

# Excellence in Resourcefulness - Water

Network Intelligence  
NORTH AMERICA



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## Background and Company Performance

### *Industry Challenges*

Cities across the globe continue to face numerous challenges dealing with an aging infrastructure for water and electricity. According to the American Society of Civil Engineers (ASCE), the United States has more than one million miles of water mains, some which date as far back as the Civil War. On average, water mains experience approximately 240,000 breaks per year, and to replace just the most urgently needed pipes, it would cost \$1 trillion over the course of 25 years. To better manage these investments, smart grid technologies play an important role for pinpointing, detecting, and managing our existing water network. Undetected and unaccountable pipes create issues in terms of locating faults, delaying repair time, increasing maintenance costs, and reducing overall efficiency for the city.

Currently, 30% of municipal water is reported lost due to undetected leakage or non-revenue water such as leakage or theft and unbilled water to fire stations. Unaccounted usage adds costs to the overall water system. These costs are, in turn, passed on to the city's residents, and potentially at increasing rates if the system continues to deteriorate. To reduce the monetary burden to these communities, municipalities are optimizing their infrastructure with technologies, such as smart water systems, to improve fault detection. Smart water solutions can also help identify and capture water that was previously unbilled and turn that into revenue. Optimization efforts are often combined with conservation strategies to address water scarcity. For many communities, concern around water supply and contamination is a growing issue. Smart water solutions monitor water quality to identify changes in system architecture and supply that can impact quality. Quality sensors hooked into a smart solution can safeguard a water network from multiple threats. These will be able to identify and safeguard against contaminants from the surrounding soil or brackish water that can backflow into the system.

This best practice award recognizes a utility's method for addressing resourcefulness through implementing behavioral change and technology that results in significant water usage and wastewater reduction.

### *Focus on the Future and Best Practices Implementation*

The City of North Miami Beach celebrated its 90th birthday on 1 October 2016. This mid-size city has a population of 41,523. The city recently completed a \$12 million deployment of Itron's advanced metering infrastructure (AMI), 11,000 acoustic leak detection sensors, and cloud-based analytics as the part of its effort to improve the city's water operations and water conservation. During the initial pilot project, the city was still recovering from a drought. This meant it needed a system that would help it curtail water consumption and improve efficiency. The new system allows the city to conduct hourly reads of water used.

The utility also needed to address growing concerns about leakage. Previously, the municipality would hire an acoustic monitoring technician who would spend two weeks each quarter listening to every valve to determine leakage sounds, a less-than-efficient system. With the leak sensors in place, the technician has been able to reduce the leak detection survey time by half.

The analytics for the AMI systems are accessed via a cloud-based program. Through this, the city will be able to provide its customers access to an online portal to view their hourly consumption, both in terms of dollars spent and gallons used.

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 effectiveness as a result of successful strategy for sustainability				X
Strengthen utility's brand image as a leader for sustainability				X

**Societal Impact**

*Improving Customer Awareness and Participation*

The city deserves top rating for improving customer awareness. It was realized very early on during the project that customer participation is crucial for executing a successful water conservation strategy. Through data gathered from smart meters, utilities can deliver current consumption information in real time to its customers. This, in turn, can trigger sentiments for changing consumption patterns. The city has been active on the awareness front through arranging and participating in education programs in schools, condo associations, and water associations. Customers are informed about the importance of water conservation and new and upcoming technologies changes, as well as being provided the opportunity to ask questions about their bills.

By the end of 2016, the city will be launching a portal where customers can register to view their own consumption on an hourly basis in terms of gallons and receive notifications regarding potential leaks. Many of the customers live in the area seasonally,

and with access to a customer portal, they will be able to monitor any anomalies remotely.

### *Enabling Behavioral Change for Reducing Waste through Customer Engagement and Technology-driven Programs*

Since the deployment, the city has been able to conserve 27 million gallons of water per year, saving approximately \$38,000 a year. With the AMI system, the utility can notify its customers about abnormal usage before sending a bill. The system is expected to set the foundation for additional programs for automated leak detection, improving efficiency of meter reading, and upgrading overall customer service.

### *Yielding Impressive Waste Reduction Results that Benefit the Overall Served Community*

Prior to AMI installation, the utility was losing between 10% and 30% of water that was pumped through its distribution system. This type of loss negatively impacts overall budgeting and conservation strategies, as well as impacts the timing of infrastructure expansion projects.

## **Business Impact**

### *Drafting a Clear Vision to Address Excessive Waste through Technology Implementation*

The successful deployment of the Itron's AMI technology is part of the city's overall vision to reduce waste. This was particularly critical during the mid-2000s when the city was suffering from a severe drought. The city has since been able to recover from the drought period. Better water management also improves overall water treatment expenditure.

### *Achieving Operational Effectiveness As a Result of Successful Strategy for Sustainability*

The technology has benefited the utility in terms of leak detection. Prior to the installation, the utility lacked great precision on the location of its pipes and valves. With the new system, the utility has been able to install a sensor at every three meters to monitor and identify leak sounds. Since the installation, the utility has been able to reduce the survey time to half.

### *Strengthen Utility's Brand Image as a Leader for Sustainability*

The city of North Beach Miami demonstrates true leadership in excellence for resourcefulness. It sets precedent for rolling out an effective conservation strategy for other parts of its city operations.

## **Conclusion**

The city has demonstrated exceptional results, both from a societal and business standpoint. With its strong overall performance, North Miami Beach has earned Frost & Sullivan's Excellence Award for Water.

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