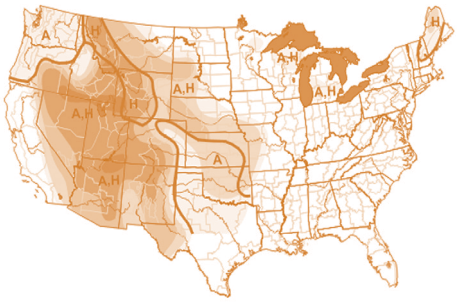
EPA United States Environmental Protection Agency

Funding Water Efficiency Through the State Revolving Fund Programs

Introduction

Total demand on the nation's public water supply systems nearly tripled from 1950 to 1995. As potable water use has escalated, so has the need to collect and treat an increasing volume of wastewater. Recent water shortages across the United States have served to remind states and water systems that water efficiency and reuse is important for ensuring reliable and efficient services to customers. When water demand is inflated by wasteful water use and water loss, water systems and their customers spend more than necessary in capital and operating costs. Water efficiency and reuse also are important for meeting the environmental goals of many states and communities. The number of water efficiency programs has increased dramatically in the last 10 years, and these programs are now found in almost every part of the United States. The Drinking Water State Revolving Fund (DWSRF) and Clean Water State Revolving Fund (CWSRF) programs can be important sources of financial assistance to help states and systems initiate a variety of efficiency measures and programs.

Drought Conditions, July 2003



(www.drought.unl.edu/dm/monitor.html)

Why Use Water Efficiently?

1. Water efficiency saves money. Although some water efficiency strategies require an initial capital investment, in the long run, conserving water can provide significant cost savings for water and wastewater systems. Water efficiency and reuse programs help systems avoid, downsize, and postpone expensive infrastructure projects, such as developing new source water supplies, building new treatment capacity, and expanding pumping and delivery infrastructure. When unneeded investments are avoided, systems have more resources for other critical needs.

By installing more efficient water fixtures and regularly checking for leaks, households can reduce per capita water use from 74 to 52 gallons per day.
(www.awwa.org/advocacy/learn/conserve)

An effective way for water systems to realize significant savings is to reduce unaccounted-for water. This is water that is produced, but generates no revenue because it is lost before it gets to customers. By reducing the water lost from leaks and stolen by unauthorized connections (e.g., the tapping of hydrants), water systems can decrease their costs and minimize the amount of water they must produce and pump to meet demand. The first step in reducing unaccounted-for water is quantifying it by measuring the amount of water consumed by customers and the amount of water withdrawn from the source. These measurements require that the source and service connections be metered. Metering also allows a system to base its fees on actual customer use, which creates an incentive for customers to use water more efficiently.

Water efficiency initiatives can produce greater long-run savings by extending the useful life of a system's infrastructure and lowering the cost of new investments. For instance, rather than build an oversized treatment plant, a water system may save money by building a smaller scale plant and offering incentives for customers to retrofit plumbing fixtures. The system benefits from increased treatment plant efficiency and reduced energy costs.

Roles in Promoting

On average, 50% to 70% of home water is used outdoors for watering lawns and gardens. Inside, toilets use the most water, with an average of 20 gallons per person per day.

(www.awwa.org/advocacy/learn/conserve)

2. Water efficiency helps water supplies withstand droughts. In recent years, many communities' water supplies have been threatened by drought. Some systems have implemented mandatory water efficiency measures to ensure they can provide sufficient quantities of safe drinking water. Although drought contingency plans are an important part of system planning, year-round water efficiency programs can help communities and systems plan for true consumer demands and reduce the need for more drastic policies during droughts. Improved water efficiency can significantly reduce withdrawals from ground and surface water supplies. Lower water demand may allow treatment facilities to produce high quality finished water at a lower cost during the periods of low raw water quality that often accompany a drought.

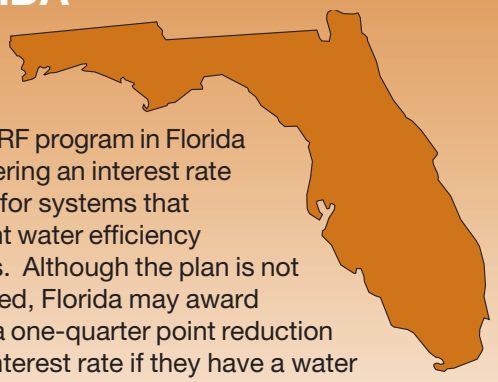
3. Water efficiency helps protect the environment. Reducing water waste and consumption decreases the need to impound streams and rivers, thus preserving aquatic systems as wildlife habitat. Efficiency helps sustain aquifers for future generations while reducing pollution from saltwater intrusion. Water efficiency can also reduce wastewater flows and energy consumption as well as reduce polluted runoff from excessive landscaping irrigation.

How can the SRF programs help systems use water more efficiently?

The CWSRF and DWSRF programs, which operate in every state and Puerto Rico, work like banks. Federal and state contributions are used to capitalize the programs. These assets, in turn, are used to make low or no-interest loans for important drinking water and water quality projects. The DWSRF was established by the 1996 Safe Drinking Water Act (SDWA) Amendments to provide loans to publicly and privately owned public water systems for infrastructure improvements needed to protect public health and ensure compliance with the SDWA. As of June 30, 2002, the DWSRF program had provided 2,500 loans for $5.1 billion to water systems for eligible projects. States may set aside up to 31 percent of their DWSRF grants to finance activities that encourage enhanced water system management and performance, like helping to prevent contamination problems through source water protection measures. Under the loan fund and set-asides, state DWSRF programs can provide financial assistance to initiate a variety of water efficiency measures and programs.

The CWSRF program was established under the Clean Water Act (CWA) of 1987 to provide loans for point source (§212), nonpoint source (§319), and estuary (§320) projects. As of June 30, 2002, the CWSRF program had provided 12,500 loans for $42.4 billion for water quality protection

FLORIDA



The DWSRF program in Florida is considering an interest rate incentive for systems that implement water efficiency measures. Although the plan is not yet finalized, Florida may award systems a one-quarter point reduction on their interest rate if they have a water efficiency plan.

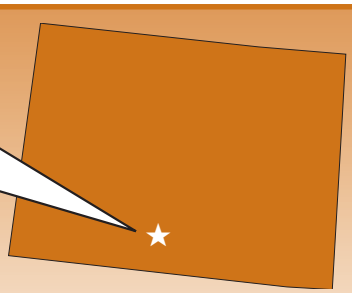
Florida uses its 2 percent DWSRF technical assistance set-aside for a contract with the Florida Rural Water Association (FRWA) to provide water audits and leak detection. Florida is divided into five water management districts. Each district issues consumptive use permits, which limit the amount of water a utility is allowed to withdraw from any source. When a system requests an increase in its allowable water use, the management districts generally refer systems to FRWA for a water audit and leak detection (if necessary). Systems have saved money by avoiding the treatment and pumping costs for water that would have been lost.

projects. The CWSRF funds approximately $3 to $4 billion in water quality projects each year. Water efficiency and reuse activities and projects may be considered point sources if they are developed as a component of a wastewater treatment works (§212 project). These types of projects are eligible under the point source authority because they address the ability of wastewater treatment plants to meet the environmental goals of a community with efficiency and at minimum cost. As required by the CWA, §212 projects must be publicly owned to receive CWSRF funds.

How does a water efficiency project get funded?

Project eligibility and available funding varies according to the priorities, policies, and laws of each state. States develop annual Intended Use Plans (IUPs) that describe how they will use funds in the SRF programs. Because each state administers its SRF program differently, the necessary first step is to get the project or activity included in a state's IUP. Potential assistance recipients should contact their state DWSRF or CWSRF representative.

The **East Alamosa Water and Sanitation District in Colorado** is using a CWSRF loan to purchase and install publicly owned water meters in its distribution system. Metering provides essential data for charging fees based on actual customer use. This approach has been found to contribute directly to water efficiency. The water meters will reduce water use by an estimated 3 million gallons per year. The loan will be repaid from wastewater user charges.



COLORADO

The Colorado Department of Public Health (DPH) requires water systems that provide over 2,000 acre feet of water per year to implement a water efficiency plan before applying for DWSRF funding. The DWSRF program also gives 5 bonus points to systems that have water efficiency plans when ranking loan applications, which encourages many small systems to develop plans. Systems submit their plans to the Colorado Department of Natural Resources, which then provides a list of approved systems to the DPH. The water efficiency plans typically address irrigation, drought tolerance and management, and measures to reduce lawn watering. The majority of plans also include surcharges on water use.

Roles in Promoting

How can systems harness the SRF programs to improve water efficiency?

The SRF programs are a powerful resource for systems to finance projects that promote water efficiency and reuse. The SRF programs can make loans for a wide variety of water efficiency projects, as shown below. Because each state SRF program differs in its water efficiency incentives and requirements, systems should check with their state DWSRF or CWSRF representative for specific requirements.

The average American household could save 20,000 gallons of water per year if it installed an inexpensive low-flow showerhead. A low-flush toilet could reduce their water use by an additional 34%.

(www.epa.gov/water/you/chap3.html)

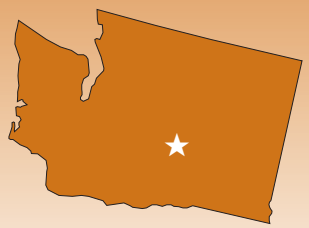
Installing water meters.

Accurate water consumption measurements are essential for detecting leaks and for charging customers based on the amount of water they consume. When customers are billed for the water that they actually use, they have a monetary incentive to use water more efficiently. The DWSRF and CWSRF programs can fund the installation of water meters.

Installing or retrofitting water-efficient devices.

Installing fixtures that save water or retrofitting older, inefficient fixtures with water-saving devices can conserve a significant amount of water. The DWSRF program can fund the installation or retrofit of water-efficient devices, such as appliances and plumbing fixtures. The CWSRF program can fund plumbing fixture retrofits or replacements in public buildings. In addition, the CWSRF can pay for the use of efficient landscape irrigation equipment for facilities that are publicly owned (e.g., public parks and public golf courses).

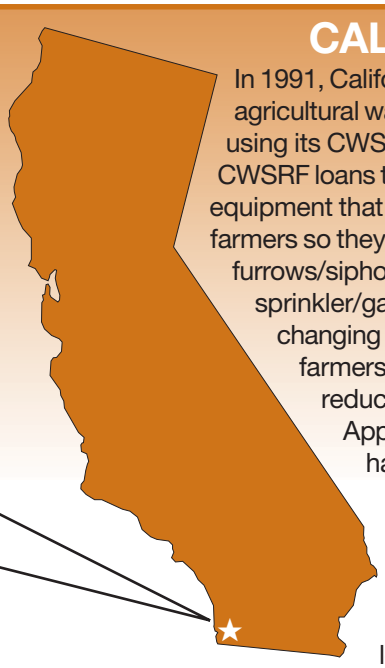
WASHINGTON



Royal City, Washington, is using a CWSRF loan to build a new wastewater treatment facility in which the reclaimed water will be used to augment irrigation water in the summer and enhance local wetlands and lakes in the winter. The loan will be repaid from user charges.

San Diego, California, initiated a Public Facilities Retrofit program in 1992. While not funded from the CWSRF, this project would be eligible for a CWSRF loan. Seventy city-owned structures were retrofitted with low-flush toilets (which require 1.6 gallons or less per flush). The water savings resulting from this project are estimated to be almost 8.5 million gallons per year. Since then, the city has retrofitted 290 additional public buildings.

CALIFORNIA



In 1991, California initiated an agricultural water efficiency program using its CWSRF. State districts use CWSRF loans to purchase irrigation equipment that is then leased to farmers so they can convert from furrows/siphon tube irrigation to sprinkler/gated pipe irrigation. By changing irrigation methods, farmers use less water and reduce subsurface drainage. Approximately $45 million has been loaned to seven districts to operate this program. The districts pay back the loan with money collected from leasing the equipment.

Water Efficiency

KANSAS

The Kansas Department of Health requires municipalities to implement water efficiency plans approved by either the Kansas Water Office or the Division of Water Resources in order to receive funding from the DWSRF program.

Funding incentive programs.

It is not uncommon for water systems to lose more than 10% of total water production due to leaky distribution systems.

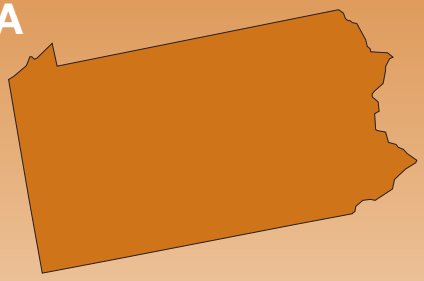
(AWWA, 1992. *Water Industry Database: Utility Profiles.* AWWA, Denver, CO.)

Incentives such as rebates, tax breaks, vouchers, and conservation rate structures can encourage customers to conserve water. These incentives can encourage water users to install water-efficient equipment, appliances, or plumbing fixtures, repair water leaks, or implement sound landscaping practices. The DWSRF program can fund incentive programs if the costs are included as part of a larger project (similar to planning and design costs included as part of a loan). The CWSRF program can fund incentive programs as a method of reducing municipal waste if the programs encourage wastewater service customers in the service area of the proposed project to reduce wastewater flow to the project.

Installing dual pipe distribution systems.

Some of the water that systems provide to customers does not need to meet National Primary Drinking Water Regulations (NPDWRs) because it is used for non-potable purposes such as landscape irrigation and fire protection. A parallel distribution network (potable and non-potable) allows a public water system to treat less water to potable standards, saving both water and money. Treated wastewater (i.e., reclaimed water) is provided to homeowners and industrial users for non-potable purposes through the parallel distribution system. The use of treated wastewater for non-potable purposes reduces source withdrawals and eliminates the need for the public water system to expand its facility. The DWSRF can pay for the installation of a dual pipe distribution system as a means of lowering costs of treating water to potable standards. The CWSRF can pay for recycling gray water in public buildings, reusing wastewater for public purposes, and stormwater treatment and reuse. Systems should consider combining drinking water and wastewater projects to save water and money by promoting efficiency.

PENNSYLVANIA



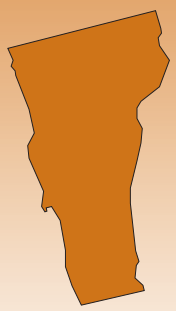
The Pennsylvania Water Conservation Leak Detection Program, funded by the state's 2 percent DWSRF technical assistance set-aside and matching state funds, is a joint effort of the Pennsylvania Department of Environmental Protection and the Pennsylvania Rural Water Association (PRWA). PRWA uses set-aside funds to provide two circuit riders to conduct water audits and perform leak detection for small systems (serving fewer than 10,000 persons). The PRWA, which is familiar with systems in the state that have high levels of unaccounted-for water, targets small systems for participation. Systems may request water audits as well. Before the Water Conservation Leak Detection Program began, only systems that were members of PWRA were eligible for water audits. Now any small system can participate.

Since the program began in 1998, 86 systems have participated. Despite the time-consuming nature of the project, the circuit riders have detected 594 leaks and saved over 1.4 billion gallons of water and $1.36 million annually. From June 2001 to July 2002, 24 systems underwent water audits. A total of 152 leaks were detected, which saved systems over 396 million gallons of water and $152,800 annually. Individual systems are saving an average of $6,900 per year by reducing average lost water from 36 percent to 9 percent. These savings may seem small, but they are significant for small systems on tight budgets.

Roles in Promoting

How can states use the SRF programs to promote water efficiency?

VERMONT



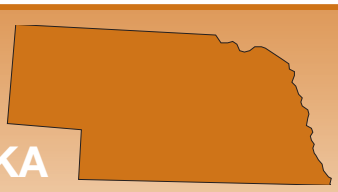
The Vermont Department of Environmental Conservation uses its 2 percent DWSRF technical assistance set-aside to fund a circuit rider from the Northeast Rural Water Association (NeRWA) to conduct water audits and leak detection. Systems generally ask to participate in the program, though they may also be targeted based on sanitary survey results. The program is very successful—often coming to the rescue of systems that have a major leak which they are unable to find.

The power of educating the public should not be underestimated. Customers are a key part of any water efficiency effort and should be included through public education and outreach. The savings created by reducing wasted water can be passed along to customers, who themselves can be empowered to save money on their utility bills by using water efficiently.

In the DWSRF program, states can use their set-aside funds to promote water efficiency through the following activities:

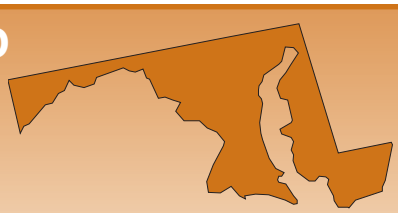
- ☒ Development of water efficiency plans.
- ☒ Provision of technical assistance (e.g., water audits, leak detection, and rate structure consultation) to help systems conserve water.
- ☒ Implementation of drought monitoring.
- ☒ Development and implementation of incentive programs or public education programs on efficiency.
- ☒ Development and implementation of ordinances or regulations to conserve water.

NEBRASKA



The Nebraska Public Water Supply Program uses the DWSRF in several ways to encourage water efficiency. To receive DWSRF funding in Nebraska, a system must have metered connections or include meter installation in the proposed project. Disadvantaged systems are eligible for additional financial assistance if they have average metered water use of less than 100 gallons per person per day. A portion of the 2 percent DWSRF technical assistance set-aside is used for a contract with the Nebraska Rural Water Association to assess the infrastructure of systems serving 10,000 or fewer persons. These assessments include leak detection.

MARYLAND



The Maryland Department of the Environment (MDE) is proposing a new priority ranking process for systems applying for DWSRF funding. The current scoring system gives points for public health, compliance, and environmental and system reliability. The proposed water efficiency bonus points would increase the total number of available points from 100 to 110. A system would receive 5 points for completing a water audit within the past year and 5 points for implementing Best Management Practices (BMPs) for water efficiency. MDE already has written guidance on water efficiency BMPs.

Water Efficiency

The SDWA gives states the option of requiring systems to submit water efficiency plans as a condition of receiving DWSRF assistance (SDWA §1455). States have also chosen to award bonus points in their priority rankings to systems that have water efficiency plans or that implement water efficiency measures. Systems should check with their state DWSRF representative to find the specific requirements or incentives for their state. EPA guidelines for developing a water efficiency plan can be found on the EPA website, *www.epa.gov/owm/water-efficiency/*. The guidelines include a variety of planning steps and recommendations for water efficiency measures, each geared to different system sizes and different water efficiency needs and goals.

In the CWSRF program, states can fund the following activities as §212 treatment works projects:

- Use of ordinances or regulations to conserve water use.
- Development and implementation of public education programs on efficiency.

The Texas Water Resources Board requires all systems applying for a DWSRF loan greater than $500,000 to submit a water efficiency plan and a drought management plan. The Texas Water Conservation Group receives the plans from systems, reviews them, and returns them to systems with comments. The Conservation Group notifies the DWSRF program when the plans are acceptable. Even when a loan is approved, however, the DWSRF program will not transfer funds to the system until the system submits documentation that the water efficiency and drought management plans have been implemented.

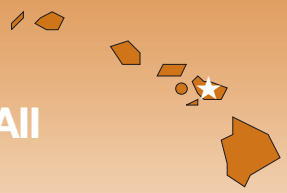
Houston, Texas, has implemented a water efficiency education program as part of a comprehensive plan to reduce water use. The city's program has saved $3.70 for every $1.00 invested in water efficiency. The education program promotes retrofitting of older structures with efficient fixtures. It works through city schools, a T-shirt design contest, a display used at festivals and meetings, and a public speaking program. Although not funded from the CWSRF, these types of activities would be eligible for funding.

United States Bureau of Reclamation WCFSP

The United States Bureau of Reclamation (USBR) created the Water Conservation Field Services Program (WCFSP) in 1997 to encourage water conservation, assist water agencies in developing efficiency plans, and provide information about water use and management. Among the water efficiency services provided by the WCFSP are:

- ✓ Conducting field tours.
- ✓ Distributing information guides and materials.
- ✓ Teaching workshops and an annual water management seminar.
- ✓ Providing on-the-ground educational services for general and specific activities.
- ✓ Brokering partnerships with governmental, state, and local educational organizations.
- ✓ Participating in water fairs and other children's education activities.
- ✓ Establishing and supporting Water Conservation Information Centers.

In addition, the USBR provides for implementation of water efficiency measures to water systems through cost-sharing activities. For more information, see *www.usbr.gov/watershare*.



Maui, Hawaii, used CWSRF funding to upgrade the filtration, disinfection, and ancillary facilities at the Kihei wastewater treatment plant to produce a consistently high-quality effluent. The reclaimed water is used to help meet the needs of golf courses, resort areas, county parks, community centers, and schools affecting 1,200 acres. The loan will be repaid from the city's general fund.

Rural Utilities Service WEP

The Rural Utilities Service (RUS) created the Water and Environmental Programs (WEP) which provides loans, grants, and loan guarantees for drinking water and wastewater facilities in rural areas and in cities and towns of 10,000 or fewer residents. Public bodies, non-profit organizations, and recognized Indian Tribes may qualify for assistance. RUS also funds technical assistance and training to aid rural communities and may be able to assist in planning or funding water efficiency measures. For more information, see *www.usda.gov/rus/water/*.

FOR MORE INFORMATION...

DWSRF Website:
www.epa.gov/safewater/dwsrf.html

CWSRF Website:
www.epa.gov/OW-OWM.html/cwfinance/cwsrf/

Water Efficiency Website:
www.epa.gov/OWM/water-efficiency/

Office of Ground Water and Drinking Water:
www.epa.gov/safewater/

Office of Wastewater Management:
www.epa.gov/OWM/

Office of Water (4606M)

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