Chapter 9

Resources Spent to Address the Impacts of CSOs and SSOs

This chapter responds to the congressional directive to report on the resources spent by municipalities to address environmental and human health impacts of CSOs and SSOs. The chapter presents information on historical investments in wastewater infrastructure, resources spent on CSO and SSO control to date, projected costs to reduce CSOs and SSOs, and financing mechanisms available to municipalities.

Most municipalities are not required to explicitly report costs to implement CSO and SSO controls. Therefore, financial information on resources spent to address CSOs and SSOs was drawn from alternative sources, including: LTCPs and other facility planning documents; municipal interviews described in Appendix C; information on state and local expenditures on wastewater infrastructure from the U.S. Census Bureau (2002, 2003a); specific reporting categories associated with the CWNS (EPA 2003b) and the CWSRF (EPA 2003j); other loan and grant programs; and federal, state, and industry reports, such as the AMSA's triennial financial survey (AMSA 2003a).

All cost figures in this chapter are presented in 2002 dollars, unless otherwise noted. Unadjusted costs are included in Appendix M.

9.1 What Federal Framework Exists for Evaluating Resources Spent on CSO and SSO Control?

At the national level, two EPA programs provide information on the monies spent on CSO and SSO control, as well as anticipated needs:

- Clean Water State Revolving Fund (CWSRF)
- Clean Watersheds Needs Survey (CWNS)

The CWSRF is a national program established in 1987 under the Clean Water Act to fund water quality projects. Through the CWSRF, all 50 states and Puerto Rico maintain

In this chapter:

revolving loan funds to provide low-cost financing for these projects through low-interest loans. The CWSRF is primarily used to fund wastewater treatment projects, but it can also be used for nonpoint source pollution control and watershed and estuary management (EPA 2003j). The CWSRF tracks state and local expenditures on these projects on an annual basis, and it includes a separate reporting category for CSO expenditures.

The CWNS, a joint effort between states and EPA, includes a survey of needs of facilities for control of CSOs along with other wastewater and watershed needs (EPA 2003b). Survey data are maintained in a database and used to produce a CWNS Report to Congress, which provides a national estimate of needs. The CWNS and the CWSRF do not specifically track costs related to SSO control.

The CSO Control Policy provides a regulatory framework for CSO control. Under the CSO Control Policy, communities are required to develop and implement LTCPs. In developing an LTCP, the CSO Control Policy recommends that the community complete a detailed evaluation of CSO control alternatives and develop a financing plan to fund implementation of the selected controls. This means that communities that have completed LTCPs usually report the anticipated cost of CSO control in their plan.

The costs of addressing SSO problems can vary significantly among communities. Currently, there is no national framework for SSO control that requires communities to develop and report projected or realized costs. Therefore, more financial information is available for CSOs than SSOs. For the purposes of this report, the costs to address SSOs were estimated using information from the CWSRF, the CWNS, and recent EPA efforts.

9.2 What are the Past Investments in Wastewater Infrastructure?

Municipalities, states, and the federal government have been investing in the nation's wastewater infrastructure since the late 19th century (EPA 2000a, 2000c). With passage of the Clean Water Act in 1972, investment in wastewater infrastructure increased markedly. The Clean Water Act dramatically increased funding for the Construction Grants Program, establishing a national policy to provide federal grants for the construction and upgrade of POTWs.

The Construction Grants Program provided grants for as much as 75 percent of the total capital cost for construction of wastewater treatment facilities from 1970 to 1995. During this period, the Construction Grants Program provided a total of more than $100 billion in federal funding for new construction and POTW upgrades (EPA 2000a). In 1981, amendments to the Clean Water Act cut the authorization for POTW grants in half and reduced the maximum federal match to 55 percent. Legislation was amended to phase out the Construction Grants Program by 1991 and replace it with the CWSRF. Federal funding for the CWSRF totaled more than $21 billion from

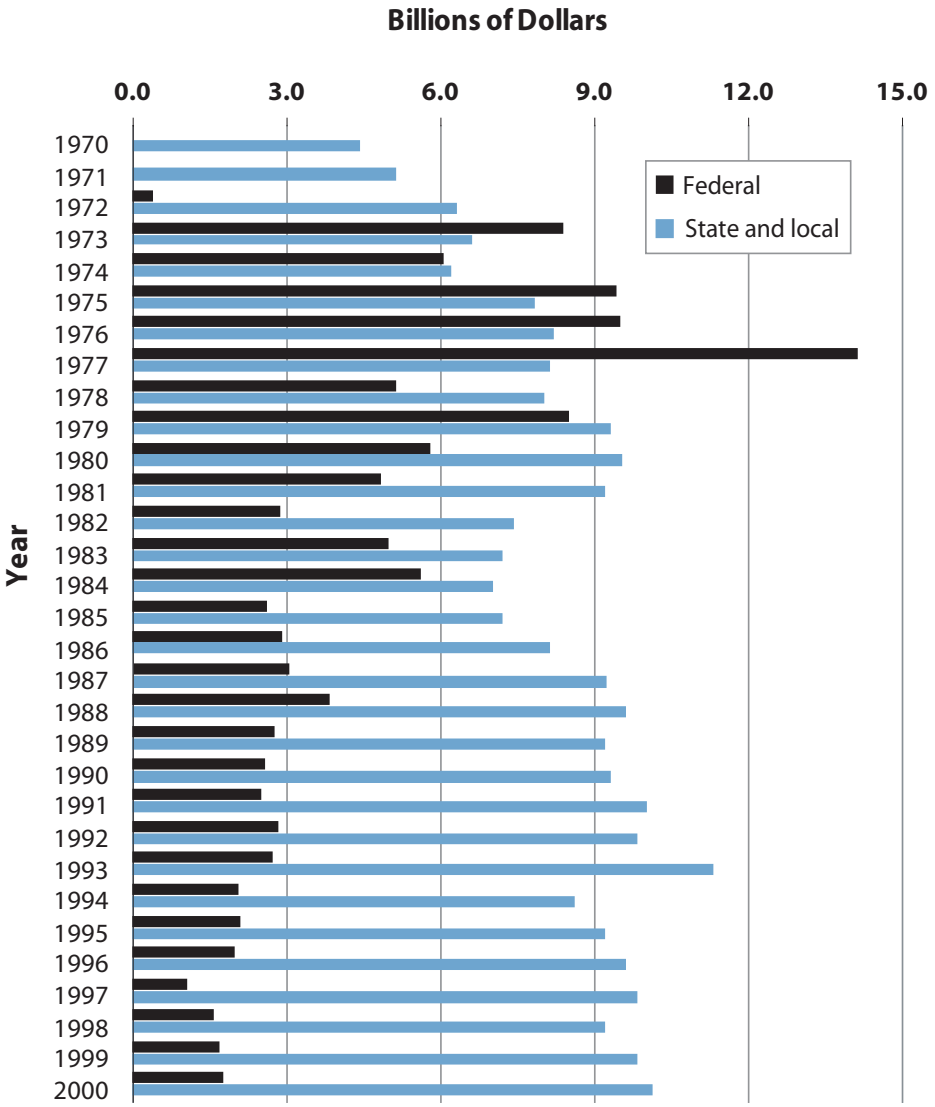
1988 to 2002, and states have made over $47 billion available through the CWSRF for investment in wastewater infrastructure; both figures are in unadjusted dollars.

As shown in Figure 9.1, federal grant funding for capital wastewater projects peaked in 1977 at $14.1 billion dollars. The U.S. Census Bureau (2002, 2003a) reported that total local and state spending on wastewater infrastructure exceeded $535 billion between 1970 and 2000. EPA estimates that the current capital investment in wastewater infrastructure from all public sources—federal, state, and local—is just over $13 billion annually (EPA 2002a). Today, according to industry organizations, local governments and utilities pay as much as 90 percent of capital expenditures on wastewater infrastructure (AMSA and WEF 1999).

Figure 9.1

Annual Capital Expenditures on Wastewater Infrastructure, 1970-2000

Federal funding for capital wastewater projects peaked in 1977. At that time, federal funding accounted for more than 60 percent of annual capital expenditures on wastewater projects; by 2000, federal funding represented about 15 percent of annual capital expenditures. Details on annual federal, state, and local expenditures are shown in Appendix M (Tables M.2, M.3).



Sources: Construction Grants Program and CWSRF expenditures (EPA 2000a, 2000c, 2003j); and U. S. Census Bureau (2002).

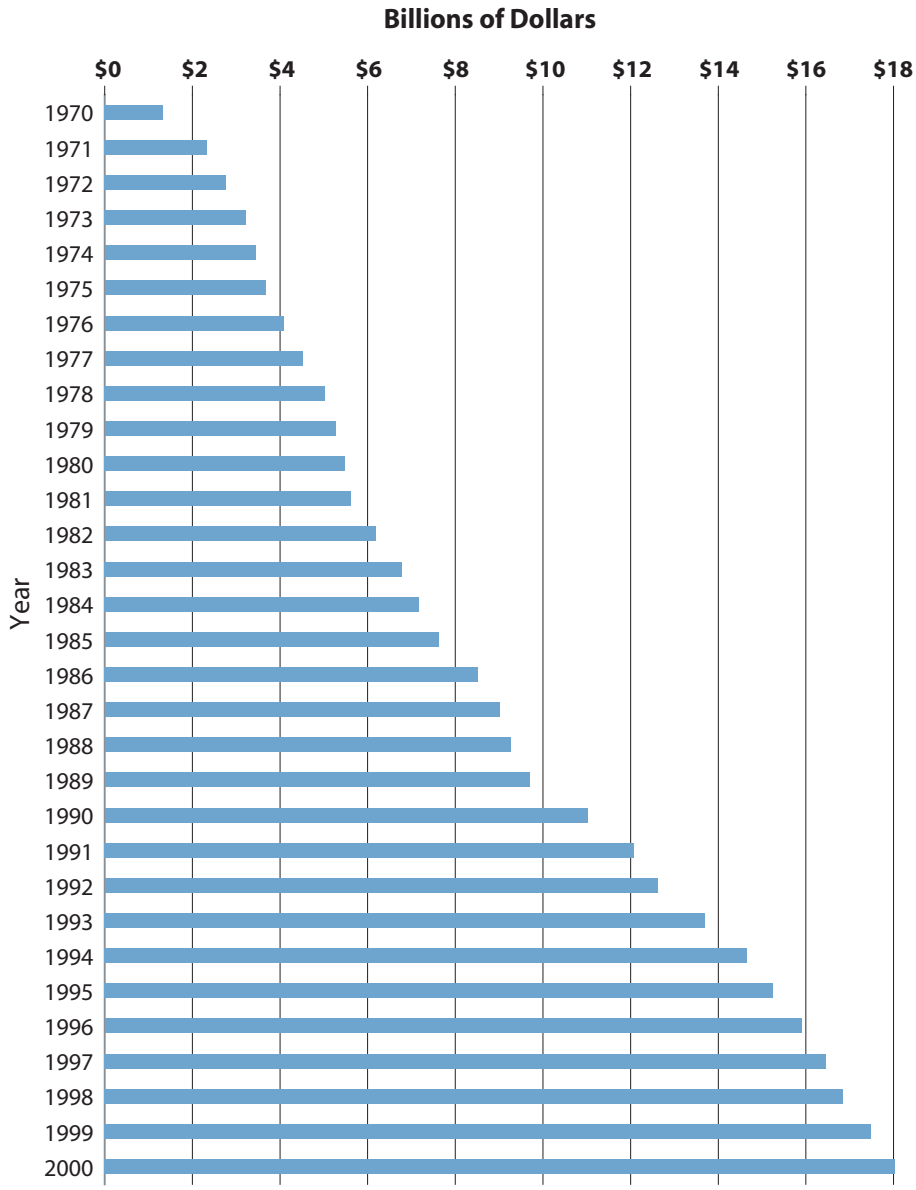
As the value of the nation's wastewater infrastructure increased, O&M (non-capital) expenditures at wastewater facilities have increased from $1.3 billion in 1970 to $18.0 billion in 2000 (Figure 9.2). O&M expenditures now account for 60 percent of total spending on wastewater services (U.S. Census Bureau 2003a). AMSA (2003b) cites a "combination of aging infrastructure, expectations of higher quality service, a growing population, and increasingly expensive federal regulations" as contributing to increased O&M costs.

Since 1970, total public investment in wastewater infrastructure (capital) and O&M exceeded $658.4 billion (EPA 2001f). According to ASCE, water and wastewater systems are the second largest public works infrastructure in the country (ASCE 2003). This infrastructure includes:

Figure 9.2

State and Local Expenditures on Wastewater O&M, 1970-2000 (EPA 2000c, U.S. Census Bureau 2002, 2003b)

The majority of O&M expenditures are borne by local governments. The Census Bureau does not, however, report state and local expenditures separately.



- 16,202 wastewater treatment facilities;
- 21,264 sewer systems (both CSS and SSS);
- 100,000 major pumping stations;
- 584,000 miles of sanitary sewers;
- 200,000 miles of storm sewers; and
- 140,000 miles of combined sewers (EPA 2001g and 2003b).

9.3 What Has Been Spent to Control CSOs?

Federal funding for CSO control projects began in 1965. Although some communities financed CSO controls through the Construction Grants Program, investment in wastewater infrastructure during the 1970s and 1980s was focused on POTW upgrades to secondary and advanced treatment and expansion (EPA 2001a). Federal funding for CSO projects through the Construction Grants Program totaled $3.4 billion.

Since 1988, the CWSRF has been used to provide loans to CSO communities. CSO projects financed under the CWSRF total $3 billion (EPA 2003j). As shown in Figure 9.3, total state and local expenditures reported under the CWSRF program for CSO projects have increased to $0.44 billion per year in 2002. The exact percentage of total annual municipal investment in CSO control projects funded through the CWSRF is not known. Some communities participate in the CWSRF for only a portion of their CSO financing; others do not participate in the program at all.

Statewide information on past expenditures for CSO control is available in some states. Two coordinated surveys were conducted in Michigan in 1999 to obtain community and state information on CSOs, SSOs, and other water pollution control efforts (SEMCOG

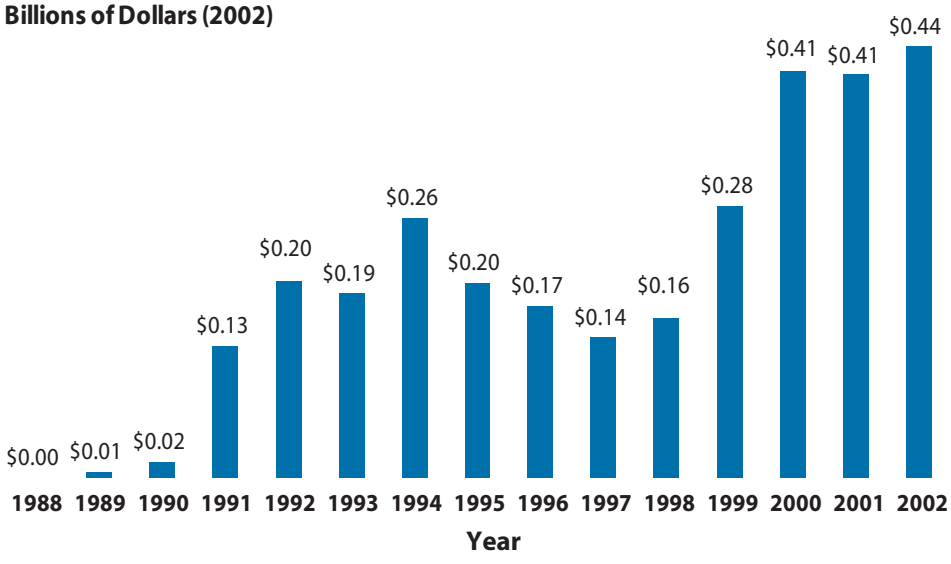


Figure 9.3

CWSRF Annual Expenditures for CSO Projects, 1988 - 2002 (EPA 2003b)

This figure shows state and local expenditures reported under CWSRF Category V (CSO correction). Some communities participate in CWSRF for a portion of their CSO financing; other CSO communities do not participate at all.

HUD and CWSRF Funding Used to Fund Sewer Separation: Agawam, MA

The Town of Agawam, Massachusetts had 132 miles of combined sewer and found sewer separation to be a cost-effective CSO control. The town spent a total of $5.85 million to implement CSO-control measures. Funding was provided through a Housing and Urban Development (HUD) grant in the 1970s for limited sewer separation. CWSRF loans provided $2 million for a pump station upgrade (1996-1997) and $3.5 million to complete the sewer separation (1999).

2001; PSC & ECT 2002). Capital CSO control expenditures by 63 Michigan communities exceeded $1 billion between 1989 and 1999 (PSC & ECT 2002). It should be noted that few of Michigan's CSO communities began implementing controls prior to 1989.

No comprehensive source of individual municipal expenditures for CSO control exists. Through this report effort, however, EPA compiled expenditures to date for 48 CSO communities (Appendix M). These expenditures total $6 billion, ranging from $134,000 to $2.2 billion per community. Information on the unit costs of specific control technologies used by communities to reduce CSOs is available in the technology decriptions provided in Appendix L.

9.4 What Has Been Spent to Control SSOs?

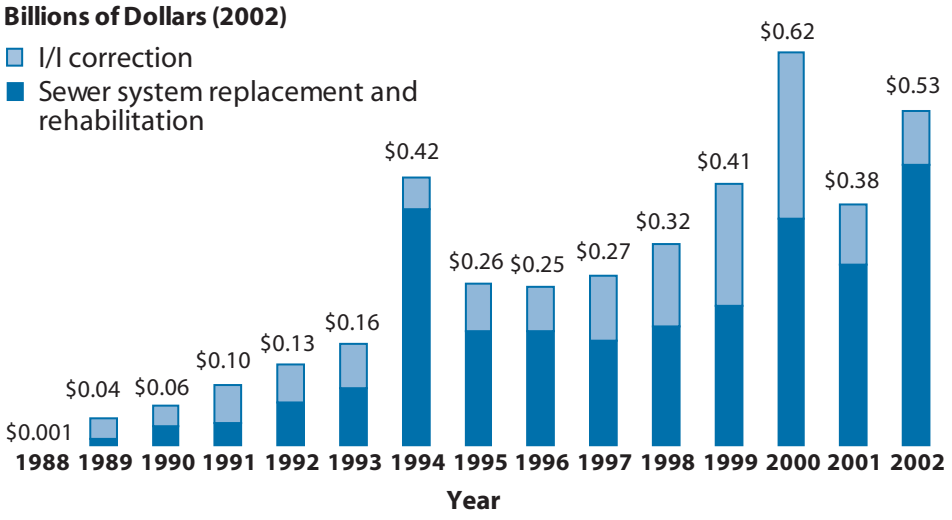
Many of the expenditures associated with controlling SSOs are costs associated with renewing aging sewer system infrastructure. This makes separating costs specifically associated with SSO control from standard sewer system O&M costs difficult.

The CWSRF does not explicitly track expenditures related to SSO control. The CWSRF, however, does track "I/I correction" and "sewer system replacement and rehabilitation" expenditures. For the purposes of this report, these CWSRF categories of expenditures are used as a surrogate for SSO capital projects, with the understanding that they may

Figure 9.4

CWSRF Annual Expenditures for I/I and Sewer Replacement/ Rehabilitation (EPA 2003j)

Although the CWSRF does not specifically track expenditures related to SSO control, spending related to I/I correction and sewer system replacement and rehabilitation may serve as a surrogate for SSO capital projects. These categories, however, may overestimate CWSRF expenditures on SSO control.



overestimate CWSRF expenditures on SSO control. As shown in Figure 9.4, total state and local spending through the CWSRF on I/I correction (Category III-A) and sewer system replacement and rehabilitation (Category III-B) was $0.53 billion in 2002. From 1988 to 2002, expenditures totaled $4.0 billion. Spending in these areas has increased over the last several years and now exceeds expenditures for CSO projects under the CWSRF program (EPA 2003j). It should be noted that communities may have reported expenditures on SSO projects under other categories, and not all communities participate in the CWSRF.

Some local cost information on expenditures to control SSOs was obtained as part of the municipal interviews conducted for this report (Appendix C). These communities had service populations ranging from 75 to 615,000 people. Of the 45 communities with SSSs that participated, 29 communities provided cost information on either capital or O&M annual expenditures on SSO control. As shown in Table 9.1, the total annual capital and O&M expenditures for these 29 communities totaled $196.8 million. The total annual expenditures varied with population served, from a minimum of $20,000 in one small village to nearly $96 million in a major metropolitan area.

The cost of SSO control can vary significantly, depending on the size and condition of the SSS, the technologies chosen to reduce SSOs, and regulatory requirements. Information on the unit costs of specific control technologies used by communities to reduce SSOs is available in the technology descriptions provided in Appendix L.

9.5 What Does it Cost to Maintain Sewer Systems?

As discussed in Section 9.2, the current capital investment by federal, state, and local sources in wastewater infrastructure is $13 billion dollars per year. O&M costs exceed $18 billion per year, more than 60 percent of total spending.

As shown in Table 9.2, average annual O&M costs per mile of sewer are highly varible. Various studies have estimated average O&M costs between $3,100-$12,500 per year per mile of

Type of Cost	Number of Communities	Minimum	Maximum	Total
Capital	19	$6,000	$75M	$154.5M
O&M	26	$12,500	$20.9M	$42.3M
Total (capital + O&M)	29	$20,000	$95.9M	$196.8M

Table 9.1

Annual Expenditures in Sanitary Sewer Systems

This table shows annual capital and O&M expenditures for 29 communities with SSSs, which service populations ranging from 75 to 615,000.

Table 9.2

O&M Costs for Sewers

This table shows the average annual O&M costs per mile of sewer. Studies have found that O&M costs can vary widely.

Source	Annual Average O&M costs per mile	Range of O&M costs per mile
WERF (1997)	$8,667	$1,033 - $51,051
ASCE (2000)	$3,100	
WERF (2003)	$12,503	
AMSA (2003a)	$6,212	$300 - $57,000

sewer. A study commissioned by ASCE and EPA on optimizing maintenance of SSSs estimated that utilities should spend, on average, $8,009 per mile annually (ASCE 1999). This study found that it is often difficult to develop comparable unit costs for different O&M techniques.

Communities participating in the interviews for this report also provided information on O&M expenditures. On average, these communities spent $33,000 per mile of sewer per year on capital projects. O&M expenditures averaged $7,886 per mile. These findings are consistent with the aforementioned ASCE, WERF, and AMSA findings.

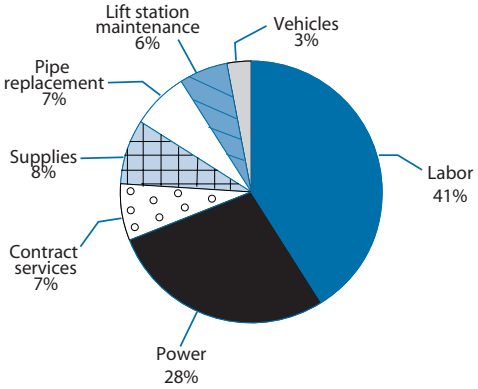
9.6 What are the Projected Costs to Reduce CSOs?

The CWNS is the primary source of data on anticipated capital needs for CSO control at the national level.

In the 2000 CWNS, EPA estimated future capital financial needs for CSO control at $50.6 billion (2000

Sewer System Operation and Maintenance Costs: Santa Margarita Water District, CA

The Santa Margarita Water District in California serves 134,000 people, and owns and operates three wastewater treatment plants and 539 miles of SSSs; the District also maintains unknown miles of private laterals. The current O&M budget for sewer system work is approximately $5 million a year, with more than one-third covering labor costs.



Sewer System Operation and Maintenance Costs: Somersworth, NH

The City of Somersworth, New Hampshire, maintains 24.4 miles of sewers. Prior to obtaining CWSRF for SSO projects, the city typically cleaned less than one mile of sewer each year. CWSRF funding was used to purchase a $325,000 flushing truck. In 2002, the city was able to clean 15 miles of older sewer lines for $140,000. The city currently anticipates spending at least $15,000 per year on O&M. The city also anticipates spending $100,000 to analyze the SSS and the separate storm sewer system and to enter that information into a GIS. These efforts have helped reduce the frequency of SSOs, which cost an average of $1,200 per event for cleanup.

dollars). This estimate is based on LTCPs and CSO planning documents (which indicate varying levels of control) and a model used to estimate missing costs. Thirty-four facilities from 10 states documented CSO needs using LTCPs. These needs, totaling $3.9 billion, account for 7.7 percent of the CSO needs reported in the CWNS. EPA also reviewed other materials (e.g., capital improvement program budgets) submitted by states as part of the CWNS process which documented municipal CSO needs. In compiling this information EPA found documentation of approximately $16.7 billion in needs. The CWNS reports that a cost curve methodology was used to estimate the cost of CSO control where documented needs were not provided. The cost curve methodology is based on communities providing primary treatment and disinfection, where necessary, for no less than 85% of the CSO by volume. Compliance with current state water quality standards could, however, require a higher level of control resulting in additional needs.

Some organizations have compiled information at the state level on estimated capital needs for CSO control. Recent analyses conducted for Michigan estimated that $1.7-$3.4 billion will be needed for CSO communities in Michigan over the next 12 years (PSC & ECT 2002). Estimated costs to control CSOs in West Virginia exceed $1 billion (Mallory 2003).

Community-specific information on projected CSO needs is available from several sources, including LTCPs, the *Report to Congress–Implementation and Enforcement of the Combined Sewer Overflow Control Policy* (EPA 2001a) and the 2000 CWNS (EPA 2003c). Together, these sources provide information on the future capital needs for CSO control in 71 communities (see Appendix M).

Information on O&M costs for CSO control is not available at the national level.

9.7 What are the Projected Costs to Reduce SSOs?

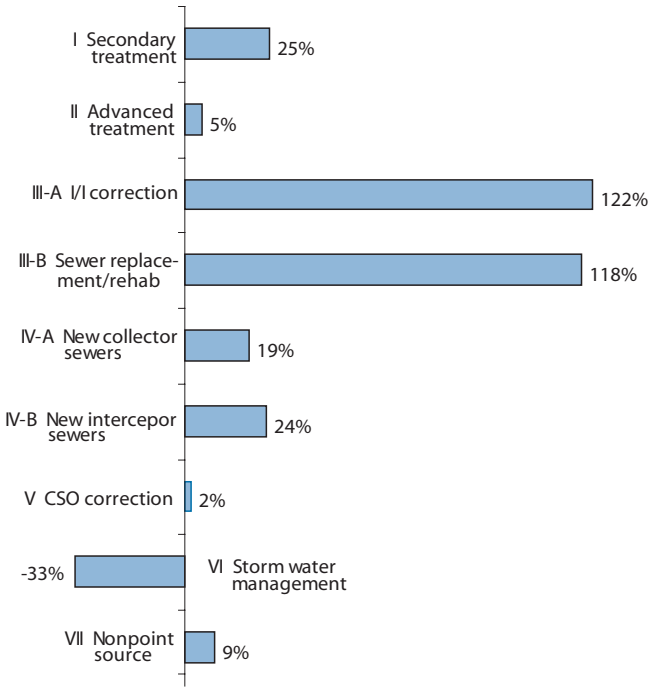
The 2000 CWNS identified $3.5 billion in I/I correction needs (Category III-A) for facilities reported by states as having SSO problems (EPA 2003b). A further $10.4 billion in needs were reported for sewer system replacement or rehabilitation (Category III-B). The total needs for Category III-A and III-B were reported at $8.2 and $16.8 billion, respectively. Needs for Category III-A and III-B account for only 14 percent of the total CWNS. As shown in Figure 9.5, needs for Category III-A and III-B have more than doubled since the 1996 CWNS. This increase demonstrates that communities are planning for the correction of problems that are symptomatic of SSOs (EPA 2003b).

In addition to the documented needs, national modeled cost estimates for reducing SSOs to one overflow every five years for each SSS were prepared for the 2000 CWNS (EPA 2003b). EPA estimated that it would require $88.5 billion in capital improvements to reduce the frequency of SSOs caused by wet weather and other conditions, such as blockages, line

Figure 9.5

Change in Estimated Needs Between 1996 and 2000 CWNS (EPA 2003b)

Between the 1996 and 2000 CWNS estimated needs related to I/I correction and sewer system replacement and rehabilitation have more than doubled, increasing by 122% and 118%, respectively.



breaks, or mechanical/power failures. This estimate does not include costs associated with improved system management and O&M activities necessary to actually achieve the desired level of control. A case-by-case analysis of each SSS is needed to determine the actual level of investment required to control SSOs. EPA notes that these modeled needs should not be added to documented needs because the documented needs may already include costs to address SSOs.

SSSs, including newer systems, typically require significant, ongoing investment in O&M to reduce SSOs. O&M costs in individual communities vary significantly depending on community size, sewer system characteristics, local geology, and climate. EPA believes that needs will be greatest in communities that lack regular preventive maintenance or asset management programs. EPA estimates that the gap between projected needs and current O&M spending over the next 20 years is between $72 billion and $229 billion (with a point estimate of $148 billion), if current spending and operations practices are maintained. However, if municipalities increase spending at the rate of expected economic growth, the gap largely disappears (EPA 2002a).

9.8 What Funding Mechanisms are Available for CSO and SSO Control?

Significant capital and O&M expenditures are often required to control CSOs and SSOs. Detailed descriptions of various finance mechanisms and case studies can be found in EPA's *SSO Fact Sheet Financing Capital Improvements for*

SSO Abatement (EPA 2003k) and in *CSO Guidance for Funding* Options (EPA 1995a). The following sections provide an overview of common financing options for capital projects, including self-financing, CWSRF loans, and federal and state grants. Financing options for debt repayment and O&M costs are more limited and often rely solely on self-financing.

9.8.1 Self-financing

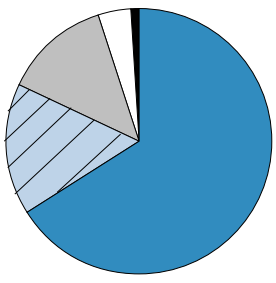
Self-financing is the most common financing option used for CSO and SSO control. Self-financing relies on local revenue sources including:

- Fees – user charges, property taxes, hookup fees, development charges, assessments, permit fees, and special levies.
- Bonds – general obligation and revenue bonds.
- Other local income sources – reserves or fund transfers, interest payments, sales, and other mechanisms.

The AMSA Financial Survey–2003 documents that local sources (i.e., fees, bonds, and other sources) have been used to fund between 90 and 95 percent of capital investment and operating funds for wastewater infrastructure between 1992 and 2001 (AMSA 2003a). The distribution of revenue sources based on AMSA's most recent financial survey is presented in Figure 9.6.

AMSA's recent financial survey notes that, when adjusted for inflation, residential service rates have decreased slightly since 1999, while rates for industrial customers have increased for some pollutants and decreased for others (AMSA 2003a). Specifically AMSA stated:

> *"The overall average residential sewer service charge from 1999 to 2002 rose 7.6 percent from $216.02 to $232.59 per year ($19.38 per month) for a single-family residence (for common 1999 and 2002 survey respondents the increase was only 6.0 percent). Adjusting for inflation, average residential sewer rates have actually decreased by 0.3 percent from 1999 to 2002 (1.9 percent for common agencies). For industrial customers, inflation-adjusted rates for volume (in dollars per 1,000 gallon) and BOD have increased by 1 and 4 percent, respectively, since 1999, while inflation-adjusted rates for suspended solids have decreased by 2 percent from 1999 to 2002."*



Revenue Sources	Percent
Local fees	66%
Other sources	16%
Bonds	13%
CWSRF loans	4%
Federal & state grants	1%
Total	**100%**

Figure 9.6

Revenue Sources for Municipal Wastewater Treatment (AMSA 2003a)

Self-financing is the most common option used to fund capital investments and O&M activities for wastewater treatment systems.

The costs associated with the control of CSOs and SSOs can be substantial and are likely to be borne mainly at the local level. Planning is needed to spread costs over time, as appropriate, in developing comprehensive, long-term programs.

9.8.2 State and Federal Funding for CSO and SSO Control

State and federal funding can offset some expenditures for capital projects needed to control CSOs and SSOs. A local match is typically required for state and federal funding, which can create debt repayment pressures for some communities (EPA 2002d).

Clean Water State Revolving Fund

CWSRF programs operate much like banks that are capitalized with state and federal contributions. CWSRF monies are loaned to communities for planning, design, and construction of environmental infrastructure. Loan repayments are recycled back into the program to fund additional projects.

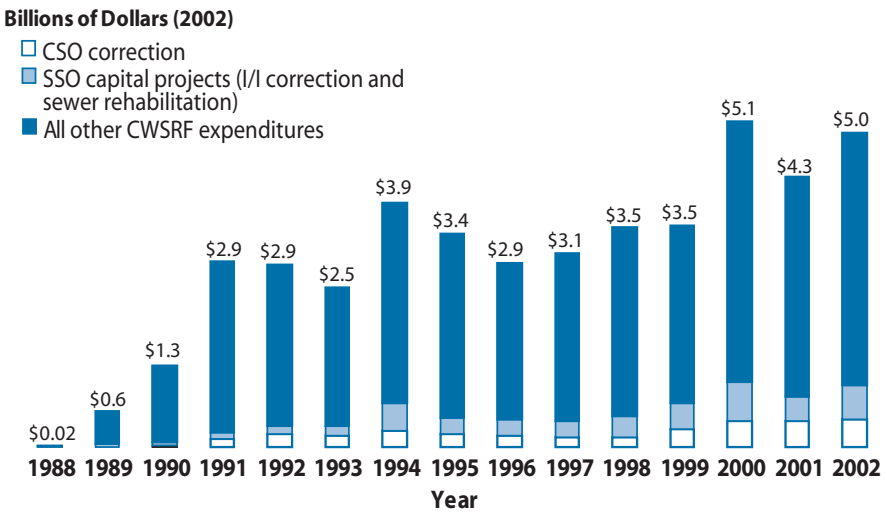
The CWSRF is the federal government's major funding mechanism for financing capital improvements in wastewater infrastructure, including projects to address CSOs and SSOs. The CWSRF is used by states to provide loans at or below market interest rates, purchase existing local debt obligations, and guarantee local debt obligations. Loans are not available for O&M or other non-capital I/I reduction activities (e.g., downspout disconnection programs). As shown in Figure 9.7, the total expenditures under the CWSRF have increased since 1986, as has the amount being spent on CSO control (Category V) and on I/I correction and sewer repairs or rehabilitation (Category III-A and III-B, a proxy for SSO capital) projects.

Total assets of the CWSRF program exceed $42 billion. States have significant control over the CWSRF funds. States set loan terms, including maximum loan amount, fees, interest rates (from zero percent to market

Figure 9.7

State and Local Expenditures Under the CWSRF Program for CSO Correction and SSO Capital Projects

Total expenditures under the CWSRF have generally increased since program inception in the late 1980s.



rate, sometimes on a sliding scale based on community economics), repayment periods (up to 20 years), requirements on repayment dollars, prioritization requirements, and many other features of the program. In some cases, legislative approval is required for changes. Twenty-six states are leveraging the federal funding by issuing bonds. States can also tailor their CWSRF programs to leverage a number of financing mechanisms to make funding opportunities more attractive for communities. Options include loans; refinancing, purchasing, or guaranteeing local debt; and purchasing bond insurance.

Federal Grants

As discussed in Section 9.3 of this report, federal water pollution control grants for CSO control were available as early as 1965. The federal Construction Grant Program was used extensively during the 1970s and 1980s to fund construction of wastewater infrastructure, and several communities used this program to fund CSO projects. The program was phased out in the late 1980s in favor of the CWSRF.

Several other grant programs—the Rural Utilities Service Grant Program, the Economic Development Administration Grant Program, and Community Development Block Grants—also are used for CSO and SSO control projects, but they are only available to small and economically disadvantaged communities.

State Grants for CSO Control

Twenty-eight states have grant programs specifically to help communities implement CSO projects (EPA 2001a). These programs vary significantly in funding level and restrictions; many incorporate CWSRF loan funding. Most of these state programs are targeted at small

CWSRF Loans Fund SSO Control: Lawton, OK

The City of Lawton, Oklahoma, is using CWSRF loans along with utility rate increases to fund rehabilitation and replacement of the SSS. The project is separated into three 7-year phases. The first phase ends in 2004. By establishing a Sanitary Sewer Technical Division for design in May 1998 and a Construction Division in January 1999, the city has been able to complete many of the tasks associated with this project on its own. While costs for Phase I were estimated to be $22 million, actual costs held to $16.8 million (see table below). This cost difference is the result of city efforts to use in-house designers and contractors. Actual costs for the remaining phases of this project are expected to be substantially lower.

Contract and Actual Costs for Lawton, OK SSS Rehablitation Project

Phase	Contract Cost	Actual Cost	Projected Acutal Cost	SRF Loan
I	$22M	$16.8M	--	$15M
II	$37M	--	$28M	$28M*
III	$40M	--	**	--

* Lawton has qualified for this loan but has not borrowed the money yet.

** It is too early for a projected cost for Phase III.

State Grants for CSO Control: Hartford and New Haven, CT

Connecticut's state grant program for CSOs has provided $173 million to eight communities. Without this funding, the City of Hartford would have been unable to proceed with CSO control, because independently the city could not issue $80 million in debt. The state grant program also allowed the City of New Haven to meet its 12 to 15-year schedule for the LTCP, and the program kept user rates below EPA's affordability cap (EPA 2002d).

and/or economically disadvantaged communities, and often have fairly low funding levels.

States with grant programs for CSO control include Connecticut, Vermont, and Maine. Connecticut established a CSO grant program in 1986 that provides grants for 50 percent of the federal eligible project costs, and a CWSRF loan at 2 percent interest for the remaining costs. Vermont has a similar program that requires a 25 percent local match, provides a 25 percent grant for construction costs, and allocates CWSRF loans for the remainder. Maine has a state bond issue for $2.4 million that funds grants awarded for 25 percent of the cost of development of CSO Master Plans, the functional equivalent of an LTCP.

State Grants for SSO Control

Oklahoma and North Carolina are examples of states with targeted grant programs, primarily aimed at making funding more readily available for rural areas, that have been used for SSO control projects. Oklahoma's Water Resources Board administers the CWSRF, provides low-interest bonds, and provides competitive funding through a Rural Economic Assistance Program (REAP). REAP provides grants between $50,000 and $100,000 for towns with populations between 500 and 1,000. The state has awarded 379 REAP grants for a total of $32.7 million. North Carolina's General Assembly funded a program of grants called the High Unit Cost Program through issuance of state bonds in 1987 and again in 1993.

State Grants for CSO Control: Springfield and Rutland, VT

Vermont's grant program helped the Town of Springfield make CSO projects more acceptable to voters. The town recently finished a $4 million project for which it received $1 million in state grant funds and a 50-percent loan at close to zero-percent interest. In Rutland, the Commissioner of Public Works also stated that grant funds were beneficial and helped keep user rates down (EPA 2002d).

State Grants for SSO Control: Nowata, OK

Nowata, Oklahoma, secured $250,000 from the Community Development Block Grant Program and $79,000 from the Oklahoma REAP grant program to replace 7,000 feet of failing sanitary sewer line. Prior to receiving the grants, Nowata was able to replace 3,000 feet of sewer. The city plans to replace an additional 3,000 feet in the next five years. The grants represented a significant source of funding to the Maintenance Department, which operates with a $190,000 annual budget.