



CITY OF ENID

CLIENT

ENID, OKLAHOMA

LOCATION



HIGHLIGHTS

- Number of services: 20,500
 - 17,500 residential
 - 3,000 C&I
- Achieved 99.7% meter read success rate
- Reduced # of meter readers by 100% with no job losses
- Reduced length of meter reading route from 4-5 days to almost instant
- More proactive customer service
- Ability to implement a mobile system in parallel to read remote meters
- Ability to leverage peak demand for distribution water

All in One Place: Bringing in Reads, Revenue with ARB® FixedBase™ AMI

Rising Demands for Water Amid Sinking Meter Accuracy

Located in northwestern Oklahoma, the City of Enid shares the wide open, flat spaces with wheat fields and oil wells. Founded during the famous Land Rush of 1893, the “Queen Wheat City” began an oil boom in 1910. Now also the home of Vance Air Force Base and an overall population of nearly 50,000 people, the City serves 20,500 water service connections – 17,500 residential and 3,000 commercial and industrial (C&I) accounts. Even in the best of times, the water meter system was a challenge to maintain; but especially during the 1990s with an oil bust and drop in population, the resources for regular maintenance were scarce.

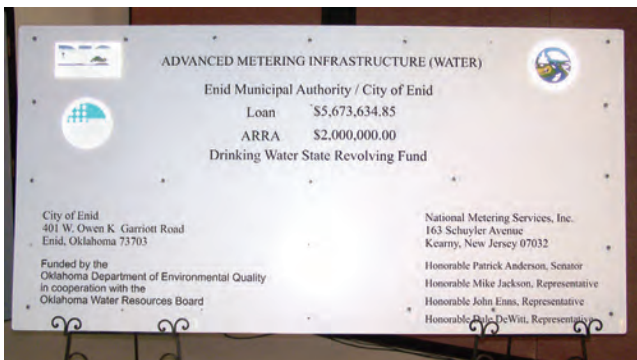
The area experienced a turnaround by the mid-2000s, so much so that population growth caused increasing demand on the water system. It became increasingly evident that the existing 80-year-old metering infrastructure (including an eclectic mix of products from different manufacturers) was inadequate as was the water distribution system. In 2007, the City decided to invest in improvements to its public works system, while new utility management came on board around the same time.

According to City Manager Eric Benson, many of the aging meters were inaccurate, inefficient, and unreliable. Head of Engineering Robert Hitt agreed, saying that an upgrade was needed to the meters to “comply with a reasonable standard of accuracy”. In the summer of 2009, the City, under the leadership of Jim McClain, Public Works Director, began looking into an automated meter reading system. Utility Services Manager Scott Morris said the goal was to provide “the best efficiency, the best service, and the best system of data collection that [would be] maintainable and renewable for the life of the meters”.

A Round-Trip to Tallassee for Neptune’s Two-Way AMI

At first, the City considered a mobile, “drive-by” system, and visited other communities’ utilities to see their systems in action. Enid’s team also consulted with a variety of manufacturers to investigate the capabilities of the latest AMR (automatic meter reading) systems. At this point, the City became aware of two-way-communication AMI (advanced metering infrastructure) systems and saw the advantages inherent in an automated system that eliminated the need for truck rolls.

After the City sent out a request for proposal to several manufacturers, representatives traveled to Tallassee, Alabama to the headquarters of Neptune Technology Group. “We’d identified those [metering system companies] with the experience and infrastructure for top quality products,” said Benson. Hitt



L-R: Sonya Mock, Senior Financial Analyst, OWRB; Robert Hitt, P.E., Director of Engineering Services, The City of Enid; Joe Freeman, Chief Financial Assistant Division, OWRB; Steve Thompson, Executive Director, ODEQ; Charlie Trimble, Senior Territory Manager, Neptune; Eric Benson, City Manager, The City of Enid; Joe Castrovinci, President, National Metering Services; Leslie Smith, P.E., Water Quality Division, ODEQ; Rebecca Poole, P.E., DWSRF Manager, ODEQ; Jared Hendrix, AMR Product Specialist, H.D. Supply.
 ODEQ = Oklahoma Department of Environmental Quality; OWRB = Oklahoma Water Resource Board; DWSRF = Drinking Water State Revolving Fund

added, "We knew of Neptune's reputation for quality systems and radio reads... and after seeing the equipment and facilities they had to test RF communications systems, we were very impressed with the expertise they had on staff. They answered all our questions and made complex operations easy for the layperson to understand."

Neptune Senior Territory Manager Charlie Trimble gives credit to Neptune New Program Development Manager Jim Brennan for his thorough explanation of how the R450™ RF products work, saying, "The Enid representatives were particularly impressed by his presentation." Trimble added that it gave further support to Enid's prior evaluations of Neptune. Earlier the City had discovered that older Neptune meters were providing more accurate readings than several newer meters from other manufacturers during a field check of its own system.

Neptune's R450™ Data Collectors Cover All the Bases

By the fall of 2009, primary contractor National Metering Services, a New Jersey company headed by Joe Castrovinci, was awarded the bid for the complete turnkey installation of the City's 20,500-meter system. The firm worked together with Neptune in the effort, and the two companies were joined by HD Supply, whose Systems Specialist Jared Hendrix and Outside Sales Representative Shad Byrne assisted in the installation. The City chose Neptune's ARB® FixedBase™ AMI System, complete with E-Coder® Solid State Absolute Encoder registers, R450 meter interface units (MIUs), and R450 Data Collectors. Before the changeout, Castrovinci also performed flow monitoring studies on many of the larger meters to see which were working best.

Installation started in late January 2010 and took a year to complete. Hitt said, "The installation went smoother and better than I anticipated." Morris added, "Any time we needed to solve a specific issue, Joe and National Metering Services took care of the situation – 95 percent of the time, it was on the same day."



Installation of an R450 in a pit.

Because the City of Enid was in the process of eliminating an outdated emergency services communication system and implementing a downtown wireless network, Castrovinci's team was able to take advantage of the flexibility of the ARB FixedBase AMI System, specifically its ability to backhaul data through a WiFi system. Dana Watkins, IT Manager for Enid, said, "Before, we'd been looking at using cell phone technology to use in data collection. But this project blended right in with our plans for tripling the size of our WiFi network."

After Neptune conducted a propagation analysis to determine the optimal locations for the R450 Data Collectors, National Metering Services installed one atop a 150-foot water tower, another on a 250-foot grain elevator, and another 14 on the area's 30-foot tornado siren poles. The collectors were placed at proper intervals for signal redundancy; and, according to Hitt, provided "good overlap on meter reads". Although the city was prepared to find "holes" in the coverage, that turned out not to be the case. "We had expected a two-percent difficulty rate," Hitt added, "but instead we've gotten close to 99.9 percent success rate, almost 100 percent, of reads collected" from the network. Even when lightning struck two of the collectors during the installation process, the other collectors took up the slack. "We haven't missed a read from those meters," enthused Morris. "That's impressive."

Making Reads Easy, Going Easy on the Readers

In a short time, the benefits of the new AMI system have revealed themselves far beyond read success rates. Whereas before it took three full-time meter readers four or five working days to read a billing route, each keying in 350 meter reads per day using a handheld device, now *no* full-time readers are needed. That same route is now read almost instantly at the touch of a button. By removing personnel from the streets, the City no longer deals with safety issues involving meter readers on icy roads and walking a five-to-six-mile route in sub-zero temperatures during the winter and in 100-plus-degree heat in summer. Neither is the lack of sidewalks or the abundance of customers' dogs a problem. Leaving all these dangers to postal carriers, the City can collect reads from the comfort of its own office, as it did in February 2011 when 15 inches of snow buried the area.

Not only were the meter readers safe but so were their jobs. With the manual walk-by routes totally eliminated, two former meter readers were transferred to their choice of other departments while the third is now being trained as a designated AMI tech to run reports and monitor the system. According to Morris, through this new position the City can, for the first time, proactively contact customers about leaks at their residences or businesses.

The Measure of “The Most Outstanding Customer Service”

Morris sees the R450 System’s ability to monitor customer consumption as probably its greatest asset in helping him perform his day-to-day tasks. “It’s an amazing thing,” he says, “to show customers the amount of water they’ve used and when they’ve used it. A lot of people didn’t know the amount they’d used... this is a tool we’ve never been able to have before.”

Using ARB® N_SIGHT™ AMI host software to graph consumption, Morris has helped customers, many with longstanding leak issues, identify their problems. “Ninety percent of the time it’s a leaking toilet, so now I can tell them to shut off the valve, and then [from the software] I can see if that’s where the problem is. I don’t even have to visit their house.” One customer who benefitted from the system’s heightened leak detection ability was the city manager himself. Benson was able to identify a small, 0.6-gallon-per-hour leak at his house which he then fixed before the lost water could add up over time.

For those customers who’ve complained about higher bills – because of the new meters’ greater accuracy – Morris has been able to provide conclusive answers as well, proving the truth to the skeptics. “The data’s hard to deny,” he said, adding that “it has [also] given us the opportunity to provide the most outstanding customer service.”

The advanced analytics offered by the new AMI system are also yielding benefits for the City’s commercial and industrial customers. Morris can now provide several of his customers with larger meters with reports that detail daily reads and consumption for grouped meters over a week or ten days’ time. An additional quantum leap in the City’s service to C&I customers is the ability to provide daily data profiling on every meter and assist with proper large meter sizing.

Neptune’s system can help prevent a single meter malfunction from causing significant water loss. In one particular case, analysis of a consumption graph in ARB N_SIGHT AMI software pointed to a problem with a TRU/FLO® compound meter at Vance AFB housing. According to Castrovinci, the new meter performed well for a few days and then stopped registering on the turbine side. Upon opening up the meter at the site, his team quickly found a large stick that had lodged itself in the rotor. Once removed, the problem was solved.

What’s on Tap: More and More Uses for ARB FixedBase AMI

As remarkable as the benefits from its new system are, the City of Enid is looking forward to taking fuller advantage of Neptune’s AMI capabilities for new initiatives. According to Hitt, as water conservation becomes more of an issue, the City plans to make it possible for customers to check their own water usage each day – and then use that information to adjust their consumption behavior. Another potential use for the system Hitt is particularly interested in leveraging is accurately modeling peak demand for distribution water, which will help large facilities with the fire protection and water pressure they need.

The City is now in the process of implementing 26 R900® MIUs on remote meters 20 miles outside of Enid. Because ARB FixedBase AMI can operate in parallel with Neptune’s ARB® Mobile™ System, these extra meter readings will be downloaded into compatible software and included in the same billing cycle each month.

The City can say with confidence that the changeout to Neptune’s AMI has been a quantifiable success. “In addition to the greater precision and accuracy... the cost efficiencies have made the effort worth it,” said Hitt. “The system pays for itself.” Morris added, “Now we can better protect resources, increase revenue, and improve customer service. And for the first time, I’ve been able to *reduce* my annual fiscal budget.”

“It’s been a lot less hassle than I anticipated,” summed up Hitt, “and the benefits to our customers as well as the financial benefits are *more* than I anticipated.”

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