

# The Winding Path to Sustainability

*Significant progress has been made since the dawn of federal regulations—compliance rates are up and so is the number of regulated contaminants.*

By Neda Simeonova

The implementation of federal regulations has resulted in new treatment processes and technology advancements. While regulatory compliance has driven utilities to establish effective environmental, operational and management practices, it has also presented significant funding challenges. As new regulations continue to emerge, utilities must look forward and invest in effective planning to meet the challenges that these new regulations could impose. All of these factors often make regulatory compliance not only challenging, but costly as well.

## Technology Advancements & Proficiency

Technology advancements such as use of membranes, microfiltration and desalination are emerging as important tools in meeting today's stringent regulatory standards.

However, according to John Young, chief operating officer of American Water, new technologies will demand a greater level of technical proficiency from those who design, operate and maintain these systems.

"Continued emphasis on employee retention and development will also be important if a utility is to meet tomorrow's challenges," Young said.

Meeting water quality requirements requires water and wastewater utilities and treatment plants to have staff that is knowledgeable and experienced in a number of areas and disciplines. Implementing these technologies also requires training the staff. This is usually accomplished through facility training programs, implementation of standard operating procedures and specialized training.

"It is critical to provide ongoing training to operators to ensure they have the skills to operate their facilities on a daily basis and understand new technology and regulatory requirements," said the U.S. Environmental Protection Agency (EPA).

As a result, staff retention and training requires significant investments.

## Infrastructure & Funding Challenges

While the areas where investment is most needed varies from location to location—capital expenditures, operations and maintenance, staff salaries—it is the distribution and collection systems that represent the highest percentage of assets and the area that will need the most attention and investment, according to the EPA.

Replacement of the nation's aging infrastructure is the area where water and wastewater utilities will see the greatest challenges to comply with stricter water quality standards.

According to Young, U.S. water supply systems, which serve 300 million Americans, are in serious need of replacement, upgrading and maintenance, especially if they are to continue to support a growing population.

"While appearing deceptively simple, much planning and investing goes into supporting this infrastructure system," Young said. "As the population increases, so does the demand for water, placing further stress on already strained systems."

In October 2002, the EPA released the Clean Water and Drinking Water Gap Analysis Report. The report estimated that if capital investments remained at current levels, the potential gap in funding between 2000 and 2019 would be approximately \$122 billion (in 2001 dollars) for wastewater infrastructure and \$102 billion for drinking water (in 2001 dollars). Add to this increasing operation and maintenance costs for both sectors to keep infrastructure in good repair and the funding gap comes to roughly half a trillion dollars nationally. Much of the projected gap is the product of deferred maintenance, inadequate capital replacement and a generally aging infrastructure, according to the EPA.

"Municipal expenditure for water and wastewater infrastructure is one of the highest expenditure categories," Young said.

According to him, much of the financing is directed toward underground pipe. The problem, however, is that the cost of water infrastructure replacement far exceeds the financial capabilities of many local water utilities. Many municipalities, for example, believe that the federal and state governments will offer grants and other low-cost funding as a means of dealing with infrastructure challenges.

"It has been estimated that utilities spend approximately \$10.4 billion annually on infrastructure improvements," Young said. "Despite spending billions each year, there is an annual shortfall of at least \$11 billion to replace aging facilities near the end of their useful life and to comply with existing and future federal water regulations. The shortfall does not account for any growth in the demand for drinking water over the next 20 years. Furthermore, money that has been earmarked toward building new infrastructure is often diverted to other projects, aggravating the challenge."

The cost of operating infrastructure presents other challenges. While the cost of water itself is minimal, there are other expenses associated with the planning, design, construction, operation and maintenance of plants and pipelines. The electricity used to pump water from its source and across terrain, for example, is one of the largest recurring costs.

## Addressing Financial Burdens

"With 85% of the nation's water serviced by the public sector, the burden to finance the upgrades rests mainly on municipalities, local communities and ultimately, state and local governments," Young said. "But the billions of dollars needed to upgrade infrastructure make the cost burden more than local political structures can sustain."

To assist, the government has set up funds to help finance the upgrades, such as the State Revolving Fund (SRF), which was established in 1987. The SRF enables state and local governments to get low-interest loans in order to fix aging water infrastructure. States are required to match the funds they use by at least 20%.

"Other solutions point to the private sector, which is currently serving 15% of the U.S.'s water services," Young said. "A recent survey from Standard & Poor's noted that approximately \$100 billion was raised in 2006 alone for



*Tackling regulatory requirements  
and funding challenges*

## EDITOR'S FOCUS

infrastructure funds. The problem is there are barriers impeding the private sector's investment in the U.S. water infrastructure, such as caps placed on private activity bonds in 1986 that have never been updated. Meaning, there is a limit to how much private sector money can be made available to municipalities. Some argue that a rise in the cap would enable municipalities to tap into much-needed private sector capital and address this obstacle."

In addition, Young thinks that public-private partnerships will play an increasingly critical role in helping the U.S. overcome its water infrastructure challenges, and they may be able to offer one of the most viable ways in which cities, towns and communities can access the capital and industry expertise of the private sector.

While there are various options that can ease utilities' financial burdens, the EPA also believes that in the long term, utilities can address funding and other challenges successfully by adopting sustainable management practices for all operations and carefully monitoring and measuring their performance.

For example, in May 2007, the EPA and six major utility associations signed an historic agreement to promote these types of practices throughout the water sector.

"Under this agreement we are promoting sustainable management based on 10 Attributes of Effectively Managed and Utilities and Keys to Management Success. These attributes describe the types of outcomes EPA and our industry partners believe all utilities can and should seek to achieve to achieve long-term sustainability. The attributes cover all facets of utility operations from product quality and infrastructure stability to employee and leadership development and community sustainability," the EPA said. [www](#)

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### A Public-Private Partnership Solution

For more than a decade, American Water has operated and maintained the city of Buffalo's water system, resulting in significant improvements to the city's water system. This demonstrates how public-private partnerships can help municipalities effectively manage their systems and provide reliable water service to their customers.

Under this partnership, American Water was responsible for managing, upgrading, operating and maintaining the city of Buffalo's water system to provide: repair and maintenance of the distribution system; water treatment and pump station operation; residuals management; customer service; billing and collections; and the repair and

installation of water meters.

After 11 years of working with American Water, the city of Buffalo recognized more than \$44 million in savings through operational and financial improvements. The public-private partnership between the city of Buffalo and American Water has resulted in the complete automation of customer records, the design and construction of a new customer service center and a new computerized maintenance and management system.

Also, from an operational standpoint, American Water provided expertise to implement regulatory standards, improve water quality and measure technical performance. Since the formation of the public-private partnership, finished water turbidity has gone down by 77%.

In addition, American Water significantly reduced the 250 to 300 average annual main breaks and associated labor costs by installing a data system to monitor and control pump stations and a pressure relief system to manage excess pressures.

In January 2008, American Water and the city of Buffalo received the 2008 Excellence in Public-Private Partnership Award from the U.S. Conference of Mayors. This award honors the outstanding achievements made possible through the combined effort of cities and the members of the Mayors Business Council.

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