

Making Small Water Systems Strong

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There are approximately 52,000 “community” water systems (Rourke and Selby 2002) and 16,000 “publicly owned treatment works” or wastewater systems (U.S. Environmental Protection Agency 2002b) in the United States. While the vast majority of water and sewer customers are served by large metropolitan systems, most systems are small and located in rural areas. Due to their small size, these rural systems are generally more expensive to build and operate on a per-user basis, and they tend to have more problems complying with environmental and public health requirements. Many of these systems need special help to serve their customers reliably over the long term.

Within the last few years, the U.S. Environmental Protection Agency (EPA) commissioned two studies of community water systems. One was the Community Water System Survey 2000 (Rourke and Selby 2002); the other was the Clean Water and Drinking Water Infrastructure Gap Analysis (U.S. Environmental Protection Agency 2002a), commonly referred to as the Gap Analysis. These studies revealed that between the years 2000 and 2020 water and sewer systems in the U.S. will experience a cumulative funding shortfall for operating and capital improvement costs of between 500 and 750 billion dollars. We are now several years into that time frame, and there is little evidence of progress toward erasing the looming shortfall. Without measures to increase revenues and reduce costs, in the next several decades, our water and sewer systems will experience serious financial upsets that may shut some systems down and seriously imperil the operations of many others. The effects will hit small rural systems disproportionately hard.

Large systems enjoy economies of scale that allow them to hire financial and other management and planning expertise. They tend to be well funded and managed on a current operations basis. However, they will experience a staggering capital improvements funding shortfall over the next few decades as they replace aging distribution and treatment systems.

Small systems, lacking economies of scale, are frequently poorly funded. They will experience the same kinds of funding shortfalls as the large systems. They also commonly operate at a loss on an operating cost basis. Small system managers attempt to manage well, but they are at a distinct disadvantage without proper training, experience, tools, and funding.

This paper examines successes in helping small systems, and it highlights opportunities to strengthen the capacity of these systems.

Successes

The U.S. water and wastewater industry generally designs and builds exceptional infrastructure and operates it well. The industry and its associated agencies and organizations also develop and deliver training, tools, and assistance to enable operators and decision makers to manage this infrastructure.

Operator Training

Operators get training, mostly technical, largely because it is required for certificate renewal. That training, delivered by state agencies, associations, assistance agencies, and private contractors, focuses

mainly on operational and technical issues that enable operators to satisfy permit requirements. While this situation is not ideal, it works.

Decision Maker Training

Some states, environmental finance centers, rural water associations, and others have conducted “water board training” and similar training opportunities for water system decision makers. Most of this training is very effective for those who participate. As their budgets allow, these organizations continue to offer more training opportunities.

Tools

The State of Missouri has developed the Show-me Ratemaker software, a do-it-yourself spreadsheet program that small water and sewer systems use to analyze and reset their user rates. It is used throughout the country by thousands of systems and consultants. The environmental finance center at Boise State University has developed several software programs for rate setting and asset management. Many states have developed technical, managerial, and financial capacity assessment checklists. Several companies market commercial accounting, finance, billing, and rate-setting software programs. The National Drinking Water Clearinghouse distributes hundreds of titles of technical guides, books, and other resources. These are a few representative examples of tools that are readily available and often free.

Assistance

Many states, rural water associations, environmental finance centers, rural community assistance programs, and others offer technical assistance to small systems. For a fee, consulting engineers, accountants, and bond attorneys help the more financially fit systems or those getting grants and loans to put together capital improvement construction projects.

From the design and construction of facilities, to operations, to the development and delivery of training, tools, and assistance, the water and wastewater industry does an exceptional job in some respects. It does an admirable job in most others. Unfortunately, gaps still remain.

Gaps

Serious gaps accompany our successes. Most gaps in the water and wastewater industry center on issues related to the future. Infrastructure does not last forever. Growth and regulatory changes eventually render infrastructure inadequate, and the service requirements we place on that infrastructure change over time.

Training, Tools, and Assistance

Decision makers and assistance providers underutilize the training, tools, assistance, and other opportunities already afforded to them. For example, in the State of Missouri alone there are approximately 10,000 community decision makers who would benefit by attending the state’s award-winning Environmental Management Institute. Yet, only 813 have attended in the six years the program has been offered. At that rate, it would take 73 years to reach them all, disregarding the fact that all of these decision maker positions will turn over many times during such a long period. Personnel turnover is continuous so, even if the training effort was great enough to reach them all in a reasonable time, the effort would need to be on-going to continue training their replacements. Other programs such as those offered by the rural water associations are better attended but do not offer all the topics about which decision makers need training.

Rate Analysis

Small water systems need to analyze and adjust their rates on an ongoing basis—every year or every other year at the least. Many systems have never analyzed their rates and almost none do it as an annual exercise. Elected boards tend to believe that their role is to keep rates low. In the extreme, which is common, this tactic results in a compromised level of service and financial capacity to handle future capital improvement needs. The predictions of the Gap Analysis (U.S. Environmental Protection Agency 2002a) reflect this problem. There is rarely ill intent by such boards. The failure to analyze rates regularly deprives them of the information needed to be able to appreciate the short- and long-term effects of their decisions.

One of the major roots of this problem is the simple tendency of people to be reticent about sharing their financial information. Just as individual citizens

hesitate to discuss their income with neighbors, water and sewer system decision makers hesitate to share information about the financial well-being of their systems. Such reticence prevents many systems from achieving financial health.

The power of rate analysis can be illustrated with a seemingly unlikely example. I analyzed the water rates of an Illinois city with a population of approximately 12,000 in 2003. This system's rate revenues were \$2.7 million, and its operating costs were \$3.6 million during the test year through June, 2003. This system was losing approximately \$900,000 per year in net operating revenues, not counting significant capital replacement needs that were going unmet. This city had been so hesitant to get a proper rate analysis that it is now facing financial ruin if it does not make drastic rate increases. This kind of performance occasionally happens in relatively large and prosperous communities. It is much more common as community size and prosperity decreases.

In spite of the impact on the financial prospects of the water system, amazingly, the city was hesitant to move forward with a similar analysis of sewer system finances, even though that system is in even worse financial condition. Calculations, information, and forecasts do not cure the fundamental problem of shyness about finances.

Even though there is a great need for water and sewer rate analysis around the country, the lack of demand leads to a lack of affordable, talented service providers for small systems. State agencies, associations, and similar organizations could provide this assistance, but they tend to avoid sensitive rate and finance issues.

Asset Management

All systems need to start managing their infrastructure assets in a more comprehensive way so they can make them function as well as possible while minimizing their life-cycle costs (U.S. Environmental Protection Agency 2002b). This strategy is often called advanced asset management (AAM). One potential benefit of AAM is closing the mounting funding gap. Even small systems can do simplified AAM and reap valuable benefits.

At its most basic, AAM is accomplished by answering these five sets of questions.

1. What do I own? Where is it? What is its condition?
2. What is my required level of service?
3. Which assets are critical? How do they fail? How can we prevent their failure or compensate for their failure?
4. What are the possible combinations of infrastructure and management regimes that will yield the required level of service?
5. What is the required funding level for the most economical combination of infrastructure and management regime?

While these gaps are very serious, they are long-term and do not require an immediate change of direction. If systems will use this time to plan well, they will be able to cover the gaps over time with relatively modest short-term rate increases. Over the long-term, rates will actually be lower on a purchasing power basis due to the return from good planning and execution. Assistance providers can likewise develop well conceived programs to help systems make these future-oriented changes.

Direction Changes and Opportunities

Advanced asset management, several related planning techniques, sound business principles, and generally accepted accounting standards should be adopted by infrastructure systems if those systems are to serve their users well at the most economical cost.

Community leaders, voters, and utility service users need to change some of their attitudes about infrastructure systems. All need to require that these systems be built and managed using sound business principles, not just politics and anecdotal information. Public investments should be made like private investments, seeking a strong return on investment.

The Governmental Accounting Standards Board (GASB), organized to set accounting standards for government operations, recently issued guidance for reporting financial activity, including the value of assets. This guidance, GASB Statement 34, should be adopted by all municipal infrastructure systems because it gives an accurate portrayal of the net value and financial management of those systems. This information is a good basis for infrastructure

managers and citizens alike to make sound judgments about the management of those assets.

Systems should strive to continuously improve their technical, managerial, and financial capacity (TMF) to operate their systems. Originated by the federal government and now adopted by the state agencies that regulate water systems, TMF embodies good business principles as they are applied to the water industry.

The federal and state governments need to continue improving their use of good business principles and encourage the use of those principles in small water systems. In that regard, TMF, advanced asset management, and similar strategies promoted by the federal and state governments should be taught to the systems whenever possible. This strategy would enable government agencies to lead systems toward good performance and force them less.

Funding agencies need to continue their emphasis on protection of public health and the environment while seeking the greatest return on investment of the funds they devote to water systems. To do so, agencies should consider requiring applicants to submit a rate analysis that will show critical financial and investment information, thus enabling agencies to fund the neediest, most deserving and/or most productive applicants.

While the need for financial assistance will never go away, agencies should increase their emphasis on technical assistance and the development and provision of tools to help systems solve problems. Appropriate technical assistance will always yield a good return on investment. Agencies need to give technical assistance a higher profile and more funding so it will be more easily seen, trusted, and used.

Importantly, federal and state agencies need to continue to improve their ability to accurately measure and document the results of their assistance so they can prove its effectiveness to legislative and executive funding decision makers. These decision makers also need to know that they are receiving the best possible returns on investment.

Agency assistance providers do fine work, but the need is simply too great for them to service it all. There is so much need for assistance that consultants and other service providers should be used to their greatest advantage. Concurrently, agencies need to teach system decision makers how to be smart

consumers of agency, consultant, and other service providers' services. Agencies need to always keep the systems' best interests in mind and train them in how to protect and serve themselves through the use of assistance providers.

Conclusion

Small water and sewer systems currently do a good job of providing services at a reasonable cost. Future prospects; however, are not as good. There is a looming gap between the level of funding these systems are now receiving and the level they will need to operate on a sustainable basis. To bridge that gap and maintain the level of service that customers desire, the systems should adopt advanced asset management, TMF, rate analysis, improved accounting standards, and related strategies. These actions will assure that systems build the right infrastructure and maintain and operate it so as to incur the lowest possible costs over the life of the facilities. Federal and state government agencies can foster adoption of such strategies by developing, promoting, and teaching these strategies and methodologies.

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