



How Migratable AMR Technology Transformed Bloomington's Reading, Revenue, and Customer Service

A WHITE PAPER BY NEPTUNE TECHNOLOGY GROUP INC.

A NEED TO STREAMLINE METERING, COMMUNICATIONS, AND BILLING

When it came to its metering system, the City of Bloomington, Illinois Water Department had an accuracy problem. Accumulated over decades (with many 30 years old or more), the meters it was using came from an eclectic mix of manufacturers – as did its software and collection devices. All of this resulted in billing errors. In addition to this non-standardized system, the Department struggled with maintaining timely and efficient communication between field personnel and office staff.

Trying to fit in the meter reading needed to provide monthly billing was also a challenge. Superintendent of Meter Services Nick O'Donoghue said that each 30-day billing cycle necessitated sending out three full-time meter readers house-to-house, eight hours a day, 40 hours a week, to manually capture the reads from 30,000 meters. Making matters more difficult, with Bloomington's continued population growth, the City would occasionally have to move employees out of their job

classifications to read those meters, taxing human, financial, and physical resources in an effort to keep up.

TRANSITIONING TO AMR

It was clear that to move forward towards a smart water network, the entire Department would have to move much faster – and all in the same direction. The first step would be to eliminate steps, to transition from walk-by to mobile radio frequency (RF) technology for automatic meter reading (AMR). In choosing the Neptune® R900® System, the City of Bloomington made sure that with its system changeout, meters, encoders, collection devices and software would all come from the same source. Not only would this allow for continued inhouse operations (preventing the need to hire a third-party) but it would also provide the most seamless transition.

After initiating a pilot program using radio frequency meter interface units, Bloomington began a transition to a wireless unit that combines a solid state register with the radio transmitter, making installation simple for field technicians. Even easier, the units did not have to be programmed. "We weren't having to write readings down any longer, so we no longer had transposition errors," said O'Donoghue.





PICKING UP MORE READS AND REVENUE WITH FEWER RESOURCES

Mobile AMR is making a substantive difference in Bloomington's efforts to save time and labor. Now using a mobile data collector with 72 receiver channels, the City has the capability to read 21,000 of its 30,000 meters in a single day. "By being able to read those remotely by just driving by, we're able to keep a 30-day billing cycle. Our customers really like that," said Water Meter Technician Sada McGee. "It's so fast. We are able to pick up readings from, ten, twelve blocks away sometimes."

Quicker, more reliable meter reading has led to improved efficiencies and business outcomes in other areas, such as work orders and maintenance.

Bloomington has been able to take former full-time meter readers and put them into positions that are more valuable to help with other tasks within the utility, including leak detection, replacing broken water mains, replacing pumps, and finding locations for valves, according to O'Donoghue. Instead of having to eliminate jobs, the City has reallocated personnel to more critical positions with more responsibility.

Using advanced software, Bloomington can more accurately estimate how long it takes to read all the meters in its system, and then base the allotment of support staff and work they need to do upon that data. "We can look at our whole system and be able to change our utility billing practices," said O'Donoghue.

Planning for capital expenditures has been given a boost. By replacing its

old meters with new (and lead free) meters as part of its AMR system, Bloomington has seen an increase in revenue, allowing the water department to invest in other projects for the City.

Gathering intelligence at the meter itself means that the Bloomington Water Department can go beyond mere reading and billing. With the absolute encoder's 8-digit registration and resolution down to 1/10th of a gallon, the City can detect possible leaks, reverse flows, or even possible tamper events at 15-minute intervals. Because of the more exacting, more frequent metering data, Bloomington can stop water loss sooner – whether apparent water losses such as unauthorized consumption or real water losses due to leaks within the distribution system.

IMPROVED CUSTOMER SERVICE VIA CUSTOM LEAK DETECTION AND USAGE PROFILE ANALYSIS

While streamlined operations and increased revenue are welcome outcomes for the City of Bloomington, just as important a priority is ensuring peak levels of customer service. Its smart water system is key in these efforts, enabling:

- Custom leak detection analysis to detect exact times, duration, and amounts of flows for individual accounts that likely indicate intermittent and continuous leaks
- Usage profile analysis (data logging) of 96 days of historical consumption data for an individual account
- Dispute resolution of high water bills, showing customers their usage history via graphs
- More proactive notification of either possible leaks or excessive consumption before they impact a customer's bill; and
- Preemption of bill complaints and elimination of write-offs.

By being able to share with customers 96 days of hourly consumption information, "our customer service is so much better," said McGee. "We have so many people that have high water bills and they can't figure out why ...

but when you can pull that data and you can show them that graph, you can [say], 'Your water has been running constantly since this date,' or, 'You're having a spike at this time,' or, 'During this three-day period, your water ran non-stop'. Once they see it, they can understand it, and they can try and get the problem fixed."

Having information in hand to help the customer can be literal in some cases. In addition to addressing inquiries over the phone when the customer calls the City, Bloomington can share consumption in the field for the customer's own account, using a special app in conjunction with a portable radio transceiver. The service technician can promptly show the customer his or her usage patterns on a standard smartphone.

OFF-CYCLE METER READINGS AND MIGRATABILITY

The City of Bloomington is home to two colleges and thus the temporary home of nearly 50,000 students, making high-transient accounts a sizable portion of its total service area. O'Donoghue said, "We're always going to have a lot of finals [reads] that need to be done, with a lot of people moving in and out." Whereas currently, technicians must visit the meters to obtain final reads, he anticipates being able to use fixed network collectors to communicate these types of off-cycle reads straight to the office, saving dozens of hours and work orders. For now, the Department is happy with the results of its unified, streamlined AMR system.

Utilities looking to achieve the same types of successful business outcomes as Bloomington's should consider how the City has adopted a migratable system. While it has made the move from walk-by to mobile data collection virtually seamless, it also provides for an equally-simple transition to fixed network AMI (advanced metering infrastructure) at some point in the future, using the same endpoints. Such technology enables a utility to implement a system changeout at its own pace as circumstances and budgets permit, instead of all at once. It also enables the utility to go back and forth between collection modes as needed without the need to reprogram.

Speaking to this, O'Donoghue said, "Backward compatibility is very important. There are still accounts, for whatever reason, where we cannot get into the property, or get into the home to do an install, so being able to still do the walk-by reading is important right now....the backward compatibility with the new products going forward – that's invaluable."

For technology that works for you, learn more about the Neptune R900 System at neptunetg.com and connect to what's next in water.



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