

Case Study

Chesterfield County Integrates FlexNet to Conserve Capital and Water Resources

Founded in 1968, Chesterfield County Rural Water Company in Chesterfield, South Carolina is a private, non-profit corporation that prides itself on operational efficiency and customer satisfaction.



Chesterfield County Rural Water Company (CCRWC) in South Carolina uses the Sensus FlexNet™ Advanced Metering Infrastructure (AMI) solution to service its 800-plus square-mile territory, comprised mostly of agricultural and poultry farms and dotted with small towns. However, sheer size of this rural home to 22,000 residents is only one of the challenges. Rolling terrain and a 700-foot elevation variance from the northwest to southeast corners of the area—not to mention 30% of the area is state and federal wildlife refuge lands—keep CCRWC officials aware of the environmental impact of its operations.

Company CEO Charlie Gray says that FlexNet has delivered that environmental accountability, and more. The system is reducing the company's fuel consumption and carbon footprint while increasing the integrity of the physical plant and customer satisfaction. Leaks are often discovered in six hours or less, compared to weeks or months prior to implementation. CCRWC customer service reps are now able to proactively alert customers to leaks, saving time, resources, and minimizing damage, cost and aggravation. In all, Gray considers their upgrade to FlexNet to be a win-win-win for the company, customers and the environment.

Reaching the point of enjoying the return on CCRWC's FlexNet investment is a story in itself. Prior to the switch, CCRWC used a team of six meter readers equipped

with Sensus TouchRead handhelds for its reading and billing process. Officials knew that a fixed base system's myriad of features would enhance customer service and save money. A selection process via competitive bid was launched.

"We're a huge rural system with just over 7,000 endpoints - it became a matter of survival and we realized that fixed based technology would save us money while also providing additional customer benefits. We looked at a number of drive-by and fixed based systems, but it boiled down to FlexNet as the only one that met all of our requirements," says Gray. "The big draw for us was the number of receivers required, the licensed spectrum, and the power output of the SmartPoints. But the feature that really made our decision easy was the 20-year battery life. That was a big thing for us."

The CCRWC FlexNet deployment is done on 14 Tower Gateway Basestations (TGBs). "No one else was close to that number. The closest competitor had more than three times that number of receivers," Gray said.

Gray also said CCRWC's history with Sensus was a key factor in choosing FlexNet. "Sensus is always willing to stand behind its product. Their customer service, reliability and the fact that we know we'll never get left behind as technology changes was a big factor in our decision."



Working with local distributor, Ferguson Waterworks, the FlexNet system was deployed to active meters. Inactive meters were worked into the program, so that FlexNet's system can monitor any unauthorized water use, monitor for leaks, as well as physically locate inactive meters. To cover the wildlife refuge area, CCRWC leased land from a cooperative landowner to install an antenna and TGB. CCRWC employed two monopoles, since the use of a typical tower would not meet wildlife requirements.

CCRWC is realizing the anticipated cost-benefits of FlexNet, the most significant of which include:

- Conservation of vehicles, gasoline and manpower by eliminating reads, re-reads, and service starts and stops. It took two-man crews in three trucks approximately 12 days to read all meters - and return trips to recheck high or questionable readings of meters that could be 30 miles away - under the old system. Now, all meters are read with 100% accuracy in two minutes or less, from CCRWC offices.
- Worker's compensation insurance is reduced. CCRWC field personnel were the highest indexed employees because of their exposure to accidents, injuries, and animal attacks. By eliminating the need to be onsite to read meters, that insurance premium has plummeted.
- Unaccounted for water is virtually eliminated. Since CCRWC purchases its water supply from another local water company that draws water from the Mid Middendorf aquifer, leaks leave CCRWC holding the bill for lost water. Now, leaks are generally found within hours - and addressed.
- Unauthorized use of water is also found within hours, allowing CCRWC to collect from customers who may have previously slid by without being detected.

"We have computers at our home, and we can read our meters from anywhere in the USA," Gray explains. "Every day, someone is monitoring." Utility officials are happy to list the economic benefits of using the FlexNet system, and Gray is no different. "FlexNet stands on its own in cost savings. We didn't pick up a single customer or expand our territory, we didn't have to," he added. It is real-life stories of how FlexNet impacted the lives of this rural South Carolina community that brings the system's capabilities to the forefront.

Prior to FlexNet, leaks were reported when discovered by high bills or literally finding running water. Had that been the case in the uncharacteristically cold January 2009, water leakage would've ruined one customer's home. A water pipe located in the ceiling of a home vacated by an elderly couple ruptured on a Saturday morning. When CCRWC's Controller, Gale Griggs, checked readings that morning, the abnormal usage was immediately identified and the water was cut off within a couple of hours. Minimal damage occurred. "If it was the old system, it would've taken someone seeing water running out the door before seeking help. The plumber servicing the property credited our system for saving that house from being totally destroyed," Griggs said.

In that same month, a major line break in a creek bottom, under 6-inches of snow, caused CCRWC to hemorrhage approximately 1,000 gallons per minute while about 100 customers had leaks from broken water lines ranging from 100 gallons per hour to 1,800 gallons per hour. "We were immediately able to isolate the leaks. Had we not been able to do that, we literally would've run out of water. We were losing water faster than we could keep up with it," Gray added.

CCRWC has also provided ways for customers to have more control of their water use. During installation, every meter was installed with a new customer-side shutoff valve, costing about \$11 each. Customers can shut off their water when going on vacation, remodeling, or they can quickly shut off their own water in the event of a leak. "It saves time and property when the customer can shut off their water instead of waiting for a serviceman to drive 30 or 40 minutes or more across the county - and it saves the company money," explains Project Manager, Ray Wallace.

"The reliability of FlexNet also gives us a solid 30-day billing cycle. When we read meters manually, holidays and weather sometime prevented us from doing so, and the billing period could have a 27-35 day billing swing," Gray

said. "For our customers on a fixed income, that presented a problem. Those days are over."

Griggs said customer service reps are also reaping the human benefits of FlexNet. "We're getting customers calling in to thank us for timely notification of leaks. Our office personnel used to just collect their money - now we're in a position to help them."

Another beneficial human side of this FlexNet story is the joining of three entities in the name of conservation. CCRWC partnered with the adjacent towns of Cheraw and Chesterfield for tower placement. CCRWC gained the use of these towns' water tanks for the antennas, and the two towns were allowed to share the antennas and TGB's in return.

"I'm a strong proponent for regionalization. We're living proof that regionalization works, small towns can make more money and benefit more by utilizing regional systems. The other two towns would've never been able to use FlexNet without partnering with us, and we have 100 percent coverage at reasonable costs thanks to them," Gray said.

"In the long run, there's no reason why neighboring utilities couldn't use our towers and system. I would like to see the whole region completely blanketed by FlexNet. We all could share antennas, save money, and be environmentally

friendly," Gray added. "This technology makes us economically viable, keeps our rates down and allows us to be more customer friendly than we've ever been in the past."

But Gray is also the first to say FlexNet is only what the utility personnel put into it. "If you don't manage your system on a daily basis to find leaks, tampers, unauthorized use, etc., this system is not realizing its full potential. You'll only get a tenth of the benefit. The real value in the system is not the monthly reads, it's all these little things that really make up the list of assets in incorporating this data collection system."

FlexNet is fueling a host of new programs for CCRWC. They plan to be the first water utility in America to offer pre-pay options and automated notification when pre-set water usage is nearing depletion. Plans are underway to replace payment drop boxes with kiosks to allow for real-time balance, payments, and more.

"We are determined to utilize the full capabilities of our AMI system to benefit our company, customers and the environment," Gray added. And apparently, CCRWC's work is getting noticed. Gray reports that federal rural development officials are so impressed with how FlexNet is working, that they are seeking to feature it in their publication that recognizes excellence in water utility management and resource conservation.

FlexNet is also helping to reduce CCRWC's carbon footprint.

The savings are sizable:

Number of miles NOT driven per truck	3,200
Number of trucks	3
Average miles per gallon of gasoline per truck	10
Total gallons of gasoline per year	11,520
Cost of one gallon of gasoline	\$3.65
Total savings - gasoline	\$42,048
Total savings - oil/tires/maintenance	\$3,240
Annual savings	\$45,288

11,520 gallons of gasoline is equivalent to:

- 236 barrels of oil
- The annual electricity use of more than 14 homes
- 23.1 acres of annual pine forest sequestration
- 4,229 propane gas grill cylinders

