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WATER INFRASTRUCTURE

Approaches and Issues for Financing Drinking Water and Wastewater Infrastructure

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Highlights of [GAO-13-451T](#), a testimony before the Subcommittee on Interior, Environment, and Related Agencies, Committee on Appropriations, House of Representatives

Why GAO Did This Study

The nation faces costly upgrades to aging and deteriorating drinking water and wastewater infrastructure. Frequent and highly publicized incidents of combined sewer overflows into rivers and streams, as well as water main breaks in the nation's largest cities, are the most visible manifestations of this problem.

A variety of approaches have been proposed to help bridge the potential gap between projected infrastructure needs—estimated by EPA as almost \$335 billion for drinking water infrastructure and \$298 billion for wastewater infrastructure—and current funding. GAO has conducted recent work on three of these approaches. In addition, GAO's recent work has addressed rural water infrastructure funding and economic recovery, as well as utilities' use of asset management, an approach to planning for and managing infrastructure costs.

This testimony is based on a body of work from August 2002 through October 2012 and focuses on (1) EPA's Clean Water and Drinking Water State Revolving Fund programs; (2) stakeholders' views on creating a clean water trust fund, a national wastewater infrastructure bank, and public-private partnerships for wastewater infrastructure; and (3) issues in financing drinking water and wastewater infrastructure. GAO's testimony summarizes the results of issued reports.

GAO made recommendations in past reports to strengthen utilities' use of asset management and coordination of rural water infrastructure funding. EPA generally concurred with the recommendations, taking action on some and beginning action on others.

View [GAO-13-451T](#). For more information, contact J. Alfredo Gómez at (202) 512-3841 or gomezj@gao.gov

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What GAO Found

The Environmental Protection Agency's (EPA) Clean Water and Drinking Water State Revolving Fund (SRF) programs are the largest sources of federal assistance to states and local communities for funding drinking water and wastewater infrastructure. In fiscal year 2012, EPA funded the Clean Water SRF program \$1.5 billion and the Drinking Water SRF program \$918 million from congressional appropriations. EPA grants capitalization funds to states, which in turn provide low- or no-interest loans to local communities or utilities to pay for water distribution pipelines, treatment plants, sewer lines, and other similar infrastructure.

GAO reviewed three of the approaches proposed to pay for the nation's drinking water and wastewater needs, each of which offers a different means to fund and finance projects. To understand these approaches as they apply to wastewater infrastructure, GAO surveyed stakeholders, including industry representatives and associations and federal, state, and local government officials. GAO's reports identified the following issues with each approach:

- A *clean water trust fund* would provide a dedicated source of funding, such as an excise or other tax, for wastewater infrastructure. Stakeholders identified three main issues that would need to be addressed in setting one up: how a trust fund should be administered and used, what type of financial assistance should be provided, and what activities should be eligible to receive funding. A majority of stakeholders said that a trust fund should be administered through EPA in partnership with the states, but they differed in their views on how a trust fund should be used.
- A *national infrastructure bank* would use public and/or private funds to finance infrastructure projects through a variety of loans, loan guarantees, and other mechanisms. A majority of stakeholders supported the creation of such a bank but also identified three issues that should be considered in designing a bank: mission and administrative structure, financing authorities, and project eligibility and prioritization.
- *Public-private partnerships* encourage private investment in infrastructure projects. GAO identified seven municipalities that have entered into privately financed partnerships for wastewater infrastructure. Municipal and company officials identified advantages to these partnerships, such as having access to sources of financing other than traditional sources, but also identified challenges to using partnerships. Local opposition is one challenge, as is the complexity and difficulty of contracting involved.

GAO's work on asset management, among other things, highlights the importance of targeting federal funding to communities with the greatest need and spending funds efficiently. For example, in 2004, GAO identified opportunities for EPA to improve its promotion of asset management to utilities—an approach that could give utilities the information and analytical tools they need to manage existing assets more effectively and to plan for the future. Since then, EPA has implemented GAO's recommendations on asset management by, among other things, holding workshops and coordinating initiatives to provide asset management information.

Chairman Simpson, Ranking Member Moran, and Members of the Subcommittee:

I am pleased to be here today as you consider the infrastructure needs facing the nation's drinking water and wastewater systems. As you know, the nation's water utilities face the task and costs of upgrading aging and deteriorating infrastructure in both drinking water plants and wastewater treatment systems, including collection systems, treatment plants, and distribution systems. Frequent and highly publicized incidents of combined sewer overflows into rivers and streams, as well as water main breaks in the nation's largest cities, have been perhaps the most visible manifestations of this infrastructure problem. In its most recent needs surveys, the Environmental Protection Agency (EPA) estimated that the funding need for drinking water infrastructure totaled \$335 billion (in 2007 dollars) and wastewater infrastructure needs totaled \$298 billion (in 2008 dollars).¹ These needs are made more daunting by the limited resources and budgets facing all levels of government.

A variety of approaches have been proposed to help bridge the potential gap between projected future infrastructure needs and current levels of funding. My testimony today will draw from our reports reviewing three of these approaches, including a clean water trust fund,² national infrastructure bank,³ and public-private partnerships.⁴ My testimony also draws on reports that we have issued on rural water infrastructure,⁵ utility

¹The most recent drinking water needs assessment is EPA, *Drinking Water Infrastructure Needs Survey and Assessment: Fourth Report to Congress*, EPA 816-R-09-001 (Washington, D.C.: February 2009) and the most recent clean water needs assessment is EPA, *Clean Watersheds Needs Survey 2008: Report to Congress*, EPA-832-R-10-002 (Washington, D.C.). EPA conducts a separate survey and assessment for each type of infrastructure, drinking water and wastewater, on separate 4-year schedules. The costs shown reflect the year that each survey was conducted.

²GAO, *Clean Water Infrastructure: A Variety of Issues Need To Be Considered When Designing a Clean Water Trust Fund*, [GAO-09-657](#) (Washington, D.C.: May 29, 2009).

³GAO, *Wastewater Infrastructure Financing: Stakeholder Views on a National Infrastructure Bank and Public-Private Partnerships*, [GAO-10-728](#) (Washington, D.C.: June 30, 2010).

⁴[GAO-10-728](#).

⁵GAO, *Rural Water Infrastructure: Additional Coordination Can Help Avoid Potentially Duplicative Application Requirements*, [GAO-13-111](#) (Washington, D.C.: Oct. 16, 2012).

asset management,⁶ and EPA's existing programs to finance drinking water and wastewater infrastructure (water and wastewater infrastructure).⁷ These reports have generally been informational, and we have not made recommendations to EPA, but in cases where we did and EPA provided an opinion, it generally concurred with our recommendations. My statement today is based on our prior work issued from August 2002 through October 2012 and focuses on (1) EPA's Clean Water and Drinking Water State Revolving Fund (SRF) programs; (2) views of stakeholders on creating a clean water trust fund, a national infrastructure bank for wastewater, and public-private partnerships for wastewater infrastructure;⁸ and (3) issues facing federal agencies, states, local communities, and utilities in financing drinking water and wastewater infrastructure. Detailed information about scope and methodology can be found in our issued reports. We conducted this work in accordance with generally accepted government auditing standards.

Background

Drinking water and wastewater infrastructure improvements are largely paid for by communities or utilities and their ratepayers, through the water and sewer rates they pay. Drinking water infrastructure involves treatment plants, distribution pipelines, and other equipment needed to take water from natural sources, such as rivers, lakes, and groundwater aquifers, treat it, and then provide it to households, businesses, and others for drinking and other uses. Wastewater infrastructure includes collection systems, tanks, treatment equipment, and other related equipment that all transport wastewater from homes, businesses, and other sources for treatment and discharge, generally, into a nearby body of water.

A number of federal agencies provide funding to assist communities and utilities in financing water and wastewater infrastructure construction and

⁶GAO, *Water Infrastructure: Comprehensive Asset Management Has Potential to Help Utilities Better Identify Needs and Plan Future Investments*, [GAO-04-461](#) (Washington, D.C.: Mar. 19, 2004) and GAO, *Water Infrastructure: Information on Financing, Capital Planning, and Privatization*, [GAO-02-764](#) (Washington, D.C. Aug. 16, 2002).

⁷See GAO, *Recovery Act: Funds Supported Many Water Projects, and Federal and State Monitoring Shows Few Compliance Problems*, [GAO-11-608](#) (Washington, D.C.: June 29, 2011).

⁸Stakeholders include individuals and groups from the water and wastewater industry and federal, state, and local government with knowledge of water and wastewater infrastructure issues.

rebuilding projects. In addition, the federal government subsidizes infrastructure projects through the tax exemption for municipal bonds, which reduces localities' borrowing costs. Table 1 describes the assistance provided by the different federal agencies.

Table 1: Federal Agencies Providing Financial Assistance for Local Water and Wastewater Infrastructure

Agency, Program	Financial assistance provided
EPA, Clean Water State Revolving Fund	Grants funds to states that provide loans to communities of all sizes for wastewater treatment infrastructure, nonpoint pollution management, and estuary programs.
EPA, Drinking Water State Revolving Fund	Grants funds to states that provide loans to communities of all sizes for drinking water infrastructure.
Department of Agriculture, Rural Utilities Service, Water and Waste Disposal Program	Provides funding for water and wastewater infrastructure projects in communities with populations less than 10,000.
Department of Housing and Urban Development, Community Development Block Grant	Provides block grant funds to states for distribution to communities, and to certain metropolitan areas; communities use funds for a broad range of activities including water and wastewater infrastructure. According to department officials, about 10 percent of funding is used for this purpose.
Department of Commerce, Economic Development Administration, Public Works and Economic Development Program	Provides grants to small and disadvantaged communities to construct public facilities, including drinking water and wastewater facilities, to alleviate unemployment.
U.S. Army Corps of Engineers	Provides assistance for water and wastewater infrastructure projects, typically for specific locations as authorized by Congress.
Bureau of Reclamation	Provides assistance for water supply projects through individual projects and under its rural water supply program.
Indian Health Service	Provides funding for water and wastewater infrastructure on tribal lands.
Department of the Treasury, Internal Revenue Service	Administers provisions for tax-exempt bonds issued by local governments to finance qualified projects.

Source: GAO.

The issue of how the federal government should help to finance the nation's water and wastewater infrastructure involves several considerations. First, the entity to administer the assistance can include a federal agency, a special-purpose entity, or a public-private partnership. Special-purpose entities include government corporations and

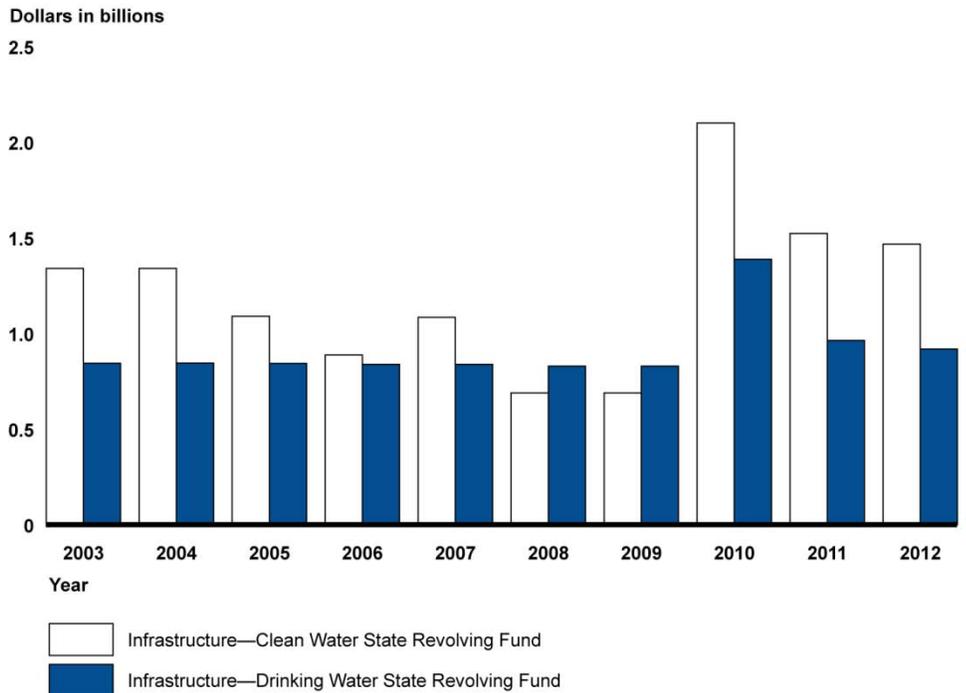
government-sponsored enterprises.⁹ A second consideration in financing the nation's infrastructure is the source of funding for the financial assistance provided. Such funding can be public, such as appropriations from the federal, state, or other governments, or private, such as private investment or revenues and other income from the enterprise. Third, the financing provided for infrastructure projects can come in a variety of forms: grants, loans, loan guarantees, debt or equity purchases, insurance for project costs, bonds, and others. And, finally, projects eligible to receive financing can be public and/or private and can include one or more aspects of a project, including design, capital construction, and other support.

EPA's Clean Water and Drinking Water State Revolving Funds Capitalize State-Managed Revolving Funds

EPA's Clean Water and Drinking Water SRF programs are the largest sources of federal assistance to states and local communities for funding drinking water and wastewater infrastructure. EPA receives federal appropriations that are then, in turn, granted to states to use in conjunction with state funds to provide loans for improvements at communities' water and wastewater treatment systems. From fiscal years 2003 through 2012, appropriations for the Clean Water SRF averaged about \$1.2 billion annually and about \$913 million annually for the Drinking Water SRF. Figure 1 shows the total appropriations to EPA for the two programs for fiscal years 2003 through 2012.

⁹Government corporations are not completely alike but have generally been established by Congress to provide market-oriented public services, such as the Commodity Credit Corporation, which stabilizes and protects farm income and prices. Government-sponsored enterprises are privately owned, for-profit financial institutions that have been federally chartered for a public purpose, such as facilitating the flow of investment to specific economic sectors.

Figure 1: Appropriations for EPA’s Clean Water and Drinking Water State Revolving Fund Programs, Fiscal Years 2003 through 2012



Source: GAO analysis of Congressional Research Service data.

Notes: EPA administers the Drinking Water State Revolving Fund (SRF) program, which provides annual funding to states to finance projects for publicly and privately owned drinking water treatment systems, and the Clean Water SRF program, which provides funding to states to finance projects for constructing, replacing, or upgrading publicly owned municipal wastewater treatment systems.

The funding in this table represents annual appropriations and does not include funds appropriated in the American Recovery and Reinvestment Act. The Clean Water SRF was appropriated \$4 billion from the Recovery Act and the Drinking Water SRF was appropriated \$2 billion.

The Clean Water and Drinking Water SRF programs provide states and local communities with an independent and sustainable source of financial assistance by providing capital for state SRF funds. The states are required to match 20 percent of the federal grant money.¹⁰ From these federal and state funds, states then typically provide assistance in

¹⁰State grants for the Clean Water SRF program are to be made on the basis of a statutory allocation formula. The Drinking Water SRF grants are to be allocated to states on the basis of current needs assessments, with a minimum allocation of 1 percent per state.

the form of low- or no-interest loans to communities or utilities, repayment of which replenishes the funds and provides the ability to fund future loans for additional projects.

The Clean Water SRF was established in 1987 in amendments to the Clean Water Act, which was enacted to protect the nation's surface waters, such as rivers, lakes, and coastal waters and to maintain and restore the physical, chemical, and biological integrity of these waters. Funds can be used to pay for projects such as constructing or upgrading secondary or advanced wastewater treatment facilities, construction of new sewers or storm sewers, and similar projects, among other things.¹¹

The Drinking Water SRF was established in 1996 in amendments to the Safe Drinking Water Act, which was enacted to establish national enforceable standards for drinking water quality in public water systems and to require such systems to monitor water to ensure compliance with standards, among other things. Funds can be used to pay for upgrading or replacing infrastructure to address violations of drinking water regulations or to replace aging storage facilities, distribution pipelines, treatment facilities, and similar projects related to public health protection. Unlike the Clean Water SRF,¹² assistance can be provided to privately owned community water systems, as well as publicly owned community water systems, and nonprofit noncommunity systems.¹³

In addition to annual appropriation funding provided to the programs, the American Reinvestment and Recovery Act of 2009 (Recovery Act) provided a large influx of funding for the SRF programs—in total \$6 billion: \$4 billion to the Clean Water SRF program and \$2 billion to the

¹¹Wastewater treatment involves several processes, including primary treatment to remove suspended solids; secondary treatment to further remove contaminants using biological processes; and tertiary or advanced treatment to remove additional material in wastewater, such as nutrients or toxic chemicals.

¹²Clean Water SRF funds used for financial assistance for construction or upgrades of treatment plants may be provided only to municipal, intermunicipal, and interstate agencies.

¹³A community water system is one that has more than 15 connections used by year-round residents or that regularly serves 25 year-round residents. Cities, towns, and communities such as retirement homes are examples. A noncommunity system is a public water system that is not a community water system and serves a non-year-round population of at least 25 individuals daily for at least 60 days of the year. Schools and churches are examples.

Drinking Water SRF program. The act, which was passed in February 2009, required that projects funded with Recovery Act program funds had to be under contract within 1 year of the act's passage, or February 17, 2010. We reported in June 2011 that states had awarded contracts and obligated this funding, which they used to pay for major infrastructure projects.¹⁴

Stakeholders Identified Issues to Consider in Designing a Clean Water Trust Fund, a National Bank for Wastewater Infrastructure, and Public-Private Partnerships

A variety of approaches have been discussed to pay for the nation's water and wastewater infrastructure needs. In May 2009 and June 2010, we reported on the views of stakeholders, including individuals and groups from the wastewater industry and federal, state, and local governments with knowledge of water and wastewater infrastructure issues,¹⁵ of what is needed to create three of these financing approaches.

Clean Water Trust Fund

A clean water trust fund would provide a dedicated source of federal funding for wastewater infrastructure, similar to federal trust funds such as the Highway and Airport and Airways Trust Funds, which are used to account for funds that are dedicated for spending on a specific purpose. As authorized by law, the federal government may control a trust fund, as well as its earnings, and raise or lower future trust fund collections and payments or change the purposes for which the collections are used. Stakeholders concluded that a number of issues need to be addressed in

¹⁴[GAO-11-608](#).

¹⁵See [GAO-09-657](#) and [GAO-10-728](#).

creating a clean water trust fund.¹⁶ The issues identified were (1) the administration and use of the trust fund, (2) the type of financial assistance that should be provided for projects, and (3) the activities eligible for funding.

Administration and use of a trust fund. Stakeholders told us that designing a clean water trust fund would involve deciding what agency or entity would administer the fund and whether the trust fund would be used to fund the Clean Water SRF or a separate program. A majority of stakeholders (15 of 20) expressed the view that a trust fund should be administered through an EPA-state partnership like the current Clean Water SRF program. Four of the remaining stakeholders thought that another entity should administer the fund, and one had no opinion on the matter.

Stakeholders had mixed views on how a trust fund should be used. About one-third (7 of 20) thought that a trust fund should be used to only fund the existing Clean Water SRF. These stakeholders said that they had an interest in building on the success of the existing program, avoiding redundant administrative costs associated with establishing a new program, and providing a dedicated source of funding for the existing program. Three of 20 stakeholders said that a trust fund should fund a separate and distinct infrastructure program from the Clean Water SRF. Some said that a separate program was needed because Clean Water SRF loan amounts can sometimes be inadequate to fund needs in large urban areas and that smaller communities may lack the administrative capacity to go through the process. However, five of 20 stakeholders said they favored using a trust fund to both fund the Clean Water SRF and to fund a separate program. In contrast, other stakeholders (3 of 20) opposed the creation of a trust fund because they said that utilities should be self-sustaining through the rates they charge their customers and by

¹⁶The stakeholders we interviewed on the creation of a clean water trust fund included 50 individuals and groups with knowledge of water and wastewater issues, including industry associations; federal, state, and local government officials; and industry representatives. Based on the information gathered from these interviews, we developed a questionnaire and sent it to 28 national organizations with expertise in financing wastewater projects, constructing and maintaining wastewater projects, local and state wastewater infrastructure needs, and environmental protection. Twenty-two stakeholders responded to our questionnaire; however, because not all stakeholders answered every question, the total number of respondents can vary for each question. See [GAO-09-657](#) for detailed information on our scope and methodology.

more efficiently managing their systems. The remaining stakeholders said the fund should be used for other purposes.

Type of financial assistance. Another design issue that stakeholders identified was specifying the type of assistance—grants or loans—that a clean water trust fund would provide. More than half of the stakeholders (13 of 21) favored distributing funding through a combination of grants and loans. The type of assistance provided by a trust fund, according to many stakeholders, should be tailored to the applicant’s needs and capacity. Other stakeholders said that while loans impose discipline on borrowers, grants may be needed for certain communities that cannot make loan repayments, such as those with declining or low-income populations. In contrast, a few stakeholders thought that either loans or grants should be provided from a clean water trust fund.

Eligible activities. Stakeholders said that designing and implementing a clean water trust fund would involve determining the type of wastewater infrastructure activities that the fund would support. The majority of stakeholders supported using funds to pay for planning and designing wastewater projects (18 of 21) and for capital costs of projects (19 of 21), similar to the Clean Water SRF.

Funding a Clean Water Trust Fund: Our May 2009 report identified potential sources of revenues for a clean water trust fund, but each of these faces obstacles to implement. A variety of options could be enacted, including excise taxes on products that contribute to the waste stream, additional taxes on corporate income, a water use tax, and an industrial discharge tax. However, it may be difficult to raise substantial sums for a clean water trust fund from any one source. Table 2 summarizes the options we identified and the implementation obstacles.

Table 2: Options for Funding a Clean Water Trust Fund and Obstacles to Implementation

Option	Description	Obstacles
Excise tax on products that contribute to the waste stream	A tax on products that contribute to the wastewater stream, such as beverages, fertilizers and pesticides, flushable products, pharmaceuticals, and water appliances and plumbing fixtures	Excise taxes require precise definitions of the products to be taxed, including a decision on per unit or percentage basis of tax Internal Revenue Service would have to modify its excise tax collection and enforcement framework, update forms, train staff, and increase audit responsibilities
Additional tax on corporate income	Similar to the Corporate Environmental Income Tax to fund the Superfund program (until 1995)	Corporate income tax requires defining the types of corporations and the portions of income to be taxed

Option	Description	Obstacles
Water use tax	A tax on water use using volume-based charge or flat charge added to local residential, commercial, and industrial water utility rates paid by customers	Developing a tax collection system, structuring the tax, and determining the tax base would be necessary
Industrial discharge tax	A tax on industrial discharge by levying a fee on National Pollutant Discharge Elimination System permits or a tax on toxic chemical releases reported by industrial facilities	No federal system exists to charge such a tax Determining the tax base—permits or toxic discharges—would be necessary

Source: GAO.

National Wastewater Infrastructure Bank

A national infrastructure bank could finance wastewater infrastructure through a variety of mechanisms, such as directly loaning money to eligible projects, guaranteeing municipal bonds to lower costs, and pooling loans from numerous smaller municipalities to lower costs. The majority of stakeholders responding to our questionnaire about creating a national infrastructure bank to fund wastewater projects supported the concept overall, but they identified three key areas that would need to be considered in designing such a bank.¹⁷ The three areas identified by stakeholders are similar to those raised in creating a clean water trust fund: mission and administration, financing authorities, and project eligibility.

Mission and administration. A majority of stakeholders supported the creation of a bank, but their views varied on its mission and administrative structure. Of the 20 stakeholders who supported creation of a bank, about two-thirds (13) said its mission should be to fund infrastructure in multiple sectors, such as transportation, energy, water, and wastewater. The reasons for their views included that it would allow for coordination across sectors and that financial experts at such a bank would be able to apply their expertise to a wide range of projects. In contrast, one-third of

¹⁷To obtain stakeholders' views of a national wastewater infrastructure bank, we surveyed 23 (18 replied) national organizations with expertise in one of the following areas: financing and operating wastewater projects, constructing and maintaining wastewater infrastructure, local and state wastewater infrastructure needs, or environmental protection. In addition, we also sent the questionnaire to 14 (11 replied) financing experts to solicit additional views on this topic. See [GAO-10-728](#) for detailed information on our scope and methodology. While a total of 29 organizations and individuals responded to the questionnaire, not all stakeholders rated each criterion. Thus, the total number of respondents varied for each question. See the report for the full results of our questionnaire.

stakeholders (7 of 20) said that the bank's mission should be focused only on water and/or wastewater infrastructure.

Stakeholders did not agree on whether a bank should be administered as a new responsibility for an existing federal agency, structured as a government corporation, or structured as a government-sponsored enterprise. As we have previously reported, an entity's administrative structure affects the extent to which it is under federal control, how its activities are reflected in the federal budget, and the risk of exposure of U.S. taxpayers.¹⁸

Type of financial assistance: Most stakeholders also agreed on some of the mechanisms that a bank should offer for financing projects. In particular, a majority of stakeholders said that a bank should issue direct loans to projects (19 of 29) and loan guarantees (15 of 29) for projects.¹⁹ Almost half of stakeholders (14 of 29) supported pooling loans for infrastructure projects into a larger bond to lower borrowing costs.

Eligible projects. Stakeholders differed in their views of what projects to fund through a national infrastructure bank but they agreed on how the projects should be prioritized, such as whether a bank should be used exclusively for large projects. Half of stakeholders (12 of 24) said projects of all sizes should be eligible for bank financing, while a third (8 of 24) noted that only large projects should be eligible.²⁰ One reason for supporting larger projects for financing was that these are beyond the capacity of the Clean Water SRF to fund. In addition, a majority of stakeholders agreed that a bank should prioritize projects for funding that address the greatest infrastructure need (18 of 29) and that generate the greatest public health (17 of 29) and environmental benefits (15 of 29).

¹⁸See GAO, *Federally Created Entities: An Overview of Key Attributes*, [GAO-10-97](#) (Washington, D.C.: Oct. 29, 2009) and GAO, *Fannie Mae and Freddie Mac: Analysis of Options for Revising the Housing Enterprises' Long-term Structures*, [GAO-09-782](#) (Washington, D.C.: Sept. 10, 2009).

¹⁹Stakeholders could select more than one mechanism that a bank could offer, and thus, the total number of respondents selecting mechanisms may be greater than 29.

²⁰The remaining four stakeholders replied "other" on the size of project that would be eligible.

Funding. A majority of the stakeholders we surveyed agreed on the financing authorities for a national infrastructure bank, including how it should be funded and how it should finance projects. Specifically, most stakeholders (20 of 22) agreed that the federal government should provide all or some of the initial capital for a national infrastructure bank, though four suggested that federal funds should be augmented by private funds. Further, most stakeholders (21 of 23) agreed that a bank should be authorized to generate its own funds for operating expenses and lending, using multiple financing mechanisms (15 of 23). Some of these stakeholders stressed the need for a bank to have access to low-cost capital through borrowing from the Department of the Treasury and issuing tax-exempt bonds. However, we noted that the Internal Revenue Service said that these guaranteed bonds are not exempt, so a statutory exemption to allow tax-exempt, guaranteed bonds would be needed to accomplish this.

Public-Private Partnerships for Wastewater Infrastructure

A third approach for financing wastewater infrastructure is to encourage private investment in projects, including through public-private partnerships at the municipal level. A privately financed public-private partnership, as defined in our June 2010 report, is a contractual agreement in which the private partner invests funds in the wastewater project, but the agreement does not include full privatization, in which the municipality sells its wastewater infrastructure assets to a private partner.²¹ In that report, we identified and reviewed only a few privately funded public-private partnerships developed for wastewater since 1992, concluding that the use of such approaches is still uncommon for wastewater.²² Stakeholders from municipalities and private companies engaged in such partnerships cited several advantages and challenges in their use.²³ The seven partnerships we identified and reviewed, the

²¹[GAO-10-728](#).

²²This result echoes the results of a study by the Congressional Budget Office. See CBO, *Issues and Options in Infrastructure Investment* (Washington, D.C.: May 2008).

²³To obtain views on public-private partnerships, we interviewed officials from municipalities involved in six of seven partnerships we reviewed. We also interviewed officials from other municipalities in the states where four partnerships are located: Alaska, California, New Jersey, and Ohio. In addition, we interviewed officials at six of the largest private companies involved in water and wastewater public-private partnerships. See [GAO-10-728](#) for detailed information on our scope and methodology.

parties administering the partnership, the eligible activities and assets, and the form of financial assistance are described in table 3.

Table 3: Wastewater Public-Private Partnerships Developed since 1992 Identified by GAO

Municipality	Company	Year initiated	Type	Initial term (years)	Assets included	Up-front payment
Arvin, CA	U.S. Filter (now Veolia Water)	1999	Lease and DBFO ^a	35	Lease: existing plant DBFO: upgraded treatment plant components	Yes
Cranston, RI ^b	Triton Ocean State LLC (now Veolia Water)	1997	Lease	25	Treatment plant, collection system, pumping stations, industrial pretreatment	Yes
Fairbanks, AK	Golden Heart Utilities	1997	Lease and asset sale ^c	30	Lease: treatment plant Asset sale: collection system	Yes
Franklin, OH ^d	Wheelabrator EOS (now Veolia Water)	1995	Lease and asset sale ^e	20	Lease: one process within treatment plant Asset sale: treatment plant	Yes
North Brunswick, NJ ^f	U.S. Water (now United Water)	1995	Lease	20	Collection system and pumping stations ^g	Yes
Santa Paula, CA	Santa Paula Water, LLC ^h	2008	DBFO	30	New water recycling facility	No
Woonsocket, RI ⁱ	U.S. Filter (now Veolia Water) with third-party financing through LaSalle Bank and ABN AMRO	1999	DBFO	20	Upgrade of existing treatment plant	Yes

Source: GAO.

^aDBFO refers to an agreement to design-build-finance-operate.

^bSince officials from Cranston declined to speak with us, this information about Cranston's privately financed public-private partnership is derived from publicly available sources.

^cThe city of Fairbanks leased its wastewater treatment plant, which falls within the report's definition of a privately financed public-private partnership. Fairbanks sold its collection system, which falls outside of the scope of the report.

^dThe wastewater treatment plant involved in the 1995 lease and asset sale was originally owned by the Miami Conservancy District, a flood-control agency in southwestern Ohio. The treatment plant serves the communities of Franklin, Carlisle, and Germantown, as well as unincorporated areas of Warren and Montgomery counties.

^eThe city of Franklin leased a portion of its wastewater treatment plant, which falls within the report's definition of a privately financed public-private partnership. Franklin sold other parts of the treatment plant.

^fThe North Brunswick lease was terminated in 2002.

⁹North Brunswick also leased their drinking water assets, including a treatment plant, as well as the distribution system.

¹⁰Santa Paula Water, LLC, is a partnership between PERC Water and Alinda Capital.

¹¹The wastewater treatment plant involved in the 1999 DBFO serves multiple communities: Woonsocket, Rhode Island; North Smithfield, Rhode Island; Cumberland, Rhode Island; Bellingham, Massachusetts; and Blackstone, Massachusetts.

Officials from the municipalities and companies we interviewed reported advantages of privately funded public-private partnerships, including faster delivery of facilities or upgrades, access to alternative sources of financing, cost and operational efficiencies, access to expertise and technology solutions, up-front payments to municipalities, and increased focus by local governments on their other functions. For example, two of the municipalities we interviewed were facing regulatory deadlines that required them to upgrade their facilities or pay fines. Company and municipal officials said that private procurement may be faster because it is more streamlined than public procurement. Other municipal officials said that they could not access the bond market to pay for their project, and another community official said that it was difficult to get the public to approve their bonds, and the public-private partnership offered an alternative source of financing.

Challenges that municipal and company officials reported included public and political opposition, higher costs to borrow with private financing, difficulties with combining public and private financing, loss of municipal control over a project, lack of experience with public-private partnerships, costly and difficult contracting, and legal issues.

- The challenge most often cited by municipal and company officials was public and political opposition. The public is often concerned about the possibility that a company would not be as responsive to ratepayers as a municipal government; other public concerns are about job losses and sewer rate increases. For example, one community we reviewed terminated its agreement in 2002 because, in part, of a public reaction to rate increases. In another case, public opposition derailed the development of a partnership.
- Financing challenges include the fact that private financing generally costs more than public financing and that combining public and private financing is difficult. In our June 2010 report, we cited a National Research Council study that said private financing may be 20 to 40 percent more expensive than public financing, although officials said that tax rules allowed companies to depreciate capital and find cost savings over the long term. In addition, the public entity must

follow Internal Revenue Service tax rules to avoid changing the status of existing tax-exempt municipal bonds to taxable bonds, and may have difficulty meeting the requirements to issue tax-exempt bonds in the future.

- Several municipal and company officials told us that they had concerns with losing control over their facilities and rates. For example, officials in Santa Paula, California, told us they experienced a loss of control over plant design, choice of equipment, and construction costs after entering into their design-build-finance-operate agreement. The terms of this kind of agreement determine the extent to which a municipality may retain control in a public-private partnership.
- Municipal and company officials also said that they lack experience with developing partnerships and that this might limit development of any such partnerships. Related to this is costly and difficult contracting, another challenge cited by municipal and company officials. Finally, state and federal laws may raise difficulties in entering into public-private partnerships. For example, EPA officials stated that prior to accepting private financing, municipalities must repay any remaining federal investment for facilities built under the construction grants program of the 1970s and 1980s, as well as any other federal grants.²⁴

Issues with Efficiently Financing Water Infrastructure

As the nation faces limited budgets and funding for federal programs, the importance of targeting federal funds to communities with the greatest need and spending funds efficiently increases. Part of this effort, as our work and that of EPA's Inspector General shows, is determining which communities and utilities have the greatest need for funding and targeting federal funds to help these communities. One way to target funds is to provide them to communities that are economically disadvantaged. The Drinking Water SRF program requires states to consider household affordability, among other factors, in prioritizing drinking water projects, and it also allows states to provide extra subsidies to disadvantaged communities, under some conditions (the Clean Water SRF allows states to consider community financial need in prioritizing funds for projects, but does not require it). As we reported in June 2011, however, EPA has

²⁴Prior to the creation of the SRF programs, EPA provided grants to states for infrastructure construction.

limited information about how states target disadvantaged communities for SRF funding.²⁵ Furthermore, while the Recovery Act did not require states to provide funding to disadvantaged communities, it did require them to provide a portion of Recovery Act Clean Water and Drinking Water SRF funds to communities without the requirement to repay the funds—a concept called principal forgiveness—and states targeted this principal forgiveness to entities that they determined were economically disadvantaged. While some states had data, according to an April 2011 EPA Inspector General report, EPA did not have the overall data to ensure that Recovery Act SRF funds were targeted to the disadvantaged communities.²⁶

Our October 2012 report on rural water infrastructure funding shows the potential for greater efficiency in federal funding.²⁷ One group of communities that has a difficult time paying for infrastructure improvements is small, often rural, communities that have 10,000 or fewer residents. Unlike large communities, which can spread costs across a broader public, small, rural communities often cannot pay for infrastructure improvements through rate increases because they have a low number of ratepayers to bear the costs. Rural communities also often lack access to bond markets and cannot, therefore, raise their own capital to pay for projects. As a result, they are more dependent on federal financial assistance to help pay for their projects.

In October 2012, we reported on the three largest sources of federal funding for rural water infrastructure and identified opportunities for these programs to coordinate and lower the costs to communities applying for funding from more than one program and agency. Our analysis showed that program overlap among EPA's Clean Water and Drinking Water SRF programs and the Department of Agriculture's Rural Utilities Service Water and Waste Disposal program, which provides funding for both drinking water and wastewater projects in low-income rural communities of 10,000 or less, can result in potential duplication of communities' efforts to prepare funding applications and related documents, including preliminary engineering reports and environmental analyses. Engineers

²⁵[GAO-11-608](#).

²⁶OIG, *EPA Faced Multiple Constraints to Targeting Recovery Act Funds*, Report No. 11-R-0208 (Washington D.C.: Apr. 11, 2011).

²⁷[GAO-13-111](#).

we interviewed estimated that preparing additional engineering reports could cost anywhere from \$5,000 to \$50,000 and that the cost of an environmental analysis could add as little as \$500 to a community's costs or as much as \$15,000. The additional time and resources add costs to projects.

Further, we found that inefficiencies in funding projects arose when state-level programs did not cooperate in funding projects. Specifically, the officials with the Rural Utilities Service in Colorado and North Carolina reported needing, or expecting, to deobligate more than \$20 million that they had committed to fully fund projects because they were unaware that the state SRF programs had also committed to fully fund the same projects. The two Rural Utilities Service state offices could not meet internal agency deadlines to fully obligate their available funds and, as a result, had to return these funds to a central headquarters pool for reallocation. We recommended several actions to improve coordination among the agencies and programs, such as completing an effort to develop guidelines to assist states in developing their own uniform preliminary engineering reports to meet federal and state requirements and starting an effort to create uniform guidelines for environmental analyses that could be used, to the extent appropriate, to meet state and federal requirements. EPA and USDA neither agreed nor disagreed with these recommendations, but they have implemented one action and have begun to take steps on the others.

Part of the effort to efficiently finance water and wastewater infrastructure funds is managing existing infrastructure efficiently to manage costs of repair and replacement. As we reported in March 2004, comprehensive asset management is an approach that could give utilities the information and analytical tools they need to manage existing assets more effectively and to plan for the future.²⁸ Using asset management concepts, utilities and other organizations responsible for managing capital infrastructure can minimize the total costs of designing, acquiring, operating, maintaining, replacing and disposing of capital assets over their useful lives. The steps involved, as we cited in our March 2004 report, include the following:

²⁸ [GAO-04-461](#).

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- Collecting and organizing detailed information on assets. Collecting basic information about capital assets helps managers identify their infrastructure needs and make informed decisions about assets. An inventory includes descriptive information about assets, an assessment of the assets' condition, and information on the assets' value.
 - Analyzing data to set priorities and make better decisions about assets. Under asset management, managers apply analytical techniques to identify significant patterns or trends in the data they have collected on capital assets, help assess risks and set priorities, and optimize decisions on maintenance, repair, and replacement of assets. This can include a life-cycle cost analysis or risk assessment.
 - Integrating data and decision making across the organization. Managers ensure that the information collected within an organization is consistent and organized for the people who need it.
 - Linking strategy for addressing infrastructure needs to service goals, operating budgets, and capital improvement plans.

Our 2004 report recommended various actions that EPA could take to promote asset management, and EPA has taken those actions, including holding workshops for utilities and coordinating its ongoing initiatives. In addition, in its SRF sustainability policy, EPA supports asset management as an approach to increase the longevity of infrastructure. The last time we reviewed utilities' use of asset management was in 2002.²⁹ At that time, we found that, of large utilities (i.e., those with over 10,000 users), one-quarter did not have asset management plans. We have not updated this work and do not know the extent to which more utilities, including smaller utilities, now have plans. Those utilities that did have asset management plans reported benefits such as being able to better justify rate increases and bond ratings. In addition, utility officials believed that such plans would slow the rate of growth of their costs for capital, operations, and maintenance.

In conclusion, Mr. Chairman, the funding needs for upgrading the nation's drinking water and wastewater infrastructure require attention. Much of this burden will be borne by local communities and utilities and the

²⁹ [GAO-02-764](#).

ratepayers using the services provided. Given the magnitude of our projected infrastructure needs nationwide, it is important that utilities adopt a strategy to manage the repair and replacement of key assets as cost-effectively as possible, as well as a plan to sustain their infrastructure in the long term. The states and federal government have played a long-time role in assisting local communities and utilities, and will likely continue to do so. In considering approaches for providing continued federal assistance, it is helpful to consider how an entity providing assistance will be administered and funded, how it will finance projects, and what projects will be eligible. It will also be important to consider how to target funds to those with the greatest needs and to spend funds efficiently.

This concludes my prepared statement, Chairman Simpson, Ranking Member Moran, and Members of the Subcommittee. I would be pleased to answer any questions you have at this time.

GAO Contact and Staff Acknowledgments

For further information about this testimony, please contact me at (202) 512-3841 or gomezj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this testimony. Susan Iott (Assistant Director), Liz Beardsley, Mark Braza, Cindy Gilbert, Scott Heacock, Rich Johnson, Micah McMillan, Janice Poling, and MaryLynn Sergent made key contributions to this testimony.

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