A number of factors affect the bottom line of water utilities, which may in turn lead to rate increases. These factors include the need to replace water infrastructure in a tight economy, and the increasing costs of energy, chemicals, and labor.

On the other hand, water utilities have opportunities to achieve significant savings through expanded use of automation and technology.

**PLANNING FOR COST SAVINGS**

It is important for water utilities to evaluate short term cost-saving opportunities based on whether the long-term impacts are detrimental or positive. For example, though water utilities may cut operating costs by implementing hiring freezes, salary freezes, or layoffs, the short-term benefits of these cost savings (e.g., preserving capital) can not be sustained. Additionally, water utilities should consider the external impact of their cost savings decisions. For example, by not working with key stakeholders or communicating consistently with customers, requesting a rate increase may be more difficult.
With advances such as process automation, and remote monitoring and manipulation of water operations, water utilities have been able to achieve an estimated 30% savings in operational costs.

TECHNOLOGY AND AUTOMATION
Implementing technology is an important way to provide financial savings and improve efficiency. With advances such as process automation, and remote monitoring and manipulation of water operations, water utilities have been able to achieve an estimated 30% savings in operational costs.

Operations and maintenance (O&M) costs are one of the main cost centers for a water utility, and the three largest components of O&M costs are labor, energy, and chemicals. Through automation, water utilities can achieve savings in each of those areas: staffing (5% to 30%), energy (5% to 35%), and chemicals (15% to 40%).

Automation has tangible and intangible costs and benefits. Tangible costs are part of planning, engineering, procurement, and implementation. Intangible costs include technology or operational risks, such as changes to operating procedures, employee concerns, and change management costs. Tangible benefits include lower labor costs, reduced travel time to remote facilities, and lower chemical and energy costs. Intangible benefits are often difficult to quantify but could include improved water quality, better data collection, and streamlined regulatory reporting.

With advances such as process automation, and remote monitoring and manipulation of water operations, water utilities have been able to achieve an estimated 30% savings in operational costs.

Utilities can also use an MLOG device to identify potential water leaks before they surface. As a result, crews can fix pipe leaks before significant damage occurs and during the normal workday without incurring overtime costs. The estimated range of savings from using MLOGs is $40,000 to $100,000.

However, if these technology solutions are not implemented well, there could be a number of negative impacts. For instance, management and staff of many water utilities do not have the necessary training in the proper use of sophisticated technology. As a result, some utilities have purchased expensive technology systems only to find that they did not use them efficiently, losing opportunities to achieve cost savings and operational efficiencies.

Below are examples of how water utilities are using automation and technology to achieve cost savings and other benefits:

- Enterprise mobile computing can provide up to a 30% annual improvement in efficiency and service; improve security, health, and safety; and aid regulatory compliance and reporting.

- A number of utilities are using automated meter reading (AMR) systems, which tie to the customer billing system and can result in improved customer satisfaction. AMR systems also can help determine and evaluate water loss—providing data that utilities can use to develop water loss reduction strategies.

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<tr>
<th>SAVINGS FROM AUTOMATION</th>
<th>STAFFING</th>
<th>ENERGY</th>
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