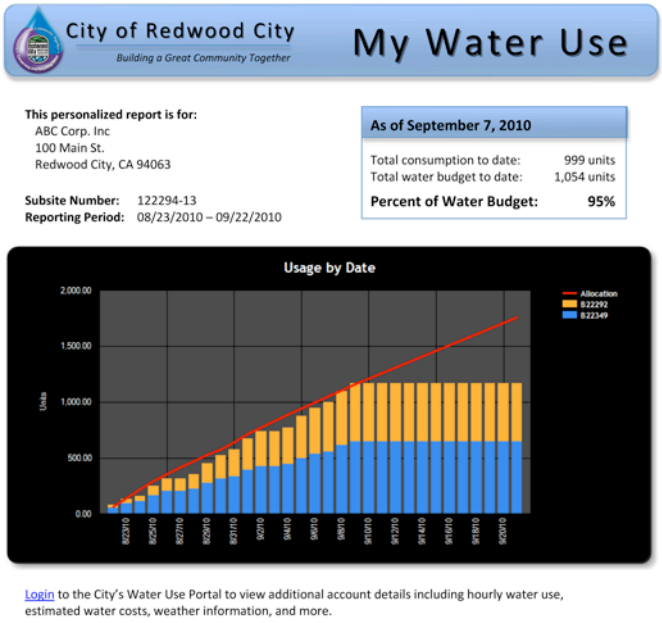
Putting a real-time, reliable data communication system in place allowed Redwood management to move their progressive conservation plan forward. They were able to build the necessary web applications, establish a level of trust with customers based on accurate reads, and support strategic thinking because of the volume of information supplied by the FlexNet system.

"Everything that Sensus produces is cutting edge, and we like to think of ourselves as a cutting edge organization," Ezell said. "We are glad to align ourselves with Sensus and their same approach to an innovative and customer-oriented business model."

With an information delivery system in hand, the City used in-house talent to create a web-based tool to calculate the irrigation customer's water budget, based on weather patterns and how much water a customer's landscape needs in any given day. The budgeting process also factors in the size of the family and property, whether a swimming pool is present, and landscape designs.

"Because irrigation schedules change daily, the system is a way to hold landscapers accountable. If it's raining, no one should be irrigating their lawn," Ezell said. "We still get questions, but now we can talk them through it. In the past, we would've sent a representative in the field to the site. Now we can look on a screen and show them how to help themselves to this information and find the answers they need on their own."

An automatic email module is also in use – based off of a customer's suggestion – to alert customers of potential overuse or continuous leaks. "We were amazed at the number of leaks the FlexNet system found, almost immediately after it was launched," Ezell said. "We are saving millions of gallons in otherwise lost water just by identifying and correcting these leaks immediately."



Sample usage report sent via email to Redwood City water customers

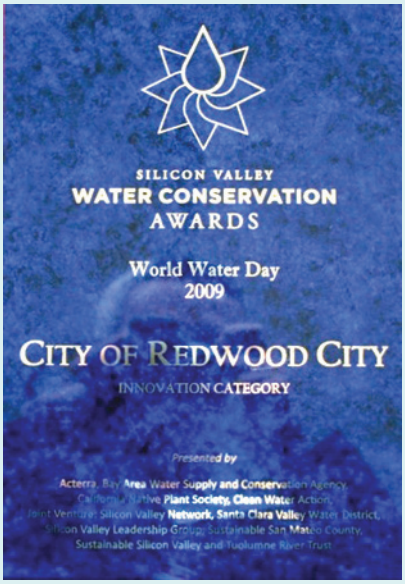
Because FlexNet operates from a powerful, tower-based system, utilities are able to easily expand their service area footprint. Plans are underway to extend the Redwood program to residential customers in hopes of an even greater savings in 2010 and beyond, Ezell said, with plans for a five-year overall total coverage area deployment.

CONCLUSION

Thanks to the FlexNet solution's ability to provide real-time system reliability, the first year of the pilot was a complete success. Water usage has plummeted. The conservation program saved more than 80 million gallons of water – about 15 percent – in 2009 irrigation use compared to 2008 numbers. Some irrigation customers reduced their budgets and bills by $75,000.

Redwood City customers now have access to daily water consumption records, including a chart of monthly, weekly, daily or hourly water use. With 24-hour access to their water account, customers can now make adjustments prior to the end of the month so that they stay within their budget and retain the lowest tier of rates. If a question arises about a bill or water use, Redwood staff can pinpoint when a single customer has been irrigating their lawn – and if it was raining when the irrigation took place.

"We benefit by the water savings and our customer benefit by the monetary savings," Ezell adds. "We are truly building a great community together."



The Redwood City program has earned awards from the California State Legislature and the Sustainable Silicon Valley organization. Utilities from other regions are also contacting Redwood to learn about the benefits of the FlexNet AMI system and how to start a similar program in their area.

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