

Excellence in Water Resourcefulness

Network Intelligence

NORTH AMERICA



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Background and Company Performance

Industry Challenges

Cities across the United States are recognizing the benefits of modernizing and retrofitting water infrastructure to keep up with the pace of population growth, maintain high water quality and service, and implement important and often necessary water conservation strategies. Advanced metering infrastructure (AMI) can play an important role by giving customers access to online information to monitor and control usage and receive usage alerts. An added benefit of AMI is improved leakage detection.

Currently, 30% of municipal water is reported lost due to undetected leakage or “non-revenue” water such as leakage or theft, unbilled water to fire stations. Unaccounted usage adds costs to the water system that are passed on to customers through higher rates if the system continues to deteriorate. Smart water solutions can help identify and capture water that was previously unbilled and turn it into revenue.

This best practice recognizes a utility’s resourcefulness by encouraging changes in behavior and implementing technology that significantly reduced water use and wastage.

Focus on the Future and Best Practices Implementation

The City of Madison might be celebrating its 169th this year, but it is far from showing its age. Nicknamed Four Lakes City because it is surrounded by four lakes, the state capital of Wisconsin is characterized as a modern university town and an early adopter of water sustainability and water quality initiatives. Madison Water Utility (MWU) manages the water supply. Drinking water comes from an aquifer, which provides the city with just under than 10 billion gallons of water a year. As the population continues to grow, water conservation becomes particularly important for the city.

As part of its water conservation strategy, MWU partnered with Itron to roll out the Project H2O metering system—a wireless smart water AMI program to improve billing accuracy and customer engagement, and accurately detect water leaks. MWU installed 66,000 wireless communication modules in homes and businesses and made two important changes:

- Switch from bi-annual to monthly reading
- Switch from measuring consumption in cubic feet to gallons

The new system also improved water leak detection. With enhanced and accurate data read, the utility is able to respond and alert residential leaks within 72 hours of detection.

Project H2O was officially completed in 2014; however, it continues to yield positive results and MWU is considered an important advisor in the industry. The following criteria were used to measure the City of Madison’s excellence in water resourcefulness.

Societal Impact	1-3 Poor	4-6 Fair	7-8 Good	9-10 Excellent
Improving customer awareness and participation				X
Enabling behavioral change for reducing waste through customer engagement and technology-driven programs			X	
Yielding impressive waste reduction results that benefit the overall served community			X	
Business Impact	1-3 Poor	4-6 Fair	7-8 Good	9-10 Excellent
Drafting a clear vision to address excessive waste through technology implementation				X
Achieving operational efficiency as a result of successful strategy for sustainability			X	
Strengthening utility's brand image as a leader for sustainability				X

Societal Impact

Improving Customer Awareness and Participation

As with many early AMI projects there were concerns about (unproven) radio frequency (RF) radiation. To address this issue, the utility worked Public Health Madison-Dane County to study¹ RF emission and concluded that the meter emitted far less RF than other conventional devices found in homes, such as laptops and cell phones. Despite this initial setback the utility was still able to move ahead complete the project within 18 months.

MWU provided two additional options to address customers’ concerns: an opt-out (including a \$7 monthly fee) and a transmitter installation outside of the house instead of the basement (at a charge of \$50.59).

Nevertheless, the city’s message about the importance of water conservation and empowering consumers to make better choices through technology resonated with the vast majority of customers: fewer than 1% of households opted out of the program altogether.

Enabling Behavioral Change for Reducing Waste through Customer Engagement and Technology-Driven Programs

An extensive marketing campaign was crucial to spread the message. The project kicked off with a media event, followed by the mailing of post cards to notify customers to schedule an appointment for meter installation. The city continued spreading the message through local talk shows, a Web site, neighborhood lists, and public meetings at libraries.

¹ <https://www.cityofmadison.com/sites/default/files/city-of-madison/water/documents/phmdcRptRF.pdf>

It also created a 3-minute video that it played on the city's community access channel, and entered participating customers in a drawing for an iPad.

The new AMI system allowed the utility to significantly improve water leak detection and notification time. Customers are using online tools to set their own usage goals and inquire about usage anomalies. The tools have been instrumental in improving customer engagement and interaction.

Yielding Impressive Waste Reduction Results that Benefit the Overall Served Community

The city hopes to reduce the residential per capita water consumption by 20% by 2020². The number of enrolled customers for online conservation tool services continues to increase. To maintain a high quality of service for the growing population, the city is requesting a water rate increase to fund the replacement of water mains and aging wells to improve water quality.

Business Impact

Drafting a Clear Vision to Address Excessive Waste through Technology Implementation

The city understood the value of an AMI system and worked quickly to allay consumer fears about RF radiation to ensure a smooth rollout. This clear vision led to a relatively quick deployment despite the early pushback on RF issues.

Achieving Operational Efficiency as a Result of Successful Strategy for Sustainability

The city's original water meters were installed in the mid-1970s, often in customers' basements. These analog systems required a technician to visit each property and manually read the meter twice a year. It also meant that leaks would go unnoticed and unattended until either a technician arrived or the customer received an exorbitantly high bill. The average monthly water bill is \$19.

With the new wireless system, the information is automatically transmitted back to MWU and is available to the customer online. Technician visits are no longer required.

The program combines meter reading with online conservation tools. The customer can track hourly water usage and set household limits on a yearly, monthly, and daily basis, and receive email alerts whenever limit is exceeded. The Web site also provides other water conservations offers, such as toilet rebate programs, and information about how much water is used for the lawn, laundry, and shower. About 4,000 customers have signed up for threshold usage, and 9,500 customers actively monitor their usage online.

Strengthening Utility's Brand Image as a Leader for Sustainability

² https://www.cityofmadison.com/sites/default/files/city-of-madison/water/documents/ConservationPlan_71708.pdf

MWU has become a model for sustainability, not only for its customers but for other utilities. Its reputation for improving water quality and maintaining strong infrastructure has been in place for decades: it was among the first in the state and in the country to replace its 8,000 dated lead water pipes with copper pipes in the 1990s.

Conclusion

MWU has demonstrated exceptional results from both societal and business standpoints. With its strong overall performance, the City of Madison has earned Frost & Sullivan's Excellence Award for Water Resourcefulness.

Frost & Sullivan

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