EFAB Advisory

Environmental Financial Advisory Board

PUBLIC SECTOR OPTIONS TO FINANCE ENVIRONMENTAL FACILITIES

The views and opinions expressed in this advisory do not represent those of the U.S. Environmental Protection Agency, nor are they intended to reflect consideration of other fiscal issues which may be overriding in terms of Administration domestic policy.

March 13, 1992

Mr. William K. Reilly
Administrator
U.S. Environmental Protection Agency
Washington, DC 20460

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Dear Mr. Reilly:

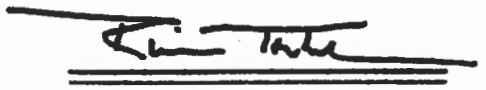
I am pleased to transmit to you this Advisory of the Environmental Financial Advisory Board (the Board). This report describes problems that state and local governments face as they attempt to keep pace with the levels of investment required to meet national environmental goals. The report also presents alternative management and funding approaches that the Agency may wish to consider as it works toward facilitating greater investment at the state and local levels.

The Board examined changes to existing financial institutions and the establishment of complementary institutions that could help ensure the nation's environmental investment needs are met in an efficient and timely manner. The Board considered:

- Taking regular inventories of national environmental program costs;
- Improving the effectiveness of the SRF program;
- Evaluating the feasibility of trust funds as new mechanisms for directing funding support to state environmental programs; and
- Examining dedicated fee systems as sources of funding for federal and state environmental programs.

I want to thank George Raftelis, Chair of the Public Sector Workgroup for his leadership in producing this Advisory. The Board is committed to helping EPA address the issues raised in this Advisory and will gladly provide supplementary material, if requested. We appreciate the opportunity to assist the Agency in its work, and look forward to continuing this dialogue in the future.

Respectfully submitted,



Richard Torkelson, Chair
Environmental Financial
Advisory Board

CONTENTS

EXECUTIVE SUMMARY

The Environmental Financial Advisory Board (the Board) was established in August 1989 to counsel EPA on ways to enhance investment in environmental facilities. The Public Sector Workgroup was formed within the Board to explore public sector strategies that could enhance total investment in environmental facilities.

BACKGROUND

The cost of maintaining a clean environment is growing rapidly. According to the *Cost of Clean* report, annual public expenditures in drinking water, water quality, and solid waste management must increase by over 17 percent between now and the end of the century just to maintain current standards. State and local investment alone is expected to rise by almost a third over the same period. Furthermore, state and local governments will be responsible for an increasing share of total public expenditures -- their share will rise from 88.5 percent to almost 99 percent of total public expenditures required to maintain current standards between 1988 and 2000.

Some state and local governments may be unable to keep pace with these escalating requirements. In particular, the Board identified three potential obstacles to the successful and timely achievement of the nation's environmental goals:

- The inability of some small and economically disadvantaged communities to access publicly available capital or other funding sources at reasonable terms;
- Limits on local governments' ability to debt-finance environmental projects; and
- Limits on the effectiveness of government-sponsored financing mechanisms as an alternative to municipal debt markets.

PUBLIC STRATEGIES FOR FINANCING ENVIRONMENTAL FACILITIES

The Board considered several options that could help state and local governments meet the financing challenges they face. The first, which is independent of the others, calls for consistent, timely accounting of the public costs of meeting national environmental mandates. The second two options consider incremental adjustments to existing public finance institutions and new public sector finance alternatives. The final option looks at potential revenue sources that could be tapped to help finance environmental investments.

Regular Inventory of Environmental Protection Costs

The Board first considered the availability of current data on the public costs of meeting environmental mandates for wastewater, drinking water, and solid waste infrastructure. Cost data for drinking water and solid waste initiatives are not collected in a comprehensive way or

on a recurring basis, as they are for wastewater facilities. Such data would provide a valuable tool to assess the financial impact of mandates, evaluate financing strategies, and measure progress toward environmental goals. The Board therefore urges EPA to undertake a regular comprehensive inventory of the public sector costs of environmental protection.

Improving the Effectiveness of the SRF Program

The Board supports administrative and statutory improvements to the current SRF program as a near-term priority. The Board examined four options EPA could recommend to Congress. It could seek increased flexibility, allowing states to use some portion of their overall SRF assets for program administration after 1994. Further modifications to the present rules include examining whether the SRF should play a role in offering financial support for public-private partnerships where funds would be used for public-purpose environmental investments. The Board also considered improving financial assistance to small communities under the Title VI SRF program. Finally, the Board examined the option of funding the SRF program at fully authorized levels for FY 1993-94 as well as appropriating the difference between the amounts authorized under Titles II and VI and those actually appropriated to date, or alternatively, funding the SRF program at $2.0 billion per year for 1993 and 1994, or for 1993-98, following the Administration's budget request for FY 93. The Board strongly endorses this recent and timely action on the part of the Administration, and encourages consideration of maintaining this level of funding through 1994 and the next reauthorization period. The Board encourages that all of the above options be considered by EPA.

Public Finance Options for Environmental Protection

To the extent that further federal funds for capital financing become available, the Board considered several public finance options for the delivery of that assistance. These options include: directing the funding to the current SRF program; channelling funds into an SRF program with expanded eligibilities; and using the funds to help capitalize a national trust fund or, alternatively, individual state trust funds.

Continued Federal Funding of the SRF Programs

If further federal funding is made available, the Board supports directing such funds to the current SRF programs, as they have served as a successful mechanism in providing assistance for wastewater investments.

However, the Board generally does not support the creation of set-asides within the SRF to target national priorities. Separate accounts that assign a particular funding priority to a subset of programs can be rigid and unresponsive to state needs and priorities. In contrast, the Board supports the establishment of set-asides based on the recipient group targeted and type of assistance offered, such as set-asides for small system projects. In addition, the Board feels that the cost impact of Title II equivalency requirements and cross-cutters should be evaluated in the event that federal funds become available. It may be advisable to limit the scope of these requirements if their costs outweigh the public benefit.

Expansion of the SRF Program

The wide variety and magnitude of public health and environmental needs for physical facilities argue for additional flexibility in the SRF program for assisting multimedia eligibilities. In response to this need, the Board endorses an expansion of eligibilities for the SRF program contingent upon further federal funding. The Board urges that an evaluation of the impacts of federal cross-cutting authorities be undertaken as part of this approach as well.

The Board is concerned that expansion not undermine the original financial objectives of Title VI. Thus care must be taken not to compromise the fiscal integrity of the SRF. The most compelling policy argument for expanded eligibilities centers on hardship situations where communities cannot afford to proceed unless grants or principal subsidies, in some combination with loan assistance, are available. The financial risk is that SRF grants could deplete the corpus of the program and, at the same time, reduce hard-won acceptance of its credit functions. The use of principal subsidies, however, such as those proposed in New York, would not deplete the corpus of the SRF.

If hardship grants are authorized for expanded and current eligibilities of the SRF, the Board urges that they be made from a financial set-aside created specifically for that purpose.

Environmental Trusts

The Board considered national and state environmental trusts, to serve both program and capital assistance functions. An environmental trust as conceived here is neither a competitor nor an alternative to the SRF program. On the contrary, a trust could serve a valuable capital formation function in many states, not only to assist the SRF, but also other state financing programs. The Board believes a properly designed trust could perform these functions with fee revenues and certain other authorities independent of annual federal appropriations. Given the uncertainty of future federal funding, a trust could play a particularly important complementary role in building state capacity and financing multimedia environmental infrastructure.

The Board recognizes that state environmental trusts and fee systems have been established by some states and shares the concern that federal actions not disrupt current state initiatives in this regard. The federal role in expanding the use of state trusts should be one of active encouragement through a number of incentives, but without penalty for nonparticipation.

Although the trust concept has several major concerns, the Board believes that the potential inherent benefits warrant a cross-program evaluation by EPA and careful consideration by federal and state policy makers. As part of the trust evaluation, the Board recommends that EPA examine the state trust concept as an alternative to the national trust, supported by fee revenues and federal incentives. The evaluation should stress the advantages and limitations of linking the state trust with the SRF and should include incentives and sources of revenue. The evaluation should also consider modifying the SRF itself to accommodate the broader multimedia functions of a state trust. The latter becomes particularly advantageous if eligibilities are expanded for the SRFs.

Dedicated Fee Systems as a Source of Funding for Federal and State Environmental Programs

The Board urges the Administration to support and encourage the adoption and expansion of state environmental fee systems and to investigate opportunities to establish national fee systems. The latter activity must be carefully evaluated for potential duplication with disruptive effects on state programs. Further, in many cases state environmental programs cannot, and probably should not, be totally dependent for funding on fee-based revenues. The strength of state programs is enhanced by their use of and access to a diversity of funding sources, including federal appropriations.

I. INTRODUCTION

Financing the restoration and protection of the environment presents a challenge that may be increasingly difficult to meet. Total public investment (capital outlays as well as expenditures to cover operating and maintenance costs) in drinking water, water quality, and solid waste management totalled $22.78 billion in 1988.[1] Annual investments will have to grow to $26.74 billion by 2000 -- an increase of 17.4 percent in constant dollars -- just to maintain current levels of environmental quality. State and local investment will have to increase by 31 percent over the same period, from $20.17 billion in 1988 to $26.42 billion a year by 2000. Compliance with new regulations is expected to push state and local requirements even higher, to a total of $29.02 billion by 2000.

If 1988 levels of investment are maintained, state and local governments may face a financing gap of almost $9 billion per year by the end of the century. If costs are not reduced, state and local investment in the environment will need to increase by 3.1 percent per year for the next 12 years to meet expected levels of environmental quality. This is substantially faster than the average expected rate of growth in US GNP over that period, which is forecast to equal 2.37 percent per year from 1990-2000.[2] State and local demands for capital alone will need to rise from $4.7 billion per year in 1988 to $5.4 billion per year by 2000 to maintain current standards, an increase of $700 million per year.

A. PUTTING PUBLIC FINANCE PROBLEMS IN PERSPECTIVE

From a public finance perspective, it is questionable whether state and local ability to borrow can keep pace with the rising expenditures anticipated under current policy. In particular, environmental investments may be increasingly delayed, as small and economically disadvantaged communities often cannot get access to or afford the cost of capital. Delays may also result from state limits on local indebtedness that can raise the cost of capital financing for local governments. Examples of these problems are described below.

Small and Disadvantaged Communities

Small and economically disadvantaged communities frequently do not have established credit ratings, making it difficult and costly for them to issue bonds for capital projects.[3] Those communities that can issue bonds pay high costs of capital because the fixed costs of issuance impose a greater burden when spread over a smaller bond issue and may pay a higher yield because of their credit risk. Communities without sufficient credit experience may be required to secure bond insurance that raises the cost of capital further. Small size alone raises unit capital costs because such communities cannot take advantage of economies of scale. Since most environmental facilities serve towns with small populations, this problem is widespread. For example, approximately 81 percent of the wastewater treatment plants in operation in 1988 handled less than 1 million gallons per day (typically adequate for populations of 5,000-10,000).[4] Almost 88 percent of the nation's community water systems serve fewer than 3,300 people, and most publicly owned landfills are small, accepting less than 30 tons of refuse per day, the average amount generated by a community of up to 8,400.[5]

State Limits on Local Indebtedness

Many local governments face restrictions on their levels of indebtedness. While these restrictions are intended to protect the financial integrity of substate governments, they also increase competition for credit capacity. This means that the rising demand for debt-financed environmental investment will be competing for a growing share of a relatively fixed level of total debt.

Restrictions on indebtedness limit the use of general obligation bonds. Indeed, this is the case in many states that limit total outstanding general obligations of their local governments to a fixed percentage of the value of real property in that locality. As a result, local governments have had to turn more to revenue bond financing, which has led to a general increase in user fees to help pay for the associated debt service.[6] If, over time, debt service exceeds the revenue from user fees, a community's credit rating may suffer along with its ability to issue future debt. User fees can support only a certain level of revenue bond debt. An economically disadvantaged community's ability to raise its fees to support further debt may be constrained once fees reach beyond one percent of the median household income for each service. Increasing debt beyond this point will cause its debt coverage to fall, and hence its solvency will come into question.[7]

In Boston, for example, the current average annual combined water and sewer bill is about $337 per household. This is expected to rise substantially once the costs of the federally mandated clean-up of Boston Harbor are added. By 1996, the average combined bill is expected to equal $999, and by 2000 it is expected to grow to over $1,300 per year, per household.[8] Not surprisingly, a local action group is attempting to get rates rolled back to their 1988 levels.[9] If this occurs, the municipality's debt coverage may be seriously reduced, damaging its credit rating, limiting its market access, and consequently hampering its ability to meet future financing requirements. While not all examples are equally dramatic, other cities also are fast approaching the one percent threshold in each service.[10]

Existing Alternatives to the Municipal Debt Markets

The SRF program was introduced to replace the construction grants program in the financing of wastewater facilities, placing program responsibility on the state and hence closer to actual needs. As loan repayments accumulate and revolve as new loans, SRFs are expected to create sustainable, self-sufficient, and long-term sources of capital for local water quality investments. Finally, SRFs were intended to leverage federal resources in order to ameliorate more of the nation's water quality problems at a quicker pace.

Various statutory restrictions on the uses and sources of funds in the program may act to lessen its effectiveness. These restrictions include limits on administrative expenditures, the application of federal cross-cutting authorities, and the exclusion of the private sector from funding assistance.

B. PURPOSE OF THIS ADVISORY

The Board believes it is both necessary and timely for EPA to develop positions on promising public finance strategies to respond to these problems. More generally, the elevation of environmental finance as an agency theme is an essential step to giving more recognition to the ways and means of paying for pollution prevention, control, and abatement.[11] As an Agency priority, the development of environmental financing strategies would help:

- Underscore the fact that national environmental objectives cannot be met without adequate fiscal capacity to support state and local environmental programs;
- Reinforce the validity and role of such strategies as a vital part of achieving national objectives;
- Focus on the approaching reauthorizations of key environmental laws as near-term opportunities to bring finance issues to the forefront; and
- Stress the importance of imagination, vision, and innovation in improving existing financing mechanisms and in evaluating new ideas and approaches.

In serving these broad purposes, this Advisory proposes several strategies to help state and local governments finance environmental facilities. These options include:

- Institutionalizing the measurement of the public costs of environmental mandates in water quality, water supply, and solid waste management;
- Improving the effectiveness of the SRF program in achieving the nation's water quality goals;
- Exploring the feasibility of several new public financing institutional approaches that would build state capacity and assist local governments; and
- Examining fee systems as a means of financing environmental programs.

II. REGULAR INVENTORY OF ENVIRONMENTAL PROTECTION COSTS

The biennial Needs Survey documents the capital cost of bringing all publicly owned wastewater treatment works into compliance with the Clean Water Act, as well as the cost of meeting the needs of the population 20 years hence. The report is required and defined by sections 205(a) and 516(b) of the Clean Water Act. Cost estimates presented in previous surveys served as a basis for authorization and allocation of funds to states under the construction grants program. The institutionalization of a similar survey in other environmental areas -- i.e., drinking water and solid waste management (and the expansion of the current survey to measure costs of nonpoint source pollution, stormwater runoff and other water quality areas not currently measured) -- would demonstrate to Congress the financial requirements of meeting a fuller range of national environmental mandates. Such a measure would also provide information crucial to states faced with rising costs of compliance in all three media. In particular, it would assist states in budgeting and allocating capital, without prejudice for environmental media.

A. STATEMENT OF THE ISSUE

A regular inventory of the cost of national environmental mandates would help the Administration and Congress understand the financing challenges faced by state and local governments and provide a basis from which to measure progress in achieving environmental goals. Such data would help policy makers select the most appropriate environmental goals and establish the level of federal support to state and local efforts to achieve those goals. The information also would help state and local governments allocate limited funds to competing environmental priorities. Yet, while the joint EPA/state biennial Needs Survey provides this type of information for wastewater treatment plants, comparable estimates are not required by statute and are unavailable in drinking water or solid waste programs.

B. POTENTIAL APPROACHES

Expansion of the Needs Survey

One potential approach to filling the cost-assessment gap would expand the joint EPA/state biennial Needs Survey of municipal wastewater treatment facilities to include estimates of related water quality needs such as stormwater runoff controls, nonpoint source programs, and estuary management activities. In addition, EPA should consider the initiation of separate but similar needs surveys for community water supply and municipal solid waste management facilities. Special care would need to be taken by EPA and the states to fully define categories of need in these two media, and active state participation in the collection and evaluation of such data would be crucial to ensure that needs were accurately represented.

Benefits and Concerns

The primary benefit of using this approach is the improved accuracy that would result, as states would individually collect data and submit estimates of need. Second, Congress would be apprised of state and regional needs for each media.

However, institutionalizing the Needs Survey in other media raises the question as to whether states actually have the raw data available for such an inventory. Definitions of need in drinking water and solid waste currently have no statutory basis and states are only beginning to measure the costs associated with these newer areas of concern in water quality. In the absence of readily available data, therefore, another concern is the cost of establishing new data collection initiatives and ensuring that they are roughly comparable across the 50 states.

Institutionalizing the "Cost of Clean Report"

A second option would annualize EPA's periodic report, *Environmental Investments: The Cost of a Clean Environment* (the Cost of Clean Report).[12] This report covers all three media (as well as other environmental programs), and projects capital as well as operating and maintenance costs over a 10-year period for three scenarios: maintaining current standards, meeting new regulations, and achieving full implementation of current standards.[13] Further, it breaks down cost estimates into U.S. EPA, non-EPA federal, state, local, and private shares.

Benefits and Concerns

The primary advantage of using the Cost of Clean Report is that it is an existing measurement tool that estimates required capital and operating expenditures in the three media. Another advantage is its relatively low cost. Because Congress does not currently make decisions regarding authorization or allocation of capital grants for municipal drinking water or solid waste facilities, an institutionalized Cost of Clean Report may be a cost-effective way to ensure that the basic information on environmental costs is available.

However, the Cost of Clean Report projections in wastewater are based on the Needs Survey data. For consistency, a similar approach would be required for the other media, implying that the Cost of Clean approach might necessitate expansion of the Needs Survey anyway. Thus, rather than representing an alternative option, a successful, annualized Cost of Clean Report may only be possible in conjunction with the first option presented.

A second concern is that the information in the Cost of Clean Report is aggregated for the nation as a whole, rather than state-by-state. Thus it is of limited use in helping states meet their planning needs for capital investment, especially for projects requiring cross-media, risk-based funding. In addition, the financial impact of federal regulations on individual states is impossible to assess for federal policy purposes if this information is presented in an aggregate form.

A final benefit of using either report is that undertaking a regular inventory of the public costs of national environmental mandates in several media would help EPA and the states administer various geographic initiatives, including for example, the Great Lakes Initiative, the

Gulf of Mexico Program, the Chesapeake Bay and Puget Sound Programs, and the Long Island Sound Program.

However, as currently structured, neither report includes an assessment of the costs of meeting environmental goals conditioned on pollution prevention measures being implemented. There is growing evidence that pollution prevention can pay for itself by reducing the overall waste stream and therefore the costs associated with meeting environmental standards. Inclusion of this kind of cost assessment would provide an accurate estimate of needs and therefore help states and the federal government increase the efficiency of their environmental investments. In making decisions regarding the allocation of investment funds, an expanded report would allow comparisons to be made on the return per dollar, with and without pollution prevention measures.

Despite several caveats in using either or both reports described above, the Board recommends that the public capital costs of environmental mandates be estimated on a regular basis, in the three media of water quality, drinking water, and solid waste management.

III. IMPROVING THE STATE REVOLVING FUND (SRF) PROGRAM

State Revolving Funds have replaced the construction grants program in the financing of publicly owned wastewater treatment works. The Board evaluated a series of changes to the SRF program that could help reduce the cost of SRF financing, increase funds available to localities, and strengthen the overall effectiveness of the SRF program.

A. STATEMENT OF THE ISSUE

The 1972 Federal Water Pollution Control Act created EPA's Construction Grants Program, which provided federal grants to local governments for the construction of municipal wastewater treatment facilities. Under this program, the federal government has provided over $50 billion dollars over the last 20 years for the planning, design, and construction of sewerage facilities nationwide. In 1981, the program was streamlined, and in 1987, the construction grants program began a four-year phase out of new funds appropriation. Permanent revolving financial institutions, or State Revolving Loan Funds (SRFs), were phased in with federal grant money and state matching funds that will capitalize the funds until 1994. The states finance future wastewater treatment needs and other water quality management activities with loans from these funds, the repayments of which will allow them to revolve their lending ability in perpetuity.

To maintain current standards in water quality, total public expenditures on new capital outlays must exceed $49 billion between 1988-2000.[14] Compliance with new regulations will increase total needs slightly, to $49.2 billion over the period, and achieving full implementation increases total capital requirements to $82.2 billion. The authorized levels for capitalization and implementation of the SRF program under the 1987 reauthorization of the Clean Water Act will fall short of total required expenditures. Total federal funding under Titles II and VI from 1988 to 1994 will equal $12.43 billion, if appropriations in FY 1993-94 equal authorizations.[15] The state match of 20 percent will bring the total to $14.92 billion for the period. These loans will therefore have to "revolve" several times before needs are met. Several states, however, are providing more than the 20 percent match required, or "overmatching" their funds.[16] In addition some states have undertaken bond leveraging activities. Both of these actions will act to increase the total amount of available funds. Overmatch funds alone, for example, would add anther $1.07 billion in funds available and proceeds from leveraging would add as much as $5.8 billion.[17]

Given the magnitude of the needs and the increasing importance of the SRFs in meeting them, the Board considered several improvements that could be made in the program, to facilitate state efforts in meeting the water quality challenges they face.

B. POTENTIAL APPROACHES

The Board examined the merits of a number of changes, including:

- Seeking flexibility in the 4-percent restriction on use of funds, to allow states to use some portion of overall fund assets for program administration after 1994, as several states could otherwise face temporary deficits in their budgets for administration;

- Allowing the SRF to support public-private partnerships for wastewater services;

- Improving financial assistance to small communities under the Title VI SRF program; and

- Funding the SRF program at the authorized levels for FY 1993-94 and appropriating the difference between those amounts authorized under Titles II and VI, and those actually appropriated to date.

Seeking Flexibility in the 4-Percent Restriction on Use of Funds for Administrative Expenses

Currently, states are allowed to set aside up to 4 percent of their capitalization grant to pay for SRF administration.[18] However, when federal capitalization grants begin to decline in 1991 and end in 1994, federally provided funds for administration will similarly decline and end. After 1994, states will have to appropriate funds from state budgets or charge administrative fees to cover the costs of SRF administration, unless they had managed funds to carry them beyond FY 1994. Many states, especially those facing budget deficits, may be unable to provide appropriations. Administrative fees, however, could discourage demand for loans.

To help states avoid short-term deficits that may result, EPA could propose a statutory amendment that would allow states to use some portion of their overall SRF fund assets for program administration after 1994, phasing in this new allowance for administrative costs as capitalization grants are winding down. This strategy would ensure a continuity in state funds available to cover SRF administrative costs.

Since a minimum level of administration is necessary to service outstanding loans and maintain the integrity of the fund, the opportunity to reduce administrative costs is limited. Ordinarily, administrative costs associated with a more mature program would be expected to decline along with loan origination after the federal capitalization grants end. For some SRF programs, however, some costs associated with loan administration will not decline with the drop in loan origination -- for example, the fixed costs associated with administering the portfolio of outstanding loans. In addition, some program managers may find it difficult to reduce staff proportionately. In the years immediately following the cessation of capitalization grants, therefore, overall administrative costs will be high relative to funds available for re-lending. States that did not prepare adequately to cover their administrative expenses are at risk for delayed compliance. These states would probably need to charge administrative fees.

Several states already do this and should be able to cover their expenses. Some states, however, may find they have to levy additional charges once their administrative allowance is reduced to zero, and may still face short term deficits, as is demonstrated in the model outlined below.

The magnitude of the problem may be illustrated by modelling the accounts of eight SRF programs.[19] One method of raising funds for SRF administration is through loan origination fees that, in effect, would add basis points to loan interest rates. The accounts of eight SRF programs were examined to measure the adequacy of administrative funds if either a .5 percent or a 1 percent administrative fee were added to all post-1990 loans.

The model uses states' anticipated administrative costs for each year as the target.[20] Appropriations were estimated to equal 78 percent of authorizations for FY 1993-94, following the Administration's request for 1992 levels. Appropriations for FY 1990, 1991, and 1992 were set at actual levels received and fee percentages were added to interest rates charged for all post-1990 loans.[21] The model assumes loans are disbursed in total, debt service begins one year after disbursement, and that a state's fee surpluses in any year would accrue interest at 8 percent and be used to offset future deficits.[22]

Tables 1 and 2 demonstrate the deficits that each state may face. Over time, as loan repayments grow, these deficits will disappear and states will begin to accrue surpluses.

Table 1: Annual Administrative Net Deficit in Eight States Using a .5% Fee ($ millions)

	1992	1993	1994	1995	1996	1997	1998	1999
Connecticut	-0.77	-1.27	-1.42	-1.60	-1.36	-1.17	-0.95	-0.76
Georgia	1.03	0.96	0.63	0.08	-0.43	-0.46	-0.43	-0.39
New Jersey	-1.61	-3.88	-4.77	-5.27	-5.09	-4.98	-4.93	-4.92
New Mexico	0.35	0.31	0.16	-0.11	-0.24	-0.22	-0.18	-0.09
South Dakota	0.07	-0.09	-0.22	-0.29	-0.24	-0.17	-0.17	-0.17
Tennessee	-0.53	-0.52	-1.41	-1.75	-1.66	-1.59	-1.57	-1.50
Texas	6.98	7.32	6.69	5.03	3.39	1.72	0.026	-1.56
Virginia	2.74	3.09	3.28	3.25	3.35	3.61	3.91	4.27

Table 2: Annual Administrative Net Deficit in Eight States Using a 1% Fee ($ millions)								
	1992	1993	1994	1995	1996	1997	1998	1999
Connecticut	-0.60	-0.77	-0.68	-0.61	-0.13	0.14	0.90	2.15
Georgia	1.11	1.29	1.35	1.33	1.44	1.63	1.93	2.32
New Jersey	-1.44	-3.51	-4.18	-4.45	-4.09	-3.86	-3.76	-3.74
New Mexico	0.37	0.41	0.38	0.27	0.22	-0.20	0.27	0.53
South Dakota	-0.09	0.00	-0.13	-0.18	-0.07	0.06	0.13	0.22
Tennessee	0.59	-0.28	-1.09	-1.32	-1.14	-0.99	-0.96	-0.81
Texas	7.60	9.05	9.97	10.23	10.81	11.64	12.77	14.21
Virginia	2.82	3.36	3.99	4.61	5.53	6.84	8.30	9.94

If this group even roughly represents the nation as a whole, then several states may find they cannot cover their expected administrative costs with a .5 percent or even a 1 percent fee.[23]

Benefits and Concerns

Lifting the restriction on "eligible uses of the SRF" would help prevent such short-term deficits in states that did not act to ensure they would have adequate funds to meet their administrative costs. The primary concern is that some states will jeopardize the long-term lending ability of their SRF to cover short-run administrative costs. In all likelihood, not all states will be ill-prepared to cover administrative costs.[24] Further, there is conflicting evidence as to whether states are planning ahead to cover such costs.[25] In the absence of compelling evidence that administrative shortfalls will be significant and widespread, the Administrator may want to request that Congress maintain some restriction yet allow a portion of fund assets to be used for administrative purposes. This would provide SRF programs some leeway in covering their costs yet protect the original goals of the SRF.

A second concern is the inherent tradeoff that would occur if some portion of fund assets were allowed to be used for administrative purposes. The higher the expenditure on administration, the fewer funds available for lending.

The Board therefore recommends that the restrictions on "eligible activities of the SRF" with respect to the financing of SRF administration be lifted to allow states to use some portion of their overall fund assets for program administration after 1994, phasing in this new allowance for administrative costs as capitalization grants are winding down. Each state would have to be examined in order to determine whether it can expect to run short of funds, and the magnitude of its expected shortfall. Once the extent and duration of each state's expected deficit were measured, the appropriate allowance would be determined.

Allow the SRF to support Public-Private Partnerships for Wastewater Services

The Board considered lifting the limitations on use of SRF monies to finance the publicly owned portion of wastewater treatment facilities. Privatization of wastewater treatment plants gained momentum in the 1980s due to incentives provided in the 1981 and 1982 Tax Reform Acts. Eight wastewater treatment plants were privatized in the early 1980s, one of which has since been sold back to the local public sewer authority.[26] After the 1986 Tax Reform Act, however, most of the earlier tax benefits were lost and no additional fully privatized wastewater treatment facilities have been built in the United States since that time.

At issue is the merit of a federal policy that restricts local choices. In particular, why should SRF funds be restricted to publicly owned treatment works if a locality, for whatever reason, chooses to involve a private partner to improve its delivery of wastewater treatment services? Where private sector involvement can be shown to be beneficial to the public purpose, the removal of this restriction would widen financing opportunities to that sector, and could help ensure timely investments in wastewater facilities.[27]

Benefits and Concerns

Allowing the SRF program to offer assistance in cases of private sector involvement would expand the range of possible financing solutions available to municipalities considering participation by private enterprise. Where such participation could be shown to be beneficial, access to SRF funds could help encourage private sector participation.

In addition, allowing the SRF to support public-private partnerships could increase interest in privatization of wastewater treatment plants. Clearly the benefits of further privatization depend on the individual circumstances. In some cases private sector involvement can reduce the costs of providing environmental services, simultaneously freeing public funds for use in other areas. The private sector may also be able to achieve solutions where local governments cannot, due to legal or political barriers.

There are, however, concerns associated with allowing this use of funds. First, if an SRF has borrowed to provide funds to the private sector, it may face restrictions under the 1986 Tax Reform Act since such loans will have been made out of the proceeds of private activity bonds. The implications under current tax law would therefore need evaluation.[28] Second, states may face political resistance to offering funds to the private sector ahead of municipalities, even where the participation by private enterprise is warranted. Finally, loans to the private sector may require adjustment of the SRF's lending terms, as the alternative financing arrangements available to the private sector differ from those available to the public sector.

There was also concern on the part of some Board members that subsidies to promote public-private partnerships would be more efficiently and effectively delivered through tax incentives instead of through the types of assistance available from the SRF. In addition, some members questioned whether the private sector should receive any subsidy at all.

For the purposes of this Advisory, however, the issue discussed was one of the delivery of a subsidy and the Board would urge that the SRF's role in this delivery be made a primary

issue on the EFAB agenda. (The Board has also recommended that EPA evaluate increasing the flexibility of grant policies to permit the privatization of grant-funded publicly-owned treatment works. The reader is referred to EFAB's *Private Sector Incentives Advisory*).[29]

Improving the Financial Assistance to Small Communities under the SRF Program

In a companion Advisory, *Small Community Financing Strategies for Environmental Facilities*, the Board recommended three ways to improve the availability of Title VI SRF funds to small and economically disadvantaged communities.[30] These included:

- Creating a small community set-aside under Title VI SRFs to provide principal discounts or principal subsidies on SRF loans or direct grants in the case of demonstrated need;

- Creating a new revolving fund exclusively for small communities covering wastewater treatment, drinking water and solid waste management; and

- Extending the SRF loan term beyond 20 years for small communities.

Some barriers to financing affect small communities under Title VI SRFs. In particular, the Board found that small communities may not be able to compete successfully against their larger counterparts for SRF funding, or may not be able to afford that funding where it is made available to them. Small communities may not seek SRF loans because they lack the ability to document needs or meet application requirements, and, finally, they may be unable to finance the operating costs associated with an SRF financed wastewater facility. (For further discussion of these options the Board refers the reader to the Small Community Advisory cited above.) The Board recommends that these options be considered in concert with the other SRF options discussed.

The Board recognizes that set-asides reduce state flexibility in dealing with small communities and grants may deplete the corpus of the SRF itself. (Subsidized assistance other than direct grants could avoid fund depletion, and are discussed in Section IV B, subsection entitled *Expansion of the SRF Program*). The Board expressed the concern that such set-asides be funded through additional federal appropriations.

Funding the SRF Program at Authorized Levels

A fourth option considered funding improvements in the SRF program. A continuation of the capitalization program could help meet point and nonpoint source investment needs. Fully authorized levels could be appropriated for FY 1993-94. Further funding could be made available by appropriating an extra $1.43 billion, which is the difference between amounts authorized under Titles II and VI from 1986 to 1992, and the amounts actually appropriated in those years. This $1.43 billion, while not enough to close the gap between needs and resources, would contribute toward that goal.

The further capitalization could be distributed in several ways. It could be used to increase the FY 1993-94 appropriation; it could be made available in FY 1995-96; or it could be spread over the entire 1993-96 period.

A 50 state aggregate model SRF was developed to illustrate the difference further capitalization could make in helping to close the funding gap. The model uses the total grant program as its initial capitalization. In Case I, it assumes that capitalization equals actual appropriations to the states for 1988-92. Appropriations for FY 1993-94 are estimated to equal 87.5 percent of authorizations, the same as the ratio of 1991 appropriations to authorizations. In Case II, appropriations for 1993-94 are estimated to equal authorizations and the program is further capitalized by the additional $1.43 billion. The model distributes these funds equally in 1995 and 1996.

In both cases the model assumes:

- The full amount of the capitalization grant and state match (20 percent of the capitalization amount) are disbursed each year, at 5 percent interest for a 20 year period;
- Loan repayments are assumed to begin three years after disbursements, based on the average construction time for wastewater treatment facilities; those funds are available for re-lending one year after they are repaid (e.g., a 1988 loan begins repayment in 1991, and that repayment can be re-loaned in 1992);
- Administrative costs use 4 percent of each year's capitalization grant appropriation, and 4 percent of all funds available for re-lending after 1994; and
- Bond proceeds from actual state leveraging activities in the 1988-91 period are added to total funds available for lending in those years.[31]

Based on this model and assuming no additional capitalization, Table 3 shows the total value of projects that will have been financed from the SRF program by 10 years, by the year 2000, and over the 20 year period.

Table 3. Case I: Financing Capacity of the SRF Program Under Current Policy (billions of 1991 dollars)

Projects Financed over 1988-1998 Period	Projects Financed by the Year 2000	Projects Financed over 1988-2008 Period
$21.85	$24.73	$40.61

Under current policy, by the year 2000, the combined SRF program in the 50 states will have been able to fund over $24 billion worth of capital costs for point and nonpoint source

water quality projects, or nearly half the estimated needs assuming maintenance of current standards.[32]

Under the more aggressive capitalization assumptions, the gap can be reduced somewhat. Over 55 percent of needs could be met by the year 2000, assuming maintenance of current standards. This result is summarized in Table 4:

Table 4. Case II: Financing Capacity of SRFs Capitalized Through 1996 (billions of 1991 dollars)

Projects Financed over 1988-1998 Period	Projects Financed by the Year 2000	Projects Financed over 1988-2008 Period
$23.86	$26.99	$44.32

The original $1.43 billion would be translated into a total increase in financing capacity of $3.7 billion over the 20 year period.[33] A significant gap still remains, however.

The Board notes that the Administration's recent FY 93 budget requests $2.0 billion for the SRF program. This changes the funding outlook from that which prevailed at the time the original discussions took place regarding SRF financing.

In order to measure the possible effect of capitalization of the current SRF program at the $2.0 billion level for 1993 and 1994, a third scenario of the model was run. In addition, the Board looked at the outcome of capitalizing the SRF program at $2.0 billion per year for the years 1993-1998. The results of the third and fourth cases are highlighted in Tables 5 and 6.

Table 5. Case III: Financing Capacity of SRFs Capitalized at $2.0 Billion per year for 1993-1994 (billions of 1991 dollars)

Projects Financed over the 1988-1998 Period	Projects Financed by the Year 2000	Projects Financed over the 1988-2008 Period
$24.96	$28.28	$46.43

Table 6. Case IV: Financing Capacity of SRFs Capitalized at $2.0 Billion per year for 1993-1998 (billions of 1991 dollars)		
Projects Financed over the 1988-1998 Period	Projects Financed by the Year 2000	Projects Financed over the 1988-2008 Period
$34.56	$38.44	$63.07

If capitalization for the current program equals $2.0 billion for the years 1993 and 1994, almost 58 percent of estimated needs can be financed, assuming maintenance of current standards. If, however, this level of financing is continued through 1998, over 78 percent of estimated needs can be financed, assuming maintenance of current standards.[34] This represents a 55 percent increase in the dollar value of projects that could be financed by the end of the century, relative to that which could be financed under current policy (Table 3). If full implementation is the goal, however, even in this case less than half the estimated needs could be met by the year 2000.

Benefits and Concerns

The primary benefit of any of these options is that it should allow a greater number of eligible water quality projects to receive funding more quickly than would be possible under the current program.

In some states, needs outweigh available funds, even under the more aggressive capitalization assumptions of Case II. Hence, appropriations at the authorization ceiling and adding $1.43 billion in 1995 and 1996 are only partial solutions -- funding gaps will remain. Indeed, even the most generous financing scenario, that which provides $2.0 billion in capitalization over the years 1993-1998 is insufficient to ensure investment to maintain current standards much less meet full implementation needs.

To augment available funding resources, the Board urges that capitalization of the SRF program be continued by appropriating at least, the fully authorized levels for 1993-94, and by appropriating as well an extra $1.43 billion, the difference between amounts authorized under Titles II and VI from 1986 to 1992, and amounts actually appropriated in those years. The Board also strongly endorses the Administration's recent FY 93 budget request for $2.0 billion for the SRF program, and encourages consideration of maintaining this level of funding through 1994 and the next reauthorization period.

IV. PUBLIC FINANCE OPTIONS FOR ENVIRONMENTAL PROTECTION

A. STATEMENT OF THE ISSUE

Public finance options for environmental infrastructure have three inherent dimensions: the types of facilities or "needs" that are eligible for assistance; the delivery of the assistance; and the level and timing of assistance. This section discusses several finance options for federal and state governments in terms of eligibilities and delivery mechanisms. (As used here, "eligibilities" refers to environmental facilities and services that may be funded from a subsidy program.)

The Board believes that federal funding beyond the current authorization is the fundamental issue to be considered in developing new public finance options in water quality. It is clear that needs now eligible for funding under the Clean Water Act far outstrip the present authorization for the SRF programs. As noted in Section III, the Board strongly endorses the appropriation of all funds authorized for the SRF program under the 1987 reauthorization of the Clean Water Act. It also supports the Administration's recent FY 93 budget request for $2.0 billion for the SRF program, and encourages consideration of maintaining this level of funding through 1994 and the next reauthorization period.

If no additional federal funds for capital financing become available, the Board recommends that current eligibilities remain unchanged and that no new initiatives requiring additional federal funds be mandated.

Under this scenario, EPA's efforts would be directed toward seeking further improvements in the SRF program, such as those described in Section III and in the EFAB Advisory, *Small Community Financing Strategies for Environmental Facilities*. EPA should also encourage states to continue investing in their SRFs after the cessation of federal funding in 1994.

In anticipation of new federal investment capital, EPA should work toward selecting options for its delivery and use. While the Board has investigated eligibility issues and options, such as water supply and solid waste management programs, it also recognizes that many legitimate claims can be made on any future federal funding. The Board thus considers it to be outside its charter to make recommendations regarding the selection of such eligibilities and their relative priority within overall national environmental goals.

It is evident from the deliberations of the Public Sector Workgroup and comments on drafts of this Advisory that many informed opinions exist on public finance options. *The main point of departure is whether one views the SRF program as the principal vehicle for change, or whether one considers other institutional approaches as better suited to act in this capacity.* This discussion by no means includes all options and is not meant to be an exhaustive analysis of those presented. The intent is to describe the structure and function of several possible delivery mechanisms and to highlight key benefits and concerns of each.

The Advisory considers three potential approaches to the delivery of financial assistance, touching upon the issue of eligibility for each approach. These options include:

- Directing further funding to the current SRF programs;
- Building on the success of the SRF program by expanding eligibilities to include water supply and solid waste management programs; and
- Considering several trust fund approaches that could complement the other initiatives examined.

In sum, the Board believes that EPA should seek administrative and statutory improvements in existing SRF programs, regardless of whether new federal investments are made in financial assistance programs for environmental infrastructure. Since, however, continued funding for various capital needs has been under serious consideration by Congress in the context of hearings on the reauthorization of the Clean Water Act, the Board also urges EPA to evaluate these options for delivery mechanisms with the objective of developing and recommending an administration position on them.

With respect to the first two approaches, it should be noted that the Board also reviewed the issue of whether the application of Title II equivalency requirements and cross-cutting authorities should be extended along with federal funding. Further, the public finance approaches covered here are difficult to compare since they serve different purposes. Each approach may be a better strategy for achieving a national priority, delivering a type of assistance, or providing support for a certain eligibility. The following discussion clarifies the benefits and purposes of the various strategies.

B. POTENTIAL APPROACHES

Continued Federal Funding of the SRF Programs

Description

This option would continue federal funding of the existing program beyond the end of the current authorization in FY 1994. No other changes would be made in the types of assistance or eligibilities of the program, although alternative approaches to lessen the cost impact of Title II requirements and cross-cutting authorities should be considered.

An important alternative within this option is to direct some share of the federal investment to either national priority areas or towards a particular recipient group. This goal can be best achieved through the statutory distribution of funding into set-asides.

The Board discussed these two types of set-asides in its deliberations of public finance options for environmental protection. The first type is one that is defined by the eligibility being targeted; funds are set aside to provide financing for that particular eligibility, such as national priority areas. The type of assistance is no different from that normally available, and no

particular group is targeted for the funds. Set-asides of this type can be designed to reserve a specific amount of funds or a range of funds to finance a particular program area.

The second type of set-aside is defined by the group being targeted and the type of assistance available; funds are set aside to provide a special type of assistance to a designated recipient group. This type of set-aside could target small communities, for example, and be set up within the SRF.

Instead of set-asides, federal funding could be used as an incentive to encourage more state attention to that purpose for which a set-aside was considered, whether it be a national priority area or a particular recipient group. Inducements such as grants (with or without a matching funds requirement) could be made available on a program or project basis.

Benefits and Concerns

Continued federal investment in the state revolving funds beyond 1994 would represent a recognition and affirmation of a program that works. Use of these existing state mechanisms would be a fast and effective way of getting assistance to important environmental priorities not included in the wastewater construction grants program. Most notable of these are nonpoint source control programs and practices.

Set-Asides

Nonpoint source and combined sewer overflow programs are eligible without legislative change. If Congressional intent is to direct state attention to certain national priorities, and if the cost of the needs they represent exceeds any reasonable expectation of additional federal funds, then a set-aside of the first type, established within the instrumentality of the SRF itself, is a readily available approach to achieving that goal.

From an operational standpoint, however, mandated set-asides of the first type, (those defined by the program area targeted), established within the SRF, may be too rigid to accommodate the needs and priorities of a given state. State programs generally do not require or benefit from mandated set-asides of this type. The states are capable of determining their water quality priorities and, in the Board's view, should be able to largely direct the use of funding in accordance with existing federal requirements.

On the other hand, set-asides that target the recipient group provide SRFs flexibility in allocating funds to water quality priorities, yet reserve funds for a recipient group that might otherwise be overlooked.

A concern with set-asides is the build-up of unobligated funds over time. This occurs if no eligible projects are ready for financing. Such build-ups can be avoided by designing the set-aside to incorporate a time limit feature, whereby if funds are not used within a particular time frame, unobligated funds revert back to the general SRF fund to be used elsewhere. Each year, a new set-aside would be created, with the same "use or lose" feature.

The Board noted that incentives, as an alternative to set-asides, can avoid the rigidity problem because incentives are voluntary. For example, a supplemental federal appropriation could be established for EPA to make grants or enter into cooperative agreements in support of activities that address a national interest. States presumably would have the choice of whether to take advantage of the incentive. This approach probably makes more sense than set-asides that target particular programs to receive funding, unless state nonparticipation becomes, in effect, a penalty because the incentives are drawn from funds that otherwise would have been part of the SRF capitalization grant.

Federal Requirements

A concern that emerges with continued federal funding of the SRF program is the applicability of Title II equivalency requirements and cross-cutting authorities. Both sets of requirements now apply to the use of federal capitalization grants made to the SRFs. Based on comments received from the Office of Water in the development of this Advisory, the Board understands and has been informed by the EPA that these requirements will no longer affect SRF financial assistance once federal funding ceases. The only exceptions involve Civil Rights and National Environmental Policy Act requirements which will stay in place.[35] If federal funding continues, however, Congress may retain the same equivalency and cross-cutting requirements.

Enough evidence exists to suggest that these federal requirements significantly increase project costs. In particular the Davis-Bacon Wage Act may increase project costs enough to delay start-ups.[36] The Board believes that the increases in cost cited as resulting from these authorities is enough to warrant an inquiry into this issue in order to determine whether, if further federal funding is made available, some adjustment should be made to the applicability of these authorities in the case of financial assistance provided by the SRF.[37] The Board also expressed concern that the increased project costs generated by compliance with these requirements may outweigh their public benefits. The Board therefore strongly supports a cost evaluation of both Title II equivalency requirements and federal cross-cutters.

Cost increases vary across states depending on how closely state statutes mirror federal regulations. For some states the Davis-Bacon Act and various cross-cutters may act to decrease the subsidy and attractiveness of SRF loans. Where the municipal debt markets are a viable option for a local government this is not a problem, but for communities that cannot afford to borrow at market rates, the statutory imposition of the Act and other cross-cutters may effectively block the one alternative financing mechanism available to them.

The Davis-Bacon Wage Act requires that wages for those working on federally funded projects be set at the going rate for that region, as determined by the U.S. Department of Labor. The region is generally defined as the state, but can be smaller. Despite the fact that wages can vary greatly within a state, these wage levels are applied uniformly to all projects in the state whether in metropolitan or rural areas. In cases where one wage rate has been set for the state, there can be a significant difference between the Davis-Bacon wage rate and the local wage rate.[38]

In Arizona, for example, where few statutes mirror federal regulations governing the use of federal funds, the impact of the Davis-Bacon Act can be significant. Since the Davis-Bacon

wages are based on the going rates in Phoenix and Tucson, the greatest impact is to the rural areas, where wages are generally much lower. The state's SRF coordinators estimate that the Davis-Bacon Act raises project costs by as much as 20-25 percent in rural communities, and 5 percent in the metropolitan areas (outside of Phoenix and Tucson).[39] The consequence of higher costs is an effective reduction in the subsidy offered by the SRF loan. The SRF coordinators in Arizona and Utah felt that communities would not take the SRF loan unless interest rates were at least 2 percentage points lower than market rates.

While the increase in SRF costs attributable to statutory authorities has never been systematically measured, if the estimates are correct, the financial consequences could be significant. Consider, for example, a $1 million project that a community plans to debt-finance at 7 percent with a 20-year maturity. Debt service would cost $94,393 per year. If, instead, the community borrows from the SRF and cross-cutters raise costs by 20 percent, the town would need to borrow $1.2 million at the SRF rate and maturity. If Arizona's SRF loans carry an interest rate of 4 percent, annual debt service on the $1.2 million loan would be $88,298, effectively reducing the SRF subsidy from 3 points to 0.8 percentage points ($88,298 is the debt service on a $1 million loan at 6.2 percent interest). If the cross-cutters add 25 percent to the project cost, the effective subsidy is only 0.3 of a percentage point. Thus, in this example, what was designed as a 3-point subsidy actually provides a subsidy of less than 1 percent. For some communities, such a small differential may be outweighed by the administrative ease of market transactions relative to SRF loans. Table 7 summarizes these results:

Table 7: Characteristics of Financing $1 Million in a Publicly Owned Treatment Works under Municipal Debt Market and SRF Loans, Conditioned by Cross-Cutting Authorities

	Amount Financed	Nominal Interest Rate	Annual Payment	Effective Interest Rate on $1 million Invested
Municipal debt market financing	$1 million	7%	$94,393	7.0%
SRF financing with cross-cutters that impose a 20% cost premium	$1.2 million	4%	$88,298	6.2%
SRF financing with cross-cutters that impose a 25% cost premium	$1.25 million	4%	$91,977	6.7%

While the Department of Labor's assessed Davis-Bacon wage can be adjusted to local economic levels, the administrative process is cumbersome and lengthy. For example, Utah received a revised wage scale three years after the Department of Labor undertook another wage survey within the state. Local governments may not have the resources to challenge the Act on

their own, and if their respective state does not intervene on their behalf, delay or noncompliance may be an easier solution.

Measuring the costs directly would clearly quantify the actual effects of the Title II equivalency requirements and cross-cutting requirements on project costs. If costs or delays (or both) are found to be significant, dropping or moderating some or all of these authorities may be appropriate if federal funding is continued beyond 1994.

In sum, the Board recognizes that the decision with respect to federal funding will ultimately be a political one, whether attention is focussed on appropriating the full amount authorized under the 1987 Clean Water Act or on a consideration of maintaining the Administration's requested level of funding for FY 93 through the next reauthorization period.

The Board generally does not support the use of statutory set-asides targeting particular programs as separate accounts within the SRF. The Board, however, supports set-asides to aid small community projects, where the community's limited financial capability is often the primary issue blocking compliance.

However, as was discussed in the Board's Advisory, *Small Community Financing Strategies for Environmental Facilities*, SRFs were not intended to serve as small community assistance programs or to give special priority to their needs; thus the Board recommended in that Advisory that the Administrator consider supporting a set-aside or separate program for small communities and that the agency should actively encourage SRFs to give more attention to small community needs.[40] The Board also supports that an evaluation of the impacts of the Title II equivalency requirements and federal cross-cutters be undertaken if further federal funding is made available.

Expansion of the SRF Program

Description

A second institutional initiative would use the SRF as the primary vehicle for the delivery of financial assistance to an expanded set of eligibilities, including water supply and solid waste management programs. Expansion of eligibilities would be continent upon continued federal funding beyond the current authorization period. The Public Sector Workgroup's attention was focused on the merits of expansion and not on the criteria for eligibility; thus, the inclusion of water supply and solid waste management programs in the discussion served as example eligibilities only and do not reflect a recommendation as such. Once selected, the expansion of the SRF program could be gradual through a phase-in of the new eligibilities.

Benefits and Concerns

The primary benefit of SRF expansion is that it establishes, in each state that so chooses, a multimedia environmental financing authority capable of directing assistance to the most critical state environmental priorities. For a number of years many states have been developing financial assistance programs of their own. In some cases the SRF programs were created within an existing state financing authority. Expansion of the SRF programs seems a natural and

beneficial consequence of a trend that has seen states and localities shoulder the fiscal burden of compliance with federal environmental mandates.

A fundamental concern is that the nature of the need for financing in drinking water and solid waste management may make the SRF, as currently structured, an inappropriate vehicle through which to supply such financing. The communities that would stand to benefit most from an expansion of the SRF are economically disadvantaged and may not be able to afford SRF loans; the expansion of eligibilities for SRF assistance may thus require a concomitant expansion in the type of SRF assistance available, where such new assistance would include grants, principal discounts, or principal subsidies, for economically disadvantaged communities. New York, for example, is considering the use of negative interest rates for economically disadvantaged communities seeking SRF assistance. In contrast to an outright grant, this program would allow principal to remain available to the SRF for other financing once the loan recipient's needs were accommodated.

The New York program would calculate the difference between what a community could afford to pay annually and the real annual cost. The SRF would then allocate, to an interest bearing account, that amount necessary to generate sufficient interest to equal the difference between the real annual cost of the loan and the amount the community could afford to pay. Upon project completion, the SRF would bill the community for the affordable cost of the project, and use the interest accumulated to pay the balance of debt service due in that year.

As previously discussed, the Board feels that the second type of set-aside (that defined by the recipient group targeted and type of assistance made available) would be the most appropriate way to provide grants or principal subsidies for such communities.

Water Supply

Currently, water supply investments are locally financed. Under certain conditions, however, local governments may be unable to continue to finance their programs through revenue bond issues. This occurs when local governments try to issue debt above the level that their user base can support. If communities are unable to raise rates, they may be constrained from taking on further debt. This problem arises more frequently in small and economically disadvantaged communities. For any level of required investment, economically disadvantaged communities will reach this threshold at a lower level of investment per capita than will affluent communities. Where these communities are also small, the problem is exacerbated. Higher unit costs and a smaller base over which to spread fixed capital costs may result in higher user rates to achieve a given standard in water supply than would be the case in larger systems. Such communities also may have difficulty in imposing full-cost pricing as costs continue to escalate, and falling behind in rate increases may hamper bond issuance.[41] According to Standard & Poors, the "lack of timely rate increases can weaken overall credit quality as debt service coverage and liquidity declines."[42] These communities may require extra assistance in financing their water supply investments.

The primary need for assistance in financing in water supply thus comes from small and economically disadvantaged communities. While regionalizing small communities' water supply facilities may help reduce rate pressure in some cases, other economically disadvantaged

communities may not be able to regionalize. Thus, the provision of an alternative financing mechanism for water supply, such as grants, may provide the only financing option to certain communities.

Solid Waste Management

Capital investment requirements in solid waste management also are rising. Low-cost options for solid waste disposal are diminishing, due both to a stricter regulatory environment and to the limited capacity of landfill sites. This results in an increased need for capital and a need for new landfill and incineration sites.[43] While most analysts agree that difficulties in siting new facilities are a major barrier to investment in solid waste management, the high cost of capital also delays investment in economically disadvantaged communities.[44] Where economically disadvantaged communities are also small, regionalizing the wastesheds for local facilities could, in some cases, lower the cost of capital by taking advantage of economies of scale. This would lower unit costs and hence lower user rates, improving the chances of manageable revenue bond financing. Economically disadvantaged communities in general, however, may need an alternative financing mechanism to relieve rate pressure and ensure that national solid waste management goals are met without undue delay.

General obligation debt financing appears to be constrained primarily in economically distressed communities that are also small. One recent study, for example, estimated the cumulative effect of increasing solid waste regulations on municipalities of different sizes. The study found that the additional regulations increased the difficulty with which small municipalities could issue general obligation bonds to finance compliance activity, even where this type of indebtedness had not reached the limits defined in state statutes.[45] In particular, the study estimated that under new regulations, 18 percent of communities with populations of less that 2,500 would face increased difficulty in raising funds to finance investment in solid waste facilities. This impact fell to three percent for municipalities with populations between 2,500 and 10,000, and to one percent or less for larger communities.[46]

Revenue bond financing may be constrained in most economically disadvantaged communities. The average household spends only about 0.32 percent of its annual income on solid waste management, less than for sewer costs or drinking water. Thus, communities would normally be expected to have considerable room to raise user rates. However, from the perspective of the householder's ability to pay, the relevant issue is the ratio of the user rates for all three environmental services to median income. On average, this equals 1.30 percent.[47] In economically disadvantaged communities the ratio would be higher, as household income can fall significantly below the median. In addition, such towns could possibly face constraints in their ability to issue revenue bonds for solid waste facilities. Such communities may not be able to afford SRF loans; a grant mechanism may be more appropriate to help alleviate these financing constraints.

Expansion of the type of assistance available along with an expansion of eligibilities may allow the SRF to more successfully meet the needs of communities requiring financial assistance to reach their water supply and solid waste management investment goals. This expansion in type of assistance available could be established through a set-aside for "hardship" grants,

although the impact of such grants on the integrity of the fund corpus would have to be closely examined.

Second, in the drafting of any new statutory requirements governing expanded use of additional federal funds particular attention should be given to crafting streamlined requirements that reflect the federal interest without impeding state implementation. Using the SRF program as the vehicle through which to implement change would require the application of cross-cutting requirements to these expanded eligibilities. Their application to the new eligibilities could be a complex and time-consuming activity. The Board feels that an evaluation of the impacts of these authorities is warranted under this policy approach as well.

Third, if the objective of additional federal funding is to focus more on national priorities by restricting and concentrating the use of federal funds, then expansion of the SRF programs tends to be counter-productive. The achievement of national targeting through state programs probably requires the creation of dedicated set-asides that could be administered within or outside the SRF instrumentality. As state-controlled and managed enterprises, the SRFs may not be the best vehicle for set-asides dedicated to specific funding of national priorities. Use of the SRF undercuts state priorities in administering the program and may raise issues affecting the practicality and cost of borrowing by local communities. In the Board's view, expansion should result in more, not less, flexibility for the SRFs.

A final concern is whether a new federal subsidy program for facilities heretofore paid for by local governments or private entities would trigger a queuing phenomenon, whereby communities, required to build facilities to attain or maintain compliance, would delay until assistance became available. If grants or principal subsidies are reserved strictly for hardship cases, however, this should not be a problem.

The Board supports expanded authority governing eligibilities of the SRF program if federal funding continues, bearing in mind that alternatives to loan assistance may need to be built into any expanded eligibilities program through a set-aside targeting economically disadvantaged communities. The Board urges that any federal requirements regarding new eligibilities be kept to a minimum, leaving the determination of funding priorities to state discretion within broad federal guidelines.

Environmental Trust Funds: A Complement to Other Public Finance Approaches

An approach that could complement existing institutions includes the development of a national or state trust funds as mechanisms to help in the delivery of federal (or other) assistance. The definition of a trust, as used here, is a permanent, self-funding account of public funds used for predetermined purposes. Its funds may come from any sources used to pay for public programs, but a base level of funding should come from one or more dedicated sources. As dedicated accounts, trusts are well-suited to perform functions closely related to the source of their funds, such as fees for permit issuances that are used to support the permit program and related activities. Trust assistance may take many forms, including grants, loans, credit enhancement, and even include technical assistance.

The Board does not view trust funds as set-asides. A set-aside reserves some share of funds where those funds usually come from annual appropriations. Thus, set-asides are typically neither permanent nor self-sustaining and they usually operate as part of, or to support, other program elements, as was the case with the set-asides of the wastewater construction grants program.

The Board feels it would further the debate over public finance strategies to present the outlines of various "straw options" for several approaches to environmental trust funds. The following discussion is for illustrative purposes only and does not represent an endorsement of the trust concept by the Board at this time.

National Trusts

Description

A national environmental trust would require federal legislation to charter it, provide for its administration, define its scope of activities and sources of revenues, and provide other authorities as may be necessary regarding its financing operations. The national trust would serve two broad functions, providing:

- Financial assistance to state environmental programs and regional environmental planning and regulatory commissions; and

- Additional capital to state and local infrastructure financing agencies.

Program Assistance

The trust's charter would authorize financial assistance to state environmental programs and regional commissions for research, training, and public education and demonstration purposes, and would authorize categorical grants for certain special projects. The scope of the trust's activities would extend to public purpose environmental services and facilities in all media.

The national trust would have broad authority in setting terms and conditions governing its assistance. Trust grants would be exempt from the cross-cutting requirements discussed in Section III. Aid to state programs would attempt to find a workable compromise, if necessary, in emphasizing EPA priorities such as pollution prevention, small community needs, geographic initiatives, public-private partnerships, staff training, multimedia planning, and enforcement. Special projects would include financial hardship assistance to communities unable to pay for the capital costs of environmental facilities required for compliance. Assistance would be awarded and administered through the appropriate state environmental agency.

As discussed earlier, the greatest need for subsidized financing in water supply and solid waste management arises primarily in economically disadvantaged and small communities. Such communities, unable to afford financing through the municipal debt markets, may also be unable to afford even subsidized loans. These communities would benefit greatly from grant financing.

Capital Assistance

The trust's charter would improve the liquidity of state environmental infrastructure financing authorities and eligible local governments. "Liquidity" is defined here as the availability of sufficient capital, as needed, at an affordable cost to local governments. The trust concept may play a significant role in facilitating capital formation in the 1990s and help bridge the financing gap.[48] The trust would improve liquidity for the financing of multimedia environmental infrastructure by:

- Having the statutory authority to issue environmental infrastructure revenue bonds exempt from federal taxation, which would lower the cost of financing;[49]
- Making loans to state environmental infrastructure financing programs;
- Purchasing debt instruments, including short-term notes, and pooling issues;[50]
- Providing guarantees or issuing letters of credit backing debt instruments; and
- Acting as a secondary market by purchasing state loan portfolios.

Thus, in performing these activities, the national trust would perform a role similar to that of the Fannie Mae in the housing industry. Its charter, however, would stipulate that the trust was not a government-sponsored enterprise and that its borrowing was not guaranteed or insured by the federal government.

Trust Revenues

Unlike the approaches for the delivery of federal assistance discussed above, a trust requires financing through a dedicated continuous source of revenues, such as a fee. While fee systems are discussed separately, a brief review of the role of fees with respect to the trust concept is presented here, as trusts are dependent on such systems.

The most appropriate source of revenue for a national trust would be environmental fees and charges. These could be as broad based as fees on corporate production or sales, or as specific as effluent fees on permits issued under the National Pollutant Discharge Elimination System. Other options include water fees and solid waste disposal fees. Small or economically disadvantaged communities (with systems serving populations under 25,000, for example), could be exempt or pay reduced national fees. Operationally, states could collect the fees, deduct a share specified under law, and deposit the balance in the national trust. The trustees would make annual and multiyear funding decisions based on proposals from the EPA and state environmental programs. EPA has already given some consideration to fee systems, although not in the context discussed here.[51]

The fees collected would be used for programmatic assistance and for special projects. Fee revenues, however, would probably be insufficient as a source of capital financing beyond their possible use for hardship construction grants. The liquidity functions listed above that

serve to make additional capital available at attractive rates would require the authority to issue tax-exempt bonds.

Administration

A national trust might be set up under the aegis of the EPA but run by an independent Board of Trustees including state and local representatives appointed by the President, the Congress, and chaired by the EPA Administrator.[52]

Benefits and Concerns

The most significant benefit of a national environmental trust is that it is a permanent source of financial assistance supporting state environmental programs. As a self-funding mechanism, the trust would function independently of annual federal appropriations. The financial independence of the trust is an especially attractive feature in contrast to other approaches, such as categorical grant programs, that depend on continued direct federal funding. If funding is phased out, the utility of a trust takes on added value.

A second benefit, is that the trust could be administered by representatives from all levels of government assuring that no one priority or point of view would dominate decision making. Third, a national trust is a natural vehicle for promoting national environmental priorities. Alternatively, enabling legislation chartering the trust could require coordination with state priorities. For example, the trust might be chartered to support multimedia state activities involved with EPA's geographic initiatives. The trust's funding decisions in this regard would give particular weight to state proposals. Thus, the trust could serve as an important mechanism for blending and balancing national priorities with those of the individual states.

The liquidity functions would provide a significant alternative source of lower-cost capital for state multimedia infrastructure financing programs, helping to narrow the financing gap now opening between needs and resources. In contrast to other public finance options, the trust's capital financing operations would not be run as a subsidy program; nor would it have to rely on the national fees dedicated to program assistance. This self-sufficiency would be accomplished primarily with the authority to sell tax-exempt bonds, the sale of securitized portfolios, and assessment of participation fees. Additionally, by directly supporting the several state bond banks or by serving as a national bond bank itself in assisting needy communities, the trust could play a unique and worthwhile role.

One potential beneficiary of the trust's capital assistance could be those SRF programs that are making deeply subsidized loans without a commitment of further state financing for their programs.[53] According to a recent EPA report on the status of the SRF program, SRFs would need to ensure that the interest rate on their loans matched the rate of inflation, to avoid diminishing the amount of lendable SRF funds over time. In order to maintain the fund in real terms, such states would need to make a concomitant financial commitment to further capitalize their SRF program. The report notes that only 15 SRFs plan to provide further capitalization beyond 1994, yet more than this number offer loans below the inflation rate, which has averaged about 4.5 percent per year since 1982. Thus some SRFs may find their fund balance

diminishing after 1994, when federal capitalization ends.[54] These SRFs may therefore benefit from the availability of an alternative source of capital assistance.

Several key concerns arise with the national trust concept. With any national approach based largely on fees there will be cross-subsidization among states. Some states will receive more than their contribution in fees. While a national trust would provide considerable assistance to most state programs, it is clear that some states would do better if they had similar fee systems of their own. Second, a national trust based on national fees could disrupt state attempts to establish alternative financing mechanisms.

Also, the liquidity functions raise a concern with redundancy. In some states the municipal debt markets and existing state financing programs may be sufficient to meet increasing capital spending requirements for environmental infrastructure. Well-established markets currently serve the borrowing needs of state and local governments (although certain provisions of the 1986 Tax Reform Act had the effect of decreasing demand for tax-exempt bonds, thus increasing yields paid by some issuers.)[55] Secondary markets for loan portfolios have long existed and all states have at least a SRF program. A national trust functioning as described here could be perceived as a competitor with the municipal capital markets and may seem to be of little use to some state financing programs.

Whether this potential "crowding out" effect would occur depends on the validity of the premise that the volume of public borrowing for environmental infrastructure must increase dramatically in the coming decade. If that occurs, a trust would likely serve as another useful mechanism providing the additional capital required to meet needs, and the trust itself would borrow significantly in the capital markets.

A related concern is the possibility that the trust liquidity function would interfere with or duplicate the SRF programs, some of which now borrow on their own. This issue requires further examination beyond the scope of this Advisory. However, it is likely that states with strong infrastructure financing programs probably will not benefit greatly from a national trust. Those states that do not have multimedia financing programs may stand to gain considerably from the trust's capital operations.

A final concern is the effect the trust's sale of tax-exempt bonds would have on the national deficit. While some tax expenditure will result, where the trust issues tax-exempt debt on behalf of other public borrowers, however, there should be no net revenue loss to the Treasury.

State Environmental Trusts

Description

Instead of creating one national trust, federal legislation would offer incentives to states to establish their own environmental trusts. Federal authorizing legislation could specify a range of incentives, including:

- A state share in annual revenues from national environmental fees (if such fees were used);
- Federal matching funds;
- Federal grants and loans;
- The removal of various impediments from the trusts' sale of tax-exempt bonds;[56] and
- Various forms of technical assistance.

Functionally, the state trusts would operate in a similar fashion as the national trust discussed above. Depending upon legal and political circumstances in each of the states, the liquidity functions would probably vary considerably. Two basic approaches are considered here: placing the trust within the instrumentality of the SRF or setting it up as a separate, stand-alone entity.

Within the SRF. The SRF programs are themselves a form of trust fund in the sense that federal and state deposits must be used for certain purposes in perpetuity and all loans made by the fund must be repaid to it. They are intended to be permanent and eventually self-sufficient institutions. Strictly speaking, however, SRFs are not trusts. Once federal and state contributions to the SRF cease, SRFs can only remain financially self-sufficient as long as the interest charged on new loans does not fall below prevailing rates of inflation or the cost of borrowing. If new loans do not meet these conditions, the SRFs may deplete their corpus. Trusts are financed by a revenue source external to their activities and can remain solvent even if they disburse no funds at all, or disburse them as grants.

In this approach a trust account would be created within the instrumentality of the SRF. The trust would perform the several functions described above for a national trust. Because these functions are multimedia in scope and would involve grants, the trust's operations may need to be segregated from those of the SRF. The capital assistance functions of the trust could support the SRF as well as other state financing programs involved with drinking water and solid waste management.

A related alternative to a separate trust within the SRF is the modification of the SRF itself to accommodate the functions of the trust. This could build on, and reinforce, the expansion of SRF eligibilities as discussed above.

Separate Entity. Alternatively, the state could establish the trust as a separate entity with its own administrative infrastructure and resources. Its multimedia mode of operation, which would probably require interaction with a large number of state and local organizations, may be more suited to an independent status, particularly if SRF eligibilities are not expanded. Similarly, the capital assistance functions, extending to all public-purpose environmental infrastructure, could be administered more easily if run independently of other financing programs operating under different restrictions.

Benefits and Concerns

The general benefits of a state trust correspond with those cited for a national trust. The trust is a practical mechanism for allocating funding for a wide variety of purposes most likely involving several state programs and many local agencies. The net benefits of a state trust would depend, to a large extent, on the capabilities of existing programs. Some states have advanced environmental and financing programs that may make a trust redundant. With other states, the trust might be a valuable tool for building program capacity and expanding infrastructure financing options for state agencies and local governments. This variation among the states argues for an approach that provides for considerable latitude in design and implementation.

The public financing approaches developed in this chapter were based on the assumption of further federal funding. One advantage of state trusts is that they, like a national trust, could be established without federal funds. Alternatively, if funding continues and the SRF programs are expanded in terms of eligibilities, modification of the SRF to accommodate trust functions also provides a viable option. Thus, state trusts are a sound option in either case. However, depending on the nature of the trust's authority and operation, adding trust functions to the SRF might prove time consuming, legally complex, and controversial with traditional constituencies.

In short, the Board recognizes that the trust concept at either the national or state level is bound to be controversial. But, it cuts across existing program responsibilities and functions. As a self-funding mechanism, it is independent of annual appropriations, yet requires the levy and collection of taxes and fees which may reduce tax revenues to the U.S. Treasury Department.

A national environmental trust or state trusts independent of annual appropriations, could play a particularly important role in building state capacity and financing environmental infrastructure. The Board believes that the concept has sufficient inherent merit to warrant a careful consideration by federal and state policy makers.

The Board, therefore, recommends that EPA conduct a cross-program evaluation of the trust concept and potential revenue sources for it. The evaluation should emphasize ways a trust could support and enhance the SRF programs as they currently function, and with expanded eligibilities. The Board further endorses the use of environmental fees as the principal source of revenue for a national or state trusts. Any proposal, however, to implement a national fee system by itself, or in support of national or state trusts, should be carefully evaluated for potentially duplicative or disruptive effects on existing state fee systems.

As part of the trust study, the Board recommends that EPA evaluate the state trust concept as well as the national trust concept. The evaluation should stress the advantages and limitations of linking the trust to the SRF and should carefully examine incentives and sources of revenue. The investigation of potential sources of revenue should include taxes and fees that tap the private sector, as well as the public. The Board further recommends that EPA actively support, through technical assistance and cooperative agreements, any current state efforts to create environmental trusts or trust-like mechanisms as a public finance strategy for meeting environmental needs.

V. DEDICATED FEE SYSTEMS AS A SOURCE OF FUNDING FOR FEDERAL AND STATE ENVIRONMENTAL PROGRAMS

A. STATEMENT OF THE ISSUE

Even with additional capitalization of the SRF program, states may still face funding shortfalls in their water quality programs. In addition, there is currently no self-sustaining source of capital available for drinking water and solid waste management programs. Thus new public funding sources must be considered. Dedicated fee systems, for example, can help raise the capital needed to finance investments in these media. Fee systems, however, while able to contribute toward capital costs, are primarily a good source of funds for program administration and operation. Since such costs are rising concurrently with the need for environmental investments in capital projects, the Board believes an evaluation of fee systems is warranted.

Dedicated fee systems to support state environmental programs are becoming increasingly significant as sources of funding. According to a 1989 study by the National Governors' Association (NGA), 44 states used some form of alternative financing to help fund their environmental programs.[57] The NGA counted 431 active alternative financing mechanism programs operating between September 1988 and May 1989. Alternative financing programs are defined as any financing method other than federal grants and state appropriations from the general fund. Programs cited in the report include fees, taxes, bonds, and revolving loan funds.

The term "fees" in this discussion refers to both fees and taxes used to help pay for environmental programs. Conceptually, a fee is linked directly to a service or benefit provided, while taxes may or may not have such a linkage. Fees could be used to support any of the public finance options described in Section IV, although historically appropriations have been the source of funding for the SRF program and would also be for the Clean Water Fund.

Several issues associated with fee systems include fee design and the media targeted, the level and location of system administration, and, in the case of state fee programs, the role of the federal government. The Board believes it both timely and appropriate to examine fee systems designed to meet both programmatic and capital needs.

The first issue to be considered in assessing all fee systems is that of fee design and administration. On equity grounds, the fee should be structured to match the benefit received from the service to the cost charged for that service. Alternatively, where fees are actually taxes, policy makers may want to structure the tax to reflect the contribution to pollution made by the taxed entity. In practice, however, this kind of close matching of fee and benefit (or tax and contribution to pollution), is sometimes difficult. There may be no data to provide the basis for such an accounting, as in the case of industrial solid waste management. It may be impossible to accurately measure the contribution to pollution -- an industrial effluent fee, for example, would most likely be based on permitted levels, because actual levels are not metered. Different classes of users may have different kinds of impact on the environment. If all are taxed, it may be difficult to design tax rates that reflect the respective impact of each. A water use fee levied on users of publicly-supplied water and on self-suppliers of water is one such

example. As a result, a compromise may have to be reached in order to make implementation of a fee system possible.

A second issue is the level and location of administrative control of the fee system. As a general guideline, the control over collection and disbursements should be as close to the use of the revenues as possible. Where more than one agency or program uses the revenues, some central authority is usually necessary to make funding decisions. A national fee system could probably be administered by EPA or Treasury.[58] Alternatively, a national fee system could be administered by the states; an effluent discharge fee, for example, might be collected by the states as discharge permits are reissued and deposited in the national trust, net of administrative expenses.

A national system might well return to a state an amount equivalent to that collected from it, with the state allocating the revenues based on its own priorities. This "hold harmless" approach begs the question of having a national system in the first place, unless the system has the discretion to redistribute revenues among the states based on some preference given to national priorities and state needs. This function, of course, is the principal underlying justification for a national system. (It should also be noted that state fee programs are often redistributive in nature, with revenues going to support state or local assistance programs.)

The third issue involves the role that should be played by the federal government with respect to state fee programs. That role can be passive -- limited, for example, to the provision of technical assistance -- or active, whereby the federal government actively encourages the creation of state fee programs.

B. POTENTIAL APPROACHES TO TYPES OF FEES AND THEIR DESIGN

There are a host of fee systems that may be used to help pay for environmental infrastructure and environmental programs. Several examples include:

- Water supply fees;
- Wastewater effluent or permit charges; and
- Solid waste taxes.

Other types of fees that could be charged would be more loosely related to the beneficiary-pays principle. Corporate revenues can be taxed, for example, and used for environmental purposes. In evaluating options that could be used to finance the Superfund program, the Atlantic Richfield Company suggested the imposition of a gross corporate receipts tax. This would tax the gross receipts in excess of $50 million in selected industries, or could be spread across all industry. The proposal entailed a dedicated tax of less than $4 per $10,000 on corporate receipts in excess of $50 million per year on all businesses filing a U.S. corporate income form 1120. This deductible excise tax would be levied on line 1(c) of form 1120. The company estimated that, depending on the rate used, the program could collect $500 million per year.[59]

The Board examined the revenue capacity of the three example fees listed above, in order to assess their potential as public finance approaches to help pay program and capital costs in the three environmental media. It should be noted that while the examples discussed below use estimates for the United States as a whole, they are not meant to imply that these fee systems are appropriate only at the national level. Indeed, many states have successfully adopted fee systems for environmental programs.

Water Supply Fee

Description

An administratively simple water user fee could be levied on residential, agricultural, and industrial users, entailing a fixed charge per 1,000 gallons used. Several issues, however, must be resolved before such a fee could be implemented. First, for unmetered users, water use would have to be approximated. The current system used by cities to estimate annual usage by unmetered users could be used for fee assessment purposes. However, imposing a fee on self-suppliers of water is more problematic. Such a fee would be difficult to collect at the household level, as measurement would be all but impossible without installation of meters at every wellhead. Self-suppliers of water can affect the water table and hence the costs of public system withdrawals in adjacent areas that draw from the same aquifer; therefore, an argument could be made for charging these users some lower rate. In 1985 approximately 17 percent of the U.S. households supplied their own water through private wells.[60] Assuming that this percentage has not changed significantly, a $0.03 fee per 1,000 gallons levied on self-suppliers could raise $345 million from 1993-2000.[61]

Even excluding self-suppliers, the revenue potential from a water use fee is large. Using recorded withdrawals of publicly supplied water, a 5-cent fee per 1,000 gallons withdrawn has been estimated to yield revenues of $6.3 billion for the period 1993-2000. Increasing the fee to 10 cents per 1,000 gallons would yield $12.5 billion for the period. At 20 cents per 1,000 gallons, revenues would equal $25.1 billion over the same period.

This analysis assumes no reduction in water use. While such an assumption appears valid for residential users, the imposition of a fee would probably lead to a drop in demand by industrial users, who are more sensitive to price changes than individual households.[62] This group represents about 16 percent of total demand for water. Even if that demand fell by 50 percent in response to the fee, revenues overall would only fall slightly, to $5.8 billion, $11.5 billion, and $23.1 billion, respectively.

Translating this fee into an impact on households shows that it results in a relatively small user burden. At the highest fee rate, average household water bills would increase by $20.25 to $26.98 per household per year.[63] This rise represents an increase of 15-20 percent in the nation's average household water bill and increases rates as a percentage of median household income from 0.46 percent to between 0.53 and 0.56 percent.[64]

Benefits and Concerns

The benefits of water use charges include large revenue potential, moderate impact on households due to the breadth of the charge, and relative ease of collection. Economically disadvantaged households can be excluded or charged less for water use and the charge can be added as a line item to water bills.

One concern with water use fees is their design, especially determining "fair" rates for self-suppliers. While industrial self-suppliers could, in theory, be monitored, households that draw their own water would be difficult to charge.

Wastewater Charges

Description

A fee on wastewater could take several forms. Ideally, the amount and/or toxicity of wastewater generated could be monitored and a fee levied per gallon, per unit of controlled pollutant, or some combination of the two. In practice, the fee could be based on permitted limits rather than on actual discharges. Data on permitted levels of effluent discharge is available under the National Pollutant Discharge Elimination System (NPDES) established under the Clean Water Act. (All point source dischargers must secure a NPDES permit before they can discharge to U.S. waterways. These permits are reissued every five years.) The permits also show the estimated effluent content discharged, and its total volume. A fee could thus be levied at the time of issuance or reissuance on the effluent limits as specified in the permit, or made a function of the permit's estimate of actual discharge levels and content.[65] To help enforce payments by industry, NPDES permit issuance could be made contingent upon payment of the fee. Alternatively, a fee could be charged for the permitting program itself. Fees of this type are included in the Senate bill for reauthorization of the Clean Water Act (S.1081). In this case, industries subject to the NPDES permitting program would be required to pay an annual fee to the state, where total revenues would cover not less than 60 per centum of the development and administration of the permitting program.

An administratively simpler alternative would be to levy fees on the same basis that household wastewater rates are charged, using water use as a proxy for wastewater discharge volume. This would restrict the fee to a percentage of volume generated, however, and not reflect effluent concentration.

Revenue from effluent charges could be substantial. Using recorded releases of wastewater from publicly owned treatment facilities as an estimate of total volume, while underestimating true volume (because it excludes commercial facility discharges), gives some idea of the revenues possible.[66] A fee of 5 cents per 1,000 gallons discharged would yield $5.3 billion over the seven year period 1993-2000. Increasing it to 10 cents would yield $10.6 billion, and a charge of 20 cents per 1,000 gallons discharged would raise $21.3 billion over the period.

These estimates also assume no reduction in water use. In this example as well, approximately 16 percent of the volume discharged was industrial. Even if that demand fell by

50 percent in response to the fee, revenues would fall only slightly, to $4.9 billion, $9.8 billion, and $19.6 billion, respectively.

This fee would result in a relatively small user obligation for households, increasing household wastewater bills by $20.25 to $26.98 per year, on average, at the highest fee rate.[67] The levy would increase wastewater rates, as a percentage of median household income, from 0.52 percent to between 0.59 and 0.61 percent.[68]

Benefits and Concerns

The benefits of effluent fees are similar to those of water use charges. The main concern in charging industrial effluent fees is in fee design. If the fee is a flat rate per 1,000 gallons, industry will have the incentive to concentrate its pollutants. If the fee design incorporates a charge per pollutant, effluent may be diluted. It is possible to combine both concepts in an effluent charge; indeed, states such as New Jersey have very sophisticated designs, but this may result in complex administrative processes.

Solid Waste Taxes

Description

Unlike a water supply fee or a wastewater charge, solid waste taxes do not fall into the category of user fees, unless the tax is restricted to feedstock taxes on inputs to production. Levies on waste generation tax the polluter and not the beneficiary of the service.

Two main types of tax can be levied on solid waste -- waste-end taxes, and front-end (or feedstock) taxes. The practicality of a solid waste end tax is limited -- there is no documentation for solid waste collected and disposed of on behalf of industry. Municipal collection of waste could charge a garbage fee, however, on a per bin basis. Some U.S. cities already use this method of tax collection. In order to provide a revenue source at the state level, charges could be levied on the disposal site operator. Alternatively, the tax could be collected from manufacturers who would pass it on at point of sale, as is the case with many state litter taxes.

Annual municipal solid waste generation is difficult to measure accurately -- definitions of what constitutes municipal solid waste vary across states and within states. According to the EPA/Franklin Model, 158 million tons of municipal solid waste were generated in 1986; the volume will rise to 193 million tons per year by 2000.[69] Actual amounts of solid waste being delivered to incinerators and landfills may be higher, however, as several categories of waste are not included in the model's definition of municipal solid waste. Even so, the model suggests that average per capita generation of such waste equalled 3.6 pounds per person per day in 1986 and will rise to 3.9 pounds per person per day by 2000. If a tax of $1 per ton were levied on disposal operators, as much as $1.47 billion could be raised from 1993-2000, assuming no change in behavior. A $5-per-ton tax would raise $7.4 billion over the period.

Benefits and Concerns

The benefits of a solid waste fee include large revenues and moderate impact. Assessing a solid waste tax on industry, however, may be administratively impossible as there is no documentation required in commercial solid waste management transactions. In addition, if a tax could be imposed (such as a surcharge on the tipping fee at the point of disposal), it could result in midnight dumping of solid waste if industry sees its waste disposal bills increase too much.

Combined Revenue Potential

If fees and taxes are levied on drinking water, wastewater, and solid waste streams, the potential revenues from 1993-2000 are huge and the impacts moderate. Using the lowest rates considered for water supply, wastewater discharge, and solid waste management as a "low projection" and the highest rates considered as a "high projection," Table 8 illustrates the possible revenue streams.

Table 8: Annual Revenue Streams Available, 1993-2000 ($ billions)

	Low Projection	High Projection
Water supply fee (public supply only)		
With reduction	$5.77	$23.08
Without reduction	$6.27	$25.09
Wastewater charge		
With reduction	$4.89	$19.56
Without reduction	$5.30	$21.30
Solid waste tax	$1.47	$7.35
Total	$12.13 - $13.04	$49.99 - $53.74

Benefits and Concerns

The Board recognizes that the imposition of fees and charges could cause too great a financial burden on some households in economically disadvantaged communities. Small communities, or individual households with incomes below some level, could be exempted from paying these charges. Thus, policy makers may not want to rely completely on user fees. Tapping corporate revenues (or profits), as discussed earlier, could help alleviate the share of the fee burden placed on localities and households.

C. POTENTIAL APPROACHES TO SYSTEM ADMINISTRATION

The following approaches to system administration are presented as options for consideration and do not reflect recommendations by the Board.

National Fee System

Description

As described earlier, environmental fees might be assessed against:

- Dischargers using issuance of permits as the vehicle,
- Consumers using surcharges on service bills,
- The unit of government providing an environmental service, or
- Industry, as environmental surcharges on various activities.

Examples of national fees or taxes already in operation include the motor fuel tax and the emissions fee program established under the 1990 Clean Air Act.[70]

The motor fuel tax is essentially two taxes -- a $0.14 tax per gallon of gas and a $0.20 charge per gallon of diesel fuel. Many states have expressed the option to attach riders to these federal charges. The taxes are dedicated to the Highway Trust Fund, a user-supported federal trust fund intended to finance the Interstate Highway System and other roads authorized by Congress. The gas tax is collected from the refineries directly, a system that is considered efficient since the total number of collection points is relatively small. The diesel fuel tax is collected at the wholesaler level. (Diesel fuel is used for other products besides fuel for motor vehicles.[71] In order to limit the assessment of the tax to that portion used in motor vehicles, collection must take place after it leaves the refinery, hence collection at the wholesaler level.) When the tax is reflected at the pump, the consumer is reimbursing the refineries and wholesalers who have already paid this tax.

The tax is collected by the US Treasury and funds are then credited to the Highway Trust Fund. Although the fund is "on-budget", it is structured to hinder any attempt by Congress to use revenues for other than designated purposes. Such diversion of funds has been successfully prevented until recently. Total annual revenues raised equal approximately $12 billion.

A second federal fee is based on the permit program instituted under the 1990 reauthorization of the Clean Air Act. Under Title I, Section 502, the Act requires that an emissions permit program be set up by the relevant air pollution control agencies (often the state). It also requires that fees of not less that $25 per ton of each regulated pollutant be collected from all sources subject to the program up to a limit of 4,000 tons per year of that regulated pollutant. The monies are to be used exclusively for the administration of the permitting program.

The design of a national environmental fee system to finance the types of options discussed in Section IV will involve two primary administrative issues. The first is the level of fee program administration; the second concerns the redistribution of funds among states.

The fee system, including disbursements, could be administered by EPA. If, however, fee revenues were dedicated to national or state trusts, the trustees would be responsible for system administration. Alternatively, state agencies now responsible for regulatory environmental programs might be delegated administrative authority to implement a national fee system and be compensated for that activity. At the same time, the state agency would be permitted to levy additional fees for its own purposes. Regardless of fee design and media targeted, the key question with any national system will be ease of fee assessment, collection, and monitoring.

A variation to a centralized system of national fees is federally mandated authorizations whereby states are authorized to establish their own fee systems contingent on meeting certain minimum federal criteria. If a state failed to establish a fee system after a given interval, a federal system would take effect. This essentially is the approach taken in S.1081 (now under consideration by the U.S. Senate) as part of the Clean Water Act reauthorization.[72] A more passive option could provide a system of federal cash incentives in the form of a guaranteed federal match to states whose fee system satisfies national criteria.

Benefits and Concerns

The chief utility and benefit of a national system is its capability to direct revenues toward the support of national or state environmental programs with the concomitant reduction in state reliance on general funds. Dedicated fees diversify available funding sources for environmental programs and help reduce that proportion of funds that is dependant on an annual appropriations process. The public and private payees into the system benefit through improved professional management of programs and in the case of subsidies, from potential eligibility for financial assistance. A second benefit is the ability of a national fee system to redistribute revenues among the states, should such redistribution be established as a national goal.

The primary concern with a national fee system is the risk that its design and implementation will disrupt state fee initiatives. Care must be taken to ensure that this does not occur. One way to help mitigate this risk is to use a default system as described above, which leaves the design and implementation to the states.

State Fee Systems

Description

There are many examples of operating state fee systems that fund environmental programs. Ideally, fee systems should reflect the importance of full-cost pricing not only to pay for pollution prevention and control facilities at the local level, but also to support the administrative infrastructure required for state program implementation. Several examples of current state programs are discussed below to demonstrate the variety of designs that exist.

Most states levy some form of environmental fees or taxes to cover program costs and help finance capital investments. For example, Arizona's state water tax is imposed as a surcharge on local user fees; Washington uses its cigarette tax to fund environmental programs; and the New Jersey NPDES permitting fee program finances permit administration.

There are actually two taxes that appear on local water bills in Arizona. The first is a state sales tax of 5.5 percent on the "sale" of water used. The funds are not dedicated, but rather deposited in the state's general fund. The second fee is referred to as the "Drano" tax and equals 0.65 percent of the bill. The tax was introduced in October 1990 for the express purpose of financing the state Department of Water Resources. As a line item on local water bills, the tax is repaid by water utilities on a monthly basis as receipts are collected. Revenues collected in the first eight months of FY 1991 were $830,679. Receipts for 1991 as a whole will reach an estimated $1.1 million.[73]

The New Jersey Pollutant Discharge Elimination System (NJPDES) charges permit fees on industrial dischargers to state waterways. The fees are designed on a sliding scale for each permittee. They are a function of both the quantity of contaminants discharged and the relative environmental risks associated with the discharge. High-volume, high-risk dischargers therefore face a higher fee than low-volume, low-risk dischargers. Total fees collected in 1987-88 equalled over $16 million. The total dropped to $11.2 million in 1989 as a result of permit terminations, rate recalculations, and probably pollution reduction. The Department of Environmental Protection has statutory authority to issue Civil Administrative Penalties to facilities for failure to pay their permit fees. The revenues are dedicated to covering the cost of processing, monitoring and administering the permit program. Revenues must not exceed these estimated costs.

The state of Washington levies taxes on cigarettes, tobacco, and water pollution control equipment to finance ground water protection projects and water pollution control programs. The fee is $0.08 per packet of cigarettes and 16.75 percent on tobacco products.

All revenues are dedicated to the state Centennial Clean Water Fund, which provides grants to municipalities for environmental projects. Half the fund proceeds are dedicated to control discharges into marine waters. The other half is used for various water quality projects, including nonpoint source programs and aquifer protection. In 1990, estimated revenues were $45 million.

Benefits and Concerns

Properly structured and administered fee systems can be a reliable source of significant funding for environmental programs.[74] Further, fee systems can serve as dependable, significant supplements to annual appropriations and other undedicated sources of funds, which are subject to forces unrelated to the needs of environmental programs. In addition, fee systems can serve as an efficient means of directing funding to priority needs involving capital financing, and providing debt service payments for environmental projects financed by revenue bonds.

One concern with national and state fee systems is their potential to displace other sources of funding.[75] As fee systems become major sources of revenue for state programs, a

perception may grow among state policy makers that there is a concomitant decline in need and justification for additional direct appropriations that historically have supported such programs.

The Board concludes that environmental fees should play a much broader role with respect to assisting state programs. National or state fees should be viewed as a potentially significant source of additional, supplementary revenue to help states meet the increasing capital and management costs of environmental programs.

The Board further recognizes that state environmental programs cannot, and probably should not, be totally dependent for funding on fee-based revenues. The strength of state programs is enhanced by relying on a diversity of funding sources, including federal appropriations. Thus, the Board does not suggest that fees be adopted as a means of eliminating or reducing other existing sources of funding support, while at the same time recommending that the federal government actively support and encourage the adoption and expansion of state environmental fee systems.

NOTES

1. Calculated at operating costs plus new capital outlays. Figures exclude non-EPA federal expenditures. Alan Carlin, with the assistance of the Environmental Law Institute, *Environmental Investments: The Cost of a Clean Environment*, prepared for the US EPA, Office of Policy, Planning, and Evaluation (December 1990), Tables 4-1A, 4-2A, 5-1A, and 5-2A. All figures are given in 1986 dollars.

2. The average expected real rate of growth in US GNP from 1990 to 2000 equals 2.37 percent per year. Figure calculated from yearly forecasts as cited in Congressional Budget Office, *An Analysis of the President's Budgetary Proposals for Fiscal Year 1992*, Table II-2, Comparison of CBO, Administration, and "Blue Chip" Economic Projections, Calendar Years 1990-2000 (March 1991).

3. For further discussion of small communities, the reader is referred to the EFAB Advisory, *Small Community Financing Strategies for Environmental Facilities* (August 9, 1991).

4. US EPA, *1988 Needs Survey Report to Congress: Assessment of Publicly-Owned Wastewater Treatment Facilities in the United States* (February 1989), Table C-3. Average populations served by a 1 MGD facility calculated from Table C-4.

5. Wade Miller Associates, Inc., *The Nation's Public Works: Report on Water Supply*, prepared for the National Council on Public Works Improvement (May 1987). Also, US Congress, Office of Technology Assessment, *Facing America's Trash, What Next for Municipal Solid Waste?* (October 1989). Average community size generating 30 tons per day calculated from estimates on 75-76. Ratio of municipal solid waste to all waste generated and sent to landfills for one community in Florida (3.9/8.5 lbs per capita per day), used against national estimates for average municipal generation per capita (3.75 lbs. per person per day), between 1986-2000.

6. While it is true that some states exclude general obligation bonds from state caps where the proceeds are used for environmental projects, overall there is still a trend toward the use of revenue bonds for such projects.

7. Government Finance Research Center and Peat Marwick, Mitchell & Co., *Financial Capability Guidebook (Draft)*, Financial Management Assistance Program, 41-45. The threshold for wastewater charges ranges from 1-1.5 percent for income levels up to $17,000. The same thresholds are applied to drinking water charges as well in: Policy, Planning & Evaluation, Inc., *The Municipal Sector Study, Impacts of Environmental Regulations on Municipalities*, prepared for US EPA, Office of Policy, Planning, and Evaluation (September 1988). If solid waste fees are charged a similar threshold might apply. In addition, it should be noted that other factors also affect credit worthiness, and hence a municipality's ability to raise capital. These include its rates relative to neighboring communities and how rate setting is managed within the community. In the latter case, for example, a town's rating is less likely to be damaged if rates are increased incrementally over several years, rather than abruptly in any one year.

8. These figures are given in nominal terms and therefore include the effects of inflation. In real terms, rates will still increase over 10 percent per annum until the end of the century.

9. The organization behind the movement is the Massachusetts' Citizens for Limited Taxation.

10. Malachy Fallon and Joan Pickett, "The Price of Clean Safe Water", *Standard & Poor's Credit Week* (July 30, 1990), and personal communication with William Chew, Senior Vice President, Municipal Finance Department, Standard & Poor's Rating Group.

11. See for example the EFAB Advisory, *Incentives for Environmental Investment: Changing Behavior and Building Capital* (August 9, 1991).

12. US EPA, Office of Policy, Planning, and Evaluation, *Environmental Investments* (December 1990).

13. The costs of existing regulations are "those associated with regulations and programs that were substantially in place by 1987 and have achieved substantially full compliance with standards or attainment of goals." The costs of new regulations are "those estimated to result from new or recently implemented regulations and programs (i.e. those not substantially in place by 1987) and regulations currently under development or proposed by EPA." The costs of full implementation are those costs "that would arise from full compliance with those existing laws, regulations, and programs for which the attainment deadline has passed but for which there was substantially less than full attainment by 1987. They include costs of bringing all cities into attainment with ...the costs to satisfy the nation's municipal wastewater treatment needs to bring about fishable/swimmable water quality". US EPA, Office of Policy, Planning, and Evaluation, *Environmental Investments*, 1-5.

14. This figure is calculated from US EPA, Office of Policy, Planning, and Evaluation, *Environmental Investments*, Table 4-1A: Water Pollution Control Capital Costs. The figure equals total state, local, and federal (EPA only), capital spending requirements for point and nonpoint source projects, to maintain current levels of environmental quality, for the years 1988-2000 inclusive. Figure is in 1986 dollars.

15. Appropriations to the SRF equaled $2.304 billion in 1988; $1.95 billion in 1989; $1.99 billion in 1990; $2.10 billion in 1991; and $2.289 billion in 1992. Personal communication with US EPA, Office of Water.

16. Figures taken from Table C-1, US EPA, Office of Wastewater Enforcement and Compliance (formerly Office of Municipal Pollution Control), *State Revolving Fund (SRF) Final Report to Congress* (October 1991). Sixteen states will provide overmatch funds at some time between 1988 and 1999.

17. Figures taken from Table 4.2, for years 1988-1994, US EPA, Office of Wastewater Enforcement and Compliance, *State Revolving Fund (SRF) Final Report.*

18. "Money in the SRF may be used for the reasonable costs of administering the SRF, provided that the amount does not exceed 4 percent of all grant awards received by the SRF. Expenses of the SRF in excess of the amount permitted under this section must be paid for from sources outside the SRF. . . . Reasonable administrative costs include all reasonable costs incurred for management of the SRF program and for management of projects receiving financial assistance from the SRF. Reasonable costs unique to the SRF, such as costs of servicing loans and issuing debt, SRF program start-up costs, financial management, and legal consulting fees, and reimbursement costs for support services from other State agencies are also available. . . . Unallowable administrative costs include the costs of administering the construction grants program under section 205(g), permit programs under sections 402 and 404 and Statewide wastewater management planning programs under section 208(b)(4). . . . Expenses incurred issuing bonds guaranteed by the SRF, including the costs of insuring the issue, may be absorbed by the proceeds of the bonds and need not be charged against the 4 percent administrative costs ceiling. The net proceeds of those issues must be deposited in the Fund" (*55 Federal Register 10180*).

19. Most of the data for this model was taken from the US EPA, Office of Municipal Pollution Control, *State Revolving Fund (SRF) Interim Report to Congress* (April 1991). Numbers were added, and/or updated by personal contact with SRF administrators in the states involved.

20. Expected administrative costs in 1995 were assumed constant through 1999 based on the assumption that there is not necessarily a direct relationship between administrative costs and the level of lending.

21. In 1990 states received approximately 85 percent of their authorization levels, and in 1991 appropriations equaled 82 percent of authorization levels. In 1992 states actually received 127% of authorizations; $2.29 billion instead of $1.80 billion.

22. In fact, debt service typically does not begin until construction has ended, which can be three years. Constructing the model so that debt service (and hence fee payment) begins one year after loan disbursement shows that even if states could require debt service to begin right away, not enough money can be raised quickly enough to avoid a short term deficit.

23. During the 1992-1999 period, three of the eight states in this example overmatched or intend to overmatch their contribution to their SRF program. Connecticut significantly overmatches its funds over the entire period. New Mexico plans to contribute between $0.3 and $1.4 million per year during the years 1992-94 in an overmatch account and Virginia will contribute an extra $2.8 million in 1992. Because SRF restrictions regarding the use of funds do not apply to overmatch funds, these three states, and in particular Connecticut, may be able to reduce or avoid short-term deficits as discussed in the text. In the nation as a whole, 16 states contributed or intend to contribute overmatch funds at some point during the 1988-2000 period. In many cases, however, the state's overmatching activity is limited to intermittent years. The two states with significant overmatch activities are Connecticut and Wisconsin. Thus, while in the

sample overmatch activity may reduce or eliminate the deficit for these three states, overmatching tends to be the exception rather than the rule for the nation as a whole.

24. In a recent report on the status of the SRF program, 16 states reported that they expected to face an overall administrative deficit over the 1989-94 period. US EPA, Office of Wastewater Enforcement and Compliance, *State Revolving Fund (SRF) Final Report*. After 1994 however, it is possible that a greater number of states will experience shortfalls as the administrative allowance will have been reduced to zero.

25. The same study reports that many states have not developed financing plans to address administrative costs after 1994. US EPA, Office of Wastewater Enforcement and Compliance, *State Revolving Fund (SRF) Final Report*, 1-5. According to the Office of Water however, 30 states already have fee programs of one kind or another, so some anticipation of future supplementary funding requirements has been made.

26. EFAB Background Paper, *Current Private Involvement in the Provision of Environmental Services: A Literature Review*, (January 30, 1991). Only seven privatization contracts were ever signed -- one of the agreements included the construction of two plants.

27. This financing would be restricted to projects serving the public purpose.

28. For a greater discussion of the effects of the 1986 Tax Reform Act on environmental financing, the reader is referred to the EFAB Advisory, *Incentives for Environmental Investment*.

29. EFAB Advisory, *Private Sector (Final) Advisory* (November 1991).

30. EFAB Advisory, *Small Community Financing Strategies for Environmental Facilities* (August 9, 1991).

31. The four additions to funds available for lending by this "50-state SRF" equaled $67 million in 1988; $215.7 million in 1989; $625.98 million in 1990; and $923.76 million in 1991. These figures represent the aggregation of ten states' leveraging efforts: Alabama, Colorado, Connecticut, Iowa, Maryland, Minnesota, Missouri, New Jersey, New York, and Texas.

32. Total estimated needs over the 1988-2000 year period were cited as $49 billion, assuming maintenance of current standards. The reader is referred to section III,A.

33. Without the extra funding projects worth $40.61 billion could be financed over the 20 year period. Under Case II, this total rises to $44.32 billion, an increase in funding capacity of $3.71 billion.

34. Overmatch funds were excluded from the model in all four cases. Sixteen states have contributed or intend to contribute overmatch funds sometime during the 1988-1999 period. Over the 1988-1994 period, this activity will add a total of $1.07 billion in capitalization to the SRF program. Between 1995-1999, another $286 million will be added from the overmatch efforts of six states. This additional $1.35 billion, spread over

a 12 year period, would add incrementally to the total financing capacity of the SRF program. Overmatch activity for most states tends to be episodic in nature. Overmatch figures taken from US EPA Office of Wastewater Enforcement and Compliance, *State Revolving Fund (SRF) Final Report,* Tables 4-2 and C-1. In addition, the period selected to represent case IV (Table 6), is based on the reauthorization period proposed in the senate bill for reauthorization of the Clean Water Act, S. 1081.

35. Personal communication with the Office of Wastewater Enforcement and Compliance, Office of Water, US EPA.

36. This evidence was made available through direct contact with the Bill Shafer from the Arizona SRF, for example, and is mentioned as an issue in US EPA, Office of Wastewater Enforcement and Compliance, *State Revolving Fund (SRF) Final Report,* 1-7.

37. The actual measurement of the costs resulting from these authorities, could be made a part of state efforts to estimate the costs of compliance with environmental mandates, as discussed in Section II above.

38. Personal communication with Jean Green, Enforcement Branch, Wage and Hour Division, U.S. Department of Labor.

39. Personal communication with Bill Shafer, Arizona SRF program.

40. EFAB Advisory, *Small Community Financing Strategies.*

41. The fiscal affairs of small systems often are subsumed into the overall local government making full-cost pricing difficult to implement; larger systems are often managed by quasi-autonomous authorities whose bonding capability is separate from the local government.

42. Fallon and Pickett, "The Price of Clean Safe Water".

43. Solid waste facilities are typically debt financed. Office of Technology Assessment, *Facing America's Trash.* See also, Policy Planning and Evaluation, Inc., *The Municipal Sector Study* and R. W. Beck and Associates, *The Nation's Public Works: Report on Solid Waste,* prepared for the National Council on Public Works Improvement (May 1987).

44. Office of Technology Assessment, *Facing America's Trash.* Estimates made in 1988 suggested over 80 percent of all operating landfill sites would close by 2008. As much as one third will close in the next three years. Closures are not being matched by new openings: EPA estimated in 1988 that only 10 of existing landfills were less than five years old, while the life of a landfill often exceeds 20 years. Siting a new facility (whether incinerator or landfill), can take 5-8 years or more; thus those states with less than this time left in current landfill capacity face a siting constraint. This is a significant number eight states have less than five years remaining capacity, and another 15 have between five and ten years remaining capacity. In addition, plans to site incineration facilities are often dropped long after financing has been secured. A 1987

survey by Kidder, Peabody & Co. concluded that the capacity of incineration facility plans that had been canceled exceeded the capacity actually coming on stream (see R. W. McCoy, R. J. Sweetnam, and M. A. Liker, *Resource Recovery as of December 31, 1987,* Kidder, Peabody Equity Research Industry Comment (New York: Kidder, Peabody, & Co., 1988).

45. For a more complete discussion of the model used see Policy, Planning & Evaluation, Inc., *The Municipal Sector Study.*

46. The study recognizes that very small communities are more likely to obtain a bank loan than float a bond and therefore measures this impact for that particular group.

47. The 1.30 percent is the sum of the average rates as a percentage of income in the three individual media: .46 percent in drinking water; .52 percent in wastewater; and .32 percent in solid waste.

48. US EPA, Office of Policy, Planning, and Evaluation, *Environmental Investments.*

49. The reader is referred to EFAB Advisory, *Incentives for Environmental Investment.*

50. This idea is based on a paper by Michael Curley. The Board gratefully acknowledges the contribution of Michael Curley to this Advisory and to that of the Small Communities Workgroup.

51. The reader is referred to US EPA, Office of Policy, Planning and Evaluation, *Economic Incentives, Options for Environmental Protection* (March 1991).

52. The Board did not examine legislative options for establishing national fees to support an environmental trust. One approach is to include in the trust's authorizing legislation the amendments to the relevant environmental statutes providing for national fees.

53. It would not help such programs avoid the problem, however, it would only help them after-the-fact.

54. US EPA, Office of Wastewater Enforcement and Compliance, *State Revolving Fund (SRF) Final Report,* 6-4 - 6-6.

55. Anthony Commission on Public Finance, *Preserving the Federal-State-Local Partnership: The Role of Tax-Exempt Financing* (October 1989).

56. These could include the implementation of some of the suggestions put forward in the Anthony Commission Report on Public Finance, The Environmental Infrastructure Act of 1991 (S. 90), Representative Anthony's 1991 tax simplification proposals (H.R. 710), or the Environmental Infrastructure Financing Act of 1991 (H.R. 2172). These include, for example, reclassifying environmental bonds as tax-exempt "infrastructure bonds", defined as any state or local bond from which 95 percent of the proceeds are used to provide sewerage, solid waste, water supply, certain hazardous waste disposal, and other pollution-control facilities. For further discussion of the options discussed in these

proposals the reader is referred to the EFAB Advisory, *Incentives for Environmental Investment.*

57. National Governors' Association, *Funding Environmental Programs: An Examination of Alternatives (1989).*

58. In the case of a national trust fund supported by fees the fee system could be administered by the trustees.

59. Atlantic Richfield Company (ARCO), *Funding Aspects of CERCLA Reauthorization,* Executive Summary (March 9, 1984). Also see, Management Analysis Center, Inc., *Superfund Financing -- Analysis of CERCLA Taxes and Alternative Revenue Approaches,* prepared for Atlantic Richfield Company (ARCO) (March 6, 1984).

60. Wayne B. Solley, Charles F. Merk, and Robert Pierce, *Estimated Use of Water in the United States 1985,* U.S. Geological Survey Circular 1004, US GPO 1988, Table 3.

61. 1985 figure for self-supply taken from Solley, Merk, and Pierce, *Estimated Use of Water,* Table 3. Water use is assumed to grow at 1.5 percent per annum.

62. Agricultural use could also potentially drop in response to the tax.

63. Based on drinking water withdrawals averaging 105 to 140 per person per day, and an average household size of 2.64 persons.

64. Water rates calculated from Ernst & Young, *1990 National Water and Wastewater Rate Survey* (January 1990), Exhibit 1. Median income figure is based on 1989 median total household income of $28,906, Ed Walnack, Income Division, Bureau of Census, Department of Census. Figure from US Bureau of Census, *Current Population Report,* Series P-60, #168 (September 1990).

65. In practice it would need to be based on both. A straight volume fee could give rise to highly concentrated discharges, and a contents only fee would give rise to dilution. Only a fee that captured both would make the discharger pay for the pollution released. This would be administratively more complex than a straight volume fee, however.

66. Numbers taken from Solley, Merk, and Pierce, *Estimated Use of Water,* Table 22. The 1985 wastewater releases are total public releases, in millions of gallons per day. Wastewater releases were assumed to grow at 1.5 percent compound annual rate. Figures for Puerto Rico and the Virgin Islands were excluded.

67. Using average drinking water withdrawals of 105 to 140 gallons per person per day as a proxy for wastewater discharge and an average household size of 2.64 persons.

68. Wastewater rates calculated from Ernst & Young, *1990 National Water and Wastewater Rate Survey,* Exhibit 2. Median income figure is based on 1989 median total household income of $28,906, Ed Walnack, Income Division, Bureau of Census, Department of Census. Figure from US Bureau of Census, *Current Population Report.*

69. Office of Technology Assessment, *Facing America's Trash*, 73, 76.

70. For a full discussion of the fee program under the Clean Air Act, the Board refers the reader to Title I, Section 502 of the Act.

71. It may be a component in home heating oil, for example.

72. See S. 1081, Section 21 (q)(5).

73. Personal contact with Rosa Hill, Phoenix Water Department, and Georganna Myers, Arizona Department of Revenue.

74. See National Governors' Association, *Funding Environmental Programs*.

75. Ibid, 31-32.

APPENDIX

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