Proper Rates Are Critical for Financial Health

by Mark Kemp-Rye
Water Sense Editor

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 dated back as far as the distribution system itself. Rates were set so that costs—mostly 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, 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 above. For a variety of reasons—often political, sometimes economic—these towns have been reluctant to set water rates any higher than necessary to cover immediate costs. This is a situation that is coming back to haunt communities across the country.

The real cost of water was one discussion topic at the Futures Forum, sponsored by the U.S. Environmental Protection Agency (EPA) and held in Washington D.C., in December 1999. (See the article “What is the future of America’s drinking water?” on page 12 of this issue for more about the Futures Forum.) “While the average household water bill of $15 a month generally covers the basic cost of current service,” the Futures Forum noted, “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 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...”

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NSFC Newsletter Outlines Funding Sources

Is your small community looking for funding to replace or upgrade a wastewater treatment system? If so, you’ll want to check out the Fall 1999 issue of Pipeline, a free quarterly National Small Flows Clearinghouse (NSFC) publication.

“This eight-page newsletter outlines a variety of sources that small communities may wish to look into if they are in need of funding for water or wastewater treatment projects,” says Peter Casey, NSFC program coordinator.

U.S. Environmental Protection Agency (EPA) funding programs are detailed and contact information for EPA’s seven environmental finance centers is listed. Other funding avenues available through the federal government are also outlined, including the U.S. Department of Housing and Urban Development’s Community Development Block Grant Program, the U.S. Department of Agriculture’s Rural Utilities Service Water and Waste Disposal Program, the Economic Development Administration’s Grants for Public Works and Development Facilities, and the Appalachian Regional Commission’s Community Development Supplemental Grants Program.

RUS Market Rate Increases; Others Unchanged

Two of the three interest rates for Rural Utilities Service (RUS) water and wastewater remain unchanged this quarter. The market rate increased by 3/8ths of a percent.

RUS interest rates are issued quarterly at three different levels: the poverty line rate, the intermediate rate, and the market rate. The rate applied to a particular project depends on community income and the type of project being funded.

To qualify for the poverty line rate, two criteria must be met. First, the loan must primarily be used for facilities required to meet health and sanitary standards. Second, the median household income of the area being served must be below 80 percent of the state’s non-metropolitan median income or fall below the federal poverty level. As of April 1, 2000, the federal poverty level was $17,050 for a family of four.

To qualify for the intermediate rate, the service area’s median household income cannot exceed 100 percent of the state’s non-metropolitan median income.

The market rate is applied to projects that don’t qualify for either the poverty or intermediate rates. The market rate is based on the average of the Bond Buyer index.

The rates for the second quarter of fiscal year 2000 apply to all loans issued from April 1 through June 30, 2000, are:

- poverty line: 3.5 percent (unchanged from the previous quarter);
- intermediate: 4.625 percent (unchanged from the previous quarter); and
- market: 5.5 percent (up 0.375 from the previous quarter).

RUS loans are administered through state Rural Development offices, which can provide specific information concerning RUS loan requirements and applications procedures.

For the phone number of your state Rural Development office, contact the National Drinking Water Clearinghouse at (800) 624-8301 or (304) 293-4191. www.usda.gov/rus/water/states/usamap.htm.
“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.” (See the Fall 1995 Water Sense for a more detailed discussion of rate structures.) 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 6 for an overview of rate setting.) It is not unusual for systems—even small 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, Continued on page 4

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. (See the Summer 1999 issue of Water Sense for more information about capital planning.)

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.
“Replacement of deteriorating infrastructure must be planned for and included as an expense in your rate structure.”

Gary Williams, executive director, Florida Rural Water Association

Proper Rates Are Critical for Financial Health

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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.

How often should a system review its 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 3 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. (See the Fall 1995 Water Sense for an explanation of basic rate setting calculations.)

While meeting costs is the primary goal of a rate study, there are other considerations.

Continued on next page

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, 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

Editor’s Note: There are several software programs available to help small systems set rates. The following information describes a software package endorsed by the U.S. Environmental Protection Agency and used in training sessions taught by the Environmental Finance Centers (EFCs).

RateMod Pro™ is a rate-setting, development fee, and financial planning software for water and wastewater utilities. It can accommodate any system size or population and allows a variety of user-defined scenarios and “what ifs.” The program automatically generates rate and fee schedules, and prepares a six-year budget, rate and financial forecasts based on user input of customer, facility and budget data. It allows a system to customize for its own facilities, accounts, and billing practices. The program is suited for systems using a cash or utility basis method, and accommodates either line item or functional chart budgets. The program provides a full range of rate and fee design options from flat rate to inclining/declining block rates, “inside” vs. “outside” rates and allows for up to 33 customer groups and 4 different block rates.

RateMod Pro™ enables a utility to develop water and wastewater (sewer) rates based upon each user group’s cost of service. After initial setup, a rate study and comprehensive rate schedule can be developed in a matter of minutes. Sewer rates can either be calculated independently of water rates based on cost of sewer service, or be assimilated into the water rate design for smaller systems.

Additional information about this software—including a demo—may be obtained by contacting the EFC at the University of Maryland. Their phone number is (301) 405-6377. You may also visit their Web site at www.mdsug.umd.edu/MDSG/EFC/index.html.

Continued from previous page

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 4.)

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 problem with either of these methods,” she continues, “is not only that they do not reflect the true cost of the service, but that the decision makers are also left without the documentary evidence that a rate study can provide to convince the consuming public that a change in rates is even 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. (See the Winter 1995/96 Water Sense for more information about involving the public when proposing rate increases.)

In addition to public involvement, EFC’s 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.”

Jean Holloway, training manager, Region 3 EFC

“Just as your house or your car requires more care and expense some years than it does in others, so does a utility system.”

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Calculating Basic Rates Is a Three-Step Process

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. This topic will be explored further in a future Water Sense.

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 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.

See the list of contacts on page 7 if you require assistance in determining water rates.

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) Split system’s annual expenses into fixed costs and variable costs

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

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

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
Rate Setting Help Is Available

Rate setting can be a complicated and costly process. Fortunately, there are organizations that offer help to small communities who want to establish proper rate structures. A good place to start is one of the six regional offices of the Rural Community Assistance Program (RCAP). Another is one of the U.S. Environmental Protection Agency’s (EPA) Environmental Finance Centers (EFCs), located at universities around the country. RCAP and EFC offices each cover a specific geographic area. Check the contact information below to see which serves your state.

**RCAPs Help With Rate Setting**

RCAP helps small and rural communities with water problems, including funding issues. Each of six regional RCAP offices provides help with rate setting, as well as funding searches, help with writing and processing grant and loan applications, and putting together packages of multiple funding sources.

**Northeastern Region: Rural Housing Improvement (RHI)**


Phone: (800) 488-1969 or (978) 297-5300

**Southeastern Region: Southeast Rural Community Assistance Project, Inc. (SE/RCAP)**

Serves Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, and Virginia

Phone: (540) 345-1184
Web: www.sercap.org

**Great Lakes Region: WSOS Community Action Commission (WSOS)**

Serves Illinois, Indiana, Kentucky, Michigan, Ohio, West Virginia, and Wisconsin

Phone: (419) 334-8911
Web: www.wsos.org

**Midwestern Region: Midwest Assistance Program (MAP)**

Serves Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, and Wyoming

Phone: (800) 822-2981 or (612) 758-4334
Web: www.map-inc.org

**Southern Region: Community Resource Group (CRG)**

Serves Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas

Phone: (501) 443-2700
Web: www.crg.org

**Western Region: Rural Community Assistance Corporation (RCAC)**

Serves Alaska, Arizona, California, Colorado, Hawaii, Idaho, Nevada, New Mexico, Oregon, Utah, and Washington

Phone: (916) 447-2854
Web: www.rcac.org

Additional information about the RCAP network and other assistance offered is available on their Web site located at www.rcap.org. You may also call the RCAP National Office at (888) 321-RCAP or (703) 771-8636.

**EPA’s Environmental Finance Centers Help Small Communities**

EPA has established seven Environmental Finance Centers (EFCs) at universities across the country to help communities find creative ways to fund environmental projects. You may call any of these centers for assistance.

**EPA Region 2 Environmental Finance Center at Syracuse University**

Serves New Jersey, New York, Puerto Rico, and the Virgin Islands

Phone: (315) 443-9438
Web: www.exed.org/EFC/efc.html

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Can SCADA benefit small systems?

by Babu Srinivas Madabhushi
NDWC Technical Assistance Specialist

Editor’s note: In the Fall 1999 issue of Water Sense, we examined membrane filtration, a disinfection method commonly regarded as too expensive for small communities. The following article is about an innovative tool—SCADA—that is also thought of as costly, but that may be affordable for small systems.

What is SCADA?

SCADA stands for “System Control And Data Acquisition,” a complete monitoring and control system. SCADA features a computer placed at a central location, communications equipment, programmable logic controllers, sensors, and other devices that, when put together, will monitor and control a utility, such as a water system. The hardware includes remote telemetry units (RTU) placed at remote locations. (See the sidebar on page 9 for more about SCADA terminology.)

SCADA provides multipurpose utility management, operating flexibility and more complex system control. In a nutshell, this type of system lets the water plant operator keep an eye on the entire system from one place.

Why use telemetry?

Telemetry gives system operators the ability to monitor and control the system’s performance remotely, with real time efficiency. Operators can monitor various sites and allows for the automatic collection of data from multiple places. Telemetry eliminates many time-consuming trips out to the field—reducing operation and maintenance costs, as well as ensuring system reliability.

How does SCADA help in water system management?

SCADA systems help operators meet regulatory requirements and satisfy consumer demands. SCADA requires only a single qualified operator to monitor and control several treatment plants from a single location.

SCADA helps automate wells and pumps, monitors reservoir levels, and generates useful data about the system. It can monitor water quality characteristics, such as water flow, pH, turbidity, head loss, and chlorine residual.

Pump automation is another aspect where savings are significant. If a SCADA system is used, the water system can use electricity during off-peak hours, which will reduce the load and the cost. Automation of pumps requires timers and probes, which means levels of water in reservoirs and tanks can be monitored remotely. This avoids the trips an operator has to make to release water to a particular tank or reservoir. The savings can be viewed in terms of reduced personnel hours and gasoline expenses for vehicles.

In addition to monetary benefits, SCADA also helps in efficient system management. Should there be a problem, the operator is notified by an alarm. To further improve this, key personnel can be hooked up with the SCADA via personal pagers. This allows unmanned operation of the system for long stretches of time.

Continued on next page
SCADA can store various activities on a computer. Graphs and reports can be generated automatically using the data collected from field devices. These reports are useful in inferring production and consumption patterns. This data helps in drought situations and provides ready information for customers, as in the EPA-mandated Consumer Confidence Reports, for example. (See the Summer 1999 On Tap for more information about Consumer Confidence Reports.)

Can SCADA work for small systems too?

As water system management becomes more complex, SCADA becomes more advanced yet, paradoxically, less expensive. Additional complexity also makes the need for a SCADA system become more apparent. Initial installation costs, which are often high, typically pay for themselves in a few years.

Here are three stories from water systems that use SCADA.

Ventura River County Water District: This system, located in Ojai, California, which serves approximately 6,000 people, uses a SCADA system. Manager Chuck Curtis says, “The initial cost of our SCADA system was $52,000. It has saved us more than $25,000 over the first two years alone, just on electricity consumption. The off peak pumping saves the customers lot of money during the peak energy billing periods of summer.

“The SCADA computer is updated in order to display field conditions accurately,” he continues. “The operation of the SCADA system is so easy that we have only four people at the system and any of the four can easily act on the alarms given by the SCADA system. We can even work from home and take necessary action. It has a battery back up and, hence, no worries about power failure. If computer operation fails, for any reason, the system still sends the alarm information to key personnel by paging. This is proving to be a highly reliable and effective option in transmitting alarms.”

United Water of Idaho (UWID): This system, which serves 190,000 people in southwestern Idaho, has been using SCADA for nearly 15 years. They have recently identified the communication system as a key area for improvement. The system has been using leased telephone lines since the beginning. With the advancement of computers, the water system has decided that radio signaling will better suit system requirements. The list of factors that influenced their decision include low cost, reliability, and ease of installation. Continued on page 10

What are some common SCADA terms?

**Distributed Control System (DCS):** It is an integrated system made up of many subsystems that are remotely located. Each subsystem can operate independently.

**Modem (MOdulator DEModulator):** This is used to convert signals in one form to another. A modem is generally used for communication between computers and other devices over telephone lines or radio.

**Programmable Logic Controller (PLC):** A microprocessor-based controller, a PLC usually has multiple inputs and outputs and a program to perform control functions

**Remote Telemetry Unit or Remote Terminal Unit (RTU):** This is a microprocessor device with multiple inputs and outputs connected to field instruments and devices. The RTUs translate these signals to digital form and transmit the same to central location by radio or telephone lines.
Can SCADA benefit small systems?

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This change allowed the system to cut the expense of leased telephone lines.

Martins Ferry Water System: This system, which serves approximately 15,000 people in eastern Ohio, installed SCADA in 1996. William A. Laughman, the superintendent of the water system says, “SCADA has been working well for us.” He also adds that SCADA controls the entire treatment system and monitors water levels in the system’s storage tanks located at various corners of the town.

“Alarms are transmitted from the location of the problem to the operators,” Laughman says. “These alarms can be viewed on the computer monitor and the necessary action can be taken right from the central computer. All these activities can be recorded and stored. The SCADA system saves money, time, and personnel. The water quality has become better and the usage of chemicals has gone down. We are using chlorine only 1/15 of the quantity of what we used to use, and a drastic reduction in disinfection byproducts (trihalomethanes) was observed.”

According to Laughman the entire SCADA system cost “less than $90,000.” Funding for the system was secured through a 2 percent, hardship loan from the Ohio Water Development Authority.

Enid, Oklahoma: This small community in Oklahoma, which serves 2000 people, installed SCADA to reduce ammonia levels. The automated operation is saving the system $2,500 annually, according to Enid officials.

While a first look at SCADA might give an impression that the installation costs are too high and that an average small system is incapable of investing money for modernizing the treatment plant in this manner, this isn’t always the reality. As can be seen from the case studies, SCADA works for systems of various sizes.

Despite the initial costs, SCADA is an investment that usually pays for itself in a short time through direct labor and vehicle cost savings, as well as increased efficiency. Installation costs depend upon several factors, including the number of items to be monitored. Costs usually range between about $50,000 to well over $100,000—putting the technology out of the reach of the smallest communities but within the means of small- to medium-sized systems.

A prudent idea might be to look for immediate sources of funding—such as a loan—to finance a SCADA system. Instead of waiting several years to save sufficient money to purchase and install SCADA, the loan allows a community to start saving immediately.

For more information about SCADA, see the article “Can SCADA put your plant on remote control?” in the Winter 1997 On Tap. Readers may also call Madabhushi at (800) 624-8301 or (304)293-4191 or send him an e-mail at bmadabhu@wvu.edu.

NDWC Launches Keyword Search Engine

The National Drinking Water Clearinghouse (NDWC) recently added a keyword search feature to its Web site. Users may search for specific drinking water-related topics that appeared in Water Sense and On Tap, quarterly newsletters published by the NDWC.

Once users search for a topic, they may download an electronic copy of the newsletter in which the article was published. Not all newsletters dating back to 1991 are available for downloading at this time, however they soon will be available.

To search for specific drinking water information, log onto the NDWC site at www.ndwc.wvu.edu.

John Barkey, plant operator for Martin’s Ferry, Ohio, inspects the water levels of the system’s storage tanks from his desk.

Source: Wall Street Journal

During the 1990s, tap water was the second most popular restaurant drink, after carbonated soft drinks. Approximately 10 percent of diners opt for water with their meals, up sharply from the previous decade.

Water Fact

During the 1990s, tap water was the second most popular restaurant drink, after carbonated soft drinks. Approximately 10 percent of diners opt for water with their meals, up sharply from the previous decade.

Source: Wall Street Journal
New York Sells Water Bonds on the Web

New York State sold $68 million in state bonds over the Internet for the first time ever, according to a mid-February Water Online article. Proceeds from the bonds will be used to finance low-interest and interest-free loans for clean water projects throughout the state. The funds are designated to help communities protect local drinking water supplies and prevent pollution.

New York’s Governor George Pataki says that as the reliability and popularity of e-trade rises, the state will continue to aggressively explore the use of high-tech, user-friendly innovations.

The bonds, totaling $67.8 million, were sold through the New York State Environmental Facilities Corporation (EFC). Interested parties were able to download bond sale details from EFC’s Web site at www.nysefc.org.

To sign up for free e-mail updates about the drinking water industry, log onto Water Online at www.wateronline.com.

CRG Loans Money for Southern Water Projects

Community Resource Group, Inc., (CRG) a private nonprofit organization that assists rural communities in seven southern states, operates a Community Loan Fund offering loans of up to $100,000 for small water and wastewater system projects.

“Our average loan is $50,000 at 5.9 percent interest,” says Mark Rounsaball, CRG’s deputy director. “Loans are available for any rural area or community of fewer than 25,000 residents in Arkansas, Alabama, Louisiana, Mississippi, Oklahoma, Tennessee, or Texas.”

Eligible loan recipients should serve significant numbers of low-income customers, be unable to obtain affordable financing from other sources, and be willing to accept free technical assistance to improve their systems.

CRG loans may be used as interim financing, as well as for actual project construction. Additionally, CRG makes very small loans for emergency repairs. Loans of $6,000 to $10,000 often can be committed within one week, says Rounsaball.

CRG is a member of the Rural Community Assistance Program network. For more information about CRG’s Community Loan Fund, visit its Web site at www.crg.org or call (301) 756-5583.

Rate Setting Help Is Available

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EPA Region 3 Environmental Finance Center at the University of Maryland
Serves Delaware, Maryland, Pennsylvania, Virginia, West Virginia, and Washington, D.C.
Phone: (301) 405-6377 or (301) 405-6383
Web: www.mdsg.umd.edu/MDSG/EFC/index.html

EPA Region 4 Environmental Finance Center at the University of North Carolina at Chapel Hill
Serves Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee
Phone: (919) 962-8494
Web: www.unc.edu/depts/efc

EPA Region 5 Great Lakes Environmental Finance Center at Cleveland State University
Serves Ohio, Indiana, Illinois, Michigan, Wisconsin, and Minnesota
Phone: (216) 687-4590 or (216) 687-3988
Web: www.csuohio.edu/glefc/

EPA Region 6 Environmental Finance Center at the University of New Mexico
Serves Arkansas, Louisiana, New Mexico, Oklahoma, and Texas
Phone: (505) 272-7357 or (505) 272-7356
Web: nmeri.unm.edu/Eefc.htm

EPA Region 9 Environmental Finance Center at California State University at Hayward
Serves Arizona, California, Hawaii, Nevada, American Samoa, and Guam
Phone: (510) 749-6867
Web: barney.sbe.csuhayward.edu/~efc9/

EPA Region 10 Environmental Finance Center at Boise State University
Serves Oregon, Washington, Idaho, and Alaska
Phone: (208) 426-4293
Web: sspa.boisestate.edu/efc/

Additional information about the EFC network is available on the Environmental Finance Program Web site located at www.epa.gov/efin-page. Or you may call EPA headquarters at (202) 564-5001.

MISTAKE CORRECTED

In the story “EPA Loan Program Makes Progress,” which appeared in the Winter 2000 issue of Water Sense, we quoted Greg Morgan of the Georgia Environmental Facilities Authority (GEFA). In fact, the gentleman’s name is Greg Mason, the assistant executive director and SRF program manager for GEFA. Our sincere apologies to Mr. Mason for this mistake.
Right now, the U.S. provides some of the safest—and cheapest—drinking water in the world. According to the 1999 National Utility Service's International Water Cost Analysis report, the cost of water in the U.S. actually dropped an average of 0.5 percent to just under 51 cents per cubic meter (pcm).

But are we paying the real cost of providing a safe drinking water supply? While the average drinking water cost in the U.S. is approximately 51 cents pcm, the cost is much higher elsewhere in the world. Drinking water averages $1.15 pcm in the United Kingdom and $1.82 in Germany, according to the U.S. Environmental Protection Agency’s (EPA) Futures Forum: Summaries of Discussion.

Water isn’t simply less expensive in the U.S. It is also safe to drink because of some of the most stringent drinking water laws anywhere in the world. December 16, 1999, marked the 25th anniversary of the passage of the Safe Drinking Water Act (SDWA), a landmark in public health protection.

As part of the 25-year celebration, EPA and a dozen partners held a drinking water Futures Forum. The purpose of this forum was to discuss and evaluate challenges facing the nation in ensuring a safe drinking water supply. EPA and its partners gathered suggestions and comments from individuals all over the country. Many organizations hosted discussions—often as sessions added to annual conferences—to talk about the future of drinking water protection.

“This Futures Forum is not the end, but a beginning,” said Cynthia Doughtery, director of EPA’s Office of Ground Water and Drinking Water, adding that how safe and inexpensive our drinking water remains over the next 25 years depends upon a number of issues, including:

• unknown or newly emerging public health threats,
• aging infrastructure,
• an expanding and aging population that increasingly includes those with special health concerns, and
• needs for additional high-quality research on health effects, treatment technologies, and accurate information about drinking water standards.

“We must figure out how to solve problems together; we [EPA] can’t do it on our own,” Doughtery said.

What about the future?
The United Nations set October 12, 1999, as the date that the world population hit 6 billion. The U.S. Census Bureau estimated the date a little earlier—July 19.

According to an article about world population growth by Laura R. Vanderkam, it took all of human history for the world’s population to reach 1 billion in 1804, but only 156 years to reach 3 billion in 1960. Now, 40 years later, that number has doubled.

As population increases, the world demands more and more water. Joan Lowy, a writer for Scripps Howard News Service, reports that life-threatening water shortages are increasingly likely in some parts of the world. In India, which adds 18 million people a year, some water tables are dropping from 3.3 to 9.9 feet per year.

Lowy states that the Earth is now gaining 78 million people annually, roughly equivalent to adding a city the size of Philadelphia each week. By 2025, there are expected to be 650 cities with populations of more than 1 million.

According to Population Action International statistics, two thirds of the world’s population live within 100 miles of an ocean, inland sea, or freshwater lake: 14 of the world’s 15 largest megacities (10 million or more people) are coastal. Their impacts include growing loads of sewage and other waste, drainage of wetlands, and destruction of prime fish nurseries. Spreading deserts and declining water tables on a third of the planet contribute to famine, social unrest, and migration.

The current U.S. population is 272 million, making it the world’s third most populous country. It is projected to grow to 335 million by 2025. According to U.S. Census projections, California, the country’s most populous state, contained 12 percent of the nation’s population in 1995, and by 2025, this amount is expected to rise to 15 percent.

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As We Head Into a New Century, Experts Wonder

How much will clean water cost?

by Mark Kemp-Rye
Water Sense Editor

Over the last several years, the media has reported about aging infrastructure in the U.S. Transportation and roads are, more often than not, the focus of these articles. Water system needs are less frequently mentioned. Have you ever wondered what it will cost to replace water systems around the country?

If so, you’re not the only one. The U.S. Environmental Protection Agency (EPA) completed a Drinking Water Infrastructure Needs Survey in 1997, which found that “the nation’s water systems face an estimated $138 to $330 billion in infrastructure replacement needs over the next 20 years.”

To put this figure in perspective, consider that “the entire estimated current assets of the water industry are $132 billion,” according to Dr. Janice Beecher, in a report for the National Association of Water Companies titled The Water Industry Compared.

How are estimates made?

The 1996 Safe Drinking Water Act (SDWA) Amendments directed EPA to conduct a survey of the infrastructure needs facing public water systems. The first Needs Survey, cited above, was released in 1997. Results from the survey were used to develop a formula to allot funds for drinking water state revolving fund (DWSRF) grants to states. The next Needs Survey, due to Congress in 2001, is currently being conducted.

EPA sent a questionnaire to each of the nation’s 813 large water systems (serving 50,000 people or more); to 240 systems serving between 40,000 and 50,000 people; and to 2,370 medium-sized systems (serving 3,300 to 40,000 people). EPA plans site visits to approximately 600 randomly selected small drinking water systems (serving fewer than 3,300 people), as well as to

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Safe Drinking Water Goals Are Ambitious

As required by the 1993 Government Performance and Results Act, the U.S. Environmental Protection Agency (EPA) has established the following goals for community water systems in the U.S.:

By 2001

• Every customer served by a community water system will have access to a Consumer Confidence Report that contains information about the system’s source water and the quality of the drinking water.

By 2003

• Provide a stronger scientific basis for future implementation of the Safe Drinking Water Act.

By 2005

• The population served by community water systems providing drinking water that meets all 1994 health-based standards will increase to 95 percent from a baseline of 83 percent in 1994.
• Ninety-five percent compliance will be achieved for any new standards within five years after the effective date of each rule.
• Fifty percent of the population served by community water systems will receive their water from systems with source water protection programs in place.
• Standards that establish protective levels for an additional 10 high-risk contaminants (e.g., disinfection byproducts, arsenic, radon) will be issued.
• Increase by 50 percent the waters that meet the drinking water use that states designate under the Clean Water Act.

The overall goal is that by the year 2005, 95 percent of the population served by community drinking water systems will receive water that meets health-based drinking water standards.
CoBank Assists Rural Water Systems

CoBank, a federally chartered and regulated bank that serves rural utility systems and agricultural cooperatives, provides loans to rural utilities, including water and wastewater systems serving unincorporated areas or towns with fewer than 20,000 residents.

“We currently finance more than 120 water and wastewater systems nationwide with loans and commitments exceeding $325 million,” says Steve Gustafson, vice president of CoBank. “Our Water and Wastewater Loan Program provides financing to creditworthy water and waste disposal systems for new construction, upgrades to existing systems, system acquisitions, water rights purchases, project financing during construction, and refinancing of existing debt.”

According to Gustafson, the minimum loan amount for a new customer is usually one million dollars with a term not to exceed 20 years at a fixed or variable rate.

CoBank also offers a Small Loan Program, which provides loans of $50,000 to $500,000 at fixed and variable interest rates through a streamlined application process. Loans may be used to cover construction-related costs, as interim funding until guaranteed federal assistance is delivered, or to refinance higher interest loans from other sources.

For more information about CoBank, call Gustafson at (800) 542-8072, ext. 4310 or visit their Web site at www.cobank.com.

What is the future of America’s drinking water?

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What accounts for the price of water?

Most U.S. drinking water systems supply water to the increasing population at a very reasonable rate. According to EPA, on average, tap water costs are slightly less than $2 per 1,000 gallons. Surprisingly, treatment only accounts for approximately 15 percent of that cost. Other costs are for equipment and infrastructure—such as treatment plants and distribution systems—and labor to operate and maintain the system.

However, treatment costs are increasing because of the price of replacing infrastructure and removing pollutants. There have been inconceivable changes since the SDWA became law in 1974. Scientific advances now make it possible to detect contaminants in units as minuscule as parts per trillion.

Every day researchers discover microorganisms that either didn’t exist, or we didn’t know they existed; or we weren’t aware they were harmful. Regulators scramble to keep pace with the flow of history.

Besides treatment concerns, much of the existing infrastructure, including underground pipes and treatment plants, was built many years ago. EPA’s 1997 Drinking Water Infrastructure Needs Survey estimated that drinking water systems will need to invest $138.8 billion over a 20-year period to ensure source water development as well as storage, treatment, and distribution of safe drinking water. And many agree that this is a very conservative estimate. (See related article on page 13.)

What are small systems’ challenges?

In addition, small systems may not always have the resources to pay for upgrades or improvements necessary to provide safe water. Small drinking water systems make up more than 90 percent of all public water systems. The challenges they face include:

• source water quality may affect a small system’s ability to comply with drinking water standards;
• costs are rising, placing more of a strain on these systems;
• systems serve such a high percentage of low-income customers, are so isolated, have source water of such poor quality or limited quantity, or are otherwise hampered that existing entities cannot provide solutions; and
• privatization is changing the structure of the drinking water industry, making administrative consolidation of physically non-connected systems possible.

Some solutions include exploring partner-based training for small systems, creating incentives to help small systems become more successful, and long-term, area-wide planning. And small systems may even want to consider regionalization or other forms of consolidation.

Federal-funding opportunities will also continue.

For more information about the cost of safe drinking water, contact the Safe Drinking Water Hotline at (800) 426-4791 or visit EPA’s Web site at www.epa.gov/safewater.
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How much will clean water cost

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systems that serve American Indians and Alaskan Natives. Drinking water programs in each state are providing technical support to help with the survey.

Data from the second survey will be used to apportion DWSRF funds among the states beginning in fiscal year 2002.

Why are the estimated improvements so expensive?

The Association of Metropolitan Water Agencies (AMWA) and the National Association of Regulatory Utility Commissioners (NARUC), point to several factors that contribute to the high cost of replacing and improving drinking water systems. “Aging infrastructure, high replacement costs, direct and indirect costs of compliance with the SDWA, flat demand for water, meeting fire protection standards, and the increased need for source water protection all are contributing to upward pressure on increasing water system costs,” they report. Installing one foot of main pipe, for example, cost about a dollar in 1900, when many drinking water systems were first established. By the year 2000, $100 or more is need to replace the same one foot of deteriorated pipe.

SDWA requirements, while important to public health, add significant costs for monitoring, testing, and treating an ever-expanding list of contaminants. Administrative costs associated with these requirements continue to grow. (See sidebar on page 13 for a list of some mandated drinking water goals slated for the next few years.)

What can be done over the next two decades?

AMWA and NARUC, in a recommendation to the EPA-sponsored Futures Forum, made the following suggestions: set water rates to reflect the actual cost of providing safe water; look for opportunities to more efficiently allocate resources; encourage mergers and acquisitions of smaller systems; and encourage more widespread use of “rate making techniques,” such as single tariff pricing. (See the Summer 1999 Water Sense for more information about mutual aid and single price tariffs.)

As Beecher notes, government grants and loans, such as those provided by the Rural Utilities Service or the DWSRF, will cover only a small portion of the billions needed for infrastructure. AMWA and NARUC agree. “A one-size-fits-all approach is not likely to meet the present cost challenges,” they write. “Instead, flexible regulation and approaches are more likely to meet drinking water suppliers’ needs over the next 25 years.”

RCAC Provides Interim Loans to Western States

The Rural Community Assistance Corporation (RCAC), which serves 11 western states, provides interim loans for rural water and wastewater treatment projects to legal public entities eligible for federal funding. These loans can give eligible communities up to three years to meet conditions required by a permanent long-term funding source.

RCAC loans can be used to build a new facility, expand an existing facility, meet health and safety concerns, or modernize a current facility. Eligible entities include public utility districts, special purpose districts, municipalities, counties, nonprofits, and Indian tribes.

“These loans span a gap of time between issuance of a letter of commitment from an approved permanent lending source and the funding of the project,” says Rod Marshall, RCAC director of financial services. “Loans provide interim financing to pay predevelopment costs, engineering, bond counsel, and other related costs to satisfy the requirements of the permanent lender or grant provider.” According to Marshall, loans range from $25,000 to $750,000 at an interest rate of 5.5 percent.

States served by RCAC include Alaska, Arizona, California, Colorado, Hawaii, Idaho, New Mexico, Nevada, Oregon, Utah, and Washington.

To learn more about RCAC’s interim loan program, call Marshall at (916) 447-9832 ext. 142 or visit their Web site at www.rcac.org.

For more information about EPA’s Needs Survey, call the toll-free Survey Help Line at (877) 996-3337 or write to David Travers, survey manager, U.S. EPA Office of Water, 401 M Street, SW, Washington, DC 20460. Information is also available on the EPA Web site at www.epa.gov/safewater/needs.html.
Helpful Products Available from the NDWC

Note: Call (800) 624-8301 or (304) 293-4191 to order products. Please allow three to four weeks for delivery. Actual shipping charges are added to each order. NDWC products also may be ordered via e-mail at ndwc_orders@mail.estd.wvu.edu. Products are subject to availability. Please verify price when ordering.

- Preliminary Analysis of the Public Costs of Environmental Protection 1981—2000
  Item #FDBLFN16 — 1990
  This study analyzes environmental protection costs and uses data to examine the differences between current expenditures and future costs of environmental protection. It also assesses trends in funding from the U.S. Environmental Protection Agency, states, and local governments, and identifies financial impacts on local governments, capital markets, and households.

- Tech Brief Package
  Item #DWPKPE719 — 1998
  This package includes all of the NDWC’s current Tech Briefs, four-page fact sheets that provide concise technical information about drinking water treatment technologies relevant to small systems. The documents are aimed at drinking water professionals, particularly small system operators. The content is fairly technical.

- Building Support for Increasing User Fees
  Item #FDVTFN18 — 1990 Video, 20 minutes
  Item #FDBKFN19 — 1989
  This video and booklet describe how to implement a public education campaign to gain support for increasing water and wastewater fees. The process of developing the message, choosing a spokesperson, targeting various audiences, and other campaign information is described.

- State and Local Government Guide to Environmental Program Funding Alternatives
  Item #FDBLFN14 — 1994
  This booklet provides an overview of traditional funding mechanisms for environmental programs, and introduces state and local governments to alternatives to traditional funding. Although the booklet focuses on nonpoint source pollution, the information provided can be applied to environmental programs in general. A list of contacts and references is included.

- Directory of Drinking Water Training Materials
  Item #DWBKTR12 — 1995
  This report contains abstracts and ordering information for drinking water training documents. The directory is organized by author, producer, publication date, material type, and keyword.

- Water Rates: Information for Decision Makers
  Item #DWBLTR05 — 1990
  An introduction to water rates, this guide can serve as a reference for deciding, adjusting, and evaluating water rates. Four different structures are reviewed.