



U.S. Army Corps of Engineers
Water Resources Support Center
Institute for Water Resources

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The Federal Role in Funding State and Local Infrastructure: Two Reports on Public Works Financing

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Federal Infrastructure Strategy Program

August 1993

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IWR Report 93-FIS-6

Federal Infrastructure Strategy Reports

This is the sixth in a series of interim reports which will be published by the U.S. Army Corps of Engineers during the Federal Infrastructure Strategy program, a three-year effort to explore the development of an integrated or multi-agency Federal infrastructure policy. This report presents two studies of State and local infrastructure financing and the Federal role in that financing and also provides a discussion of some of the economic context in which that financing takes place.

Other reports in the series thus far include:

Framing the Dialogue: Strategies, Issues and Opportunities (IWR Report 93-FIS-1);

Challenges and Opportunities for Innovation in the Public Works Infrastructure, Volumes 1 and 2, (IWR Reports 93-FIS-2 and 93-FIS-3);

Infrastructure in 21st Century Economy: A Review of the Issues and Outline of a Study of the Impacts of Federal Infrastructure Investments (IWR Report 93-FIS-4); and

Federal Public Works Infrastructure R&D: A New Perspective (IWR Report 93-FIS-5).

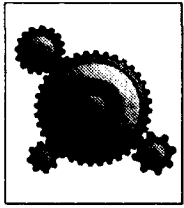
The program will culminate with a final report to be published in 1994. The interim documentation contained herein is not intended to foreclose or preclude the program's final conclusions and recommendations. Within this context, comments are welcome on any of these reports.

For further information on the Federal Infrastructure Strategy Program, please contact Robert A. Pietrowsky, Program Manager at :

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The Federal Infrastructure Strategy study team includes Cameron E. Gordon, Economic Studies Manager and James F. Thompson, Jr., Engineering Studies Manager. The program is overseen by Dr. Eugene Z. Stakhiv, Chief, Policy and Special Studies Division, and Kyle Schilling, Director of the Institute.

Reports may be ordered by writing (above address) or calling Ms. Arlene Nurthen, IWR Publications, at (703)355-3042.



The Federal Infrastructure Strategy Program

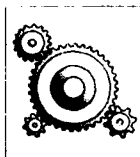
THE FEDERAL ROLE IN FUNDING STATE AND LOCAL INFRASTRUCTURE: TWO REPORTS ON PUBLIC WORKS FINANCING

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IWR REPORT 93-FIS-6



The Federal Role in Funding State and Local Infrastructure

ACKNOWLEDGEMENTS

This report presents the results of two inquiries into the Federal role in State and local infrastructure finance, undertaken by the U.S. Army Corps of Engineers under a broad administrative directive aimed at the development of a Federal infrastructure strategy (FIS).

The FIS program is being administered by the Corps as a collaborative interagency effort, supported by a series of expert inquiries and research papers. Two of those research papers are presented here. One report ("The Effect of Federal Tax Policy on Public Works Investment") was commissioned from Apogee Research. The other report ("State Programs for Community Infrastructure Innovations in Financing Methods and Program Operations") was commissioned from the Urban Institute.

Policy guidance for the FIS program is provided by the Office of the Assistant Secretary of the Army (Civil Works) through Dr. Robert N. Stearns, Deputy Assistant Secretary for Project Management, while program execution is overseen by the Corps of Engineers Directorate of Civil Works through Donald Kisicki, Chief, Office of Interagency and International Activities.

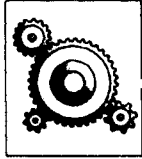
The Corps Institute for Water Resources (IWR) has detailed management responsibility for the FIS program under the direction of Dr. Eugene Z. Stakhiv, Chief, Policy and Special Studies Division; and the FIS Study Team which includes Mr. Robert A. Pietrowsky, Program Manager, Mr. Cameron Gordon, Economic Studies Manager, and Mr. James F. Thompson, Jr., Engineering Studies Manager. Mr. Kyle Schilling is Director of the Institute.

This report was prepared under the supervision of Mr. Cameron Gordon, who also wrote the introduction. Special thanks are given to Dr. George Antle, Chief of the Navigation Division of IWR, Ms. Brenda Avoletta of the U.S. Advisory Commission on Intergovernmental Relations (ACIR), Ms. Jessica Fox of the Research Division of IWR, Dr. Pamela Moomau of the U.S. Congress Joint Committee on Taxation, Dr. Larkin Warner of the Oklahoma State University and visiting fellow of the Navigation Division of IWR, and Mr. Robert Pietrowsky for their helpful comments on the introduction. Mention must also be made of Ms. Arlene Nurthen, IWR, for her efforts in editing and formatting this report.

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ACKNOWLEDGEMENTS iii



The Federal Role in Funding State and Local Infrastructure

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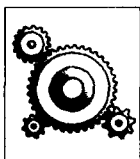
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The Federal Role in Funding State and Local Infrastructure

PURPOSE OF THIS REPORT

This report presents two studies of State and local infrastructure financing and the Federal role in that financing, and also provides a discussion of some of the economic context in which that financing takes place.

The Introduction reviews some of the general trends in State and local infrastructure budgets and analyzes the possible effects that Federal policies may have had on those budgets.

Report I, conducted for the Federal Infrastructure Strategy Program by Apogee Research, Inc., and titled Effects of Federal Tax Policy on Infrastructure Investment, examines the volume of tax exempt bonds issued over the period 1979-1989 in order to assess the impact that the 1986 Tax Reform Act had on the ability of State and local governments to finance public works projects, and also reviews the trend of infrastructure costs to verify whether the Act has indeed resulted in more expensive projects.

The study revealed that over the 1979-1989 period, the volume of tax-exempt bonds issued to finance infrastructure has remained steady in real terms, while the volume of taxable bonds has risen slightly. Since the volume of tax-exempt bonds has not changed significantly, it is possible to conclude that infrastructure investment is continuing at the pre-tax reform level. However, whether the post-tax reform sample period has fully responded to the Act, and whether these levels of investment meet the nation's current infrastructure needs, remain as outstanding issues.

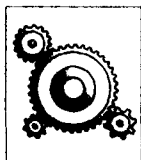
Report II by The Urban Institute, titled State Programs for Community Infrastructure: Innovations in Financing Methods and Program Operations, examined programs in nine states to support local water supply, wastewater treatment, and solid waste efforts.

The study includes the results of a literature survey and interviews of State administrators focused on examples of innovative State assistance methods. The report also provides Federal agencies with a perspective on successfully applied techniques, and concludes with several suggestions for relatively low-cost activities that could be undertaken by the Federal government in support of state and local infrastructure efforts.



The range of State techniques examined include innovative financial measures, the provision of technical assistance, the use of project selection incentives, the application of decentralized decision-making, the use of the terms and conditions of infrastructure loans and grants to screen projects, the use of bond banks, monitoring and evaluation assistance, and the accomplishment of needs assessments.





The Federal Role in Funding State and Local Infrastructure

INTRODUCTION

Financing infrastructure is expensive. Infrastructure facilities are usually large, require significant amounts of initial capital for construction, and often only begin to operate years after ground is broken, meaning that recovery of the investment costs occurs far after the initial investment is made. Moreover, once public works are built, they usually require significant sums to operate and maintain.

State and local governments face the challenge of financing infrastructure most directly and most acutely. These governments are usually the main providers and servicers of public works and thus shoulder the primary responsibility for paying for these facilities. Indeed, in most instances, State and local capital expenditures dwarf Federal contributions.

In light of these two facts, the U.S. Army Corps of Engineers, Institute for Water Resources, commissioned two studies as part of the Federal Infrastructure Strategy (FIS) program to examine the Federal, State, and local roles in financing infrastructure. One study, by Apogee Research, looks at the effect of federal tax law on public works finance, while the other study, by The Urban Institute, looks at innovative state and local financing mechanisms. This introduction provides some context on the way all three levels of government work together to provide infrastructure.

There are various ways to measure the relative importance of Federal, State and local responsibilities for providing public works. One way is to compare direct spending for capital assets across the three levels of government. (Direct spending is to be distinguished from grants or other indirect spending which are essentially transfers of money from one level of government to another rather than a direct purchase of a good or service.) In Table 1, Federal outlays for capital assets are presented as a percent of State and local outlays for similar types of assets. This calculation highlights the significance of direct State and local capital expenditures as a proportion (reported as a percentage) of direct Federal capital expenditures, each taken as a whole.

As the table demonstrates, direct Federal capital spending on items such as education, highways, health and hospitals, and air transportation were generally far outstripped by State and local spending on the same items. In 1970, Federal capital outlays in the areas below were equal to only 15% of similar State and local outlays. By 1988, the Federal level of effort had increased relatively, but was still only one quarter the size of the commitments being undertaken



by other levels of government. However, it is important to note the Federal government does have significant influence over and provides significant amounts of money to support infrastructure through grants, as opposed to direct purchases of public works. These figures on direct spending do not fully capture this fact.

TABLE 1					
DIRECT CAPITAL OUTLAY EXPENDITURES: Federal outlays as a percent of State & local expenditures (calculated as the ratio of Federal outlays/State and local outlays)					
	1970	1975	1980	1985	1988
Education	0.1%	0.0%	0.9%	0.3%	0.0%
Highways	0.1	0.5	0.7	0.5	0.5
Health & Hospitals	21.0	17.5	27.5	33.8	35.7
Natural Resources	214.3	306.9	384.6	235.7	189.1
Housing	64.7	58.2	14.1	60.1	143.1
Air Transportation	33.9	42.6	10.9	41.9	14.1
Water Transportation	110.5	59.9	161.0	81.3	40.6
Other	20.4	32.2	27.2	41.0	51.4
TOTAL	15.3	20.7	18.7	22.0	24.0

Source: Statistical Abstract of the United States

Tables 2 and 3 provide some perspective on the budget constraints which these State and local governments face in shouldering the infrastructure burden. Table 2 shows these sources and uses expressed in nominal dollars, that is dollars not adjusted for inflation. Table 3 shows the percentages of the budget raised by various methods and spent for various purposes. Note that the Federal role in providing funding to State and local governments is significant but has been declining recently.

In recent years raising taxes has been difficult in many jurisdictions, and this fact is revealed by the declining percentage of revenues raised from taxes. Whereas State and local governments got almost two-thirds of their revenue from taxes in 1970, that proportion had declined to three-fifths by 1988.

There are a number of reasons that taxes have declined in relative importance as a revenue source. First, the numbers obscure a fair amount of tax increases which have occurred at the state and local level. Many excise and property taxes are not indexed to inflation and will decline naturally relative to other sources such as income taxes which grow with economic activity. State and local governments have thus had to raise excise tax rates simply to stay in



TABLE 2				
SOURCES AND USES OF FUNDS (millions of \$)				
STATE AND LOCAL GOVERNMENTS				
	1970	1980	1985	1988
General Revenue	\$130,756	\$382,322	\$598,121	\$727,161
From: Federal Govt.	21,857	83,029	106,158	117,602
Taxes	86,795	223,463	350,367	435,691
Current Charges	14,873	44,373	74,323	94,558
Miscellaneous	7,231	31,457	67,273	79,310
Direct General Expenditure	131,332	367,340	552,033	702,240
Education	52,718	133,211	192,686	242,683
Highways	16,427	33,311	44,989	55,621
Public Welfare	14,679	45,552	69,523	86,469
Health & Hospitals	9,668	32,174	49,678	61,940
All Other	37,840	123,092	195,157	255,527
NET OPERATING BALANCE	(576)	14,982	46,088	24,921
Debt Outstanding	143,570	335,603	568,633	755,034
Capital Outlay	29,650	62,894	79,901	104,314

Source: Statistical Abstract of the United States; Government Finances, various issues



TABLE 3				
SOURCES AND USES OF FUNDS (% of total revenues or outlays) (calculations by author)				
STATE AND LOCAL GOVERNMENTS				
	1970	1980	1985	1988
General Revenue	100.0%	100.0%	100.0%	100.0%
From: Federal Govt.	16.7	21.7	17.7	16.2
Taxes	66.4	58.4	58.6	59.9
Current Charges	11.4	11.6	12.4	13.0
Miscellaneous	5.5	8.2	11.2	10.9
Direct General Expenditure	100.0	100.0	100.0	100.0
Education	40.1	36.3	34.9	34.6
Highways	12.5	9.1	8.1	7.9
Public Welfare	11.2	12.4	12.6	12.3
Health & Hospitals	7.4	8.8	9.0	8.8
All Other	28.8	33.5	35.4	36.4
NET OPERATING BALANCE (as % of revenues)	-0.4	3.9	7.7	3.4
Debt Outstanding (as % of revenues)	109.8	87.8	95.1	103.8
Capital Outlay (as % of expenditures)	22.6	17.1	14.5	14.9



place as far as real tax revenue is concerned. Second, states and localities are always concerned with driving out existing economic activity such as manufacturing by imposing corporate and individual income taxes which are viewed as uncompetitive with that of their neighbors. Third, property taxes are already at high levels in many places, and those with fixed incomes in particular often have difficulty paying existing taxes, much less any increases. Fourth, the political climate generally has been anti-tax. Finally, the slow economy has lowered the revenue yield of all taxes as fewer taxable sales are made, personal and corporate incomes have fallen in real terms, and property values have shrunk. To partially compensate for the inability to raise tax rates, states and localities have relied more on user fees and other current charges, which rose from around 11% of the budget in 1970 to 13% in 1988.

Of course, many public works are debt-financed, a sensible proposition since up-front costs are so high and returns from the investment are delayed. But State and local debt has its limits as well. Bonds issued for a specific project, and whose repayment is to be covered by the revenues from that project, are thus limited to the capitalized amount of those revenues. Bonds whose repayment are secured by general tax revenues, rather than project revenues, are limited by the capacity of the jurisdiction issuing the bonds to raise tax revenue. Both of these limits are easy to reach in many cases and with recently stagnating tax bases they are not growing particularly fast. In any case, voters usually have the final say on most general obligation bond issues, and they are frequently saying "no", even when issuance seems to be justified. As shown in Tables 2 and 3, total State and local debt outstanding was rising as a percentage of total State and local revenues between 1980 and 1988, but was still below 1970 levels.

While local public works are limited by the local revenues available, the benefits of building such public works usually are not. A town road leads to other towns and thus benefits those other towns. A wastewater treatment plant in one State will improve downstream water quality in the whole watershed. The Federal Government often directly or indirectly requires localities to provide infrastructure in the name of some national policy goal, such as equal access to the handicapped (though, as noted below, federal funding is not always included). For those reasons, and also because some jurisdictions need public works like sewage treatment but are not able to afford them (small rural towns are one example), the Federal government has stepped in to provide assistance for State and local infrastructure.

This assistance has historically taken two forms, namely grants and a Federal income tax-exemption on interest paid to private holders of State and local debt. Direct Federal contributions such as grants have been declining as a share of State and local budgets. As Table 3 indicates, Federal assistance as a percentage of State and local budgets has been declining. The 16.2% of State and local revenues received from the Federal government in 1988 was just slightly below the 16.7% garnered in 1970, and well below the 21.7% received in 1980.

TABLE 4				
ISSUANCE OF STATE AND LOCAL TAX-EXEMPT DEBT				
YEAR	TOTAL TAX-EXEMPT BOND ISSUANCE ('000s)	TOTAL TAX-EXEMPT BOND ISSUANCE ('000s of 1987 dollars)	5-YEAR AVERAGE GROWTH RATE (% of nominal issuance) (annual arithmetic average)	ISSUANCE AS PERCENT OF GROSS DOMESTIC PRODUCT
1960	\$7,229,500	\$27,805,769		1.4%
1961	8,359,500	31,785,171		1.6
1962	8,558,200	31,933,582		1.5
1963	10,106,700	37,156,985		1.7
1964	10,544,100	38,065,343		1.6
1965	11,084,200	39,028,873	10.7%	1.6
1966	11,088,900	37,717,347		1.4
1967	14,287,900	47,154,785		1.8
1968	16,374,300	51,653,943		1.8
1969	11,460,300	34,415,315		1.2
1970	17,761,600	50,602,849	12.0	1.8
1971	24,369,500	65,863,514		2.2
1972	22,940,800	59,125,773		1.9
1973	22,952,600	55,575,303		1.7
1974	22,824,000	50,832,962		1.6
1975	29,326,200	59,606,098	13.0	1.8
1976	33,844,600	64,712,428		1.9
1977	45,060,500	80,609,123		2.3
1978	46,214,800	76,641,459		2.1
1979	42,260,800	64,520,305		1.7
1980	47,133,400	65,736,960	12.1	1.7
1981	46,134,200	58,471,736		1.5
1982	77,179,000	92,099,045		2.5
1983	83,347,900	95,582,454		2.4
1984	101,881,600	111,957,802		2.7
1985	204,280,600	216,398,941	66.7	5.1
1986	151,300,900	156,141,280		3.5
1987	105,441,400	105,441,400		2.3
1988	117,763,000	113,342,637		2.4
1989	125,047,000	115,357,011	4.5	2.4

Source: 1991 Bond Buyer Yearbook and Author Calculations



Partly in response to this fall-off in Federal money, State and local governments have increased their use of the other main Federal subsidy, namely the issuance of tax-exempt bonds. However, Congress began to chip away at the ability to use this subsidy in the late 1960's, and then put on fairly tight controls with passage of the Tax Reform Act of 1986. Table 4 shows the patterns in issuance of tax-exempt debt since 1960. Figures 1 and 2 plot those trends graphically.

Several interesting trends emerge from the data above. The 1980's, and Tax Reform in particular, were a turbulent time in the tax-exempt bond markets. Tax-exempt bond issuance between 1981 and 1985 grew by two-thirds a year over the period and much of that growth came over the course of one year when issuance more than doubled between 1984 and 1985 as issues sought to rush bonds to market to beat the anticipated restrictions on State and local debt that were enacted as part of the Tax Reform Act of 1986. Bond issuance in that one year went from being equal to less than 3 percent to more than 5 percent of GDP. The fall-off in issuance in the following two years was almost as dramatic.

Despite the temporary fluctuations resulting from restraints which Tax Reform and previous Acts placed on State and local bonding authority, the growth in tax-exempt bond issuance since 1960 has been remarkably steady. When adjusted for inflation, tax-exempt bond issuance has more than quadrupled over the period and, up until the 1980's, the five-year average annual arithmetic growth rates have consistently exceeded 10 percent. Tax-exempt bond issuance has also grown as a percentage of GDP since 1960, rising from 1.4 percent of GDP in 1960 to 2.4 percent of GDP in 1989. A simple reading of the facts seems to indicate that Federal restrictions on State and local debt have not been as effective or as onerous as is often claimed.

However, these numbers do not tell the whole story. First, not all the proceeds from the issuance of tax-exempt debt goes to new projects. A significant amount of bond volume is used simply to refinance or "refund" or "defease," in bond parlance, existing debt. Second, as mentioned above, the increase in State and local bond issuance may simply be out of necessity. Even though Federal subsidies have been declining, since 1980 State and local public works responsibilities have not. Many existing facilities are in grave states of disrepair and need extensive refurbishment. Public works always require adequate funds for operation and maintenance. And demand for new infrastructure must often be met.

The Federal government itself has a significant effect on the size and type of demands for infrastructure through the imposition of various legislative requirements. Some of these Federal requirements, such as clean water standards, require that States and localities invest in new or expanded public works facilities. Table 5 provides a list of selected mandates which have infrastructure ramifications. These mandates generally can be said to have national purpose and arguably provide benefits which justify their costs. Beneficial or not, State and local governments have to come up with funds, often from their own revenue bases, to meet these requirements.



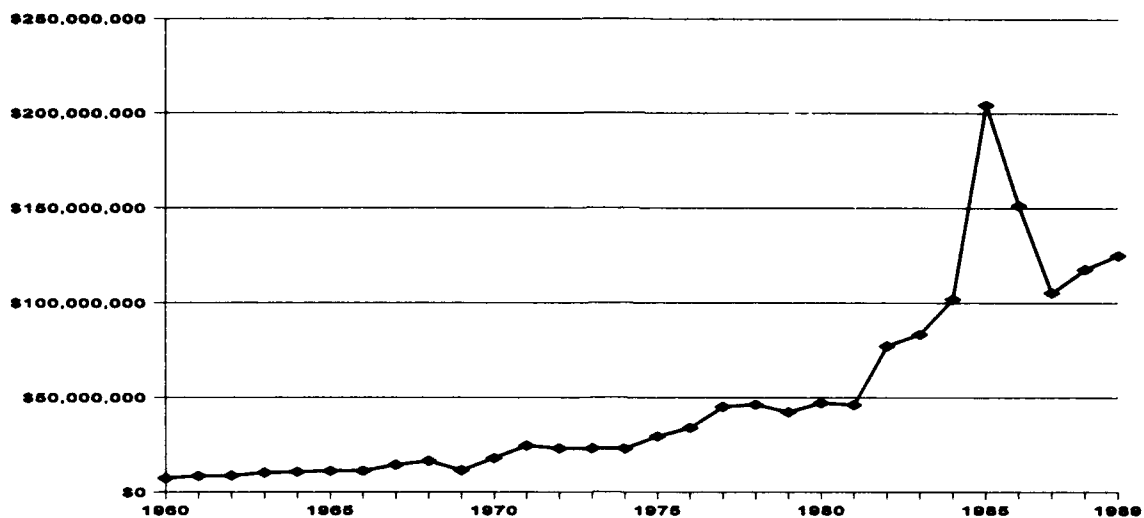


FIGURE 1 - TOTAL TAX EXEMPT BOND ISSUANCE
(Thousands of Nominal Dollars)

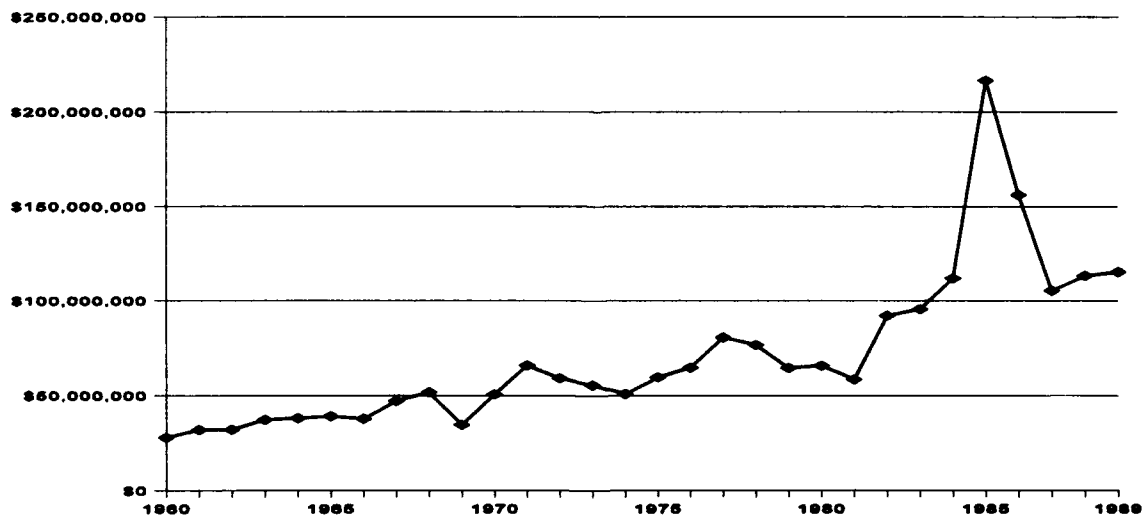


FIGURE 2 - TOTAL TAX EXEMPT BOND ISSUANCE
(Thousands of 1987 Dollars)



TABLE 5
SELECTED RECENT FEDERAL INFRASTRUCTURE MANDATES

Americans with Disabilities Act
Asbestos Hazard Emergency Response Act
Clean Water Act
Clean Air Act and Amendments
Federal Rivers and Harbors Act
Federal Insecticide, Fungicide and Rodenticide Act
Hazardous Materials Transportation Act
Resource Conservation and Recovery Act
Safe Drinking Water Act
Toxic Substances Control Act
Title III of Superfund Amendments and Reauthorization Act

Source: Author review of selected legislation

Given that infrastructure requirements are, in many instances, rising, at the same time that Federal subsidies are falling relatively, three basic questions are raised. First, what activities should the Federal government be subsidizing, what form should those subsidies take, and how large should those subsidies be? Second, assuming an increase in Federal funds is forthcoming, what alternative sources of funds, or efficiencies in the use of those funds, are available to State and local governments? Third, when no more money can be squeezed out existing budgets, what infrastructure needs or requirements have been, or can be, sacrificed by State and local governments?

Two research reports, commissioned and funded by the U.S. Army Corps of Engineers Institute for Water Resources under its Federal Infrastructure Strategy Program, have addressed specific aspects of these questions. The first report, by Apogee Research, Inc., examines the effects the Tax Reform Act of 1986 may have had on the ability of States and localities to finance the building of public works.

The Tax Reform Act of 1986 posed some basic questions about the activities which were appropriate for Federal subsidies. In general, the approach to tax-exempt finance that emerged from the Tax Reform Act of 1986 was that activities whose benefit could be shown to accrue largely to private, nongovernmental interests, should not receive a tax subsidy, while activities whose benefits did accrue to government, or which were primarily private, but deemed to be in the public interest, should nonetheless be controlled and targeted.

As the Apogee report describes in more detail, the Tax Reform Act added a number of requirements for States and localities to follow before interest on their debt would be exempted from Federal income taxation. First, tests which determined whether a bond issued by a



government accrued mainly to private persons rather than the public at large, and thus called "private activity bonds", were tightened, with the net effect being that fewer government bonds would qualify for tax exemption. Second, all private activity bonds which were nonetheless deemed to qualify for tax-exemption because of the socially desirable activities they were financing, were placed under a volume cap, so that future growth in issuance would be limited. Third, the use of proceeds from governmental bonds, that is, bonds which are not private activity bonds, were restricted in certain ways if they were to receive tax-exemption. The main restriction was on the use of tax-exempt bond proceeds to buy financial instruments which yielded a higher taxable return.

These limits have arguably reduced the abuse of the Federal interest subsidy which has taken place in the past. But have these limits gone too far, and reduced funding of legitimate infrastructure needs of the public sector? The Apogee report attempts to answer this question by looking at changes in the trends of the issuance of government debt for various public works categories. In general, the Act has effectively controlled some of the abuses of the Federal subsidy which occurred previously, but has done so by raising the cost of issuing debt and eliminating some bond issues which arguably have a public purpose.

Whether the benefits of the Act's provisions outweigh the costs is very difficult to determine. Underlying growth rates in issuance for various types of infrastructure have continued to be positive in most cases after passage of the Act. But it is also possible that public works needs are going unmet which otherwise would have been met in the form of even higher levels of debt issuance.

To the extent needs are going unmet, the Urban Institute Report describes various ways in which local governments can squeeze the most out of every dollar they have on hand. The report is "an 'idea book'...present(ing) a number of ideas that states can consider for strengthening programs aimed at assisting communities to improve their infrastructure."

The study examines four types of policies - state grant and loan programs, technical assistance regimes, bond banks, and privatization - in fifteen states - Georgia, Illinois, Indiana, Kansas, Maine, Maryland, Missouri, New York, North Carolina, Ohio, Tennessee, Texas, Utah, Washington and Wisconsin.

The report notes that state infrastructure loan and grant programs are targeted to a wide variety of purposes including general construction, capital improvement, development of infrastructure in infrastructure-poor areas, and economic development projects. Generally these loans and grants are designed like most private grant and loans in that the characteristics of the borrower, of the project, and of the use of the funds are all examined with respect to applicants in varying degrees of detail. However, unlike private lenders, states seek to address various social wants through their lending such as income or regional inequity. Thus most state loans are subsidized in that they do not charge borrowers administrative fees or market interest rates.



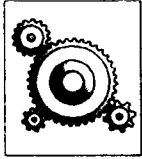
Beyond grants and loans, the report examines three other approaches states use to aid local infrastructure. One approach is bond banking where States provide seed money and pool local bond offerings and thus reap economies of scale by borrowing big sums periodically on the behalf of many small borrowers. This approach results in lower interest costs but does little to aid localities which can afford only nonmarket rates rather than the market rates of large borrowers.

Another approach used by states is technical assistance programs. New York and Tennessee are apparently unique in the assistance they provide to communities. New York, for example, provides on-site technical aid to communities with populations under 5,000. In particular, the state encourages local self-help programs which are meant to sustain projects after local people have been suitably trained. Tennessee's program is open to most communities and provides a wide range of project assistance such as on-site training, workshops, experts-on-loan and a reference library for local officials.

As for the appropriate Federal role, the Urban Institute report asks that the Federal Government act as an overseer and coordinator for states, setting standards for project selection and needs/program assessments and transferring information and ideas.

State and local governments clearly have the primary burden of providing infrastructure. This burden has only grown more difficult with the relative decline in Federal subsidies which have been observed in recent years, and the growth in Federal mandates which carry no funding with them. The two reports contained herein provide both some perspective on these changes and, more hopefully, some ideas which can be followed by the public sector to make the limited funds available travel that much farther.





**The Federal Role in Funding
State and Local Infrastructure**

REPORT I:
**THE EFFECT OF FEDERAL TAX POLICY
ON PUBLIC WORKS INVESTMENT**

Prepared by:

Apogee Research, Inc.

February 1993

Prepared for:

**U.S. Army Corps of Engineers
Water Resources Support Center
Institute for Water Resources**



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EXECUTIVE SUMMARY

With the passage of the Tax Reform Act in 1986 (the Act), Congress completed a lengthy overhaul of the federal tax code. The Act contains several provisions that restrict or place conditions on the use of tax-exempt bonds to finance public works infrastructure. These provisions are generally assumed to have increased the cost of providing basic public services and facilities.

The focus of this paper is the effect of federal tax policy, specifically the 1986 Act, on investment in public works infrastructure. The paper approaches this question in two ways. First, it reviews the Act, provision by provision, and discusses the effects of each provision on supply and demand in the tax exempt bond market. Second, it looks at trends in infrastructure investment before and after the act.

Taken as a whole, the Act had three purposes: to simplify the revenue code with an emphasis on closing loopholes, to promote tax equity, and to reduce the federal deficit in the long run by reducing incentives for capital diversion to tax shelters and increasing economic growth. The provisions of the Act that address tax-exempt bonds support the general goals of the Act. However, some provisions had secondary effects on both issuers and purchasers of tax-exempt bonds, which made their use in financing infrastructure more difficult and more expensive.

The Act has restricted the use of tax-exempt bonds, has made them more difficult to administer, and has altered the nature of the demand for them. The true extent of these effects may never be fully established because of the complexity of monetary, fiscal, and tax policy that also affect bond issuances. Some of the more direct effects of these provisions, such as changes in volume and demand, are observable. However, the primary effect of these provisions -- raising the cost of borrowing to states and localities -- is not easily quantifiable.

The direct impact on infrastructure financing can be divided into two categories: effects on issuers of tax-exempt bonds (supply) and effects on demand for tax-exempt bonds. From the supply perspective, the Act affects issuers three ways: it restricts the volume of tax-exempt bonds that can be issued to finance infrastructure, second it increases costs associated with those bonds that are tax exempt, and third it forces some infrastructure projects to be financed through taxable bonds.

In addition to those provisions that increase the difficulty and cost of getting tax-exempt infrastructure bonds to market, other provisions affect demand for these bonds. As Part 1 of this paper demonstrates in more detail, the Alternative Minimum Tax, bank deductibility, and Property and Casualty provisions reduce the attractiveness of (and hence, demand for) tax-exempt bonds which, in turn, increases yields that bond buyers demand when purchasing these bonds.



Although investment in infrastructure has maintained a steady pace, the Act had the effect of increasing costs for public purpose infrastructure facilities. Four major factors contributed to this increase:

- **Higher tax-exempt interest rates.** The 1986 Act required states and localities to offer higher tax-exempt rates on some types of bonds -- by some estimates, increases of 15 to 30 basis points. These higher rates must be offered to investors to compensate for the imposition of the Alternative Minimum Tax.
- **Reduced attractiveness of tax-exempt bonds for certain institutional investors.** Provisions in the Act narrowed the market for tax-exempt bonds by eliminating certain types of large-volume institutional buyers. Many observers believe that this generally tended to destabilize the market and increase bond interest rates compared to what would have been necessary to attract a broader set of buyers prior to 1986. Between the end of 1985 and the end of 1989, for example, bank ownership of tax-exempt securities declined by more than 49 percent, from \$231 billion to \$117 billion.
- **Delays in issuing tax-exempt bonds.** Some provisions of the Act have at least delayed and possibly increased the costs significantly of financing many infrastructure projects. According to a recent analysis, for example, requests for some \$2.4 billion in solid waste, water and sewer bonds were denied or delayed in 1989 because of the Act's limitations on the volume of private activity tax-exempt bonds that states can issue each year.
- **Restrictions on tax-exemption of bonds.** Because the Act restricted the amount of private activity tax-exempt bonds that can be issued each year, many states and localities have had to issue public purpose bonds as taxable bonds, increasing borrowing costs significantly. For example, a \$10 million taxable bond issuing with a yield that is 2 percentage points higher than a similar tax-exempt issue will cost the issuer \$2.5 million over the life of the issue.

Investment in public works is affected by a complex array of economic, political, and legal conditions. For example, macro economic conditions directly and indirectly dictate interest rates which, in turn, are a principal determinant of the volume of municipal bond issues. Federal fiscal policy decisions also play an integral role in determining the supply of bond issues in the municipal market. Further, changes to tax legislation may partially explain public works investment trends to the extent that they alter activities of market participants issuing and purchasing municipal bonds.

There is a degree of difficulty in correlating provisions of the Act and changes in municipal bond market activity. This paper was not designed to examine all the variables that affect bond volume or interest rates. Instead, it represents a more modest effort, making use



of readily available secondary information. However, had a more ambitious level of effort focused on statistical inferences between changes in the Tax Code and bond volume or yields, it would not be unreasonable to expect that the strength of economic and political influences would likely cloud relationships between the Act and these variables.

Huge increases in tax-exempt bond volume in 1984 and 1985 are attributable to the combined effect of several factors: a strong economy; relatively low interest rates; easy credit; strong state and local finances; and most importantly, the knowledge that Congress was considering a Tax bill that might severely affect tax exempt bond issuance. The sweeping reforms proposed under the Treasury Department's tax reform plan were unveiled in November of 1984 which, combined with nearly ideal market conditions, caused issuers to rush their bonds to market before the law could be enacted. In late 1985, when the House passed its version of tax reform, H.R.3838, an incredible surge in volume took place. As a result, 1985 was the highest volume of tax-exempt bond issues in any year and over 50 percent of that volume was sold during the last three months of the year.

The subsequent decline in volume in 1986 and 1987 is to be expected; after such a massive surge, most issuers would have either met most of their capital needs for the next few years or would have reached limits of their debt capacity. What is difficult to discern from 1985 on is what portion of the decrease was due to expected counterbalancing effects, what portion (after 1986) was due to the Act itself, and what portion to other factors discussed in previous chapters?

A comparison of trends in the volume of tax exempt new capital issues for public works to trends in volume of all other tax exempt issues does not suggest that the 1986 Act affected public works investment significantly more than other municipal bond categories. Trends in volume of tax exempt public works bonds follows the same general trends observed for all municipal bonds. Public works bonds were rushed to market earlier than other municipal bonds. In 1984 the volume of tax exempt new capital infrastructure bonds increased 107 percent, while all other tax exempt new capital municipal bonds increased only 12 percent. However, volume of issues other than public works dropped off more significantly immediately following the Act, and public works volumes were slower to fall off. The question we are again faced with is: what portion of the trends in volume are attributable to the rush to market, what part to the Act itself, and what part to other trends?

Prior to the 1984-1985 rush to market, aggregate volume of new capital issues for public works infrastructure projects dropped by 26 percent from \$22 billion to \$16 billion. The most prominent categories contributing to this decline were Water & Sewer (which declined by 34 percent from \$3.3 to \$ 2.2 billion), Pollution Control (down 42 percent from \$5.2 to \$3.0 billion), and Transportation-Other (down 94 percent \$92.7 to \$5.9 million). Somewhat distorting the severity of aggregate decline in volume was the Solid Waste/Resource Recovery category which posted a 286% increase. In other words, if it were not for the Solid Waste/Resource Recovery category, infrastructure volumes would have shown a more drastic



decline in 1983. A possible explanation of the overall decline in volumes in 1983 is a lagged response to the recession of the late 1970s and early 1980s which reduced planning for large capital projects that would have reached construction in 1983.

The rush to market in anticipation of the Act also was compounded by low interest rates that generally encouraged issuance. Taking volume into account, the categories contributing significantly to the aggregate volume increase of tax exempt new capital issues over the two years 1984 and 1985 were Pollution Control (186 percent increase), Roads/Tunnels/Bridges (516 percent increase), and Solid Waste\Resource Recovery (430 percent increase).

Again, while this study chose not to examine causality statistically, trends in volume of tax exempt new capital issues for each infrastructure category suggest effects that may be loosely attributable to the Act or a provision thereof. As would be expected, volumes of issues for most of the major infrastructure categories track the aggregate trend. Notable exceptions were Mass/Rapid Transit and Roads/Tunnels/Bridges, which were still extremely high in 1986, and Water and Sewer, which has continued to grow since 1983 with only slight interruptions.

INTRODUCTION

Tax-exempt bonds are the main instrument with which state and local governments finance a wide variety of public goods and services such as schools, highways, water supply systems, wastewater treatment facilities, airports, low income housing, and correctional facilities. Over the years, the ability of local governments to use debt financing to pay for these projects has become increasingly important as the need for infrastructure grows and federal aid for such projects has decreased.

A number of reforms have been made to the 1954 tax code over the past 25 years, one of the most significant being the 1986 Tax Reform Act (the Act) whose provisions affect, among other things, the market for municipal tax exempt investments. Investment in public works is financed primarily through municipal bond sales, and as such has been affected by this legislation.

This paper focuses on the relationship between federal tax policy, specifically the 1986 Act and investment in public works infrastructure. The paper approaches this question in two ways. First, it reviews the Act, provision by provision, and discusses the effects of each provision on supply and demand in the tax exempt bond market. Second, it looks at trends in infrastructure investment before and after the act. These approaches are developed in Parts 1 and 2 of this paper, respectively.

Before attempting to determine the extent to which financing public works has been affected, it is necessary to examine the Act and its effects on the entire tax exempt municipal bond market. Part 1 provides this overview placing tax exempt financing and tax reform in an historical context. It then discusses the purposes and goals driving the 1986 Act and reviews each provision affecting tax exempt financing. Finally, it details the effects of each provision on issuers and purchasers and how those, in turn, affect the overall market.

Using available data on tax exempt bond issuance, Part 2 analyses trends by infrastructure mode. Part 2 first addresses the three main factors that have contributed to changing investment trends in the tax exempt bond market in the last decade: macro economic conditions; fiscal policy; and the 1986 Tax Reform Act itself. Part 2 then examines trends in volume of tax exempt issues from three perspectives. The first section examines trends in volume of all tax exempt new capital issues in the last decade to understand the aggregated effect of the three factors discussed previously, with special attention given to the Act. The second section narrows its focus to examine trends in volume of new capital issues for public works infrastructure only. The intent here is to contemplate whether public works programs were affected more adversely than other municipal recipient programs. The third section is yet more specific in its examination of each of the 15 categories that comprise public works.



PART 1
EFFECTS OF THE VARIOUS PROVISIONS OF FEDERAL TAX
POLICY ON INFRASTRUCTURE INVESTMENT



I. INTRODUCTION

With the passage of the Tax Reform Act in 1986 (the Act), Congress completed a lengthy overhaul of the federal tax code. Among its many provisions, the Act contains language that restricts or places conditions on the use of tax-exempt bonds to finance public works infrastructure. These provisions generally are assumed to have increased the cost of providing basic public services and facilities.

Part 1 of this study reviews provisions of the Act and its amendments that affect tax-exempt bonds, their purposes, and their effects on state and local infrastructure financing. It is designed to help the Corps of Engineers better understand the effects of federal tax policy on the ability of its state and local partners to finance their civil works and environmental infrastructure projects.

THE ROLE OF TAX EXEMPT FINANCING

The tax status of municipal bonds is part of the larger policy debate on whether it is appropriate for the federal government to subsidize construction of infrastructure with primarily local benefit, and if so, whether exempting municipal bonds from federal taxation is the proper mechanism for providing that subsidy. Consensus has held that providing inexpensive financing to the states for projects that increase the public welfare is a proper role for the federal government. Disagreement exists, however, over the types of projects that can be properly labeled "public purpose." To a great extent, the present debate over tax policy revolves around this disagreement.

States and localities have used tax-exempt financing extensively since the 1820s to finance roads, bridges, schools, and water and sewer systems.¹ Over time, the use of tax-exempt financing has expanded from traditional purposes to "industrial development" uses such as building sports stadiums and convention centers as well as lending money to private industry to pay for pollution control devices. As the use of these Industrial Development Bonds (IDBs) continued to grow, Congress began to consider limitations on tax-exempt debt. The policy impetus for restrictions, again, focused on whether and to what extent the federal government should subsidize private industry. The federal subsidy associated with tax-exempt bonds is calculated as the loss in federal tax revenue when a tax-exempt as opposed to a taxable bond is purchased.

¹*Preserving the Federal-State-Local Partnership: the Role of Tax-Exempt Financing*, a report to Congressman Beryl F. Anthony Jr. prepared by the Anthony Commission on Public Finance.



TAX REFORM EFFORTS

Although limited restrictions on the use of tax-exempt debt for certain types of financing were imposed in the late 1960s, the major attempts to control tax-exempt financing took place in the 1980s. In 1980, limits were placed on tax-exempt bonds issued to finance single family home mortgages, called mortgage revenue bonds (MRBs). In addition to price limits on homes financed, the Mortgage Subsidy Bond Act created a state-by-state limitation on the volume of MRBs that could be issued and established restrictions on arbitrage earnings (earnings in excess of bond yields or bond proceeds invested prior to their intended uses). Two years later, the Tax Equity and Fiscal Responsibility Act of 1982 increased restrictions on the use of tax-exempt IDBs. In 1984, the Deficit Reduction Act placed volume restrictions on certain IDBs and student loan bonds. Arbitrage rules were tightened, including placing a requirement that arbitrage earnings on IDBs be rebated to the U.S. Treasury.

The policy debate on tax-exempt bonds has intensified since the Tax Reform Act of 1986. The Act contained several provisions affecting tax-exempt bonds in an effort to correct abuses within the tax code and promote tax equity. These provisions redefined governmental and private activity bonds, made the state volume caps more restrictive, expanded arbitrage rebate requirements, closed loopholes in yield restrictions, limited advance refunding, modified the alternative minimum tax, and changed rules on the ability of banks and property and casualty insurance companies to hold tax-exempt bonds. Generally, the Act made issuing tax-exempt bonds more complicated and limited uses of the bonds to very specific projects. These issues are discussed in more detail below.

While few would deny that the goals of the Act were meritorious, the Act has increased the costs to state and local governments of building and maintaining public-purpose infrastructure. In response to these increased costs, groups such as the Anthony Commission on Public Finance, the Public Securities Association, the National League of Cities, and the Government Finance Officers Association have called on Congress to loosen the restrictions on certain types of tax-exempt bonds, notably those used to finance infrastructure projects. They argue that tax exemption provides an efficient subsidy from the federal government to support necessary (and often federally mandated) public improvements.

Congressional and Administration opponents of revising the Act have resisted changes on two grounds. First, in accordance with the Budget Enforcement Act of 1990, Congress cannot make changes to the tax code that reduce revenues to the U.S. Treasury without creating an off-setting revenue gain. Second, Congress argues that there should not be an interstate subsidy given to a project that does not meet Congress' definition of a completely public purpose.

II. PURPOSES AND PROVISIONS OF THE ACT

Taken as a whole, the Act had three purposes: to simplify the revenue code with an emphasis on closing loopholes, to promote tax equity, and to reduce the federal deficit in the long-term by reducing the incentives for capital diversion to tax shelters and promoting economic growth. Provisions that address specific issues of tax-exempt bonds must be viewed in the context of the intent of the entire act.

The three purposes behind the provisions in the legislation regarding tax-exempt bonds paralleled the objectives of the general tax reform: preventing abuses within the tax-exempt bond system by limiting tax-exempt borrowing to truly public purposes and by preventing abusive issuances of tax-exempt bonds; increasing tax equity; and capturing revenues lost to the federal government from excessive tax-exempt issues. The reasoning behind the stated purposes of the Act and the specific provisions that support each purpose are described below.

LIMITING TAX-EXEMPT BORROWING TO TRULY PUBLIC PURPOSES

Generally accepted uses of tax-exempt bond proceeds such as roads, bridges, schools, and water and sewer systems have historically constituted the majority of tax-exempt bond issuances. In fact, as late as 1970, 95 percent of the total municipal market (\$18.1 billion) went for these traditional purposes. However, during the 1970s both the volume of tax-exempt bonds and their uses expanded greatly. By 1982, only 48 percent of \$77.3 billion in tax-exempt issuances went to the traditional purposes.² In 1986, Congress felt that too many private interests were benefitting from this inexpensive method of financing because the existing rules defined public purposes too broadly. As a result, the Act now severely restricts the types and conditions surrounding projects that qualify as tax exempt and places a limitation on the volume of qualified tax-exempt private activity bonds (defined below) that may be issued by each state.

Governmental Bonds v. Private Activity Bonds

The Act divides municipal bonds into two categories, *governmental bonds* and *private activity bonds*. Interest on governmental bonds is exempt from federal taxation in all cases. Private activity bonds, with the exception of a sub-category that must meet certain requirements (discussed below) called *tax-exempt private activity bonds* (sometimes known as qualified private activity bonds), are taxable. Under the Act, a municipal bond is considered to be for a private activity unless it can pass the private business use and security interest tests. Under the private

²U.S. General Accounting Office, *Trends and Changes in the Municipal Bond Market as They Relate to Financing State and Local Public Infrastructure*, Report to the Chairman, Subcommittee on Economic Stabilization, Committee on Banking Finance and Urban Affairs, House of Representatives, September 12, 1983, p. ii.



business use test, no more than 10 percent of the proceeds from the issue may be "used (directly or indirectly) in any trade or business carried on by any person other than a governmental unit."³ The security interest test states that no more than "10 percent of the payment of principal or interest on the issue is to be made (directly or indirectly, and whether or not to the issuer) with respect to such a trade or business use of the bond proceeds, or is otherwise secured by payments or property used in a trade or business."⁴ Prior to 1986, the thresholds of both tests stood at 25 percent.

Under the business use test, for example, a bond to finance a wastewater treatment plant would be classified as a private-activity bond if more than 10 percent of the plant's capacity handled industrial wastewater. Under the security interest test, a bond to finance a solid waste incinerator would be classified as a private-activity bond if more than 10 percent of the revenue stream used to repay bondholders was derived from sales of energy or district steam to the private sector.

Private activity bonds qualify for tax-exempt status (if they are allowable under statewide annual volume caps for such issues, see below) if they are used to finance what are defined in the Act as *eligible exempt facilities*. These facilities include multifamily residential rental projects, airports, docks and wharves, mass commuting facilities, sewage disposal facilities, solid waste disposal facilities, facilities supplying electric energy or gas, facilities supplying water, local district heating or cooling facilities, and qualified hazardous waste facilities (i.e., those facilities subject to permitting requirements under subtitle C of title II of the Solid Waste Disposal Act). As a result of the Act, industrial pollution control, sports, parking, convention, and trade show facilities, which had been eligible for tax exempt financing, lost their eligibility.⁵ In addition to eligible exempt facilities, the Act designated student loan bonds, single family housing bonds, veterans' mortgage bonds, 501(c)(3) bonds, and redevelopment bonds to be eligible uses of tax-exempt private activity bonds.⁶

The use of qualified private activity bonds is further restricted by the requirement that 95 percent of net proceeds (the proceeds from the issue less the amount placed in a bona fide

³Conference Report, II-687.

⁴Conference Report, II-687.

⁵For the purpose of bond classification, pollution control facilities are those devices that are used at industrial plants to comply with pollution control regulations such as air emissions and effluent standards. An example of a pollution control facility is an air scrubber placed on a smoke stack of a coal burning plant. Prior to the Act, proceeds from tax-exempt bonds were often loaned to private businesses to pay for the installation of these facilities.

⁶501(c)(3) refers to organizations that qualify for nonprofit status under section 501(c)(3) of the Internal Revenue Code.



reserve fund) from the issue be used for the tax-exempt purpose. For example, the construction of a private cafeteria in a government building with funds from tax-exempt bonds must be limited to 5 percent of the total issue. The 5 percent unrelated use allowance must also cover the issuance costs, no more than 2 percent of which can come from the net proceeds of the bond issue.⁷ Prior to 1986, 90 percent of the issue had to be used for the tax-exempt purpose, and issuance costs were not included as part of the net proceeds.

Depending on market conditions, bonds that are tax exempt will pay approximately 2 to 3 percent lower interest rates than comparable taxable rates. Over a 10 year life of a \$10 million issue, a tax-exempt bond yielding 2 percentage points less than a comparable taxable bond will save the issuer \$1.796 million (in present value terms), a considerable subsidy. The constraints on the types of projects that qualify for tax-exempt status were designed to restrict projects that receive a subsidy from the federal government to those that yield the greatest benefit to the public. This provision also served to reduce the tax losses to the federal government associated with the interest earned by investors in tax-exempt bonds.

Unified Volume Limitation

The Act limits the volume of private activity tax-exempt bonds that states can issue annually under the Unified Volume Limitation (volume cap). Volume caps exist in order to set a limit on the total federal subsidy given to public purpose projects. They force states to allocate tax-exempt status to those private activity bonds which give the greatest benefit to the public. Each state's volume cap is defined to be the greater of \$150 million or \$50 multiplied by the state's population. Private activity bonds to finance airports, docks and wharves, and government owned solid waste disposal facilities as well as 501(c)(3) bonds whose nongovernmental portion does not exceed \$15 million, are not subject to the volume cap limitation.

Prior to the Act, the private activity state volume cap was \$200 million or \$150 per capita (scheduled to drop to \$100 per capita after 1986), and there were separate volume limitations for private activity bonds, mortgage revenue bonds, and qualified veterans mortgage bonds. Additionally, 501(c)(3) bonds were not subject to volume restrictions.

ENDING ABUSIVE BOND ISSUANCE PRACTICES

Congress also attempted to eliminate "abusive" bond issuance practices that were possible under the existing rules. Critics of the status quo felt that state and local governments were

⁷Issuance costs include such expenses as counsel fees, underwriters' spread, financial advisor fees, rating agency fees, trustee fees, accounting fees, and printing costs. Insurance premiums and letter of credit fees that lower the interest rate on the bonds are not counted as issuance costs.



abusing tax-exempt financing to take advantage of interest rate differentials to earn arbitrage profits.⁸ In a common example, tax-exempt bonds would be issued for a construction project that would eventually be canceled. The issuing government would refund the bonds, but in the interim, they had earned a profit by investing the proceeds. Municipalities could also skirt the existing arbitrage rules by using refunding devices, thus earning arbitrage profits through accounting loop holes. Another perceived abuse addressed by the Act was the use of bond proceeds to pay unreasonably high issuance costs. These abuses were dealt with by tightening rules regarding yield restrictions, arbitrage rebate requirements, advance refunding, and costs of issuance to ensure that proceeds go toward their tax-exempt purpose either in their entirety or in a timely manner.

Yield Restriction and Arbitrage Rebate

In the context of tax-exempt bond issues, arbitrage earnings are interest earnings from bond proceeds invested at rates above the bond yield. Because tax-exempt bonds have a yield that is approximately one-third lower than the yield on similar taxable bonds, it is easy for issuers of tax-exempt bonds to earn arbitrage on the proceeds. Some claim that bond issues that use the federal subsidy (i.e., tax exemption) to earn arbitrage profits rather than to provide public services abuse of the system. Others assert that when arbitrage earnings are used to reduce the size of the financing, the federal subsidy is justified.

Although the yield restriction and arbitrage rebate requirement existed prior to 1986, it was still possible to skirt the rules. In order to prevent arbitrage-driven transactions and to ensure that tax-exempt bonds were used for their intended purpose, the Act limited the ability of issuers to earn and keep arbitrage profits. This is accomplished by restricting the yield that may be earned on securities purchased with the proceeds of an issue and requiring issuers to rebate any arbitrage profits that are earned to the federal government.

The yield restriction provision states that proceeds from a private activity bond issue (except 501(c)(3) bonds) may not be invested in obligations that yield greater than 0.125 percent above the yield on the issue. The principle exception to this rule is an amount equal to 150 percent of that year's debt service requirement which may be invested without regard to yield. Two other exceptions to the yield restriction rule are the period immediately after the issue (the "temporary period," usually defined as three years), during which there is no yield restriction, and proceeds invested in a bona fide debt service reserve fund not exceeding ten percent of the total issue, which are never yield restricted. The Act made the following changes to the rules on yield restrictions:

⁸"Arbitrage is the amount of money earned by investing the bond proceeds in investments which provide for a higher investment return than the interest rate on the bonds." (Senate Banking Committee Subcommittee on Securities, *Background on Baucus/Dodd Bill to Reform Municipal Finance*, p.1)



- The yield is determined to be the market price of the issue. Previously, issuance costs were subtracted from the proceeds in determining the yield. This raised the yield beyond the market price of the issue and allowed issuance costs to be paid from arbitrage earnings.
- It eliminated the option for municipalities to waive the temporary period in exchange for the right to earn interest on invested proceeds 0.5 percent higher than the yield on the issue for the life of the issue.
- The investments of proceeds that are not subject to yield restriction were tightened so that all investments other than other tax-exempt bonds are restricted.
- The "minor portion amount," that percentage of the proceeds which may be invested without regard to yield, was reduced from 15 percent of the proceeds to the lesser of 5 percent of the proceeds or \$100,000. The minor portion is in addition to the investments in a reserve fund but is still subject to the 150 percent rule.

The arbitrage rebate requirement states that any arbitrage profits earned under the exemptions to the yield restriction rules must be rebated to the federal government with the following exceptions:

- The issuing government issues less than \$5 million worth of tax-exempt bonds during the year.
- The bond proceeds are disbursed according to the following schedule: 10 percent in 6 months, 45 percent in 1 year, 75 percent in 18 months, and 100 percent in two years.⁹
- Earnings on tax and revenue anticipation notes do not have to be rebated if the cash flow deficit to be financed with the notes exceeds 90 percent of the face value of the issue.

Advance Refunding Restrictions

Most bond issues with repayment schedules of 10 years or more contain call provisions that give the issuer the right to buy back the bonds at pre-established times. The call option allows the issuer to refinance the bond if interest rates have dropped between the issuance date

⁹This schedule reflects changes to the law passed in 1989. The Act originally waived the rebate requirement only if the funds were expended within 6 months. (Senate Banking Committee Subcommittee on Securities, *Background on Baucus/Dodd Bill to Reform Municipal Finance*, p.3.)



and the time of the option. If there is an opportunity for interest savings within a certain period before the call date, a *refunding* bond is issued for the amount of the outstanding principle and for the remainder of the original bond's term. *Advance refunding* takes place when conditions for a refunding arise before the call date of the original issue. When bonds are advance refunded, the refunding bonds are put into a trust until the original bonds may be called.

When an issue is advance refunded, the volume of tax-exempt debt is increased until the refunded bonds are called. As interest rates fell from 1982 to 1986, many issues were refunded several times before the original issues could be called. While advance refunding decrease the debt burden of the issuing entity, Congress restricted the practice because advance refunding also increase the volume of tax-exempt debt, eroding the federal tax base. Moreover, Congress believed that private advisors such as underwriters and bond counsel were encouraging multiple refunding primarily for their own benefit.

The Act made the following changes to the advance refunding rules:

- The definition of advance refunding has been changed from a refunding issue that occurred 180 days before the original bonds were called to one occurring more than 90 days prior to retiring the original issue.
- Advance refunding for private activity bonds (except for 501(c)(3) bonds) are prohibited.
- Governmental and 501(c)(3) bonds issued after December 31, 1985 may be advance refunded once.
- The refunded bonds must be retired on the first call date that produces debt service savings.
- The temporary period during which investments of the proceeds from the refunding bond are not yield-restricted is limited to 30 days. The arbitrage temporary period for the refunded bonds ends the day that the refunding bonds are issued.

The Act also outlawed the use of devices. Devices are transactions in connection with advance refunding that result in a financial gain other than interest rate savings. For example, under the original rules, it was possible to issue refunding bonds to pay the debt service obligations of an outstanding issue and then invest the debt service reserve of the original issue in long-term, higher-yielding investments.¹⁰

¹⁰Hawkins, Delafield & Wood, "Analysis of Provisions of the Tax Reform Act of 1986 Affecting Tax-Exempt Obligations," as reprinted in Robert Lamb and Stephen Rappaport, *Municipal Bonds* (New York: McGraw-Hill, Inc., 1987), p. 302.



PROMOTING TAX EQUITY

The second purpose of the tax-exempt bond provisions is to promote tax equity. Congress felt that, under the old statutes, individuals and businesses investing in large amounts of tax-exempt bonds were able to reduce their tax burden beyond what was reasonable. Three provisions were designed to promote tax equity. The first made tax-exempt bonds subject to the Alternative Minimum Tax (AMT). The second prevented banks from deducting the interest incurred to carry tax-exempt bonds (bank deductibility). The third reduced the deduction taken for losses incurred by property and casualty insurance companies (P&Cs).

Alternative Minimum Tax

Individuals and corporations are subject to an *Alternative Minimum Tax* (AMT) that is based on a broader definition of income than the regular income tax. It is designed to ensure that all individuals and corporations pay a minimum level of taxes. The AMT must be paid when it exceeds regular tax liabilities. Under the AMT, income equals regular taxable income plus tax preference items -- other income, deductions, or credits such as accelerated depreciation or tax shelter farm losses, that are not subject to the income tax. The AMT is assessed at a lower rate than the regular income tax -- 21 percent for individuals and 20 percent for corporations.

The Act expanded the AMT to include interest earned on tax-exempt private activity bonds (except for 501(c)(3) bonds) as a preference item. This means that an individual who is subject to the AMT would have to pay a tax of 21 percent on interest received from qualified private activity bonds.

As a result of the Act, corporations also had to pay the AMT on half of the tax-exempt interest from those bonds that are not subject to the full AMT (governmental and 501(c)(3)). This amounted to a tax of 10 percent on interest from governmental and 501(c)(3) bonds. In 1990, the percentage of interest subject to the corporate AMT rose to 75 percent, making the effective tax 15 percent.

Nondeductibility of Interest

The cost of borrowing in order to purchase tax-exempt debt is generally not deductible from gross income. However, from 1917 to 1982, banks were allowed to deduct all of their costs associated with buying and carrying tax-exempt debt. This deduction was allowed for two reasons. First, banks deduct costs associated with making loans as a business expense, and buying tax-exempt bonds can be equated to making a loan to the issuer. Second, stimulating the demand of banks for tax-exempt bonds was considered desirable because banks are more likely



to understand the credit worthiness and financial needs of state and local governments than other investors.¹¹

In 1982, Congress limited the carrying-cost deduction to 85 percent of a bank's costs. The deduction dropped to 80 percent in 1984. The Act removed the deduction altogether for all tax-exempt bonds except governmental and 501(c)(3) obligations that are offered by municipalities and their subordinate entities that issue no more than \$10 million of tax-exempt obligations annually.

Property and Casualty Insurance Companies

Prior to 1986, P&Cs were able to deduct all investment losses from their income. The Act reduced P&Cs income reduction by an amount equal to 15 percent of the interest earned on tax exempt bonds during the year. Congress instituted the change because P&Cs were able to write off as losses investments that were never subject to income taxes. In other words, certain investments could not be taxed when they resulted in gains but could reduce taxable income if they resulted in losses.

REDUCING THE FEDERAL DEFICIT

In addition to their intent to prevent abuses within the tax-exempt bond system and promote tax equity, most of the provisions of the Act relating to tax-exempt bonds had the secondary purpose of increasing revenues to the federal treasury. The main revenue raising provision is the volume cap, which places an overall limit on the amount of private-activity, tax-exempt bonds that may be issued. The U.S. Congressional Budget Office estimated that the volume cap would increase revenues to the U.S. Treasury by approximately \$1.875 billion between 1988-1992.¹² Other provisions that were originally intended to raise revenue are the rebate requirement, the bank deductibility restriction, the P&C loss deduction restriction, and the AMT. Arbitrage rebate, on the other hand, has netted over \$127 million through 1990 with rebate payments expected to increase dramatically beginning in September 1991 when the

¹¹*Preserving the Federal-State-Local Partnership: the Role of Tax-Exempt Financing*, Report to Congressman Beryl F. Anthony Jr. prepared by the Anthony Commission on Public Finance, October 1989, p. 28.

¹²Estimated from data in *Reducing the Deficit: Spending and Revenue Options*, 1987 Annual Report, Congressional Budget Office.



deadline for payments comes due for bonds issued in September 1986, the first month this provision was in effect.¹³

¹³Rebate payments must be made every five years. The rebate requirement for governmental bonds took effect September 1, 1986 meaning that the first governmental bonds issued under the rules will have reached their payment dates in September 1991.



III. EFFECTS OF VARIOUS PROVISIONS OF THE ACT ON INFRASTRUCTURE FINANCING

The provisions of the Act that address tax-exempt bonds support the general goals of the Act -- preventing abuses within the system, promoting tax equity, and reducing the federal deficit -- the merit of which is difficult to refute. However, these provisions had secondary effects on both the issuers and purchasers of tax-exempt bonds, which made their use in financing infrastructure more difficult and more expensive.

The Act has restricted the use of tax-exempt bonds, has made them more difficult to administer, and has altered the nature of the demand for them. The true extent of these effects may never be fully established because of the complexity of monetary, fiscal, and tax policy that also affect bond issuances. Some of the more direct effects of these provisions, such as changes in volume and demand, are observable. However, the primary effect of these provisions -- raising the cost of borrowing to states and localities -- is not easily quantifiable. In this section, we present a distillation of the knowledge gained from continual contact with state and local finance officials, municipal bond underwriters and traders, trade associations, and others in the municipal finance community.

While each of these provisions will eventually raise the costs of borrowing for states and localities, the direct impact on infrastructure financing can be divided into two categories: effects on issuers of tax-exempt bonds and effects on demand for tax-exempt bonds. This distinction hinges on where the first impact of a provision occurs. For example, a provision for which the direct effect is to cause bond buyers to demand higher rates of interest is placed in the effects-on-buyers category even though the ultimate impact is on the issuer, who must pay higher interest rates to sell his bonds. Generally, provisions that influence the conditions under which tax-exempt bonds are issued or managed fall under the issuer impacts category while provisions that affect the desire or ability of a purchaser to buy (i.e., demand for) tax-exempt bonds will fall under the demand impacts category.

EFFECTS OF THE ACT ON ISSUERS

Bond Classifications and the Volume Cap

The most important factors in making infrastructure bonds more expensive and difficult to issue are the new classification scheme for projects and the volume cap. The direct consequences of these provisions are twofold. First, the new classification scheme increases the public component required in order for a project to qualify for governmental bonds. Consequently, states and localities often must either restructure projects to reduce the private sector component or issue private activity bonds. Second, private activity bonds that finance projects that qualify for tax-exempt status must be accepted under its state's volume cap. The volume cap constricts the total dollar value and ultimately the number of private activity bonds



that may be issued each year. At the same time, it increases the number of projects that must compete for an allocation under the cap by including bonds for housing and student loans in the same cap as bonds for infrastructure.

By narrowing the definition of governmental bonds and then subjecting private activity bonds to a more restrictive volume cap, the Act has forced state and local politicians to make difficult choices as to which projects receive the tax exemption, which are taxable, and which are delayed or canceled. In 1989, for example, the volume caps delayed or denied approximately \$2.4 billion in potentially tax-exempt solid waste, hazardous waste, water, and sewer bonds. Some of these issues may have been re-issued as taxable debt although available data are insufficient to confirm this. The primary reason for delays and denials of infrastructure bonds was that states had reserved large portions of their tax-exempt private activity volume for mortgage bonds leaving too little (relative to demand) for other types of financing.¹⁴ In fact, \$5.606 billion (36.9 percent of the total available cap) was issued for mortgage revenue bonds in 1989.¹⁵ Moreover, the \$2.4 billion does not include those bonds that are for a public purpose but cannot meet the 95 percent related use requirement to qualify for tax-exempt status. Bonds that must be issued as taxable, rather than tax-exempt, debt increase significantly costs to the issuer.

While the private activity definition and the volume cap could prevent states from issuing tax-exempt bonds where they had in the past or as many tax-exempt bonds as they would like, the other five provisions which affect issuers -- arbitrage rebate, yield restrictions, limits on issuance costs, and advance refunding -- increase costs of those bonds that do receive tax-exempt status.

Arbitrage Rebate and Yield Restriction

The two provisions that have sparked the most complaints from issuers are the yield restriction and the arbitrage rebate requirement. The yield restriction places a cap on earnings from the investment of tax-exempt bond proceeds equal to the yield on the bonds. The arbitrage rebate requirement requires issuing entities to rebate to the federal government any arbitrage profits earned on proceeds not subject to yield restriction, outside of the two-year window immediately following the issue date.¹⁶

¹⁴Apogee Research, Environmental Financial Advisory Board Tax Policy Statement, p.15.

¹⁵Dennis Zimmerman, *The Volume Cap for Tax-Exempt Private-Activity Bonds: The State and Local Experience* in 1989, June 1, 1990.

¹⁶Technically, arbitrage earnings must be rebated if bond proceeds earn interest in excess of bond yields on amounts held longer than the following periods: 10 percent of bond proceeds after the first 6 months, 45 percent after the first 12 months, 75 percent after 18

Most analysts agree that arbitrage rebate and the yield restriction increase costs to issuers in two ways. First, these provisions increase project costs by preventing municipalities from reducing the amount of their borrowing by prudently investing the proceeds during the construction period and dedicating interest earnings to the capital cost of the project. Issuing governments argue that, since a project has qualified for tax-exempt financing, a public purpose is implied, and that they should, therefore, be allowed to minimize the borrowing necessary to provide a public service by investing the proceeds from an issue at the maximum yield. On the other hand, the rebate and yield provisions prevent municipalities from raising proceeds that they do not intend to use for stated purposes or raising them far in advance of needs, both of which occurred frequently before 1986. While arbitrage rebate does not have to be paid if funds are disbursed according to a two-year schedule, large infrastructure projects generally take more time to complete. For example, EPA found that a wastewater treatment plant typically takes four years to construct.¹⁷

The second cost stems from the complexity of the regulations that increase administrative costs associated with tax-exempt issues. Because of economies of scale, larger issuers have been able to absorb these costs, but smaller issuers cannot. Furthermore, some small issuers may not have the knowledge or staff to comply with the regulations. Congress recognized this problem and took steps to alleviate its effect on the smallest issuers by exempting municipalities that issue less than \$5 million worth of tax-exempt bonds per year from the rebate requirement.

On the other hand, some analysts note that the extent of the hardship caused by the complexity of the arbitrage rules may be temporary and exaggerated. Indeed, some issuers have argued against certain liberalizations of yield and rebate restrictions because they are now comfortable with current regime. These municipalities desire continuity in the system and would prefer to avoid the costs of adjusting to new rules. On April 19, 1991, the Treasury Department issued two dozen revisions designed to simplify the arbitrage rebate rules. Some bond lawyers feel the revisions will make it much easier for issuers to comply with the rebate requirements.¹⁸ Second, it appears that state and local governments are devising ways to lessen the cost of compliance. Large issuers, such as the state of Illinois, can time their issues so that all of the

months, and 100 percent after 24 months. Five percent of bond proceeds may be held for 36 months and earn non-rebatable arbitrage earnings only if that 5 percent is held for "reasonable retainage."

¹⁷See *Analysis of Mean Time Intervals Construction Start to Initiation of Operation: Construction Grant Projects 1972-1990*, prepared by Don Rugh, Policy and Analysis Branch, Office of Municipal Pollution Control, U.S. Environmental Protection Agency, March 27, 1990, for the Environmental Financial Advisory Board of EPA.

¹⁸Stevens, Lynn, "Arbitrage Rebate Rules Are Widely Praised by Tax And Bond Lawyers," *The Bond Buyer*, April 29, 1991.



funds can be spent within the two years allowable.¹⁹ Some small issuers have been aided by programs designed to ease the compliance burden. Virginia, for example, developed the State Non-Arbitrage Program (SNAP), which allows local governments to invest the proceeds from tax exempt issues in a pool of short-term investments.²⁰ The fund is managed by a professional investment firm that provides services such as cash management, legal review, accounting, and arbitrage rebate calculation. There is no direct cost to the issuer to buy into the pool. All costs are subtracted from the pool's earnings.

Advance Refunding Ban

The ban on advanced refunding for private activity bonds increases costs to issuers in a similar manner to that of the yield restriction and arbitrage rebate regulations. It prevents issuers from prudently reducing their debt service obligations by not allowing them to take advantage of normal fluctuations in interest rates.

Issuance Cost Limitations

The issuance costs limitations have two effects on issuers. First, costs, which are determined primarily by market conditions and not by the issuer, are limited to 2 percent of the net proceeds of an issue. While the issuance cost limitations have not prevented many municipal tax-exempt bond offerings, they have forced some municipalities to pay for issuance costs above 2 percent with operating revenues or "taxable tails."²¹ These alternatives are likely to increase costs, perhaps significantly. A 1988 study by the U.S. General Accounting Office on issuance costs before the Act found that costs averaged 3.5 percent in 1985 and that these costs were justifiable and reasonable.²² Moreover, the Act has the secondary effect of generally increasing issuance costs due to the complexity of complying with such provisions as the private activity definition. Connecticut, for example, estimates that their issuance costs have quadrupled since passage of the Act.²³

¹⁹Telephone conversation with Mike Calsh, Illinois Bureau of the Budget, February 1990.

²⁰Samper, A.I., "Compliance with Arbitrage Rebate Requirements: A SNAP in Virginia," *Government Finance Review*, April 1991, pp. 25-28.

²¹Telephone conversation with Michael Decker, Public Securities Association, February 4, 1993.

²²U.S. General Accounting Office, Tax Policy: Tax-Exempt Bond Issuance Costs, GAO/GGD-90-9BR, pp. 18-20, 1988.

²³See *Testimony of Francisco L. Borges, Treasurer, State of Connecticut, Before the Securities Subcommittee, Committee on Banking, Housing, and Urban Affairs, U. S. Senate*, April 24, 1991.

Summary

From the supply perspective, the Act hurts issuers three ways: first by cutting back on the volume of tax-exempt bonds that can be issued to finance infrastructure, second by increasing the costs associated with those bonds that are tax exempt, and third by forcing some infrastructure projects to be financed through taxable bonds.

EFFECTS OF THE ACT ON DEMAND

In addition to those provisions that increase the difficulty and cost of getting tax-exempt infrastructure bonds to market, other provisions affect demand for these bonds. The AMT, bank deductibility, and P&C provisions reduce the attractiveness of tax-exempt bonds which, in turn, increases the yield that bond buyers will demand when purchasing these bonds. The impact of these provisions is to increase interest rates for some bonds and to alter the nature of the demand for all tax-exempt bonds. On the other hand, the Act eliminated several other tax shelters for corporations and individuals, which may strengthen the demand for tax-exempt bonds.

Alternative Minimum Tax

The AMT has two possible effects on the demand for private activity bonds. Because interest on the bonds might ultimately be taxed, potential buyers may demand a higher yield. The AMT also may have driven some buyers out of the market for private activity bonds, which also raises interest rates to compensate for decreased demand. According to the testimony of numerous public finance practitioners before the U.S. Senate Committee on Banking, Housing and Urban Affairs' Subcommittee on Securities, purchasers of bonds subject to the AMT receive an interest rate that is 15 to 30 basis points higher than similar non-AMT bonds.²⁴ They claim further that the AMT provision substantially decreased corporate demand for private activity bonds subject to the AMT, resulting in higher costs to issuers. From the issuer's perspective, this yield premium can be significant. In dollar terms, a 25-basis-point differential in interest rates on a \$50 million bond issue costs the issuer an extra \$1.354 million (in present value

²⁴See Statement of Ralph Horn, Executive Vice President, First Tennessee Bank and Chairman, Public Securities Association before the Senate Committee on Banking, Housing, and Urban Affairs, Subcommittee on Securities, March 13, 1991, p.5. See Statements of John B. Cregan, Vice President of General Reinsurance Corporation and member of Municipal Securities Rulemaking Board, of Gedale Horowitz, Senior Executive Director, Salomon Brothers Incorporated and Chairman, New York Local Government Assistance Corporation, of Raymond C. Scheppach, National Governors' Association before the Senate Committee on Banking, and Urban Affairs, Subcommittees on Securities, March-April, 1991. Estimates of a 20 to 30 basis point increase were cited in *Impact of the Tax Reform Act of 1986 on Privatization*, a report to the National Council on Public Works Improvement, Scully Capital Services, Inc., June 1987, p. 18.



terms), which is \$1.354 million less to invest in infrastructure or otherwise fund important needs.²⁵

Bank Deductibility and P&Cs

The bank deductibility provision, which removed the ability of banks to deduct interest expenses on funds borrowed to purchase tax-exempt securities, also has been demonstrably expensive. Banks have reduced their share of holdings in the municipal bond market from 35 percent in 1985 to 14 percent in 1990,²⁶ a decrease of over \$114 billion (from \$231.7 to \$117.4 billion).²⁷ As a result, issuers have had to raise interest rates to attract buyers. The small issuer exemption to this rule, which permits banks to deduct 80 percent of their carrying costs on bonds that are issued by entities that issue less than \$5 million worth of bonds in a year, has allowed a clear demonstration of the effect on municipal bond interest rates. Those bonds which qualify for bank deductions through the small issuer exemption enjoy interest rates 20 to 30 basis points below non-deductible bonds because banks still have an active interest in purchasing these issues.²⁸ This 20 to 30 basis points differential should be viewed as an indicator of banks' pricing preference for deductible bonds, and not necessarily the actual issuer cost savings if all bonds were bank deductible.

The provision of the Act that reduces the loss write-off for P&Cs (by an amount equal to 15 percent of the corporation's interest received from tax-exempt bonds) has made municipal bonds less attractive for a large institutional investor, although to a lesser degree than the bank deductibility provision. While P&C holdings did increase from \$88.2 million (13 percent of total municipal holdings) in 1985 to \$136.9 billion (17 percent) in 1990, there is concern that the increase in demand may not hold following the 1990 increase in the AMT for governmental

²⁵Figure calculated using an interest rate of 7%.

²⁶See Statement of Ralph Horn, Executive Vice President, First Tennessee Bank and Chairman, Public Securities Association before the Senate Committee on Banking, Housing, and Urban Affairs, Subcommittee on Securities, March 13, 1991, p.3.

²⁷"Municipal Supply Increases Slightly; Holdings Shift," Public Securities Association, *Municipal Market Developments*, May 7, 1991, p.5.

²⁸See Statement of Ralph Horn, Executive Vice President, First Tennessee Bank and Chairman, Public Securities Association before the Senate Committee on Banking, Housing, and Urban Affairs, Subcommittee on Securities, March 13, 1991, p.4.

and 501(c)(3) bonds.²⁹ There is some evidence that most P&Cs have recently become net sellers of municipal bonds.³⁰

The combined impact of the bank deductibility and P&C provisions is difficult to measure. As shown in Figures 1-1 and 1-2, individuals (and their surrogates, money market and mutual funds) have increased their holdings of tax-exempt bonds in both absolute and percentage terms over the last decade. Over the same period, banks have been reducing their holdings, and P&C holdings have been fairly steady. While it is true that tax-exempt bonds are more dependent than ever on a single sector of demand, the trend toward increased reliance on individuals began in 1981. The 1986 Act does not appear to have accelerated this shift. What the 1986 Act did do is cause banks to become net sellers of tax-exempt securities, leaving only a single sector to buy tax-exempts.

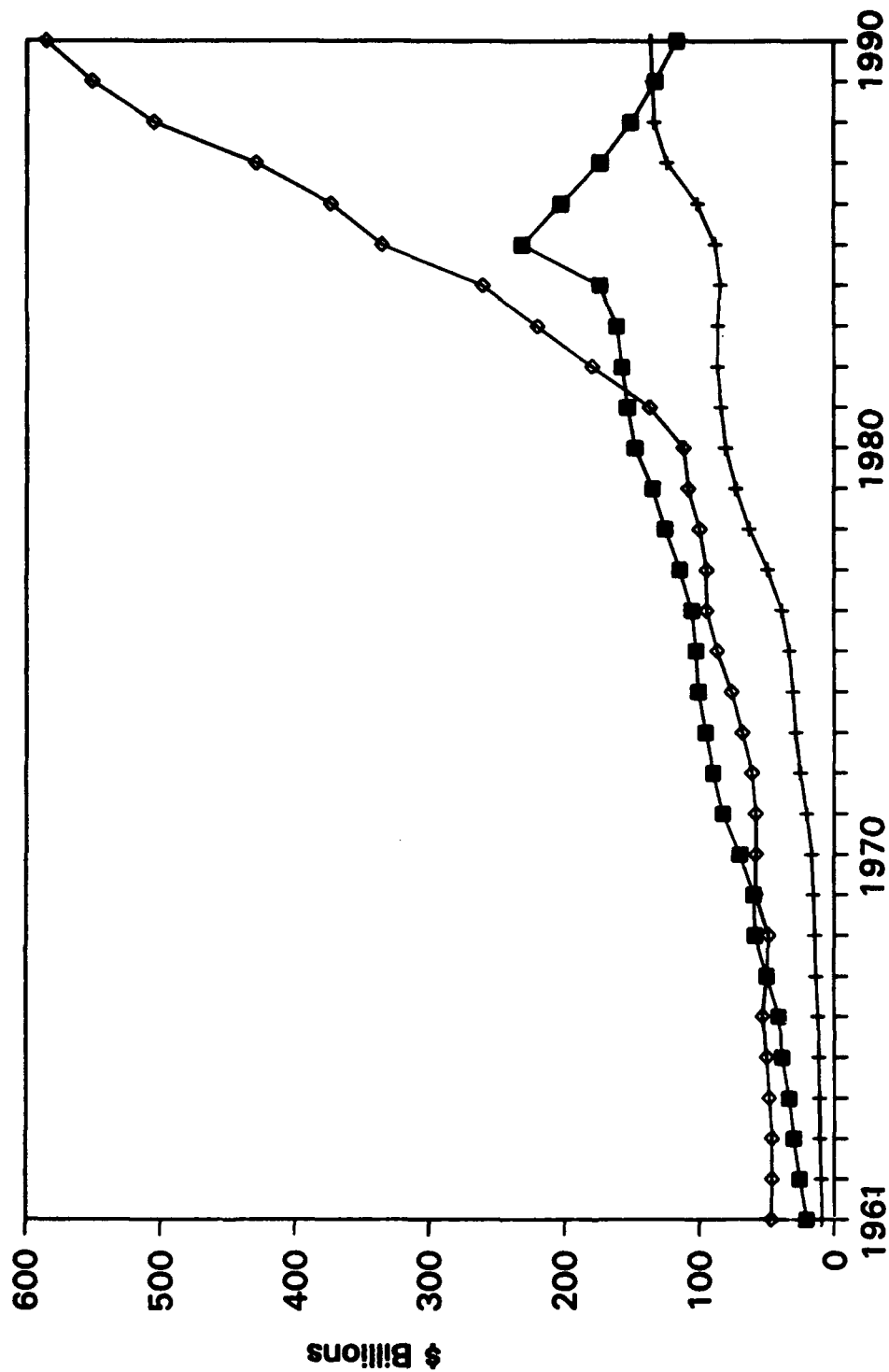
In a market with healthy multi-sector demand, the purchasing patterns of the different sectors counterbalance each other to keep demand relatively steady. Individuals invest in bonds when interest rates are high -- generally at the peak of the business cycle. Then when rates drop, individuals tend to shift their investments to stocks. Property and casualty companies have a rigid investment cycle and to a lesser degree, so do banks. They buy the most tax-exempt bonds around the trough of a recession when interest rates are low because demand for bank loans is slack. When the demand for loans rose, banks sold their tax-exempt holdings. This counterbalancing demand pattern, which is vividly demonstrated in Figure 1-2, kept the secondary market for bonds liquid, thus lowering interest rates.

To the extent that the Act caused banks and property and casualty companies to leave the market, it has left the tax-exempt market with one major buyer, namely households. The tax-exempt bond market is already more volatile than normal bond markets because the tax-exemption itself limits the attractiveness of municipals to those paying high marginal tax rates. To some analysts, the exit of corporate buyers and entrance of individual investors will make the bond market more volatile. If household investor demand drops, there is no other sector to take up the slack. This increases the risk to those investors who do not want to hold bonds until they mature. Investors respond to the increased risk by demanding a higher rate of return when they first purchase bonds. On the contrary, if individual investors and their financial intermediaries such as municipal bond funds prove less cyclical in their investment decisions the property and casualty companies and banks that they are replacing, the market may become more

²⁹"Municipal Supply Increases Slightly; Holdings Shift," Public Securities Association, *Municipal Market Developments*, May 7, 1991, p.5. The 1990 holdings figure for P&Cs is an estimate put out by the Federal Reserve. PSA estimates that this estimate will be revised downward when statistics are available.

³⁰"Municipal Supply Increases Slightly; Holdings Shift," Public Securities Association, *Municipal Market Developments*, May 7, 1991, p.5.





■ Banks + P&Cs ◇ Households + Others*

Figure 1-1 - Holdings of Tax-Exempt Bonds

*(Including Corporations, mutual funds and other types of investors)

Source: Bond Buyer Yearbook, Federal Reserve Bank Flow of Funds

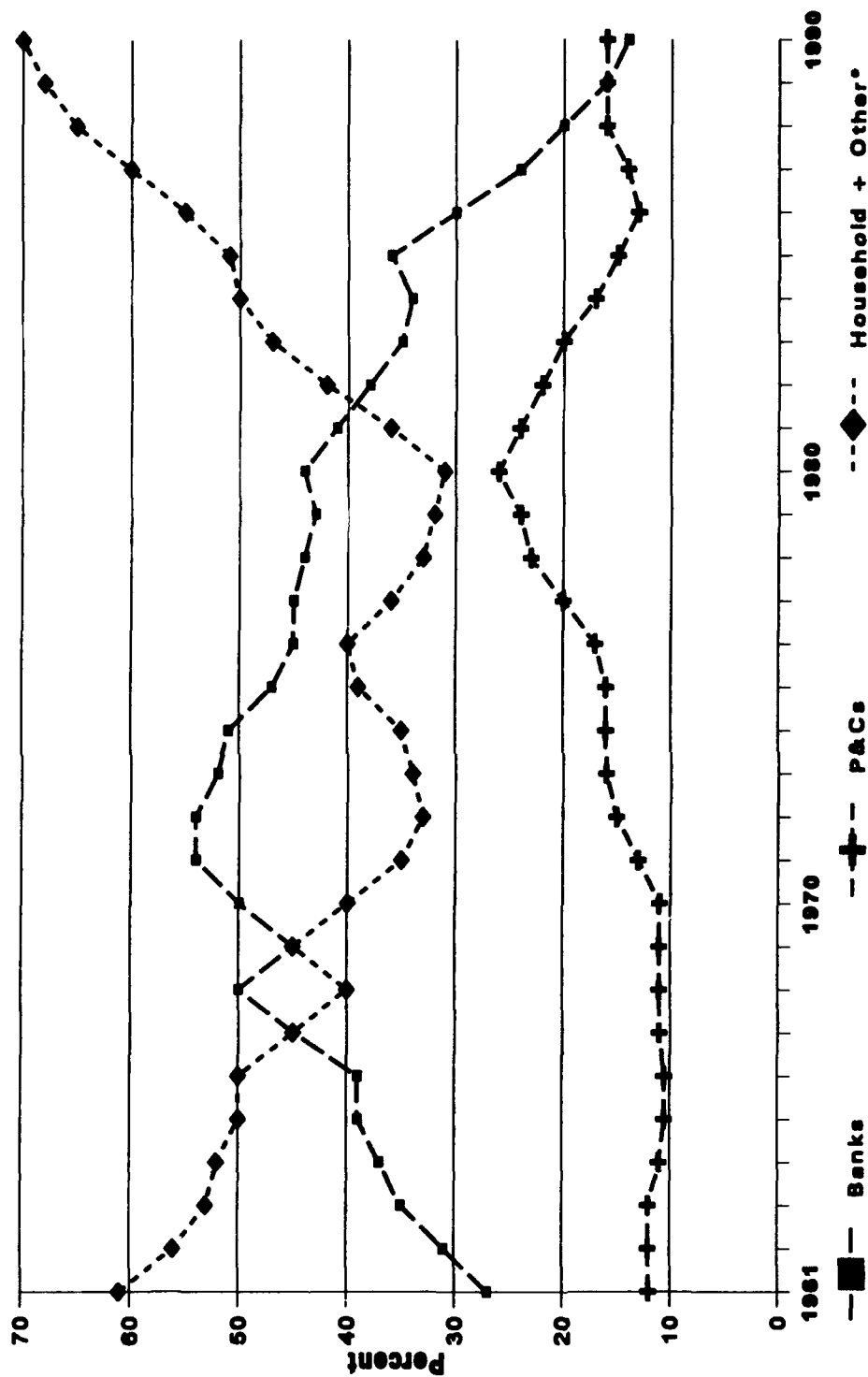


Figure 1-2 - Percent Holdings of Tax-Exempt Bonds ^{*(Including Corporations, mutual funds and other types of investors)}
 Source: Bond Buyer Yearbook, Federal Reserve Bank Flow of Funds



stable. Because individuals purchase securities through diversified financial intermediaries, some analysts argue that individual investors will not rapidly move in and out of the bond market; however, a majority of analysts remain skeptical.³¹

Elimination of Corporate and Individual Tax Shelters

With regard to one of its stated objectives, to simplify the revenue code with an emphasis on closing loopholes, the Act reduced opportunities for corporate and individual tax avoidance by, for example, eliminating the capital gains rate differential and tightening passive losses rules. From this vantage point, tax-exempt bonds may become more attractive to investors because they are one of the few remaining tax shelters for high-income earners. While the elimination of some competing corporate and individual tax shelters should increase the demand for tax-exempt bonds, it is not possible to differentiate the effect of these provisions from other aspects of 1986 Tax Act, let alone other determinants of demand for municipal bonds.

SUMMARY OF PROVISIONS' EFFECTS

Tax-exempt bonds have been an important vehicle for financing investments in infrastructure. In evaluating the impact of the 1986 Tax Reform Act on sponsors of Corps projects, two questions must be addressed: are state and local governments able to finance infrastructure projects, and what does the financing cost? The first question, whether investment in infrastructure is taking place at a reasonable rate, can be answered in part by examining volume trends. Over the 1979-1989 period, the volume of tax-exempt bonds issued to finance infrastructure has remained steady in real terms, while the volume of taxable bonds for infrastructure has risen slightly. Based on comparisons between pre- (1982-1984) and post-tax (1988-1990) eras, refunding issues are a slightly larger portion of municipal bond market in post-tax era.³² Therefore, it appears that actual infrastructure investment has remained about the same since the 1986 Tax Act.

But while investment has remained steady, the population and economy have grown. So compared to needs defined by either a population or Gross Domestic Product proxy, the role of the tax-exempt bond market has diminished. Whether this level of investment meets the current infrastructure needs of the nation depends on one's view of the growth of infrastructure needs since the Act. One of the most recent comprehensive reports argues that current levels of investment are inadequate.³³

³¹"Financing Government," by Kevin Baker, *Governing Guide*, April 1990, page 20A.

³²*A Decade of Municipal Financing*, Bond Buyer, October 3, 1991

³³National Council on Public Works Improvement, *Fragile Foundations: A Report on America's Public Works*, Final Report to the President and Congress, February 1988.

The Act had the unintended effect of increasing costs for public purpose infrastructure facilities. Four major factors contributed to this increase:

- **Higher tax-exempt interest rates.** The 1986 Act had the effect of requiring states and localities to offer higher tax-exempt rates on some types of bonds -- by some estimates, increases of 15 to 30 basis points. These higher rates must be offered to investors to compensate for the imposition of the Alternative Minimum Tax.
- **Reduced attractiveness of tax-exempt bonds for certain institutional investors.** Provisions in the Act narrowed the market for tax-exempt bonds by eliminating certain types of large-volume institutional buyers. Many observers believe that this generally tended to destabilize the market and increase bond interest rates compared to what would have been necessary to attract a broader set of buyers prior to 1986. Between the end of 1985 and the end of 1989, for example, bank ownership of tax-exempt securities declined by more than 49 percent, from \$231 billion to \$117 billion. To some degree, the elimination of other tax shelters for corporations and individuals may have increased the demand for tax-exempt bonds among high-income earners.
- **Delays in issuing tax-exempt bonds.** Some provisions of the Act have at least delayed and possibly increased the costs significantly of financing many infrastructure projects. According to a recent analysis, for example, requests for some \$2.4 billion in solid waste, water and sewer bonds were denied or delayed in 1989 because of the Act's limitations on the volume of private activity tax-exempt bonds that states can issue each year.³⁴
- **Restrictions on tax-exemption of bonds.** Because the Act restricted the amount of private activity tax-exempt bonds that can be issued each year, many states and localities have had to issue public purpose bonds as taxable bonds, increasing borrowing costs significantly. For example, a \$10 million taxable bond issuing with a yield that is 2 percentage points higher than a similar tax-exempt issue will cost the issuer \$2.5 million over the life of the issue.

As previously stated, volume trends indicate that the extra costs stemming from the Act do not appear to be crippling the ability of state and local governments to finance infrastructure, but the costs of investment are certainly growing (relative to pre-1986 conditions) at a time when the federal government continues to impose environmental and transportation mandates on states and local governments and continues to withdraw direct investment in these same facilities.

³⁴Dennis Zimmerman, *The Volume Cap for Tax Exempt Private Activity Bonds: the State and Local Experience in 1989*, U.S. Advisory Commission on Intergovernmental Relations, Washington, DC (July 1990)



PART 2
OVERALL EFFECTS OF THE ACT ON TRENDS IN VOLUME OF
ISSUES FOR MAJOR INFRASTRUCTURE MODES



I. INTRODUCTION

Part 1 provided a review of the 1986 Tax Reform Act and the effects of its provisions on supply and demand in the tax exempt bond market. Using available tax exempt bond issue data, Part 2 analyses trends by infrastructure mode. Before attempting to determine the extent to which public works have been affected, it is necessary to examine the Act and its effects on the entire tax exempt municipal bond market. An understanding of the impact of the Act, and the economic and political forces driving the entire tax exempt market is essential before one can draw conclusions regarding trends in public works investment.

Chapter II of Part 2 addresses the three main factors that have contributed to changing investment trends in the tax exempt bond market in the last decade. The three broad influencing factors include: macroeconomic conditions, fiscal policy, and the 1986 Tax Reform Act itself. The discussion of the Act in the third section of this chapter is considerably more detailed as it provides the underlying explanations for trends discussed in the Chapter III.

Chapter III observes trends in volume of tax exempt issues from three perspectives. The first section examines trends in volume of all tax exempt new capital issues in the last decade to understand the aggregated effect of the three factors discussed in Chapter II, with special attention given to the Act. The second section narrows its focus to examine trends in volume of new capital issues for public works infrastructure only. The intent here is to contemplate whether public works programs were affected more adversely than other municipal recipient programs. The third section is yet more specific in its examination of each of the 15 categories that make up public works.

The municipal bond market originated as a means of financing traditional public works infrastructure projects (highways, bridges, and water systems) constructed by state and local governments. However, recent years have seen a rapid expansion of municipal bonds issued for private activity projects and public works programs which do not meet the traditional definition of public works infrastructure. This development has resulted in an ambiguous use of the term public works. In the context of this paper, the term public works applies those categories of municipal works that sustain not only highways and bridges, but airports, seaways, and facilities necessary to maintain environmental quality.

There is some inconsistency among participants in the municipal bond market in classifying the use of proceeds from bond issues. The Public Securities Association classifies municipal bonds into 49 categories, 15 of which we considered public works infrastructure related and therefore of interest to the Corps of Engineers. The categories referred to collectively as public works in this paper include: Airports, Electric/Hydro Power, Flood Control, Irrigation, Mass/Rapid Transit, Multiple Utilities, Pollution Control, Roads/Tunnel/Bridges, Sanitation, Seaports, Solid Waste/Resource Recovery, Street Improvements, Transportation - Other, Utilities -Other, and Water & Sewer.



II. FACTORS AFFECTING INVESTMENT IN TAX EXEMPT BONDS

Investment in public works is financed primarily through municipal bond sales, and as such is affected by a complex array of economic, political, and legal conditions. For example, macroeconomic conditions directly and indirectly dictate interest rates which, in turn, are a principal determinant of the volume of municipal bond issues. Federal fiscal policy decisions also play an integral role in determining the supply of bond issues in the municipal market. Further, changes to tax legislation may partially explain public works investment trends to the extent that they alter activities of market participants issuing and purchasing municipal bonds.

To what degree each of these conditions influence investment in the municipal market is difficult to discern. This paper discusses the effects of these conditions on investment in public works infrastructure programs, with particular attention to the 1986 Tax Reform Act. There is a degree of difficulty in correlating provisions of the Act and changes in municipal bond market activity. Lack of available data on bond issue volumes in the municipal market prevented detailed analyses. However, had additional data been available, the strength of economic and political influences would likely cloud relationships between the Act and bond yield or volume patterns.

The major macroeconomic factors influencing the demand for municipal bonds include interest rates, federal monetary and fiscal policy, state and local fiscal policy, and tax policies. Microeconomic factors that influence investor demand for municipal bonds include the quality of the investment, current income, opportunities for appreciation in value, potential for losses, inflation, availability of secondary market, and the terms of the loan.³⁵ Supply in the municipal bond market is influenced by state and local need for capital facilities, ability and willingness of state and local governments to repay loans, costs of owning and operating capital stock, and accumulation of capital assets and liabilities from previous generations.³⁶ Factors such as the need for capital facilities can be driven by federal mandates as well as state infrastructure requirements. Federal matching programs for capital investment make many infrastructure projects more attractive to states, encouraging them to issue municipal debt.

MACROECONOMIC CONDITIONS

Interest Rates

Interest rates are influenced by a diversity of macroeconomic conditions such as inflation, unemployment, foreign exchange rates, and the business cycle, as well as exogenous factors. Conversely, macroeconomic conditions are affected by interest rates. The relationship among

³⁵Lennox L. Moak, *Municipal Bonds Planning, Sale, and Administration* (Municipal Finance Officers Association, 1982), Chapter 6.

³⁶*Ibid*, Chapter 7.



these factors is complex and changes frequently. For the purposes of this paper, interest rates may be the best representation of all macroeconomic conditions because they directly influence investment decisions.

Interest rates are subject to government manipulation through policy decisions of the Federal Reserve Board (FRB). The ability to manipulate interest rates allows the government to control, to a certain extent, inflationary and recessionary trends. In doing so, they also determine investment trends in the securities market. Municipalities behave in the same manner as private security issuers in response to interest rate fluctuations. When rates are low, state and local governments are likely to issue greater volumes of bonds. The Federal Reserve Board employs three basic monetary tools to manipulate interest rates as discussed below.

Open Market Operations

Open market operations allow the FRB to direct interest rates in a desired direction by purchasing (or selling) securities to restrict (or expand) the money supply. An expanded money supply causes interest rates to fall encouraging market participants to issue debt. The opposite is true of a restricted money supply.

Discount Policy

Discount policy allows the FRB to manipulate the interest rate they charge member banks (the discount rate). The discount rate acts as a measure against which other interest rates are based, including those for municipal bonds. Figure 2-1 reveals a strong correlation between the discount rate and average AA municipal bond yields (interest rates) over a 24 year period. A simple linear regression with the discount rate as the independent variable and average AA municipal bond yield as the dependent variable indicates an 84 percent correlation between the two.

Reserve Requirements

Reserve requirements, also set by the FRB, determine the percentage of funds member banks are able to lend and invest. The level of lending and investment by commercial banks is a major component of the money supply. Increased reserve requirements on bank funds restrict the money supply, driving up interest rates. However, the FRB rarely uses the reserve requirement as an instrument of monetary policy, so this factor has had the least bearing on municipal bond markets in practical terms.

Effect of Interest Rates on Investment

Despite obvious shocks such as the 1986 Act's volume cap provision, interest rates have probably affected volume of issues in the municipal bond market more consistently than any



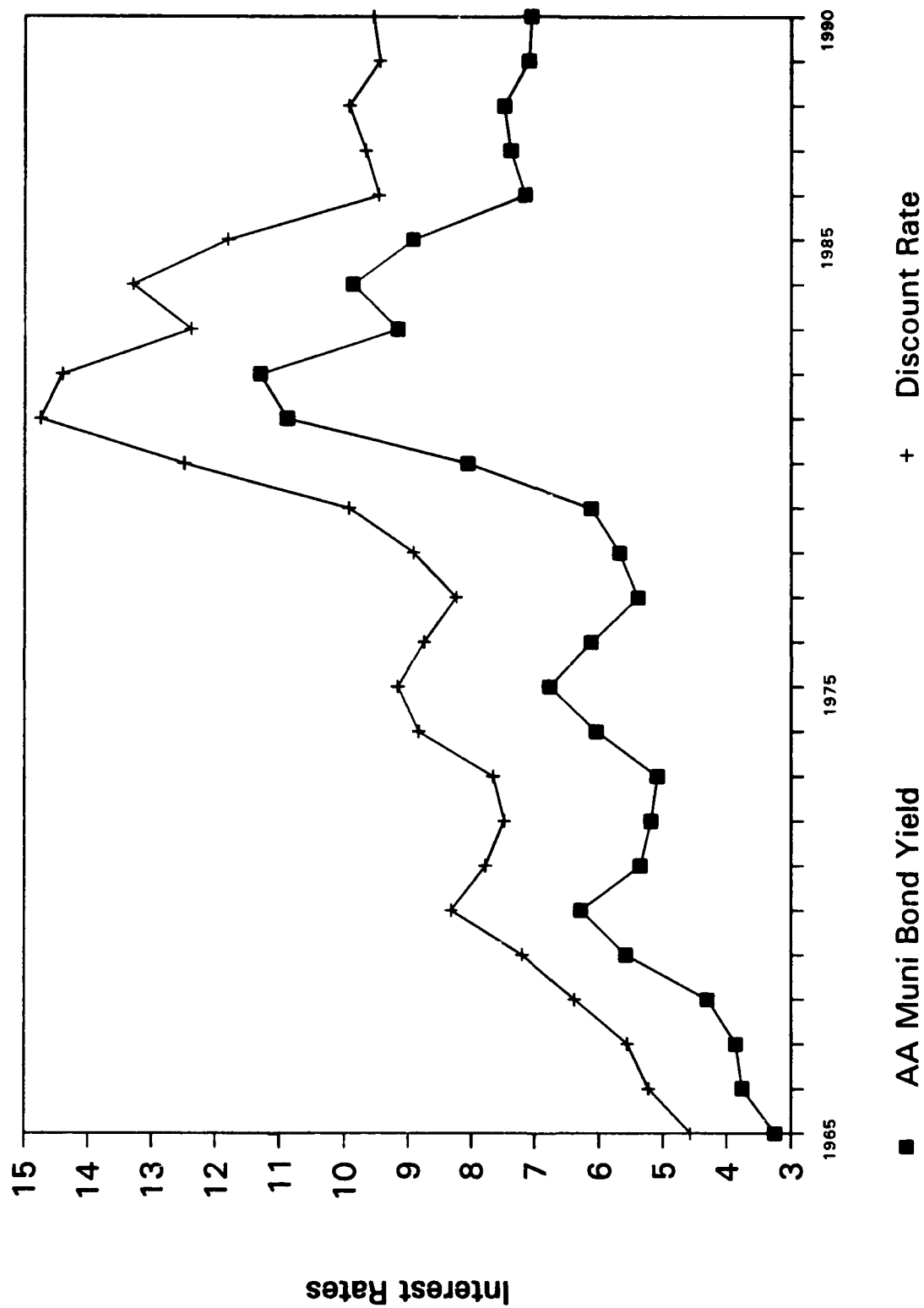


Figure 2-1 - Average AA Municipal Bond Yield vs. Discount Rate

Source: Bond Buyer Yearbook



other macroeconomic factor. In an effort to minimize costs, state and local governments hold back projects when interest rates are high, and move forward more aggressively when interest rates fall. Comparison of trends in average annual discount rates and volume of new capital municipal bond issues from 1982-1990 (in constant 1990 dollars) shown in Figures 2-2A and 2-2B does not reflect the true extent of this relationship. Volumes skyrocketed and then fell sharply in the mid 1980s distorting the true relationship they have to interest rates. This distorted trend due to the anticipation and implementation of the Act will be discussed in greater detail in the following sections.

The impact of the FRB's policy decisions upon tax exempt interest rates is greater when commercial banks have a significant role in the municipal bond market.³⁷ Therefore, as a result of the exodus of banks from that market throughout the 1980s (attributable in part to the 1986 Tax Act), the relationship between monetary policy and municipal bond interest rates may have changed.

FEDERAL FISCAL POLICY AND FISCAL FEDERALISM

Spending

Fiscal policy utilizes federal spending, in conjunction with taxation, as a means of controlling economic deficits and surpluses. The Reagan Administration's policy of "fiscal federalism" reduced federal spending, particularly the financing of state and local government expenditures while shifting responsibilities to the states.³⁸ This trend has placed large financial demands on state and local governments striving to keep pace with the needs and expectations of business, industry, and communities, and in particular has increased their need for infrastructure funding. The consensus among State Treasurers is that the combination of rising federal mandates and the end of revenue sharing is proving "near fatal" for many municipalities.³⁹ The anticipated result would be a substantial increase in the volume of bond issues for infrastructure beginning in the early 1980s. Later in this paper we will examine these trends as they relate to all municipal bonds as well as those categorized as public works infrastructure.

The Clean Water Act of 1987 offers one example of fiscal federalism and its impact on states. This legislation created stricter requirements for wastewater treatment while phasing out federal funding for the construction of treatment plants. As would be expected, volume of tax

³⁷Lennox L. Moak, *Municipal Bonds Planning, Sale, and Administration* (Municipal Finance Officers Association, 1982), p.79.

³⁸Ibid, p.81.

³⁹"Conference on State/Federal Partnerships Stresses Sticking Points With Washington," *The Bond Buyer*, August 29, 1991, p.2.



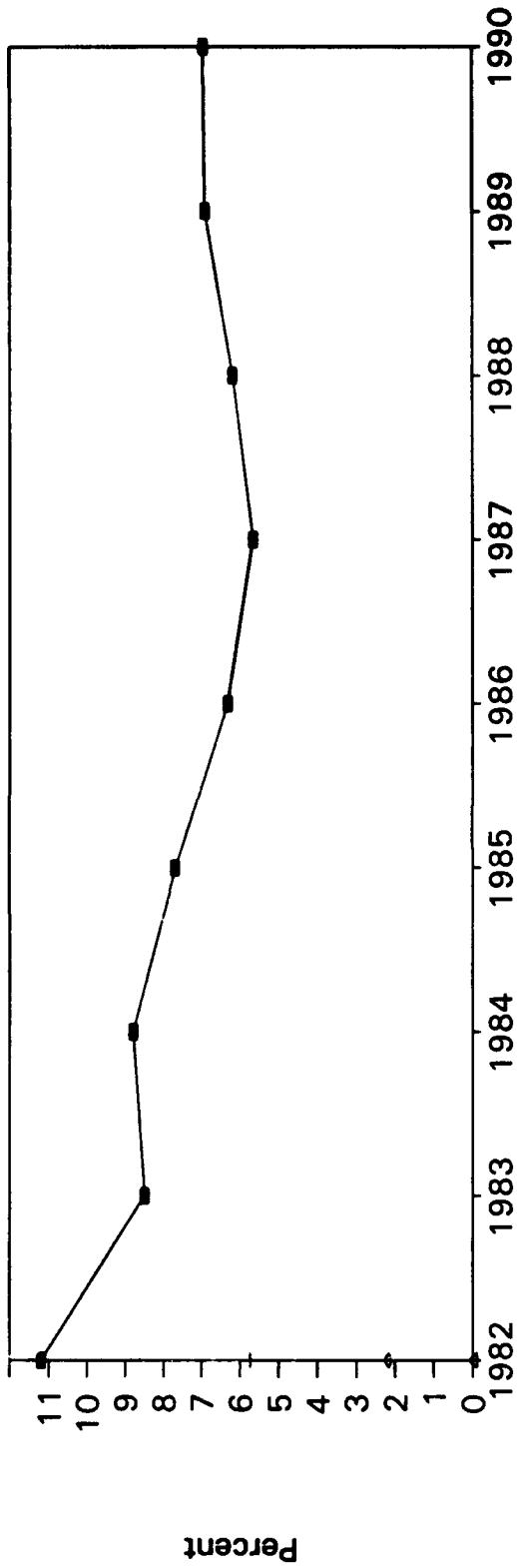


Figure 2-2A - Discount Rate

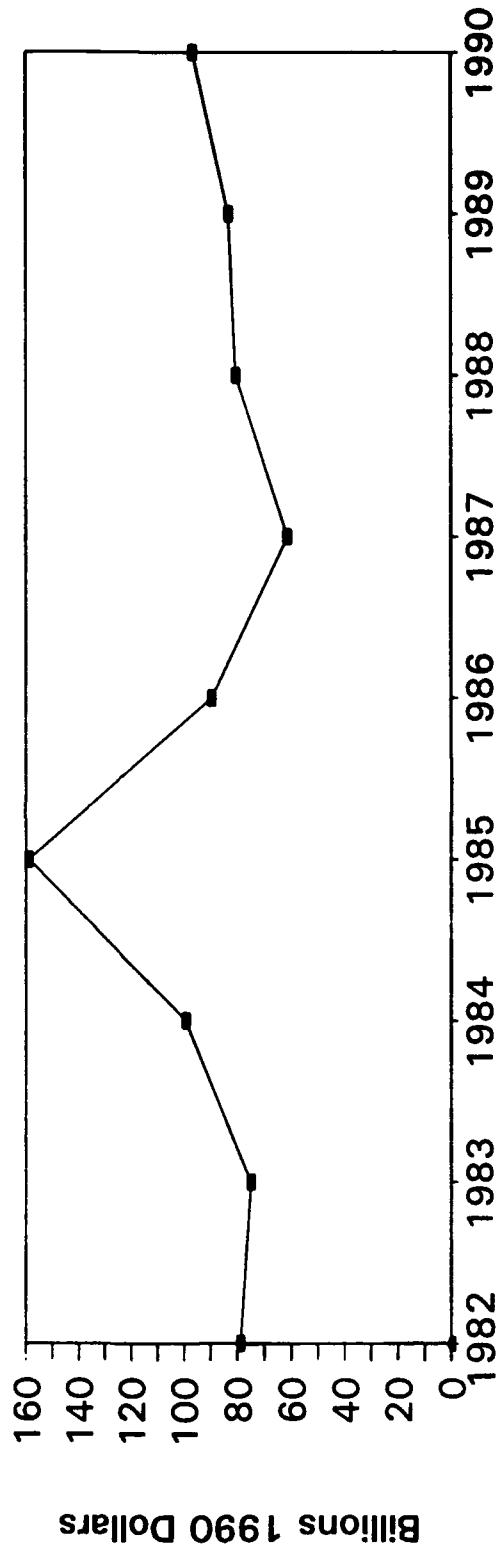


Figure 2-2B - Volume of All Tax Exempt New Capital Issues

Figure 2-2

Source: Bond Buyer Yearbook



exempt new capital issues for water and sewer projects, which includes wastewater treatment plants, grew steadily throughout the 1980s from \$3.4 billion in 1982 to \$7.0 billion in 1990 (in constant 1990 dollars) despite the restrictions of the Act which will be discussed in a latter section of this paper.

Taxation

Income taxes imposed on investors affect demand for municipal bonds to the extent that they dictate investment decisions. To understand this effect, it is necessary to introduce some basic principles regarding the difference between tax exempt and taxable bonds. First, because interest earned on tax-exempt bonds is not taxable, investors are willing to accept lower yields on tax exempt bonds than on taxable bonds. Therefore, the yield to maturity on municipal bonds is generally lower than the yield on taxable bonds of equivalent maturity and quality. The break-even marginal tax rate is the tax rate above which investors opt for tax exempt bonds over taxable bonds.

The second principle, which stems from the first, is that the break-even marginal tax rate is affected by two factors which include: the spread between average tax exempt and taxable bond yields; and the marginal tax rate imposed on individual or corporate investors. Tax exempt bond yields have an inverse effect on the break-even marginal rate -- the higher the tax exempt bond yield (other factors held constant), the lower the break even rate. Taxable bond yields have a positive effect on the break-even marginal rate -- the higher the taxable bond yield (other factors held constant), the higher the break even rate.

It is difficult to observe any correlation between changes in tax rates and investments in tax exempt versus taxable bonds because of changing economic conditions and the fact that revisions to tax rates have typically been accompanied by more influential provisions. For example, Figure 2-3 represents holdings of tax exempt bonds by category of investor. Despite repeated declines in all tax rates throughout the 1980s, household investment in tax exempt bonds continued to increase steadily, as did bank investment until 1986. Increased household ownership was largely due to the emergence of money market and mutual funds which provided both diversification opportunities and liquidity services not available to most households prior to the 1980s. Commercial Banks' relatively sluggish increase in holdings in the early 1980s may be attributable to declines in corporate income tax rates and high risk/high yield investment opportunities that gained popularity throughout the 1980s. The sharp decline after 1986 can be attributed to changes in the tax code unrelated to changes in tax rates. Tax Reform Acts in 1982, 1984, and 1986 reduced the deductibility of interest expense for commercial banks carrying tax exempt securities to 85, 80 and 0 percent respectively. These changes resulted in the decline of banks' share of holdings in the municipal market, particularly after 1986.



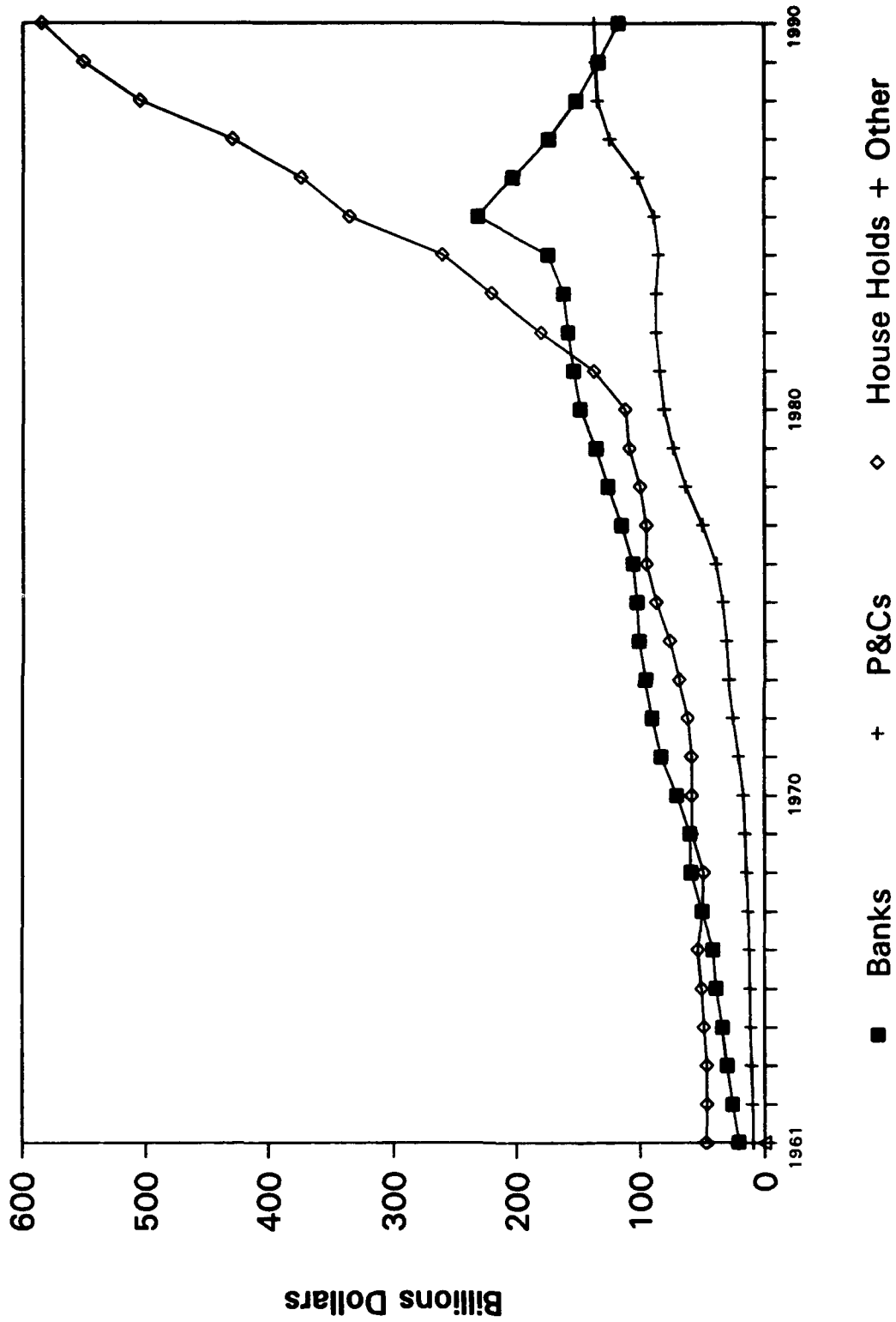


Figure 2-3 - Holding of Tax-Exempt Bonds

Source: Bond Buyer Yearbook; Federal Reserve Bank Flow of Funds



1986 TAX REFORM ACT

Simply stated, the 1986 Tax Reform Act (Act) further decreased tax rates, as had been the trend of the last two major pieces of legislation, and aimed to curtail the expansion of municipal bonds issued for purposes other than the financing of what Congress regarded as public purpose. The latter was achieved by closing loopholes that had allowed bond issuers and investors to engage in revenue generating practices for purposes other than funding public purpose programs. A case in point is the purchase and sale of bonds for arbitrage profit; where by issuers invest bond proceeds in higher yielding investments, rather than the stated project or program for which the bond was issued, to earn profits and reduce debt. The Act's restriction on arbitrage profits and other investment practices will be discussed in greater depth throughout this paper.

Generally, the provisions of the 1986 Act restricted supply of and demand for tax exempt bonds. Questions still remain as to what degree issuers, recipients of bond proceeds, and investors have been affected by the provisions. Part 1 of this study reviewed each provision and its intended purpose. This section of Part 2 describes the apparent effects of each provision based on data available and conclusions of industry professionals. Five provisions (reclassification, volume cap, yield restrictions, advanced refunding restrictions, and depreciation) restrict supply of tax exempt municipal bonds by limiting practices of issuing authorities. The remaining three provisions (alternative minimum tax, non deductibility of interest, and income tax rate schedules) restrict or diminish demand as they affect activities of investors.

As mentioned earlier, the precise effects of each provision of the Act on public works investment are impossible to discern. However, in the following section we use data on the volume of tax exempt new capital issues to observe trends in the municipal market that occurred before and after 1986. From these data we may infer, after accounting for various other factors, the impact of the Act on supply of and demand for municipal bonds.

Reclassification

The Act reclassified bonds as either tax exempt, exempt private activity (tax exempt but subject to several constraints), and private activity (taxable). Under the new classification schedule, the allowable amount of proceeds used in a trade or business and the amount of debt service secured by property used in, or derived from, a trade or business was narrowed from 25 to 10 percent in order for a bond to qualify as governmental and therefore tax exempt. Those bonds that did not meet these requirements were classified as private activity. Private activity bonds qualified as tax exempt if proceeds were used to finance eligible exempt facilities (airports, docks, wharves, mass commuting facilities, sewage disposal facilities, solid waste disposal facilities, facilities supplying electric energy, gas or water), student loans, single family housing, veterans' mortgages, non-profit organizations, or redevelopment.

To understand the degree to which public works investment has been affected by reclassification, it is necessary to know the volume of tax exempt versus taxable public works bonds before and after the Act, as well as the percent of tax exempt issues prior to the Act that would not have met the 10 percent thresholds of the private business use and security interest tests. The impact of reclassification on investment in tax exempt versus taxable bonds is further clouded because issuers are likely to have restructured projects to meet the 10 percent test rather than issue taxable bonds. For example, suppose 70 percent of municipal bonds were issued as tax exempt prior to 1986 because they passed the 25 percent thresholds of the private business use and security interest tests, but only 30 percent fell above the post 1986 10 percent threshold for either test. It is not realistic to conclude that the percent of municipal bonds issued as tax exempt after 1986 would simply drop to 40. Issuers are likely to have foregone some equity contributions in order to achieve tax exempt status. However, not all issuers would need to restructure projects to meet the threshold limits if the proceed use of the bond qualified as tax exempt private activity.

Despite lack of data identifying changes in volume of tax exempt and taxable bond issues, it can be concluded that reclassification has increased costs to state and local governments of financing infrastructure projects. Those issuers that restructure projects to meet the private activity test incur the cost of lost private equity contributions. By reducing equity formation incentives, the Act changed project economics, forcing private developers to decrease their equity contributions and state and local governments to issue more debt, increasing project costs.⁴⁰ Those projects that retain their private component must issue taxable bonds (assuming they are not a qualified tax exempt bond) and incur increased interest costs in the form of higher debt service payments.

Reclassification of municipal bonds undoubtedly affected investment in two particular infrastructure categories. Bonds issued to finance pollution control facilities lost their tax exempt status, while hazardous waste treatment or disposal facilities bonds attained exempt status which they had not enjoyed under the previous code.⁴¹ These categories will be discussed in greater detail in section III.

Volume Cap

The Unified Volume Limitation provision (volume cap) has received considerable attention as it directly affects the volume of tax exempt bonds a state may issue. By restricting the volume of tax exempt private activity bonds, it can be argued that volume caps force states

⁴⁰*Impact of the Tax Reform Act of 1986 on Privatization*, a report to the National Council on Public Works Improvement, Scully Capital Services, Inc. June 1987, P. 16.

⁴¹Dennis Zimmermann, *The Volume Cap for Tax Exempt Private Activity Bonds: the State and Local Experience in 1989*, U.S. Advisory Commission on Intergovernmental Relations, Washington, DC (July 1990).



to prioritize projects in order of their perceived value to the public. The volume cap was designed to target a federal subsidy to projects serving a public purpose, not to eliminate the subsidy. Opposition to the cap has been voiced by two concerned bodies. Some local governments object to having to compete with state programs for private activity bond allocation, while proponents of private activities subject to the cap claim that their activities may not receive a fair share of the available cap.

Prior to the Act, separate caps restricted the volume of tax exempt private activity bonds, mortgage bonds, student loan bonds, and veterans mortgage bonds. The 1986 Act consolidated single family housing bonds and all tax exempt private activity bonds, with the exception of veterans' mortgage bonds, into a single unified cap.⁴² Not only is the new unified cap significantly smaller than the sum of the separate caps, but it must meet growing state and local capital needs.

The most reliable data pertaining to the effects of the volume cap have been compiled over one calendar year in the survey report *The Volume Cap for Tax Exempt Private-Activity Bonds: The State and Local Experience in 1989*, by Dennis Zimmermann (an authority on the use of tax-exempt bonds) and The Urban Institute. These data are insufficient to evaluate fully the Acts' effects on public works investment. However, survey results were helpful in developing the following discussion of the cap which addresses administrative issues likely to have affected public works investment, including:

- allocation of priorities between levels of government;
- division among types of eligible private activity bonds;
- allocation carry forward from a previous years; and
- constraints of volume cap.

Chapter III, Trends in Volume of Tax Exempt New Capital Issues, will address trends in the volume of bond issues (by public works category) over the last decade and will attempt to discern effects of the cap provision.

Allocation Priorities

The volume cap is a unique provision to the Act in that its implementation, and therefore effect on infrastructure investment, varies a great deal from state to state. Beyond setting the state cap at the greater of \$50 per capita or \$150 million, the Act places few restrictions on states as to how they must allocate their cap. Two priority systems have been established.

⁴²Robert Lamb and Stephen Rappaport, *Municipal Bonds* (New York: McGraw-Hill, Inc., 1987), p. 294.



According to the results of the Zimmermann survey, 28 states split the cap allocation among different levels of government. The proportion of allocation set aside for local governments varies from state to state and is often a factor of a locality's population. The remaining 22 states (Washington, D.C. is excluded) retain central control of the entire cap at the state level. In these states, local governments compete with the state for bond issuances that draw from the cap. Under both systems, the proportion of a cap allocated to state and local governments is rarely an accurate reflection of the proportion actually used at that level. For example, a state agency obtaining a cap allocation may in turn allocate portions of their share to local counterparts or programs (e.g., a state housing finance agency may allocate funds to local governments for multifamily rental housing).

Allocation Among Types of Bond Issues

The Act allows states to allocate the cap among types of eligible private activity bonds. 18 states reported no established priorities among bond proceed uses, and allocate the cap on a first-come, first serve basis, although some restrict the maximum size of allocations. The other 32 states have established priorities according to various criteria, for example the number of jobs created by a project funded by a tax exempt bond.

The results of the Zimmermann survey revealed the following breakdown of 1989 volume caps allocated to public works projects: 4.7% for solid waste disposal bonds; 4.0% for local electric/gas bonds; 2.6% for sewage disposal bonds; 1.6% for pollution control bonds; 0.3 % for water related bonds; and 0.8% for hazardous waste bonds, for a total of 14%. The remaining 86% of state caps were allocated to mortgage revenue bonds (35.7%), student loan bonds (6.1%), small issue bonds (defined as bonds with an issue amount below a threshold specified in the Internal Revenue Code) (33%), multifamily housing bonds (8.4%), and Other (2.8%).⁴³ The changes in actual volume of bonds for these activities will be addressed in the discussion of the Cap's constraints.

Allocation Carry Forward

State allocations are typically reserved for at least nine months of the calendar year, after which they are placed in a central pool. Issuers that were not granted an allocation earlier have the opportunity resubmit their bid.

States are allowed to carry forward unused portions of the volume cap for a period of three years. This allows states and localities some flexibility in planning future projects funded by tax exempt bonds. However, they are required to designate a particular issuer or type of

⁴³It should be recognized that there is some inconsistency in classifying the use of municipal bond proceeds. The categories defined in the Zimmermann survey are not identical to those of the Public Securities Administration which are used in later sections of task 3.



activity for which the carry forward will be used. The allocation carry forward can be significant. For example, in 1989, 41 percent of bonds issued for sewage disposal projects, 72 percent issued for solid waste disposal projects, 79 percent issued for water programs, and 50 percent issued for electrical and gas programs were funded with carry forward allocations from previous years. On an aggregate level, one third of the bonds issued in 1989 requiring a cap allocation used carry forward allocations.

Allocation carry forward is intended to provide enough flexibility to prevent waste of a state's unused cap in any given year. However, the stipulation that carry forward must be assigned to a particular issuer or specific use constrains the intended purpose significantly. Some states lack the administrative capacity to efficiently handle the initial allocation of the cap, let alone the carry forward procedures. These states are essentially facing greater volume constraints. Furthermore, all states are restricted in their ability to respond to annual changes in demand among eligible activities.⁴⁴ Allowing states to carry forward unused cap without allocation to specific users or activities would likely increase volumes of municipal bond issues. (It is not possible to predict the percent of increase, nor the distribution of benefit among various public works categories, because currently some states make more efficient use of the cap carry forward than others.)

Cap Constraints on Private Activity Bonds

Supporting the claim that volume caps have significantly reduced bond financing for those purposes designated as private activity is a comparison of tax exempt bond figures before and after the Act. The average volume of new issue private activity bonds from 1982-1984 was approximately \$39.9 billion, excluding bonds issued for those activities exempt from the volume cap imposed in 1986.⁴⁵ This amount represents unconstrained demand for private activity financing for all states prior to the implementation of the Act's cap provision. In 1989 the volume cap for all states was \$13.9 billion. Assuming that unconstrained demand remained at \$39.9 billion, and that the entire 1989 volume cap was used, this implies a significant restriction in private activity bond financing.

As previously mentioned, states allocated only 14 percent of the total 1989 volume cap to public works infrastructure activities. However, the true effect of the provision on public works categories, in relation to other municipal proceed uses, is best represented by the percent change in volumes before (average of 1984-1986) and after (1989) the Act. The Zimmerman report shows that contributing to the 66.9% decrease in volume of new issue private activity

⁴⁴Dennis Zimmermann, *The Volume Cap for Tax-Exempt Private-Activity Bonds: The State and Local Experience in 1989*, June 1, 1990, p.29.

⁴⁵The actual average \$53.23 billion was adjusted using data from Zimmerman's study to estimate and deduct the amount of bonds issued for those activities which are exempt from the volume cap imposed in 1986 (non profit entities, airports, docks, and wharves).



bonds for those categories requiring a cap allocation were: sewage and waste disposal (-49.4%), pollution control (-93.4%), student loans (-36.1%), mortgage revenue bonds (-41.6%), small issues (-76.3%), multifamily housing (-87.9%), and other (+18.5%). Based on these figures, it does not appear that the volume cap affected public works more than other municipal bond use activities. Only two public works categories had negative percent changes in volume of issues, one of which (pollution control) can be attributed in large part to the reclassification provision. In general, non-public works categories of municipal bonds subject to the cap provision experienced significant declines. However, the volume cap cannot be held solely responsible for these changes. Other provisions of the act discussed throughout this section are likely to have contributed to decreased volumes of private activity bonds for all activities.

The Zimmermann survey results were relevant only to the 1989 calendar year. Since that time, the volume cap has seen increased opposition among state and local officials. A survey by *The Bond Buyer* revealed that 16 states experienced difficulty in meeting demand for bond authority under the cap in 1990 or expect to have such problems in the near future. These difficulties were attributed to large requests for environmental and energy projects.⁴⁶ The survey results imply that the cap provision is limiting the ability of states and localities to use tax exempt bonds to provide necessary programs and facilities at a reasonable cost to bond issuing authorities because environmental concerns, and more importantly regulations, are dictating the allocation of volume caps.

It is important to mention here that many types of private activity bonds exempt from the volume cap limit under the 1986 Act are public works related, including bonds issued to finance government owned airports, docks, wharves, and solid waste disposal facilities. Unfortunately, the Zimmerman study did not track the percent change in volume of categories exempt from the volume cap. This information would have been useful in comparing exempt and non-exempt categories to measure the true effects of the volume cap provision.

Yield Restriction, Arbitrage Rebate, and Issuance Cost Limitation

As discussed in detail in Part 1, the yield restriction, arbitrage rebate requirement, and issuance cost limitation increase costs to issuing authorities, therefore restricting supply of municipal bonds, in three distinct ways.

Project Costs

With some exceptions, the reinvestment restriction prevents issuers from investing private activity bond proceeds in investments that yield more than .125%. Such restriction constrains an issuing authority's ability to minimize project costs over the life of a project. The impact of investment restrictions may decline with the emergence of state programs designed assist

⁴⁶"Bond Hungry: Volume Caps Devoured By Big Environmental and Energy Projects," *The Bond Buyer*, May 20, 1991.



issuers plan their spending schedules so as to meet the provisions two year dispersement exception.

Administrative Costs

Administrative Costs associated with tax exempt bonds have also increased due to the complexity of the new regulations. These costs may decline in the future as a result of the April 19, 1991 revisions to the code simplifying rebate rules, and the emergence of an entire industry to assist authorities with such procedures. There are already computer software programs and consultants providing investment tracking abilities to issuing authorities.

Issuance Costs

Issuance Costs include fees paid to bond counsel, accountants, and other financial advisors, the largest component of which are underwriter spreads.⁴⁷ Under the provisions of the Act, issuers are no longer able to recover these costs through arbitrage profits (e.g. investing tax exempt bond proceeds and deducting issuance costs from the arbitrage gained). Prior to the 1986 Act, issuers were able to deduct issuance costs from arbitrage profits, essentially transferring issuance costs to federal government. The Act also limited the amount of tax exempt bond proceeds issuers could use to finance issuance costs to 2 percent, in an effort to curtail what congress considered excessive diversion of bond proceeds to underwriters.⁴⁸ These provisions probably have not affected issuance costs or volume of issues significantly. The potential costs have been minimized by two factors, declining underwriter spreads and consolidation of issues. Public Securities Association data on underwriter spreads for all tax-exempt issues which indicate that spreads have fallen during the period 1982 to 1988, especially those that were competitively bid by underwriters. Issuance costs, as a percentage of bond proceeds, are generally larger for smaller bonds due in part to underwriter spreads which are also a factor of bond size. Average issuance costs are generally higher still for private activity bonds and certain industrial development bonds than for qualified mortgage and student loan bonds. Such factors would encourage state and local governments to consolidate bonds, issuing them in larger volumes to minimize costs.

Advanced Refunding

The Act limits the ability of issuing authorities to decrease debt burden as interest rates fall by: narrowing the allowable period before the redemption date in which an advanced refunding bond can be issued from 180 to 90 days; limiting governmental and 501(c)(3) bonds

⁴⁷Tax Policy, Tax-Exempt Bond Issuance Costs, *Briefing Report to the Honorable Brian Donnelly, House of Representatives, prepared by U.S. General Accounting Office, December 1989, p. 17.*

⁴⁸Ibid, p. 13.



to one advanced refunding; and prohibiting advance refunding for private activity bonds. The restriction attaches a greater risk to long term bonds issued at high interest rates. Issuers planning large projects over a significant period of time are likely to be more sensitive to interest rate changes. Public works projects by their nature tend to be long term relative to other municipal bond proceed uses and are therefore likely to be more sensitive to the effects of this provision.

Alternative Depreciation System

Prior to the 1986 Tax Act, private corporations benefitted substantially from the issuance of industrial development bonds and pollution control bonds. Through the process known as industrial lease financing, municipalities issued bonds and used the proceeds to construct industrial or commercial facilities, purchase equipment, or purchase or construct pollution control devices which were then leased, loaned, or sold in installments to a corporation. The private corporation reaped a threefold benefit from this arrangement. An obvious benefit was the ability to finance facilities and equipment at a considerably lower costs (tax exempt bonds are generally 2 to 3.5 percent lower in interest payments) through tax exempt bonds. A second benefit stemmed from accelerated depreciation schedules afforded facilities and capital equipment financed with tax exempt bonds. Different methods of depreciation could be chosen for various classifications of assets. The third benefit, an investment tax credit, was based on the method of depreciation chosen.⁴⁹

Depreciation schedules on property and equipment financed with tax exempt lease backed loans were changed under the Alternative Depreciation System provision of the 1986 Act. Resource recovery, waste water treatment and water supply systems are now to be depreciated on a straight line basis over a significantly expanded time period, or schedule. These depreciation schedules changed from 5 years, before the Act, to: 10 years for resource recovery systems; 24 years for waste water treatment systems; and 50 years for water supply systems.⁵⁰ Expanded depreciation schedules for these facilities, or portions thereof, financed with tax exempt lease backed bonds have increased costs associated with the construction and operation of the facility.

The primary effect of the Alternative Depreciation System is the elimination of the tax benefits that resulted in private equity contributions and risk sharing by the private developer in the affected categories. Lengthened depreciation, which in turn, discouraged tax-driven

⁴⁹Robert Lamb and Stephen Rappaport, *Municipal Bonds* (New York: McGraw Hill, Inc., 1987), p.172-175.

⁵⁰*Impact of the Tax Reform Act of 1986 on Privatization*, a report to the National Council on Public Works Improvement, Scully Capital Services, Inc. June 1987, p. iii.



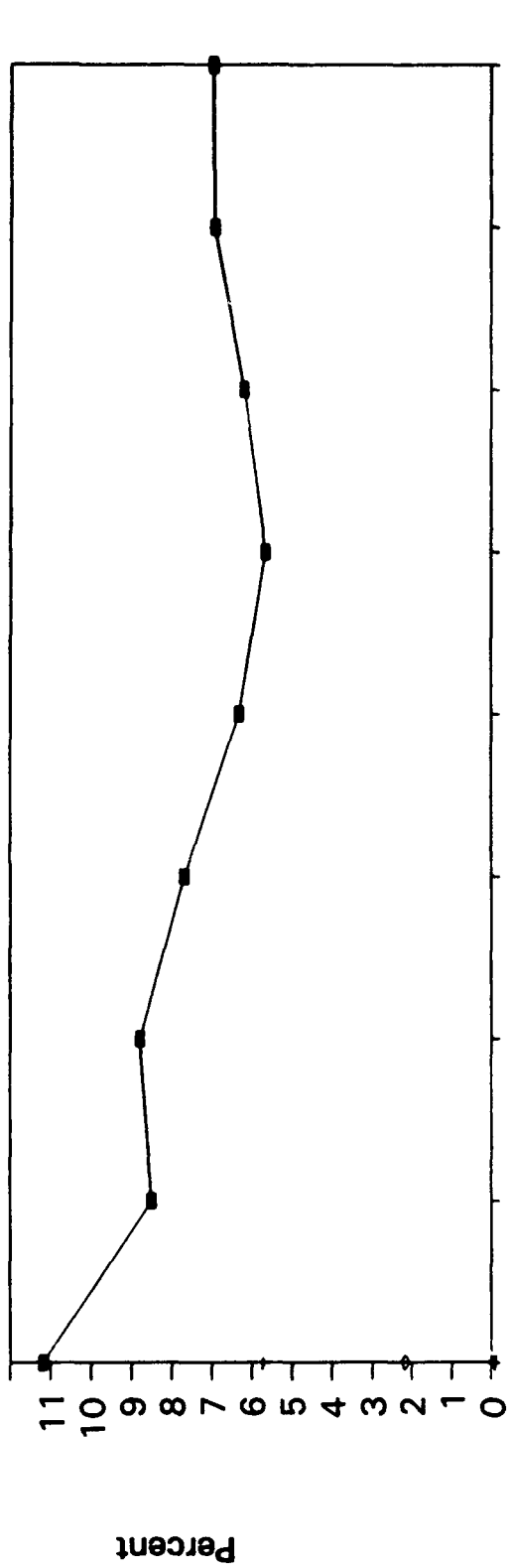


Figure 2-4A - Discount Rate

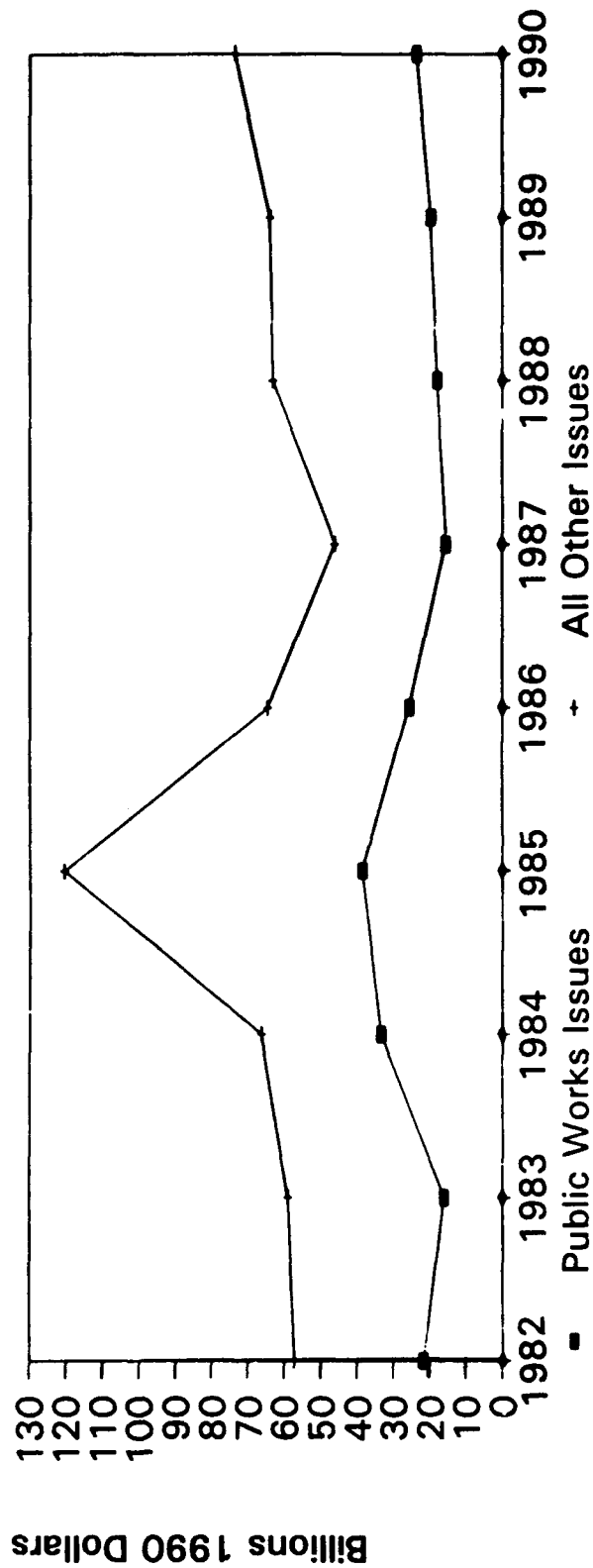


Figure 2-4B - Volume of Tax-Exempt New Capital Issues

Figure 2-4

Source: Bond Buyer Yearbook

private equity investment, also may have eliminated certain projects that would not be built based strictly on unsubsidized economic measures. As a result, this provision of the Act may have the effect of promoting fewer or smaller, but more efficient projects.

A secondary effect, although equally important, is overall increased costs and risks to municipalities as private equity contributions have declined. Despite the increased costs and risks associated with municipal securities backed by leases (lease backed bonds), the volume has continued to increase since the 1986 Act from \$5.6 billion in 1987, to \$8.5 billion in 1988, to \$9.5 billion in 1989. The reason: lease backed bonds are not legally defined as debt in most states which eliminates the need for voter approval and exempts them from inclusion under the volume cap.⁵¹

AMT & Bank Deductibility

The Alternative Minimum Tax and Bank Deductibility provisions of the 1986 Act have weakened demand for tax exempt municipal bonds, putting upward pressure on municipal bond interest rates and increasing the cost to state and local governments of financing important projects. Higher interest rates on municipal bonds due to the AMT have been reported to cost state and local governments between 0.25 and 0.3 percent more in added interest costs.⁵² To better understand the driving force behind higher interest rates due to the AMT and nondeductibility of interest by banks, we consider each provisions effect on the demand for municipal bonds.

Subjecting interest earned on tax exempt private activity bonds to the AMT has decreased incentives to invest in the municipal bond market. Individuals and corporations subject to the AMT are no longer able to shelter investments in tax exempt municipal bonds, therefore encouraging them to invest in taxable securities of higher yield.⁵³ This shift in demand could be detrimental to issuing authorities who might have to increase interest rates to attract additional investors. The group subject to the AMT constitutes only a portion of the investment community however, even a minimal change in interest rates would significantly increase debt service costs to municipalities.

⁵¹See Statement of John B. Cregan, General Reinsurance Corporation on "State and Local Governments under Stress: The Role of the Capital Markets," before the Senate Subcommittee on Securities, March 13, 1991, p.3.

⁵²See Statement of the Public Securities Association to the House Committee on Ways and Means on Environmental Tax Policy, March 19, 1990, p. 2.

⁵³Statement of John B. Cregan, Vice President of General Reinsurance Corporation on "State and Local Governments Under Stress: The Role of the Capital Markets," before the senate subcommittee on Securities, March 13, 1991, p.2.



The inability of banks to deduct costs associated with the purchase of a tax exempt municipal bonds (except governmental 501(c)(3)) under the Act's provision had a similar effect on demand for and interest rates of municipal securities. It has been argued that the non-deductibility provision has driven commercial banks out of the market for tax exempt bonds and that this exodus drives demand down and, in turn, interest rates up. The small issuer exemption rule to this provision demonstrates how sensitive interest rates are to demand. Under this rule, banks are able to deduct 80 percent of their carrying costs on bonds that are issued by entities that issue less than \$5 million worth of bonds in a year. These bonds enjoy interest rates 20 to 30 basis points below non-deductible bonds because banks still have an active interest in purchasing such issues.⁵⁴ As stated earlier, this 20 to 30 basis points differential should be viewed as an indicator of a bank's pricing preference for deductible bonds, not the actual issuer cost savings if all bonds were bank deductible.

It is also argued that because commercial banks have both withdrawn from the market, it is now extremely dependent on individual investors. Figure 2-5 illustrates this change in composition with percent holdings by commercial banks and households mirroring one another closely. While the composition of demand for tax exempt municipal securities has changed drastically, the extent to which this change is attributable to bank deductibility is debatable. As early as the mid 1970s, banks began to invest heavily in real estate and other opportunities. Their exodus from the tax exempt bond market coincides with these more aggressive investment tactics. The data do provide evidence that revoking deductibility did accelerate the rate of their departure from 1986 to the present.

Income Tax Rates

The Act reduced both income tax rates and their progressiveness, which have counterbalancing effects on tax exempt bond yields. Reduced tax rates decrease investors' incentive to hold tax exempt bonds due to the greater after tax return on investment in taxable bonds. Decreased demand for tax exempts puts upward pressure on yields for such bonds, increasing the interest rate ratio (interest on a municipal bond/interest on a treasury bond of equal quality and maturity date). Declining progressiveness of the tax rate schedule, however, tends to reduce the interest rate ratio.

As it was noted in the previous discussion, the municipal bond market has become largely dependent on individual investors. Reductions in personal income tax rate schedules under the Act were dramatic in relation to those of corporate entities. Therefore, it would be expected that the average yield curve for tax-exempt municipal bonds would increase in response to the Act as it did for AA municipal bonds from 1986-1988. However, as is the case with many of

⁵⁴See Statement of Ralph Horn, Executive Vice President, First Tennessee Bank and Chairman, Public Securities Association before the Senate Committee on Banking, Housing, and Urban Affairs, Subcommittee on Securities, March 13, 1991, p.4.

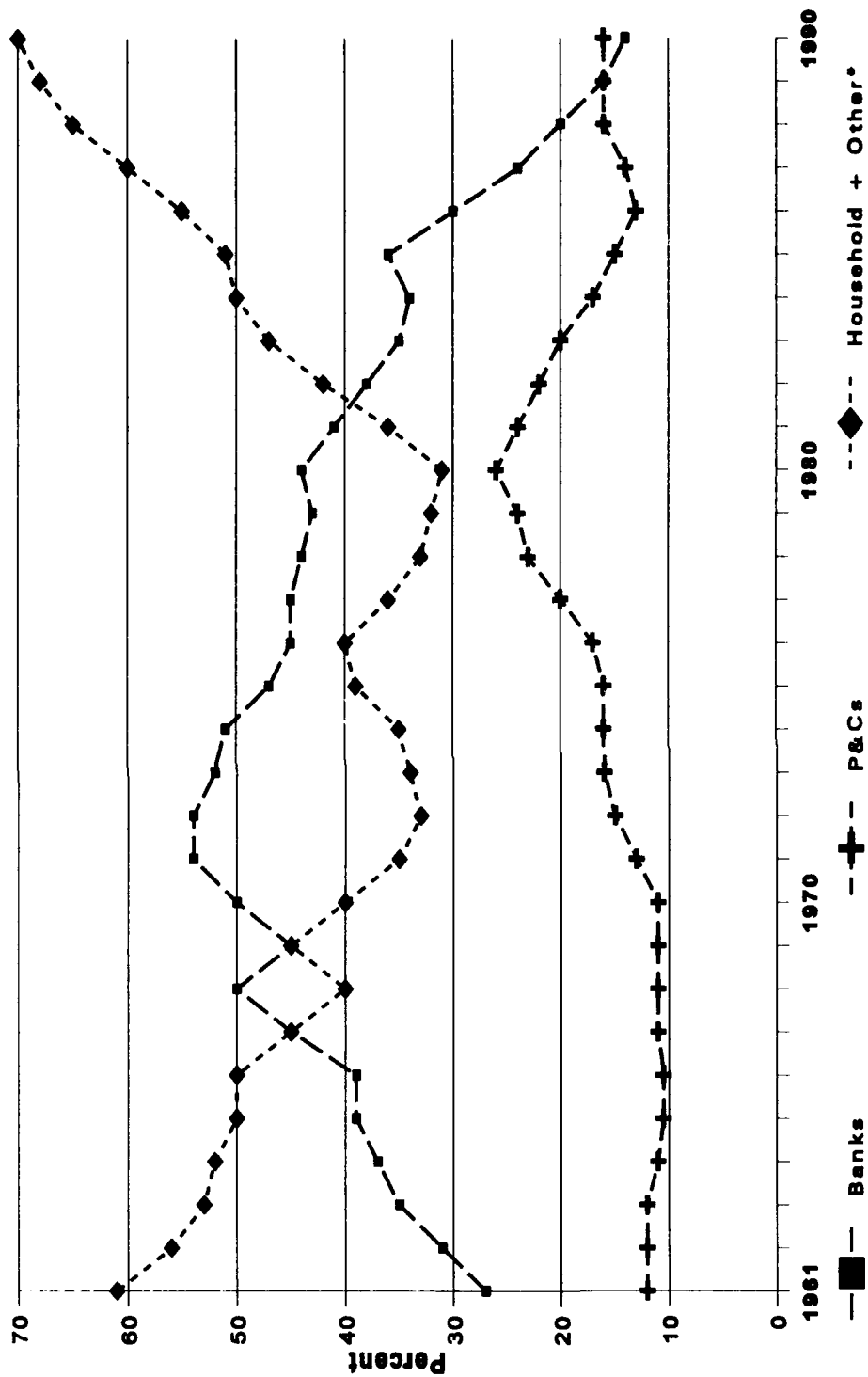


Figure 2-5 - Percent Holding of Tax-Exempt Bonds ^{*(Including Corporations, mutual funds and other types of investors)}
 Source: Bond Buyer Yearbook; Federal Reserve Bank Flow of Funds



the Act's provisions, a number of other factors contribute to trends in yield making it impossible to isolate the effects of tax rates on tax exempt investment, or investment in the narrower categories of public works. For example, the reclassification provision's downward pressure on tax exempt yields may have counter balanced the upward pressure on yields due to lower income tax rates.

OTHER FACTORS AFFECTING INVESTMENT IN TAX EXEMPT BONDS

OMB Circular A-102

In order to ensure consistency in the administration of federal grant programs, the Office of Management and Budget (OMB) Circular A-102 guides all federal agencies on various aspects of grant program management. Included in A-102 are rules governing the use of private capital to upgrade or expand grant-funded projects. Interpretation or application of these rules seems to vary among agencies which may have a significant impact on patterns of investment on various modes of infrastructure. This differential impact will affect a comparative analysis of the ability of state and local governments to raise capital for infrastructure projects.

Typically, private sector financing -- whether debt or equity -- would be repaid through the guaranteed revenue stream generated by user fees, and could, in some circumstances, involve encumbering the facility as collateral. According to A-102, projects applying for grant funding must assure the granting agency that the title to the facility will not be encumbered (i.e., used as collateral) during the "period of federal interest" in the project. Any grant funded project wishing to utilize private capital to upgrade a facility during the period of federal interest must pay the granting agency an amount equal to the current value of project's costs that were funded by the federal government.

Circular A-102 limits the flexibility that state and local governments have in expanding or upgrading their infrastructure facilities by forcing the grant-receiving government to choose between financing new capital expenditures themselves and buying out the federal government in order to bring in private capital. However, the specific impact of A-102 on different modes of infrastructure will depend on the extent to which projects for a particular type of infrastructure are funded through grants. It will also depend on the definition of the "period of federal interest" employed by the granting agency. Three examples of the different effects of circular A-102 on infrastructure financing are wastewater treatment plants, airports and water supply systems.

Wastewater treatment plants are greatly constrained in their ability to mix public and private capital for two reasons. First, because most plants are financed through federal grants and loans and second, because EPA has not defined the period of federal interest which effectively means that the period of federal interest is infinite. Airports, on the other hand, are



less constrained because the duration of federal interest in grant-funded airports expires after 20 years. Water systems are under few constraints because very few of them receive federal grants.



III. TRENDS IN VOLUME OF TAX EXEMPT NEW CAPITAL ISSUES

Examining data on the volume of tax exempt new capital issues from three perspectives allows us to account for some effects of the Act's provisions. The first section of Chapter III examines the trends in volume of all tax exempt new capital issues from 1982 - 1990, offering viable explanations based on knowledge of the Act, and economic and political conditions of the period. These explanations provide the general foundation for those offered in sections two and three. The second section examines trends in volume of tax exempt new capital bonds issued to finance public works programs. This section contrasts public works investment as a broad class to all other categories of municipal bonds, and introduces the categories within public works that contribute significantly to the class. Public works and the categories it encompasses are defined in this section for clarification. The third section focuses more closely on trends in volume of each category of public works.

ALL TAX EXEMPT NEW CAPITAL ISSUES

Line A of Figure 2-6 represents volumes of all tax exempt new capital issues in the municipal bond market. This includes bonds issued to finance a diversity of programs from retirement centers to beaches to public works infrastructure. Clearly, the drastic fluctuation in the mid 1980s can be attributed to the reactions of issuers to the 1986 Act. What is not clear, however, is whether the volume of new capital issues over the entire ten-year period was restricted due to the Act.

The huge increases in 1984 and 1985 are attributable to the combined effect of several factors: a strong economy; relatively low interest rates; easy credit; strong state and local finances; and most importantly, the knowledge that Congress was considering a Tax bill that might severely affect tax exempt bond issuance. The sweeping reforms proposed under the Treasury Department's tax reform plan were unveiled in November of 1984 which, combined with nearly ideal market conditions, caused issuers to rush their bonds to market before the law could be enacted. In late 1985, when the House passed its version of tax reform, H.R.3838, an incredible surge in volume took place. As a result, 1985 was the highest volume of tax-exempt bond issues in any year and over 50 percent of that volume was sold during the last three months of the year.⁵⁵

The subsequent decline in volume in 1986 and 1987 is to be expected; after such a massive surge, most issuers would have either met most of their capital needs for the next few years or would have reached the limits of their debt capacity. What is difficult to discern from 1985 on is what portion of the decrease was due to expected counterbalancing effects, what

⁵⁵Lynn Stevens Hume, "'Where Were You in the Fall of 1985?' Bond Community Recalls a Crazy Year," *The Bond Buyer*, Centennial Edition, pp. 38-41.

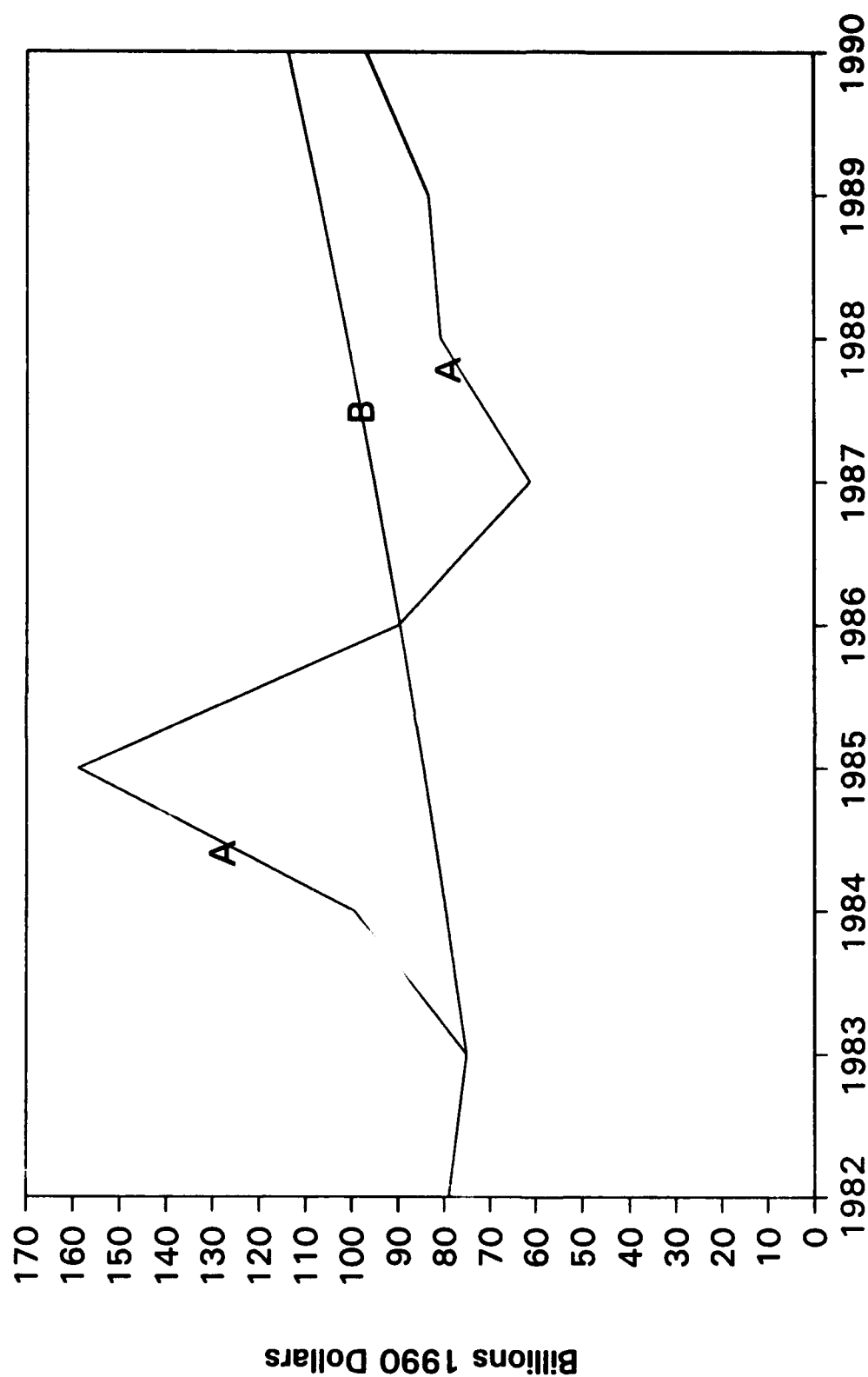


Figure 2-6 - Volume of All Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

portion (after 1986) was due to the Act itself, and what portion to other factors (discussed in previous chapters). It is important to keep this question in mind as it will arise in almost every category of public works infrastructure that we observe in the following section. It is also important to realize that, given the relatively few years of data available since passage of the Tax Reform Act of 1986, and the lags inherent in the long lives of public works projects, the conclusions reached in this section and those following remain speculative and very tentative.

We approached this question by attempting to determine whether the total volume of issues from 1984 through 1990 was reasonable. To do so, we formulate Line B (Figure 2-6) which represents the volume of tax exempt new capital issues from 1982-1990, \$825.146 billion, reconfigured to grow at the same annual rate. That is, the total volume from 1984-1990 represented in lines A and B are equal, however Line B is smoothed to control for the effects of the 1984-1985 rush to market. When reconfigured in Line B, the \$825.146 billion in volume begins to look like it could have reasonably met the growing capital needs of states and localities.

Considering the effects of fiscal federalism, it is reasonable to assume that state and local governments' spending needs increased throughout the 1980s. According to the Council of State Governments, federal transfers as a percentage of total state revenue decreased from 23 percent in 1976 to 18 percent in 1988.⁵⁶ At the same time, state and local governments were forced to upgrade their water and wastewater systems to meet tougher federal standards mandated in the 1986 amendments to the Safe Drinking Water Act and 1987 amendments to the Clean Water Act; increase their matching funds for federal programs such as Aid to Families with Dependent Children and Medicaid; and contribute tens of millions, even billions, to the clean up of abandoned hazardous waste sites under the federal CERCLA statutes and state equivalents.

Increased spending needs would be reflected in the volume of municipal bonds issued, since they are the primary vehicle for raising capital. Holding macroeconomic and other fiscal policy activities constant, and assuming that the volume of new capital issues would increased at a fairly constant pace throughout the 1980s, the visual representation would be a positively sloped line beginning sometime in 1983. If this hypothetical line fell above Line B, we would conclude that provisions of the Act restricted supply of tax exempt municipal bond issues. Since we are not able to accurately estimate, or portray graphically, the burden placed on state and local governments (in the form of greater need for bond issues) due to federal fiscal policy (even though increased mandates are clear)⁵⁷, we are unable to conclude whether or not the Act affected volumes of tax exempt municipal bonds.

⁵⁶See Statement of Gedale Horowitz, Senior Director, Salomon Brothers Incorporated and Chairman, New York Local Government Assistance Corporation, Senate Committee on Banking, Subcommittee on Securities, March 13, 1991.

⁵⁷*A Preliminary Analysis of the Public Costs of Environmental Protection: 1981-2000*, United States Environmental Protection Agency, May 1990, pg.ii.



Other factors potentially affecting the volume of tax exempt new capital issues are economic conditions (particularly interest rates), and the financial condition of state and local governments. The April 1991 *Fiscal Survey of the States* released by the National Governor's Association and the National Association of State Budget Officers showed that states were in the worst financial shape of the decade due to rising health care costs, the recession and growing human service demands.⁵⁸ Returning to Figure 2-2, we can see that the effects of the rush to market have blurred the relationship between interest rates and tax exempt bond issues. Ignoring other factors for the moment, based on interest rates, we would expect tax exempt bond issues to have been at their highest in 1987-1988. While volume of issues did jump in 1988, it is clear from the figure that other factors, primarily the rush to market, overwhelmed the effect of interest rates.

The third major factor affecting the volume of tax exempt bonds is the fiscal condition of states and localities. While in 1983 through 1985, most states and localities had budget surpluses, most currently are in poor condition financially. This situation resulted from the combined effects of fiscal federalism, greater responsibility for providing services, real estate crashes that have eroded tax bases, and the current recession. Fiscal constraints should counteract the upward pressure of fiscal federalism on the volume of bond issues.

TAX EXEMPT NEW CAPITAL ISSUES FOR PUBLIC WORKS

There is some inconsistency among participants in the municipal bond market in classifying the use of proceeds from bond issues. The Public Securities Association classifies municipal bonds into 49 categories, 15 of which we considered public works infrastructure related and therefore of interest to the Corps of Engineers. The categories referred to collectively as public works in this section include: Airports, Electric/Hydro Power, Flood Control, Irrigation, Mass/Rapid Transit, Multiple Utilities, Pollution Control, Roads/Tunnel/Bridges, Sanitation, Seaports, Solid Waste/Resource Recovery, Street Improvements, Transportation - Other, Utilities - Other, and Water & Sewer.

Public Works vs. All Other Municipal Bond Proceed Categories

A comparison of trends in the volume of tax exempt new capital issues for public works to trends in volume of all other tax exempt new capital issues does not suggest that the 1986 Act affected public works investment significantly more than other municipal bond categories.

Figure 2-7 reveals that trends in volume of tax exempt public works bonds follows the same general trends mirroring that of all municipal bond volumes. The differences in public works and other municipal categories is better demonstrated in Figure 2-8, which shows the percent change in volume of tax exempt new capital issues for public works in relation to the

⁵⁸See Statement of Raymond C. Scheppach before Committee on Banking, Housing and Urban Affairs, Subcommittee on Securities, U.S. Senate, April 24, 1991.



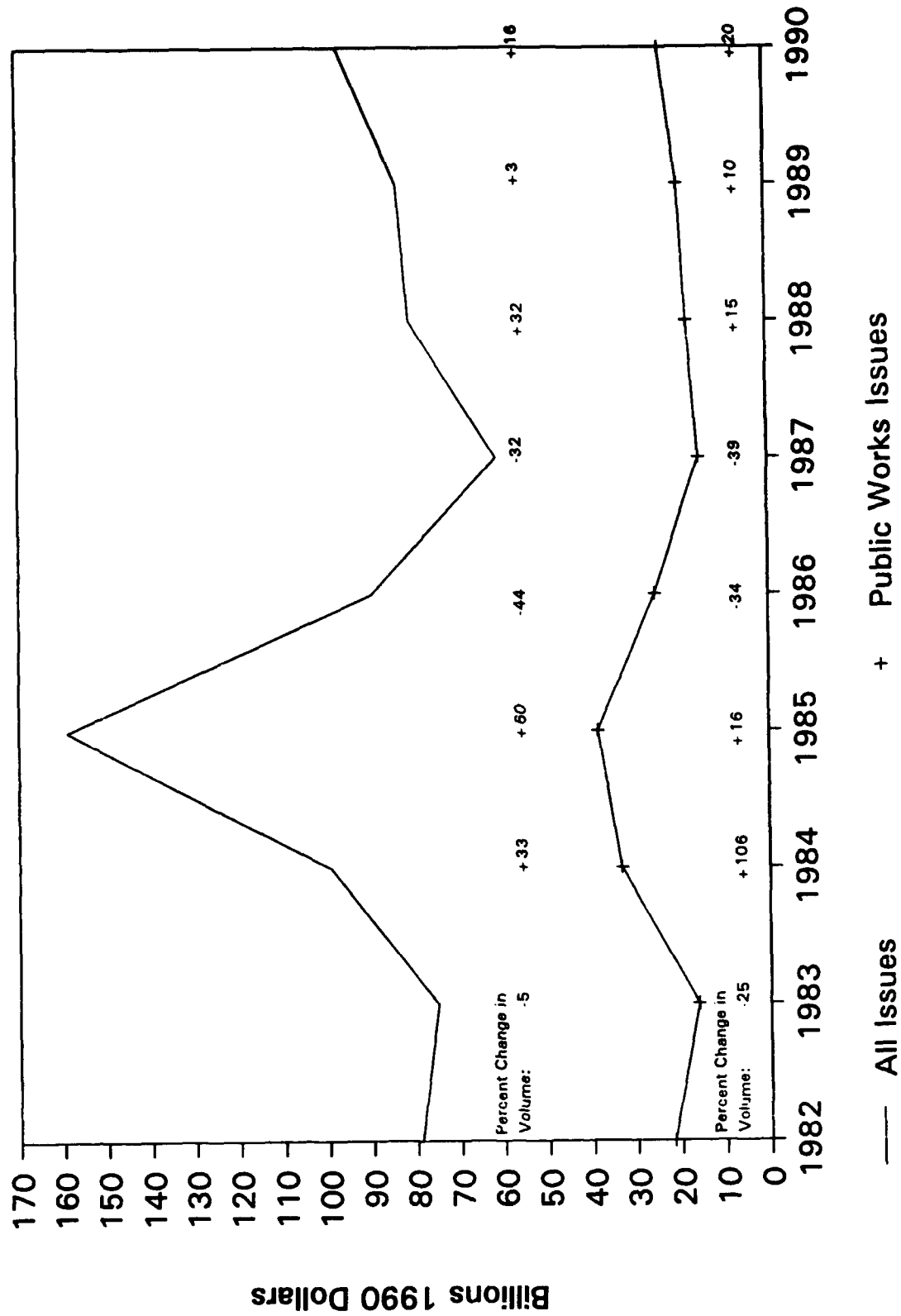


Figure 2-7 - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

percent change in volume of all other tax exempt bond categories. Figure 2-8 indicates that public works bonds were rushed to market earlier than other municipal bonds. In 1984 the volume of tax exempt new capital infrastructure bonds increased 107 percent, while all other tax exempt new capital municipal bonds increased only 12 percent. In the following year, public works volumes experienced relatively small changes in volume in comparison to other municipal bond categories. In 1986 and 1987, percent change in volume in both categories decreased, again counter balancing one another in consecutive years. However, volume of issues other than public works dropped off more significantly immediately following the Act, and public works volumes were slower to fall off. The question we are again faced with is; what portion of the trends in volume are attributable to the rush to market, what part to the Act itself, and what part to other trends?

Public Works Infrastructure

The Public Securities Association (PSA) provided volume data for each public works category through the third quarter of 1991. Fourth quarter figures for 1991 were estimated based on the first three quarters to arrive at the total volume for the year. It is also worth noting that volume figures for these individual categories from 1982-1985 exclude issues less than \$5 million. However, since volume of issues less than \$5 million for all tax exempt new capital issues was only about 10 percent of the total each year (1982-1985), and volume of public works issues were approximately 25 percent of the total each year, volume of public works issues less than \$5 million was likely not more than 2.5 percent. This incremental amount does not affect the outcome of this study because we are primarily observing trends.

Figure 2-9 presents the cumulative contribution of the largest infrastructure categories in 1990 dollars. The graph and accompanying data reveal which categories were most volatile around the time of the Act.

Prior to the 1984-1985 rush to market there was a drop in aggregate volume of new capital issues for public works infrastructure projects of from \$22 billion to \$16 billion, or 26 percent. The most prominent categories contributing to this decline were Water & Sewer (which declined from \$3.3 to \$2.2 billion or 34 percent), Pollution Control (down 42 percent from \$5.2 to \$3.0 billion), and Transportation-Other (down 94 percent \$92.7 to \$5.9 million).⁵⁹ Somewhat distorting the severity of aggregate decline in volume was the Solid Waste/Resource Recovery category which posted a 286% increase. In other words, if it were not for the Solid Waste/Resource Recovery category, infrastructure volumes would have shown a more drastic decline in 1983. A possible explanation of the overall decline in volumes in 1983 is a lagged response to the recession of the late 1970s and early 1980s which reduced planning of large projects reaching the construction phase in 1983.

⁵⁹Although some categories posted larger percent changes, their volumes were relatively smaller, therefore diminishing their contribution to the aggregate class of public works.



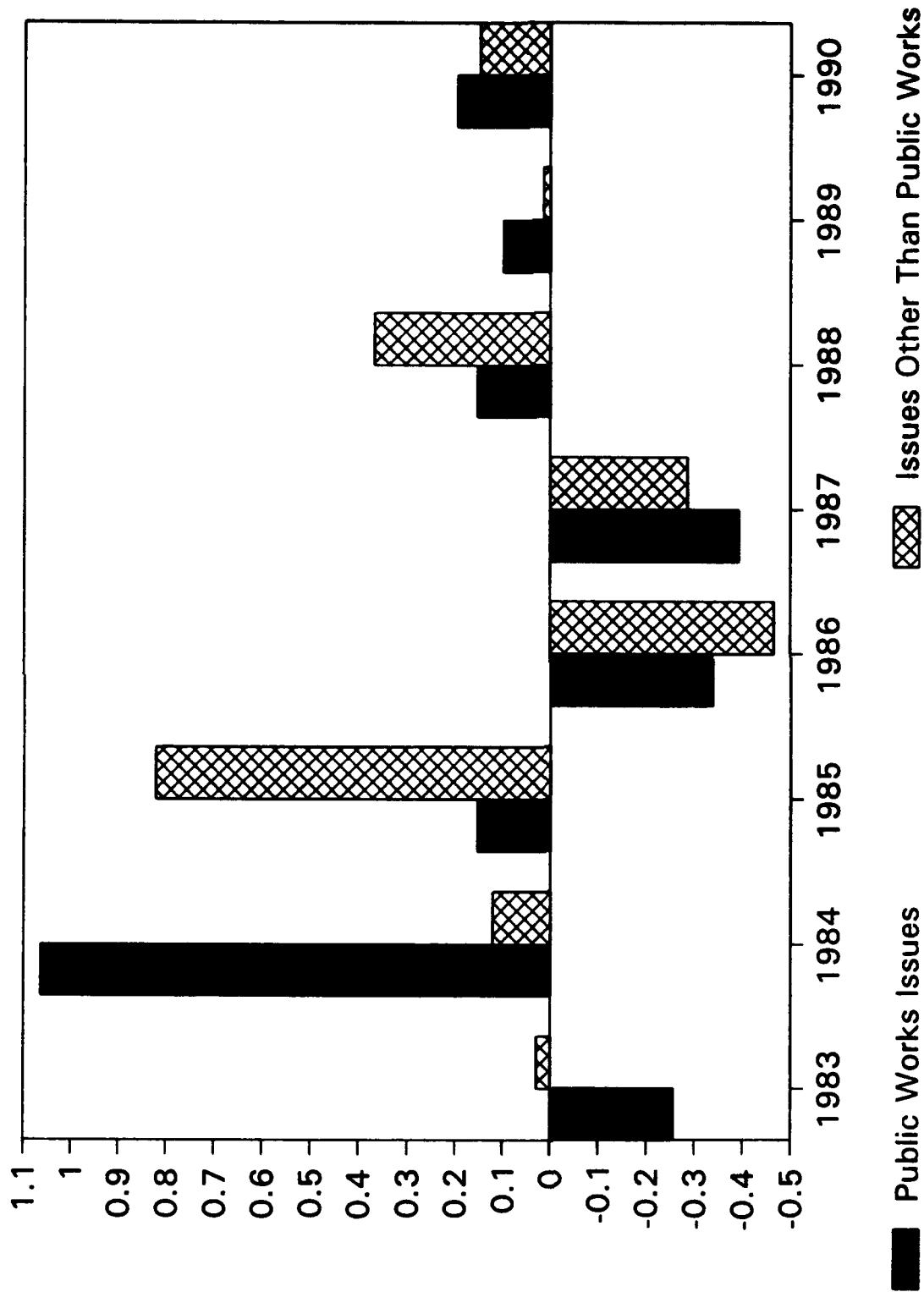


Figure 2-8 - Percent Change in Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook



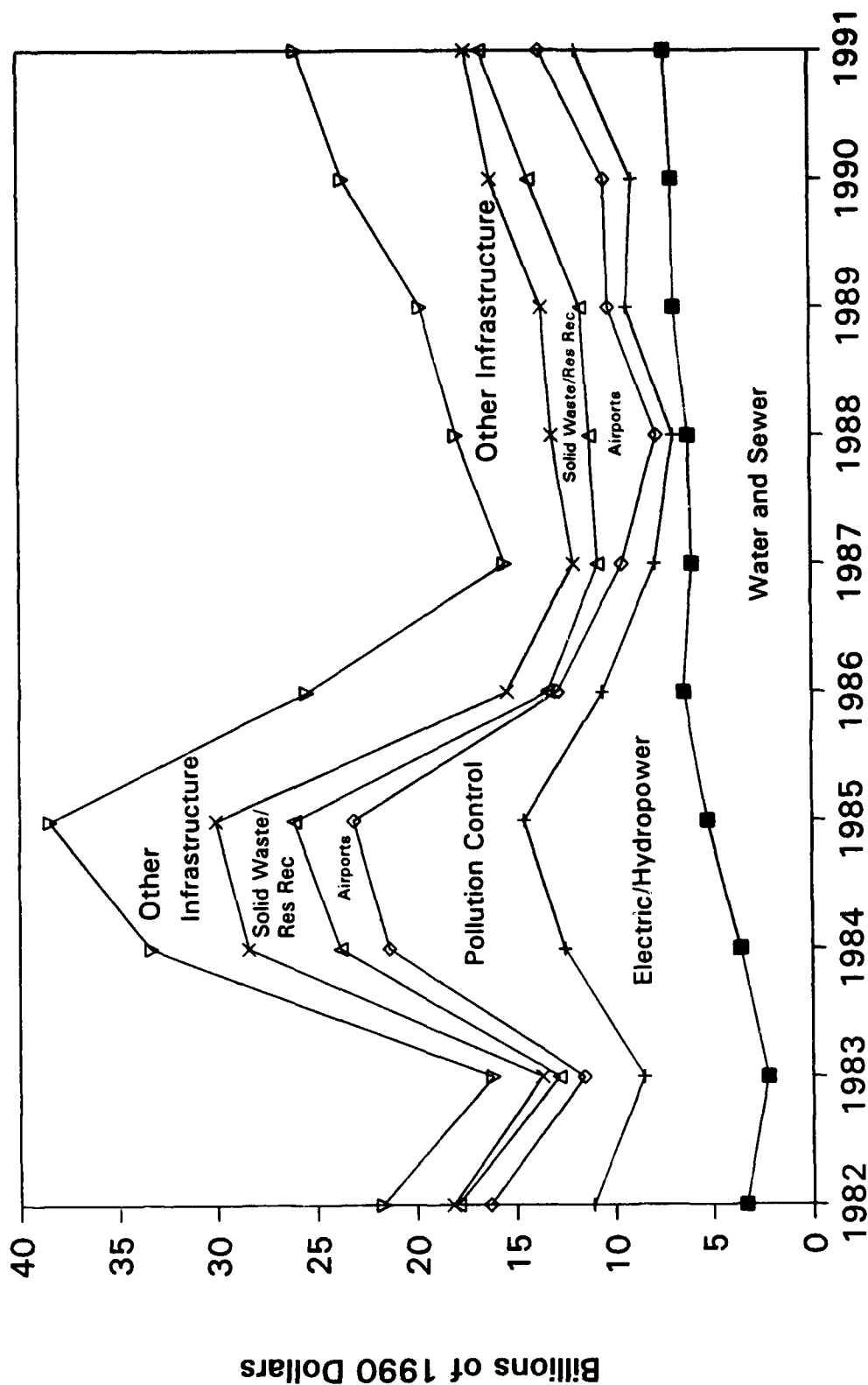


Figure 2-9 - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

The rush to market in anticipation of the Act was also compounded by low interest rates which encouraged issuance. Taking volume into account, the categories contributing significantly to the aggregate volume increase of tax exempt new capital issues over the two years 1984 and 1985 were Pollution Control (186 percent increase), Roads/Tunnels/Bridges (516 percent increase), and Solid Waste/Resource Recovery (430 percent increase).

TAX EXEMPT NEW CAPITAL ISSUES BY CATEGORY OF PUBLIC WORKS

Observing trends in volume of tax exempt new capital issues for each infrastructure category reveals effects that may be loosely attributable to the Act or a provision thereof. This micro approach allows us to examine each category's reaction to the anticipation and passage of the Act, if any, and to postulate which provisions may have had the most profound effects (see Appendix A for data on bond volumes by public works category provided by the Public Securities Association, or PSA). These observations are based largely on the available literature and opinions of experts in the securities market and various infrastructure sectors.

PSA data comparisons reveal eight categories (Airports, Electric/Hydro Power, Mass/Rapid Transit, Pollution Control, Roads/Tunnels/Bridges, Solid Waste/Resource Recovery, Water/Sewer, and Transportation - Other) that used large volumes (over than \$1 billion) in bond proceeds consistently over the 10 year period. These categories are each examined individually below. The remaining seven categories (Flood Control, Irrigation, Multiple Utilities, Sanitation, Seaports, Street Improvements, Utilities-Other) used relatively small volumes of bond proceeds. These smaller categories are discussed collectively because their contribution to the total volume of bond issues for public works infrastructure is not as significant. However, each is graphically represented to show similar patterns throughout most infrastructure categories. Line B in each figure represents the volume of tax-exempt issues from 1982-1990, reconfigured to shrink or grow at a constant annual rate from 1982 levels.

Airports

There does not appear to be any discernable relationship between the implementation of the Act and the volume of airport issues (see Figure 2-10). For one, airports retained their tax exempt status under the act (as an eligible exempt facility) as long as they are owned by or on behalf of a government unit. In addition, bonds issued to finance airports are not subject to the volume cap limitation.

Airport investment is by nature cyclical. That is, airport investments occur infrequently and, when they do, they can be quite large. This characteristic is revealed in Figure 2-10. Financing a single or a few large airports in any given year would influence the volume of bond issuance to a much greater degree than would underlying macroeconomic conditions. Hence, bond-financed airport investments, as shown in figure 2-10, probably represent an upward trend in general (Line B) in response to needs for capacity expansion system-wide. Annual variations



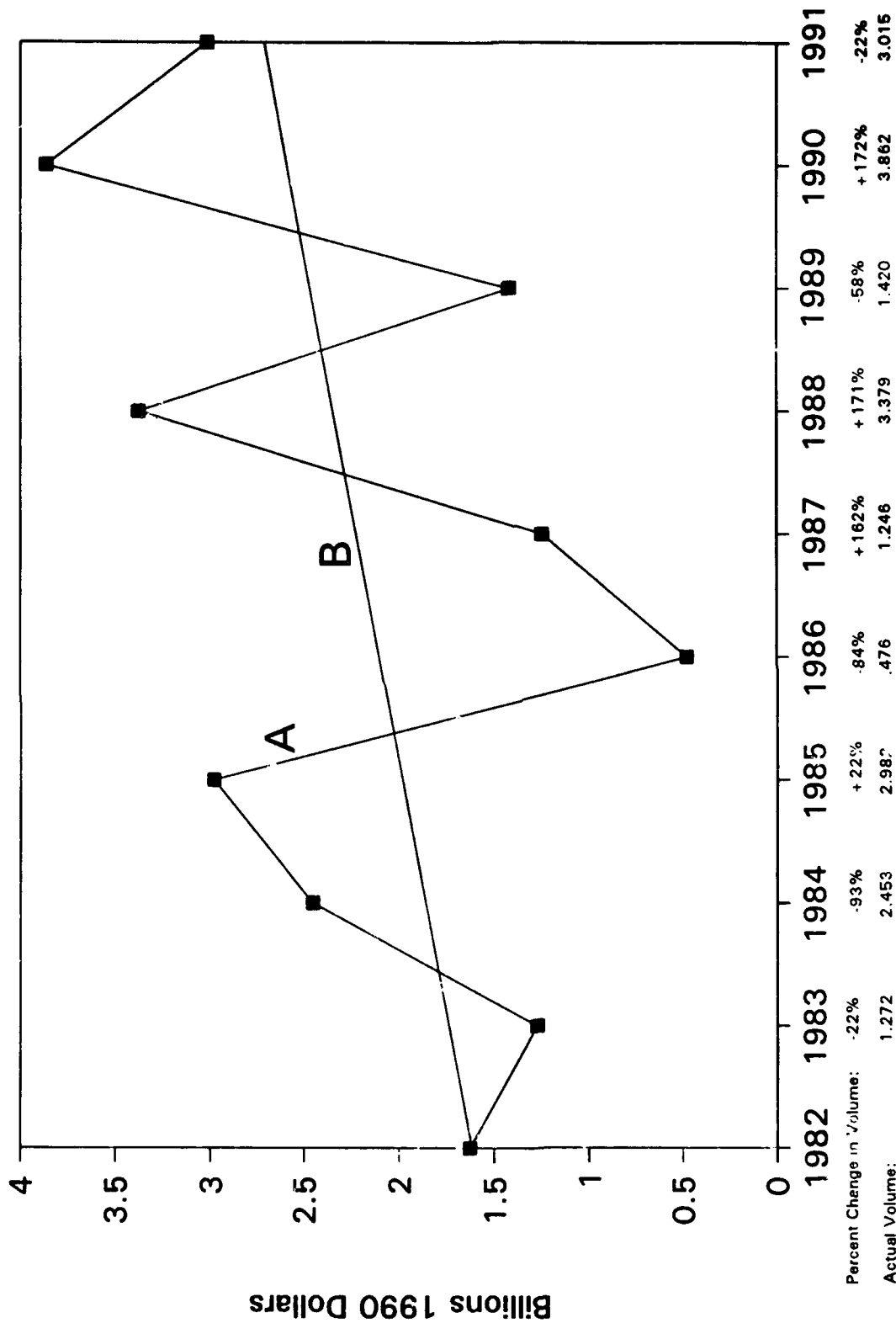


Figure 2-10 - Airports - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

about this trend line (Line A) probably represent financing of one or a few large airports, in the year in which spikes occur.

Electric/Hydro Power

From the data in Figure 2-11, it appears that the Act had a significant impact on projects in the electric/hydro power category. The relatively small rush to market in 1983 and 1985 was more than counterbalanced with declines in 1986, 1987, and 1988, totalling 169 percent. The advanced refunding and yield restrictions are likely to have contributed to this decline in volume.

Financing electric and hydro power facilities requires large bonds with relatively long repayment schedules. Prior to 1986, issuers could refinance their debt should interest rates fall, or invest part of the proceeds in higher yielding securities, thus decreasing their debt burden and project costs. Prohibition of advanced refunding of private activity bonds, limiting governmental bonds to one advanced refunding, and restricting reinvestment of bond proceeds significantly increased the risks to a government authority wishing to issue a long term bond. The opportunity to take advantage of interest rate fluctuations to reduce debt burden may well have been a deciding factor for municipalities needing to construct electric power facilities.

We cannot determine from the data the proportion of bonds issued to finance electric/hydro power facilities that were considered tax exempt private activity, as opposed to governmental after 1986. Those issues that did fall into the private activity category also were subject to the volume cap, further restricting supply of issues.

Aside from the effects of the Act and general economic conditions, the electric/hydro power industry was subject to political criticisms in the late 1970s and early 1980s perhaps affecting the initiation of projects that would require funding in the mid 1980s (just when new issues volumes dropped off). In addition, the default of \$2.25 billion worth of bonds issued by the Washington Hydroelectric Public Power System in January 1984 forced issuers and investors to evaluate the financial prospects of power bonds, in particular, and revenue bonds, in general, more closely.⁶⁰ Prudence hearings in the early 1980s also questioned earlier power demand forecasts which were determined to be too high. In addition, higher costs of construction and operations procedures associated with increased safety concerns caused a downward trend in over all construction in the late 1980s. It is not possible to link unambiguously, either these factors or the effects of the 1986 Act and the trends shown in Figure 2-11.

⁶⁰Robert Lamb and Stephen Rappaport, *Municipal Bonds* (New York: McGraw Hill, Inc., 1987), p.254.



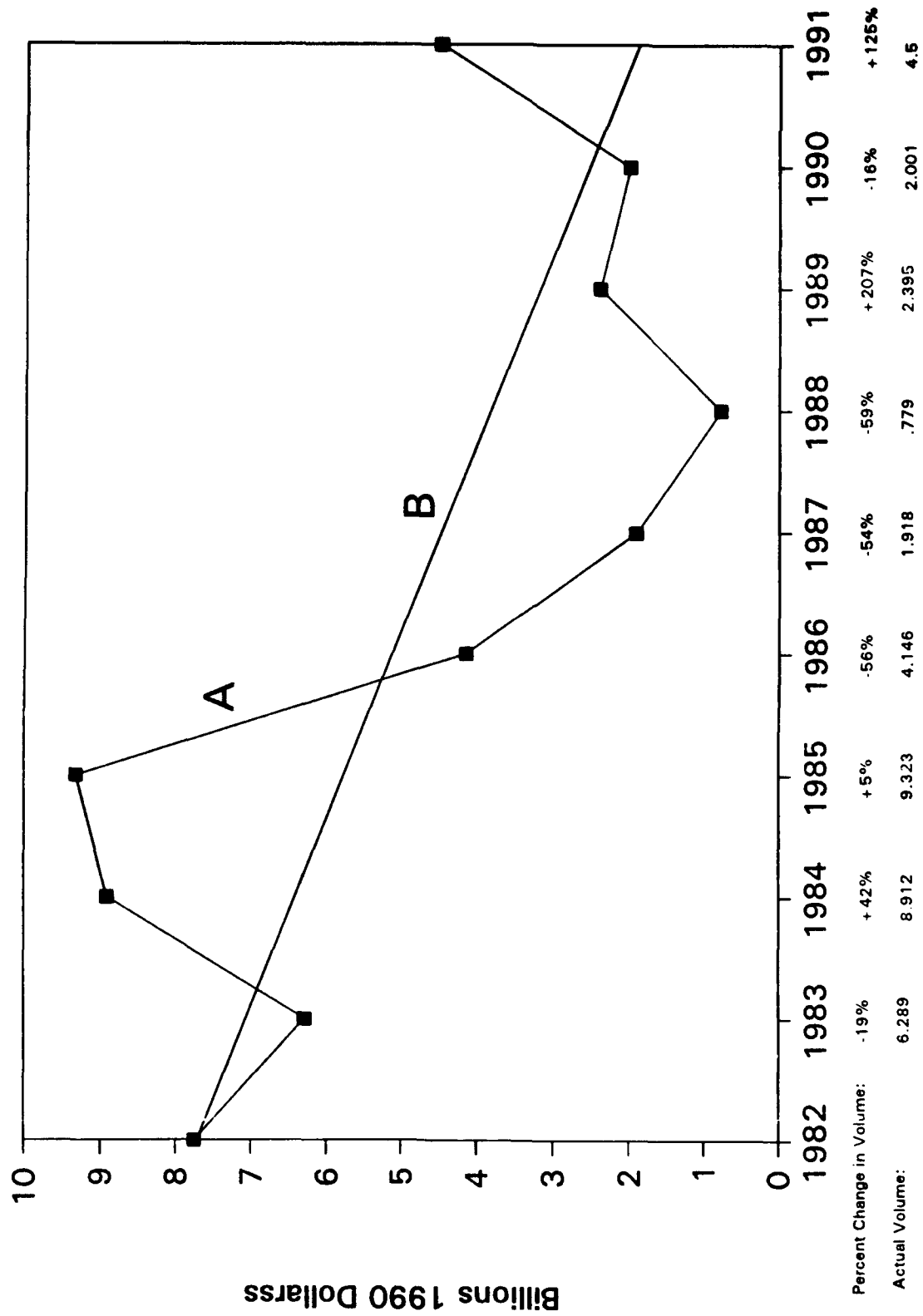


Figure 2-11 - Electric/Hydro Power - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

Mass/Rapid Transit

Volume of new capital issues for Mass/Rapid Transit climbed steadily throughout the early 1980s as interest rates were low (see Figure 2-12). The large jump in 1986, 65 percent above already high "rush" volumes, was probably the result of one or a few major issues by large metropolitan transit authority(ies). In comparison to other large public works categories, mass/rapid transit's 1986 rush to market is the most aggressive with a 65 percent change in volume from 1985. 1987 volumes saw the expected decline as capital needs were fulfilled. In the years since the passage of the act, volume has been suppressed.

Mass/Rapid Transit bonds were subject to the post-1986 volume cap on private activity bonds, which may have inhibited transit volumes from recovering to pre-1986 levels. In fact, volumes continued to decline in 1988 and grew only slightly in 1989. Since 1986, new issues for Mass/Rapid Transit are considerably lower than 1983-1986 volumes, with the exception of 1990. This may suggest that transit systems were not given high priority status among states faced with constrained cap allocations.

Pollution Control

Pollution Control bonds are the most telling category because the reclassification schedule under the Act completely repealed their tax exempt status. From Figure 2-13 it is clear that issuers rushed their bonds to market in 1984 and early 1985 to fulfill present and future capital needs in anticipation of having to issue high yield taxable bonds in the future.

Given the surge in pollution control efforts throughout the 1980s, it seems likely that volumes would have reverted to an increasing trend after the natural decline in 1987 in response to the rush to market in 1985 and 1986. However, the non exempt status of such bonds may have been partly responsible for a continued decline in volumes from 1986 to the present, more or less.

The reason that volume of these bonds did not fall off completely is due to transition rules that apply to specific facilities or state programs, as well as to the reporting procedures of issuers to the Public Securities Association. In the former case, transition to non-exempt states may have resulted in a few pollution control financing going forward even after the Act. In the latter case, a municipality may have issued a tax exempt bonds to finance pollution control measures for a government owned exempt facility. In reporting such an issue to the PSA the use of proceeds may have been reported inadvertently as pollution control.



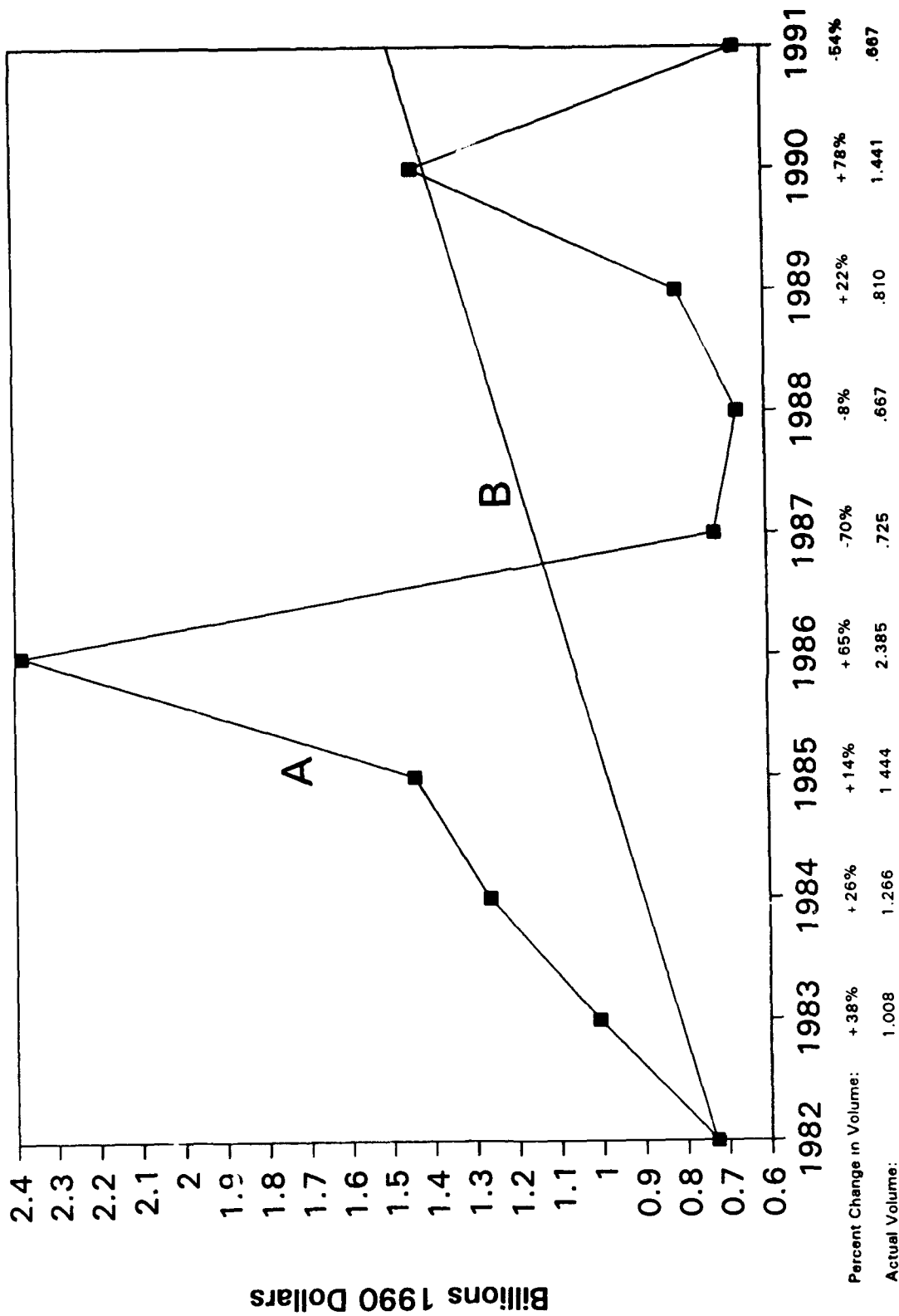


Figure 2-12 - Mass Rapid Transit - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

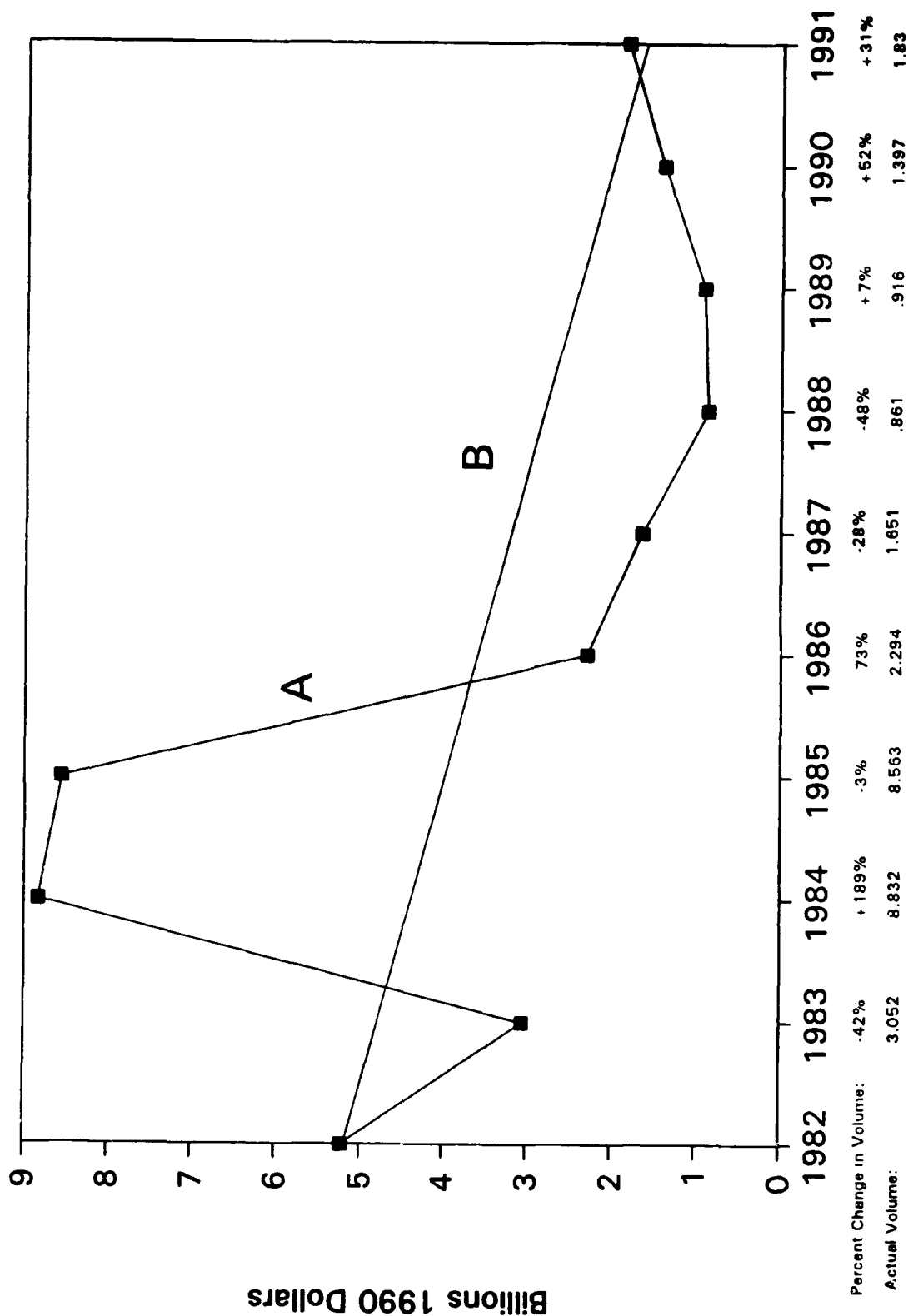


Figure 2-13 - Pollution Control - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook



Roads/Tunnels/Bridges

Bond volumes to finance Roads/Tunnels/Bridges (see Figure 2-14) closely reflect the aggregate graph discussed in the previous section with some exceptions (see Figure 2-7). As Figure 2-14 indicates, the rush to market in 1984 and 1985 anticipated the Act and responded to lower interest rates. In 1985, for example, the New Jersey Transit Authority issued approximately \$2 billion in highway revenue bonds -- an amount far in excess of normal levels. The high volume in 1986 is uncommon in comparison to other infrastructure categories that, with the notable exception of Mass/Rapid Transit, experienced large declines in that year.

From 1988-1990 volumes experienced a steady and healthy rate of growth, outperforming almost all other large public works categories with increases in volume of 45, 28, and 16 percent consecutively. In general this would indicate that Roads/Tunnels/Bridges financing using tax exempt municipal bonds was not severely affected by the Act, after accounting for the rush to market and subsequent decline. However, the provisions of the 1987 Surface Transportation Act should not be ruled out as a contributing factor to the 1988-1990 increase. The Surface Transportation Act introduced a federal funds matching program in selected states. This may have encouraged such states to allocate more of their volume caps to Roads/Tunnels/Bridges programs. In addition, the Intermodal Surface Transportation Efficiency Act of 1991 has authorized more federal funds for state matching programs; however, it remains unclear how states will respond to the availability of these funds.

Solid Waste/Resource Recovery

The volume of bonds issued to finance solid waste and resource recovery facilities is likely to have been affected by constraints posed by public opinion and action groups more than provisions of the 1986 Act. While anticipation of the Act could have contributed to the sharp increase in 1984 (see Figure 2-15), a "real" rush to market would have continued into late 1985 and 1986.

The decrease in bond volume from 1985-1987 is most likely a combined result of the phenomenon commonly referred to as NIMBY or "not in my backyard" where local opposition to siting solid waste facilities deferred hundreds of millions -- perhaps billions -- in new construction; and the recycling surge that has grown throughout the last decade. The NIMBY movement took hold in the mid 1980s as opposition to the construction of incinerators and landfills increased among local resident groups.

The solid waste/resource recovery category is unique due to the mix of public and private ownership of such enterprises. Because more facilities in this category have private interests at stake they were probably benefiting from the accelerated depreciation schedules and the investment tax credit of the pre 1986 code. With regard to resource recovery facilities, the Act, among other things, eliminated investment and energy tax credits and extended depreciation schedules for private investors, thereby reducing the incentives for private equity contributions

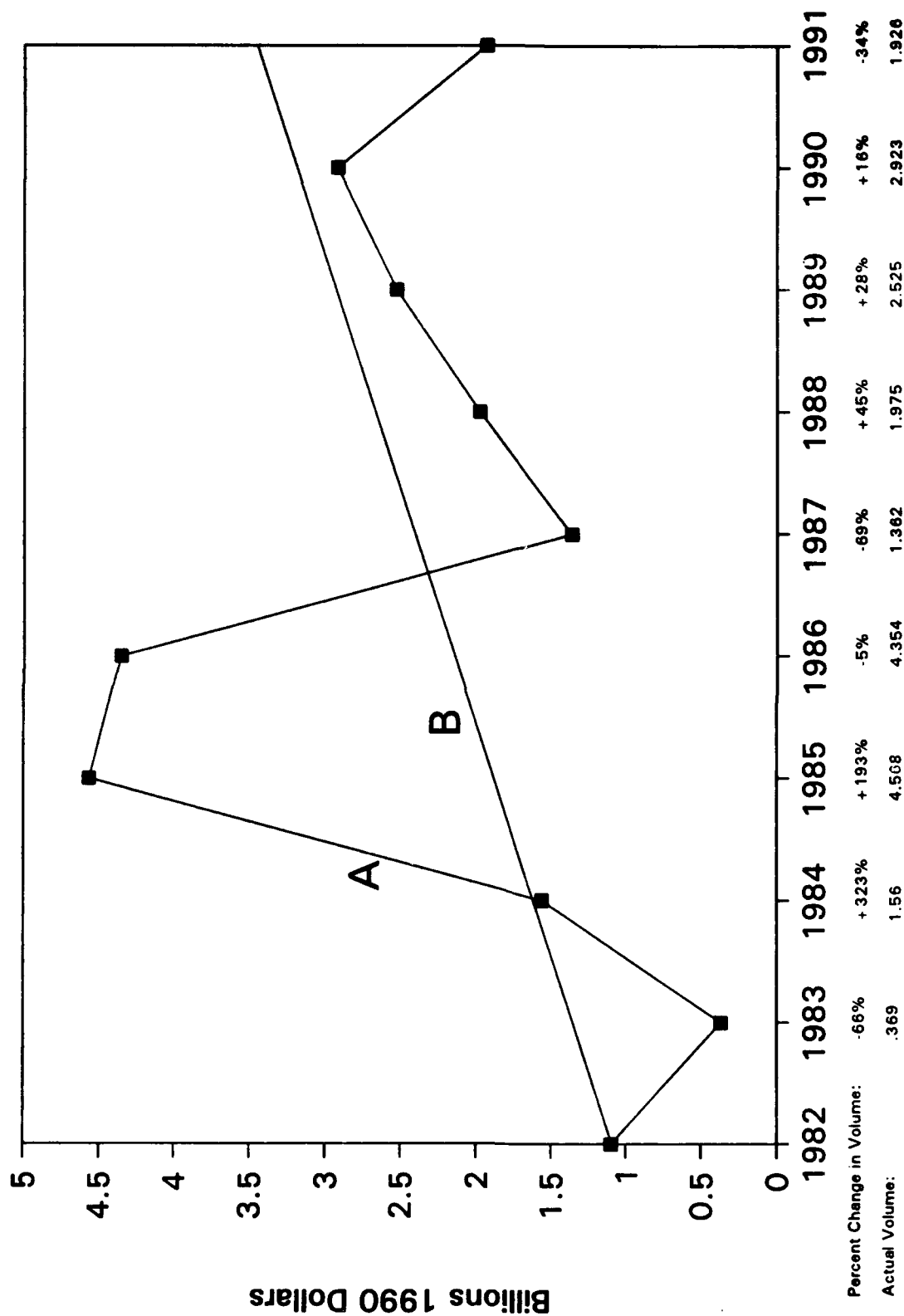


Figure 2-14 - Roads/Tunnels/Bridges - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook



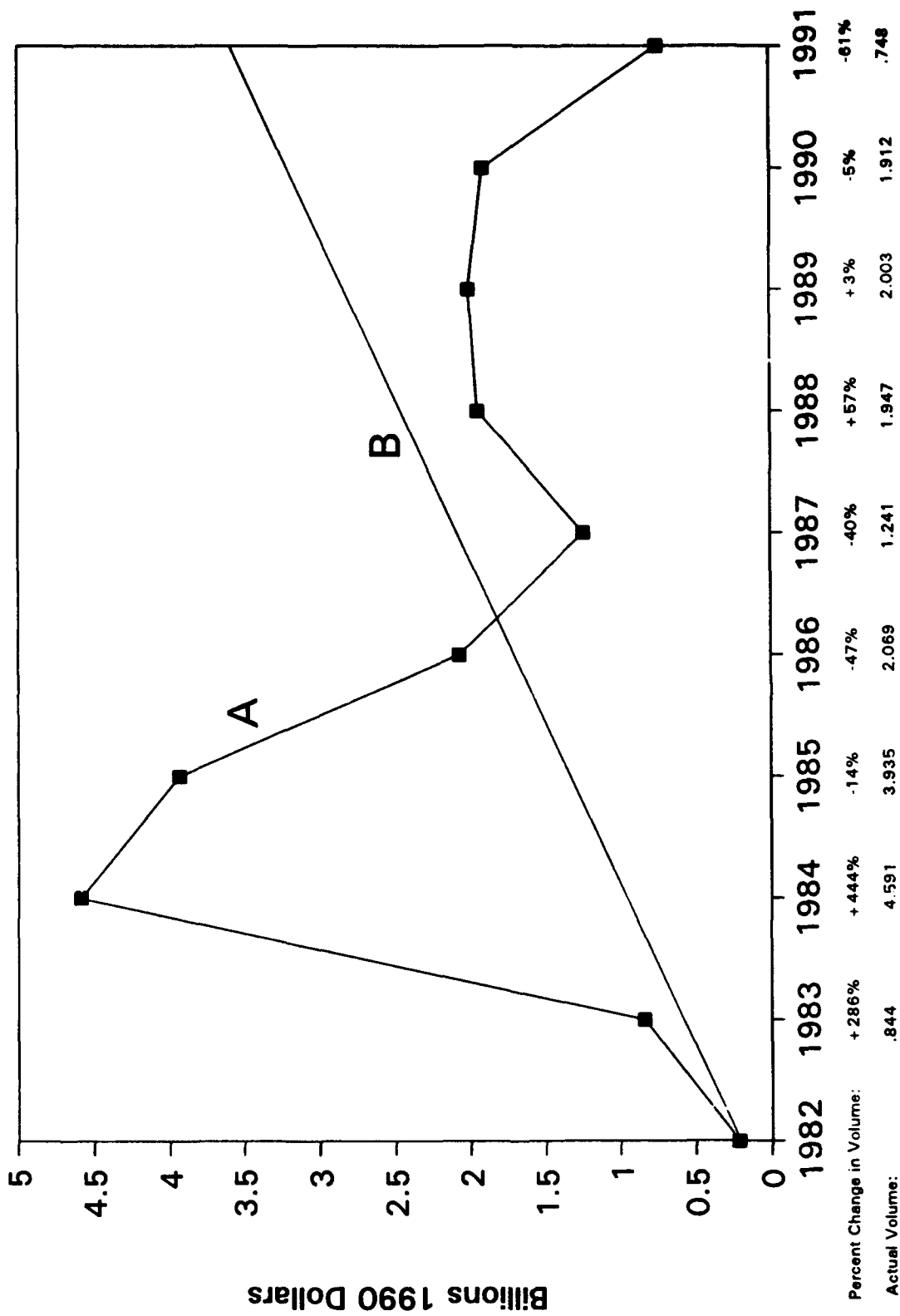


Figure 2-15 - Solid Waste/Resource Recovery - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

and increasing the costs of this disposal option for municipalities.⁶¹ As a result, this category may continue to decline. The NIMBY movement and the removal of incentives for public-private partnership might explain the reduction in new capital issues for Solid Waste/Resource Recovery infrastructure since 1986.

Water & Sewer

Bonds issued to finance waste water treatment and water supply facilities are subject to the volume cap making it increasingly difficult for local governments to obtain such financing. However, tax exempt bond issues for water and sewer public works have been increasing almost every year since 1983 (see Figure 2-16). The reasons for this increase are clear. First, population increases and rapid immigration to unserved regions of the country create more demand for wastewater treatment. Second, Congress and EPA continue to raise and enforce wastewater treatment standards. Third, the federal grant program for wastewater treatment is being phased out, which puts increasing pressure on state and local governments to finance facilities in the capital markets.

Transportation - Other

The reporting system used by PSA does not allow us to determine with any precision what types of public works are constructed using proceeds from bonds in the Transportation - Other category. This is unfortunate because volume in this category has been growing rapidly over the past five years, from hovering between \$100 and \$500 million from 1982 to 1987, to a projected volume of over \$3 billion in 1991 (see Figure 17). This could be the result of significant growth in a new area of transportation infrastructure. More likely, however, it is that issuers are simply categorizing differently than in the past.

Small Public Works Infrastructure Categories

Figures 2-18 through 2-24 portray public works infrastructure categories for which volumes of tax exempt new capital issues typically amounted to less than \$1 billion annually. It is not possible to make any correlation between the volumes of these issues and the Act because the absolute volume for each category is so small that one or two large issues can cause up to 1000 percent changes in any given year. As a result, many of these graphs indicate large swings in volume over the ten-year period. Most categories experienced a small rush to market in either 1984 or 1985 and, without the marked decline of the larger categories, returned to apparently normal levels after 1986. The exceptions are seaports, which are erratic but show a decline, and street improvements which surged immediately before the act but did not decline until 1990.

⁶¹*Impact of the Tax Reform Act of 1986 on Privatization*, a report to the National Council on Public Works Improvement, Scully Capital Services, Inc., June 1987, p. 21.



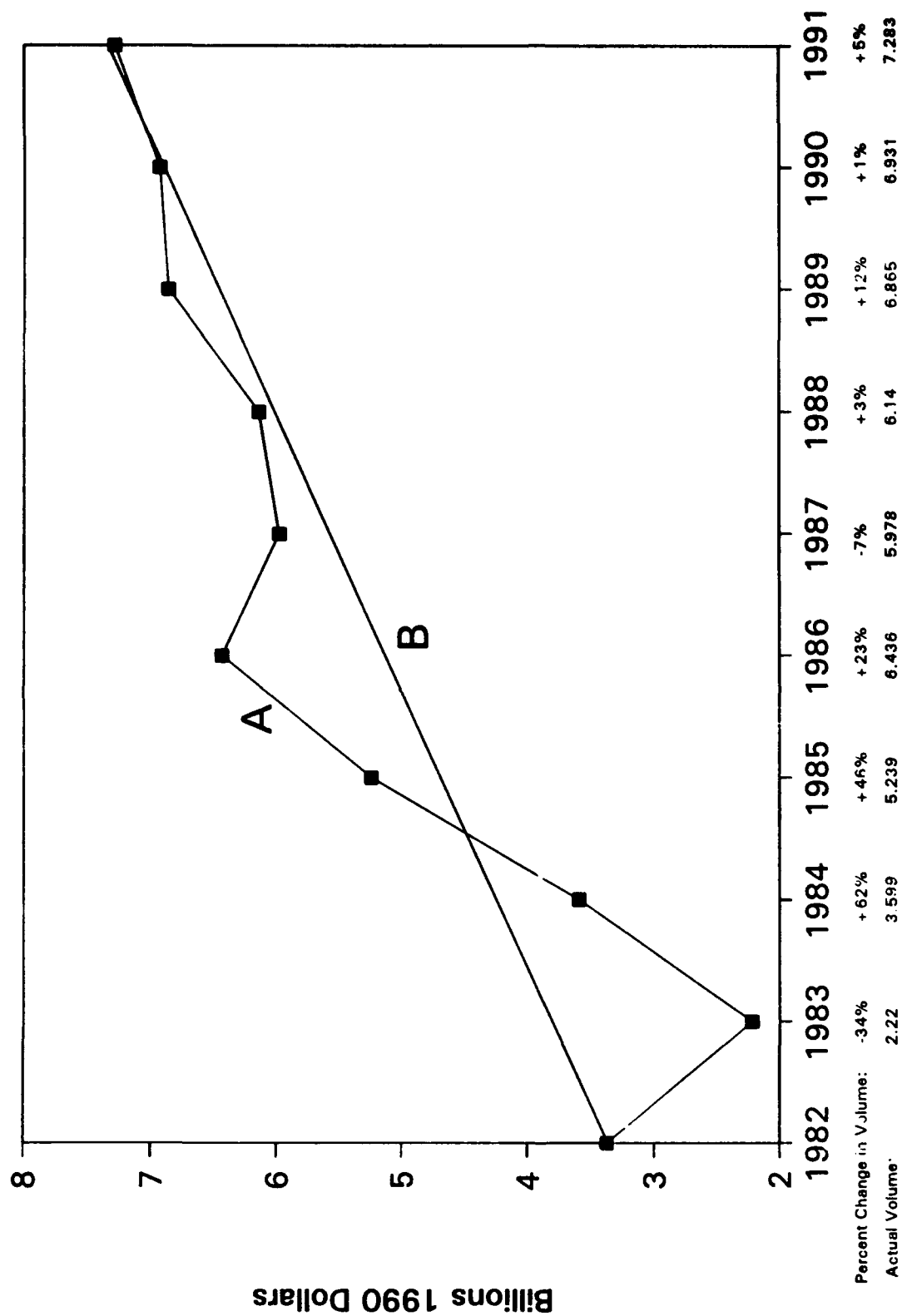


Figure 2-16 - Water & Sewer - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

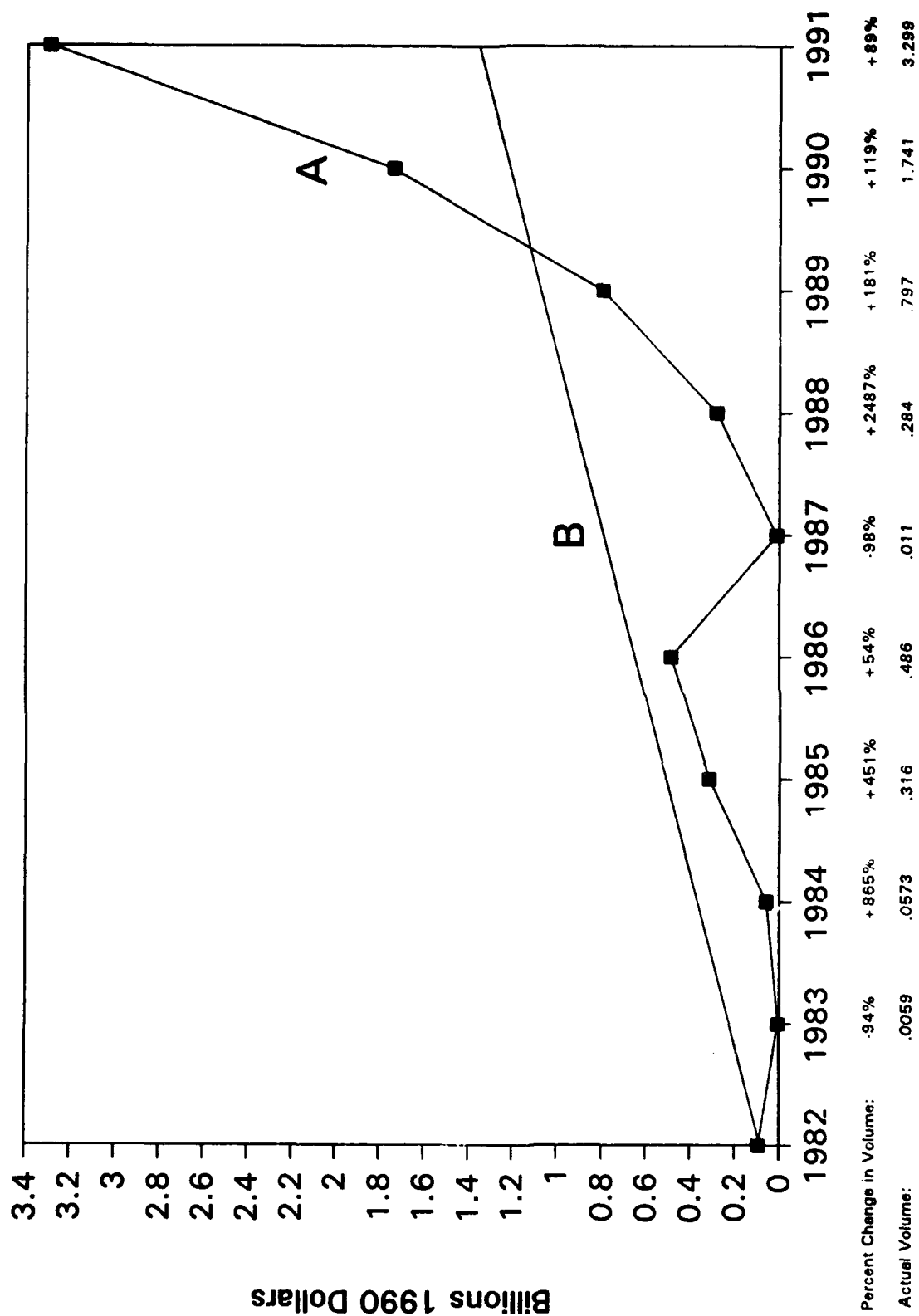


Figure 2-17 - Transportation/Other - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook



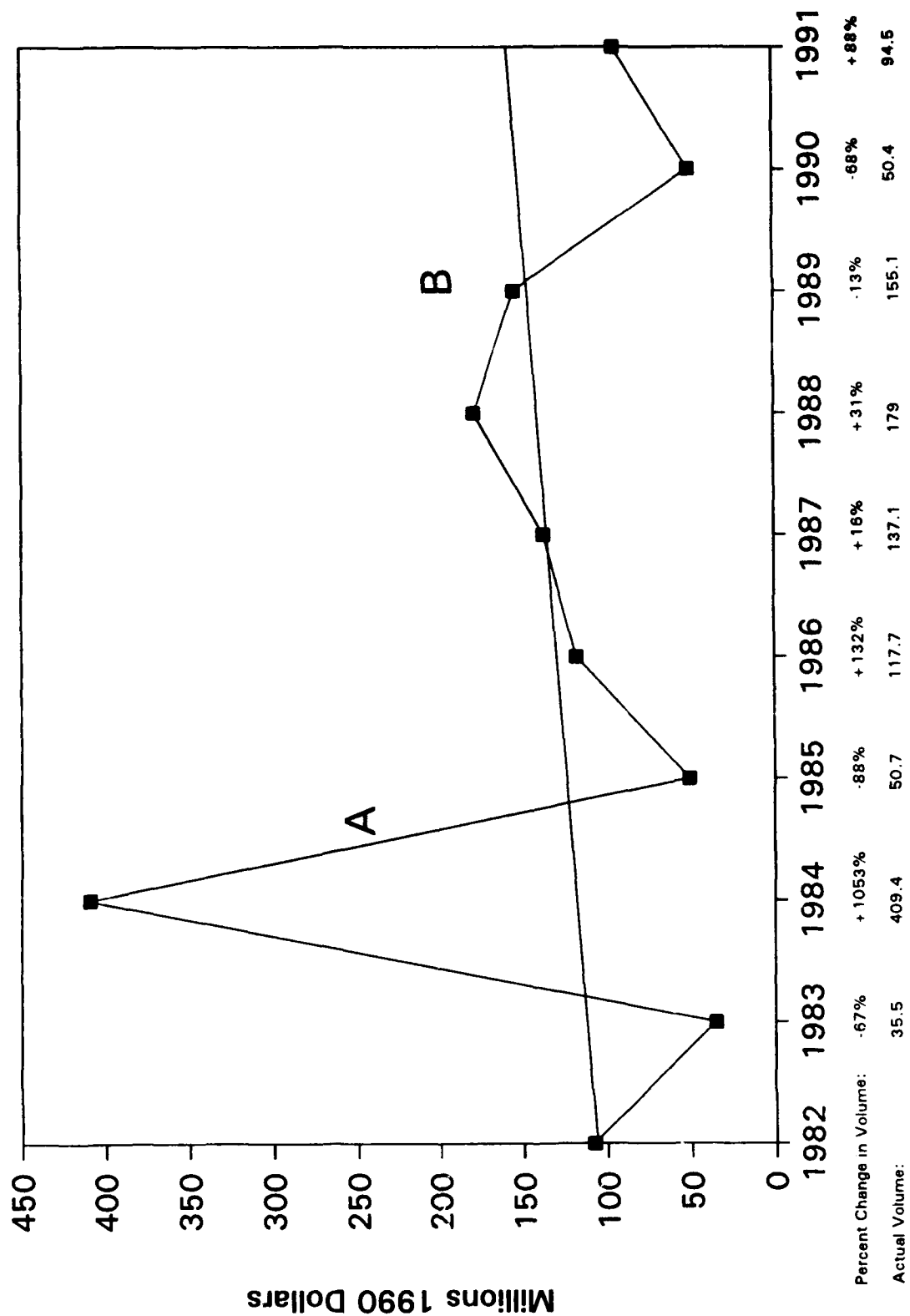


Figure 2-18 - Flood Control - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

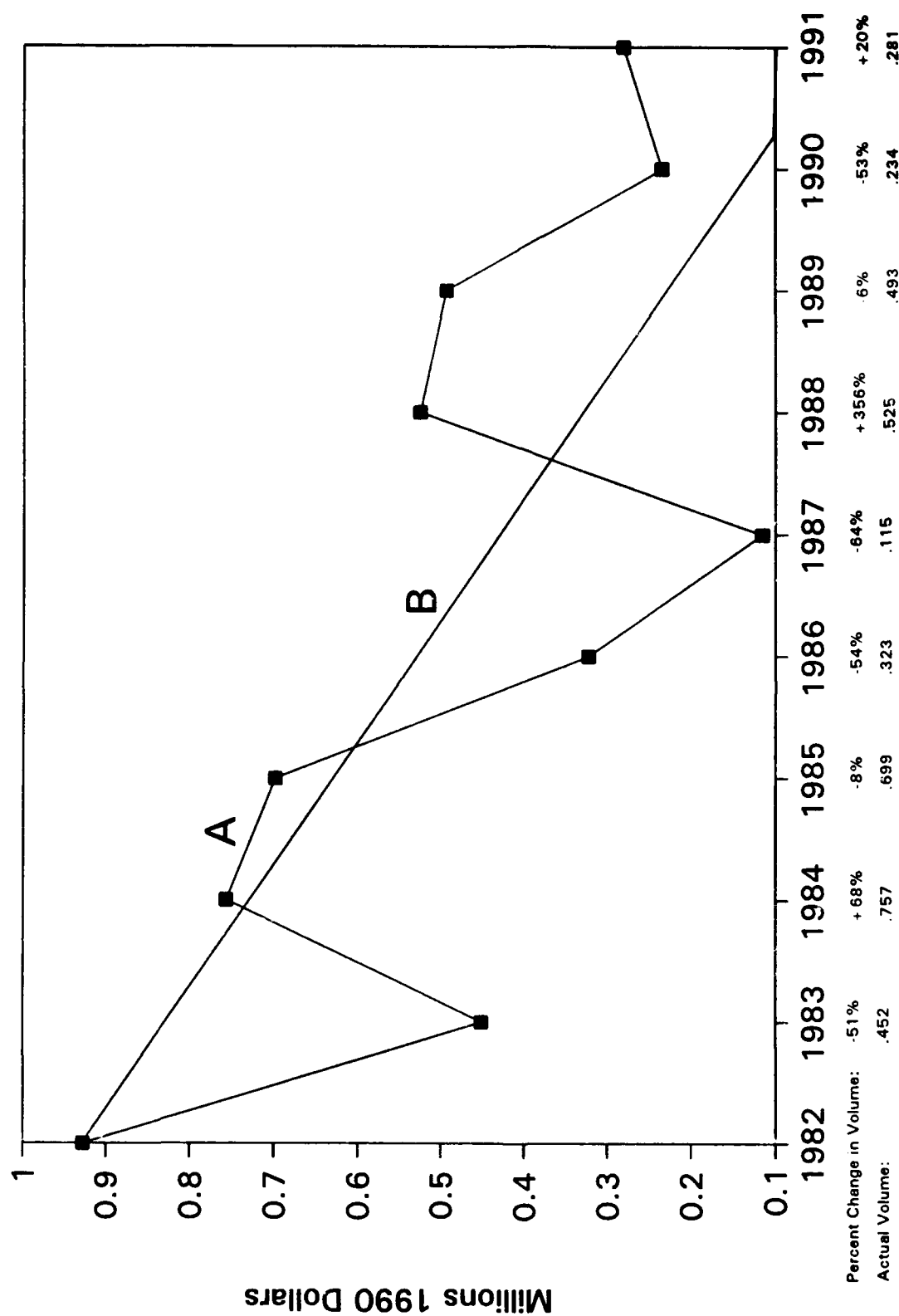


Figure 2-19 - Seaports - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook



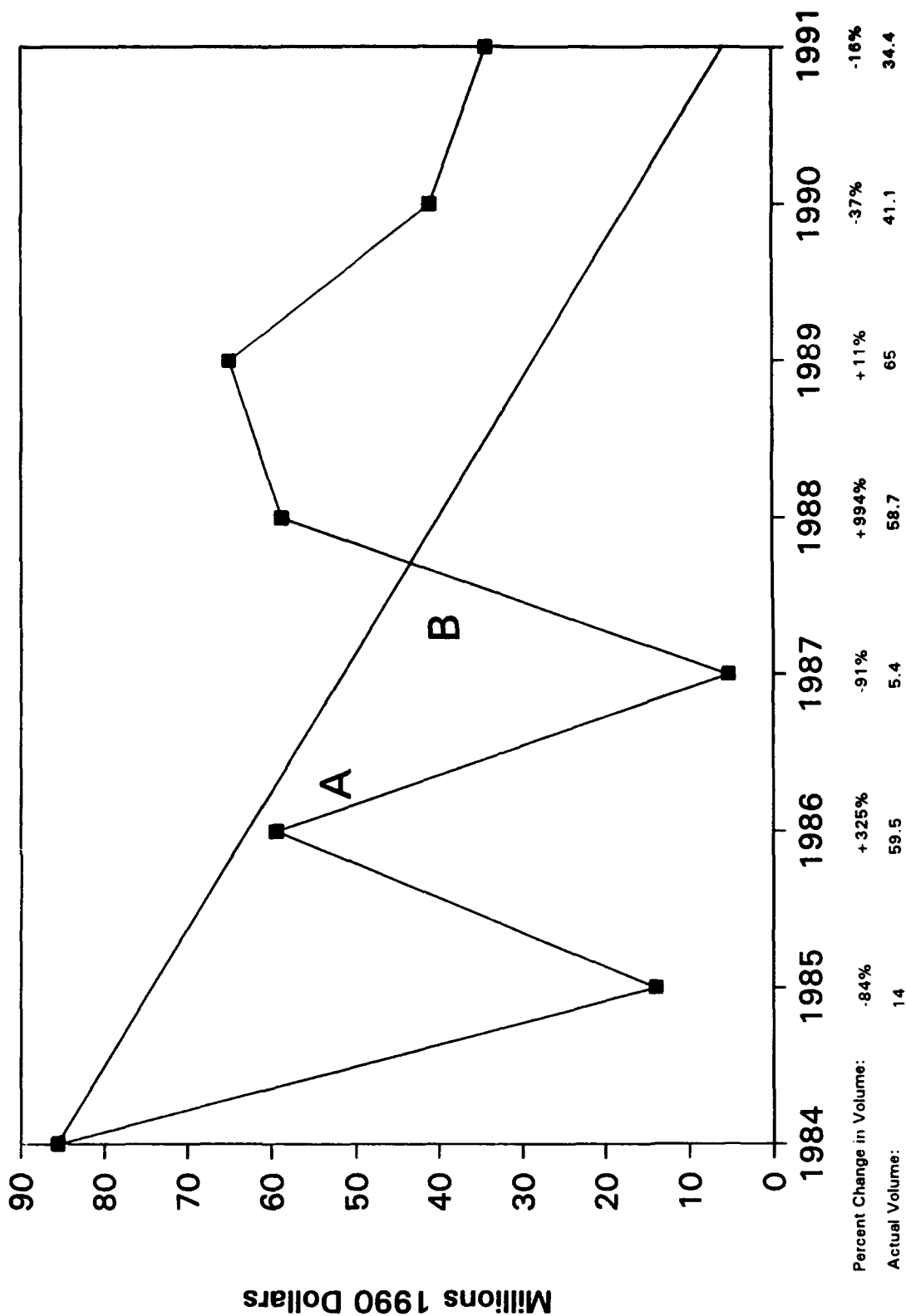


Figure 2-20 - Irrigation - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

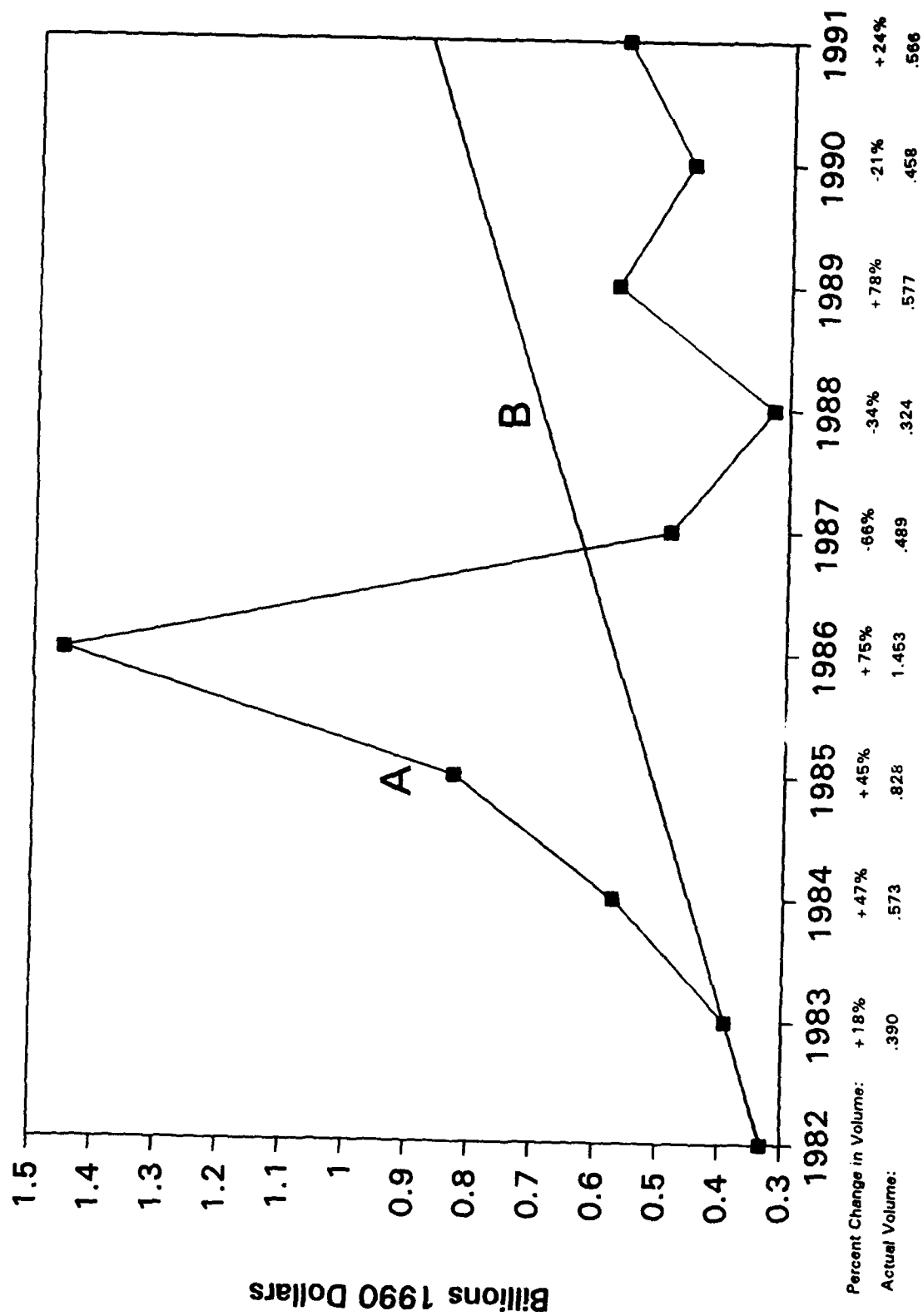


Figure 2-21 - Multiple Utilities - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook



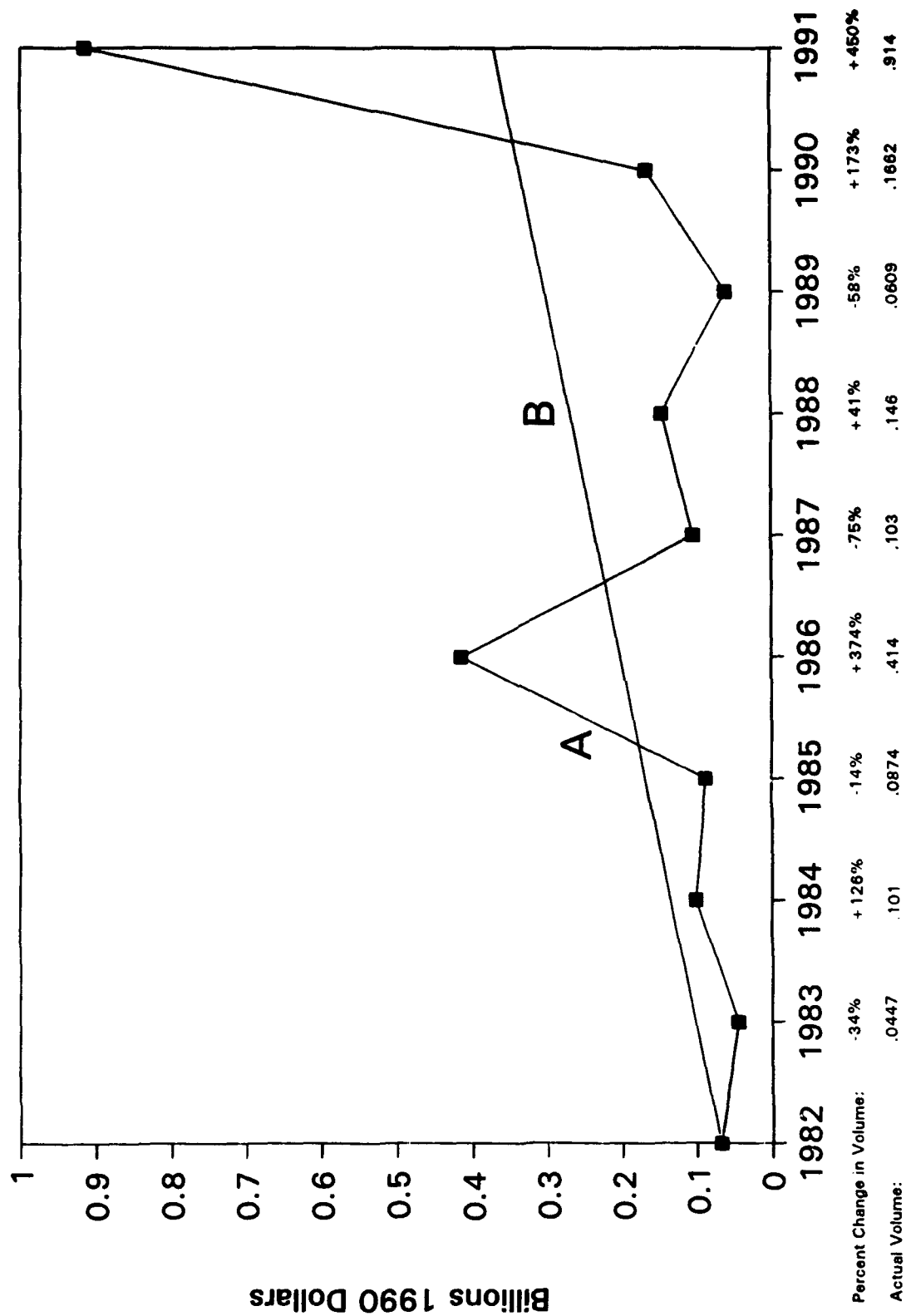


Figure 2-22 - Sanitation - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

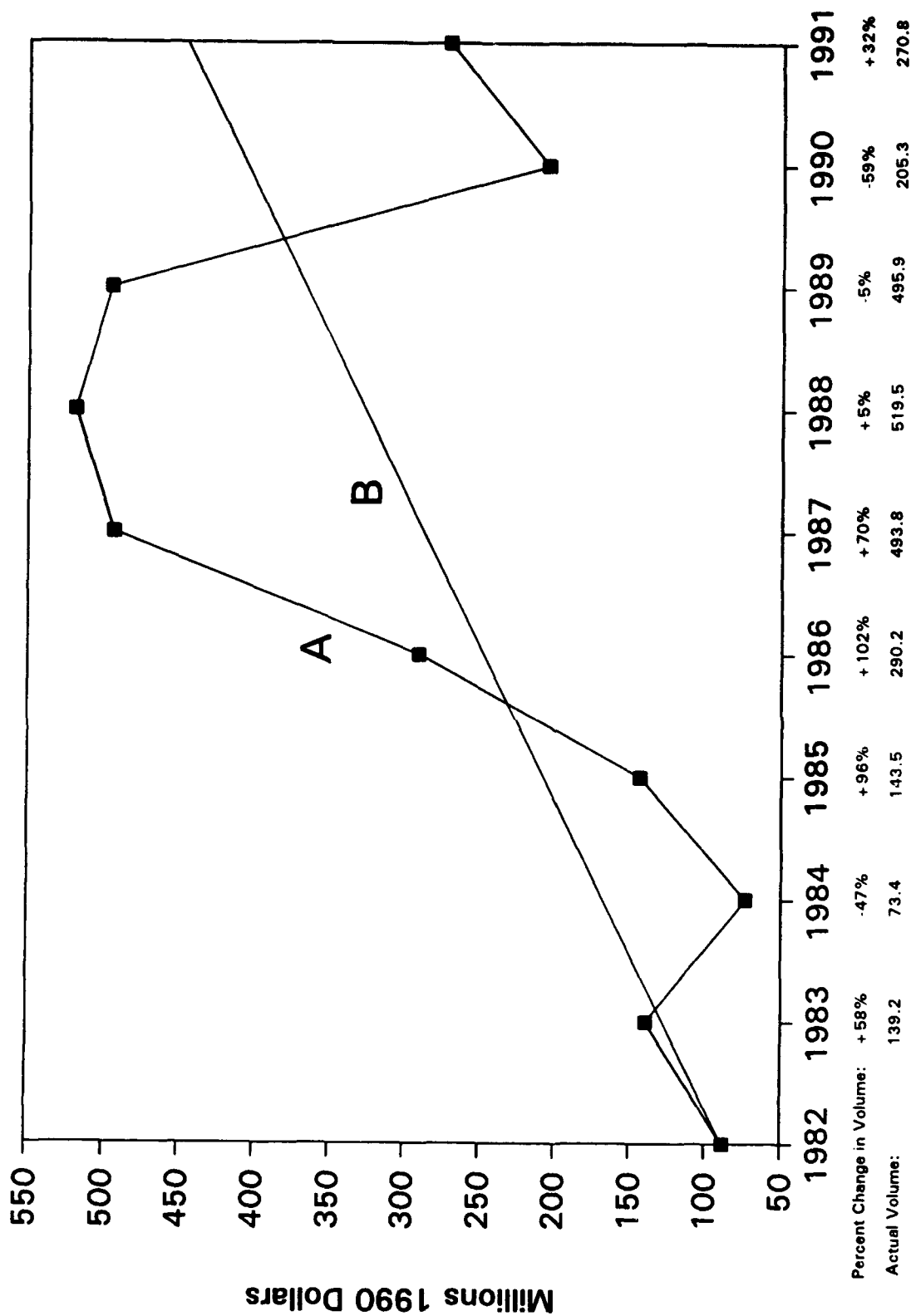


Figure 2-23 - Street Improvements - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook



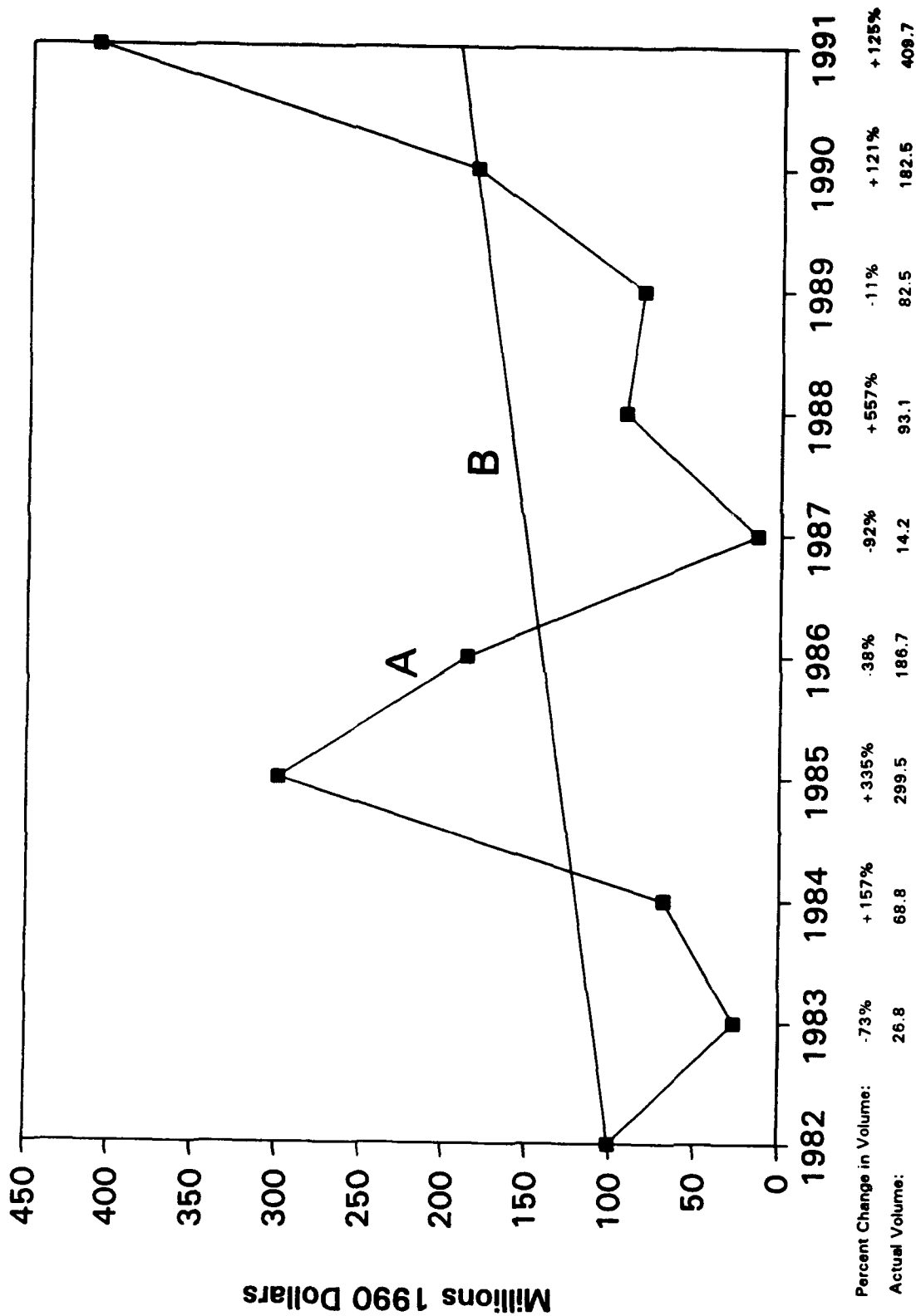


Figure 2-24 - Utilities/Other - Volume of Tax-Exempt New Capital Issues

Source: Bond Buyer Yearbook

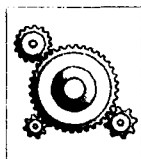
APPENDIX A

NEW CAPITAL TAX EXEMPT ISSUES INFRASTRUCTURE (millions 1990 \$)

Construction Cost Index	1982 0.808	1983 0.859	1984 0.876	1985 0.887	1986 0.908	1987 0.931	1988 0.955	1989 0.973	1990 1.000	1991 1.030	Total
Airports	\$1,626.9	\$1,272.4	\$2,452.9	\$2,982.2	\$476.0	\$1,245.6	\$3,379.3	\$1,420.0	\$3,861.9	\$3,015.3	\$21,732.4
Electric/Hydro Power	\$7,745.3	\$6,288.9	\$8,912.1	\$9,323.0	\$4,145.6	\$1,918.2	\$779.6	\$2,395.1	\$2,001.2	\$4,500.1	\$48,009.0
Flood Control	\$108.2	\$35.5	\$409.4	\$50.7	\$117.7	\$137.1	\$179.0	\$155.1	\$50.4	\$94.5	\$1,337.5
Irrigation	\$0.0	\$0.0	\$85.6	\$14.0	\$59.5	\$5.4	\$58.7	\$65.0	\$41.1	\$34.4	\$363.6
Mass/Rapid Transit	\$728.6	\$1,007.9	\$1,266.0	\$1,444.3	\$2,385.1	\$725.2	\$666.7	\$810.3	\$1,440.5	\$666.5	\$11,141.2
Multiple Utilities	\$332.1	\$390.1	\$573.1	\$828.0	\$1,452.5	\$488.6	\$324.3	\$577.0	\$485.3	\$566.2	\$5,990.1
Pollution Control	\$5,219.2	\$3,051.8	\$8,831.6	\$8,562.6	\$2,293.7	\$1,650.6	\$860.6	\$916.4	\$1,396.6	\$1,829.7	\$34,612.9
Roads/Tunnels/Bridges	\$1097.0	\$369.0	\$1,560.3	\$4,567.8	\$4,353.7	\$1,362.0	\$1,974.8	\$2,524.8	\$2,922.5	\$1,925.6	\$22,657.5
Sanitation	\$67.9	\$44.7	\$101.0	\$87.4	\$414.3	\$103.4	\$146.0	\$60.9	\$166.2	\$914.4	\$2,106.3
Seaports	\$928.3	\$451.6	\$756.7	\$698.8	\$322.5	\$115.3	\$523.3	\$493.2	\$234.4	\$280.5	\$4,806.6
Solid Waste/Res. Rec.	\$218.9	\$844.0	\$4,591.1	\$3,935.2	\$2,096.1	\$1,240.7	\$1,947.3	\$2,002.7	\$1,912.3	\$747.8	\$19,509.1
Street Improvements	\$88.2	\$139.2	\$73.4	\$143.5	\$290.2	\$493.8	\$519.5	\$495.9	\$205.3	\$270.8	\$2,719.8
Transportation - Other	\$92.7	\$5.9	\$57.3	\$315.8	\$485.8	\$11.0	\$283.5	\$796.6	\$1,741.4	\$3,299.0	\$7,089.0
Utilities - Other	\$100.6	\$26.8	\$68.8	\$299.5	\$186.7	\$14.2	\$93.1	\$82.5	\$182.5	\$409.7	\$1,464.5
Water & Sewer	\$3,373.8	\$2,220.0	\$3,599.4	\$5,239.1	\$6,435.8	\$5,977.6	\$6,139.5	\$9,865.2	\$6,931.1	\$7,282.8	\$54,064.2
Total	\$21,727.7	\$16,148.0	\$33,338.7	\$38,491.8	\$25,488.2	\$15,488.5	\$17,877.1	\$19,660.6	\$23,545.7	\$25,837.2	\$237,603.5

Source: Public Securities Association





**The Federal Role in Funding
State and Local Infrastructure**

REPORT II:
**STATE PROGRAMS FOR COMMUNITY
INFRASTRUCTURE: INNOVATIONS IN
FINANCING METHODS
AND PROGRAM OPERATIONS**

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EXECUTIVE SUMMARY

This document reports the findings of an examination of a variety of state government efforts to assist local governments in obtaining infrastructure, particularly water supply, wastewater treatment, and solid waste disposal facilities. The project team sought examples of innovative practices that could serve as models for other state and local agencies. The scope of this effort did not permit the team to evaluate in-depth these state programs.

We have grouped the information obtained from our examination into nine topics we believe are of interest to state and local agencies. These are used as chapter headings for chapters 2 through 10.

One principal finding of this effort is that in addition to providing dollars to local agencies, state governments can exercise other types of influence to guide local governments' use of their financial and human resources. These include such techniques as:

- (a) using the terms and conditions of infrastructure loans and grants to encourage more careful selection of projects, including such special requirements as: establishing funds dedicated to future infrastructure rehabilitation and replacement needs; using appropriate fees and charges; applying good management practices; and systematically tracking the maintenance and repair needs of existing facilities (Chapter 2);
- (b) using systematic project selection procedures to help the state assure that projects selected are feasible and address important needs (Chapter 4); and
- (c) providing technical assistance to local governments, both to help design proposed projects and to help communities implement activities that protect their infrastructure and that ensure that communities have adequately tapped their own resources -- to reduce infrastructure funding needs in the future (Chapter 5).

In addition, the report explores such relatively new financing approaches as:

- (a) various targeting efforts (such as targeting assistance to low-income communities) and expanding the use of state revolving funds (SRF) for activities such as non-point source pollution prevention (Chapter 3);
- (b) decentralizing project selection to regional committees (Chapter 6);
- (c) Bond Banks (Chapter 7).

While state governments typically monitor expenditures of infrastructure financing programs, we found little effort by states to evaluate their programs' impacts, such as assessing a program's effects in alleviating water quality problems and examining how the funds and other



assistance have been distributed in relation to needs. Many infrastructure loan and grant programs are relatively new, and thus it is probably too early to undertake major impact evaluations. However, we found little indication that states were obtaining data needed for undertaking longer-term evaluations in the future. Nor did we find plans to undertake such evaluations. (Chapter 8)

Many states are attempting to periodically estimate community infrastructure needs. Thus far, this appears to have been done with somewhat mixed success. Local governments have questioned the accuracy and utility of overall needs-assessment estimates, but a major virtue of such needs assessment is that it encourages communities themselves to undertake longer-range planning. (Chapter 9)

The greater use of the private sector to finance local infrastructure has tapered off considerably since the Tax Reform Act of 1986. There are still many proponents who believe that the private sector still can more efficiently and, often, more effectively operate and manage facilities such as wastewater treatment plants. However, the advantages of, and ability to attract, the private sector to obtain funds to rehabilitate or build new facilities is less clear. (Chapter 10)

As to the Federal role in such activities, the project team identified a number of relatively low cost national assistance efforts, each of which would provide states and local governments with information they could adapt to their own individual circumstances. An appropriate, and important, role for the Federal government is to provide information to state and local governments so that each does not have to start from scratch and develop its own solutions to problems when it can benefit from the past experience of other state and local governments. The Federal role includes such efforts as supporting the preparation of guidance materials on:

- (a) project selection procedures;
- (b) procedures for undertaking assessments of future needs for specific types of infrastructure;
- (c) guidance for states in undertaking their own program evaluations, and
- (d) evaluations and reporting to all states on innovative state assistance approaches -- such as decentralization programs, revolving loan funds and bond bank programs - - to identify pros and cons and conditions under which these innovations have been successful.

CHAPTER 1 - INTRODUCTION: STATE PROGRAMS FOR COMMUNITY INFRASTRUCTURE

Local governments have major problems in maintaining adequate infrastructure for such needs as water supply, wastewater collection and treatment, solid waste disposal, and roads. They often have problems or limitations in planning, in management of existing infrastructure to prolong its life, and in financing for rehabilitation and/or expansion needs.

State governments can help greatly, and provide an array of approaches to assist local governments in their infrastructure-related activities.

Once the need for a public facility has been established and the political and social commitment has been made to provide it, the question of financing must be addressed. Many choices have to be made about raising capital and paying off debt. Sometimes the financing arrangements cannot be organized to everyone's satisfaction, and projects are delayed or shelved. But just as often the financing is arranged in a manner that pleases the participants in the decision-making--a "good deal" is negotiated. These "good deals" don't just happen. They usually are the result of creativity, innovation, and perseverance, as well as a good bond rating.

Both private and public financing have gone through a period of vast change, especially since the late 1970s. Junk bonds, leveraging, cost-sharing, bond banks, discounted capital, and other terms have become part of the lexicon for those involved in financing projects. New standards, ratios, rating systems, and legal requirements have been introduced to help evaluate whether or not the financial community will participate in public projects. No longer does a community simply go to Wall Street with bonds to sell at whatever interest rate can be obtained. Extensive negotiations and pre-packaging are now coupled with documented evidence of due diligence, and segregated levels of repayment assurances may be a key element of financing. Even then, jurisdictions, particularly small ones, may not have the financial capacity to obtain needed facilities without financial grant or loan assistance from state or Federal agencies.

Federal agencies have actively encouraged more experimentation and innovation in infrastructure financing. The Environmental Protection Agency, for example, departed from its long-standing approach to making grants for wastewater treatment facilities by establishing a capitalization grant program that would assist states in developing revolving funds to finance these facilities in future years, one of the largest scale changes in financing to come out of the 1980s. This was done to reduce state continued dependency on Federal funds and to encourage states to establish "permanent" self-perpetuating loan funds. The Water Quality Act of 1987 outlined this new approach, and by 1991 most states had established their State Revolving Funds (SRFs) with required matching monies. This has been, perhaps, the greatest reconceptualization



of public infrastructure financing in recent decades. According to Heilman and Johnson¹ this has shifted the politics of water financing from the Federal to the state and local levels of governments.

It has also opened the door for innovation and creativity. Flexibility in establishing, regulating, and operating the funds was built into the Federal legislation. Some states, for example, have established procedures to target low income or high need areas for special assistance. Various levels of interest rates for different types of recipients have been utilized in repayment schemes to help achieve objectives other than just the provision of a new piece of infrastructure. These and other variations on the themes have been tried in many locations under vastly different legislative circumstances.

Additionally, non-financial assistance can be critical to localities in getting projects underway. States can sometimes apply complementary techniques, such as providing technical assistance to identify reduced cost options and ways to reduce future infrastructure needs.

This report has been prepared to sketch in brief fashion the variety of approaches now being used by the states to finance and assist local government infrastructure, particularly water projects. The examples presented in the following pages were selected after a review of the literature and discussions with knowledgeable individuals. Each example was chosen to represent a specific variation of public infrastructure financing or administration that has been used in at least that one instance. When taken together, they provide a sampling of current innovation and creativity. This report is based on information obtained through interviews with administrators of the programs described and review of written materials provided by program staff.

This report can serve as an "idea book." In effect, it presents a number of ideas that states can consider for strengthening programs aimed at assisting communities to improve their infrastructure, such as water supply and treatment facilities. Some of the states will already have implemented some of the actions discussed here. We hope, however, that most readers will find at least one new idea or approach worth pursuing.

A second purpose of this report is to provide Federal agencies with a perspective on what the states are trying, particularly some of the less familiar and more innovative ideas.

This report covers a variety of aspects of state assistance to their communities. While it centers on financial assistance, it also considers closely related elements such as technical assistance, needs assessments, and special requirements being used in the states today.

¹ Heilman, John G. and Gerald W. Johnson, Testing a Strategy for Shifting the Burden of Infrastructure Finance from the Federal Level to the State and Local Level: An Institutional Analysis of State Revolving Funds. Annual Meeting of the Southern Political Science Association, Atlanta, Georgia. November 1990.

The limited scope of this work prevented us from surveying all states and all their many programs that provide infrastructure assistance to local governments. The report primarily focuses on water programs and to a lesser extent on solid waste disposal infrastructure.

The limited scope also precluded the project team from generating new evaluation information; it relied on documentation (which seldom contained evaluative material) and telephone interviews with (primarily) state officials to identify problems and impacts.

A final chapter is directed to the Federal government, suggesting a few relatively inexpensive actions that Federal agencies can take to assist states and local governments in their infrastructure program management.



CHAPTER 2 - TERMS AND CONDITIONS, AND SPECIAL REQUIREMENTS

The Issue

In designing state loan and grant programs a state has to make a large number of decisions about various terms, conditions, and special requirements. Below we first briefly present a number of the issues and provide examples of how they might be handled.

Terms and Conditions of Financial Assistance²

1. **Non-eligible costs.** The state needs to identify which costs are eligible and which are not eligible to be covered by the financial assistance. For example, Ohio identifies as includable: project engineering, acquisition, construction, equipment, and contingency costs. Ineligible costs are expenditures for purely aesthetic purposes, expenditures for landscaping and infrastructure improvements that go beyond basic requirements, and costs for general planning and administrative services other than those directly associated with the specific project.
2. **Validation of estimated project costs.** The project cost estimate must be reviewed and approved by a registered professional engineer.
3. **Project minimum useful life.** Ohio indicates that no project can have a useful minimum life of less than seven years. The overall average estimated useful life for all projects, however, should be 20 years.
4. **Mix of new versus repair/rehabilitation projects.** This Ohio program emphasizes repair and replacement projects rather than new or expansion facilities; that is, projects that do not extend the current capacity of the infrastructure. The program specifies a maximum percentage for the funds that can be put into "new" projects (5% for each of the first two years, and 20% for each of the next three years). This condition requires a state to provide as clear and specific a definition as possible to reduce ambiguity as to what is a repair or replacement project and what is a "new" project (though inevitably there will be interpretation difficulties). Exhibit 2-1 provides the definitions for the categories used by Ohio.
5. **Time available for project completion.** Ohio requires that projects be completed within two years to be eligible for financial assistance. The state defines what comprises the time period, that is, what starting event and what ending event defines the time period.

² Information in this section is based primarily on the Ohio "State Issue #2" program, "Instructions for Completion of the Application for Financial Assistance." Ohio Public Works Commission, Columbus, Ohio, June 1990.



(Ohio found ambiguity in the legislation and is attempting to correct this.)

6. State charges for administrative activities. Most state programs do not charge local governments for their administrative costs, application, or financing fees, all of which are usually charged to local governments when obtaining loans from private sources.
7. Interest charges during project construction. The Ohio program does not impose any interest expense during the construction period as long as the project is completed on schedule.
8. How payments are made. In Ohio, payments are made by the state when evidence of costs incurred, such as invoices, are provided. The program may make payments directly to contractors.
9. Maintenance of local effort. States will usually want to insure that the local governments receiving funds are keeping up their past level of capital investment and do not use state funds to replace the funds the local government has been spending. Ohio requires that the applicant attest to this on its application. The program also requires the applicant to provide data on its current and two previous years of capital improvement projects in order to check the level of past capital outlays.
10. Minimum loan amount. The state may want to establish a minimum loan amount. Ohio establishes \$50,000 as its minimum, but there are exceptions.
11. Determination of affordability. A state will want to qualify the applicant's financial circumstances. Will the applicant be able to repay the loan given the user fees involved? Will the jurisdiction need a subsidized interest rate loan? Ohio has spelled out a process for assessing affordability. This procedure involves estimating the percent of median household income in the community that households can afford to spend on water charges. Ohio has established target figures for both drinking water and wastewater user fees based on the community's median household income. An estimate is made as to the additional likely annual cost to the community for the proposed project, including costs of operations, maintenance, and debt service. Then an estimate is made as to whether the local revenues available for the project plus the amount of funds that could be raised with new revenues (such as from increased, affordable fees) are sufficient to cover the estimated project budget.
12. Disposition of underruns. Ohio notifies all applicants that if an underrun occurs, all the underrun goes back to the lender and not to the city.
13. Provision for overruns. Ohio provides that overruns will generally be borne by the borrower. The community can request additional funds if the overrun was the result of circumstances beyond the applicant's control and the circumstances could not have been

anticipated at the time of the initial application. (Note that the project estimates can provide an allowance for contingencies, so presumably overruns should be infrequent.)

14. Grant match requirements. A state providing grants may want to specify the proportion of the total project cost that it will provide. Ohio has a variable match depending on a number of features, such as financial condition of the community. It also provides different maximum matches depending on whether the project is for a new (or expanded) facility as distinct from facilities to be repaired or rehabilitated. A community can get up to 50% state funding for a new or expanded facility, but up to 90% if it is for repair or rehabilitation.
15. Special provisions for small governments. The state may wish to have special provisions such as a special fund for small governments. Ohio provides a special set aside for small governments, defined as having less than 5000 population.

Special Requirements

Providing local governments with financial assistance for infrastructure projects presents states with an opportunity to impose special requirements or conditions that can encourage improved infrastructure planning and management. States typically impose a variety of conditions on assistance recipients. Some states have gone beyond this and used the leverage of financial assistance to impose requirements that are not directly related to the assisted project.

Some states also encourage good infrastructure practices by awarding bonus points as part of their project selection systems for local governments that adhere to specified good practices. Such practices can also be included as requirements for applicants.

Examples of special requirements and bonus systems are described below.

Dedicated Revenue and Long-Range Planning: Washington State Public Works Trust Fund³

To be eligible for a loan from Washington's PWTF, applicants must meet two threshold requirements. (1) Counties or cities must have a 0.25 percent local real estate excise tax dedicated to capital purposes, and (2) The jurisdiction must have in place a long-term plan for financing public works. These plans must meet a number of standards. They should:

- Assess capital needs for all eligible trust fund systems currently owned and operated by the applicant;

³ Information in this section is based on the "1992 Construction Loan Application Package," State of Washington, Department of Community Development, April 4, 1991.



- Identify, prioritize, and coordinate major capital improvement projects planned to meet those needs over a five or six year period;
- Estimate capital project costs and identify financing alternatives for the overall public works system;
- Update the plan at least once in the last five years;
- Provide for public input; and
- Adopt the plan by formal legislative act.

Capital Reserve Accounts, Impact Fees, and User Charges: Utah Drinking Water Board Loans⁴

Utah imposes three requirements on applications.

1. In August 1991 the Drinking Water Board began requiring that "all new financial assistance authorizations be conditional upon a capital replacement reserve account being established and maintained throughout the life of the assistance repayment period. The capital replacement account would not be considered security for the bond. Deposits to the replacement reserve account must be made at least annually in an amount equal to 5% of the water system's annual budget, including debt service and depreciation. Draws on the account require the written approval of the Board."
2. Applicants are "required to establish realistic connection impact fees. A six month limit on the purchase price of a connection must be established; if construction extends beyond the six month limit, the difference between the current connection fee and the amount paid would have to be paid."
3. The community has to pass a user charge ordinance "to insure adequate provisions for debt retirement and/or operation and maintenance."

⁴ Primary source: "Utah Drinking Water Board Loan Policies Revisions," Utah Drinking Water Board (undated).

Minimum Facility Standards: Texas Economically Distressed Areas Program⁵

In 1989, Texas initiated a program to provide financial assistance to bring water and wastewater services to economically distressed areas whose water facilities are inadequate to meet minimal needs of residents. A special requirement is that the appropriate county or municipality adopt model subdivision rules (that the state provides) for residential developments with lots of one acre or less. These model rules establish minimum standards for water and wastewater facilities for such developments. These include such standards as:

- If drinking water is to be supplied to a subdivision from a central system, the water quality and system design, construction and operation must meet the state's minimum criteria;
- If individual wells are to be used, test wells must be provided, water sampled, and results of analysis made available to prospective property owners;
- Water quality of individual wells must, after treatment, meet standards of quality for community water systems;
- If an organized wastewater collection and treatment system is planned, a permit for disposal of waste and approval of engineering plans must be obtained; and
- If on-site sewerage facilities are used, they must be designed by a registered professional engineer or sanitarian if they handle between 1,000 and 5,000 gallons per day.

Long-Range Planning: Ohio State Issue #2 Program⁶

Ohio's program for financial support for public works includes a special requirement for community planning. Each applicant must provide a Capital Improvements Report (CIR) that includes an inventory of its existing capital improvement needs, a plan detailing the capital improvement needs in the next five years, and a list of the community priorities for addressing those needs. Communities receiving funds are required to review and update the report each year (presumably during the time period when the community is receiving funding assistance).

⁵ Information in this section is based on "Economically Distressed Areas Program Model Subdivision Rules," Texas Water Development Board, May 30, 1990.

⁶ Op cit.



Adoption of Sewer Ordinances, Fees and Charges, and Bonuses for Conservation Efforts: North Carolina Clean Water Revolving Loan and Grant Program⁷

North Carolina requires that (1) applicants for wastewater projects adopt an acceptable sewer use ordinance, and (2) that they establish an equitable schedule of fees and charges so that each category of users pays "substantially its proportional part of the total cost of the operation." The fees and charges are also required to provide sufficient revenues for the adequate operation, maintenance, administration and reasonable expansion of the project.

In addition to these special requirements, North Carolina also provides specific bonus points if the applicant demonstrates it is practicing the following water conservation measures:

- A continuing water conservation education and information program;
- A continuing water loss program in its water supply system (for water supply projects);
- A continuing I/I (infiltration/inflow) program in its wastewater sewer maintenance program (for wastewater projects); and
- Adoption and effective enforcement of the state plumbing code.

While the water conservation measures are not required, such measures could quite appropriately--and easily--be specified as special requirements or conditions, rather than as practices for which bonus points are provided.

Bonuses for Good Management Practices: Illinois Water Pollution Control Revolving Fund⁸

Illinois has a water pollution control revolving fund (WPCRF) for financing of wastewater treatment facilities. Illinois awards bonus points as part of its project selection process for excellence of operations of existing facilities to reward communities with better management practices. (See chapter on "Project Selection Process" for more details.) Use of particular management practices can also be imposed as a special requirement rather than as a basis for bonus points.

⁷ Information on this section is based on "Subchapter 3L - State Clean Water Revolving Loan Fund, Section .0100 - General Provisions," North Carolina Administrative Code.

⁸ "Procedures and Requirements for Determining Loan Priorities for Municipal Wastewater Treatment Works Needs," Illinois Administrative Code, Title 35, Subtitle C, Part 366, May 3, 1990.

Illinois awards bonus points for such factors as:

- Process performance (e.g., length of time plant has produced an effluent no greater than 80 percent of its permit limits);
- Maintenance (how long have equipment and structures been in service without a failure and is there a routine preventive maintenance program); and
- Administration (are self-monitoring reports submitted on time and does the chief operator have the proper level of certification).

Requiring Preventive Efforts: Wisconsin's Compliance Maintenance Program⁹

Wisconsin's Clean Water Fund Program for wastewater treatment systems has introduced an innovation aimed at maintaining local infrastructure. The state believed that because its large-scale construction program had led to over 90% of Wisconsin municipalities complying with their discharge permits, the state could embark on an effort focused on helping to protect the infrastructure.

Effective March 1, 1987, the new legislation and the Department of Natural Resources (DNR) require municipalities to submit annual reports to DNR that assess the physical condition and performance of their sewage systems. This program is intended to protect the investment and encourage action to be taken before violations of permit limits and water quality degradation occur.

A central feature of this program is the "Compliance Maintenance Annual Report" (CMAR). This is a self-evaluation to identify problems and to determine what actions may be needed to prevent effluent-limit violations. The CMAR is prepared by the operator of the facility but has to be approved by the local legislative body in a resolution that attest that the governing body has reviewed the CMAR and identifies actions needed to maintain the effluent requirements contained in the facility's WPDES permit. The form that each municipality submits requests specific data and indicates the number of points assigned to various responses. The submitting municipality, itself, adds up its total points.

Under the point system, the state has established three action levels: (a) "voluntary range" within which the municipality may initiate longer range planning for new, upgraded, or additional treatment facilities; (b) the range within DNR notifies the municipality that an

⁹ The information in this section is based on materials received from the State of Wisconsin Department of Natural Resources, including "Implementation of the Compliance Maintenance Program: A New Direction for Wisconsin," undated; "Clean Water Fund Program: Informational Paper #59," the Wisconsin Legislative Fiscal Bureau, January 1991; and the Compliance Maintenance Annual Report Instructions and Form required by DNR.



"operation and needs review" is recommended; and (c) the range where DNR requires the municipality to complete "operation and needs reviews" and to implement any new action.

The operator is required to submit this form. Failure to complete and submit the form may result in a fine of \$10,000 per day.

DNR staff review the CMAR and are required to contact the municipal discharger and indicate whether additional analysis of the system is recommended or required. (Since the program's initiation through 1990, approximately two-thirds of the approximately 650 facilities have required no action.) Somewhat over 20% are recommended to undertake an operation and needs review, and about 15% have been required to complete a review and implement needed action.

The form requires information in ten parts: information on influent loadings and flow; effluent quality performance; age of the wastewater treatment facilities; frequency of by-passing; sludge storage (for plants that landspread sludge); available capacity of sludge disposal sites; new development and load growth; operator certification and education; financial status (such as sufficiency of user charges and the presence of equipment replacement funds); and a subjective evaluation by the operation of the condition of the facility and problems involved.

These reports are of added importance in Wisconsin. Under the state law, projects intended to maintain compliance with existing permit limitations (as indicated by the CMAR) receive the highest priority score and the largest interest rate subsidies (other than financial hardship projects). Projects to correct a violation of existing permit limits receive a low priority score. In addition, the portion of a project designed to correct a discharge violation generally is not eligible for financial hardship assistance or a reduced interest rate loan.

Conclusions/Recommendations

States should consider using the opportunity provided by their financial assistance programs to require local governments to adopt specific good practices related to infrastructure. It certainly seems reasonable, and not overly burdensome, to encourage local governments to:

- Develop capital improvement plans;
- Adopt appropriate and equitable fee and charge structures;
- Establish dedicated funds for infrastructure repairs and modifications;
- Adopt particular water conservation-related efforts;

Of course, each state must determine which practices it wishes to promote based on the specific practices that local entities in the state seem most in need of improving.

Exhibit 2-1

Ohio "State Issue #2" Definitions of Project Categories

Repair project cost - refers to the costs entailed in a project, or those elements of a project, that would repair existing infrastructure without substantially increasing designed service capacity.

Replacement project cost - refers to the cost entailed in a project, or those elements of a project, that would replace existing infrastructure with infrastructure that: (1) has a designed service capacity substantially equivalent to the designed service capacity of the existing infrastructure, regardless of the relative physical dimensions of the existing or replacing infrastructure; and (2) except for solid waste disposal facilities, uses substantially the same service technology that is used by the existing infrastructure.

New project cost - refers to the cost entailed in a project, or those elements of a project, that would add infrastructure to a subdivision's existing infrastructure.

Expansion project cost - are those costs entailed in a project, or those elements of a project, that would replace existing infrastructure with infrastructure that: (1) has a designed service capacity substantially greater than the designed service capacity of the existing infrastructure, regardless of the relative physical dimensions of the existing or replacement infrastructure; or (2) except for solid waste disposal facilities, uses a substantially different service technology than is used by the existing infrastructure.

Source: "Instructions for Completion of the Application for Financial Assistance." Ohio Public Works Commission, Columbus, Ohio, pg. 9, June 1990.



CHAPTER 3 - SCOPE OF FINANCIAL ASSISTANCE PROGRAMS

The Issue

An important consideration in establishing a financial assistance program is the scope of activities eligible for support from the program. The issue of scope goes beyond identification of types of infrastructure that may be financed by the program. The scope of activities eligible for support can also include activities related to infrastructure (such as capital improvement planning) and/or specific categories of infrastructure or conditions under which financing is available (such as limitations on size of government, wealth of the community, whether the project focuses on rehabilitation rather than growth, and whether for emergencies).

Scope may also include extending financial assistance to water protection activities or programs other than public infrastructure. The latter concept is referred to as "expanded use," and commonly refers to providing financial support for implementation of nonpoint source, groundwater, estuary and wetlands water quality management programs. This chapter will discuss these scope-related issues. The first section will address delineating the scope of traditional infrastructure projects; the second will address expanded use options for infrastructure financing.

Delineating the Scope of Traditional Infrastructure Projects

Even states that do not support expanded use activities through their infrastructure assistance programs need to make decisions about the nature of activities that will be financed by these programs. States may choose to establish separate programs to finance specific kinds of projects, or may earmark set amounts or proportions of funds for specific uses. Following are examples of ways in which different states have delineated the scope of their infrastructure assistance.

Washington Loan Programs. ¹⁰ The Washington State Public Works Trust Fund (PWTF) is a revolving loan program that provides low-interest loans to help local governments finance public works. The state has established three separate programs within the PWTF to finance different types of public works:

1. Loans for general construction. This program supports traditional infrastructure projects by providing loans for repair, replacement, rehabilitation or improvement to meet current standards and to serve the needs of the existing population--not to

¹⁰ Information in this section is based on: "Public Works Trust Fund Programs," Washington Department of Community Development, March 1991; and "Washington's Public Works Trust Fund Timber Community Assistance: Program Development and Fact Sheet," Washington Department of Community Development, June 1991.



finance growth-related projects. Eligible projects include domestic water systems, sanitary and storm sewer systems, bridges, roads and solid waste (the latter if approved by the Legislature). This program requires a local match of at least 10 percent of the project cost, which qualifies the community for a three percent interest rate. Higher local matches--20 and 30 percent--qualify the community for interest rates of two and one percent, respectively.

2. Loans for capital improvement planning. Eligible jurisdictions may receive a loan to develop a capital improvement plan. Eligible jurisdictions are those with limited capacity to develop such a plan with their own resources. Loans are for up to \$30,000 (interest free) for up to a five-year term. A local match of \$1 for every \$3 provided is required.
3. Emergency loans. Communities experiencing the loss of critical public works services or facilities due to an emergency are eligible for a loan of up to \$250,000 with a fixed interest rate of five percent per annum. Eligible public works projects are those made necessary by natural disasters or immediate threat to public health and safety due to unforeseen or unavoidable circumstances. Such loans are made only when emergency funds are available.

Washington recently introduced a new loan category in its PWTF--timber community assistance -- to provide low-interest or interest free loans for construction of new public works facilities. The new program was introduced because many communities in state-designated timber impact areas do not have the infrastructure needed to attract or retain economic development or diversification. The state earmarked \$7 million of the fund's revenues for this purpose for a two-year period to help support other state efforts to assist these communities.

Illinois Public Infrastructure Program.¹¹ Illinois has at least three programs that provide financial assistance for local government infrastructure projects, including a state water pollution control revolving fund operated by the environmental agency and the Illinois Rural Bond Bank, discussed elsewhere in this report. The third program, discussed here, is innovative in that it provides assistance for infrastructure financing as part of an economic development program.

Illinois' Public Infrastructure Program (PIP) is one component of the Build Illinois Program (BIP) operated by the Department of Commerce and Community Affairs (DCCA). BIP includes five programs focused on promoting economic development in Illinois. PIP provides funds for infrastructure improvements that are directly related to creating or retaining private sector jobs. Eligible infrastructure projects include water related projects such as water and sewer line extensions, water distribution and purification facilities and sewage treatment facilities as well as infrastructure such as access roads, bridges, streets and roads. (Note that PIP funds

¹¹ Information in this section is based on "Public Infrastructure Program: Application Guide and Forms," Illinois Department of Commerce and Community Affairs (undated).

are only for the infrastructure, not for construction-related costs of the private sector facilities that are part of the economic development project, which might be financed through other BIP programs).

PIP primarily finances infrastructure projects through loans, and operates a revolving loan fund. Amounts loaned are to be commensurate with jobs created or retained. At a minimum, at least one private sector permanent, full-time equivalent job must be created or retained for every \$5,000 loaned. There is a preference for jobs that generate additional wealth, for example, by producing goods and services exported from the community or by replacing goods and services currently imported into the state.

PIP Loans are provided at fixed, low or no-interest rates for up to 10 years (longer terms may be allowed under extenuating circumstances). Loan term and amortization will vary by the life expectancy of the project and the repayment capacity of the local government. Grants may be provided when the applicant's financial capability will not generate the revenues to repay the debt service on the project or when the project is needed to encourage relocation of large out-of-state firms to locate in Illinois or existing large companies to undertake job expansion or retention.

Ohio State Issue #2 Program. The legislation for Ohio's "State Issue #2 Program" established three separate programs. In addition to the basic program that allocates financial assistance using a decentralized approach involving 19 public works districts (described in another chapter), it has a small government program (for communities whose populations are less than 5,000), and an emergency assistance program. For these latter two programs, the districts submit their recommendations as to priorities to the Ohio Public Works Commission, which selects projects for funding. (Most of the program's \$120 million per year are for district allocation. The small government fund size is \$12 million per year. A maximum of \$2.5 million can be made available annually for emergency funds defined as funding "for the immediate preservation of health, safety, and welfare.")

The program also makes a major distinction between projects for repair or replacement rather than new or expanded facilities -- a maximum of 20% of the total funds are allocated for the latter in its basic program.

Expanded Use Options for Infrastructure Financing Programs¹²

State revolving funds (SRFs) capitalized under section 601 of the Clean Water Act (CWA) are primarily used to help finance wastewater treatment facilities. A portion of these

¹² Information and examples in this section are drawn from: National Conference of State Legislatures, Financing Clean Water: Nonpoint Source August 1991; and U. S. Environmental Protection Agency, Office of Water, Funding of Expanded Uses Activities by State Revolving Fund Programs: Examples and Program Recommendations, August 1990.



funds may be used for nonpoint source (NPS) and estuary programs -- after the state has satisfied the first use requirements of the act (essentially that the publicly-owned treatment facilities on the state's list of projects are in compliance or are otherwise being handled). The additional activities beyond "first use" are referred to as "expanded uses" of the SRF. Relatively few states have provided SRF assistance for expanded use activities. A few states are providing, or considering providing, financial assistance for support of NPS or other water quality management programs out of other sources of funds.

This section provides examples of types of expanded use activities used or under consideration by several states that other states might consider assisting. While the first use requirements may limit a state's ability to support such activities through SRFs capitalized under the CWA, state financial assistance programs that operate independently of this source of funds can choose to fund a range of water quality management activities with these programs.

- Washington was the first state to use SRF funds to finance a local nonpoint source pollution projects. The state provided a SRF loan to capitalize a new water quality improvement fund in one county. This fund will be used to provide low-interest loans to county residents for upgrading existing septic systems and implementing best management practices for NPS pollution.
- Wisconsin has a Nonpoint Source Pollution Abatement Grant Program which provides cost-sharing grants to landowners for structures and facilities that the state has identified as best management practices for control of NPS pollution. Grants may be used for construction, development, enlargement or improvement of such structures and facilities. This program is separate from Wisconsin's SRF.
- Missouri has a soil tax fund financed by a portion of the state's sales tax that is dedicated for soil conservation measures. This fund supports such programs as a cost-share program for landowners who implement measures to control excessive soil erosion and an interest-share program where the state rebates interest costs on commercial loans used to develop conservation systems or for soil surveys.
- Kansas' nonpoint source pollution program provides cost-sharing assistance to landowners for establishing conservation structures and practices that treat highly erodible land (such as construction of terraces, waterways, and sediment basins). Another aspect of this program is provision of grants to local governments for developing local environmental protection plans. These plans include NPS management plans and other water quality plans.
- Maryland provided SRF funds to a local government for use as the local match for a state grant used to finance cleanup activities for a local pond suffering from eutrophication related to nonpoint sources. Activities undertaken included construction of artificial marshes and application of an algicide.

- Georgia provided a state grant to a consortium of soil and water conservation districts for the purchase of tractors and no-till drills. This equipment enables seeding to be done in a way that reduces erosion and use of fuel and fertilizer, thus promoting water quality. High costs of such equipment may limit its adoption by small farmers, however. The consortium rented the equipment to local landowners and used the rental fees to maintain the equipment and pay the equipment operators.
- Utah's Agricultural Research Development Loan program is a revolving loan fund that provides low interest loans for soil and water conservation projects. Loans are available to individual farmers and ranchers for such activities as animal waste control projects and irrigation water management.

Other types of expanded use projects might be considered for financing through SRFs or other grant and loan programs include: stormwater management infrastructure; research and development or demonstrations of best management practices (related to agriculture, for example); local water quality management planning; addressing problems caused by leaking underground storage tanks; public education efforts to promote awareness of water quality problems and what citizens can do to protect water quality.



CHAPTER 4 - PROJECT SELECTION PROCESS

The Issue

A major issue for state financial assistance programs is how to choose among applicants. This process should be fair. It should consider in as objective a manner as possible each application against criteria related to state policy objectives for the program. Many, if not most, states appear to have adopted some form of procedure for rating and ranking individual applications, based primarily on the information provided on the application. This process requires the state to select the evaluation criteria and then design its application form so that it gets the information needed to make the ratings.

Discussion of Specific Project Selection Issues

The following are a number of specific issues that a state financial assistance program needs to consider in establishing its process for choosing applicants to assist.

1. What criteria should the program use in evaluating applications? And can, should, the same criteria be used for all types of assistance that the program provides? A state will likely need somewhat different criteria for different types of infrastructure (e.g., water supply facilities versus wastewater treatment plants) and for grant versus loan applications. However, the program can choose to use the same application form and rating system for all applications. If diverse types of applications are kept in one pool of funds and, thus, compete against each other, the rating criteria need to be sufficiently general so that all applications can be rated on the same basis.

A program also has the option of dividing its funds into separate pots of money with different applications, each normally fitting into one such pot. For example, small communities might have a special fund (such as in Ohio, although these small communities, those under 5,000 population, can also apply to the main fund). Or, different pots might be created for grants and loans, and/or for each type of infrastructure. The next section of this chapter presents specific examples of evaluation criteria.

To establish the criteria for a program, a state would do well to use a committee that includes local as well as state representatives. This will enhance the legitimacy of the criteria.

2. How quantitative, rather than qualitative, should the rating process be? In general quantitative information, if accurate, will be more objective than qualitative information. However, accurate quantitative information on many evaluation criteria will not be available. In most cases, the rating process will probably need to use a combination of quantitative and qualitative (subjective) information. Closely related to this question is who should do the ratings. In most cases, the final ratings were made by "board members" rather than, for example, technical persons. The board members had the final authority and responsibility for



these selections. In most of these cases, staff to these boards appeared to provide considerable input. Board members have considerable leeway in making selections. This allows for a greater potential for "political considerations" and favoritism to creep into the process. But this also has the advantage that special circumstances not captured by the formal rating criteria can be considered.

Regardless of who does the ratings, often considerable judgment goes into the rating for many, and probably most, criteria. All criteria, whether quantitative or qualitative, should be defined as specifically as possible for the raters. To the extent that raters are not in agreement as to what the specific characteristic is that is being measured by a criterion, opportunity for unreliable ratings and probably unfairness (when some raters are interpreting a criterion as meaning one thing and others give it a different meaning) increases. The ratings systems reviewed vary widely as to the extent to which the rating criteria are specifically defined. Many criteria in use require judgment by the rater in deciding on a particular score for each criterion. Few criteria are based on purely factual information (such as average median household income).

3. How should the ratings on each of the criteria be combined to give one overall rating? Most of the project selection systems we examined used predetermined point ranges for each criterion. In such cases, the scores for each of the criteria are added to give the application's overall score. But the question arises as to the correctness of these "weights" for each of the criteria.

For some programs, the criteria and maximum number of points for each criteria are specified in the legislation (such as in North Carolina). In Ohio's "State Issue #2 Program", which delegates project selection to local district committees (see separate section of this report), the state legislation specifies general criteria but leaves it up to each of its 19 district committees to establish more specific criteria and the weights for each.

4. Should the state use the application process to encourage communities to undertake desirable infrastructure management efforts over and above the specific project being proposed? An example of such encouragement is North Carolina's use of bonus points to applicants that have water conservation or water loss reduction programs (described further below). Another option is to require communities to have undertaken some activity as a pre-application requirement, such as to have a multi-year capital improvement plan, such as Ohio has required. Examples of other actions that a state might want to require encourage through bonus points are presented in the chapter on "Terms and Conditions and Special Requirements."

5. How accurate is the information provided by each applicant? How can its accuracy be assured/increased? Obviously, it is to each applicant's advantage to make its case look as good as possible. To what extent can, or should, state staff check the information? Should staff make on-site visits to conduct a first-hand check on some of the information? Application instructions can request written evidence in some instances, such as state inspection reports on

problems with the community's water systems, but this is not always available. Our examination indicated that programs generally did not believe they had the staff to check on-site, such as to assess the need for the particular project. Usually, they accepted the information presented in the application, along with their own personal knowledge of the situation in the particular community.

In the remaining sections of this chapter, examples of rating systems are provided in order to illustrate what well-developed rating systems look like and then provide suggestions as to project selection procedures.

Examples of Project Selection Systems

1. Washington's Public Works Trust Fund (PWTF) rates applications in two major categories: "project need" (40 points) and "local effort" (60 points). ¹³ This emphasis on local effort is in keeping with the PWTF objectives of emphasizing and rewarding local effort. Local effort is defined as including:
 - System maintenance practices -- 15 points. Ratings consider whether the jurisdiction has undertaken maintenance projects in the previous five years (up to 5 points) and whether the jurisdiction has such elements as scheduled maintenance, a maintenance plan/strategy, an inventory of the system, has permanent staff assigned to maintenance, and/or has a maintenance or depreciation fund (up to 10 points).
 - The local governments's willingness and ability to raise money from local sources - 20 points. Ratings consider such elements as: financing used for capital costs (such as pay-as-you-go, special levies, debt issuance), but full explanations are needed, not simple listings (up to 5 points); efforts to maintain or improve the system's financial base (such as rate review and adjustment, dedication of taxes, imposition of special fees or charges) (up to 5 points); debt issues to support the system or other public works (up to 5 points); and ability to form improvement districts to finance improvements or repairs (up to 5 points).
 - Its ability to manage those resources (financial management) -- 15 points. Ratings consider policies or strategies to benefit system finances, such as investment goals, purchasing practices, employee training (up to 5 points) and progress in implementation of policies and strategies, by showing how the jurisdiction has implemented one or more of the policies and strategies listed above (up to 10 points).

¹³ Information in this section is based on "Project Need Guidelines" and "Local Management Effort Guidelines," Washington Department of Community Development, 1992.



- **Implementation of capital plans -- 10 points.** Ratings are based on the ability of applicants to demonstrate that they have carried out their existing Capital Improvement Plans.

Total scores are tallied by adding the number of points assigned to each of the above items.

Project need is rated based on such elements as:

- **Severity of the problem (up to 20 points),** based on such factors as evidence of contamination, flooding, potential loss of a system, substandard components, high maintenance and operating costs, and accidents. Applications are then grouped into four categories based on the scores: critical, serious, moderate, and routine.
- **Urgency of need (up to 8 points),** based on the plausibility (and back-up evidence provided) of the description given in the application, such as whether an emergency has been officially declared, the situation is causing substantial harm, or there has been action by a regulatory agency.
- **Miscellaneous factors (up to 12 points total),** including such elements as a benefit to the local economy, the project involves more than one community, and the project size, e.g., water supply projects get more points than distribution system projects.

2. **Utah Drinking Water Board (DWB) loans** are based in large part on staff ratings of each application.¹⁴ The point ratings are provided to the Board to help it determine whether a loan or grant is appropriate and the extent of state subsidization (e.g., the interest rate). The interest rate is determined primarily by the Board's calculation of the percentage that the average water bill in a community is to its median adjusted gross income. The figure for the average monthly water bill is obtained from the community's application but based on each community's most recent audit report as to the water system's total revenue. The state divides that figure by the number of connections, also provided on the application. The figures for median adjusted gross income are obtained from the state Tax Commission, which provides the figure for each zip code based on the Commission's analysis of Federal income tax forms.

The staff also assesses whether a water rate increase is likely to be necessary. The Board has set as the "target" water rate 1.5% of the median adjusted gross income for the community. To make this assessment, the DWB staff calculates for the applicant,

¹⁴ Information in this section is primarily based on "Utah Wastewater and Drinking Water Project Loan, Credit Enhancement, and Interest Buy-Down Program Policies and Guidelines," July 1985.

the average monthly water bill for that community that would repay the loan (at various interest rate options) and also pay for other costs, such as operation and maintenance.

A copy of DBD's rating system is attached as Exhibit 5-1. The principal rating criteria are:

- Need for the project--focusing on health hazards, meeting drinking water regulations, and need for immediate or future growth.
- Number of connections per \$10,000 of project cost.
- The extent to which the private sector has been found to be unable to pay for some, or all, of the costs.
- Need as shown by the median household income (based on latest census figures)
- Ability to repay the loan, based on the percent of "total allowable indebtedness" the loan amount represents and the increase in mill levy, or fee, required (the lower the increase needed, the more rating points).

These criteria (used to rate drinking water applications) are very similar to those used to rate wastewater projects. (See "Utah Wastewater and Drinking Water Project Loan, Credit Enhancement and Interest Buy-Down Program Policies and Guidelines," dated July 1985).

Some applications are turned down, but this occurs infrequently. Usually it occurs with wealthier communities or where the request is for an inappropriate facility (such as when one community appeared to be attracting customers from an existing special district that would then be adversely affected).

The DWB had no specific formula linking the number of point to the interest rate. Thus, the Board members exercise considerable judgment in making that decision.

3. Illinois' Water Pollution Control Revolving Fund (WPCRF) finances wastewater treatment facilities.¹⁵ Four classes of projects are eligible for funding under WPCRF: service continuation (for improvement, rehabilitation, or replacement of wastewater treatment works); new service (for wastewater collection, transportation or treatment for

¹⁵ Information on the IWPCRF in this section is based on "Procedures and Requirements for Determining Loan Priorities for Municipal Wastewater Treatment Works Needs," Illinois Administrative Code, Title 35, Subtitle C, Part 366, May 3, 1990.



unsewered local government units); service expansion (to expand capacity of existing wastewater treatment works); and combined sewer service (projects to reduce or eliminate street, area and basement flooding).

As of 1991, the agency allocated available loan funds to these classes in proportion to the relative needs for each as demonstrated by communities' filing of preapplication forms for projects in the respective categories. That is, if 30 percent of the dollars requested in applications was for service expansion, 30 percent of the funds available that year would be targeted for that type of project.

The environmental agency uses a priority scoring system to establish a priority list of projects in each of the four classes of projects. There are scoring systems for each class of project. A scoring system is used to rank projects on the initial list for distribution of loan funds. The scoring system awards points, which vary somewhat by type of project. The scores attained are then multiplied to obtain an overall score which determines placement on the priority list.

Some of the factors considered in the Illinois WPCRF scoring system are:

- Need for projects in terms of the degree of utilization of existing facilities. Calculation of priority rating scores for service continuation projects include the ratio of existing load to design load for wastewater treatment, and the ratio of existing peak flow to design peak for wastewater transportation.
- Need for projects in terms of problems or violations associated with current infrastructure, such as frequency of permit violations. Factors for wastewater treatment plants include the percent of months in previous calendar year with permit exceedance; for sewer systems-- number of overflow or bypass events in previous year; for basement backups--average number of basements affected, average number affected as a percent of basements in the drainage area, and annual frequency of backups. Health hazards are considered by awarding extra points to projects on the state health department's annual health hazard list. In addition, median income of households in the project service area and whether the unemployment rate is higher than the state average is considered. Also considered is the quality of the receiving body of water (higher priority is assigned to those with higher quality and potential for improvement).
- Management practices excellence of operations. WPCRF awards bonus points for excellence in the operation of existing facilities. This is done to counter the practice of placing highest priority on systems in poor condition--thus implicitly rewarding those with poor management. Scoring sheets for this factor consider process performance (e.g., length of time plant has produced an effluent no greater than 80 percent of its permit limits); maintenance (how long equipment and

structures have been in service without a failure, is there a routine preventive maintenance program); and administration (are self-monitoring reports submitted on time; does the chief operator have the proper level of certification). Exhibit 5-2 presents the WPCRF rating form excerpt for wastewater treatment facility "Excellence of Operation."

Information used to calculate the scores on the different factors primarily is obtained from the preapplication form or the approved facility plan submitted by the local entity. Some information comes from other sources. For example, information on community characteristics is obtained from another state agency; information on waterbody quality is obtained from standard state reports to U.S. EPA. Information for the excellence of operation reviews is collected by agency field staff (much of the data for this is available from facility records). This information is only calculated for entities that are sufficiently high on the priority list to be affected by this factor.

The Illinois Public Infrastructure Program (PIP) is another assistance fund.¹⁶ PIP provides funds for infrastructure improvements that are directly related to creating or retaining private sector jobs. Eligible infrastructure projects include water related projects such as water and sewer line extensions, water distribution and purification facilities and sewage treatment facilities as well as infrastructure such as access roads, bridges, streets and roads. Factors such as the following are evaluated:

- Need for program funds. Local government applicants must demonstrate that the infrastructure is needed to secure the private sector development, expansion or retention; that it cannot be financed solely from local revenue or at an interest rate or term that makes the project viable; and that the project falls within the locality's capital improvement plan or has a documented immediate need.
- Project implementation readiness. Applicants must demonstrate that the project is ready for implementation, by providing evidence such as a time schedule for immediate initiation, a resolution of support from the local government, and a project feasibility study.
- Project impact. At a minimum, at least one private sector permanent, full-time equivalent job must be created or retained for every \$5,000 awarded. Projects which create or retain jobs at a lower program cost receive stronger consideration. Some preference is given for jobs that generate additional wealth; for example, those that produce goods and services exported from the community or that replace goods and services currently imported into the state.

¹⁶ Information on IPIP is based on: "Public Infrastructure Program Application Guide and Forms," Illinois Department of Commerce and Community Affairs (undated).



- Financial evaluation of the local government. This includes a review of alternative funding sources available to the applicant; financial health of the applicant (including review of recent audit of government funds, tax rates, utility user charges and outstanding debt); ability to pay a portion of the costs of the project
 - Financial evaluation of the firm(s) affected by the proposed project. This includes review of financial statements to assure the firm is financially stable. In addition, principals of the company must show commitment to the success of the project.
4. The North Carolina Clean Water revolving Loan and Grant Program is required by legislation to use a specific set of criteria for each type of infrastructure. The legislation attaches the maximum number of points to each of the criteria. A special feature of its rating system is that it provides bonus points to applicants that have taken specific steps towards water conservation. These include:
- Having a continuing program of water conservation education and information;
 - Having adopted and is effectively enforcing the state plumbing code;
 - Having a continuing I/I program in its wastewater sewer maintenance program (if a wastewater program) or a continuing water loss reduction program (if a water supply program).

Some Suggestions on Project Selection Procedures

Each state program of financial assistance to local governments will likely need a systematic process -- one that is as fair and objective as possible -- in order to select projects that should be funded. The process can usually also help to determine whether the applicant's loan should be subsidized and at what level, e.g., whether a subsidized interest rate or even a grant is warranted.

The typical program procedure is to use some form of rating process, with ratings based primarily on information provided by the applicant in the application. We suggest that states consider the following elements, if not already including them:

1. Starting with the requirements in the enabling legislation, develop a set of specific criteria for evaluating each application. Preferably develop the criteria with the participation of the applicant community to avoid unreasonable criteria and to include those that local governments points to as being relevant.
2. Define each of the criteria as specifically and clearly as possible so that the applicant is more likely to be able to provide the information that the state wants and so that raters are all rating using the same groundrules.

3. Consider the following characteristics for inclusion in the set of criteria:
 - Health and safety concerns -- including exceeding water quality standards, insufficient water for emergency use, and the number of persons at risk because of such problems.
 - Service improvement potential -- including reduction of water loss and reduced repair/downtime.
 - Affordability -- ability to repay loan and/or pay for any increased future O & M costs (consider such factors as: indebtedness, ability to obtain the needed future revenue from fees and charges or dedicated revenues, and bond rating).
 - Financial need -- consider such factors as median household income
 - Cost of project relative to its benefits -- such as number of connections per \$10,000 of project cost (as used by Utah).
 - Readiness of project to proceed -- include considerations of feasibility as well as current status of preparation for the project.
 - Other special factors unique to the particular project -- such as significant impact on local economic development or involvement of more than one community in the project.
4. Develop the "weights" (i.e., maximum rating points) for each of the criteria. This step also should preferably be done with input from representatives of local governments.
5. The initial ratings probably should be done by technical staff, perhaps borrowing personnel from other agencies, such as health department personnel and engineers, to make the ratings for criteria with a high technical content. The responsible public officials will, of course need to make the final choices. Applicants, whether successful or not, should be told their ratings, to permit them to improve in the future.

The examples of project rating systems given in the previous sections of this chapter illustrate many of the steps suggested here.



Exhibit 4-1

June 23, 1983

UTAH SAFE DRINKING WATER COMMITTEE LOAN PROGRAM

Priority Point System

Priority Points	I. <u>Project Need</u> (points from one of the appropriate categories will be assigned)
35	A. Eliminate documented substantial health hazard 1. Untreated surface water 2. Bacteriologic contamination 3. Chemical contamination
30	B. Eliminate an intermittent immediately occurring health hazard or a long-term health hazard
25	C. Upgrade existing inadequate water supply facilities to comply with the construction standards in the Public Drinking Water Regulations
20	D. Construction of new or modification of existing facilities to provide for immediately anticipated growth
5	E. Construction of facilities to solve long-term water demand needs
Priority points will not be assigned from this category if the health hazard results from obvious mismanagement or inadequate maintenance of the water supply facilities	
	II. <u>Cost Effectiveness</u> (points from one of the appropriate categories will be assigned)
	Cost effectiveness ratio (number of connections per \$10,000 project cost)
10	1. 150 and up
7	2. 100
4	3. 50
2	4. 25
1	5. 5

Exhibit 4-1 continued

Page 2

III. Community Need for State Assistance (points will be assigned as appropriate from each of the sub-categories)

A. Private Sector Funding

- | | | |
|----|----|--|
| 15 | 1. | A reasonable search to locate private sector funding has been made without success |
| 15 | 2. | Private sector or own funding will pay 50% or more of the project costs |
| 12 | 3. | Private sector or own funding will pay for at least 25% and less than 50% of the project costs |
| 10 | 4. | Private sector or own funding will pay for at least 10% and less than 25% of the project costs |
| 8 | 5. | Private sector or own funding will pay for less than 10% of the project costs |
| 5 | 6. | Private sector or own funding will not pay any of the project costs |
| 0 | 7. | Has not been investigated |

B. Median Household Income Per Year*

- | | | |
|----|----|-------------------|
| 10 | 1. | 0 - 5,000 |
| 8 | 2. | 5,000 - 10,000 |
| 6 | 3. | 10,000 - 15,000 |
| 4 | 4. | 15,000 - 20,000 |
| 2 | 5. | 20,000 or greater |

*1980 Census

IV. Ability to Repay Loan (points will be assigned as appropriate from each of the sub-categories)

- | | | |
|----|----|--|
| | 1. | The loan amount as a percent of the total allowable indebtedness |
| 10 | a) | 10% or less |
| 8 | b) | Greater than 10% but less than 25% |
| 6 | c) | 25% or greater but less than 50% |
| 4 | d) | 50% or greater but less than 75% |
| 2 | e) | 75% or greater but less than or equal to 100% |



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Exhibit 4-1 continued

Page 3

- | | | |
|----|----|---|
| | 2. | Percent increase in mill levy required
(points to be assigned only if general
obligation bonds are to be used) |
| 15 | a) | 10% or less |
| 12 | b) | Greater than 10% but less than 25% |
| 9 | c) | 25% or greater but less than 50% |
| 6 | d) | 50% or greater but less than 75% |
| 3 | e) | 75% or greater but less than or equal to
100% |
| | 3. | Average residential water service cost to be
charged after this project (points to be
assigned only if revenue bonds are to be
used) |
| 15 | a) | \$10/month |
| 12 | b) | \$15/month |
| 9 | c) | \$20/month |
| 6 | d) | \$25/month |
| 3 | e) | \$30/month or greater |
| | V. | <u>Special Considerations</u> (points from one of the
appropriate categories will be assigned) |
| 5 | A. | Maintain integrity of, or create a new
regionalization plan |
| 5 | B. | Meet secondary drinking water standards |
| 5 | C. | Meet energy impact demands |
| 5 | D. | Meet critical local or state need
Define: |
| 0 | E. | None of the above |

Source: "Priority Point System," Utah Safe Drinking Water Committee, June 23, 1983.

Exhibit 4-2

35 ILLINOIS ADMINISTRATIVE CODE CH. II. 6355 App.

SUBTITLE C

366. Appendix C Excellence of Operation Scoring Review Sheet for Local
Government Units That Own Wastewater Treatment Facilities

This scoring sheet will be used to rate those projects which have demonstrated excellence in the maintenance and operation of existing wastewater treatment facilities. The scoring factors are as follows:

A. PROCESS PERFORMANCE AND CONTROL:

1. Plant performance compared to permit limit requirements.
(If both BOD/SS are consistently 20% below permit limits,
2.0 points; if 40% or more below limits, 3.0 points.) _____
2. How long has the plant been producing an effluent
no greater than 80% of its permit limits? (If at
least 5 years, 1.0 point; if 10 or more years,
2.0 points.) _____
3. Current plant loading as a percentage of the
design capacity. (If the current average daily
load is 80 to 90% of design capacity, 0.5 point;
if 90 to 100%, 2.0 points; if over 100%,
3.0 points.) _____
4. Does the operator use laboratory data to make
appropriate process control adjustments?
(If yes, 1.0 point.) _____
5. Is the effluent quality consistent during the
entire range of plant flows? (If it is within
permit limits at all flows, 1.0 point.) _____
6. Is the sludge quality acceptable for land
application? (If a land application permit
has been issued, 1.0 point.) _____
7. Is the process subject to process upsets? (If
there have been no process upsets due to
discharges into the sewer system in the last 5 years,
0.5 point.) _____
8. For processes using the activated sludge
process, is microscopic analysis used for
process monitoring? (If yes, 0.5 point.) _____
- TOTAL PROCESS PERFORMANCE AND CONTROL _____

B. MAINTENANCE:

1. How long have mechanical equipment and structures been
in service without a failure that affected plant
performance? (Over 5 years, 0.5 point; over 10 years,
1.0 point; 20 or more years, 2.0 points.) _____



Exhibit 4-2 continued

2.	Are the plant grounds, buildings, and equipment well maintained (grass cut, equipment and buildings painted, etc.)? (If yes, 0.5 point.)	_____
3.	Does the plant have a routine preventative maintenance program? (If yes, 1.0 point.)	_____
4.	Does the plant have a spare parts inventory? (If yes, 0.5 point.)	_____
TOTAL MAINTENANCE		_____
 C. ADMINISTRATION:		
1.	Does the operating agency control industrial discharges into the sewer system that may adversely affect the treatment process, sludge, or effluent quality or pose a safety hazard to system workers? (If a local ordinance exists, 0.5 point; if there is an approved local pretreatment program, 1.0 point.)	_____
2.	Are all self-monitoring reports and other reports required by permit conditions submitted on time? (If they are, 0.5 point.)	_____
3.	Are all financial reporting requirements submitted in accordance with permit conditions? (If they are, 0.5 point.)	_____
4.	Does the chief operator have the proper level of certification required by Title 35, Subtitle C of the Illinois Pollution Control Board Regulations? (If yes, 0.5 point.)	_____
5.	Has the plant been issued an Agency safety certificate during the past year? (If yes, 0.5 point.)	_____
6.	Does the plant have an emergency plan to respond to hazardous material emergencies? (If yes, 0.5 point.)	_____
7.	Does the plant manager prepare an annual report to the board or council on annual facility performance which includes budget needs for the coming year? (If yes, 0.5 point.)	_____
8.	Is revenue being accumulated for annual O&M needs and equipment replacement? (If yes, 0.5 point.)	_____
TOTAL ADMINISTRATION:		_____
TOTAL ALL CATEGORIES:		_____
Reviewer	Date	Total

Source: "Public Infrastructure Program Application Guide and Forms," Illinois Department of Commerce and Community Affairs (undated)

CHAPTER 5 - PROVIDING TECHNICAL ASSISTANCE

The Issue

In addition to needing financial assistance for infrastructure projects, many local governments--particularly smaller ones--need technical assistance of various kinds. Technical assistance (TA) needs related to infrastructure projects can include assistance on such topics as: (a) the availability of financing, (b) obtaining financing, (c) planning for infrastructure, (d) managing infrastructure construction projects, (e) managing and operating facilities such as water systems or wastewater treatment plants (especially to reduce future capital needs), and (f) establishing appropriate fees or rates for such systems (especially to provide future funds for major repairs and rehabilitation).

Some states have programs that provide some form of technical assistance related to local government infrastructure, although such efforts are not necessarily provided in conjunction with infrastructure financing programs.

This chapter provides a review of two TA efforts related to infrastructure that appear particularly innovative. The New York program provides TA to help local governments reduce the cost of infrastructure projects. The Tennessee program provides TA related to operation and management of infrastructure. This is followed by briefer discussions of TA efforts some states are making in conjunction with infrastructure financing programs. These can be viewed as innovative in that most financing programs do not seem to provide TA other than assistance in completing the application process for the program.

New York State Self-Help Support System ¹⁷

The New York State Self-Help Support System (SHSS) program was initiated in 1985 to provide technical assistance to small communities--with populations under 5,000--to promote self-help to reduce the costs of water and wastewater projects. SHSS is a public-private partnership effort involving the New York Departments of Environmental Conservation, Health, and State, and The Rensselaerville Institute (TRI), a nonprofit organization that developed the self-help technical assistance approach used in SHSS. The program is currently being introduced in several other states under the Small Towns Environment Program, a national self-help initiative established by TRI and the U. S. Environmental Protection Agency (EPA).

¹⁷ Information in this section is based on interviews with staff of the SHSS program and written materials they provided. For further information contact the Office for Local Government Services, Department of State, 162 Washington Avenue, Albany, New York 12231, 518-473-3355.



SHSS focuses on small rural communities. Generating resources for infrastructure projects is particularly difficult for such small communities. In addition, they frequently lack governmental resources, such as staff with experience or expertise in managing construction projects, that can help government entities reduce the costs of public works projects.

SHSS provides technical assistance to introduce small communities to ways to reduce the financial costs of infrastructure projects to make them more affordable. SHSS emphasizes cutting costs through "do it yourself" approaches to reduce the amount of work performed by contractors. Such self-help includes: using government employees (of that community or nearby ones) or volunteers to perform certain tasks; or having the community act as its own purchasing agent or general contractor (rather than including these functions in the contractor's responsibilities). SHSS staff recommend that local governments use several different cost-cutting techniques to enhance their ability to reduce project costs.

The TA Process. SHSS staff provide technical assistance in the form of guidance, recommendations, training, and oversight. TA is provided on-site. The kind and amount of assistance provided varies with the community's needs and the nature of the self-help it adopts. The initial TA involves helping the community outline the scope of the problem, identifying what information is available and what is still needed, and identifying things the community can do to cut costs. Assistance with applying for SHSS loans is provided for those interested in applying for these loans.

Staff also provide assistance with the specific self-help activities the community undertakes. Types of self-help undertaken by communities in the SHSS program include:

- using citizen volunteers for planning-related activities, such as conducting income surveys or sanitary surveys, both of which typically involve door-to-door survey techniques;
- getting public support for formation of a sewer district;
- getting information to use in selecting the site for a treatment plant; and
- using government employees (such as highway or public works crews) to perform less technical aspects of construction such as constructing fences.

For example, staff will provide training in conducting a sanitary survey for a wastewater system that is being done by volunteers or local government employees. SHSS staff will often go into the field with volunteers or employees when such activities are taking place to see that they are being done correctly and provide guidance as needed. SHSS staff also provide TA in the form of general oversight, coordination and guidance related to the many administrative and coordination activities associated with public works construction projects. SHSS staff are available to answer questions related to project administration matters at the various stages of

the project. Staff provide on-site technical assistance about twice a month (for about a half-day each visit) over the course of a project.

SHSS also provides written TA material. TRI staff developed a TA manual, The Self-Help Handbook, which provides guidelines and techniques for communities involved in self-help projects. The handbook provides guidance about different kinds of self-help and cost-cutting options available to communities and about the steps involved in public works construction projects. Other written TA materials include a supplement to the handbook which provides advice on selecting a consulting engineer and includes a model Request for Proposals for engineering services for communities to use. Another form of written TA is the dissemination of brief case studies describing the experience of communities that participated in the SHSS program. The case studies describe how the communities conducted their projects and the lessons learned, and include contact information so other communities can obtain more information directly from them.

Eligibility. SHSS is intended for small rural communities with populations of 5,000 or less. There is no application form for SHSS technical assistance. Communities that are interested in participating in the program contact the agency. A SHSS staff member meets with them to explain the program, obtain information about the project the community wants to develop, and assess the level of community interest and readiness to participate in the SHSS program. SHSS staff select communities for participation based on community demonstration of its potential and readiness to participate in the self-help aspects of the program and on the availability of staff to take on the project. Staff determine whether the community has such attributes as:

- One or two individuals who can assume responsibility for the project's completion (the "sparkplugs" in SHSS jargon);
- Strong local commitment --of the community and its governmental boards and agencies;
- Local people with knowledge and skills needed for the particular project;
- Community awareness of the problem and eagerness to correct it, combined with willingness and ability to pay increased costs;
- Community acceptance of the self-help approach and confidence in their ability to do the job adequately;
- Absence of other local problems or activities that need action more urgently.

Program Administration. SHSS as noted earlier operates through three state agencies. Technical assistance is primarily provided by staff members of the Department of Environmental



Conservation's (DEC) wastewater program and the Department of Health's (DH) water program. DEC uses two staff from its central office and two additional engineers located in regional offices assigned to the SHSS program on a full-time basis. DH has one full-time SHSS staff member (as of 1991). The Department of State's Office of Local Government Services (OLGS) applies one full-time staff member. The OLGS staff member coordinates the efforts of the SHSS staff in the various agencies and also provides technical assistance, particularly related to financing.

Impacts. Approximately 90 communities have participated in the SHSS program between 1986 and fall 1991. Between 1987 and 1991 the SHSS program has saved small communities more than \$10 million, according to environmental agency staff. On average, the seven communities whose projects were completed by January 1991 saved \$231,000 each, or 44 percent of the project costs that had been initially estimated. (Savings are estimated on how much it would have cost if the contractor had performed those aspects of the project that were done using "self-help" methods.) Savings on project costs also translate into savings in user charges needed to support the projects. The average annual user fee savings for the first seven projects completed was \$502. The state also saves money, since the costs of operating this program are about one-third the cost of using enforcement measures to resolve the water quality or public health problems typically addressed through SHSS. Using SHSS also addresses problems more quickly than would be the case if enforcement proceedings were used. The latter normally requires up to two years of staff time for data gathering and case preparation, and may take several years before resolution. SHSS projects are usually completed in two or three years and use only one-half to two-thirds of a staff year.

Tennessee Municipal Technical Advisory Service ¹⁸

Tennessee's Municipal Technical Advisory Service (MTAS) is an agency within the University of Tennessee's Institute for Public Service. MTAS was established in 1949 to provide technical assistance to local governments on a range of municipal management topics, including engineering and public works. MTAS works in cooperation with the state's Municipal League, and is funded through a combination of state funds, a portion of the cities share of the state sales tax, and state grants. The main MTAS office is housed on the University's Knoxville campus, and it has two other regional offices. Although MTAS is affiliated with the University, MTAS staff are primarily former practitioners in their respective fields, not faculty members.

In 1984, the state's Department of Environment and Conservation began providing grant funds to support an MTAS effort focused on TA for wastewater management. MTAS has four full-time professional staff assigned to this program. All Tennessee municipalities are eligible

¹⁸ Information in this section is based on interviews with MTAS staff and written materials they provided. For further information contact the University of Tennessee Municipal Technical Advisory Service, P.O. Box 24180, Nashville, Tennessee 37202-4180, 612-256-8141.

for this program, which provides TA on a first-come, first-served basis with no fee to the participating municipality.

MTAS provides three kinds of TA to local governments. The primary form of TA is direct, one-on-one assistance where MTAS staff members act as consultants to a local government in providing the specific kinds of TA it needs. Other kinds of TA include workshops for groups of local officials and written TA materials. MTAS also maintains a municipal reference library which local officials can use or from which they can request information.

MTAS provides a variety of types of individualized TA related to wastewater treatment. TA commonly provided under this program includes:

- assistance in selecting engineering consultants and advice on engineering agreements;
- assistance in reviewing facilities planning documents and in other aspects of planning;
- developing intermunicipal agreements in cases where regional projects are involved;
- providing information about sources of funds and assistance in application procedures;
- providing financial assistance such as performing financial analyses of utility operations, rate assessments, providing advice on rate adjustments, or assessing impacts of improvements on utility bills;
- providing construction phase support such as assistance in financial and records management and in preparing for audit checks;
- acting to facilitate coordination and communications between municipal officials and consulting engineers (for example, by attending meetings between municipal officials and contractors to facilitate communication);
- providing post-construction support such as assistance in developing ordinances and policies, resolving operational problems or recommending ways to improve operations and assisting with specific managerial and operational concerns.

Some TA projects are short term, and may require only one or two on-site sessions involving three to four hours of staff time. Other projects are long-term, such as providing on-going project management assistance over the course of an entire construction project. Long-term projects typically involve 30-40 hours of staff time provided intermittently over the course



of the project.

Written technical assistance materials specifically related to water and wastewater infrastructure include a publication on financing sources for such projects and a guide to conducting water and sewer rate studies. MTAS staff also prepare and distribute occasional bulletins to inform local officials about "hot topics," such as recently passed legislation, new rules and regulations, and so forth--some of which might be related to wastewater or water infrastructure.

MTAS staff also provide TA in the form of training workshops, some of which may be related to infrastructure issues. Like MTAS bulletins, workshops are sometimes developed to address a hot topic. Workshops are also offered on a regular basis as part of the training curriculum offered to municipal officials by a related agency of the University, which uses MTAS staff to teach these courses. Workshops are typically provided once each year, and are offered in at least three different locations throughout the state.

MTAS serves as the TA arm of the Tennessee Municipal League, which helps publicize its service to its members. MTAS also has brochures describing its general assistance as well as the wastewater TA program. Newly elected officials are sent a packet of information about MTAS to introduce them to its services, and MTAS invites newly elected officials to an orientation on MTAS each year.

Technical Assistance Provided in Conjunction with Financing Programs

Technical assistance to local governments may be provided independently of infrastructure financing programs, as in the programs described above. States should also consider providing some technical assistance as one component of their infrastructure financing programs. Following are some examples of state efforts to provide TA in this manner.

Illinois. Staff members of Illinois' Rural Bond Bank provide TA to local governments participating in the bond bank program. The assistance is primarily provided informally, although it is sometimes offered in a structured format, as shown in the following examples.

- Regional workshops held to introduce the IRBB included a technical assistance component on what local governments need to do to issue bonds.
- Informal technical assistance is provided by IRBB staff on a one-on-one basis over the telephone or in person. During the pre-application process, for example, the director might suggest an applicant consider other sources of financing, identifying specific sources to pursue, or that they take specific steps to make themselves more credit-worthy. Advice may even be provided related to construction aspects on occasion, based on staff familiarity with common practices for infrastructure projects.

- IRBB staff provide assistance by coordinating with other state agencies to minimize problems or delays for entities getting IRBB financing. For example, IRBB staff might call the environmental agency to check that a particular construction project is not likely to have problems with wetlands protection requirements, or to find out what they should do to alleviate such problems.

Washington. Washington's Department of Community Development developed a Capital Improvement Planning Manual that has been widely distributed to local governments and to consultants that work with them. The manual is a step-by- step guide through the process of developing and updating a capital plan. Sample forms are included to indicate the appropriate depth of information required for various parts of the plan. The manual is designed for communities with no prior experience in capital planning.



CHAPTER 6 - DECENTRALIZED DECISION-MAKING

The Issue

Most state financial assistance programs are administered centrally. A major exception is the program in Ohio called "The State Issue #2 Program." In 1988 the Ohio legislature initiated this program, creating the Ohio Public Works Commission (OPWC) and 19 public works districts. Each district comprises between 1 and 11 counties (for the state's total of 88 counties).

The program is funded from the state's annual bond issues (up to \$120 million per year). Funds are primarily disbursed for grants, loans, and "local debt support and credit enhancements" to the 19 public work districts on a per capita basis. The program provides funds for most types of capital infrastructure, including water supply systems, waste water treatment systems, solid waste facilities, storm water and sanitation facilities, and roads and bridges.

The 19 public works district committees annually select the projects that receive loans, grants, and credit enhancement support under this program. The committees are comprised primarily of local government officials (both elected and appointed) and, in some districts, private sector personnel.

The innovative aspect of decentralized programs is whether moving decisions closer to local communities will provide a more effective and/or more efficient state program. Decentralization permits decisions to be better tailored to needs of the communities within a district. On the other hand, it also promotes differences in project selection criteria and has the greater potential for local politics to come into play. An evaluation of the approach's effectiveness or efficiency has not been undertaken.

The information below describes the Ohio process and further discusses the issues involved.¹⁹

Features of the Ohio Program

1. **Delegation of responsibility for project selection.** Probably the key feature of the Ohio program is its delegation of the responsibility for setting priorities and selecting projects that are to be funded to the local officials who comprise each district committee. The

¹⁹ The following material has been obtained from interviews with program staff of the Ohio Public Works Commission, Montgomery County (District Four) officials, and from numerous publications on the Ohio State Issue #2 Program provided by the Ohio Public Works Commission.



state OPWC reviews the selections only for compliance with state law. The legislation, however, requires that the district committees (a) "give priority to capital improvement projects for the repair or replacement of existing structures which would be unlikely to be undertaken without assistance ...," and (b) "shall specifically consider all of the following factors:

1. The infrastructure repair and replacement needs of the district;
2. The age and condition of the system to be repaired or replaced;
3. Whether the project would generate revenue in the form of user fees or assessments;
4. The importance of the project of the health and safety of the citizens of the district;
5. The cost of the project and whether it is consistent with ... [the terms of the law];
6. The effort and ability of the benefitted local subdivisions to assist in financing the project;
7. The availability of Federal or other funds for the project.
8. The overall economic health of the particular local subdivision;
9. The adequacy of the planning for the project and the readiness of the applicant to proceed should the project be approved;
10. Any other factors relative to a particular project." ²⁰

Within these general requirements, each district committee has established its own set of criteria for evaluating projects proposed by communities in their district. Thus, each of the 19 districts has somewhat different criteria. Each community can also establish the weights for each of the criteria. For example, it can choose to assign little weight to a particular criterion specified by the state, or even, in some cases, has the choice of putting a positive or negative weight on a particular criterion. OPWC has been concerned, for example, that on occasion the district allocations has been spread out evenly among counties in a district rather than using the designated criteria in the legislation, but this is difficult to determine. The legislation clearly intended that per capita allocation, or even distribution among counties, was not intended by the legislation.

²⁰Chapter 164 of the Ohio Revised Code, Section 164.06.

The law intends that district funds not be disbursed by the district on the basis of a per capita requirement. This has led to some problems, at least in some districts; one district is in litigation over the issue of whether its process amounted to a per capita allocation. This problem has occurred in a district with the largest number of counties. With numerous counties involved, political pressures may tend to push each county towards attempting to get its share of the funds. (The law does establish a minimum allocation per county of 30% of the amount of the county would have been allocated if such amounts had been allocated to each county on a per capita basis, with this 30% to be determined not by a single year's applications, but over five or six year periods.)

2. Exceptions to project selection by the districts. The legislation established three separate programs: the basic program described above; a small government program (for communities whose populations are less than 5,000); and an emergency assistance program. For these latter two programs, the districts submit their recommendations as to priorities to OPWC. OPWC in these cases makes the choices. (Most of the \$120 million per year are for the district allocated funds. The small government fund size is \$12 million per year. A maximum of \$2.5 million can be made available annually for emergency funds defined as funding "for the immediate preservation of health, safety, and welfare.") One of the districts has pointed out that this process can result in the anomaly that the district selects its priorities on one set of criteria, while the state uses a second set to make the final choices.
3. Restrictions on district allocations. The legislation restricts the amount of funds that districts can allocate for projects for new or expansion of infrastructure, rather than for repair or replacement. For each year of the program, the legislation specifies the maximum percentage of the funds that can be used for new or expansion projects, with a maximum of 20% being available for such projects, and a smaller percent in the earlier years of the ten-year program. The legislation also restricts the districts' allocations among grants, loans, and credit enhancements. Districts can only award up to a specific percent of their funds for loans (a maximum of 22% of the funds, with a smaller percent in the earlier years). The districts are required to award a specific percent in the form of "local debt support and credit enhancements" (8%, but lower in the earlier years). Credit enhancement approaches are not very familiar to committees and have not been popular in the applications for assistance from the local governments.
4. Requirements for community planning. The legislation requires that each applicant provide a Capital Improvements Report (CIR). This report should include an inventory of its existing capital improvement needs, a plan detailing the capital improvement needs in the next five years, and a list of the community priorities for addressing those needs. Communities receiving funds are required to review and update the report each year (presumably during the time period when the community is receiving funding assistance).



Thus far, each district committee has determined the format for the CIR for its own communities. The report is sent both to the district and to OPWC. The intent has been that OPWC would then prepare a statewide needs assessment report from the individual community reports. Each district would also be able to prepare its own annual district-wide infrastructure needs report. Thus far, such district wide and statewide needs assessment reports have not been prepared. OPWC does not feel that the individual reports are sufficiently comparable to pull together a statewide assessment. OPWC is currently preparing to mandate a specific format to be used in all districts and by all communities. (The legislation states that the reports should be prepared with a form prescribed by the director of OPWC.) The districts, however, are not likely to want to shift to a statewide format.

While both OPWC and the districts apparently have done little with the capital improvements reports, they appear to agree that requiring CIR preparation by applicants is highly desirable to encourage each jurisdiction to undertake long range planning for itself.

5. Composition of district committees. The legislation establishes specifically how many persons should be on the committee in each district, (a range of 7 - 12 members) and how they are to be selected (whether they should be appointed by the chief executive officer of the most populous jurisdictions, by the board of county commissioners, by the majority of executive officers of other communities, have at least one person with experience in "local infrastructure planning and economic development," include county engineers, etc.).
6. Central state administrative staffing and budget. OPWC, itself, employees approximately 18 people. It has nine program representatives, each of which is assigned two districts with one person assigned three districts. The annual administrative expenses for OPWC have been approximately \$500,000.
7. Need for district staff. Each district found that its committee needed staff help for activities such as helping the committee members prepare summaries of the many applications received each year. The original legislation had not authorized any funds for staff, but recently this has been changed to allow them a small staff. Some districts have borrowed staff from their county governments or planning commissions; some have hired consultants to help them, perhaps asking the communities receiving funds to help pay for them.
8. State technical assistance. The OPWC staff provide limited technical assistance to districts and to local communities, particularly in explaining the legislation and application and other paperwork requirements. OPWC has not provided engineering-related technical assistance to address technical matters. OPWC has in the past indicated

that it would like to provide more technical assistance to communities, particularly those with substantial infrastructure problems, but this has not been implemented.

9. Monitoring performance. Once the award is made, the districts do not appear to monitor the communities' performance. OPWC appears to have this responsibility. Its program representatives try to visit 25% of the projects each year. During those visits, the program representative primarily looks for compliance with legal requirements, examining disbursement and bidding documents and the capital improvements reports. The representatives also meet with project supervisors and discuss problems.

The districts receive reports from OPWC, which handles disbursements, on the expenditures of funds for each project. Since there is supposed to be a maximum of two years for projects, the districts are concerned with the timing of expenditures. However, even if the community exceeds the two-year period for the project, thus far at least, neither the districts nor OPWC have taken action to stop projects. No one, as of yet, has felt this to be necessary. (There is also ambiguity as to which particular period the two years applies, such as from the time the project begins or from the time that the bonds are sold.)

OPWC is required to report annually to the legislature on the program. These reports have provided data of the distribution of funds for each of the different programs (i.e. the basic program, the small government program, and the emergency program). The reports list each project and summarize the dollars spent in each district, both the total project cost and the amount provided by the state.

10. Evaluation of the program. Thus far, there has been no overall evaluation.

Some Special Issues with Decentralizing Project Choice

Some issues likely to be of particular concern to other states considering a decentralized program include:

1. Is the considerable flexibility provided to individual districts in deciding on their project-selection processes, including selection of specific criteria and each's weight, an advantage or disadvantage? On one hand, this process enables the district to tailor the criteria and weights to local circumstances of the communities within the district and thus better target local needs. On the other hand, this process lead to differences in priority setting across the state. Does this mean that some communities will not receive fair treatment or that inter-district issues will not be addressed? Will the added vulnerability to local political influences reduce the effectiveness of the program's ability to assist communities?



Control over the criteria, and each's weight, in project selection is a major feature of decentralization. An alternative is for a state to specify criteria and weights but leave a portion of the final grade (such as 20%) to the judgments of the regional committee members or to local criteria.

2. The composition of the districts itself is a question, i.e., which counties and cities should be included in each district. The Ohio legislature set its districts up so as to even out the population among the 19 districts as much as possible, while still having counties in a district adjacent to each other. Some district officials believe it may be more useful to put together similar type counties, with population being an additional criterion. Since counties are the unit used for forming the districts, Ohio has placed each of its high population cities in a one-county district. The problem is that some other districts can include a mixture of urban, suburban, and rural communities. This may not be ideal, since one type of community might get more than its fair share of funds in relation to its need.
3. Can and should multi-year priority needs plans (Capital Improvements Reports) prepared by all applicants be used by districts, or by the state, to prepare a statewide or district needs assessment projection? Would these have any use? In Ohio, because district currently has been establishing its own format for these capital improvements reports, neither the districts nor OPWC have been combining them into overall plans. OPWC, however, is developing a format that will be mandated in all districts. Will that change to a consistent format, permit a useful overall needs assessment? Note that the report will include only those communities receiving funding support under the program. However, thus far, it appears that most communities in Ohio are applying. They, however, may not apply, or be receiving assistance each year; thus, the annual update may have gaps, perhaps substantial ones. In any case, the question remains as to whether projections made independently by dozens of communities are likely to be sufficiently valid when combined, even if a single format is used, unless there is additional control of how the numbers on need (such as estimated costs) are developed.

Recommendations to States

Without any extensive objective evaluation of the Ohio decentralized program, it is very difficult to make a recommendation regarding it. Based on our brief examination, it appears that the local districts and communities like the decentralized approach. However, no survey of community or district officials has, to our knowledge, been done to obtain more reliable and valid evaluation information.

Individual states interested in decentralization should contact OPWC and others in the state, including districts and local communities, to obtain further information.

Recommendations to the Federal Government

Innovations such as the Ohio Decentralized Financial Assistance Program under its "State Issue #2" program should be objectively evaluated. The Federal government might consider supporting such an evaluation to provide information for other states and local governments. Such an evaluation should obtain feedback from at least a systematic sample of districts and local communities, as well as from OPWC staff, state legislators, and their staff. The evaluation should also include an in-depth look at the districts' project- selection processes and how project selection is done in a sample of districts -- to understand both how the priorities are set, how they seem to be working from an objective viewpoint, and whether differences among districts are causing any special problems. The evaluation should also estimate the costs and administrative requirements for the process.



CHAPTER 7 - BOND BANKS

The Issue

An innovative infrastructure financing program that differs from revolving loan programs is the state bond bank. A state bond bank (BB) in effect serves the same function as an underwriter in terms of financing the bonds that local governments want to issue. BBs issue bonds on behalf of a pool of local governments and use the proceeds of this issue to purchase bonds from these entities. BB bonds are issued at a lower cost than local government bonds because of the higher credit rating of the BB, which is a state agency, and the larger size of the issue. This results in a lower interest rate on the bond issue than the local governments would get if they sold their bonds individually through an underwriter. The lower rate on BB bonds is passed on to the local governments. The local governments then make debt service payments to the BB, which uses the payments to pay debt service for its bond issue.

Bond banks, however, do not directly provide any subsidization to local governments for infrastructure as do programs such as state revolving funds. Because they are "banks," their primary focus is on making sure that loans are repaid and on time. Thus, BB's can and do screen out communities that are not likely to be able to meet payment schedules without subsidization.

Bond banks exist in several states (including Illinois, Indiana, and Maine). This chapter describes the general processes and functions of a bond bank, based on practices of the Illinois Rural Bond Bank, which was established in early 1990 and issued its first bonds in December 1990.²¹ The Illinois bank is modeled after Indiana's bond bank. To date, 21 local governments have used the Illinois Rural Bond Bank. IRBB bonds issued total \$11,465,00, with savings to local governments averaging 9-1/2 percent for each borrower. Total savings for the 21 local governments are \$1,089,000.

Illinois Rural Bond Bank Description

Bond Bank Creation and Organization. The Illinois Rural Bond Bank (IRBB) was established by the state legislature as a separate state agency in 1990. Its governing body is a Board of Commissioners with five appointed commissioners chaired by the state's lieutenant governor, with the state treasurer serving as vice chairman. The Board sets bank policy, approves bond issues, and reviews and approves local government applications for participation in each bond issue.

²¹ Information in this chapter is based on interviews with staff of the IRBB and written materials they provided. For further information contact: Illinois Rural Bond Bank, 427 E. Monroe, Suite 202, Springfield, Illinois 62701, 217-524-2663.



The IRBB has an executive director and three other full-time staff members to conduct the bank's operations. They work with a "financial team" including underwriters, financial advisors, and lawyers (bond counsel), to issue its bonds.

Sources of Funds for the Bond Bank. State appropriations of \$4.8 million were used to finance the initial IRBB reserve fund. Earnings of the reserve fund are used to further build that fund. The state appropriated approximately \$416,000 for creation and initial operations of the bank. The IRBB charges local borrowers two and one-half percent of the amount they are borrowing as a fee for the underwriting services provided by the IRBB. These fees partly finance IRBB operations. Annual state appropriations finance the rest of the operations.

Issuing the Bonds. Local governments apply to participate in the IRBB's twice-yearly scheduled bond issue "pools," indicating the size of the bond issue they want to sell. IRBB reviews these requests. When the IRBB approves their application, local governments take the steps necessary to issue their own bonds to be purchased by the IRBB.

The IRBB issues its own bonds for the sum of the amounts that the local governments want to borrow plus an additional 10 percent to keep in its reserve fund.

Local government borrowers receive their funds at the same interest rate as the IRBB. The rate paid by different borrowers varies only by the variation in the length of term of their respective bonds, not by the characteristics of the borrowing government. That is, all government entities borrowing for a ten year period pay the same rate; all borrowing for 20 years pay the same rate, which is different than the rate paid for ten year bonds, and so forth.

Eligibility and selection criteria. IRBB is targeted to rural areas. Eligibility is restricted to local government general purpose and special purpose districts in the 96 counties outside of Cook County and its five adjacent counties (the Chicago metropolitan area), except for communities over 25,000 population. All kinds of infrastructure projects are eligible, but major emphasis is currently placed on water and sewer facilities. Refinancing is also possible through IRBB.

The preliminary application for participation includes information about local demographic characteristics and financial conditions as well as a project description and engineering reports. Bond bank staff assist local governments in filling out their application forms on request. About one month after the review of preliminary applications, local governments whose applications are slated for approval based on their preliminary application submit a final application affirming the accuracy of that information.



Factors considered in approving applicants are:

- Legal feasibility (the entity must be legally able to issue debt, which may involve voter approval in some cases);
- Project feasibility (ability to construct the project from an engineering perspective);
- Financial feasibility (ability of the entity to repay the debt and provide the required kinds of security described below).

Security for the local bonds. For general obligation bonds, the local government must pledge its full faith and credit and unlimited ad valorem taxing power. For revenue bonds, the local government must show that system revenues will generate at least 1.25 times the annual debt service requirements. Local governments issuing revenue bonds must have their own reserve fund equal to the maximum annual debt service on that bond.

Local governments pledge to provide "intercept revenues" to the IRBB in case of default on their debt service payment. Intercept revenues are state funds to which the local governments is entitled (such as the local rebates on various kinds of taxes or specific types of state aid, such as aid to school districts). If the local government fails to make its debt service payment, the IRBB can intercept whatever amount is needed directly from the state to replace the amount taken from its reserve fund to make its own debt service payment.

Security for Bond Bank Bonds. IRBB bonds are backed by the moral obligation of the state, which enables it to obtain a favorable interest rate (in 1991, it had an A+ rating from Standard and Poors). It is also backed by IRBB's reserve fund, and by the above mentioned securities backing the local bonds.

Paying Debt Service. The local government borrowers make their semiannual debt service payments to the IRBB, which uses these funds to make its semiannual debt service payments on the IRBB bonds.

If the local governments think they will be unable to make their payment, they must provide advance notice to the IRBB. (This has not yet happened to the Illinois Rural Bond Bank.) In such a case, the IRBB would take money from its reserve fund to make the required payment in a timely manner. This would trigger the intercept mechanism provided for in its agreement with the local government borrowers to replace the amount taken from the reserve (unless the local government makes up the amount before this occurs).

Outreach to Publicize the Bond Bank. Initial efforts of IRBB staff to make local governments aware of the IRBB involved:



- Eleven regional workshops to introduce local government officials to the bond bank concept, how it works and how it can serve their financial needs; and
- Meetings with other state agencies that serve local governments and with various associations of local officials to inform them about the IRBB so they could pass the word on to local officials.

Ongoing outreach efforts include:

- Regional workshops after the closing of each bond issue to inform local governments about the advantages of IRBB financing. Meetings are held after closing the issue to use participants in that issue as illustration of the benefits of the IRBB and to start the cycle for the next bond issue. IRBB staff have expanded the scope of outreach efforts by inviting professional engineers and architects to these workshops, so they can advise their clients about this source of financing.
- Participation in regional or statewide meetings of local government associations such as councils of mayors, the state municipal league, school board associations, regional planning councils, and groups involved with infrastructure such as engineer and architect groups. IRBB staff set up a booth at regional meetings, distribute brochures, and informally talk with participants. If invited, they make presentations to the group or participate in panels or presentations related to infrastructure.
- Meetings with individual local governments that express interest in obtaining information about the bank;
- Articles on the IRBB written by its director are included in newsletters and similar publications that are sent to local officials, architects, and engineers. Copies of such articles are given to those inquiring about the IRBB.
- Periodic mailings to officials of various kinds of local government entities. For example, after the closing of a bond issue, a mailing is sent indicating the projects funded and entities participating and suggesting that local entities consider using the IRBB for their financing needs.
- Personalized mailings to, or contacts with, specific government entities that have expressed interest in other infrastructure assistance programs. IRBB staff coordinate with other state agencies that provide information about applicants to their programs to IRBB for this purpose.

- Press releases, particularly associated with closing a bond issue and with announcing plans for upcoming issues.

Technical Assistance. IRBB holds regional workshops to introduce the IRBB and after the first bond closings also provide technical assistance on what local governments need to do to issue bonds.

Informal technical assistance is provided by IRBB staff on a one-on-one basis over the telephone or in person. During the pre-application process, for example, the director might suggest an applicant consider other sources of financing, or take specific steps to make themselves more credit-worthy. Advice may be provided related to construction aspects, based on staff familiarity with common practices for infrastructure projects. Staff provide assistance in completing applications on an as-needed basis.

IRBB staff coordinate with other state agencies to minimize problems or delays for entities getting IRBB financing. For example, IRBB staff might call the environmental agency to check that a particular construction project is not likely to have problems with wetlands protection requirements.

Monitoring. The trustee bank for the IRBB monitors payments made by local entities.

The IRBB director informally monitors IRBB projects by making telephone calls to the local officials and asking about the progress being made on the project. IRBB staff plan to conduct periodic site visits to monitor progress on IRBB financed projects. For example, IRBB staff might drop by when they are in the area to look at the project under construction and speak with the head of the local entity, accountant and engineer to go over the progress made on the project. This has not been done to date because of the relative newness of the IRBB.²²

Conclusions and Recommendations

Bond banks provide several advantages to local government entities. By pooling the bonds of a number of different local governments and issuing bonds in their behalf, state BBs effectively erase the differences between the credit ratings of different communities and enable them to receive equal treatment in the bond market. Because state BBs can obtain a lower interest rate and issue bonds at lower cost than most local government entities, local entities using BBs will pay less to finance their infrastructure than if they entered bond markets on their own. BBs also offer an advantage to the state in that BBs do not require the large appropriations of state funds associated with establishing of revolving loan funds or grant programs. BBs effectively raise their own funds in the bond market each time they sell a bond issue. State appropriations might be required to establish a reserve fund or support BB operations, but these are not likely to be of the magnitude of funds needed to establish a revolving loan fund.

²² Ibid.



Although BBs provide lower cost financing to many local governments, one disadvantage is that the cost reduction they provide may not be sufficient to help the smallest or neediest local governments. Such entities may need the zero or near-zero interest rates revolving loan funds frequently provide to entities that need such assistance, or they may need grants as opposed to loans. Bond banks can be authorized to provide financing through revolving loans or grants in addition to the more typical process of underwriting local bond issues described in this chapter.

CHAPTER 8 - MONITORING AND EVALUATION

The Issue

Monitoring on-going project activities and periodically evaluating the progress and success of each financial assistance program will provide state officials both: (a) accountability information, and (b) guidance on ways to improve the programs. In addressing these issues, states need to consider such questions as the following:

To what extent does the state agency providing funds, and other assistance, need to monitor the performance of recipients? Should the state monitor each project assisted, and if so, how often? Should the state periodically undertake an evaluation of how well the whole program has performed relative to its objectives, including such objectives as improvements to communities' health and safety?

Clearly the state needs to assure that its funds are used for the purposes for which they were intended. Expenditures of state funds are subject to audit and state auditors (and Federal auditors if any Federal funds are involved) will probably review expenditures. However, should the program itself provide more timely expenditure reviews and examine programmatic issues and not only fiscal compliance?

We found few examples of much in the way of project monitoring and no examples of state evaluations of their financial assistance programs. (In some instances, the lack of program evaluations can be due to the newness of the programs.) More common, however, is the legislated requirement for annual reports identifying the amount of funds provided to communities and their distribution, both geographical and by type of assistance.

Below we present some findings on state monitoring efforts and provide some comments and suggestions on monitoring and evaluation.

Some Examples of Monitoring and Annual Report Provisions

1. Ohio's "State Issue #2 Program" program representatives (see chapter on "Decentralizing Project Funding Decisions") try to visit 25% of projects each year. During those visits, the program representatives primarily look for compliance with legal requirements, examining disbursement and bidding documents and the required Capital Improvements Reports. The representatives meet with project supervisors and discuss problems.

The state agency is required to report annually to the legislature on the program. These reports primarily present data on the amount of funds used (both state funds and total project amounts, including local share) by:



- type of subdivision (county, city, township, village, or special district);
- type of infrastructure (road, bridge, drinking water, wastewater collection and treatment, solid waste disposal, or stormwater system); and
- district and county.

The report also itemizes each project by subdivision and project name.

2. The Washington State Public Works Trust Fund requires quarterly reports from each loan recipient. These are intended to be brief narrative reports of project activities during the period and to notify the state if the recipient has problems or delays, as well as identifying positive accomplishments. The department sends someone to the community to check on problems that appear important.
3. The Utah Drinking Water Board uses state engineers to do both interim and final inspections of each project to determine that the project was done as approved.
4. The North Carolina Clean Water Revolving Loan program is required to provide an annual report to the legislature. In addition to the more traditional requirements for an itemization of each loan and grant and summary data on the amounts loaned and granted, the program is required to include an "assessment and evaluation of the effects that approved projects have had upon water pollution control and water supplies ... and with relation to the total water pollution control and water supply problem."²³
5. The Illinois Rural Bond Bank director informally monitors IRBB projects by telephoning local officials and asking about the progress being made on their projects. IRBB staff plan to conduct periodic site visits to monitor progress on IRBB financed projects. For example, IRBB staff might drop by to look at the project under construction and speak with the head of the local entity, accountant, and engineer to go over the progress made on the project. This has not been done to date because of the newness of the IRBB and the early stages of implementation of projects funded by it.

Some Recommendations

Project Monitoring. States should consider a process of (a) requiring brief progress reports, perhaps on a quarterly basis (as done in Washington) to obtain the project's latest projection of completion dates, the presence of any problems, and major milestones met; and/or (b) having state staff check at least a sample of projects in the field each year to observe first hand the projects compliance, success, and problems (such as done by Ohio and planned by

²³ Section 159G-17 of Chapter 159G of the North Carolina Clean Water Revolving Loan and Grant Act of 1987.

Illinois). This effort will be more useful if the state is also able to offer technical assistance to projects that appear to be having problems.

Annual State Reporting. For each major financial assistance program, the program staff should be responsible for preparation of an annual report that contains the following elements:

- Summaries of the funds allocated: (a) to each type of financial assistance; (b) to each type of infrastructure; (c) to each size jurisdiction; (d) to each district/region and county of the state; and (e) to categories of communities characterized by their "wealth" (perhaps based on each's average median income). This information should be used both by the program staff and the legislature to assess the amounts and equity of fund distribution.
- Estimates of the effects of the program, in the past year and to-date, of completed projects on water pollution control, water supplies, or whatever types of infrastructure the program is addressing (such as required in North Carolina). This requirement is the most difficult to operationalize, but it is also the basic reason for the program in the first place. States can use project application information that gives specific reasons as to the need for the project in order to determine what improvements in the quality of life in the community have resulted after the supported infrastructure has begun operations. States can have their health personnel assist in making such assessments.

Such information can help the program identify marketing needs and need for modifications such as on program eligibility.

Program Evaluation. Each state program should support a comprehensive evaluation of the program once every three years or so. The major purpose of the evaluation is to determine both whether it is working as desired and how it can be improved. The evaluation should address the program's impacts (e.g., on health and safety), the equity/fairness of the allocation of the funds, and the efficiency of the program. Such an evaluation can make use of the information contained in the annual reports (see above) and should seek systematic feedback from both communities that have received assistance and those that have not -- as to their perceptions of the program's effectiveness and how it might be improved.



CHAPTER 9 - ASSESSING STATEWIDE FUTURE NEEDS

The Issue

To properly plan a state's capital infrastructure financial assistance program, a state needs to periodically estimate the future need so that its program of financial (and non-financial) aid can be properly developed and tailored. Ultimately, each state needs to compare likely available financial resources to the magnitude and type of need. To the extent that the projected financial assistance likely to be available cannot meet the need, the state will need to prioritize individual needs and consider other alternatives.

Needs assessments should also consider the likely financial capability of the communities to determine whether, and to what extent, subsidies from the state are really needed.

Most states are already undertaking some sort of needs assessment, but in various degrees of coverage, accuracy, and sophistication. To obtain needs assessment data some states require that applicants for state financial assistance must complete some form of capital improvement report that includes capital needs projects. For example, Ohio has required applicants to identify "repair, replacement, expansion and/or development "needs" with a five-year priority plan for addressing the needs. (This approach has the limitation that current needs information is only obtained from applicants. The latter is likely to be okay if most communities apply during the year.)

Below we describe the experience and efforts of two states (Utah and Washington).

Needs Assessment by the Utah Drinking Water Board

Utah's approach appears to be a sound procedure, and one that does not appear to be overly costly. While these examples are primarily on drinking water, the procedure seems equally applicable to other infrastructure such as wastewater facilities.

The Utah Division of Drinking Water of the Department of Environmental Quality (DEQ) staffs the needs assessment work for the Utah Drinking Water Board (DWB). DWB provides loans for drinking water infrastructure.

DEQ has tried three somewhat different approaches in recent years. In 1986, it contracted with the University of Utah's Economics and Business Bureau to survey communities. DEQ, however, felt this was too expensive, costing about \$45,000 to survey 400 communities. Also, the department received more detail than needed. The survey was also criticized for not critically evaluating the needs estimates provided by the individual communities. (Note, however, that this latter problem also affects the subsequent, but cheaper, needs assessments approaches.)



About 1988/89, DEQ asked the Utah State University's Water Research Lab to survey a sample of 30 smaller communities and all communities with over 50,000 population.

At the beginning of 1991, the Division of Drinking Water joined with the Department of Environmental Quality's Division of Water Rights to do an in-house mail survey of all communities. The state obtained about a 50 percent response rate; the responding communities, however, covered about 90 percent of the state's population. The agency prefers this latter, in-house, approach, primarily because of its low dollar cost. However, this approach is somewhat burdensome to staff; for example, an engineer did the data entry.

Agency personnel believe it would be quite feasible to do the needs survey annually; however, it also believes that every two years is adequate since the figures do not change much in one year.

Details of the Utah DWB Procedure. ²⁴ In the 1991 survey, a two-part questionnaire was provided. The first part sought information on financial elements such as the following:

- The annual income to the water system from water bills, taxes, and connection fees.
- Whether or not the water system sets aside "some water system income for future major projects to replace old facilities or construct additional facilities (i.e., constructing another storage tank, replacing a large section of the water distribution system, drilling a well, etc.)?"
- A judgment as to whether the financial condition of the community's water system is: balanced; balanced but does not set aside any funds for future major capital expenditures; has excess funds that are put to other uses; in the red but funds are transferred from other accounts; or is in the red and the community will have to raise its rates to balance the budget.

The second part of the survey addressed future needs. It sought information such as the following:

- Whether: (a) the water system functions well and is expected to meet all normal demands for the next ten years; (b) functions well but the community will need to construct additional facilities to meet expected demands; (c) the system functions well but additional facilities are needed within the next five years to meet normal

²⁴ The following information is primarily based on information from the Utah Department of Environmental Quality Division of Drinking Water report "1991 Need and Cost Survey: Utah Community Drinking Water Systems," August 1, 1991.

demands; or (d) the system does not function well and new facilities are now needed to meet normal demands.

- A description of any major improvement project the water system is contemplating within the next three years.
- An estimate of the cost of this major improvement project.
- How the community plans to finance the project, that is whether it has enough cash on hand, intends to borrow money from the buyer market, or intends to apply to a state agency for financial assistance.
- A rating of the condition of the community's distribution system with respect to fire protection (whether good, fair, or poor).
- How many leaks in the distribution system and transmission lines are repaired each year.
- A rating of the overall condition of the community's distribution system, that is, whether it: is in excellent shape with very few leaks; is in excellent shape but, some areas of town are in bad shape; is in fair shape with leaks regularly occurring but manageable; or is in bad shape. Bad is defined as "busy repairing links and there is evidence of deterioration."

A copy of these two questionnaire segments is presented in Exhibit 9-1.

In 1991 the questionnaire was sent to all community public drinking systems in the state. A total of 370 questionnaires were mailed. The state received back 49% (180) that were properly completed. An additional 9% (35) were returned but were improperly completed. The 49%, however, accounted for 86% of the total number of water supply connections in this state.

Information Developed From the Survey. The Utah DEQ report provided the following principal findings:

- The average water bill in the state per month per connection (\$18.89).
- The total amount spent annually for water service by Utah residents (nearly \$100 million).
- The percent of the statewide median adjusted gross income (for the latest available year, 1989) represented by the statewide average water bill (1.02%). The percent of each community's own median adjusted gross income represented by its own



average water bill. (These ranged from 0.08% to 4.08%.) The figures on income were obtained from state income tax data provided by the state treasury department.

- The percent of the systems that reported operating in the red and would have to raise their water rates (5%).
- The percent of the water systems that do not set aside funds for major future capital expenditures (26%).
- The dollar value of drinking water projects expected to be constructed in the next three years (\$97 million).
- The total dollar value of projects for which the communities expect to ask the state for financial assistance in the next three years (\$44 million).
- The percent of the drinking water systems that expect to construct new facilities in the next ten years (66%).
- The percent of the drinking water facilities that were rated as not currently functioning well (6%).
- The percent of the state's drinking water systems that rate their distribution system's fire protection capability as only fair or poor (68%).
- The median leak rate for transmission lines and distribution systems (1.93 leaks per 100 connections per year).

In addition, the report compared the information on cost and needs to the previous needs study.

Utah DEQ Recommendations For Future Needs Assessments. The Utah needs assessment team made the following recommendations:

1. The mailing could be an annual event, but every other year might be sufficient because information does not change quickly.
2. The current, simpler approach as compared to the previous approaches is more useful, particularly because it is more timely.
3. More detail should be obtained as to whether water systems are setting aside funds for future capital improvement projects, especially to distinguish whether the funds put aside are expected to be enough to meet future needs.



4. More detail should be sought on anticipated applications for state financial assistance, including such information as:
 - What facilities are being contemplated.
 - The total amount of funds expected to be sought from state agencies, and whether the financial assistance requested is expected to be a loan or a grant.
5. Detail needs to be provided as to the extent to which each system provides water for irrigation purposes. Costs should be developed for each category of irrigation use (e.g., for systems that provide: none, some, or all water -- for the irrigation of landscape and gardens).
6. Districts should be asked to provide a listing of cities and town served by each special water improvement and special service district -- to permit more convenient determination of the relevant median adjusted gross incomes.

Washington Needs Assessments ²⁵

In 1983 the Washington legislature required the Department of Community Development (DCD) to prepare a comprehensive plan for replacing and repairing state and local public works over a five-year period. DCD staff and a newly- created Public Works Advisory Board (PWAB) conducted a statewide inventory of critical public works repair and replacement needs in 1983. A questionnaire for local jurisdictions was mailed to over 700 Washington cities, counties and special districts. The survey identified over \$4 billion of critical local projects that needed to be completed by 1988. Local jurisdictions estimated they would be able to finance only about half of these projects. In response to this report, legislation establishing a Public Works Trust Fund (PWTF) and revolving loan program to provide low-interest loans for local government infrastructure was passed in 1984.

The 1983 questionnaire asked communities provide information about: the extent of the current inventory (for example, the number of connections for the water and sewer systems, the number of miles of sewer pipe); its current condition (for example, the percent that is in less than acceptable condition now, the percent that will require repair within the next five years); the number and type of projects that need to be started in the next five years (including "critical needs" projects such as those that need immediate replacement or repair to correct deficiencies or to remove dangers to health and safety); and the percent of funding for those projects they expect to come from various sources. A sample of the questionnaire is provided in Exhibit 9-2.

²⁵ Information in this section is primarily based on "The Washington State Public Works Report," Planning and Community Affairs Agency, December 1983.



Staff of Washington's Department of Community Development worked with a 21-member Public Works Advisory Board (PWAB) to develop the questionnaire used to obtain information about public works needs of local governments. PWAB members included elected officials, city managers and administrators representing jurisdictions of various sizes. Input was also obtained from representatives of the public works and engineering communities, and state agency personnel.

Washington collected information about future needs for a variety of types of infrastructure, including streets and roads, bridges, water systems, sewer systems and dams in its public works inventory. Separate pages (of different colors) were provided for each type of infrastructure, since it was assumed the questions for each would be answered by staff in different local agencies. A separate page was also provided for overall financial information about the community.

Washington provided assistance to local governments in completing the questionnaire. The availability of assistance was announced on the questionnaire's instruction page. The kinds of help provided included:

- Telephone assistance from project staff.
- In-person or telephone assistance from members of groups such as associations of cities, counties, sewer districts, and civil engineers, whose members provided assistance on a voluntary basis.
- Workshops held in various locations throughout the state where project staff provided advice and answered questions about the survey.

Project staff provided written and telephone follow-up reminders to encourage questionnaire completion and offer assistance if needed. To increase the response rate, groups such as associations of local governments (as noted above) were asked to make announcements about the survey and encourage participation at their meetings and in the newsletters. An 87 percent response rate was obtained.

Washington also conducted a county solid waste needs assessment in 1990. Here it used in-person interviews. This approach was feasible because only 39 counties needed to be interviewed and the survey did not require collection of data. The agency hired temporary employees to conduct the on-site interviews. Obtaining a high response rate was one reason for the in-person approach. The agency also wanted to use the personal contact to promote its revolving loan fund and to improve relations between the agency and the counties by demonstrating the agency's helpfulness.

The State of Washington calls for a biennial updating of the statewide public works inventory of needs conducted prior to the initiation of the PWTF. Staff are currently

reconsidering the frequency of this updating, since there is generally little change over a two-year period and local governments have complained about being inundated by paperwork from a variety of sources, not just the PWTF. The response rate for the first follow-up survey was much lower than for the initial needs assessment. Staff believe less frequent follow-ups may lead to improved response rates for follow-up surveys without adversely affecting the information needs of the state.

Recommendations To States on Needs Assessments

1. A short, straightforward mailed questionnaire such as that used by the Utah Department of Environmental Quality for its drinking water systems seems to be an excellent device for annual or bi-annual surveys of drinking water systems in a state. This process appears to enable a quick turn around time and an adequate response rate. The survey should provide information on: the current condition of the system's infrastructure, the expected requests for financial assistance expected during the next ten years, and information on the communities' likely own ability to finance future needs (including consideration of the "room" left in their fee and charge structure to self-finance needs). Some states might prefer to go out further than ten years: others might want to limit the projection to a shorter period, such as five years, as done in Ohio.
2. Response rates should be increased by providing a second mailing to nonresponding communities. Preferably this second mailing should be preceded by a reminder postcard to all communities to encourage them to complete the survey. A telephone reminder to nonrespondents should, if possible, be made to communities still not responding. Calls or mailings should also be made to communities whose responses were not sufficiently complete. When a state only needs to survey a small number of counties, such as 50 or less, the state can use telephone or even on-site, in-person interviews, to obtain the information.

States also should consider providing incentives to communities to respond. A response might be required for eligibility for future infrastructure assistance. Alternatively, bonus points might be provided communities that provide timely, complete community needs assessments -- when rating individual projects competing for limited assistance. (For more discussion, see the section on "Special Requirements" in Chapter 2.)

3. States should use the information to help them develop both their financial and nonfinancial assistance efforts. The responses can be used to help the state prepare a technical assistance strategy, such as using state technical personnel to visit communities with most problems (to help them identify the extent to which other approaches, possibly less expensive approaches, might be applicable)--see discussion under chapter on "Technical Assistance." A state might, in some instances, be able to identify instances of excess- or under-capacity among nearby communities, possibly permitting those



communities to help each other. At the very least, the needs assessment process will encourage local communities to undertake more long-range planning.

4. A similar questionnaire and process is likely to be appropriate for wastewater treatment systems. For other types of infrastructure (such as solid waste disposal and transportation facilities), a major modification to the questionnaire will be needed.
5. Needs assessments, if used by the state to make program and policy decisions, should be regularly updated. Every two years seem likely to be sufficient in most cases because infrastructure does not alter rapidly.

Recommendations to the Federal Government

The Federal government could quite usefully support work to prepare technical assistance pamphlets describing useful needs assessment procedures (such as that used by Utah). The material should include sample questionnaires covering different types of infrastructure. The manual should provide suggestions as how to tabulate and analyze the questionnaire (such as using information on family income from state income taxes to yield data on the ratio of water bills to household income), and uses for the information. Preparation of such guidance manuals should be overseen by a state and local advisory panel.

Exhibit 9-1

WATER COST SURVEY

1. System: _____

This form completed by: _____

2. HOW MANY CONNECTIONS ARE SERVED BY YOUR CULINARY SYSTEM?

Residential - _____

Commercial - _____

Other - (Specify: _____)

Total - _____

3. HOW OFTEN DO YOU BILL YOUR CUSTOMERS?

_____ Once per year

_____ Twice per year

_____ Four times per year

_____ Six times per year

_____ Twelve times per year

4. WHAT IS THE TYPICAL ANNUAL INCOME TO THE WATER SYSTEM FROM WATER
BILLS SENT TO YOUR CUSTOMERS? _____ per year

5. WHAT IS THE TYPICAL ANNUAL INCOME TO THE WATER SYSTEM FROM TAXES
LEVIED ON YOUR CUSTOMERS? _____ per year

6. WHAT IS THE TYPICAL ANNUAL INCOME TO THE WATER SYSTEM FROM
CONNECTIONS FEES LEVIED ON NEW CUSTOMERS? _____ per year

7. IS THE SERVICE AREA OF YOUR CULINARY SYSTEM ALSO SERVED BY A PIPED
IRRIGATION SYSTEM?

YES 41% NO 59%

If YES, approximately what percentage of your service area is served
by the piped irrigation system? _____



Exhibit 9-1 continued

8. IS THE SERVICE AREA OF YOUR CULINARY SYSTEM ALSO SERVED BY A DITCH IRRIGATION SYSTEM?

YES 46% NO 54%

If YES, approximately what percentage of your service area is served by the ditch irrigation system? _____

9. DOES YOUR WATER SYSTEM CURRENTLY SET ASIDE SOME WATER SYSTEM INCOME FOR FUTURE MAJOR PROJECTS TO REPLACE OLD FACILITIES OR CONSTRUCT ADDITIONAL FACILITIES (i.e., constructing another storage tank, replacing a large section of the water distribution system, drilling a well, etc.)?

YES 74% NO 26%

10. PLEASE INDICATE WHAT STATEMENT(S) BEST DESCRIBES THE FINANCIAL CONDITION OF YOUR WATER SYSTEM?

60% Our budget is balanced. The yearly income is sufficient to meet our needs. We are also setting aside some funds for future major capital expenditures.

30% Our budget is balanced. However, we are not setting aside some funds for future major capital expenditures. If a large water improvement project becomes necessary, we will likely have to borrow the money to construct it.

2% Usually, we have excess funds in the water budget. These excess funds are put to other uses (e.g., transferred to the sewer system account, trash pickup account, etc.).

3% Usually our water system account is in the red. However, we do transfer funds from other activities (e.g., electrical generation, sewer fund, etc.) and this balances the water system budget.

5% Our water system will operate in the red this year. We will have to raise our rates to balance the budget.

11. ANY COMMENTS OR QUESTIONS? Please indicate below.

Exhibit 9-1 continued

FUTURE NEEDS SURVEY

1. SYSTEM _____

This form completed by: _____

2. WHAT STATEMENT BEST DESCRIBES YOUR WATER SYSTEM'S SITUATION:

- 34% Our water system functions well and should meet all normal demands for the next ten years.
- 27% Our water system functions well, but we will have to construct additional facilities to meet expected demands in the next ten years.
- 33% Our water system functions well, but additional facilities will have to be constructed within the next five years to meet normal demands.
- 6% Our water system does not function well. New facilities are needed now to meet normal demands.

3. DOES YOUR WATER SYSTEM CONTEMPLATE A MAJOR IMPROVEMENT PROJECT WITHIN THE NEXT 3 YEARS? IF SO, PLEASE DESCRIBE BRIEFLY:

WHAT IS THE ESTIMATED COST OF THE PROJECT?

HOW DO YOU PLAN TO FINANCE THE PROJECT?

- 30% We have enough cash on hand to finance the project.
- 10% We intend to borrow money from the bond market.
- 60% We intend to apply to the Utah Safe Drinking Water Committee, the Utah Board of Water Resources, or the Utah Community Impact Board for financial assistance.



Exhibit 9-1 continued

4. WHAT STATEMENT BEST DESCRIBES THE CONDITION OF YOUR DISTRIBUTION SYSTEM WITH RESPECT TO FIRE PROTECTION?

- 32% Fire protection is good. All of the distribution system is at least 6" pipe with larger diameter feed lines.
- 59% Fire protection is fair. Most of the distribution system is at least 6" diameter, but we do have some 2" or 4" lines which limit the flow.
- 9% Fire protection is poor. Most of our distribution system is 2" and 4" lines.

5. IN A TYPICAL YEAR, HOW MANY DISTRIBUTION SYSTEM LEAKS ARE REPAIRED?

IN A TYPICAL YEAR, HOW MANY TRANSMISSION LINE LEAKS ARE REPAIRED?

6. WHAT STATEMENT BEST DESCRIBES THE CONDITION OF YOUR DISTRIBUTION SYSTEM?

- 39% All of the system is in excellent shape. Very few leaks.
- 40% Most of the system is in excellent shape. However, there are some areas of town in bad shape.
- 17% The system is in fair shape. We regularly have leaks to repair, but the situation is manageable.
- 4% The system is in bad shape. We are kept busy repairing leaks and there is evidence of deterioration.

7. DO YOUR DISTRIBUTION OR TRANSMISSION LINES CONTAIN ANY LEAD PIPE OR LEAD PACKED JOINTS?

- 43% Yes
- 49% No
- 8% Unknown

8. SINCE OCTOBER 1, 1987, THE STATEWIDE AVERAGE OF MOUNTAIN PRECIPITATION HAS BEEN ABOUT 77% OF NORMAL. IF THIS SITUATION CONTINUES, HOW WILL YOUR SYSTEM BE IMPACTED?

Source: "1990 Need and Cost Survey: Utah Community Drinking Water System," Utah Department of Environmental Quality, Division of Drinking Water, August 1, 1991.

Exhibit 9-2

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SECTION VI: SEWER SYSTEM

NAME OF JURISDICTION _____

NAME OF PERSON COMPLETING THIS SECTION _____

TITLE _____

PHONE _____

A. INVENTORY

1. Do you have a sanitary sewer system? ____ Yes ____ No
2. Do you have a storm sewer system? ____ Yes ____ No
 - a. If No, are individual developers required to provide storm drainage systems? ____ Yes ____ No
3. What is the present number of service connections (or residential equivalents) in your system? ____
4. Approximately how many miles of sewer pipe are contained in your system?
 - a. Collectors
 - i. miles sanitary sewer pipe _____
 - ii. miles storm sewer pipe⁽¹⁾ _____
 - iii. miles combination sanitary/storm sewer pipe _____
 - b. Interceptors
 - i. miles sanitary sewer pipe _____
 - ii. miles storm sewer pipe⁽¹⁾ _____
 - iii. miles combination sanitary/storm sewer pipe _____
5. How many lift or pump stations do you have? _____
6. Does your jurisdiction manage its own pipe system?
____ Yes ____ No
 - a. If No, who is responsible for it?

7. Does your jurisdiction manage its own sewage treatment?
____ Yes ____ No
 - a. If No, who is responsible for treatment?

(1) If your jurisdiction has a separate storm sewer system which has critical repair/reconstruction needs, please complete Part C-2 (page 18).



Exhibit 9-2 continued

Page 16

A. INVENTORY: SEWER SYSTEM (continued)

8. What level of wastewater treatment facilities do you have?

_____ primary _____ secondary _____ Advanced
Wastewater
Treatment _____ none

9. How do you dispose of your sludge? _____

B. CONDITION:

1. What percentage of your system's maintenance needs is currently (1983) being met, compared to the level needed to keep facilities in optimal condition? _____%

a. what percentage was being met in 1978? _____%

2. What percentage of your sewer facilities inventory:

a. is in less than acceptable condition
now? _____%

b. will be in less than acceptable
condition if repair is not accomplished
in 1984? _____%

c. will require repair within the next
five years? _____%

d. is in acceptable condition now and
expected to remain so for five years
or longer? _____%

Sum: 100%

3. Are you currently meeting NPDES permit requirements?

_____ Yes _____ No

4. Are your present facilities adequate to meet 1988 federal discharge standards?

_____ Yes _____ No

a. If No, please estimate the cost of facility improvements necessary to meet these standards:

\$ _____

Exhibit 9-2 continued

C-1. CRITICAL NEEDS ASSESSMENT: SEWER SYSTEM

Please list, in order of priority, all projects which need to be started within the next 5 years (from January 1, 1984). Provide a brief (4-6 word) description of work to be done. Include all "critical projects" (as defined in Instruction Section), regardless of whether they are currently funded. Show estimated total project costs. Attach other sheets as needed, using same format.

Project Name ²	Description	Major Repair	Type of Project (check one) Reconstruction	Other ³ (explain)	84	85	86	87	88	Estimated Cost (1983 \$'s)
<u>Interceptor System</u> Example: 6th Street interceptor	Replacement of 500' of 24" pipe		X		X					\$60,000
<u>Treatment System</u>										

¹Estimated total project cost includes direct construction costs plus the costs associated with architect/engineering and legal services, administration, overhead, taxes, and financing.

²Please include information on sewage ponds and lagoons in this section: do not place in Dams Section.

³If the project is a system expansion project to meet the needs of your existing population, explain in this column.



Exhibit 9-2 continued

C-2. CRITICAL NEEDS ASSESSMENT: STORM SEWERS

Please list, in order of priority, all projects which need to be started within the next 5 years (from January 1, 1984). Provide a brief (4-6 word) description of work to be done. Include all "critical projects" (as defined in Instruction Section), regardless of whether they are currently funded. Show estimated total project costs.¹ Attach other sheets as needed, using same format.

Project Name ²	Description	Major Repair	Type of Project (check one) Reconstruction	Other ³ (explain)	84	85	86	87	88	Estimated Cost (1983 \$'s)
<u>Interceptor System</u>										
<u>Treatment System</u>										

¹Estimated total project cost includes direct construction costs plus the costs associated with architect/engineering and legal services, administration, overhead, taxes, and financing.

²Please include information on sewage ponds and lagoons in this section: do not place in Dams Section.

³If the project is a system expansion project to meet the needs of your existing population, explain in this column.



Exhibit 9-2 continued

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D-1. FUNDING: SEWER SYSTEM

What percentage of total funding requirements for the projects identified in Part C-1 do you anticipate from the following sources:

	1984	1985-88
1. Current expense funds	%	%
2. Revenue bonds	%	%
3. General obligation bonds	%	%
4. Local Improvement Districts	%	%
5. Utility Local Improvement Districts	%	%
6. Grants	%	%
7. Sinking fund	%	%
8. System development fees	%	%
9. Other _____	%	%
	%	%
Subtotal		
10. Shortfall (<u>unfunded</u>)	%	%
Total	100%	100%

Source: "The Washington State Public Works Report," State of Washington Planning and Community Affairs Agency, December 1983.

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CHAPTER 10 - PRIVATIZATION

The Issue

Privately provided utilities and infrastructure were critical to the development of the U.S., especially during the 1800s when government and private sector roles were not firmly sorted out as to who should provide what facilities and services, and a period when raising capital for public works was a difficult challenge. The roles of both the public and private sectors were sufficiently resolved during the 1900s that provision of public infrastructure and the marshalling of capital for public projects became a primary accepted role of both general and special purpose governments, and provision of public facilities by private organizations waned. Governments at all levels dominated the provision of infrastructure items until around 1975, when interest in privately provided public works projects once again became popular. This reversal was primarily the result of certain tax advantages accruing to privately provided projects, such as accelerated depreciation schedules, credits for improving historic properties, or tax free bonds for many kinds of public-private joint ventures and industrial development projects.

The Tax Reform Act of 1986 eliminated many of the special incentives and credits for privately provided public facilities. The topic of privatization, sometimes heralded for its political appeal, but primarily effective as an expansion of the capital resource base for public projects, has continued to attract attention though at less intense levels than before 1986. In most states and communities, there has been active consideration of alternative or innovative financing methods for essential infrastructure projects.

Heilman and Johnson report that there are limited generic options for financing state water projects:²⁶

- 1) State revolving funds;
- 2) Self-financing of projects through bonds (including fees as well as assessments/taxes);
- 3) Authorizations from state budgets;
- 4) Privatization;
- 5) Some combination of the above.

²⁶ Notes from telephone conference on privatization with John Heilman and Gerald Johnson, Auburn University on 10/10/91.



They point out that state governments set the boundaries and rules for financing public projects, and that these vary from state to state. Further, even though states have a dominant role, Heilman and Johnson remind us that most environmental and water infrastructure projects are local, not state, projects. Therefore, financing options of interest are apt to be those used by localities, though authorized or permitted to be utilized by the state government.

There are two eras of privatization. One is the pre-1986 Tax Reform Act period, the other is the post-1986 Tax Reform Act period. Inasmuch as the pre- 1986 world of inducements to privatization no longer exists, this summary concentrates on the post-1986 era and questions associated with privatization under diminished incentives.

In the absence of incentives like accelerated depreciation and tax credits associated with the early privatization period, what advantages remain that are strong enough to motivate communities to select privatization as a feasible method for financing local projects? Inherent efficiencies and regulatory avoidance seem to be the chief advantages that accrue to those electing to privatize the financing of public projects. In addition, if a community is up against its legal borrowing authority, private sector borrowing capacity may enable it to obtain needed infrastructure. There are also disadvantages, which will be discussed later.

Advantages

Advantages to privatization might include:

- 1) Inherent efficiencies because of less frequency and red tape;
- 2) Regulatory reduction (such as Federal Wage and Hour Rates under Davis-Bacon, regulatory paperwork, and lower construction costs due to less onerous specification requirements);
- 3) Integrated design, construction, operation & maintenance;
- 4) Avoiding "over-design" and over-building of facilities;
- 5) Fast-track construction and concomitant time and dollar savings;
- 6) Avoiding "segmented bidding;"
- 7) Assistance from private firms in obtaining capital for construction;

- 8) Vertically integrated bidders (contracting firms) that provide "high design" at low cost since they expect to have operations and maintenance contracts for the facility(ies); ²⁷
- 9) Greater willingness to exchange capital for labor, potentially yielding greater long-term efficiencies.

Disadvantages

As in any public service in which a local government gives up at least part of its control of service delivery to private businesses, especially to for-profit organizations, such dangers as the following exist:

- Service quality may suffer, particularly if the business has financial difficulties. (But on the other hand, in some cases communities have found that private involvement in wastewater treatment facilities has made them better able to meet wastewater effluent standards.) Safety may become secondary to profit.
- Criminal activity is more likely to occur because of the presence of large dollars.
- Fees and charges may be more difficult to control. (Though on the other hand, this may make it somewhat easier to set fees and charges to cover all costs, including a capital reserve, since the business will be somewhat insulated from the political arena.)
- Interfaces and coordination with other public services may suffer.

In addition to these potential problems, many persons in a community will believe it to be inappropriate to turn over to private business a vital public service such as ones dealing with water supply and treatment.

Finally, the public service unions will likely strongly resist turnovers of public jobs to the private sector and battle fiercely against it.

²⁷ Heilman and Johnson have studied the wastewater treatment system in Mt. Vernon, Illinois, which was built recently as a privatized facility. The winning bidder was a firm that designed the facility with substantial economies of operation that would accrue to it as the eventual contract operator. The bidder also assisted with raising capital to finance the facility and used a "fast-track" construction schedule to get the facility on-line early.



Some Observations About the State Role in Privatization

The privatization decision is one for individual communities to make on their own infrastructure. Given the greatly reduced attractiveness of private financing following the Federal Tax Reform Act of 1986, a state might only want to note the possibility of privatization in those cases where some major turn-around in capital-raising and operation and maintenance appears needed.

If, however, the tax laws change once again and provide substantial advantages to the private sector, states might then want to review the options and assist communities in selecting the best ones.

CHAPTER 11 - RECOMMENDATIONS TO THE FEDERAL GOVERNMENT

While this study was too brief to provide major financing recommendations to the Federal government (nor was this a purpose of this work), we here provide some suggestions for relatively low cost Federal activities that we believe could be quite helpful to the states and localities in their attempts to improve community infrastructure. Each of these recommendations is based on the assumption that it would be too expensive for each state to have to undertake these activities. The Federal government is much more likely to have the needed resources, and the findings should be of interest and use to most, if not all, states.

1. Support an examination of project selection procedures. This should include identification of options as to sets of selection criteria, how these criteria should be defined, and suggestions regarding weights or at least suggestions as to the process for determining weights. This work should consider such criteria as "affordability" and health and safety considerations. (See text for more discussion of project selection approaches.) The material should in part be based on an examination of the project selection criteria used in various states, but should not necessarily choose any one process. It is more likely that the best procedures would draw elements from a number of states.

2. Support development of a guide to infrastructure future-needs assessment, such as for drinking water, wastewater treatment, sewerage systems, and solid waste disposal facilities. This should identify specific procedures, both low cost and more expensive ones, provide samples data collection instruments, estimate each procedure's costs in dollars and/or staff time, and discuss the advantages and disadvantages (including limitations). This work should review existing procedures used by states and the Federal government and extract their best elements.

3. Support development of a guide for state and local governments use to evaluate periodically their infrastructure assistance programs. Such guidance should include both low-cost evaluation procedures and optional, more extensive methods. The guide should describe specific procedures to assess progress towards goals and objectives identified, or implied, by state and local legislation and statements of program purposes -- including health and equality considerations.

4. Assist in innovation transfer by supporting in-depth evaluations of various forms of state innovative financial assistance programs (such as the Ohio State Issue #2 decentralization program, one or two of the revolving fund programs, and a bond bank program). The evaluations should have as their central purpose providing information to each state as to ways to improve their financial assistance programs. The evaluation should examine: (a) program success in helping communities improve their infrastructure; (b) the costs of the programs; (c) the ability of each approach to assist communities of different size and different financial strengths; and (d) identify the conditions under which each approach is likely to be successful.



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