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**Figure 1.** Acoustic water leak sensors (left), Internet of Things (IoT) transmission modules (center), and water operations management dashboards (right) provide the granularity of timely data to document water loss and excessive usage to reduce NRW costs and monitor consumption. Such capabilities have been shown to pay for themselves in terms of NRW-loss reductions and water savings before and during periods of water scarcity and use restrictions.

make this a top-of-mind issue for more water utilities and their customers. Utilities concerned about developing conservation plans, compliance monitoring plans, and communications plans to prepare for potential shortages can use today's advanced metering infrastructure (AMI) and analytics as a basis for future compliance monitoring and enforcement.

### Step One: Recognizing The Reality

To many consumers, water is like air — necessary for life and expected to be always available. While the concept of paying for water — more accurately, paying for the service of cleaning and distributing it to their tap — is a reality that they grudgingly accept, the concept of water not being available at any price is much harder to grasp. That is why utilities need to make conservation planning and education as much a part of their resiliency strategy as hardened infrastructure and cybersecurity.

Communicating conservation topics in the context of water use vs. water loss, population growth, demand forecasting, and conservation education programs can be a more effective approach than simply imposing strict water rationing once a crisis arises. But it depends on having good data-enabled utility action on source water availability, consumption trends, and NRW losses

garnered through field-monitoring efforts only made possible on an AMI platform.

### Step Two: Implementing Timely Alternatives

Fortunately, much of the infrastructure needed to promote and manage water conservation can be implemented incrementally to deliver worthwhile rates of return in reducing NRW losses even before scarcity issues arise. With [better metering](#), [leak reduction](#), and [distribution system monitoring](#), utilities can use this data to drive more cost-effective actions to save both water and budget costs and are then better prepared to deal with potential deficits between water available and water consumed.

Good water conservation planning and compliance monitoring supported by highly granular data — from daily, hourly, and overnight readings — keeps utilities ahead of the curve. First, it helps to manage both conservation and compliance education or enforcement efforts in the face of increasing water scarcity. Second, it shows customers how leak reduction efforts are paying off in terms of saving water, forestalling rate increases, and protecting users against billing surprises due to leaks that occur beyond their billing meters. Many of those approaches have already been taken in water-strapped areas of the globe, ranging from [Australia](#) to [Europe](#) to the [Middle East](#).

To make sustainability goals a reality, it is helpful to work with vendors who understand operational decision-making as well as the ins and outs of [federal](#), [local](#), and [third-party](#) capital financing that can enable utilities to secure the AMI tools that are needed now. A comprehensive [water operations management](#) (WOM) approach — including operational visibility, event management, leak management, hydraulic modeling, seasonal demand forecasting, predictive maintenance, and more — can set the stage for operational cost savings today as well as prepare for potential water scarcity in the future. This [value calculator](#) (Figure 2) shows how the same tools used for NRW leak detection can provide value beyond periods of restricted use due to water scarcity.

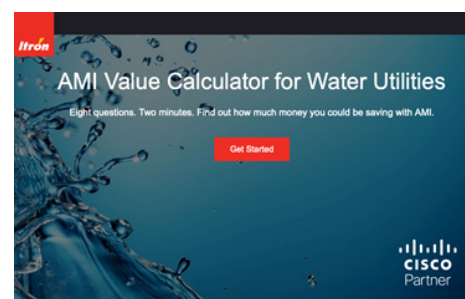


Photo courtesy of Itron

**Figure 2.** This [value calculator](#) shows how the same resources used for monitoring regulated water use compliance offer significant value for other water utility applications beyond water scarcity and conservation. Users can enter and fine-tune their own utility's operating parameters to evaluate the potential range of financial benefits beyond compliance monitoring alone.

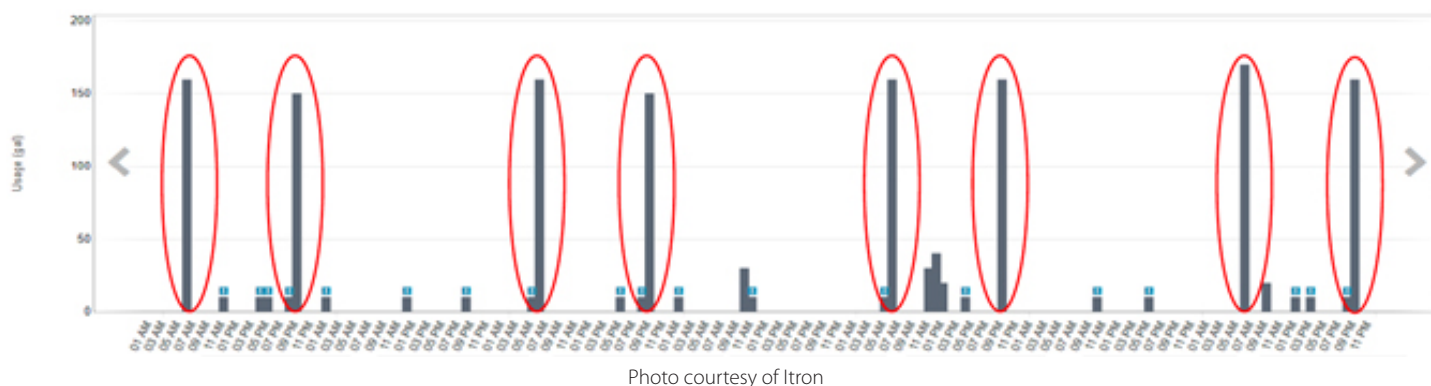


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**Figure 3.** Analyzing water consumption patterns on an hour-by-hour basis makes it easier to identify irrigation events that exceed recommended seasonal watering frequency restrictions.

### Water Conservation Compliance — A Case In Point

They say that “what happens in Vegas stays in Vegas.” But that should not be the case when it comes to sharing practical steps water utilities can take to reduce wasteful water use. Because of its desert location and rapid population growth, the Las Vegas Valley Water District has a long history of mandated [water conservation](#) and [compliance monitoring](#). When the water utility conducted a study to analyze non-compliant water use patterns in 2019, they discovered that hourly water meter readings could help them improve compliance with seasonal watering restrictions and yield significant water use savings.

Using AMI-enabled analytics, they identified accounts where consumption exceeded 150 gallons in one hour more than three days per week (Figure 3) — a condition assumed to represent irrigation watering in violation of the seasonal restrictions. Sending direct notification letters to those suspected water use violators had the desired effect, resulting in a 12 percent reduction in water consumption among the 47 percent of recipients who reset their irrigation to comply with the three-days-per-week watering guidelines. That represented a direct savings of 128 million gallons.

### Writing The Next Chapter

The case study above is but one example

of the dozens of positive actions utilities can implement once they are able to capture and utilize the timely data that AMI provides. Opportunities range far beyond basic meter reading to include identifying excessive water use, pinpointing [NRW leaks](#) as they emerge, and [managing pressures](#) within [district metered areas](#) (DMAs) to balance energy efficiency with customer satisfaction. Water utilities interested in improving their customer service and financial performance as well as their physical system performance can benefit most by working with industry experts who have experience delivering [operational intelligence](#) solutions across all facets of utility operations. ■