



Funding Drought Resiliency Projects

Droughts occur throughout the United States, and in any given year at least one region is experiencing drought conditions. Droughts do not have the same immediate effects as floods or hurricanes, but they can be more costly than other natural disasters. Depending on its severity and duration, drought can devastate crops and forests, lead to shortages of food for livestock and wildlife, increase the risk of wildfires, and have a negative effect on local and regional economies. The frequency, intensity, and duration of drought events are increasing throughout the country, a pattern that is expected to continue shifting outside of historical trends in the future.

Drought can result in significant water supply and quality challenges for communities and their wastewater systems. To address water supply challenges, water reuse, water efficiency, and related measures can be implemented to conserve and augment limited water supplies while meeting water quality goals and requirements. At the same time, restrictions on water usage during a drought and greater adoption of water efficient practices can result in declining wastewater flows in collection systems. This can increase the concentration of salts and organic material going to a treatment facility and impact the performance of facilities that may not be optimized for more concentrated wastewater

both for treatment for discharge and potential reuse. Long-term planning and investments are essential to ensure that our wastewater infrastructure can help communities adapt to drought conditions while minimizing impacts to ongoing operations. The Clean Water State Revolving Fund (CWSRF) can provide low-cost financing for activities that address and promote community and utility resiliency to drought.

How the CWSRFs Work and Who May Qualify

The CWSRF is a source of low-interest financing for a wide range of wastewater infrastructure and water quality projects. The program is an effective partnership between EPA and all 50 states and the territory of Puerto Rico. Each program has the flexibility to finance a variety of projects that address its most pressing water quality needs. The state- and territory-administered programs each operate like banks with federal and state contributions that capitalize the programs. These funds are used to make low-interest loans to local communities for water quality projects and are then repaid to the CWSRFs over terms as long as 30 years or the useful life of the project, whichever is less. Repayments are recycled back into the fund to finance additional

projects. The below-market rate loans offered by the program save borrowers significant resources over the life of the loan compared to traditional financing sources.

Financial Benefits of CWSRF Financing

- CWSRF assistance options deliver significant benefits and incentives to borrowers. CWSRF assistance can provide the following benefits:
- Coverage of up to 100% of project costs;
- Discounted loans below the market rate down to zero percent in some states;
- Deferred payments of principal and/or interest;
- Terms of up to 30 years and extended term financing that reduces annual principal and interest payments;
- Revenues for loan repayments can come from any source;
- Reliable access to capital through the use of programmatic, portfolio, and co-financing;
- Access to additional subsidies;
- Credit enhancements such as guaranteeing local debt or purchasing bond insurance, that lower the cost of loan repayments for borrowers;
- Access to affordable assistance for project development, planning, and technical assistance.

Getting a Project Funded

EPA encourages states to consider financing a wide variety of eligible water quality and public health projects based on a state's specific needs. Utilities and municipalities that want to learn more about CWSRF financing opportunities should contact their state's CWSRF program to learn more about the process states use to determine which projects are funded. A directory of CWSRF state programs can be found at <https://www.epa.gov/cwsrf>.

CWSRF Assistance for Drought Resiliency Projects

The CWSRFs provide financial assistance for a wide range of eligible water infrastructure projects to assist

communities' efforts to become drought resilient. These projects, however, do not need to be solely designed to mitigate drought; they may also have other benefits that can strengthen and protect water infrastructure. These activities include, but are not limited to:

- Planning activities that assess a wastewater system's vulnerability to drought impacts that are reasonably expected to result in a capital project (e.g., risk/vulnerability assessments, water audits, water conservation plans, emergency preparedness/response/recovery plans, drought management plans, and climate adaptation plans);
- Water conservation and efficiency projects that reduce the demand for a wastewater system's capacity through reduced water consumption (e.g., installation or replacement of water meters, water efficient appliances, and plumbing fixtures);
- Projects involving the reuse or recycling of wastewater, stormwater, or subsurface drainage water, including the purchase and installation of wastewater treatment equipment sufficient to meet reuse standards and precipitation harvesting equipment; or
- Distribution systems to support effluent reuse, including recharge transmission lines, injection wells, and equipment to reuse effluent (e.g., gray water, condensate, and wastewater effluent reuse systems).

Encouraging Drought Resilient Infrastructure

Each CWSRF publishes programmatic goals in their Intended Use Plan and Annual Report that may support drought resilience through activities such as water conservation, water reuse or recycling, climate resilience, and more. There are ways the CWSRF can support and encourage drought resilience for both wastewater systems and communities. CWSRF incentives, such as through priority setting systems, are an effective tool that states use to encourage drought resilient projects. Each CWSRF program has a unique priority setting system that evaluates and ranks projects. Ranking criteria primarily focus on public health and water quality but can also

address concerns such as drought resiliency. States can encourage projects that promote overall system resiliency through targeted ranking criteria (e.g., offering priority points) and funding incentives (e.g., reduced interest rates and/or waiving fees). Additional subsidies (e.g., principal forgiveness, negative interest rate loans, and grants) can also be used to encourage drought resiliency projects.

CWSRF programs can also use their administrative resources to provide technical assistance and training in the development of these projects. Additionally, several state programs have invested in water infrastructure funding programs that can provide financial assistance for drought resilient projects that complement CWSRF eligibilities or even co-fund with other projects. Also, many CWSRFs are members of funding coordination groups that meet to collaborate with other state and federal funding sources that can fund drought resilient projects. Other activities that support drought resiliency include assessing emergency funding availability, and marketing and outreach regarding availability of CWSRF resources.

Water Reuse and Drought

Water reuse is the practice of reclaiming water from a variety of sources, treating it, and reusing it for beneficial purposes. Since the source water for most water reuse projects is municipal wastewater, which is less dependent on variations in the local climate, it can provide a reliable, local source of water that can enhance resilience and mitigate the impacts of drought on a community. In addition, because wastewater is locally sourced, communities practicing water reuse will be less dependent on imported sources of water. This is very important for communities in the western states that have an ongoing history with drought, such as California. Having a local and climate-resilient supply of water through reuse provides greater certainty in cost as the cost of water reuse is less dependent on the availability of natural supplies. It can also better position utilities and their customers to use water resources more efficiently.

Since the start of the CWSRF program, there have been approximately 26 state programs, including Arizona, California, Florida, Nevada, and Texas, that have provided assistance for water reuse projects. Other states, however, like Georgia and Hawaii, have

seen an increase in water reuse projects over the last several years. The following are some examples of state practices and programs that target water reuse in drought-prone states:

California Water Recycling Funding Program:

California has a Water Recycling Funding Program (WRFP) with the sole purpose of financing water reuse projects in the state. This program received \$625 million through Proposition 1 bond funding in 2014 for loans and grants for planning and construction. Loans from this program are administered through the CWSRF program and utilize many of the same processes. In addition, many water reuse projects are co-funded through grants and loans provided at 1 percent interest through the CWSRF. There are also separate criteria for the WRFP that give priority to potable reuse projects over non-potable reuse projects. As of October 2021, 46 projects received financing with almost \$260 million in grants and \$1.1 billion in CWSRF loan financing. While it is unlikely that many other states will implement a water reuse focused program at this scale, it is a good example of coordinating other state funding sources to leverage CWSRF resources.

Oklahoma Water for 2060 Initiative:

The Oklahoma CWSRF Program includes a statement of support for water reuse in both their short- and long-term program goals. The program also has a goal of supporting the Oklahoma Water for 2060 Initiative. This initiative includes several recommended actions related to water reuse including identifying successful projects and opportunities for water reuse to support the overall goal of using less fresh water in 2060 than was used in 2010. The cost of water reuse infrastructure was identified as a constraint to future reuse opportunities and the CWSRF program can help address these cost concerns. Such initiatives can serve as a catalyst for spurring innovation in a CWSRF program, improving coordination in water resources management across state agencies, the utility sector, and even the private sector.

State Water Implementation Fund for Texas:

For communities that apply for or receive any state financial assistance over \$500,000, the Texas Water Development Board requires the development and submission of a water conservation plan. Water reuse

can be incorporated into these plans as an element for reducing water demand. Similar requirements help ensure that communities receiving CWSRF assistance are considering the long-term sustainability of water resources when planning infrastructure improvements.

In 2013, Texas created the State Water Implementation Fund for Texas (SWIFT) program to fund projects in its state water plan. SWIFT was initially established through a fund transfer from Texas's "rainy day fund" but was later leveraged through the issuance of revenue bonds. SWIFT provides low-interest loans for water supply projects and operates much in the same way as the CWSRF program. SWIFT can be used to support eligible water reuse projects and co-fund projects with the CWSRF program. Special consideration in SWIFT is given for rural communities, agricultural water conservation, water conservation, and water reuse projects.

CWSRF Case Studies

How communities are using the CWSRF to finance the impact of drought on their wastewater systems.

California:

The Orange County Water District (OCWD) received a low-interest loan for approximately \$182 million from the CWSRF to use towards financing the construction of OCWD's Groundwater Replenishment System (GWRS) Final Expansion and Water Production

Flow Enhancement projects. This important water reuse project will expand OCWD's existing 100 million gallons per day (MGD) GWRS to produce an additional 30 MGD drought-resistant water supply for its service area. The GWRS purifies wastewater from the Orange County Sanitation District (OCSD) that would otherwise have been discharged to the ocean and puts it through a three-step advanced purification process consisting of microfiltration, reverse osmosis membranes and advanced oxidation process of ultraviolet light in combination with hydrogen peroxide. The project will also include constructing a pump station, two flow equalization tanks, rehabilitating pipelines, headwork modifications of incoming sources of wastewater, and expanding treatment capacities of the advanced recycled water purification facility. The result is high-quality water that's injected into a seawater intrusion control barrier and pumped to recharge basins where it naturally percolates into the Orange County Groundwater Basin managed by OCWD. It will also provide an additional 31,000 acre-feet per year drought-proof water supply at a lower cost than imported water. GWRS water accounts for up to one-third of the water that is annually put into the groundwater basin; an asset that provides up to 77 percent of the annual water needs for the region. Upon completion, the GWRS will be recycling all of OCSD's reclaimable wastewater and will produce sufficient water for one million people. The anticipated date of construction completion for this project is approximately August 2023.



Photo Courtesy of Orange County Water District

The total cost of the GWRS Final Expansion and Water Production Flow Enhancement projects are \$310 million. Customers will realize a total savings of nearly \$42 million over the life of the loan. In addition to the CWSRF loan, the OCSD's remaining costs will be paid for through a \$3.6 million grant from the California Department of Water Resources Integrated Regional Water Management grant program, a \$1.1 million grant from the U.S. Department of the Interior Bureau of Reclamation Title XVI Water Infrastructure Improvements for the Nation program, \$3.8 million in grant funding from Proposition 13, \$1.2 million in grant funding from Proposition 1's Water Recycling Program, and a \$135 million loan from the U.S. Environmental Protection Agency's Water Infrastructure Finance and Innovation Act program.

Florida:

Florida's CWSRF Program provided a loan to the Town of Baldwin for \$2,373,472 to construct a reclaimed water transmission main to the Brandy Branch Power Plant near Jacksonville, Florida. This project will send all the effluent from the town's wastewater plant to the power plant to be used for cooling water at the power plant. As a result,

the amount of groundwater withdrawn from the aquifer will be reduced, which in turn reduces the impact of the power plant on the aquifer during drought conditions. The funding package included \$222,110 in principal forgiveness and a \$1,811,101 grant from the Florida Department of Environmental Protection's Small Community Wastewater Grant Program, as well as a \$889,350 grant from the St. Johns River Water Management District. Construction on this project began in November 2018 and was completed on September 17, 2019. Previously, the town's effluent was discharged to surface waters, so this project not only provides beneficial reuse but also reduces nutrients discharged to local water bodies.

Texas:

The increasingly drought prone City of Wichita Falls proposed a permanent reuse project that would deliver indirect potable reuse water from the River Road Wastewater Treatment Plant to the city's raw water source, the Arrowhead Lake. This \$33.5 million CWSRF loan is a green project reserve loan with over \$252,000 of principal forgiveness. Since completion, this project is allowing the plant to meet



Photos Courtesy of Florida Department of Environmental Protection

stringent effluent limits that will allow up to 16 MGD of processed wastewater to be added to the lake. Improvements will consist of a chemical coagulation, filtration, and reaeration system along with a new pump station and a 15-mile outfall pipeline that will run to the lake to make the city compliant with the newly established Texas Pollutant Discharge Elimination System (TPDES) discharge requirements. In recent years, Wichita Falls imposed strict water restrictions on the community, which have reduced the average MGD use by approximately 72 percent during the summer season. This reuse system will provide a long-term solution that will assist the city in meeting their source water needs.

Arizona:

Arizona has been in a sustained long-term drought since 1994, which has had significant impacts on Arizona's water supplies. As a result, communities have increased their use of reclaimed water to mitigate the effects of drought and offset the use of drinking water supplies. The City of Safford expressed that water shortage is a severe threat to the community and ensuring water availability is one of the city's top priorities. To increase the availability of potable water, Safford installed a reclaimed water pipeline in 2020. The pipeline conveys reclaimed water from the Gila Resources WWTP to the Graham County Fairgrounds for direct non-potable reuse, reducing the volume of potable water currently used for irrigation and taking full advantage of the effluent that would otherwise be discharged into the Gila

River. The project will capture 130.5 million gallons of Class A+ reclaimed water that is created each year but is currently not being utilized.

The reclaimed water will immediately replace potable water used at City properties and recreational facilities at the Fairgrounds for outdoor water use. In the future, Safford hopes to use the reclaimed water at the Graham County General Services Building, Graham County Courthouse, and City Hall. The Water Infrastructure Finance Authority of Arizona provided a \$3,225,000 loan to the City of Safford for the reclaimed water pipeline project. The loan was for 30 years at a 1.9% interest rate, with \$900,000 in principal forgiveness. As the current drought continues and water availability lessens, responsible and conservative water use remains essential. This project helped to reduce the burden of water shortages on the City of Safford and put the reclaimed water to the most beneficial use possible.

Additional CWSRF Resources on Drought

Funding Resilient Infrastructure and Communities with the Clean Water State Revolving Fund: <https://www.epa.gov/cwsrf/funding-resilient-infrastructure-and-communities-clean-water-state-revolving-fund>

State Revolving Funds: Financing Drought Resilient Water Infrastructure Projects: <https://www.epa.gov/waterfinancecenter/state-revolving-funds-financing-drought-resilient-water-infrastructure-projects>

Integrating Water Reuse into the Clean Water State Revolving Fund: https://www.epa.gov/sites/default/files/2021-04/documents/cwsrf_water_reuse_best_practices.pdf

Overview of the Clean Water State Revolving Fund Eligibilities: https://www.epa.gov/sites/default/files/201607/documents/overview_of_cwsrf_eligibilities_may_2016.pdf

EPA WaterSense: <https://www.epa.gov/watersense>