



Cape Breton Regional Municipality

Phased-In Migration to System-Wide R900® Mobile AMR

Cape Breton Regional Municipality, also referred to as CBRM, is the second largest municipality in the Province of Nova Scotia, Canada. CBRM is located on the eastern side of Cape Breton Island, one of the most scenic islands in the world.

A FUNDAMENTAL SHIFT

As an early adopter of new technologies and practices, the CBRM Water Utility made a fundamental technology decision that would shift the future direction of the Utility. The Utility undertook extensive research, which led it to commit to new and innovative water meter reading technology. CBRM Water Utility believed that its commitment to the reading system was the most important change factor as it recognized that its technology decision would have a long-lasting impact for the Utility. It ultimately decided to invest in radio frequency technology, specifically a mobile AMR solution.

By way of a competitive process, Neptune Technology Group (Canada) was the preferred choice. Neptune® offered the Utility uniquely integrated project management services for the supply and installation of Neptune's T-10 ProRead™-equipped water meters, R900® radio frequency transmitters, and Neptune's R900 mobile AMR system (mobile data collector, handheld reading equipment, and software).

In 2005, CBRM was fully metered with the exception of approximately 5,000 accounts. The unmetered 5,000 accounts in the Pottle Lake service area had significantly higher water consumption than the other metered communities within the region. The CBRM Water Utility was faced with building a new water treatment plant and correctly sizing the new facility was a priority. As a result, the Utility implemented a two-year universal metering plan that clearly mandated that all accounts be metered. The outcome would also mitigate water loss and institute a homogenous system for water billing.



CUSTOMER

Cape Breton Regional Municipality,
Cape Breton, Nova Scotia

SERVICE TERRITORY

Cape Breton Regional Municipality
serves 28,645 accounts in Nova Scotia,
Canada.

SOLUTION BENEFITS

Upgrading old meters to implement
new reading technology

Universal metering to reduce
consumption and create
equitable billing

Phased migration to system-wide
R900 mobile AMR

Read success rate 100% upon
project completion

Reading efficiencies – reading effort is
now 27 times more efficient in areas
that are fully installed with RF meters

Successful active leak program

Enhanced public communication and
customer service program

Targeted difficult-to-read
suburban areas

Reading your water meter

The CBRM Water Utility encourages the reading of the meter in your home or business to **monitor water consumption** and help **detect leaks**.

How to monitor water consumption

- take a reading at a set time of day
- take a 2nd reading at the same time the next day.

The difference between the two readings is the daily consumption.

Average daily consumption for a residential customer in CBRM is 0.7 cubic metres, 700 litres or 155 gallons per day.

Note: 1 cubic metre (m³) = 220 imperial gallons

How to check for leaks

Standard Water Meter



Reading: 00052.2 cubic metres

Look at the **low flow indicator**.

- If the little red indicator is turning, water is flowing through the meter.
- to confirm the flow of water, turn off the main water valve in the building and the indicator will stop moving.

Digital Water Meter



Reading: 00052.2915 cubic metres

Look at the **leak indicator (faucet)**

- no faucet - no leaks.
- flashing faucet - water usage for more than 50% of the time in the past 24 hours.
- continuous faucet - there is a leak.

Look at the **last number on the dial**

- represents 0.1 litres or 1/10th of a litre. If the last number advancing, there is water running through the meter.

A running toilet is the single most common reason for unexpected high water bills.

Test a toilet by putting a toilet testing tablet or food colouring in the tank. If, without flushing, colour seeps into the bowl, the toilet has a leak.

or

Lift the tank cover and look for water running into the overflow pipe or listen for a leak in the fill valve. A toilet leak of any type should be repaired immediately.

A running toilet can triple your water bill.

Protect your water meter

Please don't leave a tap running to prevent water pipes from freezing during winter. Protect your plumbing, including the water meter, by insulating the crawl space or basement. Options such as heat tape may also be helpful in protecting the plumbing.

Customers may be charged replacement costs for meter equipment that has been damaged due to freezing or other negligence.

Protect your meter reader

Water meters are read 4 times a year. Please help your meter reader stay safe:

- Shovel your walk, steps, driveway and outside meter reading unit.
- Use traction sand or salt on driveways and steps.
- Secure the family pet.

Thank you.

CBRM Water Utility
committed to quality
 320 Esplanade
 Sydney, NS B1P 7B9
 Administration: 563-5180
 Water Billing: 563-5025
 Meter Reading: 563-5280
 Meter Repair: 563-5279
 www.cbrm.ns.ca

CBRM was able to enhance its public education program and introduce the features of the E-CODER®)R900i™ to its customers, including a brochure titled Reading Your Water Meter.

PHASED-IN MIGRATION YIELDS BIG RESULTS

With a vision to implement a more efficient system and to help support stretched meter reading resources, the Utility set in motion a multi-year plan to gradually convert its meter population to mobile AMR technology. The Water Utility has assigned capital funding for each of the five years of the project. Neptune's project team installed over 5,000 meter replacements and 5,000 radio-retrofit upgrades. In combination with the universal metering project (Pottle Lake), CBRM now has over 73 percent of its total accounts reading from Neptune's R900 mobile AMR system. As a guideline, any meters that are younger than 15 years are upgraded to radio, while meters that are older than 15 years receive full meter replacement.

Neptune has completed more installations in Canada than any other service provider, with over 1.3 million to date. Neptune's expertise in the deployment of this technology has proven to be extremely valuable throughout the various projects as Neptune's R900 mobile AMR system produces an impressive 100 percent read success rate upon project completion. Neptune's approach to project management is based on a proven implementation approach that is structured around the integration of key service pillars: project management, customer care and public communication, area management, and data collection, verification, and exchange. Each year the project was directed by Neptune's dedicated Project Manager, Bill Kelly, and supported by Neptune's cross-

functional team that included field technicians, call center and data administrators, public education specialists, and IT and product support.

Upon project completion, the CBRM Water Utility will attest that Neptune's projects were completed on budget, on schedule, and with minimal disruption to the Utility. The Utility appreciates Neptune's responsiveness, professionalism, and personal approach to customer service.

PROVEN BENEFITS OF TRANSITIONING

In 2010, the CBRM Water Utility initiated a transition from the Neptune ProRead encoder registers to Neptune's E-CODER®)R900i™ whose high resolution, 8-digit encoding makes leak, tamper, and reverse flow detection possible at measurements down to one-tenth of a litre. The addition of these value-added flags has proven to be valuable with respect to leak detection and data logging of major issues. The technology has allowed the Utility to implement a very successful active leak program for the Pottle Lake area whereby the Utility can substantiate minimum nighttime flows for the distribution system and assist in identifying and isolating areas of abnormal flows. Furthermore, with the E-CODER®)R900i's easy-to-read LCD display, the Utility was able to enhance its public education program and introduce these features to its customers, including *Reading Your Water Meter*. A Leak Detection Kit mailing program was also introduced which is triggered by the leak flags gathered by Utility staff.

Through this program, the Regional Municipality has empowered its customers to be proactive in conserving water, lowering water bills, and ultimately relieving demand on the Utility's water system.

The residents of CBRM were not the only group to experience the benefits of Neptune's E-CODER)R900i . The CBRM Water Utility has three field technicians that perform meter upgrades and replacements in parallel with Neptune's Service Division. The Utility's meter shop has achieved improvements in efficiency when replacing the meters due to its ease of installation made possible by the wireless feature of the E-CODER)R900i. Prior to the implementation of the E-CODER)R900i, the field technicians were running wire from the ProRead register, usually located inside a basement, to an R900 transmitter located outside the home. With less material needed to perform the installation, the E-CODER)R900i has saved the Utility money and time.

Additionally, the Utility's meter reading group has also achieved operational efficiencies. Until recently, many of the meters were over 25 years old and required manual reading of the meter inside the dwelling. The implementation of R900 RF technology and the mobile system has relieved the meter readers from the liability and safety concerns of entering customer properties. As an example, one area in the community of Sydney had 4,000 meters that were 25 to 40 years old. This area took three meter readers a total of nine days to read, upload, process, and validate the readings. With the upgrade to R900 and Neptune's MRX920™ mobile data collector, it now takes one reader a day to read and upload the data into the billing system. The three readers process the reads, validate, initiate work orders, and perform field investigations over a two-to-three day period. The reading effort is now 27 times more efficient in areas that are fully installed with RF meters. The new

RF technology reduces the time and staff required to read; and, most importantly, it frees the meter readers to provide new and additional customer services to the benefit of both the customer and the Utility. A primary business driver for the adoption of RF technology was to better align internal resources to its area of core competency – simply put, the Utility wanted the right people doing the right work. Meter reader functions now extend to include data management processing, initiating work orders, performing field investigations, processing E-CODER® flag data, and preparing customer service packages. This results in better integrity of the overall metering and distribution systems and provides a better customer service experience.

RECOGNIZING THE VALUE

The CBRM Water Utility is on a path to achieve a system-wide R900 AMR mobile system. Similar to the challenges faced by many water utilities, funding projects of this magnitude can be a barrier. However, CBRM Water Utility opted for a phased-in approach which allows for its goal to shift technology to come to fruition. Interestingly, the phased-in approach benefits the Utility as it allows for an evolution in the gathering of data provided by the system to benefit the Utility and its customers. Eventually, CBRM Water Utility can foresee progressing to a pilot project to test a fixed network system. The CBRM Water Utility is positioned to achieve its current and future goals through a partnership approach with Neptune Technology Group who could offer industry-leading products and project management services. CBRM provides an excellent role model in the stewardship of implementing proactive product migration for the purpose of improving overall water system operations and increasing customer service.



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