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Transforming Municipal Water Performance.

Exploring the economic challenges of running a municipal water utility during a pandemic

Publicly owned and operated water utilities are increasingly running up against tight budgets, debt obligations, and other barriers to investment as user charges, municipal bonds and traditional financing tools fail to keep up with the level of need.

While governmental departments provide some financial support for municipal water infrastructure, most water investment is locally driven, and municipalities must prioritize their improvements based on a specific set of economic, political, and environmental factors—often easier said than done. A municipal utility's ability to generate revenue is far more limited than that of an investor-owned utility and many municipalities do not have the capacity to take on additional debt. From complying with new regulatory requirements to preparing for the next major storm, municipal utilities must carefully weigh local needs when launching new investments.

Utilities must overcome several financial hurdles to address aging pipes and water mains, as well as wastewater treatment and transport concerns, including rising operating costs and unpredictable revenues that can make it difficult to maintain self-sufficiency and make long-term capital plans. Meanwhile, many municipal utilities are dealing with a heavy debt burden, and are underfunded, with many not investing sufficiently in their networks to keep up with decaying infrastructure.

The gap continues to grow between water and wastewater capital needs and historical public and private capital investment. Meanwhile, regulatory pressures over water quality increase, and environmental burdens of severe storms or severe droughts become more frequent. All of these combine to intensify the challenges facing cash-strapped municipal utilities.

With these challenges providing the backdrop, the COVID-19 pandemic is now providing additional financial performance challenges for municipal water utilities. A recent report prepared for the American Water Works Association and the Association of Metropolitan Water Agencies estimated that the aggregate financial impact of COVID-19 on drinking water utilities in the U.S. alone will likely be approximately \$13.9 billion, which represents an overall 16.9% financial impact on this sector. These new pandemic-related financial impacts are the result of two unexpected impacts. First, increased costs due to operational challenges needed to handle social distancing and remote working. Second, utilities are anticipating reduced revenue due to lower non-residential water demand during lockdowns, due to some customers' inability to pay their bills, and also the no-disconnect policy followed by many utilities during the COVID-19 crisis.

Tackle Performance Challenges With Innovation

Pandemic challenges aside, many water utilities were already struggling, focusing on yesterday's work without the capacity to plan ahead. Few have proactive business models in place, and even fewer are able to invest for performance.

A few years ago, Global Water Intelligence (GWI) launched Leading Utilities of the World (LUOW), a

global network of the world's most successful and innovative water and wastewater utilities. The goal of the group is to drive performance across the water sector by recognizing achievement and celebrating those successes while inspiring others in the industry. For example, LUOW member Dubai Electricity & Water Authority's AMI project helped the utility save 1.4 billion gallons of water in 40 months and increased revenue by \$13.7 million USD.

It is not just economics that separates the successful utilities from those struggling to keep up. The winning combination, as evidenced by LUOW members, is leadership and innovation. San Francisco Public Utilities Commission, faced with the multiple challenges of earthquakes, aging infrastructure and droughts, diversified its water resources through four different initiatives: conservation, groundwater, recycled water, and non-potable water. As a result of these initiatives, per capita consumption is now averaging only 40 gallons of water per day per person.

Other municipal utilities are facing these challenges through integrated water resource management (IWRM), which emphasizes collaboration and information sharing to bridge the gap between different public and private shareholders while improving financial and environmental outcomes.

In some areas, there are efforts being made to encourage "utility strengthening through consolidation." For example, California State Water Resources Control Board is encouraging "water partnerships" (local resource sharing, physical or managerial consolidation, or full regionalization) to benefit from economies of scale and to save meager resources that can then be spent on necessary improvements, funding reserves or paying down debts.

Further, municipalities and municipal associations often contract out water and wastewater services to private sector companies such as SUEZ, Veolia and Inframark. In these cases, these companies provide scalable solutions depending upon the need of the municipal utility through public-private partnerships and comprehensive asset management contracts. Through this type of contractual arrangement, municipalities can outsource the management and operation of their water and wastewater systems while retaining control, ownership of their assets, and rate-setting authority.

It is this same long-term planning and execution of innovative approaches to performance management that have positioned some municipal water utilities to weather the impacts of the COVID-19 pandemic better than others. While the impact of the pandemic will vary for individual water utilities depending upon its impact on their customers, with utilities heavily associated with C&I and institutional customers, high unemployment, or already stressed cities likely to take a greater financial hit, the water utility sector has had previous practice dealing with periods of stress due to droughts. In an American Water Works Association-sponsored webcast in mid-May focused on the financial impacts of the pandemic, Helen Cregger, Moody's vice president and senior credit officer of public finance, noted that such periods of stress have prompted utilities to build cash reserves and increase fixed charges, and these will help them ride out this unexpected storm.

Embrace Electric Utility Strategies to Improve Water Utility Performance

The COVID-19 crisis has utilities across the board looking at ways in which to conserve capital, and it is here that water utilities can look to the electric utility industry for inspiration. For a municipal water utility with economic challenges, the key first step is to focus on making more of what is on hand: by operating and maintaining existing assets by and taking a more analytical approach. This can unlock new capacity to do new work. By better managing existing assets utilities can alleviate or postpone massive capital expenditures on new infrastructure.

As a second step, municipal water utilities can also embrace the asset and network management techniques being adopted by electric utilities.

Through network sensors, IoT, and real-time analysis of the data provided, water utilities can increase their understanding of their network assets. Adding sensors and other IoT devices will allow the utility to access first-hand information from the field, clarify asset health, and feed that data back into planning and maintenance systems faster, to better optimize asset performance and reduce incidences of failure.

Using a network management system and its modeling capabilities (as electric utilities have been doing for years) to create a water network model will provide the utility with a better understanding of flow and potential leakage areas within the system, allowing for better maintenance planning.

As a third step, municipal water utilities need to seriously consider moving their enterprise applications for asset, metering, and billing to the cloud, either alone or in tandem with other neighboring utilities in a resource-sharing, multi-tenant arrangement.

The cloud offers flexibility and modularity, providing a scalable, reliable, and agile platform for every utility's core business. It is a much quicker route to new features and functionality than on-premises implementations, allowing utilities to cut costs and remove the upgrade burden, allowing them to repurpose budgets and staff to focus on value creation.

WATER & WASTE DIGEST

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NOV 11, 2020

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