Tapping the Power of Full-Fixed AMI

By Darlene McNichol

City moves from flat-rate billing to AMI

Located about 3.5 hours from major Ontario centers such as Toronto and Ottawa, North Bay is considered the Gateway to the North. A historic Canadian railway city, it also became a major military base for the North American Aerospace Defense Command (NORAD) during the Cold War. With almost 54,000 residents, North Bay hosts a thriving artistic and cultural community, and serves as a popular location for film productions.

Even though it is nestled between Lake Nipissing and Trout Lake, the city of North Bay does not take its water for granted. After a new water treatment facility began operations in 2011 utilizing the pristine waters of Trout Lake, conservation of this important resource was one of the main reasons the city began looking into advanced metering infrastructure (AMI).

The city had a second major reason to pursue automatic metering. Of the 16,500 accounts receiving water services, its 15,000 residential customers paid a flat rate based on the number of water fixtures in their homes. Equity in billing was impossible because water consumption could not be measured—these residences had no meters in place. "It was an arbitrary method of billing the customers for the water they used," said North Bay Manager of Revenues and Taxation Lorraine Rochefort.

Rochefort added that the roughly 1,500 commercial, industrial and institutional accounts are metered, but meeting the monthly billing cycle requires sending out a technician to manually read those meters nearly every day. "Many accounts are estimated because the meters aren't reading properly," she said.

Turning the Corner

The city saw other advantages to AMI beyond reading and billing. "To us, an automatic solution also means leak detection and alarms for backflow, as well as monitoring for the public works department—such as looking for leaks in our infrastructure underground," said David Euler, director of engineering for the city of North Bay.

A request-for-proposals process led to the selection of Neptune Technology Group (Canada), with full turnkey operations provided by the team led by co-project managers Alex McGregor and Geoff Sargent. The project's scope of work included in-field meter installation, R450 transmitters and data collectors, professional call center services, data management and quality assurance, among other tasks.

In choosing which of Neptune's AMI systems, North Bay opted for the two-way communications fixed network of the R450 system. "We wanted the best product out there," Rochefort said. "The R450 system is state of the art." Euler added that from an operating cost standpoint, the full-fixed network collection approach made the most sense for North Bay, because it had no previous automated reading system in place.

Full-Fixed Network

Neptune performed a propagation study that identified the locations and optimal number of R450 data collectors. Using as many of the city's own buildings as possible, as well as existing towers and other sites, the company placed eight collectors throughout the city beginning in late 2013. At the same time, the team faced frigid temperatures and massive snowfalls to install 15,000 T-10 lead-free, bronze-body water meters with E-Coder solid state absolute encoder registers for residential accounts, along with 15,000 R450 radio frequency meter interface units (RF MIUs) by March 2014. The commercial, industrial and institutional meters also were replaced and/or retrofitted with E-Coders and R450 MIUs.

Before and during installation, Neptune implemented a comprehensive public communication program about the new AMI system. After receiving a letter from the city briefly explaining the project, customers across the service area were given an information booklet with more details—including how to schedule their own installation appointments through the company's call center or its North Bay project website, which offers real-time online bookings. Customers who had not signed up after receiving the initial letter could receive up to four reminder letters, as well as door hang tags left by installation crews.

Rochefort and Euler have been impressed with Neptune's efficiency and customer service throughout the implementation. "We were anticipating a number of challenges with the process, but we experienced less than I was expecting," Euler said.

Next Steps

McGregor and Sargent's team did not just install the latest technology; it utilized the latest technology to expedite the installation itself, including an electronic work order system to manage the process in the field. What impressed Rochefort the most, however, was the personal touch Neptune offered. "We're very fortunate to have Alex and Geoff on board," she said. "They've been very quick to respond to our needs and have always acted very professionally."

Now, with almost all the physical metering infrastructure complete, the next step in deploying the system is training North Bay's staff on how to leverage the data through N_SIGHT R450 host software. "Right now, we're working on an interface to take the meter data collected in the field and have a seamless transition into their billing database," McGregor said.

"Our goal is to be billing by January of 2015, after we're finished working on a water rate study this year," Rochefort said. As North Bay looks forward to a more equitable billing system for its water services, Euler also is eagerly awaiting other benefits to customers, including the system's priority alarms for reverse flow and continuous leaks.

The city expects big gains in conservation as well. It believes its brand-new, first-ever residential metered system likely will motivate those customers to be more aware of the water they use and adjust their consumption behavior. By leveraging the advanced data from the meters across the system, North Bay also should be able to account for water that used to be lost. "In terms of conservation, we should see 25% saved in the first year," Rochefort said. WWD

From left to right: Tom Geddes, field technician/meter reader; Alex McGregor, project manager; Susan Van Mierlo, water/sewer billing clerk; David Euler, director of engineering; Lorraine Rochefort, manager of revenues and taxation; and Geoff Sargeant, project manager.

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