Orange County Groundwater Replenishment System Project in Orange County, California

EPA United States Environmental Protection Agency

Increasing Climate Resilience and Mitigation with the Clean Water State Revolving Fund (CWSRF) and Water Infrastructure Finance and Innovation Act (WIFIA) Program

Background

Communities across the United States rely on an extensive network of drinking water, wastewater, and stormwater infrastructure to provide clean and safe water. However, the impacts of climate change are stressing the operation of our country's aging water infrastructure disproportionately impact lower income communities. Aside from an increase in extreme weather events, the changing climate is creating more frequent and longer droughts, water supply shortages, regular flooding, sea-level rise, and saltwater intrusion. These events can intensify environmental and public health stressors, like decreasing and impairing water quality. Communities should consider possible ways to address current and future climate threats and ensure their water infrastructure is resilient to climate change. The U.S. Environmental Protection Agency's (EPA) **Clean Water State Revolving Fund (CWSRF)** and **Water Infrastructure Finance and Innovation Act (WIFIA)** programs can help communities and potential borrowers address climate change impacts to their water infrastructure and reliably provide clean and safe water to all Americans.

How the Programs Work

Clean Water State Revolving Fund

Clean Water State Revolving Fund

Clean Water State Revolving Fund programs in each state and Puerto Rico operate like banks. Federal and state contributions are used to capitalize the programs. The assets are used to make low interest loans and other assistance to local communities for water quality projects. Funds are typically repaid to the CWSRFs over terms as long as 30 years or the useful like of the project, whichever is less, and recycled back into the fund to finance additional eligible projects. The programs may provide assistance to public, private, or non-profit entities for water infrastructure projects. Eligible recipients vary by project type. Since the program is managed by the states, the financing of projects may vary according to the priorities of each state.

Water Infrastructure Finance and Innovation Act

WIFIA PROGRAM

The WIFIA program is a government bank operated by EPA that provides supplemental, flexible, low-cost credit assistance to public and private borrowers for all types of wastewater, drinking water, and stormwater projects. The WIFIA program offers long-term loans that can be combined with State Revolving Fund assistance, municipal bonds, and federal and state grants to help communities deliver more critical water infrastructure projects for a lower cost with less impact on rate payers.

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Assistance for Climate Resilience and Mitigation

Climate resilience is a water system's capacity to maintain function in the face of climate change-related stress and to adapt to be better prepared for future climate impacts. EPA can provide assistance for communities to become more resilient to the effects of climate change – both as stand-alone projects and climate resilience activities incorporated into larger water infrastructure projects.

Eligible projects may include:

- Increasing storage capacity in combined or separate sanitary sewer systems to mitigate the impacts of increased precipitation and storm intensity (e.g., building CSO tunnels or other storage infrastructure)
- Preserving, protecting, and maintaining the operation of treatment works and integrity of treatment during floods or natural disasters (e.g., installing floodwater pumping systems, backup generators, or storage tanks)
- Enhancing community resilience through stormwater management using green and gray infrastructure in the event of a flood (e.g., the installation of infrastructure that protects the treatment works from flooding) and other systems capable of mitigating a storm surge such as tidal wetlands, and living shorelines
- Encouraging climate-smart agriculture (e.g., riparian forest buffers)
- Securing and conserving local water supplies through water reuse and water conservation (e.g., recycling wastewater and stormwater, using water efficient appliances)
- Reducing impairment of water quality from runoff, sedimentation, and mudslides caused by wildfire through improved forest management activities (e.g., forest thinning)
- Developing and implementing emergency response plans and mitigation plans

Climate change mitigation refers to actions limiting the magnitude and rate of future climate change by reducing greenhouse gas emissions and/or advancing nature-based solutions. Renewable energy projects have an important role in mitigating climate change by using technologies and practices to reduce the energy consumption of water quality projects and use energy in a more efficient way through:

- Installing wind, solar, geothermal, and biogas combined heat power systems that provide power to a publicly owned treatment works (POTW)
- Installing methane capture and energy conversion equipment
- Utilizing hydroelectric systems that harness wastewater flows to, from, or within a treatment works
- Using wastewater biosolids to power a POTW by generating methane gas for power (i.e., co-digestion)
- Incorporating energy efficiency upgrades and renewable energy generation projects that reduce atmospheric deposition

Green Project Reserve

The American Recovery Act of 2009 (ARRA) requires all CWSRF programs to use a portion of their federal grant for projects that address green infrastructure, water and energy efficiency, or other environmentally innovative activities. These four categories of projects are the components of the Green Project Reserve (GPR). GPR projects can help utilities adopt practices that reduce the environmental footprint of water and wastewater treatment, enhance water and energy conservation, adopt more sustainable solutions to wet weather flows, adapt to climate change, and more. EPA expects that green projects will help the water sector improve the quality of water services without putting additional strain on the energy grid, and by reducing the volume of water lost every year. For more information on GPR, please go to **https://www.epa.gov/cwsrf/green-project-reserve-guidance-clean-water-state-revolving-fund-cwsrf**

Encouraging Resilient Infrastructure

Clean Water State Revolving Fund

Priority-setting systems are an effective tool that states use to encourage resilient wastewater and stormwater infrastructure. 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 infrastructure resiliency. States can encourage more projects that promote 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 be used to encourage resiliency projects. CWSRF programs can also use their administrative resources to provide technical assistance and training in the development of resiliency projects. Additionally, many states use various marketing strategies to share information with prospective borrowers.

Water Infrastructure Finance and Innovation Act

Over the past several years, the WIFIA program has funded projects with climate resilience components – both drinking water and wastewater. Additionally, the program announces its priorities each year in its Notice of Funding Availability. Climate resiliency is often prioritized. For this category, projects will be prioritized if they are new and innovative in regard to energy efficiency, addressing drought, or reducing water pollution and contaminants. Furthermore, WIFIA encourages projects that are more resilient to all threats, including natural disasters, climate change, bioterrorism, and cyberattacks.

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Co-Funding with other Federal Programs

CWSRF and WIFIA funds can be combined with one another to support water infrastructure projects and activities to respond to challenges presented by climate change. Combining funds from multiple sources allows communities to expand and accelerate their water infrastructure improvements, utilizing benefits and flexibilities across each program. In addition to co-funding projects with CWSRF and WIFIA funding communities are encouraged to look at other Federal funding programs such as those listed below as potential co-funding options:

- **Drinking Water State Revolving Fund**
- **Federal Emergency Management Agency Funding:**
  - Building Resilient Infrastructure and Communities
  - Hazard Mitigation Grant Program
  - Flood Mitigation Assistance
- **United States Department of Agriculture**
  - Emergency Community Water Assistance Grants
  - Water and Waste Disposal Loan and Grant Program
  - Special Evaluation Assistance for Rural Communities and Households

CWSRF and WIFIA Success Stories

The City of Marianna Solar Array Project

Electricity for the City of Marianna wastewater plant and spray field constitutes over 23 percent of operational costs, with an expense exceeding $30,000 per month. Marianna is a small rural community with a population less than 6,000 and energy costs place a great deal of pressure on the wastewater rates of its residents. To reduce electrical costs, the City received a $5 million CWSRF loan for the installation of two solar facilities, including all transformers, power distribution lines, site clearing, grading, and fencing in addition to the installation of the solar arrays.

The solar power systems were designed to provide nearly all the energy needs for the City's wastewater treatment system through net metering. By reducing the operational cost over 20 percent, it will ensure that wastewater rates are stable and affordable for the future. As a direct result of this project, the electrical costs have been reduced by more than 90 percent. This reduction in costs is especially important since the City was devastated by Hurricane Michael. Completed approximately one year after the hurricane, this project is greatly assisting the City's residents in their recovery. In addition to a $301,000 state grant for this project, the $5 million CWSRF loan was made at 0 percent interest with an extended term of 25 years, and it included $2,711,000 in principal forgiveness. As a result, the City is only responsible for repaying $41,000 annually. Since the savings is approximately $25,000 each month, the debt service can be paid annually from less than two months of savings. This solar project helps the City cover much of their expenses by allowing them to create their own energy. With this new source of energy, plus the affordable financing provided by the CWSRF, this project addresses the problem of affordability in a creative approach, especially for a community rebuilding after experiencing their most devastating hurricane.

Morris Forman Biosolids Processing Solution

The Morris Forman Water Quality Treatment Center, which processes all solids generated by the Metropolitan Sewer District in Jefferson County, Kentucky, is at the end of its useful life, causing the Metropolitan Sewer District to send biosolids to a landfill. This project will replace and refurbish existing equipment and construct new equipment to generate sustainable Class A biosolids, allow for energy recovery and production for on-site use, and reduce waste sent to the landfill. After project completion, the facility will treat all solids to Class A standards, producing approximately 40,000 dry tons of exceptional quality biosolids annually that can be used for beneficial reuse. The Metropolitan Sewer District received a $97 million WIFIA loan to cover part of this $198 million renewable energy project.

This WIFIA project provides several benefits to the Metropolitan Sewer District, including additional capacity for solids processing at the water quality treatment center, increased digester biogas production and capture to allow for renewable energy recovery for on-site use, and estimated cost savings of $15 million.

Fountain Valley Groundwater Replenishment System Final Expansion

The Orange County Water District (OCWD) received a $135 million WIFIA loan and approximately $182 million in CWSRF assistance for its groundwater replenishment system expansion. This important water reuse project expands OCWD's existing 100 million gallons per day (MGD) groundwater replenishment system to produce an additional 30 MGD drought-proof drinking water supply for its service area. The project replenishs the Orange County Groundwater Basin and reduces the need for imported water. Treated wastewater from the Orange County Sanitation District Plant 2 is purified using a three-step process that produces high quality water and then stores in the groundwater basin. The final expansion project includes expanding the existing treatment facility, constructing a pump station, rehabilitating pipelines, and reconfiguring the treatment process. This water reuse project provides several benefits, including an additional 30,000 acre-feet per year drought-proof water supply, a reduction of 40 MGD of secondary effluent discharge, creation of 700 jobs, and more than $100 million in cost savings to OCWD.

Morris Forman Biosolids Processing Solution Project for the Louisville and Jefferson County Metropolitan Sewer District, Kentucky

Additional CWSRF and WIFIA Resources on Climate Resilience and Mitigation

Funding Resilient Infrastructure and Communities with the CWSRF

Funding Drought Resiliency Projects with the CWSRF

Funding Wildfire Resiliency, Mitigation, and Recovery Projects with the State Revolving Funds

Overview of the CWSRF Eligibilities

WIFIA Program Handbook