



# Excellence in Resourcefulness—Water

*Network Intelligence*

*NORTH AMERICA*

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## Background and Company Performance

### Industry Challenges

To address the growing threat of water scarcity, municipalities are actively reevaluating existing water infrastructure with an emphasis on improving situational awareness and minimizing excess water loss.

Between 2011 and 2019, California suffered from the longest drought period in recent times, causing the Governor of California to declare Drought Emergency. This started in 2014 and was lifted in 2017. Despite the lift, the state remains cautious concerning wasteful water usage and consumption. In fact, the Californian Senate Bill 555<sup>1</sup> requires the state to achieve a 20% reduction in urban per capita water usage by December 31, 2020. It also requires utilities to audit and report water losses.

By deploying an advanced metering infrastructure (AMI), households have access to water consumption data and billing while allowing utilities to detect and fix abnormalities on their network, such as water leakage caused by undetected infrastructure flaws. AMI also allows utilities to tackle non-revenue water loss, which can represent as much as 30%. This typically consists of main leaks, theft, tampering, unbilled consumption, and meter inaccuracy.

This has led to a steadily growing and maturing North American smart water meter industry. Frost & Sullivan projects smart water meter unit shipments to grow at a consistent rate of 5.8% between 2017 and 2026.

Utilities that successfully leverage technology and service solutions can improve their resourcefulness and ensure optimal management of water use and consumption. This best practice analysis recognizes a utility's resourcefulness by changing customer behavior and implementing a technology that significantly reduced water usage and wastage.

### Focus on the Future and Best Practices Implementation

Carlsbad is a mid-sized town located 25 miles north of San Diego and its water utility has been on the forefront of upgrading its water network. Starting as early as 2008, this water utility developed a plan to improve its meter reading efficiency, improve its system maintenance, reduce its water loss, and increase its water conservation.

The utility was initially looking at a 15-year replacement plan, but by 2012 it was able to switch to a 5-year replacement plan by switching to an automated meter reading technology.

<sup>1</sup>[https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201520160SB555](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB555)

The utility has since deployed over 30,000 smart water meters spanning across 32 square miles, and it has done so within its allocated budget. Through careful planning and by leveraging the in-house expertise of the city’s topography and meter routes, the project team was able to overcome the challenges of deploying advanced meter infrastructure in a hilly topography. By using GIS maps and by looking at streetlights that were elevated, the utility was able to map out signals for deploying the end points accurately.

With this new advanced system, the utility is able to troubleshoot and identify abnormal high water usage by customers. By utilizing proactive customer outreach, the utility has helped customers reduce their consumption by 37% within six months.

After successfully modernizing its water meter infrastructure, the Carlsbad Municipal Water District delivered a number of improvements and successes that are captured through the societal and business impact table below.

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 that benefits 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 a successful strategy for sustainability				X
Strengthening a utility’s brand image as a leader for sustainability				X

## Societal Impact

### *Improving Customer Awareness and Participation*

Early on during the prolonged 2011 to 2017 drought, the utility understood the steps necessary to address a dire situation and how to allow the customer to become part of the solution. By digitalizing the water meter infrastructure, the utility was able to deliver more accurate and timely data on how much is being spent. This data can be filtered by specific days and by specific times, and gathering this data was only possible by deploying an advanced meter infrastructure and embedding efficiencies. The utility was able to connect with the customer and proactively repair any noticeable leaks.

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

Engaging customers is a top priority for the utility because this not only ensures quick ROI on meter investment, but because it also improves overall customer service. In addition to sending out email notifications with tips on how to conserve water, the utility hosts customer outreach events at various public places, such as the public pool, on how to conserve water. The utility also sends out notifications via email, containing links on how to reduce irrigation time. The campaign has received a positive response from customers, especially from those that discovered a leak. It has brought the utility closer to the customer by helping them save money by conserving water. In addition to deploying advanced meters, the utility has begun upgrading its CIS system to include a customer portal that customers can use to directly review their bill and usage information online.

## *Yielding Impressive Waste Reduction Results That Benefit the Overall Community*

Since modernizing its water metering network, the utility gained operational efficiency and was able to reduce water consumption by 37% within the first 6 months. If every municipality saved this much water, a drought would have had a much smaller impact. The meter records usage data at regular intervals throughout the day and is proactively shared with users that have high or unusual usage patterns. These savings were instrumental in addressing the drought and adhering to state-level mandates to conserve water.

## **Business Impact**

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

While California is no longer in a drought, it still needs to prepare for the future and new droughts. The utility wanted to take a pragmatic approach to modernizing its metering infrastructure, which meant investing in the right technology, staying within a reasonable budget and timeframe, and ensuring quick ROI. All three goals were acquired. Deployment of new network started in 2011 and was completed by the first half of 2015.

Furthermore, the utility was able stay way below its original budget of \$15 million to just \$6 million. The endpoint read rate is at 97% against the original goal of a 90% read rate.

### *Achieving Operational Efficiency as a Result of Successful Strategy for Sustainability*

Since installation, the utility has witnessed a number of operational improvements. For example, district-wide meter reading can be completed in a single day. The utility has seen an 83% percent reduction in staff time and the rate of meeting an average monthly customer service order has been reduced by 63%. The new system delivers visibility of where faults and leaks occur, allowing the utility to address these in a timely manner.

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

Carlsbad Municipal Water District exemplifies a public entity that takes its responsibility for sustainability very seriously. The need to conserve water in a drought-prone area has been heightened given the growing frequency of wildfires and other drawbacks of climate change.

## Conclusion

Carlsbad Municipal Water District has delivered exceptional results through its strategic investments in advanced solutions that resourcefully manage its water supplies. With its strong overall performance, Carlsbad Municipal Water District has earned Frost & Sullivan's Excellence in Resourcefulness Award for Water.

## Frost & Sullivan

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