Proper Rates

Are Critical for Financial Health

By **Mark Kemp-Rye** • *On Tap* Editor

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P.J. Cameon

The water mains in Smallville were laid in the early 1900s. The terra cotta pipes were state of the art when they were installed, but now they're beginning to show their age.

The method for setting water rates probably dates back as far as the distribution system itself. Rates were set so that costs—primarily the salaries of two operators and supplies, such as chlorine—were covered. If a problem arose, the town dipped into the general fund to cover the expense. It had been that way for as long as anyone could remember.

Local politicians learned that to talk about significant rate increases meant sure defeat come election time. They were reluctant to make such proposals. Low water rates satisfied the residents of Smallville, so prices stayed that way and, for a long time, things were fine.

But by the start of the new century, things weren't fine anymore. Iron and manganese began leaching into the town's wells, giving residents unpalatable water with an orange or brown tint and staining clothes washed in it. Frequent breaks in the lines resulted in big expenses for the town. Expenses they couldn't afford. With no reserve fund in place and customers clamoring for improvements, Smallville's leaders found themselves in a predicament.

Why bother with rate setting?

While Smallville is a fictitious place, many towns can relate to the scenario described. For a variety of reasons, often political, sometimes economic, these towns have been reluctant to set water rates any higher than the minimum necessary to cover immediate costs. This situation is coming back to haunt communities across the country.

"While the average household water bill of $15 a month generally covers the basic cost of current service," noted the proceedings of the Futures Forum, sponsored by the U.S. Environmental Protection Agency (EPA) and held in Washington D.C. in December 1999, "it is unlikely to cover the costs of future needs. If a water supplier's rates do not provide for collection of a depreciation expense or a reserve fund to accommodate future plant improvements, it is questionable how future needs will be met."

Simply stated, community officials must set rates that reflect the actual cost of water, both now and into the future.

"It is critical that communities put effort into setting rates to ensure that a system pays for itself and all of its true costs," says Jean Holloway, training manager for the EPA Region 3 Environmental Finance Center (EFC). "If a system doesn't pay for itself completely, its sustainability over time is threatened due to lack of sufficient revenue. Moreover, it runs the risk of creating 'rate shock' when some day down the road, it discovers that it needs to raise rates substantially to compensate for not having had adequate rates for several years."

Rates Have Different Structures

Most communities have a rate structure that falls into one of five categories: (1) blanket, one-charge, or uniform flat rate; (2) descending, declining, or decreasing block rate; (3) ascending or increasing block rate; (4) flat or single block rate; or (5) seasonal rate. Each structure has its inherent advantages and disadvantages. P.J. Cameon, who studied rates for the National Environmental Services Center during the 1990s, analyzed rate structures in this manner.

"The one-charge or blanket rate is applied to every customer, regardless of consumption. A single person consuming 500 gallons of water a month, for example, would be charged the same as a family of six that uses several thousand gallons. Rate experts advise against using such a structure because it provides no incentive to conserve water and does not provide the system with a close match between the cost of providing service and the income from water fees.

"With most rate structures, consumers' monthly charges vary according to use. Systems start with a basic price for modest water consumption and charge extra for additional use. The difference in the structures is in how systems price additional consumption.

"Using descending rates, a system charges less per unit as additional water is consumed. The charges for extra consumption provide a minor incentive for customers to conserve water, while consumers of large amounts of water (e.g., industry and agriculture) are provided with a volume discount.

"With ascending rates, a system charges more for each unit as use increases. This structure provides a greater incentive for conservation but can hinder industrial and agricultural operations that require large amounts of water.

"Flat or single block rates also involve a per unit charge for water. The unit rate remains the same, regardless of how many water units are consumed.

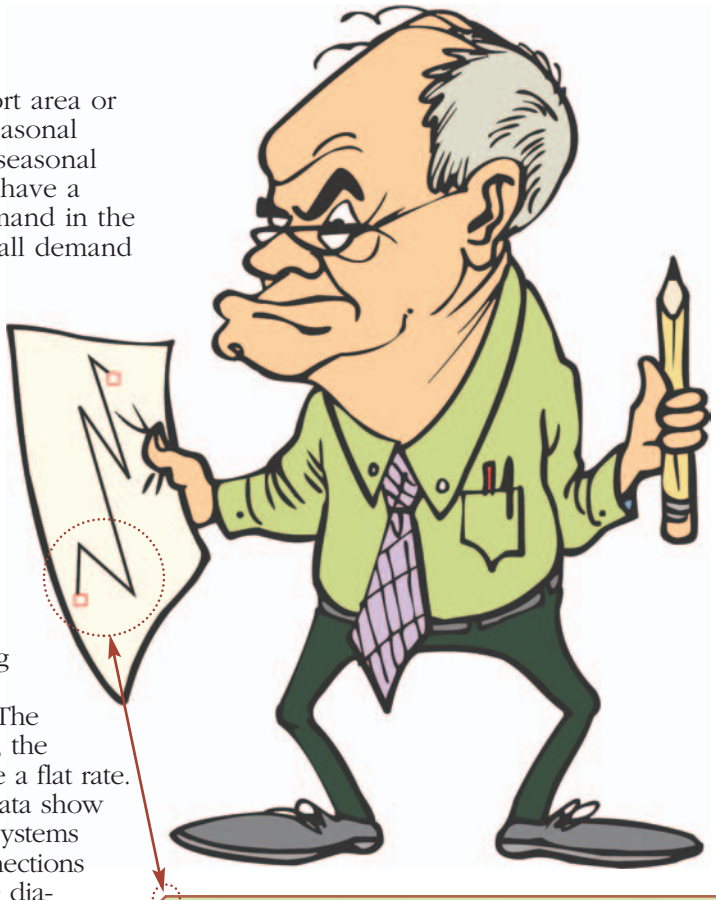
"A system in a resort area or in an area prone to seasonal droughts may have a seasonal rate. A ski resort may have a tremendous water demand in the winter months but small demand the rest of the year. Seasonal rates would be set higher during the winter months to reflect the cost of meeting increased demand while ski slopes are operating. The rate would be lowered for the rest of the year."

The most common rate structure, according to an Ernst and Young survey, is the flat rate. The smaller the system size, the more likely it is to have a flat rate. In fact, EPA-collected data show that 85 percent of the systems with 100 or fewer connections had a flat rate. (See the diagram on page 27 for an overview of rate setting.)

It is not unusual for systems to have separate rate structures for large-quantity users, such as industrial and agricultural operations. Where water is plentiful, descending or flat rates are often used, providing a discount to these large users.

Ascending structures are gaining in popularity, especially with larger systems and in western states where water supplies can be scarce. This structure has yet to catch on with small systems, though. The American Water Works Association estimates that only about five percent of small systems, regardless of geographic location, use ascending rate structures.

Whatever method your system uses, "replacement of deteriorating infrastructure must be planned for and included as an expense in your rate structure," admonishes Gary Williams, executive director of the Florida Rural Water Association.



Basic Information Is Needed for a Rate Study

Although the information needed for a rate study varies according to the type of rate structure and customer categories a system uses, most studies will need the following:

- system expenditures (including operating expenses and other "variable" costs, as well as debt requirements and other fixed costs);
- system revenue (primarily income from water bills);
- total number of service connections (including different customer categories);
- annual amount of water produced;
- annual metered sales (divided by customer categories);
- fund balances (balances of all savings accounts and reserve funds); and
- prioritized listing of estimated costs of future maintenance projects and proposed capital improvement projects.

This information may be drawn from a variety of sources, such as the system's current budget and the budgets for the previous five years. Census data showing community income and housing statistics and engineering reports showing the age and condition of the system can be useful as supporting documents.

How often should you review your rate structure?

Rate setting experts are nearly unanimous in their view that a rate review should be conducted each year. (See the sidebar on page 25 for the information needed to conduct a rate study.) They also agree that an endeavor such as this is best done by a committee rather than by an individual.

Who are some community members that might participate in such a study? Four obvious members are the town clerk; the water plant operator; an elected official, such as a town councilor or county commissioner; and a banker or other member of the financial community. Each brings a unique level of expertise: The clerk can provide data on costs and expenditures; the operator brings knowledge of the system itself; the elected official might address social and political concerns; and the banker has expertise with finance and accounting. If a rate increase is inevitable, it is probably wise to include a member of the community—one who is widely regarded as being fair-minded.

A properly conducted rate review gives the system a good idea how much income is needed to meet expenses, in both the short and long term, and gives a clear idea of how rates should be set to meet these expenses.

While meeting costs is the primary goal of a rate study, there are other considerations. Cameon notes "rates should be structured in such a way to ensure that customers pay equitable fees for the service they receive. The costs involved with providing water to a retired couple, for instance, are different from the costs involved with serving a local grocery store or car wash. The customers' bills should be proportional to the system's cost of providing them with service." (See sidebar on page 27.)

It is also useful to make rate structures as easy to understand as possible. If community members are clear about the structure and the rates, they are more likely to accept them. Unfortunately, small utilities often don't have the resources to conduct an in-depth rate study and tend to base decisions on old studies

or, as with our story about Smallville, no studies at all.

"The problem with using old information," according to Holloway, is that "decision makers are left to set rates based on what they have been for the last several years or on what surrounding communities charge for the same type of service. The trouble with either of these methods, is not only that they do not reflect the true cost of the service, but the decision makers are left without the documentary evidence that a rate study can provide to convince the consuming public that a change in rates is necessary. In short, they not only lack the information to make a well-rounded decision, they lack the ammunition to sell it."

Rate Setting Is On-Going, Public Process

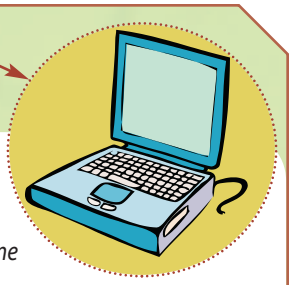
According to a 1998 report by Stratus Consulting of Boulder, Colorado, most water customers realize that they are getting a good deal on drinking water and are willing to pay more for it. As rates increase in the coming years to cover the costs of aging infrastructure and tougher regulations, it is undoubtedly useful to know this about consumers. The amendments to the Safe Drinking Water Act encourage public involvement. Indeed, fair and adequate rates won't happen without input from the community.

Rate Structures Can Help Low and Fixed Income Customers

Communities that are concerned about the ability of low-income residents or those on fixed incomes, such as retirees, to pay increased rates can develop a rate structure that helps these people. The National Association of Regulatory Utility Commissioners offers the following suggestions:

- phase in rate increases in stages;
- permit lifeline rates or special rates for low income customers;
- permit utilities to establish customer assistance programs that coordinate with a community-based organization to provide assistance (e.g., contributions to pay down participating ratepayers' arrearages and assistance with water conservation efforts, such as minor plumbing repairs and the installation of low water consumption plumbing fixtures);
- encourage utilities to institute programs in conjunction with shareholders and other ratepayers to contribute money to a fund to help low income customers (e.g., a dollar check-off system on the bill);
- encourage utilities to bill monthly rather than quarterly to keep bills smaller, so payments may be more affordable; and
- to help reduce bills, encourage water utilities to provide low consumption plumbing fixtures and to educate ratepayers about the need to fix leaking plumbing fixtures.

Software Makes Rate Setting Easier



There are several software programs available to help utilities set rates. Two have been designed with small systems in mind: *Show-me Ratemaker* and *RATECheckup*.™

Show-me Ratemaker is a free Excel-based program developed by the Missouri Department of Natural Resources. *Ratemaker* is designed so that a water or sewer utility can analyze finances and adjust user rates for the future. To download a copy of *Ratemaker*, go to *www.dnr.state.mo.us/oac/emiapps.htm*.

The Environmental Finance Center at Boise State features *RATECheckup*,™ software designed to help utilities with rate setting. *RATECheckup*™ works in conjunction with *CapFinance*,™ a capital improvement planning and financing tool. To learn more about these software packages, write to the Environmental Finance Center, Boise State University, 1910 University Drive, Boise, Idaho 83725 or call (208) 426-4293 or visit their Web site at *sspa.boisestate.edu/efc*.

Calculating Basic Rates in Three Steps

Editor's Note: While the actual calculations involved in setting water rates can be lengthy and complicated, the concept behind the calculations is fairly straightforward. The following summary is intended to be a brief overview of basic rate setting and not an in-depth look at rate calculations. Remember that rates typically must be approved by a state regulatory department or public service commission.

Basic rate setting can be divided into three steps: 1) splitting the system's annual expenses into "fixed "and "variable" costs; 2) establishing an annual base rate; and 3) calculating the block rate for water.

Fixed costs are those that remain the same, regardless of the amount of water that the system produces. Examples of fixed costs include things like insurance and debt service.

Variable costs are those that increase as water production increases. Examples of variable costs are salaries, electricity, and supplies.

Once the annual fixed and variable costs are established, the diagram below shows how basic rates are calculated. Suppose, for example, the Smallville system has fixed costs of $125,000 per year and 750 customers. As shown in the diagram, divide $125,000 by 750 to establish the base rate for each customer —$166.67. Divide this number by 12 to get a monthly base rate of $13.89.

Next, take the total variable costs and divide by the amount of water sold to establish the unit charge. Suppose the system's variable costs total $72,000 for a year and it sells 100,000 units of water. (A unit is typically 1,000 gallons of water.) Dividing the variable costs by the units results in a unit rate of 72 cents for each unit a customer uses.

Using the example we've just developed, each customer would pay a basic rate of $13.89 a month plus 72 cents for each unit (1,000 gallons) of water used. A Smallville customer who uses 6,000 gallons of water a month would see a bill of $18.21.

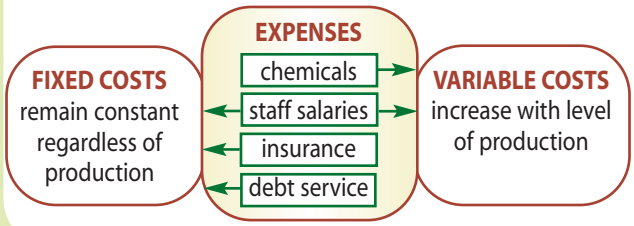
Remember that this is a very simple example. It does not take into account different customer categories or different rate structures. It also does not provide for a reserve fund or for future capital expenditures.

*A list of organizations with expertise in determining water rates may be found on pages 55 and 56. An additional article about rate setting and public service commissions is available on the NESC Web site (*www.nesc.wvu.edu*).*

Basic Rate Setting

If all customers of a small water system pay the same rate for consumption and all are properly metered. setting water rates can be accomplished with three basic steps.

1) Spilit system's annual expenses into fixed costs and variable costs.



2) Divide fixed costs by the number of customer hook-ups to form the annual base rate that every customer pays. Divide by 12 for the monthly base fee.

$$\frac{\text{fixed costs}}{\text{number of hook-ups}} = \text{annual base rate} \qquad \text{annual base rate} \div 12 = \text{monthly base fee}$$

3) Divide annual variable costs by amount of water sold (in 1,000-gallon units) in a year to find the block rate for water.

$$\frac{\text{variable costs}}{\text{units of water sold}} = \text{charge per 1,000-gallon unit}$$

Source: Water Utilities Technology Program

In addition to public involvement, Holloway also stresses that rate setting should be viewed as an ever-changing process.

"No water system is static over time in its needs for operational and maintenance revenue," she says. "Just as your house or your car requires more care and expense some years than it does in others, so does a utility system. Attention to rate setting is more than just a budgeting method, it is a planning and anticipation method, too. As utilities learn to manage resources and better provide for future needs, they will be more able to accomplish upgrades in their treatment and distribution systems that will protect and conserve environmental resources."

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