Water Pricing and Rates Dashboards

Practice Guide #23

Winter 2009

Southeast Regional Environmental Finance Center

EPA Region 4

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Acknowledgement

We gratefully acknowledge Andrew Westbrook, Project Director at the Environmental Finance Center at the School of Government, University of North Carolina at Chapel Hill, for technical advice, editing, contacts, and support.

Introduction

Contrary to some beliefs, a water rate that is efficient and sustains one water utility is not likely to work as well for another system, even if that utility is similar in size and scope and is located in the same state or region. Bill Jarocki, director of the Environmental Finance Center (EFC) at Boise State University, recounts the story of how a mayor and a town manager in North Carolina came head-to-head over the town's water rates. When referencing a state survey of water rates, the mayor noted that many were lower than the rate charged by his town's water utility and as such, he believed that the town's water customers were being overcharged. The town manager argued that the town's rates were comparable to other water utilities with the same or similar characteristics as their own. In the end, the town manager proved his argument (Jarocki, n.d.).

As Jeff Hughes (2005), the director of the EFC at the University of North Carolina at Chapel Hill (UNC EFC), succinctly put it, "… the challenges of providing safe drinking water and environmentally sound wastewater services have undeniably become as much about financial management as about treatment technologies." This practice guide is intended to be used as a resource for local government and water utility officials who are exploring 'best practices' for managing a water utility, especially as it relates to setting and regulating water rates. This guide is broken down into four sections. The first section focuses on considerations and objectives when setting water rates; the second takes a brief look at the concept of interactive dashboards which can be used to convey complex financial data to the public and elected officials; the third part is an overview of a 'Rates Dashboard' designed specifically for water utilities. Lastly, case studies provide anecdotal evidence of how water utilities have benefited from the use of these Rates Dashboards.

Water Rate Setting

Rate setting for a water utility generates revenue through fixed base rate charges and volumetric rates that are in conformance with state, local and federal rules and policies that govern their application. Citizens want clean, high-quality water, and sustainable services (including financial sustainability); they rely on the utility to balance individual and community needs such as affordability versus full cost pricing. Suppliers want to cover their costs while retaining a reliable revenue base. For the utility, the rate is more than a means for collecting revenue to cover operating costs; it is also a resource management tool. Setting an effective rate while conserving resources can improve a water utility's financial health and efficiency. Water rates are a conservation tool and can: (a) serve as an incentive for sustainable water usage both by promoting efficiency in the production of services by the utility and by the amount of water used by its customers, (b) manage demand, (c) facilitate economic development, and (d) improve public welfare and equity (Boland, 1993; Chesnutt and Beecher, 1998; Rogers, et al, 2002). The potential for water shortages combined with increases in water prices has heightened the public's awareness of how rates are set (Chesnutt and Beecher, 1998).

For many public utilities, water rate setting is a fairly arbitrary process with significant political pressure to keep rates artificially low. In other communities, water rates are based primarily on historical costs. Following this method creates the impression that the cost of water in the future

will cost the same as it does today. This inefficient method can actually lower the value of water, misleading customers into thinking that stagnate rates equates to an abundant resource which, in turn, may lead to unsustainable usage. "The cost of developing new water today (as well as maintaining the water delivery infrastructure) is often much more expensive than the historical cost of existing water sources … [therefore] prices based on incremental or marginal costs provide signals to consumers about the future costs consequences of their water use decisions" (Chesnutt and Beecher, 1998).

Theoretically, the customer cost should cover the cost of supplying the service. However, there may be other factors in determining the best water rate, such as, condition of infrastructure and environmental and geographical costs. The following objectives should be considered for setting water rates:

1. Economic Efficiency – the rate should promote patterns and levels of water use which tend to minimize the total cost of meeting the service area's water needs.
2. Fairness and Affordability – the rate should be affordable and perceived as fair by water users and the public.
3. Equity – the rate should treat customers equally, meaning all who purchase water with the same cost should pay the same price.
4. Revenue Sufficiency – taking one year with another, the rate should supply the needed revenue to support the utility's operations, maintenance activities, pay-as-you-go capital outlays, and debt service.
5. Net Revenue Stability – net revenue is the excess of cash receipts over expenditures. Rate design should minimize changes in net revenue due to unexpected fluctuations in demand (i.e., caused by economic or weather conditions).
6. Simplicity and Understandability – the rate should be easy to understand for water users and others who are expected to make decisions based on water prices.
7. Resource Conservation – the rate should promote conservation of scarce resources and include environmental costs; rates should penalize large increases in a customer's seasonal demand, thereby mitigating the need for excess capacity that is only used once a year.
8. Avoid Rate Shocks – individual customers should not be subjected to an instantaneous large bill increase; if an increase is warranted, it should be phased in through at least two or more billing periods.
9. Easy Implementation – the transition from the old rate to the new rate should be smooth and efficient and may require new billing procedures as well as additional metering and data collection.
10. Rates Must Look Ahead – rates should be set high enough to offset investment for future capacity costs, yet not too high for customers' willingness to pay.
11. Government Policies – the rate should not conflict with other government policies.
12. Consumption Measurability – the rate should reflect the incremental cost of water consumed.
13. Bond Ratings – the utility must demonstrate its ability to meet its obligations to bondholders. Utilities entering the bond market should be prepared to demonstrate that it is a sufficiently well-funded and well-managed system to garner the best possible rating, and therefore, the lowest interest rates. (Boland, 1993; Rogers et al, 2002)

Dashboards

Digital, or executive, dashboards operate in a familiar and user-friendly way. Like the dashboard we check when driving a car, the digital dashboard presents summarized information using gauges and charts that "present actionable, timely information in a format that enables readers to quickly discern business performance" (Stephens, 2007). Dashboards are attractive tools for measuring, monitoring, and managing business activity for both financial and non-financial managers.

As described by Dürsteler (2004), "… a digital dashboard is a graphic representation that contains a series of gauges and depictions that summarise the state of the company**,** be it financial, sales or more generally of any indicator that allows you to know the situation, possibly in real time, of your business. This way an executive or anyone else who needs it in the organisation, can instantly see how the business is evolving, deciding in which areas it is necessary to act in order to correct some behaviour that could potentially deviate the expected results."

Dashboards can be customized, turning volumes of data into graphic displays that are easy to understand. By filtering out information that is not relevant, users can track day-to-day operations on one screen. They should be easy to use and their drill-down capabilities should enable users to modify reports and data in ways that sustain efficient business operations. Since an effective dashboard allows the users to access data from remote locations, security measures must be built in to protect sensitive data (Stephens, 2007).

Categorized according to their applications, dashboards can either be *operational* (specific processes using real-time data, as in an assembly line), *strategic* (overall corporate objectives), or *tactical* (departmental or division-level projects; may include budget-to-actual comparisons) (Stephens, 2007). Benefits of using a dashboard include: (a) the elimination of duplicate data entry, (b) making and implementing decisions in a timelier manner, (c) costs savings related to business performance management, and (d) bringing organizational goals and strategies in line with departmental/divisional procedures and policies (Stephens, 2007).

Rates Dashboard for Water Systems

The EFC at UNC has designed a Rates Dashboard specifically for decision makers to assist them in understanding how financial decisions affect the sustainability of their water system. Currently the dashboards they've developed are for North Carolina, Georgia, and Virginia.

These Rates Dashboards are free for utility managers and local officials. Although their primary purpose is to compare rates and rate structures among various water and sewer utilities, the dashboard is also an interactive tool that measures conservation pricing, operating ratio (a measure of the extent to which operating revenues cover costs), and affordability of rates. Partnering with state agencies, UNC EFC compiles relevant data from nearly 85-90 percent of all local governments and non-profit water and sewer utilities in a state. Data may include annual

reports and tables of rates, as well as copies of the hundreds of rate sheets analyzed. All of this information is provided to the public free-of-charge on UNC EFC's website.

UNC EFC's Rates Dashboard allows the user to select criteria for comparing their utility against others within their state. Choices include location, number of customers, and utility characteristics such as groundwater versus surface water. A map is included that illustrates the locations of the utilities under comparison. A series of dials with gauges are displayed, each focusing on a different measure. For example, Utility A may want to see how their average residential customer bill (5,000-6,000 gallons consumption rate) stacks up against others throughout the state. On a statewide basis, the dial may indicate that their bills are in the 80th percentile of all utilities, but when their billing rates are compared to utilities whose number of residential customers fall within the same range or utilities located within 50 miles, they may find their rates are more in line with 50 percent of other utilities. The same principle can be applied to conservation rates and affordability. For an in-depth look at the Rates Dashboard, video tutorials (with script) are posted on the UNC EFC's website at http://efc.unc.edu/RatesDashboards/index.html#tutorial .

Following is a listing of possible uses and applications of the Rates Dashboard developed by the UNC EFC:

A. Analyzing residential water and wastewater rates against multiple characteristics, which include:
   - Utility finances
   - System characteristics
   - Customer base and socioeconomic conditions
   - Geography
   - History

B. The residential user rates can be compared with:

   - All other utilities in the State
   - Utilities of the same size
   - Utilities with the same water source
   - Utilities in the same river basin
   - Utilities within 50 miles
   - Utilities in the same regional council of government
   - Utilities in counties of the same economic tier

C. In addition, system financial health and customer demographic profiles are provided for each utility. Bill changes for any bill from selected years to the current year are compared to:

   - Bill changes from other utilities
   - Inflation
   - Consumer Price Index

- Construction Cost Index (University of North Carolina Environmental Finance Center, 2009)

Case studies

Concord, North Carolina
Concord, North Carolina's Water Resources department provides the city and two neighboring communities with both water and sewer service; currently, they have approximately 32,000 accounts. The city abuts Charlotte on its northeast side and has experienced fast growth during the past decade and its population is estimated to be about 71,000; the 2000 Census recorded 55,977 residents (U.S. Census, 2000). Concord draws its water from the same water source as several other water utilities in the region, and understanding the demands on a limited water supply, city and public officials decided to look into using a tiered rate structure for conservation pricing. Brian Hiatt, Concord's city manager said that in early 2008, the city began using the Rates Dashboard as a tool for comparing their utility rates to other utilities in the region and state. This was for budgeting purposes and as a means of achieving financial stability. Furthermore, Hiatt stated that the Rates Dashboard has been used to illustrate differences in pricing and its effects on conservation to the City Council and members of the business community. Though Concord's water rates are twice as high as neighboring Charlotte's, Hiatt says environmentally conscious customers are supportive and appreciative of conservation pricing (B. Hiatt, personal communication, February 5, 2009).

Taylorsville, North Carolina
Taylorsville is located in the foothills of the Brushy Mountains in western North Carolina and is the county seat of Alexander County. Its population is 1,980, and of those residents, 21.3 percent have median household incomes at or below poverty level. Taylorsville's water utility is classified as a water purchaser and they operate a water distribution system. In July 2008 shortly after a rate increase, the water utility began using the Rates Dashboard at public meetings with the mayor, town council, and citizens in attendance to show how their utility "stacked up to neighbors" and other water utilities throughout the state (D. Orum, personal communication, February 4, 2009). David Orum, Town Manager, noted that the Rates Dashboards adds a level of transparency to rate increases. The Rates Dashboard is available online and easy to use, offering citizens the chance to compare for themselves how their rates and water utility compare to others in the region and throughout the state.

Taylorsville's water rates include funding set aside for comprehensive capital improvements; the town's utility infrastructure dates back to early 1920s. Orum said that the Rates Dashboards are a good litmus test in the game of pricing; it establishes fair range.

Orum also credits the Rates Dashboard with helping small communities increase their accessibility to data. "Small communities have small staff with lots of responsibilities and never have time to research," said Orum, "[The Rates Dashboard] is a wealth of information put into a format that even a novice can understand. It's a valuable tool."

Conclusion

A water rate that is efficient and sustains one water utility is not likely to work as well for another system, even if that utility is similar in size and scope and located in the same state or region. Rate setting for a water utility generates revenue through fixed base rate charges and volumetric rates that are in conformance with state, local and federal rules and policies that govern their application. Citizens want clean, high quality water, and sustainable services while suppliers want to both cover their costs and retain a reliable revenue base. For the utility, the rate is more than a means for collecting revenue to cover operating costs; it is also a resource management tool. Setting an effective rate while conserving resources can improve a water utility's financial health and efficiency. Theoretically, the customer cost should cover the cost of supplying the service. However, there may be other factors in determining the best water rate such as condition of infrastructure and environmental and geographical costs.

Dashboards are attractive tools for measuring, monitoring, and managing business activity for both financial and non-financial managers. The UNC EFC has designed a Rates Dashboard specifically for decision makers to assist them in understanding how financial decisions affect the sustainability of their water system. These Rates Dashboards are free for utility managers and local officials. Though their primary purpose is to compare rates and rate structures among various water and sewer utilities, the dashboard is also an interactive tool that measures conservation pricing, operating ratio (a measure of the extent to which operating revenues cover costs), and affordability of rates.

Testimonies from communities verify the usefulness of the Rates Dashboard. The Rates Dashboard enhances a small community's access to data and adds a level of transparency to rate increases. Since the Rates Dashboard as is an effective tool for comparing their utility rates to other utilities in the region and state, it is often used for budgeting purposes and as a means of achieving financial stability. The Rates Dashboard is easy to use and thus proves to be an effective way to illustrate rates both at public meetings and on customers' home computers.

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