

Infrastructure

Objectives

- Realize the effect that aging, neglected water infrastructure has on water affordability
- Understand how federal, state, and local governments pay for water infrastructure
- Identify which government programs can be used to fund infrastructure projects
- Learn about federal legislative efforts that support affordability and equity outcomes

What is Water Infrastructure?

Water infrastructure refers to the network of pipes, tunnels, pumping stations, and treatment facilities that collect, clean, and transmit drinking water to our homes, and collect, clean, and discharge wastewater back into the environment.

Beyond these conventionally recognized components of a water system network, there are other tools, technologies, and techniques that serve to manage, supply, protect, and conserve water: rain gardens, smart meters, drought-tolerant landscaping, efficient appliances, groundwater aquifers, etc. These advancements, practices, and efforts should be recognized as distributed infrastructure.

1 Koehler, C. (2018, May 16). *Financing the Future of Water Infrastructure Just Got a Whole Lot Easier*. WaterNow Alliance. <https://waternow.org/2018/05/16/financing-the-future-of-water-infrastructure-just-got-a-whole-lot-easier/>

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WHY WATER INFRASTRUCTURE MATTERS

The state of water infrastructure directly impacts water affordability. To ensure clean and reliable water service, local utilities must make strategic investments and upgrades to infrastructure systems. But utilities struggle to sufficiently fund this work — through fees and rate increases, they have begun shifting this financial obligation to customers, whose contributions have become a larger share of maintenance and improvement costs.² This is burdensome for all customers; those in low-income, disadvantaged, and vulnerable communities are especially challenged to pay these higher water bills³.

Historically, federal and state governments were the predominant funders of water infrastructure projects, as they were responsible for almost all infrastructure development at the turn of the 20th Century. After World War II, urban infrastructure systems were expanded using federal dollars (and sometimes private industrial monies),⁴ and data shows that up to the 1980s, federal government spending increased concurrently with state and local government spending. Furthermore, federal contributions came largely in the form of grants that water and wastewater utilities did not have to repay. But since then, federal government spending has decreased and leveled off while state and local government spending has continued to grow.⁵ And this reduced federal funding now comes mainly in the form of low-interest loans, which may not be accessible to communities with poor bond ratings or insufficient revenue to repay.

To compound matters, the drop-off in federal funding has coincided with infrastructure having reached or surpassed its utility, functioning, and need for updating. Water infrastructure can last anywhere between 15 to 100 years (depending on the material), and as of 2017, much of the country's water infrastructure was anywhere from 60 to 130 years old.⁶

2 American Water Works Association, and Water Environment Federation. (2017). *The United State(s) of Water: The Midwest*. Water Environment Federation. https://www.wef.org/globalassets/assets-wef/3---resources/for-the-public/value-of-water/awwa-wef-toolkit-infographics/wef_valueofwater_poster_midwest_final.pdf

3 Duke Nicholas Institute, and The Aspen Institute, Energy and Environment Program. (2020). *Water Affordability and Equity: RE-Imagining Water Services*. The Aspen Institute. <https://www.aspeninstitute.org/wp-content/uploads/2020/12/Water-Forum-Consolidated-Report-2020.pdf>

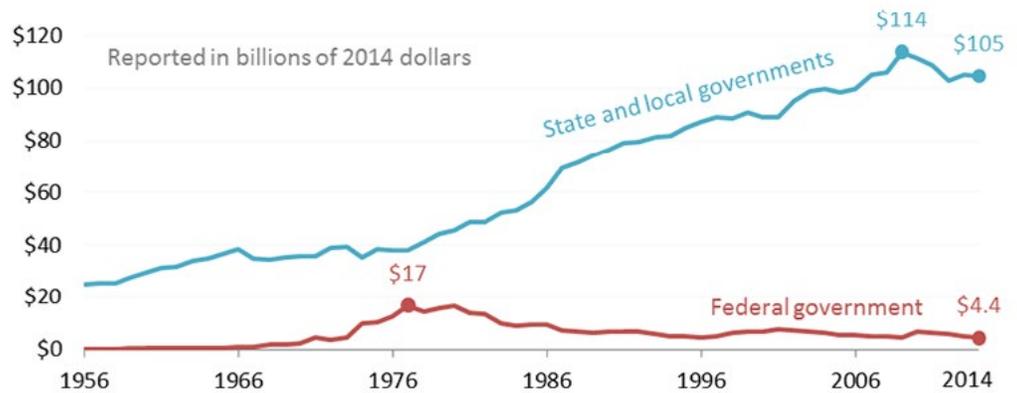
4 Sedlak, D. (2019, March 3). *How Development of America's Water Infrastructure Has Lurched Through History*. The Pew Charitable Trust. <https://pew.org/35mMYCF>

5 Bartlett, S., Cisneros, H., Decker, P., Heartwell, G., Warnock, A., Campanelli, B., ... Nellenbach, M. (2017, September). *Safeguarding Water Affordability*. Bipartisan Policy Center. <https://bipartisanpolicy.org/wp-content/uploads/2019/03/BPC-Infrastructure-Safeguarding-Water-Affordability.pdf>

6 American Water Works Association, and Water Environment Federation. (2017). *The United State(s) of Water*. Water Environment Federation. https://www.wef.org/globalassets/assets-wef/3---resources/for-the-public/value-of-water/awwa-wef-toolkit-infographics/wef_valueofwater_poster_usa_final.pdf

State and local government spending on water and wastewater utilities continued to grow while federal spending declined since the 1980s

State and local governments spent 24 times as much as the federal government in 2014



Graphed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Source: Congressional Budget Office supplemental data for the *Public Spending on Transportation and Water Infrastructure, 1956 to 2014* report (March 2015). Displays public spending on supply systems for distributing potable water as well as wastewater and sewage treatment systems and plants. Real spending is shown after adjusting nominal spending to their 2014 dollar equivalent using infrastructure-specific price indexes.

Today, wastewater infrastructure is undersized (i.e. the pipes cannot adequately serve the current population size), and water supply infrastructure is leaky: Each year, the United States loses approximately 6 trillion (6,000,000,000,000) gallons of treated water from leakage and water main breaks. And the trifecta of an old water system, deferred maintenance, and reduced federal government support is further complicated and exacerbated by the risks and threats of climate change (ex. increasingly severe storms and flooding events).

[At the time of publishing] the current federal administration determined that addressing aging infrastructure should be a 21st Century priority, and it proposed the largest infrastructure investment since WWII with its American Jobs Plan. In addition to focusing on infrastructure projects (which include modernized and climate-resilient drinking, waste, and stormwater systems), the Plan is grounded in equity and affordability considerations which acknowledge that many low-income and BIPOC communities are, and have been, disproportionately impacted by aging infrastructure.

It is important to emphasize that the American Jobs Plan is a proposal: If it is carried forward, elements and details will undoubtedly change and evolve. Advocates can monitor congressional progression of policy and bills related to [Water Resources Development](#) and [Water Affordability](#), and should also subscribe to the [River Network Federal Water Policy Update Peer Group](#).

TAKEAWAY

- As utilities work to make needed investments, customers bear the brunt of the cost, and water bills become more unaffordable.
- Historically, the federal government played a significant role in funding water infrastructure investment, but this is less the case today. Local water utilities bear much of the significant financial burden to make critical investments.
- Water infrastructure is old, prone to failures, and is further stressed by a changing climate.

FINANCING WATER PROJECTS

Addressing U.S. water infrastructure needs will require billions of dollars. Though the federal government is no longer the main source of capital for water and wastewater infrastructure projects, increased federal funding and financing is crucial, and utilities can still access well-established funding programs at all levels of government. Additionally, they can explore financing strategies (e.g. bonds, fees, and bundling) to bring in needed resources.





Federal



Local

Clean Water State Revolving Fund (CWSRF)	Water and Wastewater Utility Rates
Drinking Water State Revolving Fund (DWSRF)	Stormwater Utility Fees
USDA Rural Development	Bonds
Natural Resources Conservation Service Source Water Protection	
The Water Infrastructure Finance and Innovation Act (WIFIA)	
Section 319(h) Grants	
CoBank	
Economic Development Administration, Department of Commerce (EDA)	
Community Development Block Grant (CDBG) Program	
Appalachian Regional Commission (ARC)	
Hazard Mitigation Assistance (HMA) Program Grants	
Federal Disaster Funding (FEMA, HUD, USDA, EPA, and SBA)	

Program Considerations for Achieving Equitable and Affordable Outcomes

While its programs (understandably) have different eligibility requirements pertaining to financial status, demographics, and geography, federal support must benefit socially and economically disadvantaged communities.

Tip



Well-designed federal water infrastructure programs should aim to prioritize urban and rural communities that are less equipped to maintain and improve their water infrastructure; support local customer assistance programs; and incentivize solutions that make water services more affordable.⁷

⁷ Enobakhare, R., Blount, L. G., Boyd, T., Gavin, V., Smith, K., Hammer, B., ... Rose, K. (2018, October 23). *Water, Health, and Equity: The Infrastructure Crisis Facing Low-Income Communities and Communities of Color — and How to Solve It. Clean Water for All.* https://www.policylink.org/sites/default/files/CWC_Report_Full_report_lowres.pdf

Additional considerations to improve equity and affordability include:

Advocates should encourage their states to take a very thorough approach to the Environmental Protection Agency (EPA) Infrastructure Needs Survey and Assessment: The more “need” that a state demonstrates, the more federal funding that state can receive.

Assist communities that do not have robust asset management plans or shovel-ready projects. These communities may lack capacity to develop resources but should not be excluded from infrastructure funding. Rather, they should be provided with the resources and knowledge to develop management best practices and build capacity.

Weigh criteria that isn’t directly related to water infrastructure. Funding projects in areas with little green space or poor health outcomes, for example, might indirectly prompt parallel investment in critical water infrastructure.⁸

Account for capacity to submit a competitive proposal. If available monies are limited, and communities that lack sufficient administrative capacity must compete with better resourced communities, they are less likely to secure funding. Developing or designating targeted financing opportunities for low-income, disadvantaged, or priority communities can both neutralize such competition and ensure that equity goals can come to the fore of funding decisions.

Offer comprehensive and technical support as part of project funding. Low-capacity communities often need help navigating grant requirements, so providing planning, implementation, and monitoring assistance, and/or specialized engineering, data analysis or administrative expertise, can better assure project tracking and outcomes.

FEDERAL FUNDING FOR WATER INFRASTRUCTURE

The overarching goal of many federal water infrastructure investment policies and programs is to make financing accessible and inexpensive; in turn, utilities should not be as compelled to implement steep rate increases, and affordability outcomes can improve overall.

This publication is occurring right after the end of one administration and only a few months into a very different administration. It is therefore important to consider that there may be substantial changes in federal and the related state programs as a result of this change in administration.

8 Ibid.

The Water Resources Development Act⁹

Federal monies for water projects tend to come through the Water Resources Development Act (WRDA, and sometimes referred to as the Water Resources Reform and Development Act). Typically passed every two years (i.e. biennially), WRDAs amend U.S. Army Corp of Engineers authorizations.

WRDAs include significant changes related to water utility financing. Given that they are passed fairly regularly, these Acts can serve as a great organizing and anchoring point for advocates: Align outreach with WRDA developments and contact federal legislators during those times to voice concerns and suggestions.

Clean Water¹⁰ and Drinking Water State Revolving Funds¹¹ (SRFs)

Together, the Clean Water and Drinking Water State Revolving Funds form the largest source of federal funding for water infrastructure. Every year, Congress puts aside capitalization grants to fund SRFs, and in order to receive the grant, a state is expected to provide a 20 percent match of its allotment (and this match cannot use federal dollars.)

While the EPA supplies and manages SRFs, they are administered at the state level and function as loan programs (a significant change in the history of water financing, replacing the earlier Construction Grants program). SRFs are deemed “revolving” because the state can use the interest that its borrowers repay to make new loans. So, theoretically, SRF dollars should exist into perpetuity.

Annually, states that receive SRFs must develop an Intended Use Plan (IUP) for the upcoming fiscal year. One element of an IUP is a comprehensive list of all projects that are seeking funding.

Supporting efforts to secure this match is another place where advocates can help.

Intended Use Plan – A published document that identifies the planned uses of all Clean Water and Drinking Water State Revolving Fund programs. Intended use plans describe how those funds will be used to support the overall goals of the programs, and explain how the projects have been prioritized (also see “project priority list” entry).

Closer Look



Generally, to be eligible for SRF capital, a project must be accounted for in an Intended Use Plan, so inclusion in an IUP document is critical.

9 Sawyers, A. D. (2015, January 6). *Interpretive Guidance for Certain Amendments in the Water Resources Reform and Development Act to Titles I, II, V and VI of the Federal Water Pollution Control Act*. U.S. Environmental Protection Agency.

https://www.epa.gov/sites/production/files/2015-04/documents/water_resources_reform_and_development_act_guidance.pdf

10 Office of Water. (2021, February 11). *Learn about the Clean Water State Revolving Fund (CWSRF)* [Overviews and Factsheets].

U.S. Environmental Protection Agency. <https://www.epa.gov/cwsrf/learn-about-clean-water-state-revolving-fund-cwsrf>.

11 Office of Water. (2020, May 14). *How the Drinking Water State Revolving Fund Works* [Overviews and Factsheets]. U.S. Environmental Protection Agency <https://www.epa.gov/dwsrf/how-drinking-water-state-revolving-fund-works>.

While states produce their IUPs differently, most include a short list of projects that the state intends to fund, or a Project Priority List (PPL). Applications are assessed against established criteria (e.g. public health indexes, sustainability, and/or ability to pay), and the projects that rank the highest will typically receive funding. As an example, if a state has been advocating for comprehensive asset management, it may offer more points to applicants that already have asset management structures and practices in place, increasing the likelihood that those projects will be green-lighted.

There are limited federal guidelines for how a state must administer its SRF program, and each state creates its own selection process to determine which projects it will fund. However, public participation is a key stipulation¹² — states are required to seek public review and comment on the PPL that’s included in the draft Intended Use Plan (as well as other IUP provisions). States engage the public mainly by releasing public notices that explain how to access the IUP, sharing the dates for public meetings, and outlining the process for submitting comment.

Differences Between the Clean Water and Drinking Water SRF Programs

The Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) differ in three key ways: project type, allocation process, and program set-asides.

Project Type

The CWSRF is used mainly wastewater systems and nonpoint source projects (e.g. for bioswales and permeable pavement). The DWSRF is designed to help drinking water systems meet federal water regulations.

Across the last two decades, there has been an important evolution that recognizes the Integrated Water Resources Planning approach (discussed in [Utilities Section](#)) as a standard for planning water projects — a more integrated and holistic approach can highlight new funding sources and revisit existing sources that states and utilities have not fully explored. The federal government has issued several related guidelines via the 2009 American Recovery and Reinvestment Act (ARRA), the 2014 Water Resources Development Act, and the 2018 America’s Water Infrastructure Act of 2018 (AWIA).

Quiz

Some federal priorities of SRF funding include: (choose all that apply)

- a. Carrying out green stormwater infrastructure projects
- b. Serving environmental justice communities
- c. Improving water and energy efficiency
- d. Implementing stormwater management

Answers: a,b,c,d

Set-Asides – A percentage of State Revolving Loan funds that go toward general activities such as operator certification and technical training, i.e. set-asides are not used to directly fund infrastructure projects.

¹² Office of Water. (2020, December 15). *EPA 816-F-00-015 Fact Sheet: Public Participation in the DWSRF Program*. U.S. Environmental Protection Agency. <https://www.epa.gov/dwsrf/reports-and-fact-sheets-about-drinking-water-state-revolving-fund-dwsrf>

Allocation Process

The “formula” for deciding what percentage of the DWSRF funds a specific state receives is built into the Safe Drinking Water Act (SDWA). Every four years, utilities receive an Infrastructure Needs Survey and Assessment for the next 20 years. (Utilities that utilize asset management, emergency management, and capital improvement planning processes will have more reliable numbers for this survey.) The last survey, which covered January 1, 2015 through December 31, 2034, found that water utilities needed \$472.6 billion in infrastructure investments — this is likely a conservative estimate given that many utilities have not engaged in a comprehensive planning process. Green stormwater infrastructure and source water protection projects may not have been sufficiently represented in this survey, and emergent infrastructure challenges such as lead and per- and polyfluoroalkyl substances (PFAS) were not as prominent (a change in law now requires that lead, in particular, be factored in to the survey assessment.)

States receive at least one percent of total DWSRF dollars, and the more need a state is able to demonstrate (when compared to other states), the larger its allocation will be.¹³

Green Stormwater Infrastructure (or Natural Infrastructure) – To learn more about green stormwater infrastructure and its benefits, check out the Center for Neighborhood Technology [Green Values Strategy Guide: Linking Green Infrastructure Benefits to Community Priorities](#).

Closer Look



Therefore, advocates can encourage that their states take a very thorough approach to this survey. You can review summary results from the most recent [EPA Infrastructure Needs Survey and Assessment](#) and find how the EPA allotted [DWSRF funds to states from 2014-2016](#).

Section 205(c)(3) of the 1987 Water Quality Act,^{14,15} outlined the original CWSRF allotments, which went to all 50 states, Puerto Rico, Washington D.C., and U.S. territories. In 2000, the “formula” was slightly tweaked, but the basic allocations remain largely the same, and the criteria used to establish the allotments are unknown.

An [EPA Clean Watersheds Needs Survey](#) is conducted periodically to assess the financial investment necessary to comply with the Clean Water Act; for many years, it has been recommended that the results be used in the CWSRF allotment process, and that is currently an ongoing

13 Tiemann, M. (2018). *Drinking Water State Revolving Fund (DWSRF): Overview, Issues, and Legislation* (No. R45304). Congressional Research Service. <https://fas.org/sgp/crs/misc/R45304.pdf>

14 Office of Water. (2021, March 22). *Clean Water State Revolving Fund (CWSRF) Allotments of Federal Funds to States* [Data and Tools]. US EPA. <https://www.epa.gov/cwsrf/clean-water-state-revolving-fund-cwsrf-allotments-federal-funds-states>

15 U.S. Environmental Protection Agency. (May 2016). *Review of the Allotment of the Clean Water State Revolving Fund (CWSRF) Report to Congress*. U.S. Environmental Protection Agency. https://www.epa.gov/sites/production/files/2016-05/documents/review_of_the_allotment_of_the_cwsrf_report.pdf

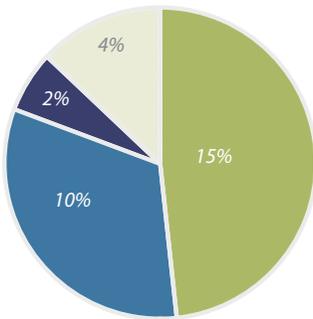
Quiz

States can use DWSRF funds for which of the following (choose all that apply)

- a. Implementing local water infrastructure projects (ex. fix leaking pipes)
- b. Training utility staff across the state (ex. operator certification, asset management)
- c. Operating and maintenance costs
- d. Administering DWSRF loan program
- e. Providing local assistance

Answers: a, b, d, e.
c is wrong because operation and maintenance is not funded by the SRFs

Breakdown of DWSRF Program Set-Asides



Local Assistance and Other State Programs (15%)

State Program Management (10%)

Administration and Technical Assistance (4%)

Small System Technical Assistance (2%)

discussion. Advocates can access mapping tools and other data from the 2012 survey, which can give them some background on the reported needs of their states.

Program Set-Asides

While the overall DWSRF goal is to implement water infrastructure projects at the local level, set-asides are a common mechanism for the federal government and states to encourage a specific type of water project. Through this program, states can set aside around 31 percent of their capitalization grants.¹⁶

Rather than going directly to specific projects, that 31 percent can be used for capacity development, operator certification, and source water protection, a broad term that encompasses land conservation, green stormwater infrastructure, and stormwater management. Set-aside initiatives may be established statewide (e.g. widely available asset management training) or rolled out through third-party technical assistance providers that target a certain aim (e.g. Georgia used a portion of its set-aside to for a consultant to help all the smallest water systems in the state with leak detection for a few years.) And, some states, such as North Carolina, also have used these DWSRF set-asides for [statewide rates surveys and interactive dashboards](#) that benefit all utilities in the state.

Specifically, the 31 percent is composed of the following subsets:

Administration and Technical Assistance (4%)

Most states use this to cover a portion of their loan program administration and help utilities complete their loan applications, but there is an opportunity for providing direct technical assistance to water systems that serve sizable populations (10,000-plus).

Small System Technical Assistance (2%)

This is reserved to assist utilities that serve small populations (less than 10,000) — their small size creates unique challenges, and funding aims to build their capacity and support them in new project planning; the funds also can cover the cost of a third-party provider to offer direct assistance.

¹⁶ Office of Water. (2020, May 14). *How the Drinking Water State Revolving Fund Works [Overviews and Factsheets]*. U.S. Environmental Protection Agency. <https://www.epa.gov/dwsrf/how-drinking-water-state-revolving-fund-works>

State Program Management (10%)

This portion addresses source water protection directly and develops infrastructure capacity (regardless of system size); water operator certification is also specified under this set-aside.

Local Assistance and Other State Programs (15%)

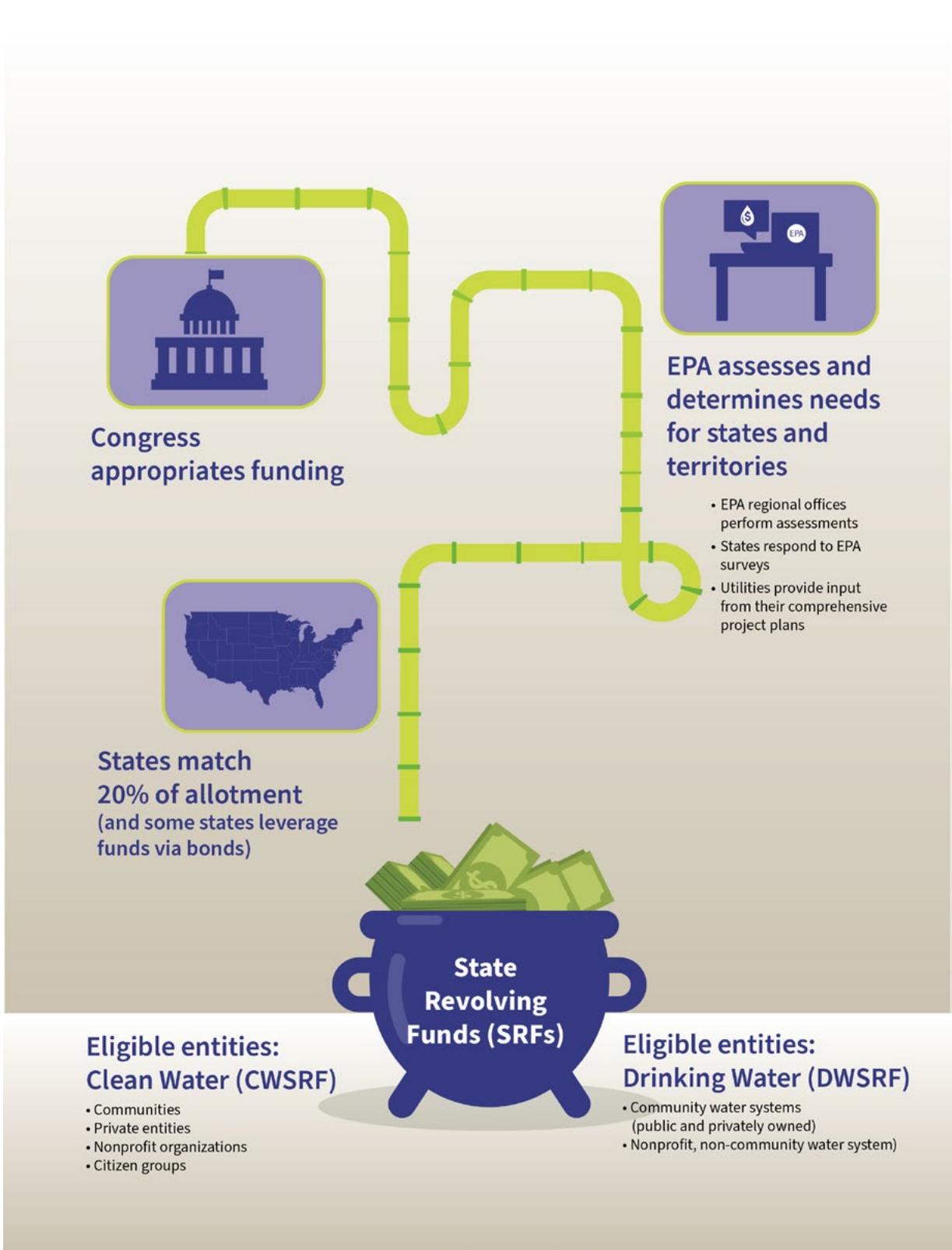
Source water protection is more broadly defined under this set-aside, These funds are a good fit for when multiple utilities want to merge, a process sometimes referred to as “regionalization” or “consolidation”; also addresses source water protection more broadly.

Most states do not set aside all 31 percent, though there has been a recent uptick in the amount that states set aside; historically they’ve only used half of the amount allowed. A balance can be struck — if the majority of water utilities cite significant water loss problem, it makes sense to provide water loss training and pay for statewide leak detection work, even if it means that less money is available to a utility might want to replace leaking water lines.

Tip



Ultimately states determine how narrowly they want to apply DWSRF funds, and changing the SRF process is a big lift. Advocates can focus their efforts on pushing forth the projects that they’d like to see advance and offering feedback on how set-asides can be targeted. Intended Use Plans will delineate how much a state is setting aside; if there is a high incidence of a specific problem (e.g. high levels of water loss), but the DWSRF program is not receiving many loan applications for these types of projects, advocates may make the case for using set-aside funds to produce water loss case studies and training.



Tribes and SRFs¹⁷

Currently, the EPA can use up to 2 percent of its DWSRF monies to support infrastructure projects in Indian Country. It allocates SRF dollars under the [Drinking Water Infrastructure Grants Tribal Set-Aside Program \(DWIG-TSA\)](#). Both federally recognized tribes and non-tribal entities whose public water systems serve federally recognized tribes are eligible to receive funds.

Because DWIG-TSA is a grant program, tribal nations do not have to repay investment costs. However, this also means that these funds do not “revolve,” so the tribal program is completely reliant on federal government appropriations; additionally, if a tribe receives set-aside grant funds, the Safe Drinking Water Act restricts how loan and grant funds can be in conjunction with one another.

Similar to the state allocation process, funds are allotted based on the Drinking Water Infrastructure Needs Survey, and an Indian Health Service Sanitation Deficiency System report that documents feasible drinking water infrastructure projects. Eligible DWIG-TSA projects can address:

- Safe Drinking Water Act remediation
- action level exceedance
- system deficiency
- drinking water outages
- risk of failure related to major treatment or distribution system components
- services to homes that lack access to safe drinking water
- operational efficiencies to reduce operation and maintenance costs

Under limited circumstances, the expansion, consolidation, or building of a new public water system may also be deemed as an eligible project. In 2016, the Water Infrastructure Improvements for the Nation Act included training and operator certification programs as eligible projects.

Compared to the reported level of infrastructure need, the level of DWIG-TAS funding is low; for example, the Government Accountability Office found that between 1987 and 2012, tribes received fewer SRF dollars per amount of need than each of the states.¹⁸

When communicating with utility staff and decision-makers, advocates can increase the efficacy of their efforts by using industry terminology, for example, zeroing in on “source water protection” rather citing “conservation,” broadly.

17 U.S. Environmental Protection Agency. (2020, October 19). EPA Pacific Southwest (Region 9) Drinking Water Tribal Set-Aside Program [Other Policies and Guidance]. U.S. Environmental Protection Agency. <https://www.epa.gov/tribal-pacific-sw/epa-pacific-southwest-region-9-drinking-water-tribal-set-aside-program>

18 Sham, C. H., Gillette, C., ERG, Vasi, J., JVasi Consulting, Baer, K., and Ollervides, P. (2019). *Drinking Water Guide: A Resource for Advocates*. River Network. https://www.rivernetwork.org/wp-content/uploads/2019/04/drinking_water_guide.pdf.

DOING MORE WITH THE STATE REVOLVING FUNDS (SRFS)

After receiving money from federal SRF programs, states have some flexibility in how they distribute the money to their communities. States create policies around interest rates, priority projects, subsidization, and which communities and projects receive that subsidization. In creating these policies, states should consider opportunities that benefit low-income communities and identify ways to extend their SRF allocations.

Focus on Low-Income Frontline Communities

According to Section 1452 of the 196 Safe Drinking Water Act (SDWA) of 1996, a disadvantaged community is “the service area of a public water system that meets affordability criteria established after public review and comment by the State in which the public water system is located.” Later, the 2018 America’s Water Infrastructure Act (AWIA) mandated that each state define their disadvantaged communities and authorized the EPA to award grants to states to assist small, underserved, and disadvantaged communities with SDWA compliance and addressing drinking water contamination.

Over time, the EPA has implicitly required that states take note of and provide allowances for such disadvantaged communities, which should now receive 6-35 percent of a SRF capitalization grant in the form of subsidies. And allowing states flexibility to set their own program criteria and establish definitions relevant to their unique populations affords SRF programs certain built-in mechanisms to provide special assistance to low-income communities,” such as favorable borrowing terms.¹⁹

¹⁹ Heaney, C. (n.d.). *Comparison of Drinking Water State Revolving Fund (DWSRF) Programs and other Federal Assistance to Disadvantaged Communities in EPA Region 4*. Environmental Finance Center at the University of North Carolina. <https://efc.sog.unc.edu/sites/default/files/DWSRFDisadvantagedCommunitiesinRegion4.pdf>

Quiz

To receive SRF funding, state plans must account for the federal definition of “disadvantaged communities.”

- a. True
- b. False

Answer: b. States are responsible for both defining their disadvantaged communities and subsequently, ensuring that those communities receive SRF-back subsidies.

Advocates should review Intended Use Plans to see how states are defining their disadvantaged communities and identify what communities are marked to receive subsidies:

- Does the “disadvantaged communities” definition make sense, do you find it to be reflective and encompassing of your state?
- Do the project decisions adequately reflect the needs of your state and its front-line communities?
- Do these communities represent your view of a front-line community? Do they high BIPOC representation? Do they contain pollution hotspots or other indicators of environmental injustice?

Advocates should encourage states to establish and revise their criteria for disadvantaged communities; below are alternative and/or additional indicators, including some that are used by utilities to define their service populations:

- Median Household Income
- % Unemployment
- % Not in the labor force
- % of all people with income below poverty
- % with Social Security income
- % with Supplemental Security income
- % with cash public assistance income
- % with Food Stamp/Supplemental Nutrition Assistance Program (SNAP) benefits
- Age dependency ratio
- Population decline

Providing Additional Subsidization Within the SRF Programs

States can both assist front-line communities and incentivize distributed infrastructure progress by “subsidizing” SRF loans. A common form of subsidization is [principal forgiveness](#) or, essentially, a partial grant that is available to certain applicants. But the determination of eligibility differs from state to state, and due to the high concern over water affordability, states such as Georgia and Kentucky²⁰ have been reevaluating their criteria for

20 Flores, C. (2018, July 5). *Metrics to Determine Principal Forgiveness Eligibility: Highlighting EPA Region 4* [web log]. <https://efc.web.unc.edu/2018/07/05/metrics-to-determine-principal-forgiveness-eligibility-highlighting-epa-region-4/#more-5827>

principal forgiveness eligibility.²¹

The federal government has also been pushing states to take a broader view on project eligibility, to encourage more green projects. In 2009, the American Recovery and Reinvestment Act required that states provide subsidization as principal forgiveness, or negative interest rates for green projects, which can protect water quality and quantity and improve affordability over the long-term. Later, the 2014 Water Resources Reform and Development Act encouraged states to offer additional subsidization to recipients that meet certain criteria, or to projects that relate to water and energy efficiency, stormwater management, and “sustainable project planning, design, and construction.”²²

Linked Deposit Program

Linked deposit programs help finance projects on private property. In a linked deposit arrangement, the state CWSRF program purchases a reduced-rate certificate of deposit from a private bank. The bank in turn loans individuals those deposited funds (at a slightly lower interest rate) for small water quality projects.

The Ohio CWSRF developed this type of linked deposit program in 1984, building on CWSRF provision to “earn interest on fund accounts.”²³ Since then other states, such as Maine and Iowa have adopted this approach for farm-related runoff issues, stormwater projects and to repair and replace homeowner septic systems.

Here’s an example breakdown of the process, supposing an Iowa homeowner is replacing a septic tank:

The homeowner is pre-approved for a loan, and the bank underwrites and signs the documents. The homeowner can patronize a bank where it already has an existing relationship, and the SRF does to take on the default risk (as it’s been assumed by the bank)

Advocates should look at how these subsidies are being issued within a state, as it can have an important trickle-down effect whereby local utility customers may be spared sharp rate increases.

21 Isaac Berahzer, S., Flores, C., and Hughes, J. (2018, May). *Affordability and Principal Forgiveness in the State Revolving Fund Programs of the Environmental Protection Agency Region 4 States*. Environmental Finance Center at the University of North Carolina. <https://efc.sog.unc.edu/resource/affordability-and-principal-forgiveness-state-revolving-fund-programs-environmental>

22 Sawyers, A. D. (2015, January 6). *Interpretive Guidance for Certain Amendments in the Water Resources Reform and Development Act to Titles I, II, V and VI of the Federal Water Pollution Control Act*. U.S. Environmental Protection Agency. https://www.epa.gov/sites/production/files/2015-04/documents/water_resources_reform_and_development_act_guidance.pdf

23 U.S. Environmental Protection Agency CWSRF Branch. (2017, May). *Financing Options for Nontraditional Eligibilities in the Clean Water State Revolving Fund Programs*. U.S. Environmental Protection Agency. https://www.epa.gov/sites/production/files/2017-05/documents/financing_options_for_nontraditional_eligibilities_final.pdf

See the [“Funding for Individual Wells and Septic Systems”](#) section for more details on private property financing programs.

Quiz

Creative and effective uses of SRF funds include:

(choose all that apply)

- a. Selling bonds
- b. Backing loan guarantees on behalf of utility borrowers
- c. Providing municipal bond insurance
- d. Financing projects on private property via a “linked deposit” program

Answers: a, b, c, d

The SRF program deposits the principal amount of the loan into an account opened by the bank. With the principal accounted for, the bank cannot charge the homeowner more than 3 percent interest

The SRF program withdraws its principal from the reserve account as the homeowner repays the loan. The funds that remain in the account will equal the outstanding loan principal. The state deposit earns no interest, so the bank has been provided with no-cost funds and the homeowner has received a lower interest rate.

Iowa started this program in 2005 and has since deposited more than \$92 million in banks across the state for linked deposit purposes.

The Role of Bonds and Leveraging in the SRFs²⁴

States can sell bonds to stretch and grow the amount of available financial assistance available at the local level. Bonds are also an important tool for leveraging SRF dollars, and there are two ways this leveraging can happen:

SRF-backed loan guarantees

Think of an SRF-backed loan guarantee as akin to co-signing a loan for your teenager’s first car: You are telling the bank that you will repay the loan if your child cannot. In this case, with such an assurance from the state, utilities can access funds from private financial markets more easily and cheaply (via lower interest rates). The EPA and other entities have identified this approach as being particularly well-suited for green stormwater infrastructure projects.

Municipal bond insurance

This offering results in lower interest rates for the entity that’s seeking private financing. Admittedly, the SRFs have some risk exposure, however, these programs have a very strong track record of low defaults on their own loans. So, if SRFs can apply the same level of underwriting for guarantees and bond insurance, the financial losses from defaults should also be low.

Federal statutes were specifically designed to allow for this type of leveraging as a low-cost way to increase financial impact. It increases the amount of money that is available to the state (alongside the federal capitalization

²⁴ Moore, R.. (2018, May). *Go Back to the Well: States and the Federal Government are Neglecting a Key Funding Source for Water Infrastructure*. National Resources Defense Council. <https://www.nrdc.org/sites/default/files/state-revolving-fund-water-infrastructure-ip.pdf>

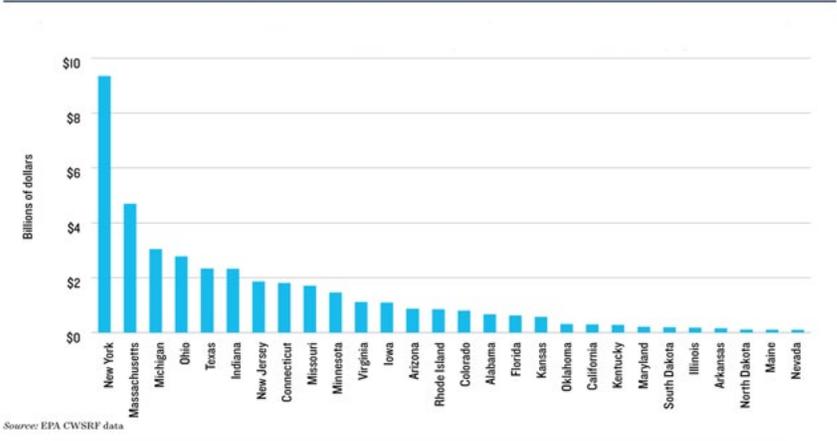
The complexity of SRFs is what makes them powerful, and states that are not fully leveraging their capabilities are leaving money on the table at the expense of their residents.

grant and the state match), as the bond proceeds are deposited in the SRF and the debt service payments would be made from future SRF revenues.

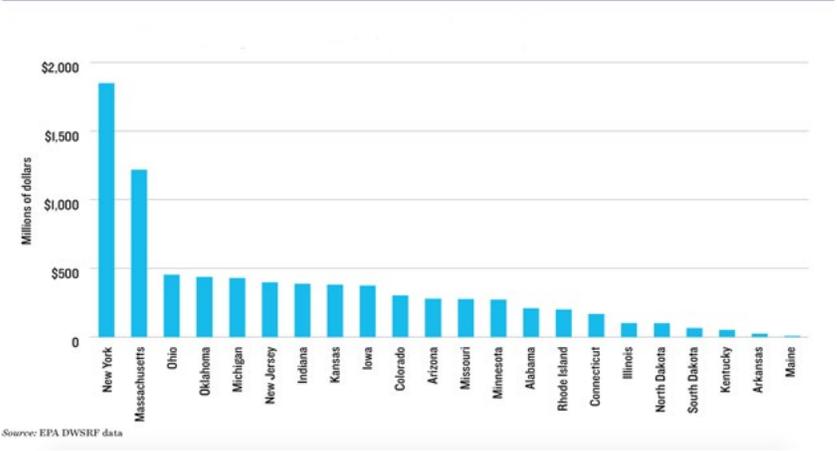
Indiana, Massachusetts, New York, and Ohio are good examples of state that regularly issue bonds to leverage their SRF programs, but less than half of states are acting on this option, which undermines the power that SRFs were designed to wield.²⁵

Advocates can review this [Natural Resources Defense Council \(NRDC\) report](#) to see the list of states that are currently exercising leveraging options; if your state is not on this list, contact your [DWSRF](#) and [CWSRF](#) contacts and ask that they take advantage of this option.

TOTAL LEVERAGED CWSRF BONDING BY STATE (CONTRIBUTIONS IN EXCESS OF MINIMUM 20% MATCH)



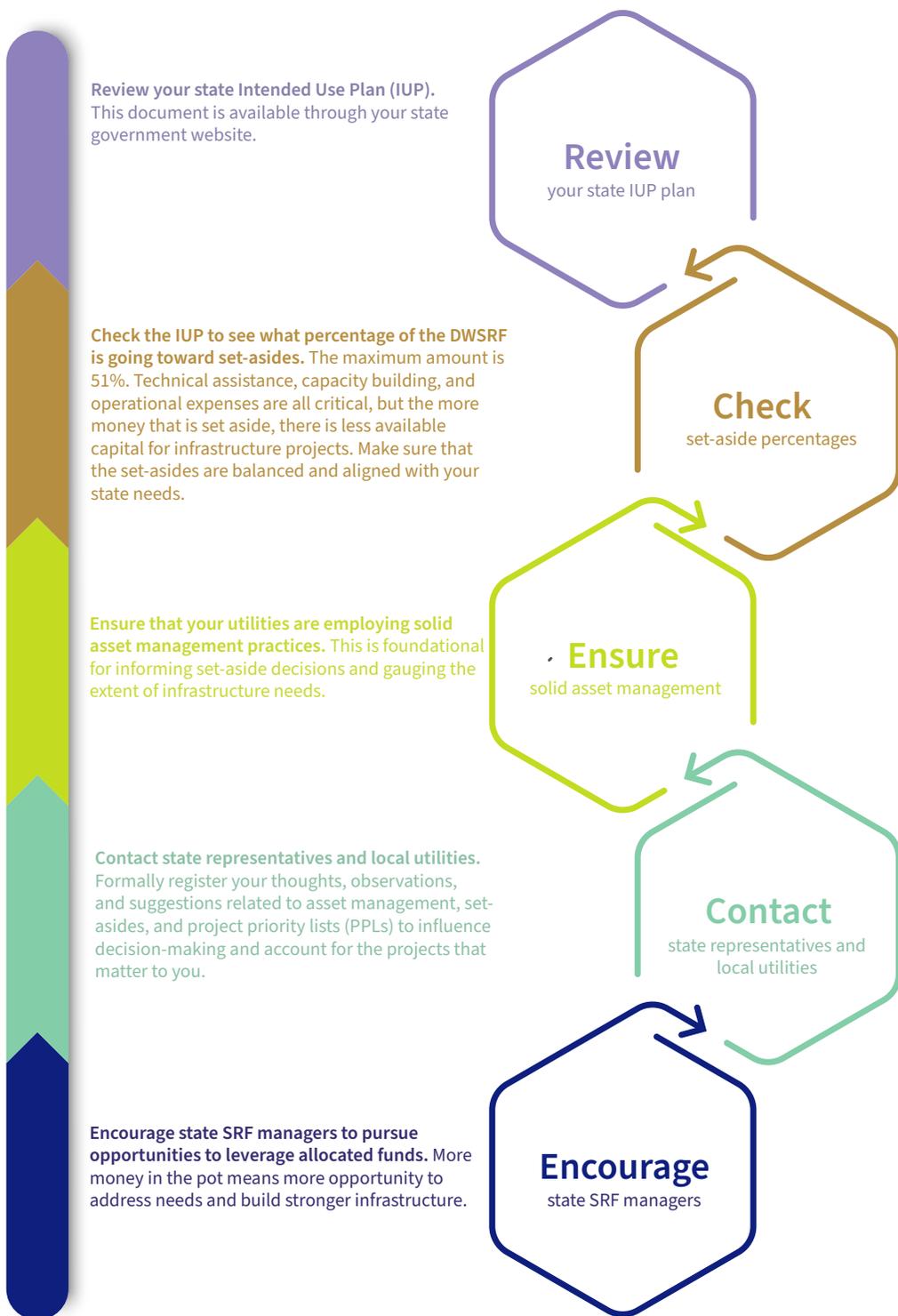
TOTAL LEVERAGED DWSRF BONDING BY STATE (CONTRIBUTIONS IN EXCESS OF MINIMUM 20% MATCH)



Moore, R. (2018, May). *Go Back to the Well: States and the Federal Government are Neglecting a Key Funding Source for Water Infrastructure*. National Resources Defense Council. <https://www.nrdc.org/sites/default/files/state-revolving-fund-water-infrastructure-ip.pdf>

25 Moore, R. (2018, May). *Go Back to the Well: States and the Federal Government are Neglecting a Key Funding Source for Water Infrastructure*. National Resources Defense Council. <https://www.nrdc.org/sites/default/files/state-revolving-fund-water-infrastructure-ip.pdf>

How Can Advocates Work to Influence How SRFs Are Spent?



See the [Decision-Making and Influence](#) section for additional resources (ex. the EPA Water Finance Clearinghouse) for identifying state-level funding sources and matching projects to the needs of your community

To reiterate: Public participation is an integral and mandated element of the SRF allocation process. At the federal level, the EPA requires public participation compliance as a condition of SRF receipt, and one of the 1996 Amendments to the State Drinking Water Act indicates that better information be provided to the general public. States must facilitate meaningful review of the short and long-term goals of their SRF programs, including but not limited to the priority scoring system for ranking projects; the comprehensive and shorter prioritized list of projects; the overall financial status of the funding program; and a description of corresponding set-asides. When visiting the SRF program websites, flag the dates and locations for public hearings to where the Intended Use Plans will be discussed, and note other means to register your comments, e.g. via the web site, email or phone. (Also: Although DW and CW SRF programs have slightly differing requirements, in many states, both programs are run by the same staff, and thus, the public participation process should be the same.)

OTHER SOURCES OF FEDERAL PUBLIC FUNDING

There are several other federal funding sources (many of which also are run at the state level). The following list provides an overview of some of these programs, later, in this section, there is information about [what type of projects](#) can be funded by each of these individual financing programs.

Advocates should note that many of these programs attached equity elements that must be fulfilled. Further, individual states may have their own state-specific funding programs, apart from these federally-funded programs.

USDA Rural Development

Currently this United States Department of Agriculture (USDA) program is the only federal program focused on rural water and wastewater infrastructure, it offers 13 programs, and issues grants and loans specifically for communities with populations of fewer than 10,000.

Natural Resources Conservation Service Source Water Protection

A significant new funding source that emerged when the [2018 Farm Bill](#) mandated that [10 percent of funds](#) authorized for conservation programs needed to be used specifically for drinking water protection; the amount translates to approximately [\\$4 billion over the next 10 years](#).

The Water Infrastructure Finance and Innovation Act (WIFIA)²⁶

WIFIA was established in 2014. Now past its pilot phase, it is quickly becoming an important funding program for large, multifaceted water projects. Projects that receive WIFIA funding must be leveraged, i.e. financed with other funding sources (e.g. bonds, loans, grants, or equity); program loans can be up to 49 percent of the total project costs. One of the benefits of WIFIA (compared to other government loan program) is the ability for borrowers to customize terms.

In addition to government entities, corporations, trusts, partnerships, and joint ventures, both SRFs can submit WIFIA applications. All DWSRF and CWSRF projects are eligible for WIFIA funding, as well as these project enumerated below:

- Enhanced energy efficiency projects at drinking water and wastewater facilities
- Brackish or seawater desalination, aquifer recharge, alternative water supply, and water recycling projects
- Drought prevention, reduction, or mitigation projects
- Property acquisition (if it is integral to the project or will mitigate the environmental impact of a project)
- Projects secured by a common security pledge or submitted under one application by an SRF program

WIFIA acclimates its offerings to both large and small communities; minimum project size is \$20 million for large communities and \$5 million for communities of 25,000 or fewer. The program also provides loans via the State Infrastructure Financing Authority Program (created through the 2018 America's Water Infrastructure Act), which allows was created to allow borrowers to finance combinations of drinking or clean SRF projects in a single application.

Water Infrastructure Finance and Innovation Act (WIFIA) – Established in 2014, WIFIA is a federal water infrastructure financing program whereby communities can cover up to 49 percent of project costs using low-interest WIFIA funds, which can support a broad array of water infrastructure investment efforts.

²⁶ Office of Water. (2021, April 15). *Water Infrastructure Finance and Innovation Act (WIFIA)* [Collections and Lists]. U.S. Environmental Protection Agency. <https://www.epa.gov/wifia>

In general, applicants are finding the WIFIA application process to be longer longer and more involved than applying for SRF programs; as an example, a \$699 million application from San Francisco Public Utilities to upgrade and replace solids handling processes (which had significant environmental justice benefits) was submitted 12/22/2017 and the loan closed 07/27/2018. Turnaround times may improve as WIFIA completes more rounds of funding.

Section 319(h) Grants

This program helps states and tribal organizations conduct their nonpoint source management programs (e.g. reducing nutrients from septic tanks and farmland).

CoBank

CoBank is a cooperative bank that offers loans and other financial solutions to water cooperatives, water companies, and not-for-profit municipal systems. Additionally, it coordinates with government loan programs and facilitates processes for its customers.

Economic Development Administration, Department of Commerce (EDA)

EDA offers two programs for municipalities: [Public Works](#), which focuses on the physical infrastructure of “distressed” communities and [Economic Adjustment Assistance](#), which offers implementation grants for infrastructure improvements. The goal of the programs is to improve economic development through job creation.

Community Development Block Grant Program (CDBG)

Provided through the Department of Housing and Urban Development (HUD), CDBG offers grants based on the population size, classified as either entitlement (larger cities) or non-entitlement communities (cities with populations less than 50,000 and counties with populations of less than 200,000). An important note when using or considering CDBG funds is that at least 70 percent must benefit low- and moderate-income communities for a state-specified period.

Appalachian Regional Commission (ARC)

Only available in 13 states/for certain regions located along the Appalachian Mountains, ARC offers grants to water and wastewater utilities for critical infrastructure, and business and workforce development. Match requirements vary based on the economic status of counties; for those located in distressed areas, grants can cover up to 80 percent of project costs.

Hazard Mitigation Assistance (HMA) Program Grants

State emergency management agencies distribute HMA grants and administer Federal Emergency Management Administration (FEMA) funds to develop and implement resilient infrastructure projects, and help utilities reduce or eliminate damages from natural hazards and rapidly recover from disruptions to service. Green infrastructure projects are often relevant to areas affected by natural disasters.

Federal Disaster Funding

FEMA, USDA, EPA, and HUD, as well as the Small Business Administration, all offer disaster funding assistance through various programs. Programs may define “disaster” differently but can certainly include flooding or droughts. Additionally, some programs such as the FEMA Public Assistance Grant, require that the disaster be recognized via official declaration from the president.

TAKEAWAY

- Both SRFs are federal-state partnership programs — states receive a certain percentage of Congressional funds (provided they match 20 percent of the allotment) and administer the program at the state level.
- States establish their own selection process and project criteria to decide which projects will be funded; projects are documented in Intended Use Plans (IUPs) and Project Priority Listings (PPLs).
- EPA law orders that states must make public participation part of their project decision-making process.
- Advocates can make a case for using set-aside funds to provide case studies and training to address specific water related issues.
- Tribal organizations can receive SRF dollars based on location, the Drinking Water Infrastructure Needs Survey, and the Indian Health Service home count data.
- There are several other federal/state grant and loan programs that operate similar to the DWSRF and CWSRF model (i.e. federally funded, run at the state level).
- The Water Infrastructure Finance and Innovation Act (WIFIA) is an important funding program for large, multifaceted water projects, and all projects that are eligible for SRF funding are also eligible for WIFIA funding.

LOCAL FUNDING

Local governments and utilities also contribute funding for water projects. Because such a large portion of federal funding comes in the form of loans (not grants), local governments must generate the funds to repay these loans; water and wastewater customer charges represent the major source of these repayment funds. New customer connection fees are another significant source of local funding, as are the issuance of bonds.

Quiz

Water and wastewater utilities should fund infrastructure projects by which of the following means? (choose all that apply)

- a. Revenues from water and wastewater rates
- b. Taxes from education funds
- c. Connection fees

Answers: a, c

Stormwater Utility Fees

In the last few decades, thousands of local governments across the country have created an additional utility specifically to address stormwater infrastructure needs,²⁷ and customers incur a stormwater fee in addition to existing wastewater and water supply fees. Typically, the utility assigns fees based on customer class (i.e. one fee for residential users, another fee for commercial and industrial users that is often higher than the residential fee). Or, the utility determines how much a site contributes to stormwater runoff and sets the fees based on the amount of impervious surface area (e.g. driveways and patios); frequently this fee can be reduced if the site owner replaces such surfaces with pervious materials that encourage infiltration.

Rate Structures of Water and Wastewater Utilities²⁸

Rate design has a major influence on water affordability. (Find more details on rate setting in the [Utilities section](#).) Some water and wastewater utilities self-fund big capital projects without borrowing or getting a grant from an external entity; commonly called PAYGO (pay as you go), the utility sets the rate structure such that, each year, it generates costs for capital projects. As the utility collects this “extra” revenue, it must spend it right away, or set aside the money for future spending related to associated projects.

Find more details on rate setting in the [Utilities section](#).

27 Campbell, C. W. (2019, June 26). *Storm Water Utility Survey*. Western Kentucky University. <https://www.wku.edu/seas/undergradprogramdescription/stormwaterutilitysurvey.php>.

28 River Network. (2019, October 4). *Setting Water Rates Considering Customer Affordability and System and Resource Sustainability Aiming*. YouTube. <https://www.youtube.com/watch?v=fU21B7sSFw4&t=2129s>

Watershed – An area of land that drains or “sheds” water into a specific waterbody (creek, river, lake etc.)

A challenge with this approach is that local governments may want to use these readily available funds for other needs that are unrelated to water infrastructure, like park facilities or road improvements. Water utilities should have written financial policies that reduce the risk of funds being siphoned in this way.

Tip



Advocates can work with third party financial advisors or a utility advisory board, if applicable, to monitor whether funds remain intact for their original purpose. They can also help develop partnerships between local governments and local nonprofit watershed groups — local utilities face a lot of competition from other applicants when competing for federal and state money (especially for grant funds), and applications that include partnerships and collaboration among multiple organizations tend to score higher.

BONDS

Bonds are a type of investment whereby money is lent to the bond issuer in exchange for interest payments. These instruments have an important, and perhaps growing, role in infrastructure financing; the Government Finance Officers Association has a digestible description of bonds in the introduction section of its primer on [Understanding Financing Options Used for Public Infrastructure](#).

A more intricate way to finance water projects, issuing a significant bond usually involves many administrative processes, typically taking a team of two dozen experts. So while a few states have lowered the administrative burden enough and can issue bonds for fairly small amounts, they make more sense for obtaining large amounts of capital.

Municipal bonds (or muni bonds) are debt obligations issued by governments that can be bought by individual investors through bond dealers, bank brokerage firms, and, in rare cases, directly from the local government.²⁹ Traditionally, there are two main types of municipal bonds that relate to water infrastructure: general obligation (GO) bonds, and revenue bonds.

General Obligation (GO) Bonds

Backed by the full faith and credit of the local government that parents the water or wastewater utility, GO bonds are generally less risky to the buyer.

29 Government Finance Officers Association. (January 2019). *Understanding Financing Options Used for Public Infrastructure*. Public Finance Network. https://www.nasact.org/Files/News_and_Publications/White_Papers_Reports/2019_PFN_Primer.pdf.

Revenue Bonds

Because they are backed by utility-generated rates and fees, revenue bonds are a little riskier, and as a result, typically offer higher interest rates than GO bonds.

There also are emerging bond types that are more tailored to water issues.

Green Bonds

Somewhat of a catchall phrase, green bonds back projects that produce a positive environmental impact or outcome. In 2013, Massachusetts was the first entity to issue a green bond,³⁰ selling \$100 million worth of 20-year notes to pay for projects outlined within its capital plan. Since then, the issuance of green bonds has been a growing trend, and the popularity of green bonds is connected to a bigger trend of corporate social responsibility (CSR) investing, environmental, social and governance (ESG) investing, and “impact investing.”

Environmental Impact Bonds (EIBs)

EIBs are similar to green bonds (in that they fund projects with environmental sustainability/resiliency outcomes), but they use a “pay for success” model that ties financial return directly to project attainments. Washington D.C. issued the first EIB in the country, to address stormwater issues; in 2019, Atlanta issued the first publicly-traded EIBs.

Case studies for these two efforts, and another example from Virginia, can be found in the [Additional Information and Resources](#) section at the close of this section.

TAKEAWAY

- Some local governments have used rate design to generate money for water infrastructure projects, which can affect water affordability at the community level.
- Advocates can monitor whether utilities are properly using revenues that have been marked for capital projects. They can also help develop partnerships between local governments and local nonprofit watershed groups to improve the chance that grant applications are funded (and therein, reduce the likelihood that customers end up shouldering water infrastructure improvement costs).

³⁰ The World Bank. (2015). *What Are Green Bonds?* The World Bank. <https://documents1.worldbank.org/curated/en/400251468187810398/pdf/99662-REVISED-WB-Green-Bond-Box393208B-PUBLIC.pdf>

FUNDING FOR INDIVIDUAL WELLS AND SEPTIC SYSTEMS

About 10 percent of the U.S. population is not connected to a public water system for their drinking water. Even more Americans (20 percent) are not connected to a public wastewater system.

Public water and wastewater services may never be provided to households that are situated in areas with challenging topography, or where the population density is too low to merit a centralized water supply system. Instead, these mostly rural and tribal households get water from private wells on their property, and/or have onsite septic tanks that handle their wastewater; for example, in Alaska, only approximately 67 percent of households are serviced by public wastewater systems, but even in the highly developed Atlanta metro area, about 12,000 new septic tanks are installed every year.³¹

When this infrastructure fails, these households have limited financing options, such as:

Section 319(h) Grants

Usually, a local government entity has to apply for the grant and then reimburses homeowners (usually a group in the same residential area as opposed to on an individual basis) for their septic tank repair costs. In some states, additional consideration is given to grant applications that demonstrate strong partnerships between the local government and a local nonprofit watershed groups.

Linked Deposit Programs (via SRF programs)

Some states have used linked deposits to fund septic tank replacement.

Rural Decentralized Water Systems Grant Program

This program includes funding to repair septic tanks, for “rural” homes, as defined by the USDA. The Agency also runs the Household Water Well Program that helps qualified nonprofits and tribes create a revolving loan fund to increase access to clean, reliable water and septic systems for households in eligible rural areas. (The program application window updates annually, check the [Federal Register website](#) for any recent updates.)

Linked deposits are explained in the [“Doing More with SRFs”](#) section of this section.

31 Isaac Berahzer, S. (2020, December 14). How Septic Tanks May be Affected by the Pandemic [web log]. <https://www.ibenvironmental.com/blog/2020/12/14/how-septic-tanks-may-be-affected-by-the-pandemic>

Water Well Trust

This [program](#) aims to provide low-income Americans who live without access to safe drinking water financing for the construction or rehabilitation of water wells; the program is only available in certain states.

TAKEAWAY

- Bonds are a type of investment where an investor lends money to the bond issuer in exchange for interest payments.
- Bonds make more sense for very large amounts of funding
- Limited financing options are available for wells and septic systems infrastructure projects. Typically, local government entities have to apply for grants, and then they reimburse customers — advocates can boost the chances of a local government receiving these funds by encouraging partnerships with local watershed nonprofits.

MULTI-SOURCE FUNDING

Funding for a single water project sometimes comes from a variety of different funding programs, which can help stretch and leverage limited funding availability. Organizations such as [The Nature Conservancy](#) promote the advantages of creating a diverse funding portfolio for water projects, and the EPA and USDA have sought to increase “co-funding” of water projects; in recognition of the complexity of coordinating funding and managing multiple application processes, the EPA report “[Funding Collaboration: Maximizing the Impact of Project Funding to Increase Compliance and Enhance Public Health](#)” highlights the challenges states have encountered and provides corresponding solutions.

Several communities and states have been successful in implementing or facilitating the implementation of multi-source funding projects. In 2020, the city of Florence, South Carolina received an EPA [AQUARIUS](#) award for “Excellence in Innovating Finance” for using its revenue funds, along with funding from Community Development Block grants, the Economic Development Administration (EDA), USDA-Rural Development, the South Carolina Rural Infrastructure Bank, and the State Transportation Infrastructure Bank, to consolidate the Town of Timmonsville, providing the municipality with its

Quiz

The CWSRF differs from the DWSRF in that the CWSRF: (choose all that apply)

- Does not have as many set-asides as the DW SRF
- Funds wastewater treatment plant upgrades
- Funds chlorine for water treatment

Answers: a, b

own water system and improving system efficiency. (Prior to this AQUARIUS award, the Florence received a 2019 EPA [PISCES](#) award for similar efforts to address a variety of sewage problems.)

To overcome the challenge of myriad application forms, varying requirements, and limited capacity due to the low number of staff, the state of Nevada created the Nevada Water and Wastewater Review Committee, made up of various funding organizations that developed a pre-application process to help match funding sources to project types, and also help small rural water systems with the application process.³² Similarly, Georgia Funders' Forum is a committee of funding organizations that meets quarterly to discuss potential collaboration and learn about changes in the various programs.³³

Closer Look



With limited dollars, and a federal emphasis on multi-funded projects, advocates can use these examples, and other models outlined at the [close of the section](#), to encourage their utilities to pursue and coordinate diverse funding arrangements.

From an equity standpoint, advocates and communities should have some voice in choosing GSI projects over gray infrastructure, where relevant.

Gray Infrastructure – The network of pipes, tunnels, pumping stations, and water and wastewater treatment facilities, that make up community water systems (also referred to as “traditional” water infrastructure); “gray” refers the color of the infrastructure, and is also used as a contrast to “green infrastructure.”

The majority of U.S. water infrastructure is gray infrastructure.

TYPES OF WATER INFRASTRUCTURE PROJECTS

Large centralized water infrastructure — treatment plants, pipes, and detention ponds, often referred to as gray infrastructure — has long been the dominant approach to providing and treating water. A complementary water management system is distributed infrastructure, i.e. projects that are distributed or scattered across a jurisdiction, and “includes permeable pavements, green roofs, rain gardens, smart meters, drought-tolerant landscaping, leak detection devices, water efficient appliances, graywater systems, rainwater catchment, point-of-use water treatment and more.”³⁴

Green Stormwater Infrastructure Systems (GSI)

Green stormwater infrastructure is a specific type of distributed infrastructure that can provide multiple benefits to a community, such as improved air and water quality, recreational opportunities, pollinator habitats,

32 Office of Water. (2012, October). *Funding Collaboration: Maximizing the Impact of Project Funding to Increase Compliance and Enhance Public Health* (EPA 816-F-12-007). U.S. Environmental Protection Agency. <https://www.epa.gov/sites/production/files/2015-04/documents/epa816f12007.pdf>

33 Georgia Funders' Forum. IB Environmental. (n.d.). <https://www.ibenvironmental.com/georgia-funders-forum>

34 Koehler, C. (2018, May 16). *Financing the Future of Water Infrastructure Just Got a Whole Lot Easier*. WaterNow Alliance. <https://waternow.org/2018/05/16/financing-the-future-of-water-infrastructure-just-got-a-whole-lot-easier/>

Centralized infrastructure systems collect, treat, and distribute water and wastewater at a central location (i.e. a treatment plant). Such systems make up the majority of water and wastewater infrastructure networks.

Definitions vary, but in the context of this toolkit, distributed infrastructure systems refers to water collection, treatment, and distribution occurring throughout a community or service area. Water utility staff sometimes referred to this as decentralized infrastructure, in contrast to a centralized system that relies on a large water treatment and pumping station, or wastewater treatment plant, to perform these same processes.

and lower energy bills (due to the air cooling effects).³⁵

Overall, distributed projects tend to be less energy-intensive, more resilient, and employ nature-based processes (i.e. bioinfiltration and evapotranspiration). But given that large centralized projects represent the traditional approach to addressing water infrastructure, there is a comfort level in terms of accounting and budgeting for these gray infrastructure projects. Additionally, green projects are often distributed across a jurisdiction which may make them more difficult to manage, and if some aspects of a distributed infrastructure project include private property, utilities may be reluctant to pay because in many cases, they must justify the expense and prove that the investment benefits the community at-large. Federal agencies and public financing programs have been working to communicate that these types of projects do qualify for public funds because of their broader community benefit.³⁶

Closer Look



However, it is also important to note that some types of GSI (trees, as an example) are tied to property value increases, which may benefit some but can create displacement concerns for low- or moderate-income households.³⁷ GSI strategies must be paired with affordability efforts to avoid such displacement, and community stakeholders should be engaged in GSI decision-making processes to spot issues and identify solutions³⁸ — homeownership strategies such as co-ops, land trusts, and property tax freezes can help stabilize existing neighborhoods, and preservation of affordable rental housing through purchase or partnerships with landlords are complementary strategies.

Lead Service Lines

Lead service lines have emerged as another important type of distributed infrastructure that needs to be addressed urgently. At the utility level, there is variability in how lead service line replacement is funded, and this is further complicated by whether the service line (from

35 Center for Neighborhood Technology. (2020, March 2). *Green Values Strategy Guide: Linking Green Infrastructure Benefits to Community Priorities*. Center for Neighborhood Technology. <https://www.cnt.org/publications/green-values-strategy-guide-linking-green-infrastructure-benefits-to-community>

36 Kammeyer, C., and Koehler, C. (2020, September 1). *How Distributed Water Infrastructure Can Boost Resilience in the Face of COVID-19 and Other Shocks*. Pacific Institute. <https://pacinst.org/how-distributed-water-infrastructure-can-boost-resilience-in-the-face-of-covid-19-and-other-shocks/>

37 Center for Neighborhood Technology, and SB Friedman Development Advisors. (2020, November 17). *Green Stormwater Infrastructure Impact on Property Values*. Center for Neighborhood Technology. <https://www.cnt.org/publications/green-stormwater-infrastructure-impact-on-property-values>

38 Center for Neighborhood Technology. (2020, March 2). *Green Values Strategy Guide: Linking Green Infrastructure Benefits to Community Priorities*. Center for Neighborhood Technology. <https://www.cnt.org/publications/green-values-strategy-guide-linking-green-infrastructure-benefits-to-community>

the water main to the interior of the home) is owned by the utility or the homeowner, as this will determine who is responsible for replacement costs; in many communities, half of the service line is owned by the utility (public side) and the other half is owned by the homeowner (private side).

Partial service line replacement does not get rid of the issues around lead in water, so replacing the entire service line is recommended. And the 2018 America’s Water Infrastructure Act makes it very clear that these projects are eligible for federal funding (e.g. via SRFs): There is even language that states need to include a cost assessment of replacing lead service lines as part of the Needs Assessment survey that occurs every four years.

Many utilities have paid for the replacement of private side lead service lines using rate revenue and, in some cases, subsidized homeowner costs when they replace the private side themselves. For utilities that are on the fence about using SRF dollars for these types of projects, the EPA states that “replacement of the entire service line is DWSRF-eligible.”³⁹ Visit the [Environmental Defense Fund](#) to learn more about how communities are funding lead service line replacement, and how states are supporting and driving those efforts; the [Lead Service Line Replacement Collaborative](#) is another relevant resource.

Funding Sources for Centralized and Distributed Infrastructure

Public Funding Source	Types of Projects Funded
Clean Water State Revolving Fund (CWSRF)	Construction of publicly owned treatment works, nonpoint source reduction projects, national estuary program projects, decentralized wastewater treatment systems, stormwater (including green stormwater infrastructure), water conservation, efficiency, and reuse, watershed pilot projects, energy efficiency, security measures at publicly owned treatment works, and technical assistance. (Project types are detailed below).
Drinking Water State Revolving Fund (DWSRF)	Improvement of drinking water treatment systems, upgrading or retrofitting leaky or old pipes, improving water supply resources, replacing or constructing water storage tanks, infrastructure projects that protect public health, source water protection, water efficiency. (Project types are detailed below).
USDA Rural Development	Constructing water and waste facilities, organizations that provide technical assistance and training, preparing for or recovering from emergencies, water and waste disposal systems for Alaskan villages, and planning and developing applications for USDA Rural Development Water and Waste Disposal Direct Loan/Grant and Loan Guarantee Programs

39 Office of Water. (2021, April 1). *Funding for Lead Service Line Replacement* [Collections and Lists]. U.S. Environmental Protection Agency. <https://www.epa.gov/ground-water-and-drinking-water/funding-lead-service-line-replacement>

<u>Water Infrastructure Finance and Innovation (WIFIA)</u>	Projects eligible for the SRF programs, enhancing energy efficiency at drinking water and wastewater facilities, alternative water supply projects, drought prevention, reduction, or mitigation projects, acquisition of a property if it is integral to the project, and a combination of projects secured by a common security pledge
<u>Section 319(h) Grants</u>	Technical assistance, financial assistance, education, training, technology transfer, demonstration and monitoring projects
<u>CoBank</u>	Upgrading existing infrastructure, building new water treatment plants and distribution systems, and integrating new technolog
<u>Economic Development Administration, Department of Commerce (EDA)</u>	Water and wastewater systems improvements
<u>Community Development Block Grant Program (CDBG; HUD Funds)</u>	Acquisition of property and property for public purposes, construction or reconstruction of water and wastewater facilities, relocation and demolition projects, rehabilitation of public and private buildings, planning activities, activities relating to energy conservation and renewable energy resources, assistance to nonprofit and for profit-entities for community development activities and economic development
<u>Appalachian Regional Commission (ARC)</u>	Projects that focus on economic opportunities, workforce, critical infrastructure, natural and cultural assets, and leadership and community capacity, community leadership
<u>Hazard Mitigation Assistance (HMA) Program Grants</u>	Projects that reduce disaster losses and protect life and property from future disaster damages, for example projects that reduce flooding
<u>Natural Resources Conservation Service Source Water Protection</u>	Conservation programs that protect sources of drinking water, increases incentives for agricultural producers to implement practices that benefit source water protection, and authorizes Natural Resources Conservation Service (NRCS) and their State Technical Committees to work with community water systems to identify state/local source water protection priorities.

The EPA has established [six \(6\) categories](#) for DWSRF funding.

DWSRF Project Categories	Examples
Treatment	Projects to install or upgrade facilities to improve drinking water quality to comply with SDWA regulations
Transmission and distribution	Rehabilitation, replacement, or installation of pipes to improve water pressure to safe levels or to prevent contamination caused by leaky or broken pipes
Source	Rehabilitation of wells or development of eligible sources to replace contaminated sources
Storage	Installation or upgrade of finished water storage tanks to prevent microbiological contamination from entering the distribution system
Consolidation	Interconnecting two or more water systems
Creation of new systems	Construct a new system to serve homes with contaminated individual wells or consolidate existing systems into a new regional water system

The EPA has cited [11 categories](#) for CWSRF funding.

CWSRF Project Categories	Examples
Construction of publicly owned treatment works	Assistance to any municipality or inter-municipal, interstate, or state agency for construction of publicly owned treatment works (as defined in CWA section 212).
Nonpoint source	Assistance to any public, private, or nonprofit entity for the implementation of a state non-point source pollution management program, established under CWA section 319.
National estuary program projects	Assistance to any public, private, or nonprofit entity for the development and implementation of a conservation and management plan under CWA section 320.
Decentralized wastewater treatment systems	Assistance to any public, private, or nonprofit entity for the construction, repair, or replacement of decentralized wastewater treatment systems that treat municipal wastewater or domestic sewage.
Stormwater	Assistance to any public, private, or nonprofit entity for measures to manage, reduce, treat, or recapture stormwater or subsurface drainage water.
Water conservation, efficiency, and reuse	Assistance to any municipality or inter-municipal, interstate, or state agency for measures to reduce the demand for publicly owned treatment works capacity through water conservation, efficiency, or reuse.

Watershed pilot projects	Assistance to any public, private, or nonprofit entity for the development and implementation of watershed projects meeting the criteria in CWA section 122.
Energy efficiency	Assistance to any municipality or inter-municipal, interstate, or state agency for measures to reduce the energy consumption needs for publicly owned treatment works.
Water reuse	Assistance to any public, private, or nonprofit entity for projects for reusing or recycling wastewater, stormwater, or subsurface drainage water.
Security measures at publicly owned treatment works	Assistance to any public, private, or nonprofit entity for measures to increase the security of publicly owned treatment works.
Technical assistance	Assistance to any qualified nonprofit entity, to provide technical assistance to owners and operators of small and medium sized publicly owned treatment works to plan, develop, and obtain financing for CWSRF eligible projects and to assist each treatment works in achieving compliance with the CWA.

TAKEAWAY

- Centralized infrastructure projects represent the traditional approach to water infrastructure funding (and they are the focus of most SRF-funded projects). Distributed infrastructure projects are often scattered across jurisdictions and can even be on private property, making it more challenging (yet possible) for traditional public utilities to pay for these projects.
- The EPA and other federal agencies have underscored the importance of distributed infrastructure projects and delineated how such projects are eligible for federal funding.
- This resource is a reference that matches types of infrastructure projects to applicable funding sources, and the EPA details the categories of water projects that can receive both CWSRF and DWSRF support.

WATER INFRASTRUCTURE FINANCE, EQUITY, AND ENVIRONMENTAL JUSTICE

Low-income communities and communities that are majority of Black, Indigenous, and people of color (BIPOC) face disproportionately high levels of negative environmental impacts, such as poor air quality, higher air temperatures in the summer, high levels of industrial pollution, increased flood risk, and older infrastructure

Even though projects undergo an environmental review process by a different department, Louisiana SRF program managers routinely use EJSCREEN as an additional step in their own internal review, looking for environmental justice impacts of new treatment plants and projects slated for undisturbed land.

that may be more prone to failures,⁴⁰ which can be directly attributed to histories of racist land use policies and practices (ex. redlining).

[Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations](#) requires that federal agencies identify how their actions (i.e. how the funding and financing programs they design and oversee) affect the environment, and the health of BIPOC and low-income populations “to the greatest extent practicable.” Agencies must create plans focused on environmental justice and promote nondiscrimination, and to help them meet these aims and objectives, the EPA developed [EJSCREEN](#), an online mapping tool that allows agencies to overlay or combine environmental and demographic indicators. The EPA also has outlined ways to fold environmental justice considerations into its [National Environmental Policy Act \(NEPA\)](#) review process.

Existing tools and legislation are starting points for framing and tracking issues of water finance equity, and holding decision-makers accountable.⁴¹ Similar to federal efforts and initiatives, when communities and states consider applying for federal water infrastructure funds, they should be addressing environmental justice inequities — an environmental justice evaluation can use demographic, economic, human health, and cultural/ethnic differences to address whether there “exists a potential for disproportionate risk” to a community that has been or is disproportionately burdened by historic and existing socioeconomic and environmental factors⁴²; the evaluation also should ensure that communities have been sufficiently involved in the decision-making process.⁴³ A water utility interested in applying for federal or state funds may explore how its planned project might be informed by EJSCREEN indicators and include some of the data from the mapping tool in its application. For example, IB Environmental interviews indicate that Louisiana SRF program managers routinely use EJSCREEN as an additional step in the interdepartmental

40 Cusick, D. (2020, January 21). *Past Racist “Redlining Practices” Increased Climate Burden on Minority Neighborhoods*. Scientific American. <https://www.scientificamerican.com/article/past-racist-redlining-practices-increased-climate-burden-on-minority-neighborhoods/>

41 Clinton, W. (1994, February 11). *Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*. The White House https://www.epa.gov/sites/production/files/2015-02/documents/exec_order_12898.pdf

42 Younger, J., Bergstein, J., Denmark, R., Mueller, H., Hoberg, C., Vallette, Y., Seaborne, R. (1998, April). *Final Guidance for Incorporating Environmental Justice Concerns in EPA’s NEPA Compliance Analyses*. U.S. Environmental Protection Agency. https://www.epa.gov/sites/production/files/2014-08/documents/ej_guidance_nepa_epa0498.pdf

43 Kinnebrew, A. (2020, July 24). *How To Make Equitable Environmental Decisions With Community Input* [web log]. <https://www.ibenvironmental.com/blog/2020/7/24/ways-to-make-equitable-environmental-decisions-with-community-input>

project review process, looking for environmental justice impacts of new treatment plants and projects slated for undisturbed land.

Additionally, given that infrastructure spending, and federal commitments and directives on climate change and environmental justice, change from administration to administration, advocates should be mindful to stay current with changes, align their work with timely priorities, and be proactive about tracking proposed initiatives and legislation — EJSCREEN is publicly available, and advocates can use this tool for grant writing or other community awareness efforts. [At the time of publishing], the current administration has chosen to emphasize these environmental justice issues through the White House Environmental Justice Advisory Council and a Climate Action Plan (two of its applicable callouts include developing a Climate and Environment Justice screening tool that builds off of EJSCREEN, and the Justice40 initiative, which aims to have 40 percent of all relevant federal funding go to disadvantaged communities)⁴⁴.

To read more about the links between water affordability and environmental justice, visit the [Affordability](#) section.

Tip



Advocates should understand their local needs, get to know their local and state elected officials, department heads, and water utility operators, and work with them to advocate for aligned funding that benefits vulnerable communities. [The River Network Federal Water Policy Update Peer Group](#) is a place where advocates can track federal policy changes.

There are other aspects to infrastructure projects that have notable equity and affordability implications. These include intergenerational equity, project readiness criteria, project sizing, and prioritizing GSI projects.

Intergenerational Equity

This concept may best be understood through example — it may take three years to fully fund and implement an infrastructure project that has a useful life of 30 years; present-day utility customers likely will bear the full burden of paying for this project through service-related fees and charges (which may result in unaffordable bills for some). Give the project’s 30-year lifespan, present-day customers will be able to benefit from the investment, but so will future customers who contributed nothing to the project costs.

44 The United States Government. (2021, January 27). *FACT SHEET: President Biden Takes Executive Actions to Tackle the Climate Crisis at Home and Abroad, Create Jobs, and Restore Scientific Integrity Across Federal Government*. The White House. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/01/27/fact-sheet-president-biden-takes-executive-actions-to-tackle-the-climate-crisis-at-home-and-abroad-create-jobs-and-restore-scientific-integrity-across-federal-government/>.

Intergenerational equity (i.e. “equity over time”) refers to this split incentive dilemma, whereby a payer bankrolls a product or service, and a beneficiary benefits from that investment without having to contribute (in the prior example, the “payer” is the present-day water utility customer and the “beneficiary” is a future customer.)

A more equitable approach may call for taking out an SRF loan and amortizing the payments over time, such that in 10 or 20 years, the customers being served by the utility are helping pay for the infrastructure upgrade that serves them, too.

Project Readiness

Federal managers continuously monitor how fast states distribute their SRF allocations. This puts states under a significant amount of pressure to fund projects in a timely manner, and if a state is not loaning out its monies fast enough, it may lose that money to a more efficient state. This creates a bias towards “shovel-ready” projects, or projects that have been planned and can be implemented quickly; local governments with sufficient capacity may have a broad portfolio of shovel-ready projects (and then be more likely to secure the financing), whereas lower capacity communities may not have the ability and/or staff to structure shovel-ready projects, which compounds their infrastructure maintenance issues and further burdens customers.

There may be opportunity for lower capacity governments and utilities to partner with nonprofits and advocacy groups whose foundation funding may allow them to set-up pilot projects, or support the initial planning and design for larger projects. States should also work to ensure that their project readiness criteria is flexible enough so lower-capacity communities aren’t excluded from consideration and have a better chance at securing needed funding.

Project Sizing

The 2020 [H2Equity: Rebuilding a Fair System of Water Services for America](#) report provides eight critical areas where investments can “improve health equity outcomes for all persons, but in particular among the economically and racially disadvantaged groups.” One of these eight is to “right-size infrastructure to fit community needs” and encourage utilities to lower their financial risk by including smaller scale projects.⁴⁵

Bioswale – A bioswale is a vegetated channel that uses natural processes to carry, retain, and infiltrate stormwater. A green stormwater infrastructure technique, bioswales are generally designed to have engineered soil and native plants that improve stormwater infiltration and retention capacity.

45 Vedachalam, S., Male, T., and Broaddus, L. (2020). *H2Equity: Rebuilding a Fair System of Water Services for America*. Environmental Policy Innovation Center. <http://policyinnovation.org/wp-content/uploads/WaterEquity.pdf>.

Oversized infrastructure make water services less affordable because there are fewer customers to absorb project costs. When utilities apply for SRF loans, advocates can ask some general questions around their growth projections. Perhaps more importantly, advocates should request that states provide good regulatory oversight for guiding infrastructure decisions: This is important given that growth levels have not materialized in many communities (e.g. Southeast coastal communities) and many rural communities in the Midwest and Northeast are experiencing populations decline. Ultimately, this leaves fewer people to both use water infrastructure and pay water bills, and SRF borrowers will run into problems repaying loans for oversized projects when those dollars would have been better spent on other types of projects.

When compared to gray infrastructure, distributed infrastructure projects lend themselves to a more phased integration and implementation — they tend to scale smaller/at the neighborhood level, require slighter investment efforts, and are designed to address specific community or district needs, such as using green stormwater infrastructure to reduce flood risk. These infrastructure systems are right-sized by nature, and pursuing a distributed infrastructure project strategy makes sense for both utilities and advocates.

Pursuing Greenstormwater Infrastructure (GSI) Projects

In addition to being a good strategy to employ and achieve right-sized infrastructure, GSI projects represent a more integrated way to manage stormwater and recharge aquifers, which protects drinking water supply. Some GSI approaches are less expensive in the short-term, and can therefore have a more immediate positive impact on water affordability. In the long-term, a GSI approach tends to be even more financially advantageous because of the many resulting community benefits.⁴⁶

Because the two SRF programs represent the largest source of public water infrastructure financing, it makes sense to look at how they can be used to facilitate GSI projects. According to federal regulations, both Drinking Water and Clean Water SRF dollars can be used to fund GSI projects such as bioswales, permeable pavers, and trees — the 2009 American Recovery and Reinvestment Act further

⁴⁶ Dean, B., and McGraw, J. (2020). *Increasing Funding and Financing Options for Sustainable Stormwater Infrastructure*. Center for Neighborhood Technology. <https://www.cnt.org/sites/default/files/publications/Increasing%20Funding%20and%20Financing%20Options%20for%20Sustainable%20Stormwater%20Management.pdf>

expanded SRF project eligibility criteria by establishing a “green project reserve” within both the DW and CW SRFs that prompted states to seek and find as many “green” projects when possible.

Since 2012, the EPA DWSRF Eligibility criteria pointedly states that “funds made available...to each State for Drinking Water State Revolving Fund capitalization grants may, at the discretion of each State, be used for projects to address GSI, water or energy efficiency improvements, or other environmentally innovative activities.”⁴⁷

Tip



*Given that each state determines the extent to which GSI projects can qualify for SRF financing, advocates can encourage their states to have a wider interpretation of what kinds of projects can be funded, and push that green projects be afforded more advantageous financial incentives such as lower interest rates and principal forgiveness (or partial grants). Science is showing that, in many cases, GSI is a more effective way to treat stormwater, so SRF programs need to be encouraged to give such projects weighted consideration.*⁴⁸

TAKEAWAY

- Executive Order 12898 exists to protect low-income and frontline communities and attend to environmental justice concerns. Existing tools such as EJSCREEN can be used to help identify and address issues of equity and inequity.
- DW and CW SRF dollars can be used to fund GSI projects.
- States determine which projects receive SRF funding, so advocates should encourage their states to think about how they qualify projects so GSI projects are successfully financed and incentivized.

⁴⁷ U.S. Environmental Protection Agency. (2017, June 13). *DWSRF Eligibility Handbook*. U.S. Environmental Protection Agency. <https://www.epa.gov/dwsrf/dwsrf-eligibility-handbook>.

⁴⁸ Green Nylen, N., and Kiparsky, M. (2015, February). *Accelerating Cost-Effective Green Stormwater Infrastructure: Learning from Local Implementation*. Berkeley Law. https://www.law.berkeley.edu/files/CLEE/GSI_Report_Full_2015-02-25.pdf

ADDITIONAL INFORMATION AND RESOURCES

Case Studies

Using SRFs for Lead Service Replacement

Across the country, lead service lines (LSL) have emerged as an urgent drinking water quality issue. Though these lines are traditionally and technically considered the responsibility of the homeowner, federal and state funding is supporting the replacement of these lines as a public responsibility by providing SRF loans to address the problem — in other words, in many states, instead of making the individual homeowners fund the repairs themselves, utilities are opting to pay for service line replacement by borrowing SRF money and repaying the loans from rate-payer revenues.

A [report](#) written by the Water Center at the University of Michigan highlights states that are using drinking water SRFs for lead service line replacement. Flint, Mich. became one of the best-known cities in the country that experienced lead exposure. In 2016, the legislature added \$100 million in supplemental grants to the Michigan drinking water SRF. Using the state's matching funds, Michigan used a total of \$120 million to replace lead service lines.

Beyond the emerging clarity that lead service lines can be replaced by the utility (as opposed to the homeowner) these projects are actually being prioritized in some states. Because federal law gives states the ability to decide project priority for SRF funds, some states have redesigned their criteria to focus on LSL replacement projects. In Wisconsin, the state directs its lower interest rates and loan forgiveness (“additional subsidization”) on LSL replacement, and it also passed legislation that enables the use of water rates to pay for LSL replacement. In addition to those funding sources, the Wisconsin Department of Natural Resources has created the Private LSL Replacement Funding Program.

Other states, such as Indiana, Connecticut, and New Hampshire, offer additional points when ranking projects on their state SRF priority list. New Jersey uses principal forgiveness for LSL replacement, for up to 90 percent of project costs, and the remaining 10 percent can be covered by interest-free loans.

These states can serve as an example to others that are still concerned about using utility funds to replace lead service lines on private property, and how to prioritize this type of SRF project.

Denver Water Lead Reduction Program

In 2019, Denver Water implemented a Lead Reduction Program. The program allows the utility to adjust the pH level of water, create an inventory of lead service lines, replace lead service lines with copper lines, and provide a water pitcher, filter, and replacements to customers. There is no direct charge to Denver Water customers for pipe replacements or water filters. The utility plans to cover the cost of the program through water rates, bonds, new service fees, and hydropower generation. In addition to these funding sources, Denver Water plans to source funds from loans, grants, and possibly from partners.

Because there are an estimated 84,000 properties that need pipe replacement, Denver Water is prioritizing neighborhoods by risk level and underserved areas. The overall timeline of replacing all lead service pipes is 15 years; Denver Water has made it a top priority to communicate with its customers about proposed plans and information about lead and drinking water, an example of how city leadership can address LSL issues and frame the problem as a public responsibility.

Additional Reading: Water Infrastructure Funding and Policies

[Drinking Water State Revolving Fund Eligibility Handbook](#)

In 2017, the EPA prepared a detailed handbook to address DWSRF eligibility, especially on emerging types of projects such as “green projects, which are explored in “Appendix B” of the handbook.

[The WIFIA Program 2019 Annual Report \(EPA\)](#)

This brief report summarizes the latest progress made by the EPA under the Water Infrastructure Finance and Innovation Act. Taking a closer look at existing federal policies on water infrastructure will help advocates have a well-grounded understanding of federal policy, and with its multiple graphics, the report particularly useful for visual learners.

[Congressional Action on Resilient Infrastructure \(2017-2018, Environmental and Energy Study Institute\)](#)

This video offers a very brief exploration of how federal policies can be employed when addressing disaster and climate threats. This video is particularly useful auditory learners.

[America’s Aging Water Infrastructure \(Bipartisan Policy Center\)](#)

This report offers a concise list that describes the various federal programs which fund state and local water infrastructure.

[Understanding How the Money is Supposed to Flow Water Infrastructure Funding and Finance 101](#)

Part one of four, this webinar provides an overview of where water, wastewater, and stormwater utilities are positioned in the local government framework (e.g. local government departments, authorities, etc.), and how this positioning affects their financial flexibility. The webinar looks at the “fund accounting” approach in local government finance to better understand the rules that should keep rate revenues preserved for water, and viewers are offered a few ways to check the financial health of a utility.

Quiz

SRF funds can be used to support GSI projects.

- a. True
- b. False

Answer: True, states determine the amount and project eligibility.

[Water Infrastructure Financial Leadership: Successful Financial Tools for Local Decision Makers](#)

This report is written for local decision-makers to help them navigate water infrastructure investing processes. This document, which has interactive features throughout, also compiles existing resources and descriptions of successful community examples as tools to help inform water infrastructure investment decisions.

[Water, Health, and Equity: The Infrastructure Crisis Facing Low-Income Communities and Communities of Color and How to Solve It \(Clean Water for All\)](#)

This report studies the issue of poor water infrastructure in low-income communities and communities of color. The report's section titled "Policy Solutions for Healthy, Sustainable Water Infrastructure" offers four opportunities that federal funding offers for funding water infrastructure.

Other Resources and Innovations in Bonding

[Forest Resilience Bond \(Blue Forest\)](#)

The Forest Resilience Bond deploys private capital to finance forest restoration projects on private and public lands.

[Atlanta: First Publicly Offered Environmental Impact Bond \(Quantified Ventures\)](#)

Case study details the first-ever publicly offered Environmental Impact Bond with the Atlanta Department of Watershed Management.

[Green Bonds \(DC Water\)](#)

Details DC Water Green Bond Reports.

[Innovative Financing for Green Stormwater Infrastructure: Waves in Water Funding \(River Network/IB Environmental\)](#)

The fourth of a four-part webinar series, this video provides an overview of the evolving use of green stormwater infrastructure (GSI) for water quality management nationally, and shares examples of how some traditional financing sources, such as the State Revolving Funds and local utility capital improvement plans, are now used to fund GSI projects.

[Financing Resilient Communities and Coastlines \(EDF\)](#)

Breaks down how environmental impact bonds are developed using wetland restoration in Louisiana as the case example.

[The Green Bond Market: An Overview for AMWA Utilities \(AMWA\)](#)

“An overview of how the green bond market originated, the definition of green bonds, a discussion of the development of principles and standards governing green bond issuances, and five brief examples describing experiences of AMWA members that issued green bonds between 2014 and 2016.”

[Bond Financing Distributed Water Systems: How to Make Better Use of Our Most Liquid Market for Financing Water Infrastructure](#)

Explores whether utilities can use bonds to finance distributed infrastructure on private property such as parking lots and landscaping through examining seven states.

[Prince George’s County Urban Stormwater Retrofit Public-Private Partnership](#)

An example of a functioning public-private partnership and using many different funding sources being brought together to fund a large project. The County relies on revenue bonds to fund project installations; the goal was to raise \$100 million. The bonds are being retired using stormwater utility fees revenue.

Other Resources for Greenstormwater Infrastructure

[Getting to Green: Paying for Green Infrastructure Financing Options and Resources for Local Decision-Makers](#)

This 2014 report includes examples of how to pay for GSI; pgs. 6-10 provide information and case studies on stormwater fees

[Utilizing SRF Funding for Green Stormwater Infrastructure Projects](#)

This report was prepared as a result of an agreement between the EPA and the City of Philadelphia to meet clean water goals with state-of-the-art green stormwater infrastructure project solutions and the limited involvement of CWSRFs. The purpose of the report is to analyze the potential of the CWSRFs to provide credit guarantees to green stormwater infrastructure projects within current program eligibilities and resources.

[Using the State Revolving Funds to Build Climate-Resilient Communities \(NRDC Water and Climate Team\)](#)

This report covers how to integrate water efficiency and green stormwater infrastructure into the SRFs program designs. It also covers how to reduce the flood risks of projects funded by the SRFs.

[EPA-Philadelphia Green Cities/Clean Water Partnership](#)

This report analyzes how the Clean Water SRF can provide credit guarantees to green stormwater infrastructure projects within current program eligibility and resources.

[Clean Water State Revolving Fund Green Project Reserve Report \(ARRA\)](#)

This report discusses the Green Project Reserve and how 20 percent of CWSRF program funding must be appropriated for projects that address green stormwater infrastructure, water and energy efficiency, or other environmentally innovative activities.

[Green Project Reserve Guidance for the Clean Water State Revolving Fund \(CWSRF\)](#)

EPA-provided resources related to the Green Project Reserve