



# WATERFORD TOWNSHIP

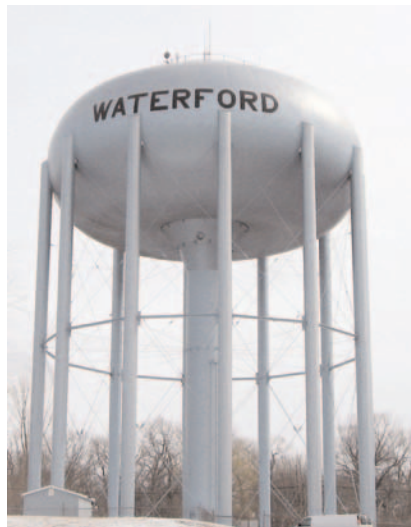
CLIENT

WATERFORD TOWNSHIP, MI  
LOCATION



## UTILITY USES HYBRID TO ACCELERATE AMI PLANS FOR FUTURE

With the word “water” in your township’s name and a landscape dotted with small area lakes and ponds as well as Lake Michigan to your west, Lake Huron to your northeast, and Lake Erie to your southeast, one might question why this water utility is pursuing the installation of Advanced Metering Infrastructure (AMI) with high resolution encoders and distribution line leak detection technology.



“Even though our area is blessed with an abundance of water, water is a precious resource and we all must do our part to preserve it,” said Terry Biederman, director of the Waterford Township Department of Public Works (DPW).

The Waterford Township, Michigan DPW serves a population of 74,000 people through 25,000 metered connections and 360 miles of water main. Located 40 miles northwest of Detroit, Waterford’s 36 square miles of service district draws its water from 15 wells to satisfy an average daily demand of 8 million gallons per day (M.G.D), peaking to 22 M.G.D. in the summer months.

With failures occurring with the previous mobile system, Waterford began its search for a new AMR system technology. Neptune’s ARB® Mobile™ System was initially selected because it provides a migration path to allow two mobile technologies to operate in parallel and be read by one mobile data collection device. Now, Neptune is providing Waterford Township DPW with a migration path to two-way fixed base AMI. Neptune’s ARB® N\_SIGHT™ Mobile and ARB® N\_SIGHT™ FixedBase software are designed to work in parallel, allowing Waterford to continue to read a portion of its system with mobile meter reading technology while it deploys and begins reading meters with Neptune’s ARB® FixedBase™ System for the balance of the system. This combination of ARB Mobile and ARB FixedBase Systems is what Neptune refers to as the ARB® Hybrid™ System – a meter reading system that supports the migration from mobile to a full-scale, two-way fixed base AMI.



“The selection of Neptune’s ARB FixedBase System supports our system migration needs. We wanted to migrate to a fixed base AMI system without sacrificing our previous technology investments.”

– Terry Biederman

According to Derek Diederich, the DPW’s administrative superintendent, “Not sending out staff to read meters is key for us. Less exposure to dogs and complaints about walking through flower beds, etc. When it is raining or snowing heavily, we still have access to our data and system. We can utilize staff for more productive things.”

Waterford Township utilizes a Wireless Wide Area Network (WWAN) for its ADA communications, security cameras, and mobile field computer connectivity. It was Waterford’s desire to leverage this existing WWAN with Neptune’s ARB FixedBase AMI System. Neptune’s ARB FixedBase data collectors can be configured with Ethernet or GPRS modems which allow Waterford to meet this objective. Communities that do not have a WWAN can use GPRS modems or other backhaul options offered by Neptune. Waterford’s ARB FixedBase System utilizes four data collectors with omni-directional antennas located at the top of their water towers. The data collectors are located at the base of the water towers for ease of access.

“We were able to leverage our existing WWAN, and if we need to access the data collectors, we don’t have to climb the water towers, saving time and money as well as protecting the safety of our staff,” said Diederich.

Neptune’s fixed base radio transmitters can be installed on the outside of homes/buildings, in basements, and in pit applications. The R450™ wall MIU installation is straightforward, using the same footprint as the existing touch pads and receptacles, eliminating the need to drill additional holes in customers’ homes. A through-the-lid traffic-rated pit antenna allows for maximum signal propagation out of pit settings and supports Waterford’s distribution main leak detection program by allowing the installation of noise loggers on distribution mains through valve covers. When these noise loggers sense distribution main leaks, notifications are communicated by the ARB FixedBase System across the wireless network to alert utility personnel of potential leaks.

“‘Managing by Exception’ – As a general rule of thumb, with fixed base meter reading, the nature of the beast is a ton of data – 90 to 95% you don’t even need to look at. Neptune’s ARB FixedBase System allows you to see the problem accounts and areas where your limited resources and staff should be devoted. Neptune’s System allows us to know about the problem areas sooner and has built-in exception monitoring.”

– Derek Diederich

Leak detection on distribution mains as well as residential/commercial customer lines is only as good as the accuracy of the leak detection technology. Neptune’s solid-state E-Coder® provides the highest resolution of any metering product on the market today (the eight-digit, 0.1 gallon, or 0.01 cubic foot resolution required to support accurate leak detection). Other standard six-wheel absolute encoder registers offer resolution only to ten gallons or one cubic foot, and incremental encoder registers (pulsers) offer resolution to one gallon or 0.1 cubic foot.

“In addition to high resolution, Neptune’s E-Coder provides 15-minute interval flow monitoring (performed by the register) which enables value-added functionality like intermittent and 24-hour continuous leak detection, backflow detection, and zero flow detection,” added Biederman. “This value-added functionality allows Waterford Township DPW to provide the highest level of service to our customers.”

Diederich agreed, saying, “Leak detection is a big customer service tool. Every utility has had to talk to a customer with a high bill who claims the meter ‘has to be wrong,’ instead of admitting to a leak or appliance problem. [The] E-Coder will help you avoid these or cut them down as well as know exactly when the problem arose. We have already used the high resolution E-Coder data to identify and resolve a leak condition for one of our customers. Not only did we save water, we were able to save critical income dollars for a retired couple in our community that was unaware the water leak was present.”

Waterford Township is a progressive water utility and strives to be a trend setter. The recommended water loss limit for water utilities is typically ten percent, and Waterford’s goal is to bring it to a fraction of that level by installing AMI technology that will pinpoint leaks on distribution mains and customer service lines. Neptune’s ARB FixedBase System supports District Metering Zone (DMZ) monitoring and analysis by providing synchronized meter readings at midnight for all meters under the network.

“This unique system functionality and advanced data will help us in conducting DMZ reviews to identify Non-Revenue Water sources within our system to further reduce water loss,” said Biederman.

In addition to the synchronized midnight read from all meters, the ARB FixedBase System meter interface units (MIUs) can be configured from the host software via two-way communication over the air to collect 24-hour consumption data from each meter. This data can be used to (1) analyze nighttime consumption of distribution network meters, often indicative of a leak, and (2) resolve high water bill complaints through identification of exceptions in usage patterns. Neptune’s ARB FixedBase System provides 24-hour consumption data without sacrificing battery life of the MIU. Neptune is the only company to offer a 20-year MIU warranty with this type of functionality.

For Waterford Township there was no doubt when it was evaluating new meter reading system technology that it was looking to get more out of the system than a daily meter reading and/or a monthly meter reading for billing. Waterford’s ultimate goal is to complete a total system integration that allows meter and distribution line data collected by Neptune’s ARB FixedBase System to interface with the utility’s Computerized Maintenance Management System (CMMS).

Biederman said, “We are excited about the opportunity to integrate advanced data generated by the E-Coder and distribution line noise loggers seamlessly with our mapping and service order software packages to ‘automatically’ populate maps with reference points and generate service orders when system-critical conditions are present. This level of system integration is required to fully optimize our technology investments toward conserving water, enhancing customer service, and improving overall operational efficiencies.”

Unlike hundreds of water utilities in drought-stricken areas, Waterford Township is blessed with an abundance of surface water and deep water wells. With AMI system technology, the management team at Waterford Township DPW is investing in the tools today to ensure its community’s natural resources are preserved and customer requirements are met for decades to come.

#### WATERFORD TOWNSHIP DPW AMR HISTORY

- 1992: Initiated an entire system meter changeout to 100 cubic foot resolution meters.
- 1999 to 2004: Implemented a mobile AMR system solution based on RAMAR technology on 35% of its system.
- 2006-2007: Initiated a pilot program to test Itron’s 2.5 fixed network system.
- 2008: Tested Neptune’s ARB FixedBase AMI System and began full deployment of the technology along with high resolution E-Coder absolute encoder registers (resolution to .01 cubic feet).

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