Utility Tips for Maintaining Financial Resilience During and After a Pandemic

Alan Karnovitz, Grace Johns, and Jack C. Kiefer

Key Takeaways

Many water and wastewater utilities effectively took a “triage” approach to addressing initial COVID-19–related disruptions but should reassess practices to ensure long-term financial resilience.

Although the short-term financial effects of the pandemic varied widely among utilities, related economic and financial uncertainties will likely persist, with potentially long-term impacts.

Utilities should implement a phased post-pandemic strategy encompassing scenario planning, rate structures, consumer assistance programs, staffing and training, debt structuring, and smart technologies.

Regardless of its financial impact, the COVID-19 pandemic has demonstrated the vulnerabilities of all sectors, including the water sector, to large disruptive events; stronger financial resilience is recommended.

Layout imagery by Kostikova Natalia/Shutterstock.com
Business shutdown and stay-at-home orders resulting from the COVID-19 pandemic have significantly affected America’s economy and quickly reshaped the demand for potable water and wastewater treatment at many utilities. In the initial months of the pandemic, many utilities experienced a dramatic decrease in water consumption by commercial, government/institutional, and industrial customers. Concurrently, residential demand surged in many communities, and domestic wastewater generation patterns have followed a similar pattern.

Assessing Financial Impacts
The short-term financial impacts on drinking water and wastewater utilities were projected to be significant. In April 2020, AWWA issued a report that estimated revenue losses of up to US$15 billion, or 20% on an annual basis, at drinking water utilities. The National Association of Clean Water Agencies (NACWA) estimated wastewater revenues decreasing by $12.5 billion. A survey conducted by AWWA during the first week of June reported that 32% of respondents were experiencing revenue declines compared with the previous year. Although the worst-case scenario appears not to have materialized, financial challenges will likely persist for many utilities even after an eventual return to “normalcy.” For example, in an informal survey conducted by NACWA’s Open Forum in late summer 2020, utilities reported that as many as 8% of residential accounts were eligible for disconnection.

The longer-term financial impacts of a pandemic to water and wastewater utilities—and specifically those of COVID-19—are uncertain, but in some cases, could prove substantial and adverse. As business shutdowns and stay-at-home orders are relaxed or restarted, water consumption patterns throughout North America might well be irrevocably altered, with a larger segment of the workforce continuing to work from home and businesses reducing travel. Some educational institutions might leave in place, at least in part, their long-distance learning programs, and many retail- and hospitality-sector establishments could permanently close. Commercial real estate in some locations such as New York City might remain depressed for years to come. Although Congress has passed multiple economic stimulus packages, including aid to low-income households, the financial impact of these measures will eventually wane, and water and sewer payment defaults could again surge. The US economy will face an unprecedented level of debt relative to its gross domestic product (GDP).

Moving forward, recovery of jobs and incomes to previous levels might take months to years depending on the shape of any rebound in economic growth, which will affect consumer spending and water use, especially for discretionary and production purposes. In the United States, the more optimistic economic forecasts currently project that the level of US GDP will not recover to pre-COVID-19 levels until at least mid-2022, and all projections depend on how well the pandemic is managed, including effective distribution and administration of the vaccines approved at the end of 2020.

Changes in demand for water and wastewater services could have far-reaching effects on a utility’s financial strength, with ramifications for its creditworthiness and rate affordability as well as its capacity to execute capital investment plans to meet level of service objectives, including robust asset management. Changing future expectations could alter existing long-term plans, particularly if acute changes in demand ultimately become structural and level-of-service objectives change. Here we describe how utilities may be affected by the current pandemic and identify opportunities to improve utility resilience for future disruptive events.

Responding to the Issue at Hand
The magnitude of financial impacts on individual utilities is being driven by customer demographics, local economic conditions, pre-pandemic financial strength, and the duration and extent of regional lockdowns. In general, utilities serving suburban communities with customer bases dominated by residential accounts have not experienced revenue
declines like urban utilities with more commercial customers have. A North Carolina Environmental Finance Center survey conducted in early May 2020 found that some utilities in the state were collecting revenues 30% higher than the same period in 2019. However, consistent with other surveys conducted mid-year, 60% of the North Carolina utilities anticipated an overall revenue reduction in 2020. The Louisville Water company at the end of 2020 projected that it would sell the lowest volume of water in 52 years. Revenue has been further hampered by payment defaults (Thomas 2020).

Other issues utilities faced during the multiple waves of the pandemic included

- maintaining staffing levels because of illness and/or social distancing protocols,
- finding funding for additional labor and material costs, and
- handling supply chain issues that disrupt capital improvement programs (CIPs) (planned or underway).

In addition, a protracted period of elevated unemployment, especially in the service sector, could exacerbate any affordability issues for lower-income households, and rising levels of payment defaults could worsen and render it more difficult to implement planned rate increases.

The pandemic has heightened the need for utilities to identify and manage potential vulnerabilities to their long-term financial health. Overall, water utilities across North America seem to have performed remarkably well, often by employing a “triage approach” to address pandemic-related disruptions. Moving forward, however, utilities should adopt a phased approach to increasing their financial resilience; Figure 1 outlines sets of activities that could be implemented toward achieving this goal.

**Phase 1 Initiatives**

Most utilities responded effectively and with alacrity to the short-term challenges posed by the COVID-19 pandemic. Many utilities activated their emergency and business continuity plans to ensure operation of their facilities, including purchasing personal protective equipment (PPE), rotating operations workers, and performing business functions remotely where feasible. Although these actions helped utilities get through the immediate challenges of the pandemic, the longer-term response must address financial resilience, and the following are examples of Phase 1 initiatives.

**Conduct Scenario Planning to Identify Potential Financial Challenges**

During this pandemic, utilities have been assessing the effects of different economic conditions on their revenue, including alternative scenarios with and without future waves of infections and associated shutdowns. The purpose of scenario planning is to help utilities determine if their financial management policies, including their CIP spending, are appropriate under a range of conditions, including the current course. The results of scenario planning do not necessarily lead to short-term changes but highlight areas that may need contingency plans and further actions should things worsen—e.g., if the pandemic worsens or an economic slowdown persists well into the future. Scenarios should be reevaluated as conditions change over time. Better estimates can be made as more information becomes available about effective safety protocols, treatment methods, and vaccination policies, rollouts, and efficacy. With these estimates, utilities can anticipate how COVID-19 will affect their customers and how they use water.

**Review Payment Policies and Procedures to Maximize Collected Revenue**

The pandemic could affect water and sewer payments from large segments of local or regional populations. To manage unpaid bills in the short term, utilities should explore options to help customers manage late or default payments until their economic conditions improve.

**Review Revenue Collection Adequacy and Equitable Cost-of-Service Allocations**

Water demand patterns among different customer classes may change permanently, with greater portions of the workforce working full- or part-time...
A Phased Approach to Addressing Financial Risks and Resilience

**ISSUES**

- Disruption of cash flow
- Large changes in revenue source allocation
- Maintaining staffing levels
- Disruption of CIP projects
- Loss of utility rate revenue

- Sustained reduction in projected revenues
- Misaligned rate structure
- Increased affordability issues
- Shortfalls in planned financing of CIPs
- Meeting regulatory requirements
- Bond rating downgrades
- Disruptions of CIP planning and execution for mission-critical projects

**PHASED APPROACH TO ADDRESSING FINANCIAL RISKS**

**Phase 1**
- Conduct scenario planning to identify all potential impacts
- Review payment policies and procedures to maximize collected revenue
- Review rate structure to ensure revenue adequacy and equitable rate class allocation
- Review all critical financial metrics
- Evaluate state and federal emergency assistance options

**Phase 2**
- Reprioritize O&M and capital improvement expenditures
- Determine need and identify federal, state, and municipal funding assistance to further reduce capital costs (SRFs, WIFIA loans)
- Identify potential opportunities for cross-training of management and operations staff
- Reassess rate levels and structure to cover changes in cost of service

**Phase 3**
- Optimize overall debt structure
- Leverage existing low interest rates to lock in long-term savings
- Obtain competitive labor and construction materials costs given macroeconomic conditions
- Invest in smart-system technologies, including advanced metering infrastructure

**Review Critical Financial Metrics**

The COVID-19 pandemic should motivate utilities to assess their policies and procedures for mitigating the impacts of financial disruptions. This can be accomplished by comparing financial management performance against policy targets developed by AWWA, the Water Environment Federation, and others for metrics such as debt service coverage ratios, cash on hand, capital and operations reserve funds, and diversity of the customer base. Regional economic factors such as unemployment, the poverty rate, and population growth also should be considered. In the United States, assessments performed to comply with the 2018 America’s Water Infrastructure Act (AWIA) have been useful in compelling utilities to assess the vulnerability and resilience of their physical infrastructure to natural and human-induced disruptive events; however, AWIA places minimal focus on financial resilience.
Evaluate Options to Receive Government Assistance

Although the initial economic stimulus packages passed by Congress did not include provisions to fund water utilities’ revenue losses and additional expenses, the final package passed in December 2020 provided relief for low-income households. In addition, the Federal Emergency Management Agency (FEMA) expanded its assistance programs to allow utilities to apply for reimbursements for additional expenditures directly attributable to the pandemic, including the PPE costs and additional labor costs for overtime and hazard pay. FEMA’s new Building Resilient Infrastructure and Communities (BRIC) program, while not focused on financial resilience, provides grants for planning and implementation of physical infrastructure to bolster overall resilience.

Phase 2 Initiatives

Because the timing of businesses reopening through early 2021 remained uncertain and will vary with location, progress will not be uniform, especially as portions of the economy are allowed to open or directed to close in response to changes in infection and mortality rates. Nonetheless, as the recovery ultimately begins to take hold, utilities will gain greater insight into their “new normal,” in which revenues may be lower, rate structures might be misaligned, unemployment may be higher, and more low-income households could face affordability issues. Moving forward, the following are evaluations that utilities should make.

Reassess Overall Rate Levels and Structures

Building on their initial rate assessments, utilities should decide if their overall rate structure should be changed to reflect changes in the cost of service and in water demand as a result of post-pandemic consumption patterns. While balancing affordability with net revenue sufficiency and stability, utilities should revisit the relative contributions of fixed and variable costs to their total revenue requirements. If water demand is projected to remain depressed, utilities might have to revisit revenue estimates from connection fees and other fixed charges that do not vary with consumption levels.

Reprioritize Operations and Maintenance (O&M) and Capital Improvement Expenditures

Utilities facing reduced revenue may need to revisit their CIPs. Using the analytical methods of integrated planning, utilities can configure and sequence their capital expenditures to better align with their new financial realities, reprogramming their CIPs to reflect new financial constraints and capital needs. Inputs from a utility’s asset management program should also be considered to ensure that reprogramming any O&M or capital expenditures does not lead to unacceptable risks from infrastructure or equipment failure.

Cross-Train Management and Operations Staff and Expand Cloud-Based Computing

Maintaining a well-trained and flexible staff reduces vulnerability to disruptive events, especially those that temporarily reduce workforce availability. Although some positions are highly specialized, a review of job functions is likely to find common or related skills between different job positions. For example, within a utility that provides both sewer and water service, some operational workers could be trained to provide both services should the need arise. Cross-training opportunities can also enhance morale, especially if incentives are attached. In addition, utilities should accelerate their transition to cloud-based computing and assess productivity from remote working and more flexible schedules.

Determine Government Funding Assistance to Further Reduce Capital Costs

Utilities, in general, should be familiar with government assistance options in their region—e.g., in the United States, the state revolving loan fund (SRF) financial assistance programs administered by a utility’s specific state. However, SRF program assistance is competitively awarded and, in some years, only a minority of projects receive low-interest loans. Utilities should continue to explore supplemental options beyond SRF assistance; other US programs are available, such as the Water Infrastructure Finance and Innovation Act, which has become an increasingly accessible complement to SRF assistance. Most economists project real interest rates to remain near zero over the next couple of years, and for some utilities, expectations about future economic growth may influence short- and long-term water demand forecasts and planning decisions.
this may be the time to accelerate their CIP implementation so they can leverage the low cost of borrowing.

**Phase 3 Initiatives**

The frequent, rapid changes caused by the pandemic make predicting long-term financial impacts difficult. Changes in business practices as well as consumer preferences and behavior may have lasting effects on future expectations and long-term planning outlooks. Utilities should consider the potential longer-term impacts of the pandemic on regulatory compliance, bond ratings, CIP planning, and the execution of mission-critical projects that may span longer planning horizons.

Utilities with AAA bond ratings typically have more than a year of operational reserve, while a less financially secure utility might fall short of even the minimum target of 90 days. Early indications were that utilities carried out ongoing projects, but some delayed new project startups, likely related in part to addressing uncertainty by maintaining cash reserves and avoiding any unforeseeable risks associated with construction or expansion. It might make sense for utilities to reassess the benefits, costs, and mission criticality of pending and planned projects.

In 2009, some utilities used the conditions of the Great Recession to accelerate their CIP implementation by borrowing at very low interest rates and leveraging low construction costs, resulting in substantial long-term payoffs. On the other hand, because of acute declines in demands after the Great Recession, some utilities reported deferring or eliminating plans aimed at increasing water supply capacity. Expectations about future economic growth may influence short- and long-term water demand forecasts and planning decisions. The following are specific strategies that utilities should consider for long-term financial resilience.

**Initiatives are available to utilities for use in addressing financial vulnerabilities during extreme events.**

*Optimize Overall Debt Structure*

Given the high level of economic uncertainty, including future revenue collection, utilities should assess their debt structure and determine whether their current and projected debt levels are appropriate, whether they should refinance current debt to leverage lower interest rates and reduce debt service costs, and whether the composition of their debt is optimal. Utilities might find it prudent to maintain a debt service coverage ratio greater than 2.0 instead of the more common ratio of 1.2 to better cope with revenue volatility, both during this pandemic and with a view to other unexpected future events.

**Leverage Existing Low Interest Rates to Ensure Long-Term Savings**

The current financial environment is highly favorable to borrowing and unfavorable to cash accrual given the historically low interest rates. Utilities, especially those experiencing only minor revenue shortfalls, should examine the value of accelerating CIP implementation by taking on more debt now but at lower costs than would be expected in the future. Reprioritizing and advancing projects that would otherwise require higher-interest borrowing and a larger share of collected revenue may serve to reduce the cost of the utility’s CIP, leading to smaller and/or fewer rate increases. Numerous utilities increased the pace of their CIPs during the 2008–2009 recession to substantially reduce the net present value of their capital expenditures.

**Obtain Competitive Labor and Construction Material Costs Given Macroeconomic Conditions**

During economic slowdowns, demand for construction materials and services typically drops. Utilities that accelerate their CIPs can potentially leverage both low interest costs and depressed material and labor costs to reduce their overall capital spending. Impacts on construction activity have varied by region and submarket. In many areas, including the South, housing construction remained robust throughout 2020, during which housing permits were up by 5.1%. However, nonresidential construction was mostly stagnant and even declined in some locations, such as in New York City, where spending fell by about 22%, or $4.4 billion, from 2019 levels.

**Invest in Smarter Systems**

Depending on the age, condition, and type of the meter system in place (e.g., advanced meter reading, manual read), the COVID-19 pandemic created conditions that justify investing in advanced metering infrastructure (AMI). Utilities with AMI have
been able to collect data on essentially real-time changes in water and sewer demand at the individual account level, which can be aggregated to the customer class level for ongoing and detailed analysis of the pandemic’s effects. These data could prove useful for identifying and optimizing mitigation measures to address financial impacts related to demand changes. Although AMI typically generates an array of other benefits, its adoption does not always seem to be a financially sound investment. However, the pandemic’s social distancing policies and the need to obtain water use information in a timely manner during socioeconomic shocks might have rebalanced the benefits and costs to further support AMI implementation.

Changes in business practices as well as consumer preferences and behavior may have lasting effects that affect future expectations and long-term planning outlooks.

A Wake-Up Call: Recommendations
Water utilities quickly responded to the COVID-19 pandemic, and many took direct measures to maintain their levels of service and worker safety. The financial impacts on water utilities have varied, but while negative impacts have generally been less severe than first expected, many uncertainties remain. Future spikes and further spread of COVID-19 virus strains are possible, and the benefits of the financial stimulus packages provided by governments may wane over time. Additional utility bill defaults are possible, particularly if there are future lockdowns or constraints on economic activity.

This pandemic should serve as a wake-up call for utilities about potential future events with similar disruptive power. Accordingly, it is important that utilities reassess all aspects of their financial management and identify strategies and policies that will enhance their financial resilience.

Initiatives are available to utilities for use in addressing financial vulnerabilities during extreme events. Some are easily implemented and likely have been completed by many utilities; these include re-assessing workforce structure, establishing modified work-from-home policies, and rotating operational staff. Other efforts will require more time and resources—for example, examining changes in consumption behavior to reassess the adequacy of the current rate structure and future water supply plans. As a “stress test,” scenario planning can help utilities identify where they are most vulnerable so plans can be developed to manage and mitigate financial risks should the pandemic continue or be confounded by other macroeconomic conditions. It is imperative that utilities review their financial management practices and take deliberate actions to preserve financial health and resilience, not only through the pandemic, but in preparation for potential future economic disruptions.

About the Authors
Alan Karnovitz is economic and financial services group leader and a senior associate and economist with Hazen and Sawyer, Fairfax, Va.; akarnovitz@hazenandsawyer.com.
Grace Johns is a former chair of AWWA’s Florida Section and senior associate and economist with Hazen and Sawyer, Hollywood, Fla.
Jack C. Kiefer is a senior associate and economist with Hazen and Sawyer, Marion, Ill.

https://doi.org/10.1002/awwa.1707

Reference
Thomas J. 2020. Pandemic Puts Big Dents in Income, Consumption at Louisville Water Co. Louisville Business First. Nov. 30. https://bit.ly/36lWYPP

AWWA Resources
- Irias X. 2019. The Three Rs of Risk Management. Journal AWWA. 111:8:56. https://doi.org/10.1002/awwa.1343
- States S. 2020. Epidemic/Pandemic Emergency Planning for Water Utilities. Journal AWWA. 112:12:26. https://doi.org/10.1002/awwa.1631
- Walski T. 2019. Risk and Resilience Assessment Isn’t Optional Anymore. Opflow. 45:9:22. https://doi.org/10.1002/opfl.1249

These resources have been supplied by Journal AWWA staff. For information on these and other AWWA resources, visit www.awwa.org.