



# The City of Toronto Water Meter Program

## Fixed Network Deployment Leads to Expansion in Savings and Revenue

### TOO MANY MOVING PARTS IN A MANUAL SYSTEM – TIME FOR AN AUTOMATED SYSTEM WITH A FIXED NETWORK

In a city as large as Toronto, lots of little things can add up quickly. That's certainly been the case for the City's Water Meter Program, according to Manager Carlo Casale. Prior to 2010, 476,000 water accounts generated \$1.1 billion in annual revenue. Toronto's system has encompassed quite a few "moving parts" – which included different groups of meters read manually, via phone, and through a card system, as well as 70,000 mainly residential accounts that weren't metered at all and charged a flat rate for water. Forty-five people were tasked with reading meters, not to mention their supervisors, vehicles, and other resources needed for support.

"Trying to get reliability and accuracy on a regular basis was difficult," said Casale, speaking to the complicated metering mix. In addition to necessitating "a lot of estimated reads", the situation led to inequitable billing for customers in different account sectors.

In 2002 the City began looking into different options for automating its metering system to address billing issues, inaccurate meters, and ways to increase efficiency. Its investigations expanded to include the possibility of recovering revenue by changing out meters. And after comparing mobile data collection technology to fixed network systems, the City's team decided on the latter for maximum savings and operational efficiencies.



#### CUSTOMER

The City of Toronto, Ontario

#### SERVICE TERRITORY

Toronto is the largest city in Canada with a population of 2,731,571.

#### SOLUTION BENEFITS

\$28 million year-over-year increase in revenue recovered

Fleet reductions, staff reallocations – \$5 million in new efficiencies

One-call resolutions of customer inquiries

Estimates reduced to 1-2%



## MAXIMIZING EFFICIENCIES BY (SMART WATER) NETWORKING WITH NEPTUNE

Most of the City of Toronto's water meters have been Neptune® meters, continuing an association going back more than a century. So when the City went forward with the new system, it sought a full turnkey solution. The Neptune team worked closely with the City to deliver the full turnkey solution, including meter and AMI endpoint installations, system integration, deployment, public education, and communications. "There were clear lines of communication between the City and Neptune, and they were easy to work with," said Casale. The project began in 2010 with a budget of \$220 million; the project was finished a year ahead of schedule and \$40 million under budget.

That's not the only area in which the City has saved money. Following the February 2016 implementation of cloud-based data and analytics, Toronto Water customers can go online to monitor and review their own usage. "We can walk them through their water use with a one-call resolution instead of a service order and a truck rolling to investigate," said Casale.

Truck rollouts are now so infrequent that Toronto was able to reduce its fleet and associated vehicle cost for metering-related functions. As a part of this process, he added, "We've amalgamated positions and redeployed personnel – and identified \$5 million in staffing savings through efficiencies."

Customers have quickly acclimated to the new metering system and are enjoying the benefits realized through advanced analytics and communications. "They have more confidence in us because they can see the water they use every day instead of after 90 days on a bill," said Casale. "Dispute testings [of meters] after high water bill complaint calls have dropped drastically. Estimates are

down from 25 to 30 percent to just one or two percent. Those who originally had flat-rate accounts have reduced their bills by 25-40 percent."

Large commercial and industrial customers are especially glad that the City enables them to track their water consumption. While comprising just 17,000 accounts, they make up nearly a third of the total bringing in \$400 million in revenue every year. Knowing how much each drop counts, "they're hungry for this information," according to Casale, "because it helps them make sense of their process and their spending. For instance, they can compare one day of water use to another day of water use and see where they used more water when cooling systems were turned on, then they can take steps to reduce cooling costs. Manufacturers love it." He also mentioned that in just a few months, the staff who look after energy efficiencies in Toronto's large towers and skyscrapers have come to depend on the ability to monitor their daily usage, and have sent grateful emails to the City.

## LEVERAGING DATA TO LEVEL-UP SAVINGS AND REVENUE

Each year the City of Toronto receives 800 million meter readings from its fixed network system. And Neptune is providing intelligent insights for a smart water network, particularly in leak detection and customer service.

Casale is excited about next steps. "We'll be looking more at grouping similar accounts – such as our 550 public schools – to compare consumption. We're also looking at providing alerts to engage customers," who'll receive emails when their water usage exceeds levels that they preselect. Customers could even compare their usage to a daily average across the service area or to another district or ward within the City. "It helps them think about water usage, and will help us promote conservation."

Interoperability with Toronto Water is another area where the system will shine. “Our people are just seeing the usages of the data,” Casale said. “We can give other departments access to metering data – such as our finance section, who are using it to review water rates to better forecast revenue.” He mentioned that in the future, Toronto Water plans to leverage shared advanced metering infrastructure (AMI) data for hydraulic modeling, pressure monitoring, stormwater and sanitary overflows, and water quality measurement including chlorine analysis. Casale said that it will prove invaluable for asset planning and capital programming.

Already, the system implemented by Neptune has transformed Toronto’s water metering program into

a smart water network. Data is collected in seconds. Customers are metered and billed on a much more equitable footing and are responding positively to leak detection and self-monitoring of usage. High bill complaints and estimates have been drastically reduced. Staffing reallocations have resulted in \$5 million in new efficiencies. And possibly most impressive of all, from 2015 to 2016, Toronto has realized a \$28 million year-over-year increase in revenue recovered. In this big city, the benefits added up quickly.

*“We can walk them through their water use with a one-call resolution instead of a service order and a truck rolling to investigate.” - Carlo Casale, Manager, Toronto Water Meter Program*



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