



Transforming the Aging Water System in Bedford, Texas, Into a Leading Smart Water Solution

When water utility managers in Bedford, Texas, determined it was time to replace the city's aging water infrastructure, they anticipated it would be a long and potentially challenging undertaking. However, by selecting a manufacturing partner with a comprehensive solutions portfolio, as well as turnkey distribution and installation partners, the Public Works Department achieved a successful and completely transformative infrastructure replacement project in less than two years. The project, which began in 2017, helped make Bedford one of the first cities in the country to deploy a smart water solution utilizing a secure LTE cellular network.

Recognizing a Need

Bedford, which is located between Fort Worth and Dallas in North Texas, serves more than 49,500 water and wastewater customers across its 10-square-mile city limits. In 2013, the city conducted a system survey and found that its water meters were in need of restoration and replacement.

"Following our analysis, city officials realized our water system was not monitoring and recording water usage as well as we'd thought. It was time to develop a plan to renew and upgrade the system," said Kenny Overstreet, Director for Bedford Public Works.

"Initially, we looked at implementing brass meters with a drive-by system. But after surveying our system, we saw the limitations of these solutions," added Overstreet. "Advanced Metering Infrastructure (AMI) technology, on the other hand, offered an option that better fit our needs and was more cost-effective in the long term."

Public Works staff talked with surrounding cities in the Dallas/Fort Worth area who had experienced varied levels of success with smart water metering technologies. Based on the feedback, the city officials decided to conduct a two-month pilot program with five Badger Meter E Series® Ultrasonic water meters located throughout the city in hopes of verifying the accuracy of the meters and the success of meter read transmissions to Badger Meter's BEACON® Advanced Metering Analytics (AMA) software suit. The pilot was a success.

Design and Funding

Meanwhile, the Bedford Public Works Department began working with an engineering design firm to develop technical specifications and construction drawings for the replacement of approximately 15,000 water meters, meter boxes and curb stops. As a city consultant, the design firm worked with the Texas Water Development Board (TWDB) to ensure necessary requirements were met to receive a State Water Implementation Fund for Texas (SWIFT) loan. Ultimately, the TWDB awarded Bedford the loan, and funding was disbursed to the city for the installation of new water meters.



Bedford Team Works on Meter Pit Installation

Selecting a Flexible, Cost-Effective Solution

After the successful completion of the E-Series Ultrasonic meter pilot program and with funds in place, the Bedford Public Works Department entered into a contract with Badger Meter, following City Council approval. Combining the BEACON AMA software suite, ORION® Cellular LTE endpoints, and EyeOnWater® smartphone/tablet application, Badger Meter helped to deliver a simple, yet powerful, end-to-end solution for Bedford.

"Using Badger Meter's BEACON AMA solution helped us eliminate the time and cost needed to install and maintain communications towers and provided flexibility for our city," shared Overstreet. "It was important for our department to get buy-in from our city and community. The ability of our customers to have access to hands-on, timely data about their water usage through the EyeOnWater customer portal was a tremendous asset."

BEACON AMA is a cloud-based software suite; therefore, water utilities like Bedford do not need to maintain servers or traditional utility-owned fixed-network infrastructure. Instead, BEACON AMA and ORION Cellular endpoints offer flexibility, the latest technology, and up-to-date, timely data without costly infrastructure. By having access to that level of regular insight, water utilities can make valuable decisions about future upgrades based on their time schedule and budget.

Rebuilding and Reshaping

Over the course of 18 months, Bedford's Public Works Department worked with Badger Meter's project management team and the installation sub-contractor, U.S. Bronco Services, Inc., to manage the intensive capital improvement project.

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“During the course of the work, Bedford not only replaced its water meters, endpoints and software, but also replaced 75 percent of its meter boxes and plumbing. The installation required close communication between all parties involved, including weekly meetings to address unforeseen circumstances and adjustments to the schedule. And, while the overall project took about four months longer than initially anticipated due to the scale of the work that was needed, the project was completed timely and efficiently, coming in nearly \$1 million under budget,” said Santiago Speranza, Manager, Project Management Office at Badger Meter.

At completion, the City of Bedford deployed approximately 15,500 E-Series residential- and commercial-sized meters with ORION Cellular LTE endpoints and began using BEACON AMA to manage its entire water system.

The Benefit of Accuracy

“Almost immediately following the installation of our new E-Series Ultrasonic meters, we saw a 20 to 25 percent increase in data accuracy. Today, now four months after the completion of this momentous project, we are still reading between 99.9 to 100 percent accurate across our system. Never have we had this sustained level of accuracy,” said Overstreet.

Customer service also significantly improved following the implementation of Badger Meter’s BEACON AMA and EyeOnWater solutions. Both the Public Works Department’s customer service team and the city’s water customers are now able to see and understand their water consumption.

“We have received fewer customer complaints overall. Also, the ability to talk with customers using data that we know is accurate and reliable is vastly reducing the time we spend managing customer issues. For instance, we had a customer contact our office to dispute an increased bill. We were able to immediately show the customer their usage data and rectify the situation quickly and painlessly,” shared Overstreet. “Having access to this data is also helping our team advise customers on how to better manage their water use. We specifically helped a customer find that their sprinkler was running two times longer than necessary.”

Four months post-project completion, city staff are experiencing continued success using Badger Meter’s BEACON AMA managed system with ORION Cellular LTE endpoints. Community outreach and education continues from city staff, who are working to provide customers with the proper tools to access and monitor their water usage. And, the transformation of Bedford’s water system into a “smart water” operation has vastly improved the efficiency of water operations. The achievement – driven by a successful combination of ingenuity, technology and teamwork – has helped make Bedford a pioneer in deploying a smart water solution using the LTE cellular network.

City of Bedford, Texas

- **BEACON® Advanced Metering Analytics (AMA)**
- **ORION® Cellular LTE endpoints**
- **E-Series® Ultrasonic Meters**
- **EyeOnWater® Smartphone and Tablet App**

Results

- **Transformed accuracy and reliability**
 - E-Series Ultrasonic meters provide accurate and reliable data to system
 - Replacing infrastructure—meter pits, plumbing and more—increases integrity and reliability of system
- **Eliminated maintenance requirements**
 - Cellular endpoints eliminate need for maintaining communication infrastructure
 - Without infrastructure to maintain, the city expects its costs to decrease over time
- **Improved customer service**
 - Timely and accurate data reduces customer disputes
 - Customers have hands-on access to their water use via their smartphone or tablet

SMART WATER IS BADGER METER

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www.badgermeter.com

The Americas | Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400
México | Badger Meter de las Americas, S.A. de C.V. | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882
Europe, Eastern Europe Branch Office (for Poland, Latvia, Lithuania, Estonia, Ukraine, Belarus) | Badger Meter Europe | ul. Korfantego 6 | 44-193 Knurów | Poland | +48-32-236-8787
Europe, Middle East and Africa | Badger Meter Europa GmbH | Nurtlinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0
Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503
Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01
Asia Pacific | Badger Meter | 80 Marine Parade Rd | 19-07 Parkway Parade | Singapore 449269 | +65-63464836
Switzerland | Badger Meter Swiss AG | Mittelholzerstrasse 8 | 3006 Bern | Switzerland | +41-31-932 01 11