Rebuilding the Foundations: A Special Report on State and Local Public Works Financing and Management

March 1990

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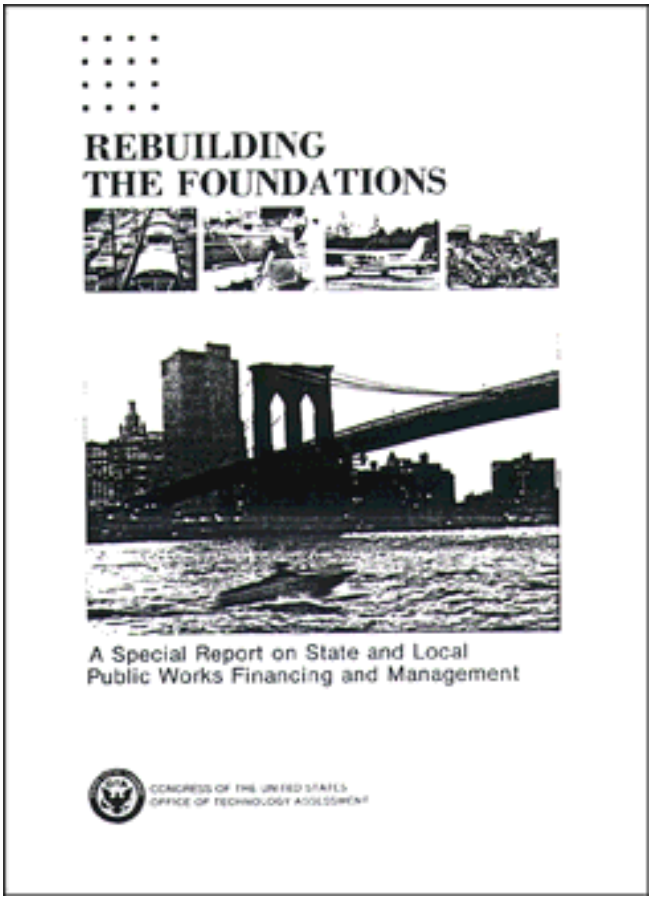

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Foreword

Potholes and sewer problems are perpetual items on local government agendas-they never go away and there is never enough money to fix all of them, or to reconstruct bridges and roads that may be in danger of collapse. In 1988, prompted by the many national studies calling for more investment in public works infrastructure, the Senate Committee on Environment and Public Works and the House Committee on Public Works and Transportation asked the Office of Technology Assessment to evaluate how technologies, management, and financing could improve public works and make them more efficient and productive.

From the outset, OTA planned to review State and local public works management and finance to spotlight issues that needed attention. The review produced so much practical and useful information that a decision was made to publish the results early in 1990 for use by the 101st Congress in this special report, *Rebuilding the Foundations: State and Local Public Works Financing and Management.* OTA's final report for this assessment, *Rebuilding the Foundations: Public Works Technologies, Management, and Financing,* will be completed in the summer of 1990.

Several intertwined issues quickly came to dominate OTA's discussions with State and local public works officials. As this report documents, the concerns centered on how to raise more money for upgrading and maintaining public works, how to enhance public works, and how to preserve the community environment and quality of life. Local officials focused on the complex tasks of resolving conflicts among these issues in a controversy-ridden and politically charged arena. State representatives highlighted the steps they have already taken to increase support for localities. This special report also outlines the roles of Federal, State, and local governments and points to avenues for strengthening the intergovernmental structure for managing and financing public works.

Throughout the study, the advisory panel, workshop participants, and a host of government, industry, and private citizen reviewers contributed a broad and invaluable range of perspectives. OTA thanks them for their substantial commitment of time and energy. Their participation does not necessarily represent endorsement of the contents of the report, for which OTA bears sole responsibility.

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NOTE: OTA appreciates and is grateful for the valuable assistance and thoughtful critiques provided by the advisory panel members. The panel does not, however, necessarily approve, disapprove, or endorse this report. OTA assumes full responsibility for the report and the accuracy of its contents.

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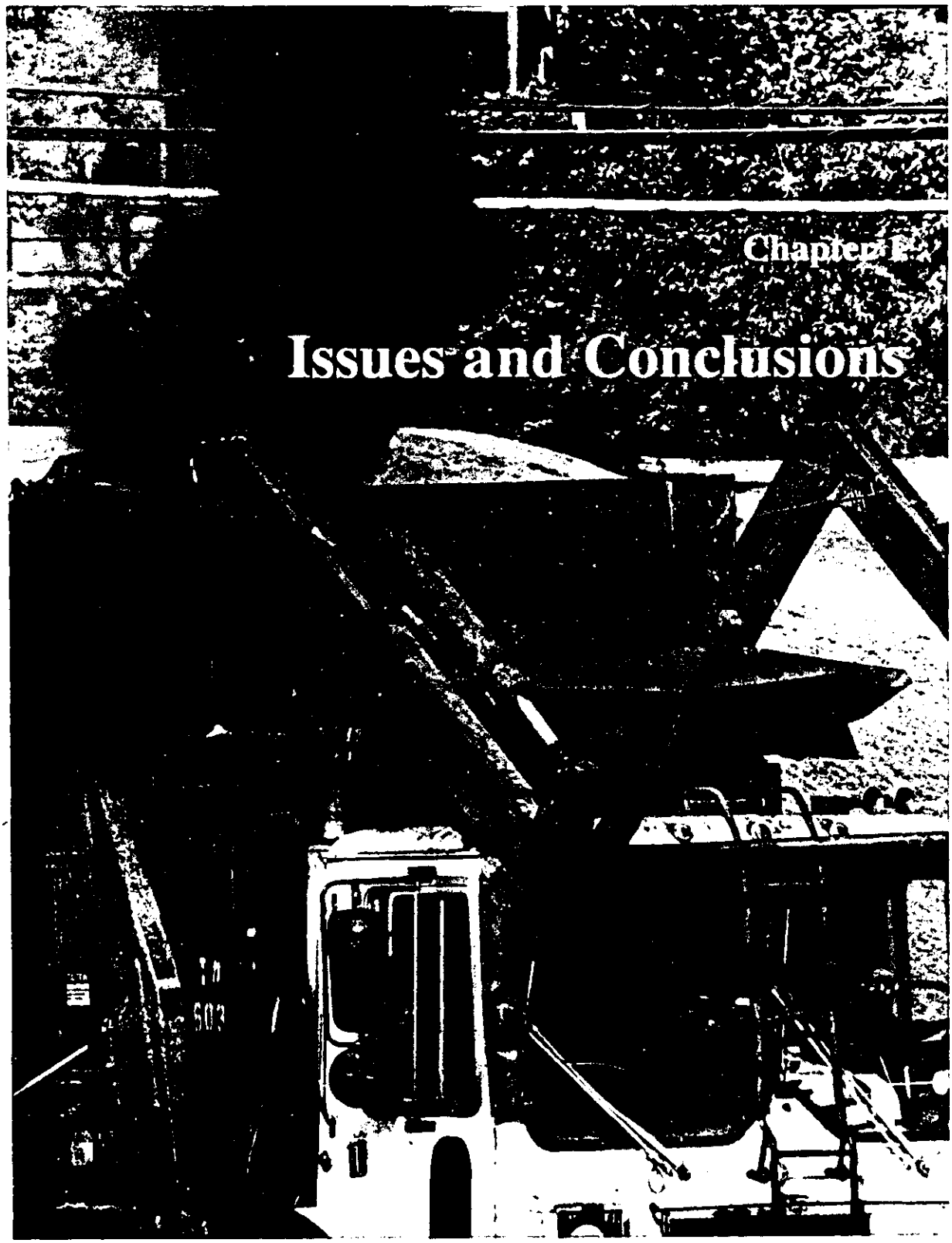

Chapter I

Issues and Conclusions

Photo credit: American Public Works Association

For State and local governments, complying wi h regulations can be a d lemma the solution to one problem such as waste disposal can create another problem air pol ution n this case

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Issues and Conclusions

"We've got all these people moving in from a neighboring State because our taxes are lower. We need roads and sewers for this new development, but we can't pay for them. And no politician wants to raise taxes-that's just too hard!" groaned an *official* from a fast-growing suburban jurisdiction in an industrial Midwestern State.[1]

"We don't need another special purpose tax; we need statewide tax reform," proclaimed the Governor of a Western State that does not have an income tax and relies heavily on sales and property taxes. The legislature did not agree and adjourned without acting on a carefully prepared special tax package for transportation improvements, leaving local officials, who badly needed the revenue, fuming.[2]

Roads, bridges, mass *transportation, airports, ports* and waterways, water supply, wastewater treatment, and solid waste disposal make up the essential infrastructure for public works services. These services underpin the public health and economic vigor of the Nation and are utilized by every citizen and every industry. But as the quotations above make clear, how to pay the bills for our Nation's public works (and other government services) remains a thorny and contentious issue. **As one** informed observer put it: "The impasse is deep: Americans' appetite for government services exceeds their willingness to be taxed."[3]

The Nation's 83,000 local governments are in an unenviable position; they take the direct political heat generated by public works issues. They are responsible for managing and maintaining over 70 percent of the Nation's public works facilities and services. They must also comply with Federal and State standards and regulations over which they have little control. In addition, they are caught in a bind consisting of the need to provide services on the one hand, and laws limiting how much money they can raise and how they can raise it and constituents who resent paying higher taxes on the other.

Federal and State governments, recognizing the importance of keeping the economy running smoothly, have long provided financial assistance for local public works. However, policy changes have reduced Federal contributions over the past decade, and infrastructure needs continue to outrun available dollars. Coping with the fiscal shortfall, meeting higher costs for maintaining transportation services, and ensuring that environmental facilities comply with new national standards create dilemmas for every State and local decisionmaker. Nonetheless, agreement is widespread that public works infrastructure needs upgrading and that additional investment would benefit individuals and the national economy alike. Indeed, one economist projected recently that: "If we increased spending on core infrastructure by $50 billion (1 percent of GNP), productivity would rise by an estimated $62.5 billion in the first year."[4] However, disagreements over how much additional support is needed and the most politically feasible method of providing it dog officials at every level of government.

But money problems are not the entire story. Solutions to urban problems such as air pollution and traffic congestion will require new technologies and 'approaches to transportation and difficult changes in longstanding management practices. For example, the view that". . . unconstrained personal mobility and control of congestion are incompatible in the America of today and tomorrow,"[5] is now widely shared by officials in major cities, but is anathema to many of their constituents. For a number of small, remote communities, compliance with new Federal environmental standards will require financial resources. beyond their fiscal capabilities. The management and technology changes necessary to resolve these problems involve staggering sums of money and require developing consensus among disparate, vocal, and tenacious industry and private citizen interest groups.

Considering all these conflicting pressures, it is small wonder that despairing descriptions of huge needs have not successfully mobilized agreement or a national approach to funding infrastructure. Efforts to date have been piecemeal. Most State govern-

[1]Unidentified official at Dingell/Ford Municipal Officials Conference, Washington, DC, unpublished remarks, June 23, 1989,

[2]John Horsley, commissioner, Kitsap County, WA, personal communication, July 7, 1989.

[3]Robert J. Samuelson, "A Frivolous Decade?" *Washington Post*, Jan. 3, 1990, p. A15.

[4]David Alan Aschauer, economist, Federal Reserve Bank of Chicago, personal communication, Oct. 30, 1989.

[5]Alan S. Boyd, "Transportation Systems of the 21st Breaking Gridlock," *Building Tomorrow: Global Enterprise and the Construction Industry* Academy Press, 1988), p. 19.

Photo credit: American Society of Civil Engineers

State and local **governments must replace and dispose of obsolete transportation equipment and meet competing revenue demands as well.**

ments have increased their support for public works, and local governments have made often heroic efforts. Yet even jurisdictions that have successfully raised taxes or fees for public works have been able to meet only their most pressing needs. Making a difficult situation worse, even when new technologies or management tools are available to make services more productive and efficient, officials are hard pressed to find funds to implement them. The current impasse over public works incorporates three critical and controversial national issues:

- the shortage of money available for competing government services, such as health and social needs, defense, education, and public works;
- the inadequate state of much of the Nation's transportation and environmental infrastructure at a time of rapid technical, industrial, and economic change; and
- the importance of preserving the environment—large, urban areas must address air and noise pollution and land use problems that diminish the quality of life and may limit growth and development, and every jurisdiction must upgrade its public works to comply with new environmental standards.

These three issues are interrelated in numerous, complex ways, but in their simplest forms, they have been on a collision course in recent years. As the 1990s begin, political and financial considerations intrude on every debate about preserving environmental quality and renewing our infrastructure.

To assess the progress of State and local governments in coping with infrastructure problems and to outline the framework for congressional decisionmaking, the Office of Technology Assessment (OTA) has prepared this special report documenting recent trends in public works financing and management. The report presents snapshots of current approaches and identifies successful programs and issues that have yet to be resolved. It provides background information and the State and local context for OTA's forthcoming report, *Rebuilding the Foundation: Public Works Technologies, Management, and Financing,* scheduled to be completed in the summer of 1990.

PAYING THE BILLS

Why have public works reached what many call a crisis point?--primarily because the costs of services that local governments must or wish to provide have outstripped the political acceptability of raising property taxes-their most important source of revenue. In 1987, property taxes generated over 70 percent of the tax revenue collected by all local governments[6]--50 percent for cities, which usually have a more diversified tax base than counties and towns. User fees, sales, income, and dedicated taxes, Federal and State monies, and private sector investment, when it is available, provide the remainder. Required by State laws to balance their budgets and limited by law (in over one-half the States) and by voter resistance in the tax increases they can impose, local governments count on every dollar from each of these sources. Declining Federal monies and State governments that have contributed substantial funding support only for highways and bridges are other contributing factors.

constitutional basis for a Federal role in public works lies in the responsibility of the Federal Government for interstate commerce, the general welfare, and national defense. Over the years our national government has addressed these goals by funding construction of a broad range of public works infrastructure, particularly for transportation and water resources. Historically, transportation facilities that promote interstate commerce-ports

[6]U.S. Department of Commerce, Bureau of the Census, *Government* in (Washington, DC: November 1988), p.

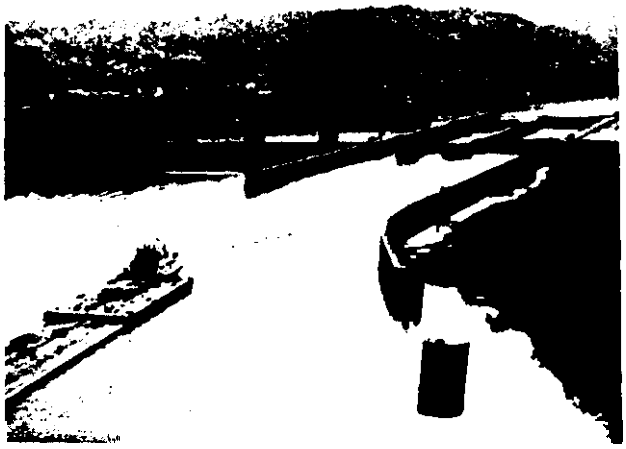


Photo credit: American Society of Civil Engineers

The Federal Government has generously supported construction, maintenance, and operation of ports and waterways.

and waterways, rights-of-way for railroads, airports and airways, and highways-have been supported with Federal monies. Local governments, with some help from their States, have maintained and operated most of these facilities, except for waterways (which are the responsibility of the Army Corps of Engineers) and freight railroads (which are privately owned and managed).

Federal involvement in environmental public works began early in the 20th century with massive investments in reclamation projects to provide water for agricultural and urban development. Over the past several decades, the emphasis has shifted to protecting the public health and natural resources, and the Federal Government has dramatically enlarged its regulatory role by setting standards for air, water supply, and water quality. Greater understanding of health dangers from contaminated drinking water, hazardous waste, improper wastewater treatment, and the health costs of air pollution prompted formation of the Environmental Protection Agency (EPA) in 1970 and tighter Federal regulation. Some Federal finding has been made available through EPA and the Farmers Home Administration of the Department of Agriculture to assist State and local governments in constructing facilities to control health threats.

As the impacts of rising national debt service and payments to individuals for health, welfare, and retirement made themselves felt (see figure l-l), Federal support for infrastructure, which had steadily expanded after World War II, began to shrink in the late 1970s. Indeed, between 1979 and 1989, Federal grants to States and local governments for all purposes, excluding payments to individuals, fell from 11 percent of the Federal budget to 5 percent.[7] Equally striking is the expansion in the share of their Federal grant monies that States and localities provided to individuals for health. These burgeoned from **3** percent of their Federal aid in 1960 to 30 percent in 1989, while the portion of aid used for public works dropped from roughly 46 percent to about 18 percent (see table 1-1, categories of natural resources and environment and transportation).

and local officials accept the need for Federal standards and regulations to protect the public health and welfare. They contend, however, that many grant requirements raise their costs by requiring expenditures for procedures that seem extraneous and by adding substantially to the time needed to complete the project. For example, Federal aid for bridge repair requires that a percentage of Federal monies be used for repairs to "off-system" bridges (bridges on highways that are not eligible for Federal aid); often these bridges are on underutilized or unimportant roads, and the State would prefer to use the money for bridges on major highways.[8] Concerns about Federal programs center on unfunded mandates, grant requirements, such as a focus on new construction rather than maintenance or management improvements, and on the regulatory process,[9] including:

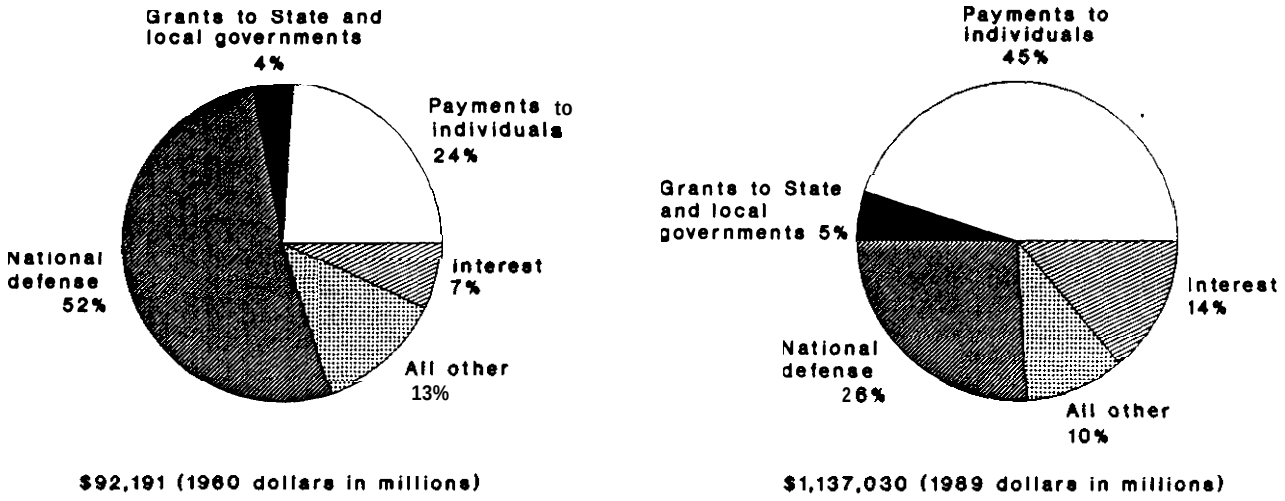
- inflexible administration of standards (standards aim at uniform performance and do not accommodate local variations in need and conditions);
- lack of coordination among Federal agencies engaged in related activities;
- frequent changes in Federal regulations, which may require major local program adjustments;

[7]Office of Management and Budget, Historical *Tables: Budget* of the U.S. Government, *FY* 1990 (Washington, DC: 1989), pp. 128130.

[8]Ian MacGillivray, director, Planning Research Division, Iowa Department of Transportation, in U.S. Congress, Office of Technology Assessment, "Transcript of Proceedings —State and Local Infrastructure Financing and Management Workshop," unpublished transcript, July 7,1989, pp. 118-119,

[9]Office of Technology Assessment Advisory Panel meeting, unpublished remarks, March 1989; and participants in Office of Technology Assessment, op. cit., footnote 8.

Figure 1-1—Federal Expenditures, 1960 and 1989[a]



[a]1989 figures are estimated.
SOURCE: Office of Technology Assessment, 1990, based on Office of Management and Budget data.

- length of time required for Federal review and approvals; and
- requirements for meetings and paperwork.

The complicated application process for approval of a major harbor improvement (shown in chapter 2, figure 2-5) gives ample evidence that these concerns are justified.

The need to conserve and stretch Federal revenue has also created conflicts between Federal tax policies and State and local financing for public works. Tax reforms enacted in 1984, 1986, and 1988 raised the costs of some forms of infrastructure financing by limiting the types of projects eligible for tax-exempt bonds. Arbitrage arrangements, sale/leaseback, and other forms of public-private funding that local governments had used to leverage investment for infrastructure improvements, were **sharply** curtailed. Congress relaxed some of the most severe restrictions on **arbitrage in legislation passed in** late 1989, and while **it is too early** to be certain, OTA **analysis indicates that the** impact of tax reform on traditional public-use projects (sewers and roads, for example) may not be significant in the long term. The decrease in tax-exempt private activity bonds for facilities, such as convention centers and sports complexes, contributed to the significant drop in municipal borrowing between 1986 and 1987. However, the municipal bond market returned to its pre-1985 level in 1988, signaling that jurisdictions were taking on new debt for their traditional public works needs.[10] (For further details see chapter 2.)

State and local governments contribute about 75 percent of total public spending for public works, with most of their share supporting operations and maintenance. Federal grants financed between 40 and 50 percent of capital spending for public works construction during the 1980s,[11] and Federal support plays an important role in finding new projects and major reconstruction. Over the past decade, only highway and air transportation received increasing portions of total Federal funds spent on infrastructure, thanks to trust funds supported by dedicated user fees (see table 1-2). (Although mass transit and waterways also have trust funds, the annual revenues are much smaller.) The fact that no similar dedicated Federal revenue sources have been enacted for environmental programs has had a significant im-

[10]Government Finance Research Center, "Federal Tax Policy and Infrastructure Financing," OTA contractor report, Sept. 13, 1989, p. II-4.
[11]Apogee Research, Inc., database derived from U.S. Department of Commerce, Bureau of the Census and Office of Management and Budget.

Table 1-1—Distribution of Federal Aid to State and Local Governments by Major Categories (In percent)

Categories	1960	1975	1989 (estimated)
Physical infrastructure:			
Natural resources and environment[a]	1.5	4.9	2.9
Transportation	42.7	11.8	15.0
Community and regional development[b]	1.6	5.7	3.7
Human services:			
Education, training, employment, and social services	7.5	24.4	18.2
Health[c]	3.0	17.7	29.5
Income security[d]	37.5	18.8	27.2
	6.2	16.7	3.5
Total	100.0	100.0	100.0

[a]Primarily Environmental Protection Agency construction grants.
[b]Primarily Housing and Urban Development grants; small portions were used for infrastructure improvements.
[c]Primarily grants for medicaid.
[d]Primarily grants for child nutrition, family support, and housing assistance.

SOURCE: Office of Technology Assessment, 1990; Office of Management and Budget, *Historical Tables: Budget of the United States Government, Fiscal Year 1989* (Washington, DC: 1988).

Photo credit: American Society of Civil Engineers

Federal support for construction of wastewater treatment plants is diminishing; at the same time, Federal requirements are becoming stricter.

pact. In 1980,20 percent of Federal grants for public works infrastructure was budgeted for water quality programs, while 80 percent supported transportation. By 1988, funding for water quality had dropped to 10 percent. Concurrent with the drop in Federal appropriations, local costs for complying with Federal environmental standards began to increase as new standards began to take effect.

each State has assumed some greater financial responsibility for public services, increasing expenditures an average of 6 percent over the last 3 years, the fiscal strain has begun to tell. The average rate of State revenue growth (estimated to be 5.4 percent in 1989) has fallen behind the growth in expenditures; in fact, 18 States had to cut back budgeted spending in 1988 because of revenue shortfalls.[12] Moreover, no State has entirely filled the chasm created by cost increases for its infrastructure needs and reductions in Federal support for public works—and funding infrastructure is a lower priority in every State than Medicaid, education, and law enforcement.

Each State has a unique fiscal and economic framework, and several factors bound its capability to plan and pay for public services. For example, the strength and balance of a State's economic base determine its ability to raise both public and private funds. Some tax their residents almost as heavily as the economic base will allow, while others are wealthier than the tax burden suggests. (See figure 1-2 and table 1-3 for information on State fiscal standing.) Most New England and Mideastern States have had strong economies in recent years, enabling them to raise State and local revenues and to offer attractive opportunities for private investment. States without a strong economic base, like West Virginia, or dependent on one resource, like

[12]National Governors' Association and National Association of State Budget Officers, *Fiscal of the* (Washington, DC: 1988), p. 3.

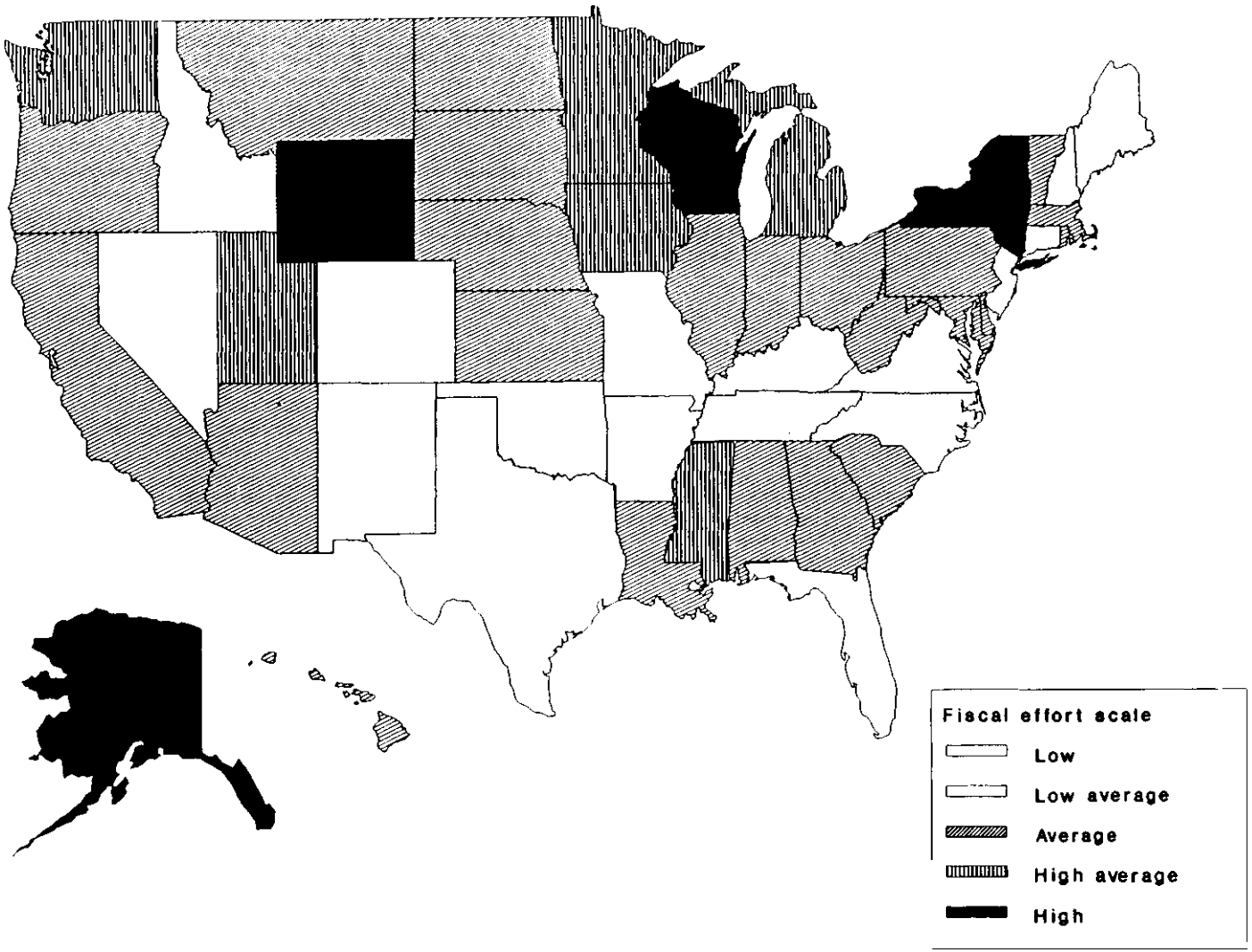
Table 1-2—Federal Infrastructure Expenditures, 1980-88 (1984 dollars in millions)

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Total	$37,164	$35,520	$29,312	$29,009	$29,594	$30,805	$32,240	$28,171	$28,656
Transportation:									
Highways	11,112	10,008	8,204	8,790	9,991	11,796	12,639	10,999	11,746
Mass transit	3,858	4,164	3,930	3,618	3,539	3,090	2,984	2,849	2,740
Rail	2,852	3,993	2,188	1,322	1,473	989	817[a]	722	512
Aviation	4,344	4,057	3,526	4,199	4,347	4,455	4,671	4,690	4,874
Shipping[b]	2,601	2,533	2,687	2,857	2,795	2,886	3,480	2,940	2,571
Water resources[c]	4,927	4,396	3,948	3,755	3,777	3,717	3,548	3,214	3,333
Environmental:									
Water supply	1,380	1,291	599	918	700	705	783	134[d]	449[d]
Wastewater	6,089	5,079	4,231	3,551	2,971	3,167	3,317	2,624	2,430

[a]Drop in expenditure reflects sale of Conrail.
[b]Maritime

reflect repayments of Farmer's Home Administration water supply loans.
on Office of Management and Budget historical data.

Figure 1-2—State Fiscal Effort[a]



[a] Fiscal effort measures how much each State chooses to tax its revenue base compared to other States.

SOURCE: Office of Technology Assessment, 1990, based on Advisory Commission on Intergovernmental Relations data.

Table 1-3—State Fiscal Summary

State	Per-capita income, 1988 (dollars)	Fiscal[a] effort rank, 1986	Personal income tax revenue per capita, 1987	Sales tax rate, 1988	Gas tax rate, 1989 (cents)	Number of interstate miles rated deficient, 1988	EPA revolving wastewater loan fund established, 1989	Wastewater needs,[b] 1988
Alabama	12,851	16	Average	Low	13[c]	Low	Yes	Average
Alaska	19,079	2	No tax	No tax[d]	8[c]	High	Yes	Low
Arizona	14,970	31	Average	Average[d]	17	High		Average
Arkansas	12,219	41	Average	Low[d]	14	Low	Yes	Low
California	18,753	30	High	Average[d]	9[c]	High	Yes	High
Colorado	16,463	45	Average	Low[d]	20	Low	Yes	Low
Connecticut	23,059	46	Low	High	20	Low	Yes	High
Delaware	17,661	25	High	No tax	16	Low	—	Low
District of Columbia	21,389	3	High	High	16	Low	—	Low
Florida	16,603	48	No tax	High[d]	10[c]	Average	Yes	High
Georgia	15,260	23	Average	Low[d]	8	High	Yes	Average
Hawaii	16,753	17	High	Low	11[c]	Low	Yes	Low
Idaho	12,665	38	Average	Average[d]	18	Average	Yes	Low
Illinois	17,575	29	Average	Average[d]	16[c]	Average	Yes	High
Indiana	14,924	27	Average	Average	15	Low	Yes	High
Iowa	14,662	6	Average	Low[d]	20	Average	Yes	Average
Kansas	15,759	34	Average	Low[d]	15	Average	Yes	Low
Kentucky	12,822	35	Average	Average[d]	15	Low	Yes	High
Louisiana	12,292	22	Low	Low[d]	16	Low	Yes	Average
Maine	15,106	39	Average	Average	17	Low	Yes	Low
Maryland	19,487	26	High	Average	19	Low	Yes	Average
Massachusetts	20,816	32	High	Average	11	Low	Yes	High
Michigan	16,552	7	Average	Low	15	High	Yes	High
Minnesota	16,674	8	High	High[d]	20	Low	Yes	Average
Mississippi	11,116	9	Low	High	18[c]	High	Yes	Low

Table 1-3—State Fiscal Summary—Continued

State	Per-capita income,1988 (dollars)	Fiscal[a] effort rank,1986	Personal income tax revenue per capita,1987	Sales tax rate,1988	Gas tax rate,1989 (cents)	Number of interstate miles rated deficient,[b] 1988	EPA revolving wastewater loan fund established, 1989	Wastewater needs,[b] 1988
Missouri	15,452	49	Average	Average[d]	11	High	Yes	Average
Montana	12,866	19	Average	No tax	20[c]	Average	—	Low
Nebraska	14,774	12	Average	Low[d]	22	Low	Yes	Low
Nevada	17,511	50	No tax	High[d]	18[c]	High	Yes	High
New Hampshire	19,434	51	No tax[e]	No tax	14	Low	Yes	Average
New Jersey	21,994	35	Average	High	11	Low	Yes	High
New Mexico	12,488	36	Low	Average[d]	16[c]	Low	Yes	Low
New York	19,305	1	High	Low[d]	8[c]	Average	—	High
North Carolina	14,304	43	Average	Low[d]	21	Low	Yes	High
North Dakota	12,833	15	Low	High[d]	17	High	—	Low
Ohio	15,536	21	Average	Average[d]	18	High	Yes	High
Oklahoma	13,323	40	Low	Low[d]	16[c]	High	Yes	Low
Oregon	14,885	14	High	No tax	16	High	Yes	Average
Pennsylvania	16,233	24	Average	High	12	Average	Yes	High
Rhode Island	16,892	18	Average	High	20	Low	—	Low
South Carolina	12,926	20	Average	Average	16	Low	Yes	Low
South Dakota	12,755	33	No tax	Low[d]	18[c]	Low	Yes	Low
Tennessee	13,873	42	No tax[e]	High[d]	21[c]	High	Yes	Average
Texas	14,586	47	No tax	High[d]	15	High	Yes	High
Utah	12,193	10	Average	Average[d]	19	Low	Yes	Low
Vermont	15,302	28	Average	Low	16	Low	Yes	Low
Virginia	17,675	44	Average	Low[d]	18[c]	High	Yes	Low
Washington	16,473	11	No tax	High[d]	18[c]	Low	Yes	High
West Virginia	11,735	13	Average	High[d]	20	Low	—	Average
Wisconsin	15,524	4	High	Average[d]	21	High	Yes	High
Wyoming	13,609	5	No tax	Low[d]	9	Low	—	Low

[a]Fiscal effort measures how much a State chooses to tax its revenue base compared to other States. See app. B for a full explanation.
[b]Estimates of the relative State cost to build all needed publicly owned wastewater treatment facilities to meet the requirements of the Clean Water Act.
[c]Local option motor fuel tax permitted.
[d]Local option sales tax permitted.
[e]Interest and dividends only.

SOURCE: Office of Technology Assessment, 1990, based on a variety of Federal and State data summaries.

Louisiana have difficulty raising both public and private investment funds, because their low per-capita income limits their taxing ability.

While a rapid rate of population growth heightens demand for services, it can also provide a broader tax base. Fast-growing States and communities can make significant demands on private developers for infrastructure investment, a practical impossibility in nongrowth areas; private investors see little opportunity to recoup an investment in infrastructure where real estate markets are weak. Low-population, low-density States also have great difficulty financing infrastructure programs. Their tax base is limited compared to the scale of needed investments, and costs are relatively higher than those of more populous districts, which can benefit from economies of scale.

Finally, political factors can override physical and economic variables and have a major influence on a jurisdiction's ability to raise revenues. Taxpayer revolts against local property tax increases have made State legislatures reluctant to raise sales or income taxes. Political pressure has pushed many States to limit the amount of bonds local jurisdictions can issue, creating barriers to traditional avenues for public works funding. To finance services needed in specific regions, many States have begun to permit local jurisdictions to impose special levies or taxes for infrastructure projects. California's efforts to overcome the effects of its well-known Proposition 13 illustrate this point (see chapter 3 for details), and a number of local financing districts have been created to finance construction, operations, and maintenance for public works. California's experience has been replicated in **a** number of States.

Yet while special districts ease States' fiscal burdens, they make State comprehensive planning and budgeting for capital improvements extremely difficult. At the local level, too, having a number of independent, separate districts complicates regional planning and management, makes political coordination a formidable task, and places a heavy burden of debt payments on district residents. **Easing restrictions on local find-raising capabilities and consolidating small districts are actions States could take to coordinate and rationalize the financing of public works.**

States coping most effectively with infrastructure financing issues and Federal requirements are those with the capacity and political will to raise capital from a variety of public and private sources, and with an available pool of technical and financial know-how. For example, two States, Washington and New Jersey, have funded special State assistance programs to make low-cost loans to local jurisdictions for infrastructure improvements. The Washington State program was carefully structured to ensure that local jurisdictions tap their own resources fully and plan carefully. (For further information, see boxes 3-B and 3-F in chapter 3.)

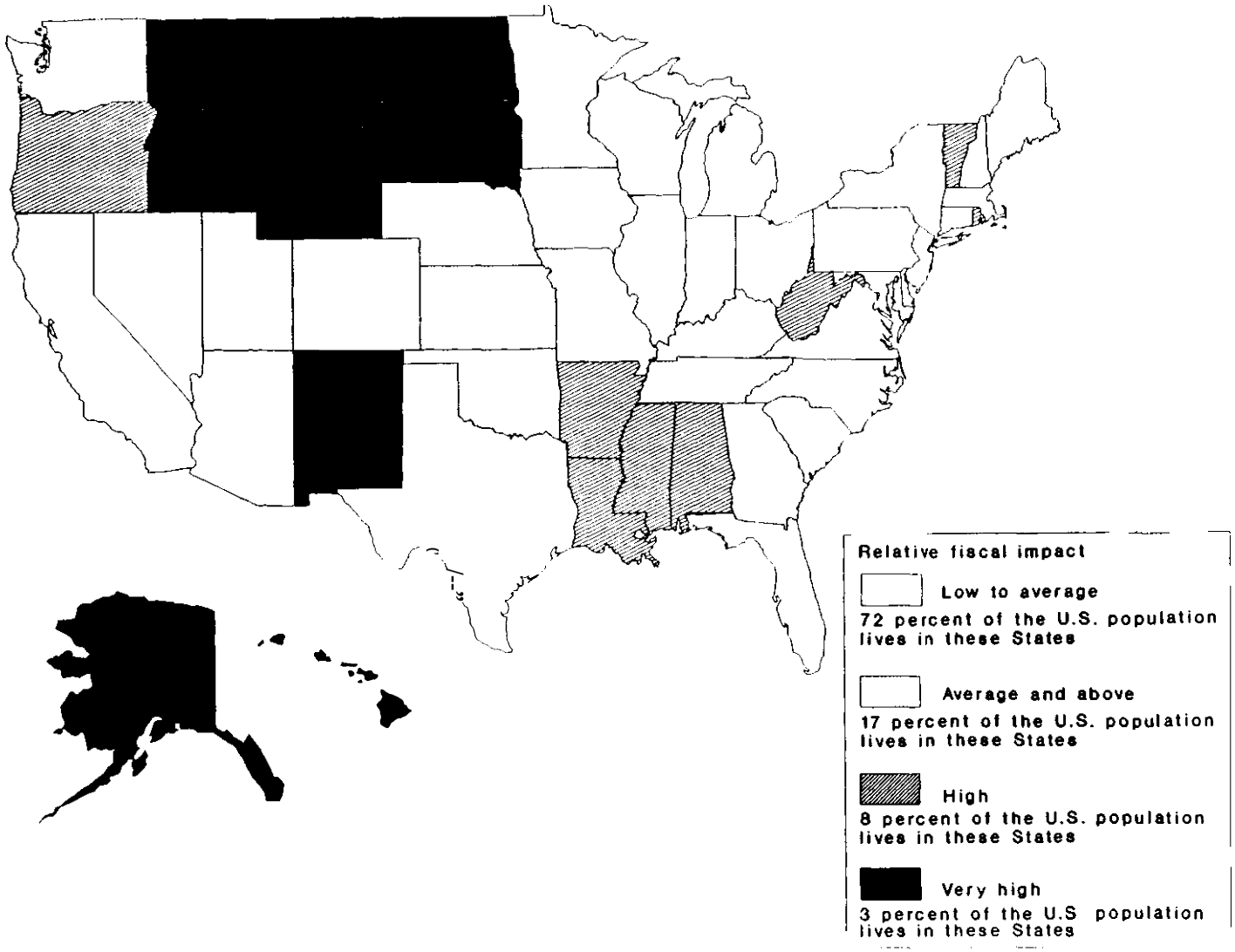
States that would be most affected by additional reductions in Federal grants are large, rural States with small populations; those with poor economic bases; and those heavily dependent on extractive industry (see figure 1-3). Although these States are **home** to less than 11 percent of the Nation's population, their problems are pressing, and OTA finds that some categorical Federal programs designed to help them are based on criteria that work at cross purposes (see box 1-A). In another example, a Federal-aid program that targets bridge repair funds to States with large numbers of substandard bridges penalizes States that have developed bridge maintenance management programs and keep their bridges in good repair.[13]

Benefit Charges or User Fees

When there were fewer demands on State and local financial resources, broad-based sales and income taxes could carry most of the public works funding burden. However, funding programs, such as health care, education, and criminal justice, have depleted general revenues and reached debt ceilings in many States. Accordingly, most States and localities have turned to benefit charges (such as user fees and special assessments) and to State loan programs that promote self-supporting projects for financing public works capital. **Benefit charges are attractive and effective strategies because of their revenue potential, voter acceptability, and service management opportunities. A** few local jurisdictions, such as Phoenix, for example (see chapter 4, box 4-C for details), target service beneficiaries to pay full cost for many public services because of their relative ability to pay compared to social service users. States with low

[13]Representatives of the Departments of Transportation of Georgia, Florida, and Minnesota, at a National Transportation Safety Board Bridge Safety Workshop, unpublished remarks, Sept. 2s, 19s9.

Figure 1-3—Projected Impact on States of Reduced Federal Aid for Public Works[a]



[a]OTA established an arbitrary 50 percent reduction in Federal aid to evaluate the impact on each State (impact is defined as the fiscal burden on each State of replacing lost Federal aid).

SOURCE: Office of Technology Assessment, 1990, based on information provided by Apogee Research, Inc.

Box 1-A—Rocksprings, Texas[1]

Rocksprings, Texas (pop. 1,350) lies 80 miles north of the Mexican border. It is the only incorporated city in a county twice the size of Rhode Island; the nearest neighboring jurisdictions of comparable or larger size are at least 50 miles away.

Agriculture is Rocksprings' economic base, and the average per-capita income is under $6,000—less than that in Mississippi, the poorest State in the country. The city's annual budget is $221,000, and annual property tax revenues are only $30,000, with the remaining revenues coming from the municipally owned water system and franchise sales taxes. How to provide wastewater treatment and solid waste disposal facilities that meet new Federal standards are pressing dilemmas for Rocksprings. The city's budget is already strained, and State and Federal regulations present the city with seemingly insupportable burdens. In the case of wastewater treatment, compliance will exact a heavy price—perhaps greater than the city can bear. In the case of solid waste disposal, there is no workable or affordable alternative to simple noncompliance.

Wastewater Treatment

Rocksprings has no community wastewater collection and treatment system, and residents have taken care of their own sewage treatment needs as they see fit. Some families have installed legal double septic systems with drain fields, while others use sewage injection systems[2] (now illegal) on their properties or resort to cesspools. State environmental and health officials have declared the city's approach unacceptable, and Rocksprings faces the prospect of constructing a $3.5 million wastewater treatment plant.

Though Rocksprings' mayor praises the efforts of the Texas Water Development Board (see chapter 3, box 3-D) to offer advice, the complex Federal grant and loan application process has proven troublesome. The city has applied for a $2 million wastewater treatment plant construction grant (representing 55 percent of the project's costs) from the U.S. Environmental Protection Agency (EPA), and local officials are optimistic about receiving the grant. The rest of the $3.5 million plant would be financed with a Farmers Home Administration (FmHA) grant for 20 percent of the remaining costs, and an FmHA loan for the balance. However, FmHA will not announce grant and loan recipients until long after the EPA decision is made. If Rocksprings does not receive the FmHA funds, it will not be able to proceed with the project and will have to return the EPA grant money. Worse, the city will have spent $43,000 on preliminary engineering work and will have no source of funds to pay the bill.

The alternative to constructing a major wastewater treatment facility would be to continue to permit individual treatment systems, but insist that they be legal, double septic systems or some other type of approved system. These potential solutions seem unworkable for two reasons. First, a legal system cannot be built on less than one-half acre, and most of Rocksprings' residential lots are scarcely one-sixth of an acre. Second, each new legal system would cost the homeowner $12,000 to $15,000—more than the value of the average Rocksprings house. As of September

[1] Material in this box is from Mary Simone, mayor, Rocksprings, Texas, in Office of Technology Assessment "Transcript of Proceeding—Workshop on State and Local Infrastructure Financing and Management," unpublished transcript, July 7, 1989.

[2] A sewage injection well consists of a septic tank that channels sewage through sand and into an injection well which filters the effluent into the caverns under the city. Though these caverns lie over a major aquifer, Rocksprings residents have always theorized that by the time the effluent gets into the aquifer, it has been sufficiently filtered through the limestone.

economic bases and/or small populations cannot assemble sufficient capital from these sources.

Recognizing the advantages of user charges, especially for transportation, a few States are expanding paid highways by authorizing privately funded toll roads, while 47 States have raised gasoline taxes and other motor vehicle user charges over the last 10 years. Sixteen States permit local governments to levy local gasoline taxes (see table 1-3, again). The gas tax is a substantial revenue producer and often more acceptable to voters than broad-based taxes for supporting transportation improvements. Gas taxes and other vehicle user charges are also used in many jurisdictions to finance public transit; a few use such revenues to support a variety of other services. A number of States use aviation-related taxes and fees to support airport development Currently, about 60 percent of road and highway improvements are funded by user charges. 14

Environmental capital improvement programs are increasingly paid for by debt, in the form of revenue

[14] Federal Highway Administration, *Our Nation's Highways: Selected Facts and Figures* (Washington, U.S. Department of Transportation, 1987), p. 20.

1989, the city refused water access rights to any builder who did not install **a legal septic system.** Though denying water rights allows the city to comply with State regulations, it also thwarts chances of attracting much-needed economic development.

Solid Waste Disposal

Since 1931, Rocksprings has maintained a landfill just inside the city limits. The region's geology—solid rock 1,500 to 2,500 feet above sea level—leaves Rocksprings with virtually no soil, so the city has always maintained the landfill by burning weekly and covering remaining garbage with dirt whenever possible. These procedures became illegal in September 1989, when Texas terminated all burning permits. The region simply does not haveenough dirt to cover the waste, and if Rocksprings complies with the order not to burn, its "landfill" will be little more than an open dump—equally illegal.

In seeking an alternative to noncompliance, local officials face the irony that while most areas suffer from an overabundance of garbage, Rocksprings does not have enough. To incinerate efficiently, a city must generate 15 tons of solid waste daily; Rocksprings generates that in a week—an amount also insufficient to make recycling a viable alternative. Private companies will not contract to provide service to Rocksprings because of its remoteness and the small amounts of waste generated. Though the region's Council of Governments is trying to develop a regional plan, the great distance between cities, the unwillingness of one jurisdiction to take another's garbage, and differing standards between communities make a solution through regional planning a doubtful proposition.

Photo credit: Mary Simone, Mayor of Rocksprings, Texas

The Rocksprings landfill

A final alternative for Rocksprings would be to unincorporate. State law mandates that all counties with a population of 30,000 or more and all cities, no matter how small, must provide for the disposal of solid waste within their jurisdictions. Because Rocksprings' county has fewer than 30,000 people, the town could unincorporate, close its landfill, and thereby meet State regulations. But this kind of formal compliance would do nothing to end trash burning; on the contrary, it would encourage it. Faced with the prospect of 579 individual barrels of trash burning within Rocksprings' 1.2 square miles, Rocksprings' mayor wonders why individual burning is considered better than burning 15 tons a week in a supervised landfill. The costs of closing the landfill—$400,000, almost double the city's annual budget—make the prospect of unincorporating even less attractive. Rocksprings will remain incorporated, and a stunning example of the dilemmas associated with establishing appropriate national environmental standards.

bonds backed by user fees. No State has a broad tax or revenue base for environmental services, and no dedicated Federal trust fund exists. A significant share of environmental capital currently comes from Federal grants, which face the perils of annual appropriations and have already fallen significantly from previous levels. Grants for wastewater treatment are scheduled to be eliminated entirely in 1994. The capacity of low-income users to pay significantly higher fees for environmental services is an unresolved issue, and Federal tax code changes have made private capital for environmental programs harder to attract. Because **of Federal trust fund support and because transportation benefit** charges **are proven revenue sources, OTA concludes that States and local governments are currently better able to finance transportation improvements than environmental programs.**

Revolving Loan Funds

Most States have established revolving loan programs for wastewater facilities in anticipation of the phasing out of Federal construction grants. Several have created similar programs for transportation infrastructure as well. Many States remodeled existing loan and grant programs to create these; others started entirely new programs. It is too early to tell how the new revolving loan funds will work,

although some States have already found that local districts accept multiple, complicated Federal regulations much more reluctantly for a loan than for the accustomed grants. **Many States are in the process of working out the technical, administrative, and institutional difficulties inherent in such a complex financial activity. Cuts in Federal appropriations to support State administration of environmental programs hamper their efforts.**

States face two additional challenges: accommodating the needs of those districts too poor to afford a loan and expanding **the** supply of capital needed both now and when **Federal grants** end in 1994. **At that time, funds** for environmental programs must come from higher user charges, State or local general revenues, from new, earmarked State taxes, or a new Federal program.

Earmarked or Dedicated Taxes

From a public policy perspective, earmarking or dedicating revenues for special purposes has the disadvantage of restricting policymakers' fiscal options in responding to changes in priorities. Nonetheless, States have found that earmarking is the best way to ensure a reliable revenue stream. Pressure is heavy in some States without strong general tax bases to use gas tax revenues to pay for social or education programs. Transportation advocates are adamant that States reserve these funds for transportation capital or replacement accounts, which can otherwise be vulnerable to budget cuts.

Despite budget difficulties and objections to new taxes, voters in a number of States and localities have supported new spending initiatives for transportation or environmental improvement programs that meet well-defined priorities. (See chapter 3 for examples in New York, Iowa and Washington State.) One measure of the willingness of a State's voters to pay for public services is the tax burden its voters have accepted relative to the State's economic base and per-capita income (or ability to pay—see table 1-3). Federal grant programs do not take into account the needs of States that have low fiscal capacities, but are already taxing their residents relatively heavily, nor the possibility that States in good financial condition, but which tax relatively lightly, could make a greater fiscal effort. **State and local officials consulted by** OTA **indicated that they would support a larger matching requirement for State and local contributions in return for Federal funds, if the formula recognized** State **and local level of effort.**[15]

States also provide local governments with nonfinancial support for both transportation and environmental public works funding. Such aid may take the form of enabling legislation to permit local option sales, fuel, or income taxes, public-private ventures, and other types of innovative strategies. Some States have established bond banks to help local districts cut the costs of acquiring capital; many are offering technical assistance and help with capital budgeting, and several have established infrastructure research programs. See chapter 3 for more complete descriptions of state programs.

Local

jurisdictions, too, have taken on additional fiscal responsibilities, although many find their financing problems overwhelming. These governments have historically relied on the broad-based property tax to finance public services from education to water supply and streets, largely because no major alternatives were needed. Moreover, the property tax was an approximation--albeit crude—of both ability to pay and benefits received. However, the property tax is no longer adequate. Costs have climbed significantly, and elimination of Federal block grants and revenue sharing, the need to support Medicare and social programs, reductions in Federal categorical grants, and higher Federal standards for environmental services have exacerbated local fiscal woes. Repeated property tax hikes to support public services needed to serve population growth or economic development have met with local resistance, often leading to initiatives that result in State limits on local taxes. Finally, just as for State governments, competition for local general tax revenue is intensifying from education, law enforcement, housing, and social welfare programs, which have no other revenue source. Forty-four percent of localities surveyed by the National League of Cities cut capital spending in 1988[16] and deferred maintenance spending because of budget constraints. Local governments have been particularly hard hit by Federal policy changes and plead for

[15] Office of Technology Assessment, op. cit., footnote 8.

[16] Douglas D. Peterson, *City Fiscal* Research Reports on America's Cities (Washington, DC: National League of Cities, July 1988), p. Ill.

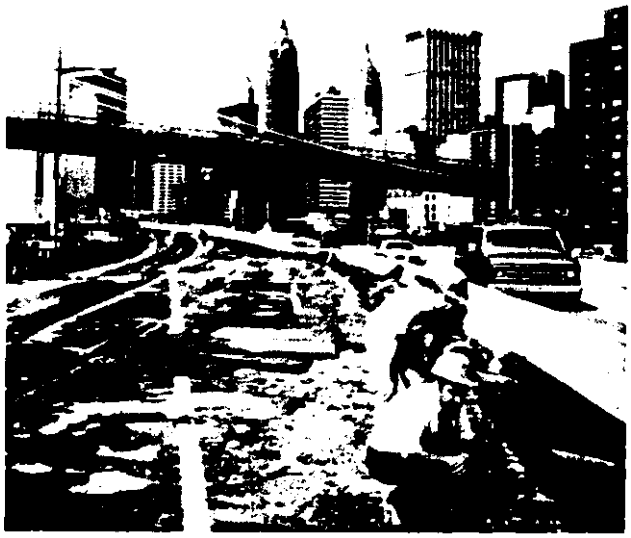


Photo credit: American Society of Civil Engineers

New York City typifies older urban areas with aging facilities that need major rehabilitation.

a consistent Federal tax policy that does not change annually. Recently implemented Federal environmental requirements for solid waste facilities and drinking water will require new or upgraded infrastructure facilities but provide no seed grant money. Costs for complying with the new standards will be substantial and will fall most heavily on small communities and large cities where major improvements are needed (see table 1-4).

Most local governments have diversified and expanded local revenue sources, raising nonproperty taxes, including user fees. Local income and sales taxes have proven to be successful revenue raisers for communities constrained by State-imposed property taxing caps. Earmarking portions of revenues from these taxes for specific improvements, such as public transit or streets and bridges, helps win public approval for the increases. Although these taxes have become an important source of revenue, few communities raised them during 1988, indicating that these sources, too, may have temporarily exhausted their voter acceptability. (See table 1-5 for a summary of local options for meeting environmental standards. Further information may be found in chapter 4.)

State caps on local taxing (in 32 States) or bonding (in 46 States) fall especially heavily on small jurisdictions, because their limited tax bases make them reliant on the property tax. Yet only some States-New Jersey, New Mexico, and Washington, for example-have special programs to aid their *small communities. The* unit cost of public works facilities for small systems is high, since the facilities are small in scale and must be customized to meet local conditions.

Tapping Private Investment

At present, jurisdictions seeking new revenue are likely to target specific areas or beneficiaries as funding sources. Approximately one-quarter of local districts have successful programs using private capital. In some growth regions, costs for infrastructure expansion to serve new development are passed directly to the private sector through developer charges, such as facility construction requirements and impact fees. Chapter 4 gives numerous examples of such programs. The private sector is initiating for-profit ventures in some districts, primarily solid waste projects, with major efforts under way to develop privately financed toll roads in Virginia and California, and high-speed rail lines near Orlando, Florida, and between Las Vegas,. Nevada, and Anaheim, California. Other transportation services that have potential for operating revenues and land development profits may successfully attract direct private investment. See chapter 4 for further details.

Paying Local Bills

Current trends indicate that new infrastructure, particularly in growth areas, will be financed increasingly with funds from benefit charges. This is the result of several factors, including *State* and voter limits on broad-based taxes, the steady and growing demands of social programs on genera! fund revenues, and the relative ability and willingness of beneficiaries to pay.

Utilizing benefit charges, such as targeted user fees, developer charges, and special district revenues, has some compelling advantages over raising broad-based taxes. **First, citizens seem willing to accept the principle that "you pay for what you get," under which they pay directly for services or developers pay for the facilities needed by their projects. Second, higher user fees raise revenues closer to full service costs, and may cut demand, hold steady or even reduce capital**

Table 1-4—Increase[a] in Household User Charges in Municipalities Attributable to Environmental Regulations[b]

Size of municipality	Number of municipalities	Distribution of municipalities (in percent) (up to 50 percent increase in charges)	(50-100 percent increase in charges)	(over 100 percent increase in charges)
Up to 2,500	26,315	45	35	20
2,500-10,000	6,279	90	10	0
10,000-50,000	2,694	80	20	0
50,000-250,000	463	100	0	0
Over 250,000	59	80	20	0
Percent of all municipalities		56	29	15
Percent of total population living in incorporated areas[c]		83	15	2

[a]No jurisdictions will have lower costs.
[b]Because of many simplifying assumptions, the potential increase in user charges may be underestimated.
[c]According to the 1982 Census of Governments, approximately 15 percent of the U.S. population live in unincorporated areas.

SOURCE: Office of Technology Assessment, 1990; based on data in U.S. Environmental Protection Agency, Office of Policy Planning and Evaluation, *Municipalities, Small Business and Agriculture* (Washington, DC: 198S), p. 2-14.

requirements, and permit local governments to design projects that are relatively self-supporting. Third, the community often can collect capital funds up front, avoiding the necessity for bond issues, thereby eliminating interest costs and reserving debt for other public facilities. Last, benefit-based financing gives local governments more autonomy, making them less dependent on State and Federal programs and the strings attached. In many communities, developers support these strategies, finding them systematic and predictable time and money savers.

INADEQUATE PUBLIC WORKS INFRASTRUCTURE

The need to replace and improve public works has been well-documented in more than a dozen national studies since 1980. The National Council on Public Works Improvement estimated in 1988 that annual future infrastructure investment needs could require double the $45 billion invested in 1985.[17] Nationally, county governments project their infrastructure needs to be at least $18 billion a year through 1990,[18] and a single State, Washington, calculates its long-range capital needs to be almost $1 billion annually.[19]

governments aided by States have always been the principal providers of funding for infrastructure (see table 1-6). When Federal funds were more plentiful, State and local governments used such funds for capital to support construction of public works facilities--completion of the Interstate highway system, major improvements to ports such as Long Beach and airports, and transit improvements in Washington, IX, and Boston are examples. State and local governments focused their own revenues on meeting needs in education and other special program areas. Thus, critical as State and local capital is in providing infrastructure, their combined total investment peaked at $34 billion (1984 dollars) in 1972,[20] and recently has languished between $20 billion and $28 billion annually.

Shortfalls in infrastructure funding coincide with major maintenance and capital needs for public works structures that have reached the end of their design lives or have been used much more heavily or deteriorated much more rapidly than anticipated. While the exact magnitude of essential public works improvements may be open to discussion, recent policy statements by major transportation and environmental interest groups[21] demonstrate that a strong consensus has solidified about the inade-

[17]National on Works Improvement, *Foundations: Report on* America's *Public* (Washington, DC: February 1988).
[18]National Association of Counties, *America's Public Works Leaders* (Washington, July 1987), p. 6.
[19]Analytic Services, "State Finance for Local Public Works: Four Case Studies," OTA contractor paper, December 19ss, p. 30.
[20]National Council on Works Improvement, op. cit., footnote 17, p. 7.
[21]Selected examples include: Transportation Alternatives Group, *Basic Directions National Transportation* (Washington, DC: winter 1989); American Association of State Highway and Transportation Officials, "New Transportation Concepts for a New Century," unpub W document, February 1989; the National Governors' Association, *Environmental Programs: Examination of Alternatives* (Washington, DC: 1989); and Victoria Price Kennedy, *New Directions Infrastructure* (Washington, Council of Infrastructure Finance Authorities 1988).

Table 1-5--Local Options for Addressing the Costs of Federal Environmental Standards

Option 1: Search for Funds From State and Federal Governments and Private Sector
Prognosis: Limited additional public funding except as loans; private investment attracted only in growth areas
Option 2: Raise Additional Funds Locally by Increasing:
• **User fees**
Prognosis: Potential for tax-payer acceptance where need is clear and fiscal capacity exists; regressive aspects and equity issues must be addressed; good potential for reducing service demand
• **Developer charges**
Prognosis: Good potential as a source of capital, but limited to growth areas and where State laws permit
• **General taxes**
Prognosis: Tax-payer resistance, perhaps leading to State legal restrictions on increases
• **Dedicated taxes (e.g., portions of sales, income, or "sin" taxes)**
Prognosis: Potential for tax-payer acceptance if need established and fiscal capacity exists
• **Revenue-backed debt**
Prognosis: Potential for tax-payer acceptance unless debt service costs push taxes or fees too high
Option 3: Reallocate Funds From Other Local Programs
Prognosis: Political battles between conflicting goals; likelihood of smaller allocations all around
Option 4: Fail To Comply With Federal Standards
Prognosis: Federal enforcement action, fines and litigation; extensions or waivers; possibility of increased health risks

SOURCE: Office of Technology Assessment, 19S0.

quacy of our infrastructure and the need for more investment. We have fallen behind in repairing potholes, easing traffic congestion to help curb air pollution, providing wastewater treatment, and disposal of municipal solid waste.

Local governments include major cities, tiny townships, and sparsely populated rural counties, as well as a multitude of single-purpose districts, such as the Nation's 600 highway districts, 356 airport authorities, 163 port authorities, and numerous water supply districts.[22] They are the level of government that has day-to-day responsibility for most public works services. For many years separate branches of Federal and State governments have funded and managed the individual public works for which they have responsibility as separate programs. For example, Federal highway programs have not

Photo credit: Massachusetts Port Authority

Facing mounting airport access problems, the Massachusetts Port Authority established a water taxi between Logan Airport and downtown Boston.

considered rail or mass transit alternatives, or the access needs of airports, ports, and waterways. Water supply, wastewater treatment, and solid waste disposal requirements have been set by separate divisions of EPA with inadequate consideration of the interactions of pollutants in different environmental media. (See chapter 2 for a more complete discussion.) State agencies often mirror the Federal structure. The diverse, long-established management patterns virtually ensure that Federal and State subsidies for transportation modes will conflict with each other and that coordination of environmental programs will be minimal.

Rapid shifts by industry, such as the move to just-in-time delivery, to adjust to global economic changes have radically altered infrastructure use. Local governments have tried to respond, but categorical Federal programs give them little flexibility to do so. For example, Federal aid for highway funds may not be used for modernizing traffic management systems to speed traffic flow.[23] Under these circumstances, State and local officials find the large unspent balances in Federal transportation trust funds especially galling (see table 1-7).

Federal program management has created some major obstacles for local governments trying to maximize *the* productivity and efficiency of their

[22]Douglas R. Porter et al., *Special Districts—A Useful Technique for Financing Infrastructure* (Washington, DC: The Urban Land Institute, pp. 4-6.

[23]For further details, see UCongress, Office of Technology Assessment, "Advanced Vehicle/Highway Systems and Urban Traffic Problems," Science, Education, and Transportation Program staff paper, September 1989.

Table 1-6--Public Works Spending by Level of Government (In percent)

Year	Federal			State and local		
	Capital	Operations and maintenance	Total	Capital	Operations and maintenance	Total
1960	28	3	31	36	33	69
1970	23	5	28	37	35	72
1975	22	6	28	31	41	72
1980	25	7	32	23	45	68
1985	22	5	27	21	52	73
1987	19	5	24	24	52	76

[a]Includes spending for highways, airports, mass transit, water resources, wastewater, water supply, and solid waste. Data for 1988 and 1989 are not available.
SOURCE: Apogee Research, Inc., based on data from the U.S. Department of Commerce, Bureau of the Census, and the Office of Management and Budget.

Table 1-7--Federal Public Works Trust Fund Summary, 1988 (current dollars in millions)

Trust Fund	Revenues	Outlays	Balance (end of year)
Highway Trust Fund:			
Highway Account.. .	$13,645	$14,036	$9,020
Transit Account	1,661	696	5,167
Airport and Airway Trust Fund	4,081	2,896	5,841
Inland Waterway Trust Fund	102	59	315
Harbor Maintenance Trust Fund	161	169	8

SOURCE: Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1990* (Washington, DC: 1989).

public works and make them into mutually supportive systems. The following summary provides a snapshot of each transportation and environmental public work infrastructure segment and identifies possible short-term relief options. For a more complete picture, see the analogous sections of chapters 2, 3, and 4. **Long-term improvements to public works management and financing will require major changes in Federal transportation and environmental program management and congressional oversight** and will be discussed in **OTA's** forthcoming report on public works technologies, management, and financing.

Highways

The Federal Government provides about one-quarter of the financing for highways and bridges, sharing the responsibilities with States, which fund about one-half, and local jurisdictions, which provide the remainder. Federal finding is administered through State highway departments, usually long-established and experienced organizations. The Federal-Aid Highway Program supports about 22 percent of the Nation's road mileage; these streets and highways carry 79 percent of the total vehicle-miles traveled.[24] Federal funds to State highway agencies primarily target the Interstate Program. In addition, the Federal-Aid Primary Program aids major arterial highways; the Federal-Aid Urban System targets aid to urban areas; the Federal-Aid Secondary Program supports farm-to-market roads; and the Highway Bridge Replacement and Rehabilitation Program funds bridge improvements.

The Federal Interstate highway program encouraged suburban development, although this was not its major purpose. The development occurred under weak State requirements and inadequate local land-use planning and zoning laws and has badly overloaded many local roads. State and local officials claim that Federal grant requirements and construction standards have contributed significantly to raising capital and maintenance costs. Recent changes in Federal policies on permissible truck lengths and weights brought productivity gains to industry, but increased government costs for highway and bridge maintenance and repair.

- *Problem ureas:* Central cities where roadways are decaying faster than they can be rebuilt, the tax base is burdened with special programs, and the capacity to pay higher taxes is limited. (Taxes on the commercial sector may be increased at the risk of business moving out.) Sprawling suburbs; inadequate investment in technologies and management tools to increase road capacity without building more roads; weak land-use planning and development controls. The need for small towns and rural counties to maintain many miles of lightly traveled roads and numerous bridges at service standards necessary for heavy trucks carrying

[24]Federal Highway Administration, op. cit., footnote 14, p. 5.

seasonal agricultural products only a few weeks a year. Low-income States with heavy tax burdens.

. *Possibilities: Increasing* Federal and State fuel taxes; enacting State legislation to permit local levies. Private investment-not a realistic option for the neediest areas. Toll roads and bridges; dedicated State and local revenues from taxes and benefit charges. Revising Federal grant requirements to allow funds to be used for relieving traffic congestion and alternative mass transportation projects, and to permit tolls on highways constructed with Federal aid. Eliminating tax subsidies for alternate fuels.

Mass Transit

Local governments or public transit authorities operate most systems, although State and Federal sources provide substantial assistance. After reaching a peak in the mid-1980s, Federal support for transit declined to $2.7 billion in 1988 (see table 1-2, again). State and local governments finance most operating and maintenance costs, and State contributions outstripped Federal funds for the first time in 1988. Across the country, transit user charges (fares) account for just under 40 percent of operating expenditures, although this varies according to region.[25] The transit users' willingness and ability to pay are both sensitive to individual incomes and local economic conditions. In addition to fares, mass transit revenues come from agency-issued revenue bonds, subsidies from local and State general funds, Federal grants from a dedicated 1 cent share of the 9-cent per-gallon Federal gas tax, State gasoline taxes and vehicle registration fees, tolls, and in some metropolitan areas, a dedicated sales tax.

Federal tax and regulatory policy has had a small but important impact on mass transit financing, usually raising costs. The Tax Reform Acts of the 1980s eliminated many private investment opportunities, particularly for purchase of equipment, while Federal equipment requirements, air quality regulations, and fuel taxes all affect costs. Federal grant categories do not always fit well with a jurisdiction's critical needs; small cities may receive more capital funds than they can use, while large cities remain in desperate need of new equipment and facilities.

- *Problem areas:* Suburb-to-suburb commutes where conventional mass transit is not appropriate, but alternatives have not been developed. Growth areas where planning and development controls are weak. Old central cities and older suburbs where capital facilities are wearing out and the percentage of users below the poverty line is increasing. Jurisdictions in which the population is aging and the tax base is eroding. Diffuse mass transit benefits, which affect many only indirectly through easier access to downtown and reduced traffic congestion and air pollution. These make it difficult to establish an adequate, reliable, and equitable local revenue base.
- *Possibilities:* Political leadership and focus on transit needs and benefits. Requiring nonusers who are indirect beneficiaries to share the costs through dedicated taxes. (See the French program discussed in chapter 4, as an example.) Increased support from State and local government general revenues. Additional Federal support from fuel taxes for the largest urban areas. Public-private partnerships.

Aviation

Most major, commercial airports support themselves (with the exception of air traffic control activities) with user charges. Federal investment in aviation increased from $4.3 billion in 1980 to $4.9 billion in 1988 (see table 1-2), with most of the increase used to modernize air traffic control and to expand and renovate airports, especially reliever and general aviation airports. User fees (ticket, cargo, and fuel taxes) provide the majority of these funds. State and local capital funding grew from $960 million in 1980 to $1.3 billion in 1987.[26]

Large commercial airports, usually structured as independent public authorities, rely primarily on debt financing for capital investment. Bonds are backed by revenues from airlines, parking, and concessions. Smaller airports (especially those for general aviation) depend much more heavily on Federal and State assistance, and special Federal subsidies go to a few small airports (at very high unit costs) in remote areas. Some States support airports with general fired appropriations and through dedicated revenues from user fees; some States include airport improvement in State-funded economic de-

[25]Thomas D. Hopkins, "Benefit Charges for Financing Infrastructure," OTA contractor report, August 1989, p. 15.

[26]Apogee Research Inc., op. cit., footnote 11.

velopment programs. Many local communities regard airports as key to economic development

Federal tax and regulatory policy does not significantly increase airport costs, but does limit revenue raising capacity. Federal air traffic control improvements will increase airport capacity and thus increase airport revenues in the long term.

- *Problem areas:* Noise and vehicular traffic and unplanned, uncontrolled development near metropolitan airports; these all restrict airport expansion potential. Large urban hub airports, which need improved ground access and air traffic control equipment to increase capacity. Small- and medium-size airports important to local travelers and economic activity and as relief airports, but which do not generate enough revenue to support bonds. Equipping, maintaining, and operating airports in remote areas where demand is low. Growing metropolitan areas where land used by small airports is attractive to developers for commercial or residential use.
- *Possibilities:* Continued Federal trust fund support for medium and smaller airports; increased State support where fiscal capability exists; and stronger land-use regulations to protect essential airports from development pressures. Authority to levy an airport head tax to support airport expansion and improvement. Air traffic control and runway improvements, larger aircraft, industry scheduling changes, and minihub development to relieve crowded hubs. Public-private partnerships to provide for ground-side needs. Development of high-speed rail as alternative transport for crowded air corridors.

Railroads

Although rates and service are regulated by the Federal Interstate Commerce Commission, the vast majority of railroads in the United States are privately owned and operated. The major exception is Amtrak, a Federal corporation, which since 1971 has provided subsidized passenger service. In 1987, Federal outlays included $595 million for Amtrak and $23 million for Local Rail Service Assistance, a program aimed at helping local districts rehabilitate worn-out track.[27] At least 20 States provide assistance to local rail service, mostly as grants or loans to small short-line freight carriers. **A** few States with major urbanized areas, such as California, Illinois, and Pennsylvania, subsidize intercity passenger train service to relieve traffic congestion and air pollution.

Sagging railroad profits and investment rebounded in the 1980s after Federal deregulation, although profit margins for railroads still average 5 percent, making it difficult for most to attract new investment capital.[28] Nonetheless, during the 1980s over 200 new, small, short-line railroads have formed, generally using track abandoned by the long-haul companies. Many are undercapitalized, and much of their track was purchased from main lines that had neglected maintenance in preparation for abandonment Thus government support will be important if service is to continue. For railroads to play a much larger role in local transportation, however, rail service must be better integrated with other transportation modes, public officials and private executives must work in concert, and legal and institutional issues (liability is one example) must, be resolved.

- *Problem areas: States,* regions, and especially agricultural areas and small communities where rail service is inadequate, undercapitalized, or has been abandoned. Locations where potential profit margins are too low to warrant" private investment, and public resources are not available for expanded service. Areas that have excess capacity and tracks that remain underutilized. Adequate funding for passenger service.
- Possibilities: Increased flexibility in Federal transportation grant programs to permit States to opt for rail alternatives to highway. State aid to underserved regions; flexibility in Federal regulations unrelated to safety, for low-profit lines. State, Federal, and industry policies that encourage public-private partnerships.

Ports and Waterways

Ports and waterways can be as important as airports to local economic development. Generally port facilities are owned and managed by a public authority, while inland waterway terminals are privately owned. The Federal Government funds the

[27] Congressional Research Service, *The FY 1989 Federal Budget for Public Infrastructure* (Washington, DC: 1988), p. 6.

[28] "Making Rail Competitive," *Congressional Quarterly,* Aug. 11, 1989, p. 455.

majority of navigation infrastructure costs and has thus played a large role in economic development and competition between ports. Federal policy has changed, and costs for channel dredging must now be shared by local sources. Federal capital outlays for ports and waterways declined from $4.9 billion in 1980 to $3.3 billion in 1988 (see table 1-2). Although more than one-half of the States have funded port and terminal facilities and their outlays for maintenance and operations increased, State and local capital investment dropped from $1.1 billion to about $750 million between 1980 and 1987.[29]

Federal grants and government bonds provide the bulk of capital investment. Most large port authorities can support operating and capital costs with user charges. Small, privately owned terminals may have a difficult time generating adequate revenue if their customer base is limited.

- *Problem areas:* Older ports that need to modernize and expand facilities to remain competitive, but cannot support the investment without raising fees so high as to threaten their competitive position. Port and terminal owners' and waterway users' heavy dependence on Federal financing. Overcapacity-more competing ports and terminals than large modem freight vessels need. Identifying priorities for Federal funds among main system waterway and competing ports-political support may keep small, marginal projects alive, slowing completion of major projects. Ports where disposal of dredged material is a major environmental and cost issue. Absence of well-integrated land transportation systems to support port activity.
- *Possibilities: State* and local public-private partnerships to finance improvements. Higher user charges and stable State funding. Industrial partnerships; industry modernization and development of diverse markets. Reducing the number of ports and shrinking the size of the waterway system to ensure maintenance of essential commercial service.

Drinking Water Supply

The benefits of a pure water supply extend beyond individual users to commerce and industry. Local governments are responsible for most of the Nation's 60,000 water supply systems, although about one-quarter are privately owned. Federal outlays to support water supply in 1988 were small--$449 million-targeted at central cities and poor, rural areas. In comparison, State and local capital expenditures were $5.6 billion in 1987, with operations and maintenance outlays an additional $11.1 billion.[30] State assistance also includes establishing bond banks, revolving loan funds, and interest subsidy programs, and providing technical advice. Local governments finance capital expenditures primarily through bonds backed by user fees and government funds, generally recovering 75 to 80 percent of costs through user fees.[31]

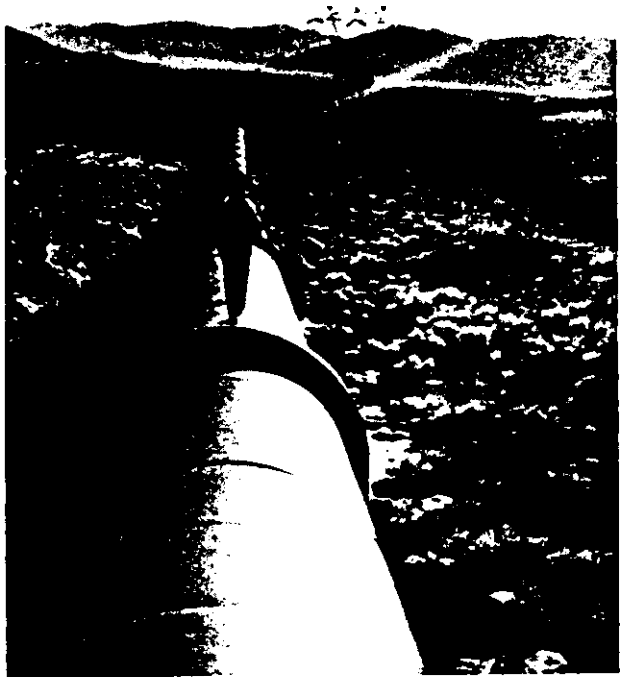


Photo credit: American Society of Civil Engineers

Although clean water is considered a right, supplying urban areas with potable water often involves extensive, costly systems.

The impact of Federal tax and regulatory policy is significant. New water quality standards will require regular monitoring of drinking water sources and filtration to remove specific contaminants. Tax reforms have increased capital costs, particularly for public-private ventures. Many communities will need to increase rates substantially, both to fund

[29] Apogee Research, Inc., op. cit., footnote 11.

[30] Ibid.

[31] Hopkins, op. ciL, footnote 2s, p. 14.

rehabilitation of obsolete facilities and to conserve and regulate water use, possibly reducing the need for new facilities.

- *Problem areas: Small systems* with water supplies that do not meet current standards. Older cities where pipes and facilities are obsolete and decaying, causing significant leakage. Regions with serious contamination of ground and surface water sources. The custom of low pricing for water, which impedes cost recovery and encourages consumption.
- *Possibilities: Dedicated State* or local revenue funds to allow renovation and regular preventive maintenance. Raising rates to recover full service costs. Policies and pricing to manage supply and demand. Separating residential drinking water and outside water supplies. Treatment technology development.

Wastewater Treatment

Federal grants for wastewater facilities have declined from $6 billion in 1980 to $2.4 billion in 1988 (see table 1-2) and will continue to drop as capital grant programs are eliminated. To help fill the revenue gap, State and local capital spending for wastewater treatment rose from $2.3 billion in 1980 to $4.1 billion in 1987. However, a major shortfall in capital investment continues; at least two large cities, Boston and New York, deferred construction of major sewage treatment facilities for most of the 1980s.

More impressive have been increasesin expenditures at State and local level for operation and maintenance, which climbed from $4.6 billion in 1980 to $6.8 billion in 1987.[32] For many years, some States have provided general fund appropriations or bond funds for local wastewater improvements, but local governments have paid the major share of costs for sewage treatment facilities with Federal grants, user fees, and general taxes. In 1987, user fees accounted for between 40 and 70 percent of public expenditures for wastewater treatment, depending on the region.[33]

The potential to raise user fees to cover needed capital investment (in addition to operating expenses) is problematic depending on economic conditions of the community and State. Growing, affluent districts will be able to increase fees, but small towns and older cities with stable or declining populations will find it hard to raise rates the necessary 100 percent or more (see table 1-4). These jurisdictions may not be able to support full capital costs, even though wastewater charges are low compared to those for other utilities.

Federal tax and regulatory policy has a major impact on wastewater treatment. The tax reforms in the 1980s discouraged private investment capital, and new Federal regulations will require many communities to upgrade their facilities. The benefits of wastewater treatment improvements include the health of the general public, the convenience and well-being of individual users, and commercial and industrial establishments, and protection of the Nation's water resources.

- *Problem areas: Small* communities that cannot benefit from economies of size and have low per-capita incomes. Communities where Federal standards disallow natural water (water sources in some regions contain more radon than allowed by EPA, for example). Older cities with obsolete pipes and facilities and insufficient revenues to rebuild or begin preventive maintenance. Low level of technical expertise of many operating personnel. Inadequate research into new technologies and limited access to existing advanced technologies.
- *Possibilities:* Higher user fees. Regional planning and consolidation or sharing of facilities. Federal or State funds targeted at specific problem areas in the form of grants or low-interest loans and technical support. Dedicated Federal or State revenue support for capital needs.

Municipal Solid Waste

Traditionally, the management of solid waste has been the responsibility of local government, but the private sector plays a major role in collection, disposal, and operation of the Nation's 6,000 municipal landfills, in operating incinerators, and in processing recyclable materials. About two-thirds of all solid waste management expenditures are made by private firms, which recover costs through charges.[34] However, during the 1980s State and

[32] **Apogee Research,** Inc., op. **cit., footnote** 11.

[33] **Hopkins,** op. **cit., footnote** 2s, p. 14.

[34] **National Council on Public Works Improvement,** op. cit., footnote 17, p. 78.

local capital expenditures for solid waste more than doubled, reaching almost $1 billion in 1987.[35] Local service is financed by local taxes and by disposal fees, which have increased dramatically during the last decade.[36] Capital expenditures are usually financed by bonds or through commercial loans.

The Federal Government does not finance solid waste facilities with the exception of limited outlays to rural areas. States have enforcement authority over landfill compliance with Federal criteria, which have become increasingly stringent since passage of the Resource Conservation and Recovery Act in 1976 and its 1984 amendments. The requirements have caused bitter struggles over siting and opening new landfills and have forced existing ones to close.[37]

- *Problem areas:* Urban areas without accessible landfill sites and small, rural communities that cannot physically or financially meet Federal criteria. Metropolitan areas where citizen opposition prevents siting of incinerators or landfills. Lack of manufacturing capacity for certain recycled materials, such as newsprint and plastics, and small market demand for some recycled products.
- *Possibilities:* Federal, State, and local policies to encourage waste reduction and recycling; State support of regional cooperation to promote joint use of existing and new facilities; adoption of known improvements in incineration and landfill technology; public education.

PRESERVING THE ENVIRONMENT

Environmental problems represent an excruciating modern dilemma the need for better stewardship of our air, water, and land resources has become critical due to many of the very practices that have helped our Nation grow and flourish. Land use and transportation patterns that fostered economic development and personal mobility in the past now embody environmental issues that will require changes beyond our current ability to conceive in industry operations and personal living and travel habits. State and local officials in major urban and high-growth areas understand that congested highways and airports, substandard air quality, and inadequate solid waste and wastewater facilities make them less attractive to business. However, the changes needed to resolve the issues are so difficult and far reaching that they cannot be understood, developed, or implemented quickly, easily, or inexpensively.

Moreover, Federal policies and programs provide few tools for State and local governments to use in managing the interactions between transportation modes and environmental media Both Congress and the executive branch oversee individual environmental and transportation modes (e.g., air and water quality, mass transit, highways, railroads) through dozens of committees, separate Cabinet departments, and a score of separate agencies. (See chapter 2 for further discussion.) Competition for policy support and revenue among these Federal agencies and State and local governments is characteristic of our governmental system; each industry interest understands this competition well and pursues its goals accordingly. Often the result is Federal programs that are ad hoc and haphazard.

Fragmented responsibility, strong opposing factions, and a focus on individual programs have led to failure by the Federal Government to modernize obsolete management of transportation and environmental programs. For example, an airport official in a city with air pollution problems, who is seeking Federal assistance with multimodal ground access, would need to contact five separate Federal agencies. Local officials needing funding aid for wastewater treatment plants (like the mayor described in box l-A) are frustrated by Federal agencies that work at cross purposes. Air quality standards are currently such potent forces in public policy and transportation discussions in large cities from southern California to New England that regional curbs on individual transportation choices long taken for granted are under serious consideration. Protection of ground water and transportation needs dominate the public agenda for land-use planning and real estate development in Florida. The scale of the environmental agenda is daunting-just to maintain current levels of compliance with environmental standards will require additional local spending

[35]Apogee Research, Inc., op. cit., foonote 11.

[36]National Council on Public Works Improvement, op. cit., footnote 17, p. 55.

[37]U.S. Congress, Office of Technology Assessment, *Facing America's Trash: What Next for Municipal Solid Waste?* OTA-O-424 (Washington, DC: U.S. Government Printing Office, October 1989), p. 3.

estimated at $15.8 billion annually by the year 2000.[38] These local and **regional** issues **are interrelated and so difficult that more comprehensive, systems-oriented, Federal program management and support will be needed if the problems are to be resolved.**

Federal Policies

Since the turn of the century, Federal public works funding has been directed through categorical grants to spur economic development as a way of meeting special needs, but not much consideration was given to the environmental consequences of the development. Specific groups, such as the unemployed or farmers; or resource-poor regions, such as Appalachia, decayed urban cores, or the arid Southwest, were targeted for Federal assistance. Beginning in the 1960s, the Federal Government varied the packaging for Federal funding, moving from tightly structured categorical grants, through loosely bound block grants, to lump-sum revenue sharing. Each grant structure has its political and public-policy trade-offs. State and local governments particularly appreciated revenue sharing, as it gave them the independence to use funds to meet their own priorities.

Congress, however, appears to believe that political and policy goals are better served by categorical grants. These grants permit the Federal Government to target special goals such as highway construction, or to require fair labor and safety practices and environmental assessments, to cite only a few examples, as a condition for receiving Federal dollars. Categorical grant requirements can be important national policy tools, although they do add costs to projects. Preserving them also enables senior congressional members to continue to provide funds directly for specific, home district projects. These projects may or may not match the priorities for funding set by groups established to analyze system needs.[39] For further discussion, see chapter 2.

The wide variation in economic capabilities and tax effort among States and local governments **virtually** ensures that some districts, especially small, rural communities, island territories,[40] and large, urban areas, will not have the necessary resources to upgrade environmental services. Moreover, they have much more difficulty undertaking economic development programs, because many cannot afford to offer tax breaks or infrastructure upgrades to attract a new business or industry. Inflexible Federal grant conditions and standards are a major frustration to State and local managers. A requirement to remove from a water supply substances added to purify it in the first place is baffling to local officials, and finding an acceptable alternative can be difficult.[41] **The Federal challenge is to develop standards that consider local conditions and health risks, that implement national public health and safety goals, and that maintain accountability.**

Public Works Management

Government officials at every level find the lure of economic development compelling, and local growth has been the major driving force for most public works infrastructure construction. Rural communities and economically distressed cities often focus on attracting industry, overlooking the costs of providing transportation infrastructure and environmental services to support new growth. Once these costs are calculated, areas experiencing rapid growth can levy impact fees on development to fund infrastructure; officials in small communities and large, older cities that are losing population do not have that option.

However, even when funding is available, major urban jurisdictions find that transportation decisions have environmental impacts or constraints that limit their options. Examples include the lack of available land for constructing new highways or disposing of solid waste in congested urban areas, noise problems that hinder airport expansion and construction, and traffic-related air quality problems.

Southern California's preliminary air quality control plan, which proposes banning outdoor barbecuing and curtailing truck operations during rush hour

[38] U.S. * ~tal Protection DC: July 1989), p. 2.

[39] Neil H. Diehl, president and chief executive officer, Ingram Barge Lines, and member, Waterway Users Board, personal communication Oct. 18, 1989.

[40] Carolyn Imamura, "Building Foundati"ens: A Pacific Island Perspective," draft background paper prepared for the Pacific Basin Development Council, September 1989, p. 1.

[41] Peter Rogers, professor of environmental engineering, Harvard University, personal communication, Sept. 13, 1989. The substance in question is chlorine.

or requiring them to operate at night, indicates the steps local governments are contemplating to combat air pollution. Traffic congestion in the area is acute almost around the clock; a one-way commute on the freeways can take 2 hours on a bad day. Yet many businesses in southern California, a rapidly developing transportation hub, depend on truck transport. A number of such companies find unacceptable the noise problems and costs of keeping their loading facilities open at night to accommodate deliveries.[42]

In every jurisdiction facing air quality or equally difficult and interrelated environmental and infrastructure issues, alternatives must be examined closely and decisions reached through consultation where possible and negotiation where necessary. The process will inevitably be lengthy and excruciatingly difficult; one participant in the California discussions compared the experience to being" . . . strung up in wet clothes on a cold, windy day."[43]

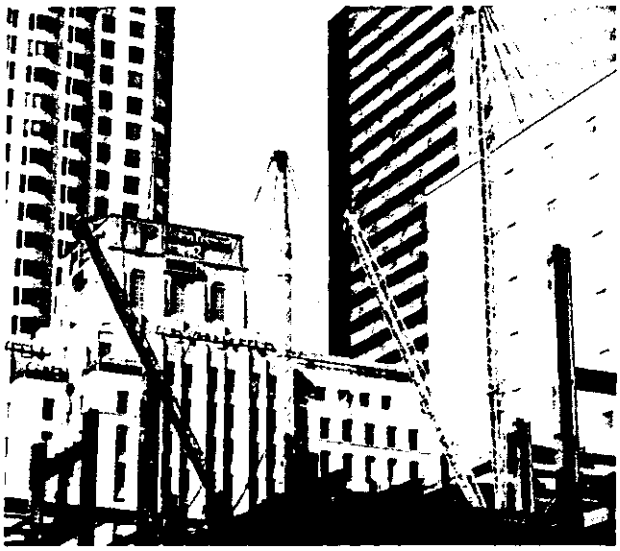


Photo credit: Thomas Burke

Downtown Los Angeles continues to grow, attracting new businesses and revenue, compounding traffic congestion and air quality problems, and highlighting the urban difficulties that accompany weak regional planning.

Regional Planning

Transportation and environmental issues are interrelated in complex ways, and managing them requires good information, careful planning and budgeting, evaluating and monitoring impacts, and the flexibility to devise alternative solutions as unforeseen events unfold. Transportation, environmental, and land-use problems are all multifaceted, and changes in one have major and complicated impacts on the others. Yet few government programs, Federal, State, or local, support or lead to systematic solutions that utilize the multimodal transportation resources available and that are sufficiently sensitive to environmental impacts.

Traffic congestion, air quality, and water supply problems do not respect local boundaries; they are regional issues. **Regional planning organizations are the most logical institutions to address these issues, but OTA found that such groups are almost universally underfunded and lacking in authority to prepare and implement plans tied to capital budgets.** Because of their institutional weaknesses, regional planning agencies are highly dependent on the talents of individual personnel and have little political clout. (See chapters 3 and 4 for further details.)

Although planning agencies are able to generate income by charging for some services, the revenue is insufficient to allow them to maintain core staff and support their technical and service capabilities. However, many of the Federal programs that together funded the necessary overhead for regional planning agencies have been eliminated, and only a few States provide any substantial support. Cuts in planning funds from Federal housing and environmental programs have left transportation monies as the primary Federal underpinning for regional planning. **Lack of Federal finding support for environmental planning is a major concern, and new Federal regulations have escalated the need for good planning.** Regional agencies have demonstrated some aptitude and success in this area. For example, in 1988, Maricopa County, Arizona, adopted a new air pollution control plan, and since then the State legislature has adopted four of the five priority recommendations of the Maricopa Association of Governments' plan.[44] **Because of local government revenue shortages and their reluctance to share planning, decisionmaking, and budgetary powers with neighboring jurisdictions, Federal and State government leadership**

[42]Sarah Siwek, manager of transportation, South Coast Air Quality Management District, personal communication, Nov. 10, 1989.

[43]Karen E. Rasmussen, director, Governmental and Industry Affairs, California Trucking Association, personal communication, Jan. 9, 1990.

[44]Campbell Associates, "Regional Planning," OTA contractor report, June 1989, app. A-4, p. 4.

and perhaps funding will be necessary if regional planning activities are to be effective.

Management Tools

In most areas of environmental infrastructure and many in transportation, the Federal role is primarily that of regulator. Federal enforcement powers and shrinking Federal program funds place strong conflicting pressures on State and local public works providers. While these officials understand the need to meet Federal health and safety standards, many lack the technical expertise and management tools for collecting data to assess needs, develop plans, and choose appropriate technologies to meet Federal requirements. These problems exacerbate the difficulties of making cost-effective decisions.

Advanced technologies can provide some relief for a variety of environmental problems, including air pollution caused by traffic congestion in urban areas.[45] Technological and management alternatives to new construction can increase the capacity of existing highways. **However,** all **the new technologies now under development will not eliminate the need for more effective land-use planning and personnel trained to use, operate, and maintain available equipment and facilities.** Investment in better management tools could enable local governments to link comprehensive land-use plans to capital improvement programs and to affect demand by pricing services according to costs. More flexibility in Federal grants will be necessary for jurisdictions to use such monies to support investment in upgraded management tools and personnel trained to use them.

CONCLUSIONS

If owners of highways, transit, and water treatment systems could charge tolls and fees high enough to cover full capital and operating costs and make a profit besides, transit systems would be as sought after as are airlines, and investors would find toll highways and water treatment facilities as good an investment as the gas company. But this is not the case; to make a profit and meet Federal standards, owners would have to set charges and fees so high as to be politically unpalatable and a hardship for many. Although their economic, social, and health benefits are indisputable, most public works services that are the responsibilities of local governments are not sufficiently lucrative to be attractive to private investors. Accordingly, Federal, State, and local governments are likely to continue to subsidize most roads, ports, airports, public transit, and environmental services, such as wastewater treatment plants, with public tax dollars. **All levels of government will inevitably have to raise taxes or fees to cover their costs, however--or they will have to eliminate or reduce programs and services.**

OTA found widespread agreement on the need to maintain and upgrade public works and to increase support for infrastructure. Yet for the foreseeable future, Federal spending will probably focus on social programs, such as Medicare; on defense (although this is likely to decline slowly); and on servicing the national debt. Consequently, State and local governments must continue to finance a larger share of their public works needs with their own revenues-general and dedicated taxes, fees, and benefit charges-and where feasible, with private sector partners. Each of the revenue sources has political, fiscal, and policy trade-offs (summarized in table 1-8).

Because property taxes have reached levels that burden low- or fixed-income homeowners in many areas, State and local governments need to give serious consideration to other broad-based income possibilities. OTA **finds that benefit charges and earmarked taxes have proven to be relatively reliable and politically acceptable revenue sources.** Many State and local governments have successfully increased the levels of these charges and taxes for specified, top-priority public works projects. However, approval at the ballot box does not come easily, and funding programs often must be submitted to the voters more than once. **Strong and committed political and community leadership, persistence, and a good public information program are key ingredients for success in efforts to increase State and local revenues (see** chapters 3 and 4 for examples).

When the State or locality has made a clear connection between the benefits and the tax or user charge, as is easy to do with fuel taxes and surface transportation improvements, voters are much more likely to approve a finding package. Because the Federal Government provides approximately 24

[45] U.S. Congress, Office of Technology Assessment, op. cit., footnote 23.

Table 1-8--Major Infrastructure Financing Mechanisms: Advantages and Disadvantages

	Advantages	Disadvantages
General fund appropriation . .	*Administrative:* appropriations reflect current legislative priorities *Equity:* all taxpayers contribute to capital projects *Fiscal:* no debt incurred, so projects cost less during periods of inflation	*Administrative:* infrastructure must compete with other spending priorities each year; cannot plan long-term projects around uncertain funding *Equity:* no direct link between beneficiary and who pays, and current generation pays for capital projects that benefit future generations
General obligation bonds	*Equity:* capital costs shared by current and future users *Fiscal:* bonds can raise large amounts of capital; general obligation bonds usually carry lowest available interest rates	*Administrative:* States often impose debt ceilings and require voter approval *Fiscal:* adds to tax burden, especially if interest rates are high
Revenue bonds	*Administrative:* do not require voter approval and are not subject to legislative limits *Equity:* debt service paid by user fees, rather than from general revenues	*Administrative:* require increased reporting and restricted by Tax Reform Act limitations *Fiscal:* usually demand higher interest rates than general obligation bonds
State gas tax	*Administrative:* established structure allows tax increase without additional administrative expense *Equity:* revenues are usually earmarked for transportation, so users pay *Fiscal:* revenues relatively high compared to other user taxes	*Administrative:* revenue fluctuates with use of gas *Equity:* fiscal burdens are not evenly distributed between urban and rural areas *Fiscal:* revenue does not rise with inflation or reflect differences in infrastructure use that may determine capital needs
Other dedicated taxes	*Administrative:* voters prefer dedicated taxes *Fiscal:* provides relatively reliable funding source not subject to annual budgeting	*Administrative:* reduces districts ability to meet changing needs *Fiscal:* major economic downturns can reduce revenues significantly
State revolving funds	*Administrative:* promote greater State independence in project selection Fiscal: debt service requirements provide incentives for charging full cost for services; loans can leverage other sources of funds; loan repayments provide capital for new loans	*Administrative:* States bear increased administrative and financial responsibility *Equity:* poor districts cannot afford loans *Fiscal:* repaying loans will mean increases in user charges or taxes

SOURCE: Office of Technology Assessment, 1990.

percent of total national highway expenditures,[46] raising the Federal fuel taxes could provide funds for a major boost to transportation infrastructure. Increases in the taxes are less likely to encounter opposition from large and powerful transport and construction industry interests if the revenues are targeted for transportation improvements.

The long history of substantial intergovernmental cost-sharing for transportation contrasted to the present uncertainties over funding for environmental infrastructure highlights the importance of consistent Federal support (see table 1-9). While officials are disenchanted with the snail's pace of expenditures from the airport and highway trust funds, none deny that without these funds, our transportation network would be in even worse condition.

In contrast, chances are good that finding difficulties will force a number of local jurisdictions to seek waivers or be unable to meet the costs of compliance with Federal environmental standards unless additional assistance is forthcoming. The needs for environmental services in communities across the country are huge; a stable Federal revenue source would provide assistance to State and local governments struggling with environmental issues that often extend beyond jurisdictional boundaries. OTA **concludes that a strong case can be made for a dedicated source of revenue to bolster local environmental program funding. This is especially important for the Federal Government to consider if it wishes localities to meet its timetable for compliance with newly enacted standards.** A portion of the monies could be used for enhancing EPA's technical capabilities, but the bulk is needed for States to use to provide financial and technical assistance to local jurisdictions.

[46] Federal Highway Administration, op. cit., footnote 14, p. 4.

Table 1-9--Current Sources of Capital for Local Public Works

Sources of revenue-relative share is indicated by one, two, or three stars (*), with three stars (***) signifying the largest.

Public works	Federal contributions[a]	State government contributions[b]	Local government revenues[c]	Private investment[d]
Environmental:				
Water supply	e	*	***	*
Wastewater treatment	**f	*	***	
Solid waste management			**	**
Transportation:				
Highways:				
Interstate	***			
Non-interstate	*	**	***	
Mass transit	***	*	*	
Airports:[g]				
Large	*	*	***	
Medium-small	***	*	*	*
Ports		*	***	h
Waterways	***		*	h
Railroads	*	i		***

[a]Includes Federal taxes and user fees.
[b]Includes State taxes and user fees.
[c]Includes revenues raised locally such as taxes, user fees, and developer charges.
[d]Investment generally reflects ownership of the facility.
[e]Housing and Urban Development (HUD) and Farmers Home Administration (FmHA) grants have been an important source of capital in small communities and rural areas.
[f]Environmental Protection Agency grants are scheduled to end in 1994; HUD and FmHA grants have been an important source of capital in small communities and rural areas.
[g]Category does not include air traffic control.
[h]Small inland ports and waterways are frequently financed with private capital.
[i]Some States have bought abandoned track to support continuation of local rail service.

SOURCE: Office of Technology Assessment, 1990, based on a variety of government data summaries.

Attractive though they may be, benefit charges and private sector strategies frequently are not workable for low-growth districts or small, rural communities where investment of private capital is unlikely to pay off, credit costs are high, and residents have limited ability to pay higher user fees. In many of these communities, the major issue is how to maintain existing levels of services, much less improve them to Federal standards.

Moreover, user fees and benefit charges have socioeconomic trade-offs that pose complex practical and public policy issues. These include equity and administrative issues, and revenue reliability in the case of an economic slowdown, a political backlash, or real hardship. The fairness of requiring a new resident to pay up front for infrastructure through higher land prices compared to long-time residents who paid gradually through property taxes is one issue. Setting and administering fees so they are not an excessive burden on the poor, determining accurately the full costs of public services and allocating costs among direct and indirect beneficiaries pose other complex problems. Services like public transportation and wastewater treatment also benefit people who do not use them directly, making it unfair to depend solely on user fees and requiring hardy political leadership to raise taxes for them. Removing fiscal and land-use decisions from the political process by establishing independent special financing districts is a further **concern. OTA concludes that while issues related to benefit charges are difficult, they are not without solutions. Before embracing user fees as a major means of public works financing, decisionmakers will want to weigh and address each choice carefully.**

Finally, **OTA's** research for this document indicates that State and local public works problems could be eased significantly if the Federal Government developed and implemented a national transportation policy and restructured transportation and environmental program management including congressional oversight.

Despite the interrelated nature of public works infrastructure, Federal-State-local relationships are strongly tied to existing programs that limit the potential for integration across infrastructure functions. For example, Federal subsidies for each of the transportation modes are so different, and industry

and congressional turf battles so vigorous, that making rational plans and decisions about the best use of our Nation's multimodal transportation system is virtually impossible. State and local governments must put together infrastructure improvement programs in a manner currently distorted by outdated Federal program management and conflicting tax policies. Local governments in small towns need technical assistance so that they can determine the most suitable type of wastewater treatment or solid waste disposal facility for meeting both **EPA standards** and their budget requirements. Current Federal regulations and management of environmental programs do not allow for this flexibility.

Given the current Federal and intergovernmental framework, it is unrealistic to expect that States will fired and administer transportation and environmental programs in a comprehensive and systematic manner. Local governments are burdened with difficult public works-related problems, most of which extend beyond their borders and affect the surrounding region as well. Moreover, regional difficulties often do not end at a State boundary. **It is time for the Federal and State Governments to acknowledge these broader aspects of public works and to create a coherent, supportive management framework that includes adequate financing.**

Photo *credit: U.S. D*epartment of *Housing and Urban Development*

Lower income families' ability to pay must be considered in setting higher user fees.

Chapter 2

The Intergovernmental Framework

Photo credit: U.S. Department of Agriculture, Farm Security Administration

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Chapter 2
The Intergovernmental Framework

The changing fiscal fortunes of the national government now stand out as the single most important factor reshaping relations between Washington and the 50 State-1ocal systems. It has transformed the expansive Great Society Federalism of the 1960s into the fairly austere and competitive fend-for-yourselffederalism of the 1980s.[1]

Financing for public works, a major factor in how States and localities manage these services, is profoundly affected by Federal policies. For many years, Federal funds have been an indispensable part of the capital financing packages for ports, waterways, highways, and bridges, and more recently for transit systems, airports, and wastewater treatment and water supply plants in every State and most jurisdictions in the United States. Federal tax policy affects the cost of capital for State and local projects, Federal regulations determine performance and design standards for public works facilities, and Federal grant conditions influence how the planning and construction are carried out.

Although the Constitution provides the basis for a Federal role in public works services, which are fundamentally State or local in nature (see table 2-l), it does not draw clear lines between Federal responsibilities and those of States and localities. Because of these interdependent relationships, States and localities have had to readjust their own public works management continuously, as national economic conditions and Federal policies have changed over the years. During the past decade, shifts in national priorities and severe budget constraints have curtailed Federal spending for public works, left large unspent balances (see table 2-2) in user-funded transportation trust funds, and placed more responsibility on State governments to increase local spending on public works improvements. As if this fiscal upheaval were not enough, environmental concerns have also prompted more stringent Federal mandates and standards for public health-related facilities, and much of the transportation infrastructure has been found to need extensive repair or renewal. (See figures 2-1 and 2-2.)

The realignment in governmental roles that has resulted has been both wrenching and painful. State and local governments confront huge, unexpected funding requirements for public works services and, although they have increased spending, have not been able to put funding packages together fast enough to meet infrastructure needs. Although Congress has acted to cut back Federal funding, members are unwilling to relinquish totally their right to allocate funds for local programs. Strong Federal-local partnerships forged during the 1960s and 1970s have been weakened somewhat, to the distress of local officials who often feel ignored by State administrations and prefer to maintain a direct link to Washington.[2]

Thus, tensions are high among State officials over the reduced levels of Federal program funding and their increased responsibilities, while local governments--large cities and counties and small rural communities, alike--fight to keep their Federal connections in addition to developing new ties to their State governments. How to ensure adequate investment in public works for long-term maintenance, repair, rehabilitation, as well as new construction, in such a contentious climate involves crucial and difficult intergovernmental issues.

PUBLIC SERVICES—WHO PAID FOR WHAT AND HOW

Until about 1900, local governments were the dominant providers of all governmental services, including public works-except for waterways, which have always been constructed, operated, and maintained by the Federal Government. Local governments accounted for 71 percent of total general government expenditures, with Federal spending representing 18 percent of the total, and States providing the remaining 11 percent.[3] Almost all Federal revenue came from consumption taxes; in contrast, *over 50* percent of State revenue came from

[1] John Shannon, former executive director, Advisory Commission on Intergovernmental Relations, as quoted in Norman Beckman, "Developments in Federal-State Relations," *of States: 1988-89 Edition* (Lexington, KY: The Council of State Governments, 1989), p. 438.

[2] John Gunyou, city finance officer, Minneapolis, MN, in U.S. Congress, Office of Technology Assessment, "Transcript of Proceedings — State and Local Infrastructure Management and Financing Workshop," July 7, 1989, p. 189.

[3] J. Richard Aronson and John L. Hilley, *Financing State Local Governments* (Washington, DC: The Brookings Institution, 1986), pp.

Table 2-1--Public Works Spending by Level of Government (in percent)

	Federal			State and local		
Year	Capital	Operations and maintenance	Total	Capital	Operations and maintenance	Total
1960	28	3	31	36	33	69
1970	23	5	28	37	35	72
1975	22	6	28	31	41	72
1980	25	7	32	23	45	68
1985	22	5	27	21	52	73
1987	19	5	24	24	52	76

[a]Includes spending for highways, airports, mass transit, water resources, wastewater, water supply, and solid waste. Data for 1988 and 1989 are not available.
SOURCE: Apogee Research, Inc., based on data from U.S. Department of Commerce, Bureau of the Census, and the Office of Management and Budget.

Table 2-2--Federal **Public Works Trust Fund Summary, 1988 (dollars in millions)**

Trust Fund	Revenues	Outlays	Balance (end of year)
Highway Trust Fund:			
Highway Account ...	$13,645	$14,036	$9,020
Transit Account	1,661	696	5,167
Airport and Airway Trust Fund	4,081	2,896	5,841
Inland Waterway Trust Fund	102	59	315
Harbor Maintenance Trust Fund	161	169	8

SOURCE: Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1990* (Washington, DC: 1989).

property taxes, as did 90 percent of local revenues. Early in this century, beginning an emphasis still important today, Federal funds were provided to assist developing rural and agricultural areas, where revenue sources were scarce. For example, the Bureau of Reclamation was established in 1902 to encourage agricultural expansion, and the Rural Post Roads Act of 1916 funded roads across sparsely settled Western States. Although needs have long since changed, the influence of these policies still lingers.

Spending by all levels of government grew rapidly through the 1920s. Although the relative shares provided by each governmental level remained about the same, the structure and composition of taxes changed markedly. For example, in 1902, revenue from income taxation was so small that government records did not tabulate it separately. However, by 1920 the Federal Government levied taxes on both personal and corporate income, and by 1927 income taxes accounted for 64 percent of Federal tax revenue.

Recovering from diminished prestige and authority after the Civil War and Reconstruction, State governments slowly began to expand their support for public works in the first three decades of the 20th century. Although still not major players, States increased their revenues during the 1920s by introducing personal income taxes.[4] By 1930, 16 States taxed individual incomes; 17 taxed corporate incomes.[5] Relinquishing property taxes as a revenue source to local governments, States gradually introduced excise taxes on motor fuels and cigarettes. Local governments continued to rely solely on the property tax, their primary source of income to this day.

The Depression

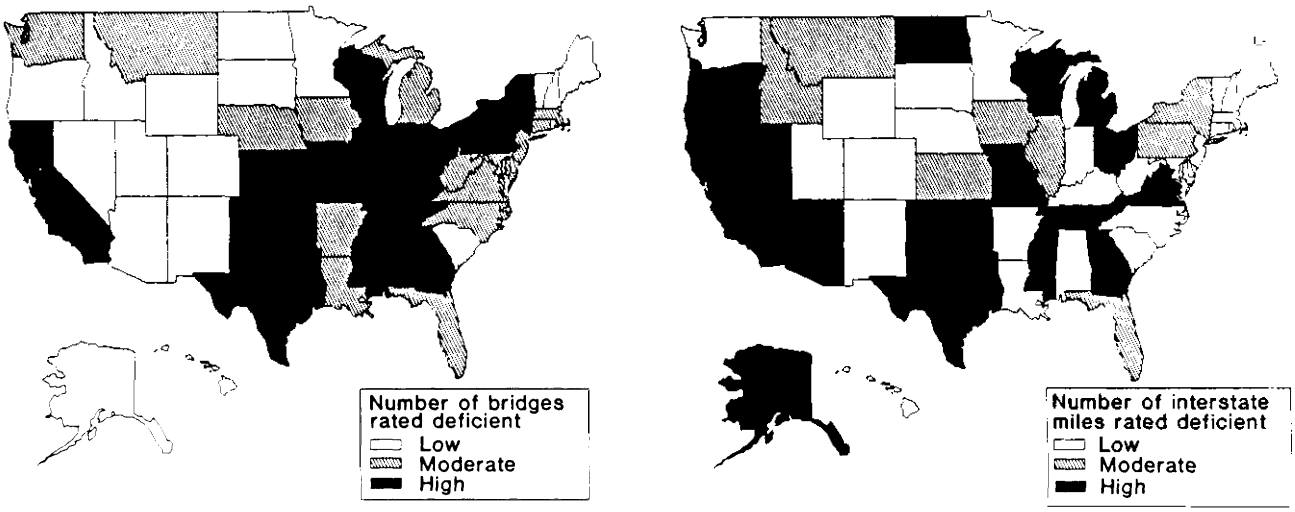
The Depression dramatically altered the Federal-State-local relationship, ultimately expanding the Federal role. Property values and tax revenue plummeted, depriving local governments, the steady providers of public services, of their major source of income. They could not borrow, because banks had gone out of business, and eventually simply ran out of money.[6] Because State governments did not have the resources or the programs to help, the Federal Government stepped in, beginning with emergency programs. Eventually, an extensive system of Federal public assistance grants and other support programs developed. Although some of these were entirely federally funded, many required a State match.

[4]Ibid., p. 17.

[5]Advisory commission on Intergovernmental Relations, *Significant Federalism*, 1989 cd., vol. 1 (Washington, DC: January 19s9), p. 114.

[6]Aronson and Hilley, op. cit., footnote 3, p. 18.

Figure 2-1--Deficient Bridges and Interstate Miles on the Federal Aid System, 1988



[a] Deficient is the Federal Highway Administration term for substandard structural or pavement condition.

SOURCE: Office of Technology Assessment, 1990, based on U.S. Department of Transportation, *The Status of the Nation's Highways and Bridges: Conditions and Performance—Report of the Secretary of Transportation to the United States Congress* (Washington, DC: 1989), pp. 63,73, 155.

To muster additional revenue during the Depression years, States expanded their use of general sales and other selected taxes. Between 1931 and 1938,24 States introduced general sales taxes, and 29 States put excise taxes on liquor.[7] During this period, some political scientists criticized State governments as obsolete and called for scrapping them, except as administrative centers for the Federal Government.[8] They cited the inability of the States to deal with the broad economic problems of the Depression and the inefficiency of providing programs and services on a State by State basis.

Public Sector Expansion After World War II

State and local spending declined during World War II but rebounded during the immediate postwar era, as governments turned to addressing deferred public works needs. For a while, the fiscal climate was good; revenues were adequate because property values increased, and interest rates hit new lows.[9] From 1950 to the mid-1970s, State and local spending grew rapidly; expenditures increased from $30.7 billion in 1954 to $108.8 billion by 1975.[10] During 2 years (1965-67) of the Johnson administration, Congress increased the number of Federal grant programs from 221 to 379, expanding social and health programs to address major societal problems.[11]

The enlarged Federal presence reignited debate over the role and structure of State governments. In 1955, a Federal study by the Kestnbaum Commission recommended major reforms in State government, including revising State constitutions and reorganizing legislatures and procedures. The Commission found that State Governors' authority was undermined by numerous independent agencies and boards, the election of many administrative officers, and weak executive influence over budgets. In addition, State legislatures had restricted their own powers by enacting limits on their ability to tax and borrow and by earmarking revenue.

[7] Advisory Commission cm Intergovernmental Relations, op. cit., footnote 5, pp. 114-115.

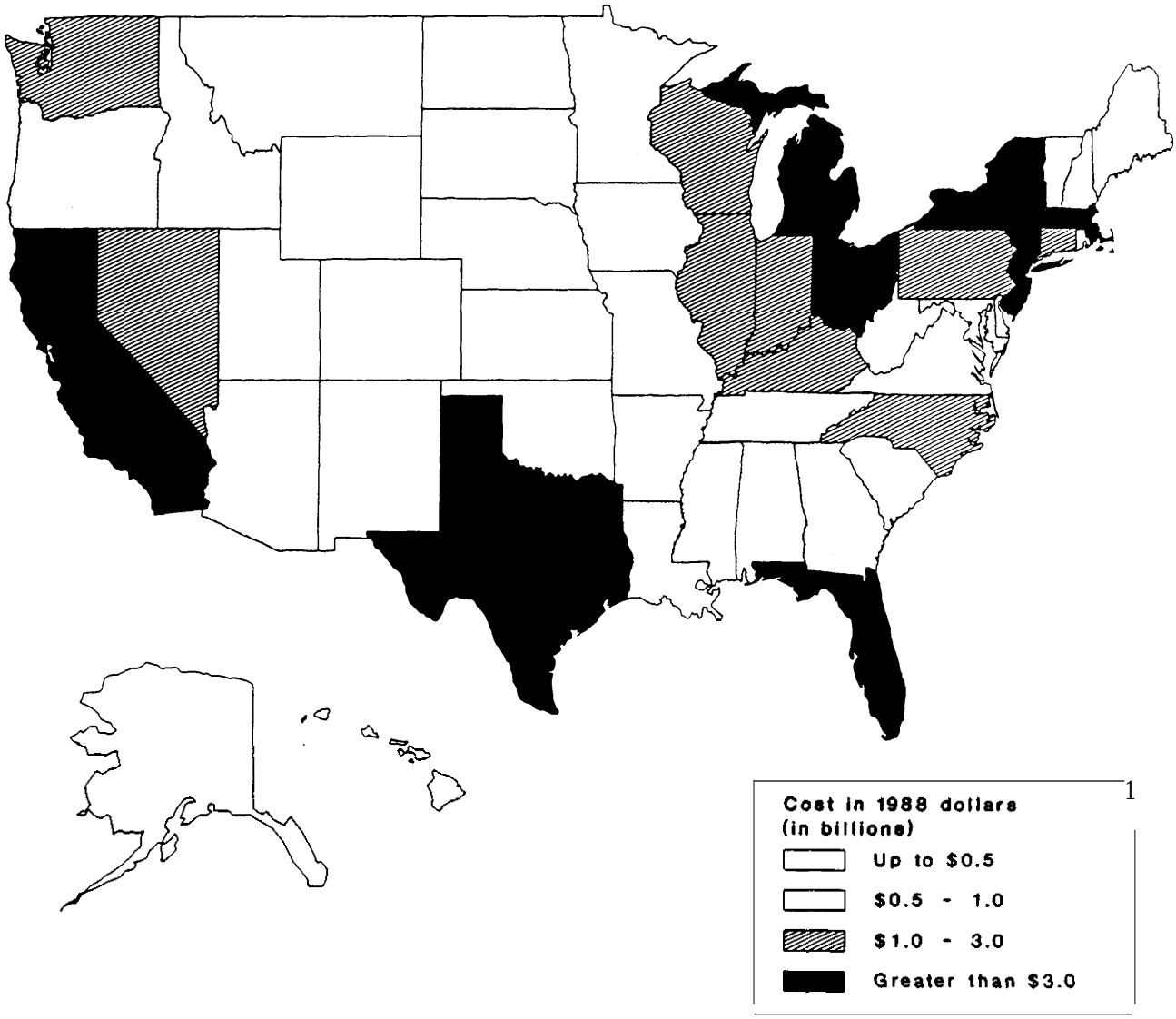
[8] Aronson and Hilley, op. cit., footnote 3, p. 18.

[9] Ibid., p. 19.

[10] Ibid., p. 21.

[11] Ibid., p. 72.

Figure 2-2--Wastewater **Treatment Facility Needs, 1988**



SOURCE: Office of Technology Assessment, 1990, based on U.S. Environmental Protection Agency calculations for construction costs of publicly owned wastewater treatment facilities necessary under the Clean Water Act.

During the next two decades, most States revised their constitutions and modernized their structures and legislative procedures to strengthen the executive authority. In 1981, the Advisory Commission on Intergovernmental Relations, a permanent agency established as a successor to the Kestnbaum Commission, reported that as a result of the reforms, most States had improved their government systems.[12]

Federal Grant Structure—Shifting Sands

Traditionally, most Federal grants and aid have been for specific categories of projects as defined by Federal legislation, such as the construction of airports, transit systems, dams, locks, or highways. States and localities serve as conduits for Federal funds targeted at these categories, and projects must

[12]Ibid., p. 28.

Photo credit: Federal Works Agency

By funding projects such as construction of local roads, the Federal Government provided both employment and transportation improvements during the Depression.

comply with many conditions and regulations, including matching funds, to be eligible for grants.

Congress finds categorical grants attractive because they permit channeling Federal funds to home district projects, allow close control over the use of Federal funds, and minimize State government interference.[13] In contrast, State and local governments view categorical grant requirements as narrow, restrictive, and hard to adapt to specific needs. While some grant requirements are specific to a particular program, most are general and apply to all Federal construction grants. Among those that have the greatest impact on State and local government public works projects are requirements to:

- conduct an environmental impact study prior to project construction,
- pay construction workers the "prevailing wages" in the area,
- provide opportunities for citizen participation,
- provide relocation assistance for people and businesses displaced by projects, and
- initiate intergovernmental consultation concerning project planning.

In the 1960s and 1970s, however, the structure of some Federal grants to State and local governments changed.

Block Grants

In response to criticisms of categorical grants during the 1960s, Congress consolidated some of them into block grants, dedicating these to broad, public purposes, such as the revitalization of cities, which included public works projects. Some block

[13]James Q. Wilson, *American Government—Institutions and Policies* (Lexington, MA: D.C. Heath & Co., 1986), p. 62.

programs--Urban Development Action Grants, for example-were established specifically to enhance the autonomy of local governments, bypassing the States and providing funds directly to local projects. Block grants generally did not require matching funds and, instead, were allocated by formulas based on measures of need. They gave project selection and administrative responsibility to the local district or the State, although they retained many of the restrictions of **categorical grants.**[14]

Block grants continued during the 1970s, but Federal review and oversight increased, as Congress sought to ensure that all State and local projects meet a variety of policy objectives, such as transportation and environmental planning, environmental impact assessment, equal employment opportunity, or requirements to "Buy America."

Revenue Sharing

In another attempt to support local needs with less Federal interference, the Nixon administration introduced revenue sharing in 1972. The program allocated unrestricted Federal funds to States and localities without a match requirement. The funds could be used for any type of government program or project and were distributed by formulas designed to reflect population, local tax effort, and State wealth, and were intended to funnel more Federal funds to poor, heavily taxed States than to richer States. (For a comparison of the Federal dollars per capita received by each State and the amount returned through taxes, see appendix **A.)**

Although block grants and revenue sharing played an important role in Federal policy from 1960 to the 1980s and funded many local infrastructure projects, they did not have strong congressional support and did not grow as rapidly as categorical grants. Moreover, broad-based grant programs lack the influential industry support groups, such as the railroad, highway, and aviation lobbies, that categorical grants and trust fund programs enjoy. These factors took their toll; block grants and revenue sharing, which amounted to 27 percent of all Federal grants in 1979, declined to 21 percent in 1983.[15] Revenue sharing with the States was cut off in 1980 and ended for cities in 1986, as part of the Reagan administration's policies of shifting local program costs to the States and establishing the concept of user-supported trust funds as the basic Federal revenue supply for infrastructure.

The Reagan administration briefly revitalized the block grant concept during the early 1980s by consolidating additional categorical grants, and several of the block grants persist. However, most Federal grants are once again categorical, continuing to focus p-ly on new construction, despite major rehabilitation and maintenance deficits, and retaining elements of their initial underlying Federal goals, regardless of the relevance to current needs and conditions.

Pursuing its goal of reduced Federal domestic spending, the Reagan administration successfully reversed the growth trend in Federal grants to State and local governments (see table 2-3). Between 1980 and 1989, Federal grants to State and local governments for all programs, excluding payments to individuals, dropped from $68 billion to $42 billion, when adjusted for inflation.[16]

PUBLIC WORKS FUNDING AS THE 1990s BEGIN

The share of Federal, State, and local government budgets devoted to public works dropped from 12 percent to below 7 percent between 1960 and 1987,[17] and capital investment decreased markedly, relative to the gross national product (GNP) (see figure 2-3). During the 1980s, annual capital expenditures in adjusted dollars stayed relatively flat, fluctuating between $40 billion and $50 billion annually-well below the pace of national economic growth.[18] State and local governments substantially increased revenue-raising efforts, permitting outlays for maintenance and operations to keep pace with GNP. However, when adjusted for inflation, total Federal spending for public works, capital, maintenance, and operations dropped from $37 billion to $29 billion between 1980 and 1988. (See table 2-4, part B.)

The decreased share of public spending allocated to infrastructure reflects a shift in national priorities

[14]Ibid.

[15]Ibid., p. 65.

[16]Office of Management and Budget, *Budget of the Fiscal 1990* historical tables, pp. 128 and 130.

[17]Apogee Research, Inc., database derived from Us. Department of Commerce, Bureau of the Census, and Office of Management and Budget.

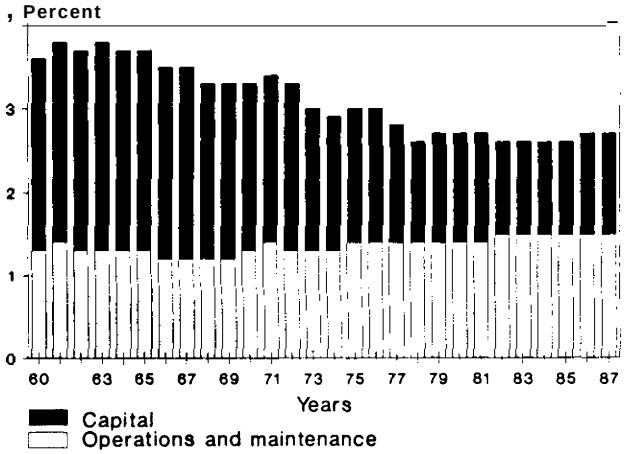
[18]Ibid.

Table 2-3--Federal Grants to State and Local Governments (adjusted 1982 dollars, in billions)

Year	Amount
1960	$25
1965	35
1970	61
1975	87
1980	106
1985	94
1989 estimate	92

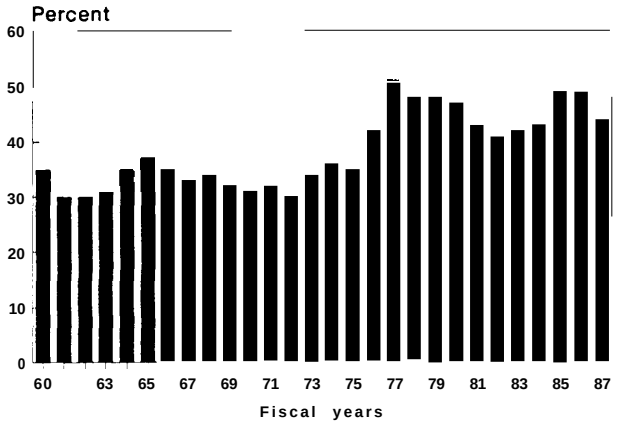
SOURCE: Office of Technology Assessment, 1990, based on data from Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism*, 1988 ed., vol. 2 (Washington, DC: July 1988).

Figure 2-3-Public Works Spending as Percent of Gross National Product



SOURCE: Office of Technology Assessment, 1990, based on information provided by Apogee Research, Inc.

Figure 2-4—State and Local Capital Spending Financed With Federal Grants



SOURCE: Office of Technology Assessment, 1990, *based* on information provided by Apogee Research, Inc.

that has brought significantly higher governmental expenditures for social programs. Currently, State and local governments spend 29 percent of their Federal grant monies on health care, a dramatic rise from 3 percent in 1960. In comparison, 15 percent of current Federal grant funds are directed to transportation compared to 43 percent in 1960.[19]

Even though Federal public works expenditures, when adjusted for inflation, have decreased during the 1980s, Federal grants are crucial to State and local governments, financing 40 to 50 percent of their annual capital spending (see figure 2-4). The share of Federal funds spent on transportation has grown significantly compared to water supply and wastewater treatment programs, thanks primarily to constant replenishment of the highway, aviation, and inland waterway user-supported trust funds. In 1980, 80 percent of Federal infrastructure outlays were directed to transportation programs, and 20 percent to water and water treatment projects. In 1988, transportation's share was 90 percent with 10 percent going to water projects (see table 2-4). The 60 percent reduction in adjusted Federal spending for wastewater treatment from $6 billion in 1980 to $2.4 billion in 1988, reflects Federal policy, established with the Clean Water Act of 1972, to provide construction grants for wastewater treatment plants temporarily as abridge to local self-sufficiency. The phasing out of Federal investment in water supply, while never large, conforms with the traditional convention of local responsibility for water supply.

FEDERAL REGULATORY POLICIES

Through its regulatory standard-setting powers, the Federal Government has a major impact on State and local public works projects. Congress, with its legislative and oversight responsibilities, and the executive branch, primarily the Department of Transportation (DOT) and the Environmental Protection Agency (EPA), Meet virtually every aspect of State and local transportation and environmental public works activities. State and local officials consulted by OTA for this study did not question the necessity for Federal regulations governing environmental quality and protecting public health and

[19]Office of Management and Budget, op. cit, footnote 16, pp. 244 and 248.

Table 2-4—Federal Infrastructure Expenditures, 1980-88 (in millions)

	1980	1981	1982	1983	1984	1985	1986	1987	1988
Part A: Expenditures (unadjusted actual dollars):									
Total	$31,849	$33,388	$29,312	$30,140	$31,872	$34,163	$36,721	$33,158	$34,673
Transportation:									
Highways	9,523	9,407	8,204	9,133	0,761	13,082	14,396	12,946	14,213
Mass transit	3,307	3,914	3,930	3,759	3,811	3,427	3,399	3,353	3,315
Rail	2,444	3,753	2,188	1,374	1,586	1,097	930[a]	850	620
Aviation	3,723	3,814	3,526	4,363	4,682	4,940	5,321	5,520	5,897
Shipping[b]	2,229	2,381	2,687	2,969	3,010	3,201	3,964	3,461	3,111
Water resources[c]	4,223	4,132	3,948	3,901	4,068	4,122	4,041	3,783	4,034
Environmental:									
Water supply	1,182	1,213	599	954	754	782	892	157[d]	543[d]
Wastewater	5,219	4,775	4,231	3,689	3,200	3,512	3,778	3,088	2,941
Part B: Expenditures (1982 dollars adjusted for inflation):									
Total	$37,164	$35,520	$29,312	$29,009	$29,594	$30,805	$32,240	$28,171	$28,656
Transportation:									
Highways	11,112	10,008	8,204	8,790	9,991	11,796	12,639	10,999	11,746
Mass transit	3,858	4,164	3,930	3,618	3,539	3,090	2,984	2,849	2,740
Rail	2,852	3,993	2,188	1,322	1,473	989	817[a]	722	512
Aviation	4,344	4,057	3,526	4,199	4,347	4,455	4,671	4,690	4,874
Shipping[b]	2,601	2,533	2,687	2,857	2,795	2,886	3,480	2,940	2,571
Water resources[c]	4,927	4,396	3,948	3,755	3,777	3,717	3,548	3,214	3,333
Environmental:									
Water supply	1,380	1,291	599	918	700	705	783	134[d]	449[d]
Wastewater	6,089	5,079	4,231	3,551	2,971	3,167	3,317	2,624	2,430

[a]Drop expend reflects sale of Conrail.
[b]Maritime Adminis on
[c]P ncipally harbo and land wat rway
Low spending fig for water supply 98 988 flect repayments of Farmer's Home Administration (FmHA) water supply loans.

SOUR E Congressional Budge Office es mates based Office of Management and Budget historical data.

safety. However, they criticized the unfunded regulatory mandates written into recent legislation and the requirements attached to categorical grants, which, they maintain, create planning, administrative, and financing problems. (For further discussion, see chapters 3 and 4.) Moreover, while they welcome Federal financial aid and reject suggestions to eliminate the transportation trust funds, many chafe at grant requirements, which they view as encroachments on their governmental sovereignty, and at large, unexpended trust fund balances. These intergovernmental issues have their roots in the compromises hammered out between Congress and the executive branch as they established, and continue to change, the responsibilities of the Federal agencies over the years.

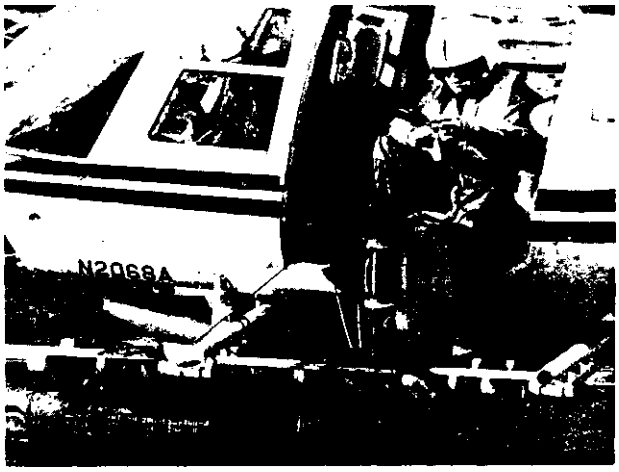


Photo credit: S.C. Delaney, S. Environme tal Protection Agency

A EPA echnician ests water q al ty for compl ance wi eg ations Many ocal gove ments ack e nds and expertise to ensu e hat ei em mee ederal equ ements

of the National Environmental Protection Act of 1%9 marked the start of a tempering of the Federal commitment to developing natural resources for economic purposes-a process that has been evolving over the past three decades. In a recent example, the Clean Water Act Amendments of 1987 strengthened the commitment to environmental protection, expanding Federal jurisdiction to include any body of water in or affecting the commerce chain, with the intent of extending regulation of navigable waters to include wetlands. **Such legislation reinforces the tensions between the goals of economic development and environmental quality. These laws form a major intersecting point for Federal, State, and local transportation and environmental public works programs.**

EPA is the Federal agency that has the largest impact on public works services related to the environment and public health. The Agency was created in 1970 by an executive reorganization order[20] that brought together functional branches of the Departments of Agriculture; Interior; and Health, Education and Welfare; the Atomic Energy Commission; and the Council on Environmental Quality. However, the order did not include an official mandate. Caught between industry advocates and environmental activists, the Agency has struggled, with little success, since its inception with the need to make its programs reflect the interrelated nature of environmental problems. Federal environmental policies continue to target individual environmental media—air, water, and land-even though pollution control in one medium may have an adverse effect on another. This". . . single medium approach is set up like concrete in the practical day-today administrative operations of EPA. . ."[21] and is further reflected in congressional committee structure.

State environmental departments tend to mirror this media-related approach, leaving local governments, which must resolve and pay for pollution problems-including those resulting from cross-media pollution-without adequate planning and technical support. As just one example, requirements to control air pollutants at wastewater treatment facilities could create acidic conditions that would turn the concrete facilities to gypsum.[22] The history of Federal legislation highlights the fragmented framework in which local public works directors operate.

[20]Reorganization Plan No, 3 of 1970.

[21]Lee M. Thomas, "A Systems Approach: Challenge for EPA," September p. 21.

[22]Blake P. Anderson, director of technical services, Fountain Valley, CA, personal communication, June 7, 1989,

Water Supply[23]

In the late 1960s and early 1970s, growing concern over the purity of the Nation's drinking water prompted Congress to pass the Safe Drinking Water Act of 1974[24] as an amendment to the Public Health Service Act. The Act and its amendments require EPA to set standards for drinking water quality; the States are to enforce them. All public water supply systems--whether publicly or privately owned—are subject to the mandate.

Dissatisfied with EPA's implementation of the 1974 Act and faced with the threat of suits by environmental advocates, Congress enacted the Safe Drinking Water Act Amendments of 1986[25] to simplify the EPA regulatory process, stiffen the requirements, and accelerate the pace for EPA to establish and implement new National Primary Drinking Water Regulations. Congress specified 83 contaminants for which EPA was required to promulgate regulations by June 1989, and required that 25 contaminants be added to the list every 3 years. The 1986 Amendments also authorized continued, but relatively small, grants to States and localities, as well as new Federal assistance intended to help small systems monitor for unregulated contaminants and install disinfection equipment.

Wastewater Treatment[26]

With the Federal Water Pollution Control Act (Clean Water Act) of 1972,[27] the Federal Government shouldered some of the responsibility for controlling water pollution for the first time. The Act required EPA to promulgate nationwide minimum standards for municipal and industrial wastewater treatment and authorized a marked increase in Federal funding. The Federal matching rate for local. wastewater treatment construction costs grew from 50 to 75 percent, and annual construction grant appropriations rose five-fold between 1972 and 1977. From 1973 to 1988 Congress granted over $50 billion to municipalities.[28]

The grants were not intended to be permanent, but rather as a bridge to help the localities toward self-sufficiency. Amendments in 1977, 1978, and 1981 created more stringent rules for governing toxic pollutants in wastewater, and Congress simultaneously began returning to States and localities the responsibility for water quality costs. The most dramatic shift was signaled by the 1987 Clean Water Act Amendments,[29] which required that the municipal construction grants program be phased out by 1991 and replaced by capitalization grants for State Revolving Funds. In 1994, all Federal aid to States and localities for wastewater treatment facility construction will end.

Clean Air[30]

By the 1950s, Congress had recognized that the itinerant nature of air pollution rendered efforts at State control insufficient, and in 1963 Congress passed the first Clean Air Act.[31] Amendments passed in 1967[32] enabled the Federal Government to set emission control standards in areas especially troubled by pollution and exercise limited enforcement powers. Amendments in 1970[33] authorized the newly founded EPA to establish minimum air quality standards, specified deadlines for action, and empowered the Agency to take over if a State failed to meet the deadline.

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[23] Material on Safe Drinkin g Water Act and the 1986 Amendments is based on Apogee Research, Inc. and Wade Miller Associates, Inc., "Problems in Financing and Managing Smaller Public Works," Report to the National Council on Public Works Improvement, Sept. 10, 1987, pp. 59-61; Sidney M. *Pollution Law Handbook: Guide to Federal Environmental* ninth ed. Books, 1988); and J. Gordon Arbuckle et al., *Environmental Law Handbook* (Rockville, MD: Government Institutes, Inc., 1987).

[24] Public Law 93-523,88 stat. 1660.

[25] Public Law 99339, 100 stat. 642.

[26] Material on wastewater treatment legislation is based on Claudia Copeland, Congressional R- Service, "Federal Assistancc for Water and Sewer Systems," background briefing paper prepared for Senate Agriculture Committee, Feb. 22, 198% Arbuckle et al., op. cit., footnote 23; and Wolf, op. cit., footnote 23.

[27] Public Law 92-s00, 86 stat. 816.

[28] Copeland, op. cit., footnote 26, p. 2.

[29] Public Law 1004,101 stat. 7.

[30] Material on clean air legislation is based on Arbuckle et al., op. cit., footnote 23, and Wolf, op. cit., footnote 23.

[31] Public Law 88-206, 77 Stat. 392.

[32] Public Law 90148,81 Stat. 485.

[33] Public Law 91-604,84 Stat. 1676.

Photo credit: Virginia Department of Transportation

Special lanes for high occupancy vehicles (HOV), such as the center lanes pictured **above, are one way States can demonstrate a commitment to enforcing the Clean Air Act.**

Despite these legislative efforts, the control of some major pollutants, most notably ozone, has failed. With the Clean Air Act Amendments of 1977,[34] Congress strengthened EPA's enforcement powers, limited its discretion to authorize waivers to nonattainment regions, and imposed new and tighter State planning requirements. Should a State fail to submit an acceptable clean air implementation plan, EPA may cut off Federal funds for highway and sewage treatment facility construction and air quality control programs. EPA can waive sanctions and penalties if it determines that a State is making a good faith compliance effort, lessening the burden on States and localities. Congress is expected to reauthorize the Clean Air Act in 1990 and is likely to include provisions calling for additional controls on mobile pollution sources, such as automobiles, trucks, and buses. Most States and localities may be responsible for major changes in their urban transportation patterns as a result.

Solid

Congress enacted the Solid Waste Disposal Act in 1965,[35] the first Federal legislation to deal directly with solid waste disposal. The goal was to create a national research and development program to determine better solid waste disposal methods.[36] Today, the main piece of Federal legislation governing State management of solid waste is Subtitle D of the Resource Conservation and Recovery Act (RCRA) of 1976.[37] RCRA was intended to improve municipal and industrial waste management by discouraging landfill disposal and encouraging resource recovery technologies.[38] The Act confers most of the planning and regulatory responsibility for the disposal of solid waste on the States and provides some financial assistance to rural commu-

[34]Public Law

[35]Public Law 89-272, 79 Stat. 992.

[36]Public Law Stat.

[37]Public Law 94-580, 90 Stat. 2795.

[38]U.S. Congress, Office of Technology Assessment, Facing *America's Trash: What Next for Municipal Solid Waste?* OTA-()-424 (Washington, DC: U.S. Government Printing Office, October 1989), p. 348,

nities. The Hazardous and Solid Waste Amendments of 1984[39] target hazardous waste management, encourage compliance of State solid waste plans with Federal guidelines, and give EPA the authority to takeover the management of a State's solid waste management plan if implementation efforts are unacceptable.[40]

Transportation and Mobility

Transportation laws developed historically to address specific defense and economic development needs as each succeeding mode of transportation—water, rail, highway, and air--emerged. Federal programs and congressional committee structure retain much of this special purpose and modal orientation, despite creation of the Department of Transportation. DOT was formed to". . . coordinate the executive functions of our transportation agencies in a single, coherent instrument of government . . . [to] strengthen the national economy as a whole.'** DOT ultimately came to house organizations that had been independent (e.g., the Federal Aviation Agency) as well as those previously a part of other departments (e.g., the Urban Mass Transportation Administration).

From DOT's inception, Congress has favored the modal emphasis inherent in the Agency's original structure, an approach supported by strong industry interest groups. These powerful forces have so far stymied development of policies that would permit implementation of a national transportation system in which the modes work in a complementary manner. This problem has not gone unrecognized by the Federal Government. A congressional report in 1977 pointed out that". . . the fragmentation of the laws which define national transportation goals . . . have dramatic impacts in conflicts between the major promotional agencies within DOT. . . each program proceeds more or less independently-with predictable inefficient and counter-productive results."[42] The Secretary of Transportation, Samuel Skinner, is expected to unveil a strategic plan for transportation early in 1990 that will attempt once again to address these issues.

State DOTs by and large reflect the Federal modal organization and place a particular emphasis on highways. The lack of Federal and State support for a systems approach to transportation creates special difficulties for local officials, who need technical and funding assistance to facilitate the intermodal transfers for people and goods that are an integral part of any healthy economy. An airport executive, for example, asserted that he could find no where to go in DOT to seek help for the ground access problems his facility has.[43] Legislative history shows the grip of the different modes on even present-day programs.

Highways[44]

The Rural Post Roads Act of 1916[45] marked the Federal Government's first foray into Federal highway aid. The Federal commitment to the Nation's highways deepened and broadened with the creation in 1941 of the Interstate and Defense Highway System, and in 1956 of the Highway Trust Fund,[46] which provided a dedicated source of funding. Through the 1960s, the Federal Government continued to bear a large portion of highway capital costs, but left operations and maintenance costs to the States and localities.

In 1976, Congress enacted legislation making some maintenance costs, as well as construction costs for highways, roads, and bridges, eligible for Federal funding. The new funds carried conditions, and new conditions have been added during several annual appropriations processes. These include Federal constraints on States' rights to define road rules,

[39]Public Law 98-616,98 Stat. 3221.

[40]Office of Technology Assessment, op. cit., footnote 38, p. 350.

[41]Lyndon B. Johnson, ● - From the President of the United States," in U.S. Congress, House Committee on Gov ernment Operations, *Creating a Transportation, Before Subcommitte Committe on Government* (Washington, U.S. Government Printing Office, pp. 38-39.

[42]U.S. Congress, Senate committee on Governmental Affairs, *Study on Federal Regulation,* 5 (Washington, DC: Us. Government Printing Office, 1977), p. 156.

[43]Richard Marchi, director of aviation planning and development, Massport, personal communication, July 2S, 1989.

[44]Material at highway legislation is based on National Council on Public Works Improvement, FM@ *oundations: on America's Works* (Washington, February 1988); and American Transportation Advisory Council, New *Directions* in *Transportation* (Washington, October

Stat. 355.

[46]70 sm. 374.

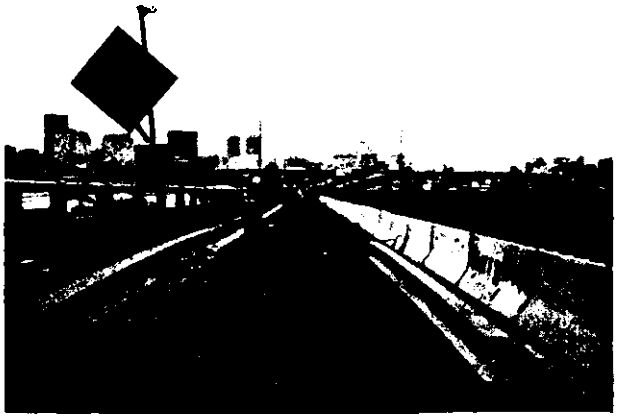


Photo credit: Massport

Despite badly deteriorating bridges, such as the one pictured here, Highway Trust Fund monies could not be used for rehabilitation until 1982.

speed limits, drinking age, truck access to both federally and nonfederally funded roads, and other policy issues. The Surface Transportation Assistance Act of 1982 (STAA) boosted the Federal gas tax, authorized increased appropriations for resurfacing, and authorized appropriations out of the Highway Trust Fund for highway bridge replacement and rehabilitation. The STAA was reauthorized in 1987, and most previous conditions were continued.[47]

Mass Transit

Until the late 1960s, the private sector owned and operated most of America's mass transit systems. By 1970, newly constructed highways, increased automobile use, and sprawling suburbs had put many public transportation companies out of business. Local governments, knowing the importance of the service, assumed an active role in supporting mass transit. Initially Federal aid was limited to discretionary project financing for States and localities. After 1970, the Federal Government expanded its support for transit, as mass transit systems were declared eligible for aid from the Highway Trust Fund.[48] New and non-urban systems, in addition to existing systems, became eligible for Federal aid, and States were allowed to substitute transit projects for interstate highway projects they judged nonessential. Perhaps most important, the Federal Government began to contribute to operating costs as well; indeed, during the late 1970s, over 80 percent of Federal formula grants were used for operating assistance.[49] Though amendments to the STAA (Public Law 97-424) in 1983 gave mass transit its first dedicated revenue source (a l-cent per gallon portion of the newly increased Federal gas tax), the Federal Government has generally retreated from its support for mass transit during the 1980s.

Airports

Since passing the Air Commerce Act of 1926,[50] the Federal Government has steadily invested in the Nation's airports and airways. Between 1947 and 1969 the Federal Government covered nearly one-half of airport construction costs.[51] The 1970 Airport and Airway Development Act[52] marked a major expansion of Federal support for aviation infrastructure; Congress approved new fuel and passenger ticket taxes, and other charges, and established the Airport and Airway Trust Fund. The Act lapsed in 1980, in the wake of conflicts over suitable uses for Trust Fund money, but in 1982 Congress reauthorized the Trust Fund with the Airport and Airway Improvement Act. Legislation in 1987 reauthorized funding for airport development and directed the Secretary of Transportation to develop a long-term comprehensive airport system plan.

Ports and Waterways

Federal dominance of water resources development was established in 1787, when Congress, in the Northwest Ordinance, interpreted the Commerce Clause of the Constitution as a mandate for Federal regulation and maintenance of navigable waterways.[53] The U.S. Army Corps of Engineers was made responsible for waterways and harbors. The 1824 General Survey Act authorized surveys for a

[47] Public Law 100-17, 101 Stat. 132.

[48] Congressional Budget Office, New *Directions* Nation's *Works* (Washington, DC: September p.

[49] Ibid., p. 29.

[50] 44

[51] Congressional Budget Office, cit., footnote 48, p. 56.

[52] Public Law 91-258,84 Stat. 219.

[53] Paul Walker, *of Independence* (Washington, DC: U.S. Army Corps of Engineers, 1981), p. 365. The Northwest Ordinance pertained to mapping and exploring of waterways and land resources.

national network of internal improvements, explicitly including waterways. In 1824, the Rivers and Harbors Act established Federal river and harbor construction and maintenance programs. The Corps had and continues to have the tasks of planning, developing, operating, and maintaining waterways.

Water programs became increasingly multipurpose in the 20th century. Flood control was incorporated into many projects in the 19th and early centuries, culminating in the 1936 Flood Control Act, which formally designated the Corps as responsible for flood control. The Bureau of Reclamation was established in 1902 to encourage westward expansion by providing inexpensive irrigation water for agriculture; hydropower was added to project purposes in legislation enacted in 1912 and 1917.

The backbone of the Corps' support for water transport lies in the 11 division and 38 district offices. These form a cadre of technical expertise and arc responsible for operations, maintenance, construction, preparation of preliminary and design studies, and acquisition of real estate for projects throughout the country. The waterways industry and regional and local port officials rely heavily on the Corps for advice and maintenance, and even operating assistance. As one put it: "Without them, we wouldn't be in business."

over the past decade, the Federal Government has continued to retrench its role as water resources developer. The 1986 Water Resources Development Act instituted waterway user fees and cost-sharing requirements for most water projects, with non-Federal sponsors responsible for a minimum of 25 percent of the costs of most construction projects. The focus of water resources development at the Federal level has now shifted to operations, maintenance, environmental accountability, and decreased financial and administrative responsibility.

Funding for waterway improvements comes from Federal appropriations and the Inland Waterways Trust Fund, supported by marine fuel tax revenue. The Inland Waterways Users Board makes recommendations on project priorities based on consideration of national system needs.[55]

INDUSTRY PERSPECTIVE

Every industry uses or provides services dependent on public works, and most take for granted governmental decisions that create the infrastructure necessary for their business, except when a tax increase or regulation that directly affects them is proposed. Then, industry associations swing into action and lobby Federal, State, and local officials to ensure that their interests are thoroughly considered. Their lobbying activities often reinforce the status quo, because they do not want the way they do business disturbed.

However, when an infrastructure issue has been widely recognized as a problem, and legislation or regulation seems a certainty, industry is likely to acknowledge a need to change and to engage in the policymaking process. As the 1990s begin, air quality problems, the need for greater investment in transportation infrastructure, and urban traffic congestion are three such potent issues. Each industry segment is trying to shape government action according to its concerns. For example, southern California government agencies and industries are trying to craft a solution to the area's severe air pollution and traffic congestion problems. With current technologies, the poor air quality precludes construction of more roads to relieve traffic congestion, so new approaches must be tried. The California Trucking Association's members are willing to operate at night as much as possible to relieve daytime congestion.[56] However, many industries that depend on truck transport find the noise problems and costs of keeping their loading facilities open to accommodate deliveries at night unacceptable. Finding a reasonable balance among the diverse interests will be a lengthy and difficult process.[57]

In one area--intermodal transportation--industry has moved rapidly to capitalize on burgeoning international trade and changes in manufacturers' shipping patterns. Federal oversight, programs, and organization have not kept pace, and a host of difficult transportation system issues are emerging, ranging from how to provide sufficient ground access for busy airports to congestion that prevents efficient local truck transfer of freight containers

[54]Donald C. McCrory, director, Memphis and Shelby County Port Commission, Memphis, TN, personal communication, Dec. 5, 1989.
[55]U.S. Army Corps of Engineers, The *Waterways Transportation System: A* April 1989), p. 42.
[56]Karen E. Rasmussen, director, Governmental and Industry Affairs, California Trucking Association personal communication, Nov. 10, 1989.
[57]Sarah Siwek, manager of transportati"on, South Coast Air Quality Management District, personal communication, Nov. 10, 1989.

from ship to rail. Local governments must deal with such problems on a piecemeal basis when Federal monies are involved, because of categorical grant requirements and the absence of a coherent Federal transportation policy that incorporates environmental concerns. (For further information, see chapter 4.)

INTERGOVERNMENTAL ISSUES

Generally, State and local officials accept the need for Federal standards to protect public health and welfare, especially if they are tied to a grant. However, officials contend that federally mandated standards and grant requirements raise their costs, through expenditures for projects or procedures that may be extraneous to State priorities and that add time to the project. As one example, Federal aid for highways requires that a percentage of Federal monies be used for repairs to "off-system" bridges (bridges on highways that are not eligible for Federal aid), and these bridges are on underutilized or unimportant routes in many States.[58] Concerns about Federal programs center on unfunded mandates, such as those described in chapter 1, box l-A; grant requirements, such as a focus on new construction rather than maintenance or management improvements; and on the regulatory process,[59] including:

- inflexibility in the administration of standards (standards aim at uniform performance and do not accommodate local variation in need and conditions);
- lack of coordination among Federal agencies engaged in related activities;
- frequent changes in Federal regulations, which require major local program adjustments;
- excessive time required for Federal review and approvals; and
- requirements for meetings and paperwork.

The complicated application process for approval of a major harbor improvement shown in figure 2-5 gives ample evidence that these concerns are justified.

In 1987,60 percent of State and local infrastructure capital came from bonds.[60] Traditionally, tax-exempt municipal or governmental bonds have been the fiscal workhorses for State and local governments, which use them to acquire the large amounts of capital needed for roads, schools, and environmental projects. In addition, tax-exempt "private activity" bonds are issued to finance many types of public-private ventures, which create facilities for public use.

To the concern of State and local governments, Federal tax reform legislation aimed at closing loopholes and minimizing revenue loss—primarily the Tax Acts of 1986 and 1988—made tax-exempt bonds much more difficult to issue. At least partially as a result of the changes, the value of new issues of municipal debt has decreased by one-half since 1985, with even more dramatic reductions in the issuance of private activity bonds.[61]

However, while it is too early to be certain, OTA analysis indicates that the impact of tax reform on traditional public-use infrastructure projects may not be significant in the long term. Debt financing of traditional public works, such as publicly owned and operated wastewater and water supply plants and roads, appears to be at a higher real level now than before the passage of the 1986 Act.[62] The decrease in tax-exempt private activity bonds for" public facilities, such as convention centers and sports complexes, may have boosted the use of tax-exempt government bonds to finance traditional infrastructure projects. A significant drop in borrowing did occur between 1986 and 1987, but the market returned to its pre-1985 level in 1988 and increased more than three-fold between 1980 and 1988[63] (see figure 2-6).

However, the reforms have had a significant effect on a wide range of activities financed by State and local governments, especially those undertaken in cooperation with the private sector. Four provisions have raised the greatest concern:

[58]Ian MacGillivray, director, Pl arming Research Division, Iowa Department of Transportation, in Office of Technology Assessment, op. cit., footnote 2, pp. 118-119,

[59]Remarks from OTA Advisory Panel meting, March 1989; and participants in Office of Technology Assessm cm, op. cit., footnote 2.

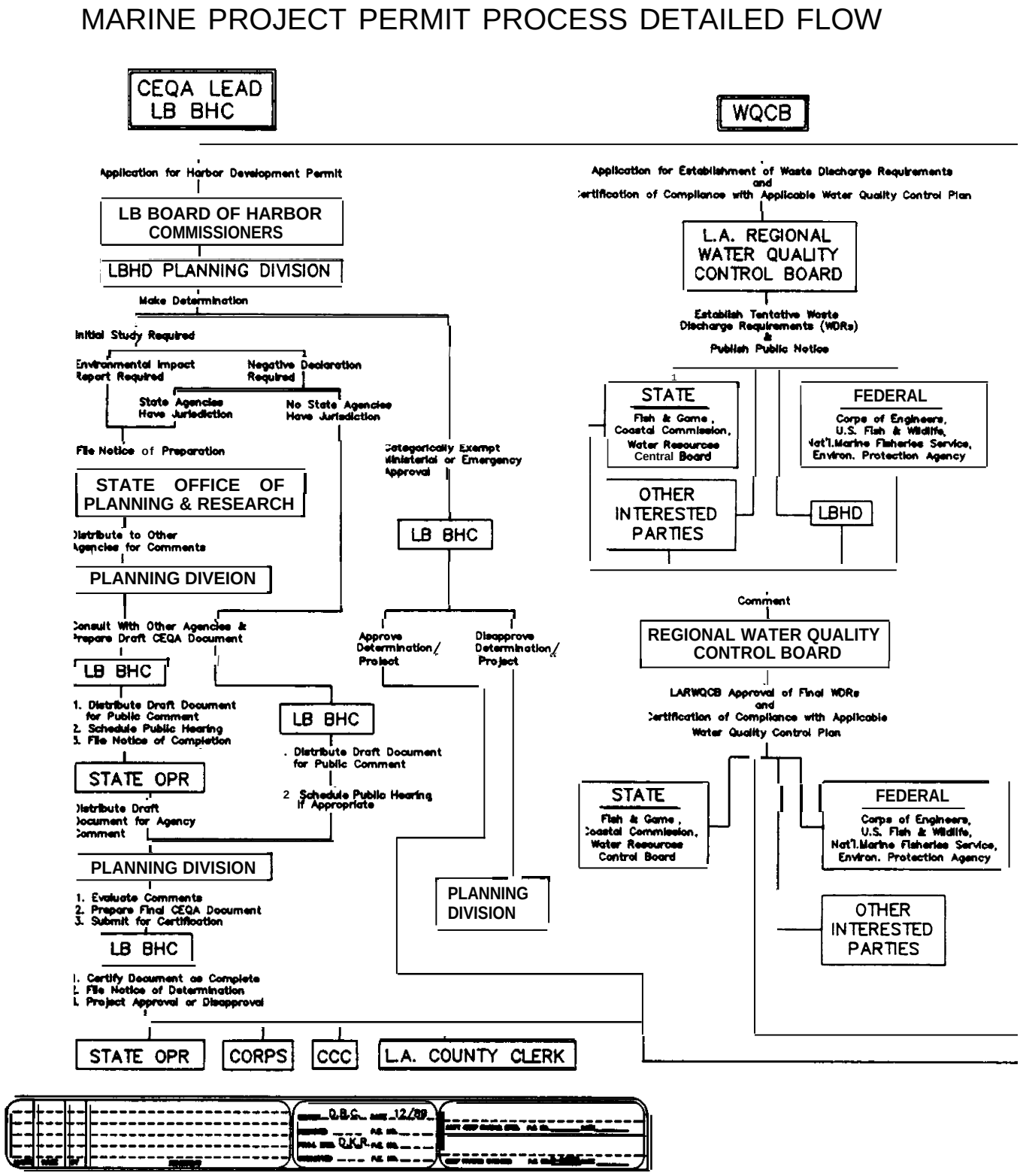
[60]Government Finance Research Center, "Federal Tax Policy and Infrastructure Financing," OTA contractor report, Sept. 13, 1989, p. IX-4.

[61]Ibid., p. I-4.

[62]Ibid., p. I-2.

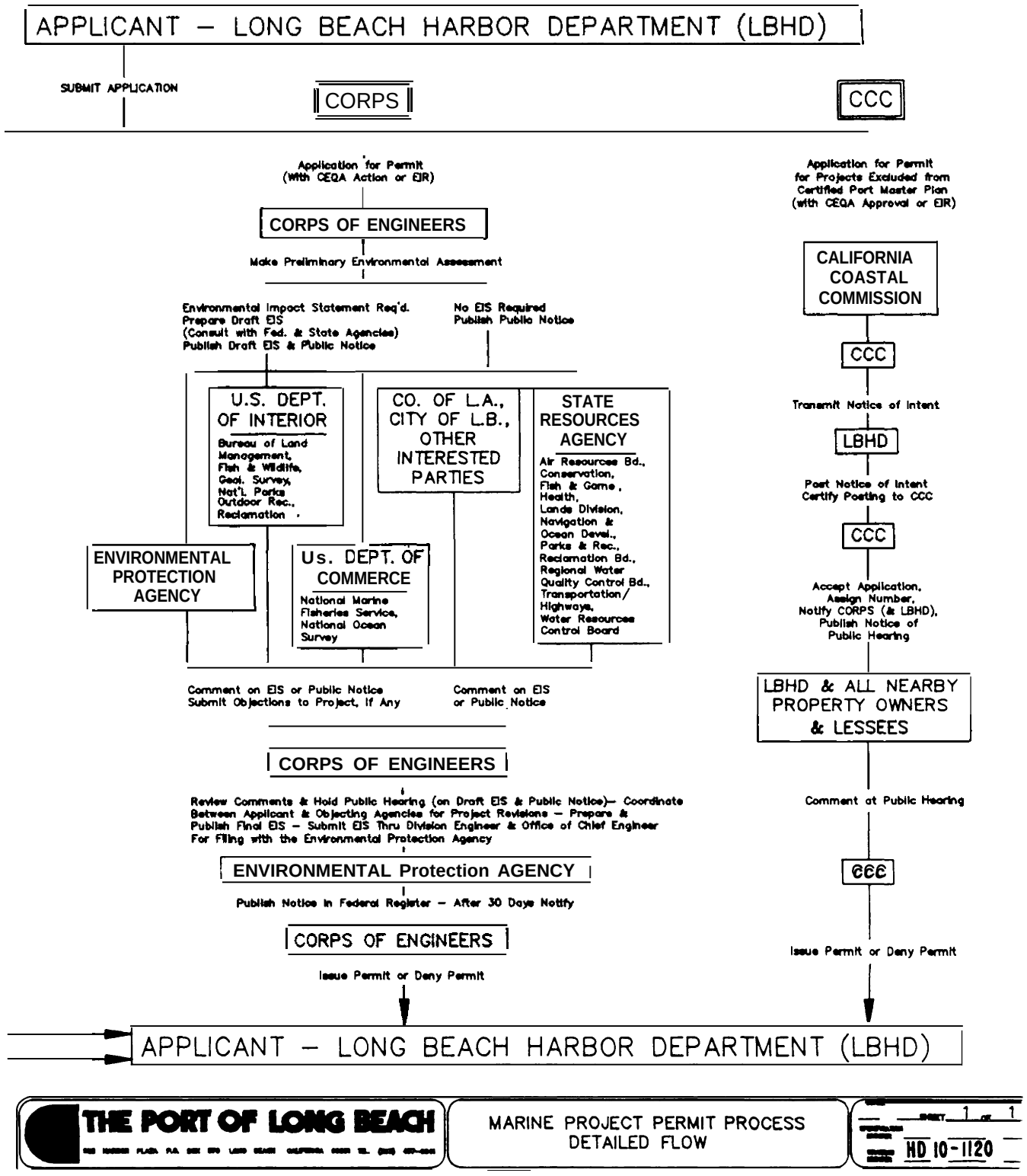
[63]Ibid., p. II-4.

Figure 2-5—Marine Project Permit Process



SOURCE: Traffic Engineering Department, Long Beach Harbor.

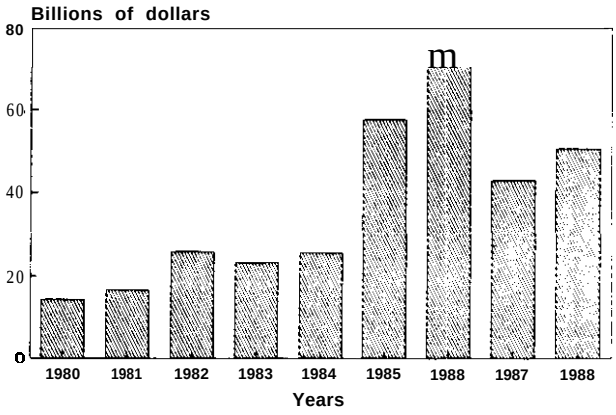
Figure 2-5--Marine Project Permit Process



SOURCE: Traffic Engineering Department, Long Beach Harbor.

- *Stricter criteria for tax-exempt bonds. Tax Code* revisions have restricted the use of tax-exempt private activity bonds to projects in which generally no more than 10 percent of the facility is used for private purposes and no more than 10 percent of the debt service is paid from private sources. The previous private activity maximum was 25 percent. This reduction in permissible level of private sector involvement has limited tax-exempt borrowing and raised costs for some forms of public works infrastructure, such as water treatment plants that are owned or operated by private firms. The new lower limits on private activity will require developers to rely more on private capital for project improvements, like new subdivision streets. In **Vacaville,** California the widening of a major arterial failed the test for tax-exempt financing because the cost of required relocation of private utility lines exceeded the 10 percent limit on debt service allowable from private sources.[64]
- *Additional procedures and reporting requirements. All* tax-exempt transactions must now be reported regularly to the Internal Revenue Service. In addition, records must be kept on investment earnings in order to make rebates on profits, if necessary, and the costs of insurance for private activity bonds are restricted. These new regulations mean increased effort and costs for every jurisdiction, but hit small, and unsophisticated issuers hardest, as they must seek outside financial help.
- *Reduced arbitrage opportunities.* Strict limits were placed on the opportunities for State and local governments to earn arbitrage income by borrowing with tax-exempt bonds and investing the proceeds, usually in higher yielding bonds, until needed.[65] Arbitrage is a lucrative income source, used in many cases to reduce project costs. After strong protests spearheaded by local governments, Congress eased these restrictions in the budget reconciliation legislation passed in November 1989.
- *Limitations on refinancing. The 1986 Act* permits governments to refinance tax-exempt loans only once. In the past, governments could refinance bonds frequently to take advantage of falling interest rates.

figure 2&Tax-Exempt Governmental Purpose Bonds



SOURCE: Office of Technology Assessment, 1990, based on data from the Government Finance Research tinter.

State and Local Financing Relationships

Although the extent varies, State governments provide essential financial support to local jurisdictions for public works, currently providing 54 cents (down from a high of 61 cents in 1975) in grants for every dollar raised by local government. Generally, State funds go for education and public welfare, and to support specific transportation infrastructure needs, such as highways, airports, and in some cases, wastewater treatment and mass transit. The relative decrease in the State contribution since 1975 does not mean that total State dollar aid to cities has decreased; indeed it increased by 10 percent in real terms from 1979 through 1986. Rather, local governments have increased the revenues they collect, which have grown 37 percent for cities and 52 percent for counties.[66] Further details are given in chapters 3 and 4.

CONCLUSIONS

Through funding support, legislation, and regulation, the Federal Government has driven public works infrastructure policy since the early part of the 20th century, and its fiscal policies and funding capabilities have shaped and local public

[64]Virginia B. Rutledge, president, Government Finance Officers Association, testimony before the Senate Committee on Governmental Affairs, Subcommittee on General service's, Federalism and the District of Columbia, May 4, 1989.

[65]Government Finance Research Center, op. cit., footnote 60, pp.

[66]Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism,* 1988 cd., VOL 2 (Washington, DC: 1988), p. 14.

works construction and service. Over the past decade, changes in Federal policies have forced States to play a larger role in financing and administering public works programs, and local communities to do more for themselves. Federal **spending is likely to continue for the short term to focus on health and social programs, defense (although this may decline gradually), and national debt service. State and local governments must expect to finance a larger share of public works with their own revenues-general taxes and fee-rid where feasible, with private sector partners.**

Competition for revenue sources-excise and income taxes, user fees, and other benefit charges—is characteristic of our Federal system and can be expected to continue at all governmental levels. When Federal funds were more plentiful, State and local governments used them as substitutes for their own resources for public works facilities, focusing their own spending on education, health, or other special program areas that do not generate revenue. They will not withdraw from funding education or caring for the destitute as Federal funding levels decline. The resulting financial squeeze on State and local governments is a major factor in the poor condition of public works infrastructure and heightened intergovernmental tension. The **impacts of continued low levels of Federal spending on public works will affect States with varying degrees of severity (see figure 2-7). This raises equity questions that Federal policymakers will want to consider.**

Recent Federal tax reforms enacted to conserve Federal revenues have increased the cost of local capital and discouraged public-private partnerships. While they understand the fiscal forces behind these actions, State and local governments do not welcome the effects and maintain that the Federal Government is pursuing conflicting fiscal policies.

Strong environmental lobbies have encouraged Congress to raise standards for environmental public works projects, and other concerns have prompted the addition of grant requirements, such as Buy America, which promote goals unrelated to the primary purpose of the grant. These entail substantial costs, both in money and time required for project completion. Local **and State officials question the appropriateness of Federal policies requiring them to conform to national priorities and guidelines that often are not sensitive to local conditions or needs, but increase the project price and timeline.**

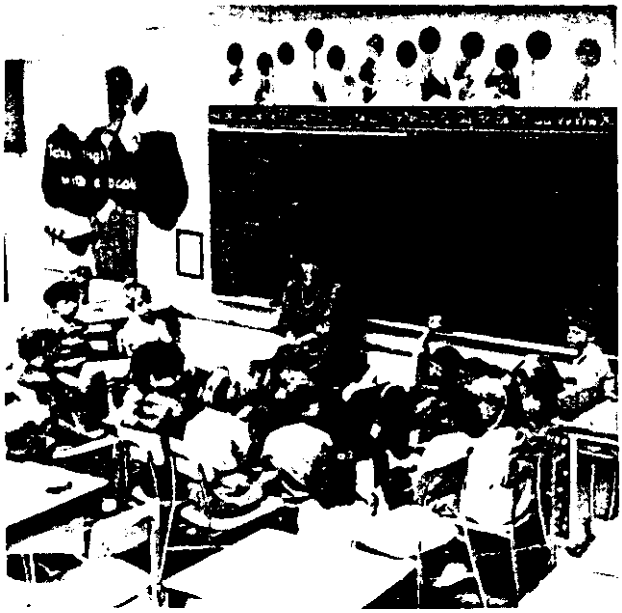


Photo credit: Iowa State University

Resources are limited and State and **local governments often direct capital to education and health care programs rather than public works.**

Federal oversight, programs, and funding are targeted through categorical grants at specific issues and problems--from wastewater treatment to airport, highway, and harbor improvements. Strong industry interest groups have grown up to support each of these categories, and environmental activists focus on enforcement of specific laws that target a single issue. **Such potent but diverse vested interests make coordinated environmental and transportation programs difficult, and congressional and executive branch policies and programs often appear to State and local governments to work at cross purposes. More systematic Federal policy coordination and consideration of reorganization or restructuring are warranted.**

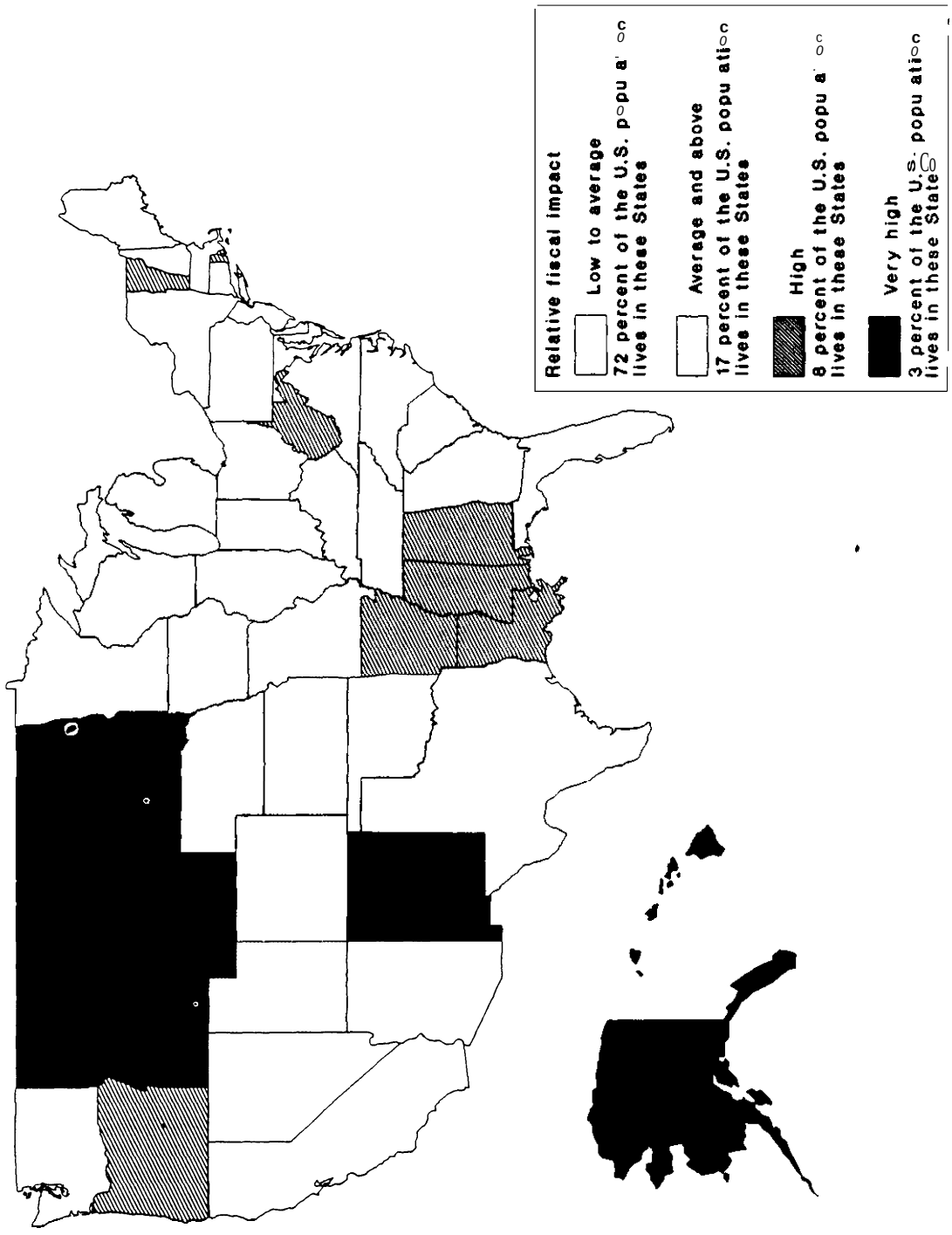


Figure 2-7—Projected Impact on States of Reduced Federal Aid for Public Works[a]

[a]Impact is defined as the relative level of effort each State would have to make to replace a hypothetical 50 percent cut in Federal aid for public works.
SOURCE: Office of Technology Assessment, 1990, derived from information provided by Apogee Research, Inc.

Chapter 3

States: Caught in the Middle

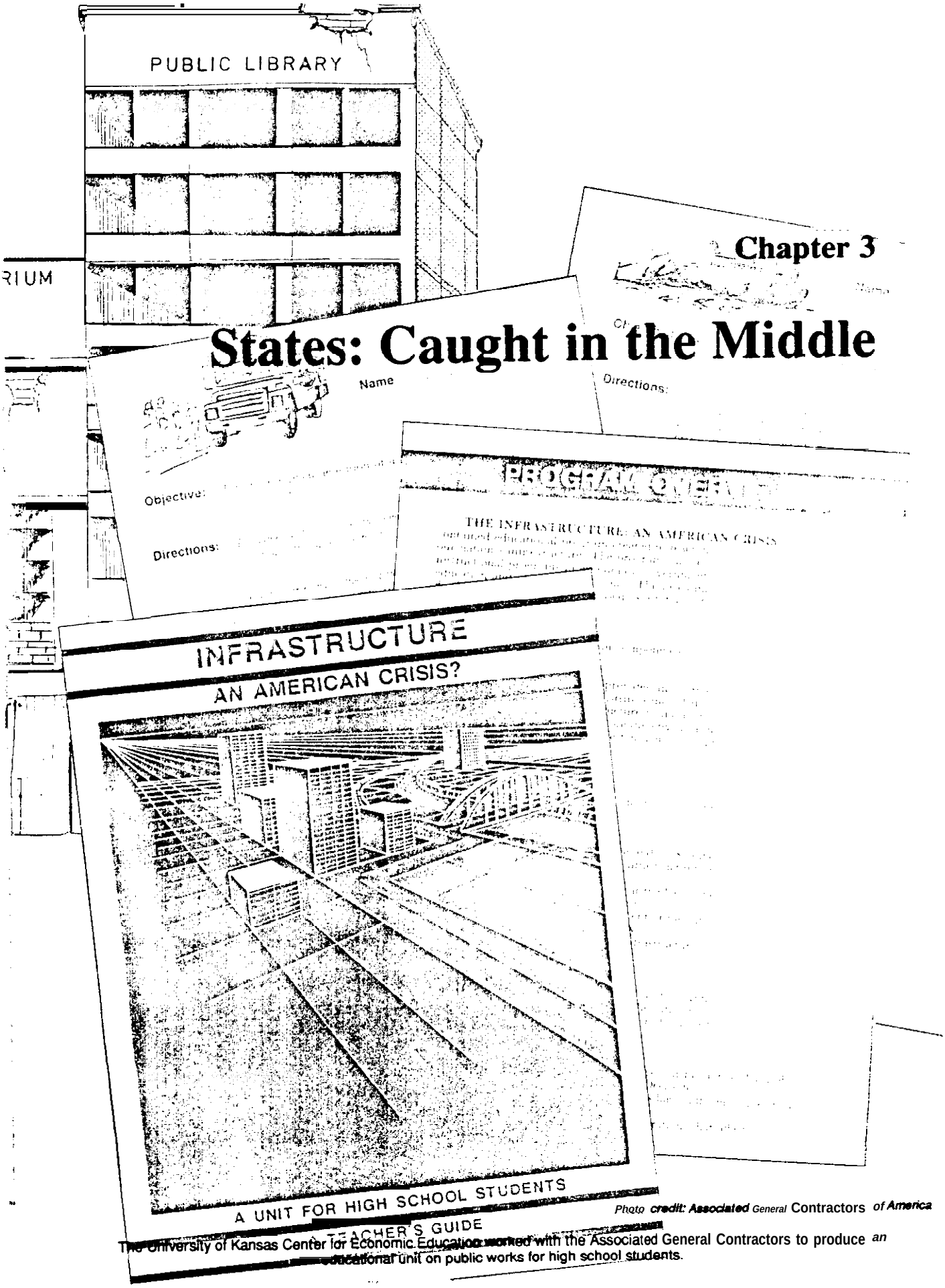


Photo credit: Associated General Contractors of America

The University of Kansas Center for Economic Education worked with the Associated General Contractors to produce an educational unit on public works for high school students.

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States: Caught in the Middle

It is not the voters who failed [to approve a tax increase for transportation]; it is we, the political leaders, who failed the voters.[1]

Notwithstanding wide differences in size, economic conditions, and governmental structure, each State confronts the same problem: how to finance transportation and environmental infrastructure improvements as well as schools, hospitals, and prisons. A State's ability to finance public works is a product of its economic base and political composition; these determine the mix of taxes, charges, fees, and private investment a State may use to pay for infrastructure.

Marked increases in targeted taxes, benefit charges, and user fees have been necessary in most States over the past 5 to 6 years to support public works priorities, after more than a decade of flat investment. States have combined these special charges and broad-based taxes to boost funding for infrastructure improvements, principally for transportation-highways, airports, and mass transit—with some States supporting railroads and ports as well. Funding environmental public works has historically been a local responsibility, although some States have long assisted with wastewater treatment plant construction. Every State will be playing a larger role in the future, since new Federal requirements include environmental mandates that are straining local fiscal capabilities and sending local officials to their States for help. This chapter outlines the economic and political frameworks for State public works programs as well as fiscal and management strategies that States have developed over the past decade or more.

THE POLITICAL AND ECONOMIC MIX

Politics and economics interact in shaping a State's public spending portfolio. Political deliberations and decisions determine State debt limits, tax rate ceilings, spending caps, and whether to levy a sales or an income tax; all of these reflect a State's willingness-to-pay. However, its ability-to-pay—the actual capability to raise revenue—is grounded in economic factors, such as per capita income, industrial production, and retail sales.

Spending and Revenue Patterns

State governmental expenditure and revenue patterns are good indicators of a State's economic vitality and fiscal condition. In the aggregate, States appear to be in relatively good fiscal health-for 1989, State government expenditures are expected to total $247 billion, or 6.8 percent higher than estimated expenditures in 1988.[2] Since the recession of 1982-83, State expenditures have grown steadily, if moderately (the average rate has been 6 percent for the last 3 fiscal years), although this general picture masks wide regional variations.

State constitutional or statutory requirements for a balanced budget require that expenditures stay very close to or slightly lower than revenues. Almost every State adopted some sort of tax initiative to meet spending demands in 1988, producing $6 billion in new revenue (see table 3-1 for examples); nonetheless, 18 States also had to reduce expenditures or deal with shortfalls by other means.[3] Moreover, data indicate the rate of growth in revenues may be falling behind expenditures; the trend for 1989 shows a 5.4 percent growth in State revenue, compared to an anticipated 6.8 percent rise in expenditures.

Economically strong, diversified States are better able to pay for public works than States with low per capita incomes and weak economies. A State's economic base and ability to raise revenue measure its *fiscal capacity*; how heavily a State chooses to tax itself reflects its *fiscal effort. These* measures are a useful guide to which States are in the greatest need (have a low fiscal capacity) and which States are doing the most to help themselves (have a high fiscal effort). A more complete description of fiscal capacity and fiscal effort indices can be found in appendix B. The variety in State fiscal capacity and fiscal effort is illustrated in figure 3-1. Regardless of

[1]John Seymour, California State Senator, at "Technology for Tomorrow's Transportation: A Policy Conference," Costa Mesa, CA, unpublished remarks, Nov. 9, 1989.

[2]National Governors' Association and National Association of State Budget Officers, *Fiscal Survey of the States* (Washington, DC: 1988), p. 3.

[3]Ibid., p. 6.

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Table 3-1--Sample State Revenue Increases, 1988

state	Revenue increase	Tax change
Louisiana	$303 million	Suspended sales tax exemptions
Arizona	$153 million	Package of personal income, sales, business, and miscellaneous tax increases
New Jersey	$100 million	Raised the motor fuels tax by 2.5 cents
Massachusetts .	$ 77 million	Raised sales and business taxes
Iowa	$ 52 million	Raised cigarette and gas taxes
Minnesota	$ 46 million	Raised sales and business taxes
Idaho	$ 21 billion	Raised income and gas taxes

SOURCE: Advisory Commission on Intergovernmental Relations, *Significant Features at Fiscal Federalism,* 19S0 d., vol. 1 (Washington, DC: 1969), pp. 2S-29.

the strength of its economic base, a State must have the political will to raise revenue (exercise fiscal effort) to attack infrastructure deficits.

Regional Difference

Fiscal capacity and revenue effort vary widely among States even within regions (see figures 3-2 and 3-3). New England and the Mideastern States have stronger economies than much of the South and the Northern Plains. However, a look at fiscal effort shows that some States with strong economic bases have a below-average tax burden, while others with weak economies ask taxpayers to pay at a relatively high level. Combining information about fiscal capacity and effort with other economic data provides an overview of State and regional economic characteristics.

New *England boasts the* Nation's highest personal income growth and the lowest unemployment rates. The tax bases of Connecticut and Massachusetts are well above the national average, whereas Maine, Rhode Island, and Vermont have below-average capacity.

The *Mideastern States are in good* shape economically, with personal income growth above the national average and low unemployment. New Jersey has a particularly strong economic base and high fiscal capacity; only Pennsylvania has below-average revenue capacity, and the State budget office projects expenditure growth well below the national average.

The *Great Lakes* region has not fully recovered from the recession of 1982-83, and States in the region are slightly below the national average in fiscal capacity, with unemployment above the national average. State expenditures in 1989 are expected to increase by only 3.9 percent, the lowest annual regional rate in the Nation.

The *Plains region* has made an impressive recovery from the early 1980s. The unemployment rate has dropped from 5.5 percent to 4.2 percent, and all States except Minnesota and North Dakota anticipate spending increases of at least 5 percent. However, the region remains slightly under the national average in fiscal capacity, primarily because South Dakota, Iowa, and Nebraska have weak economies heavily dependent on agriculture.

While a few of the *Southeastern States are prospering, many are* struggling. Florida has been the dominant growth area, maintaining a spending growth rate over 10 percent for the last 3 years; Virginia and Georgia also enjoy strong economies. Nonetheless, the fiscal capacity of the Southeast region ranks the lowest in the country-Mississippi ranks last, and Alabama, Arkansas, Kentucky, South Carolina, and West Virginia are among the Nation's weakest 10 States.

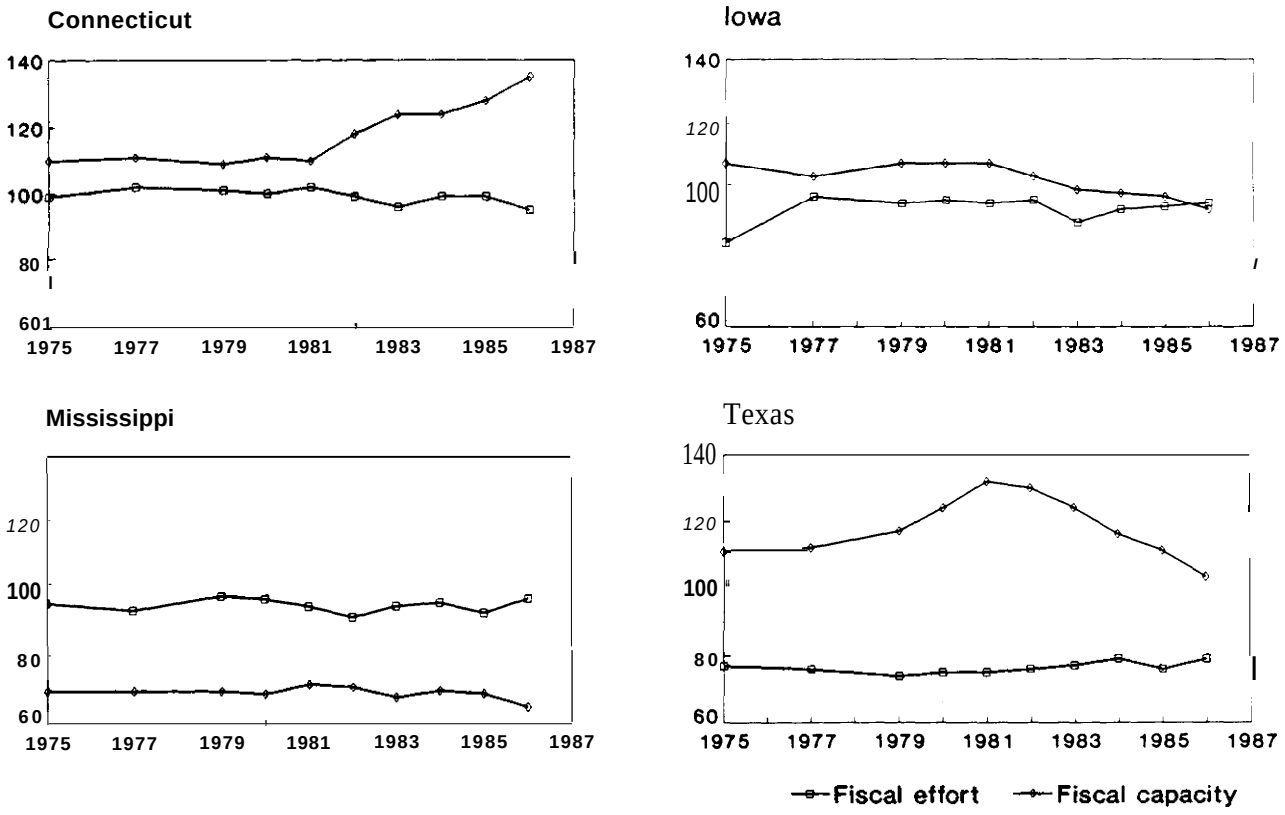
In the *Southwest, the* Texas economy dominates the regional statistics. Because of the State's recession, caused by the drop in oil prices, the region has had the Nation's highest unemployment rate, and the second lowest rate of increase in personal income. Among the other Southwest States, expenditure increases are expected to range from 2 percent in New Mexico to 10.6 percent in Oklahoma.

The *Roe@ Mountain region* continues to have economic and fiscal problems because of its economic dependence on the energy industry. State fiscal capacity is uneven; Idaho, Utah, and Montana are well below the national average, while Wyoming and Colorado have high capacity ratings because of their rich natural resources. State governments in this region have increased spending only moderately.

The *Far West States'* economic record is strong; personal income has increased by 6.7 percent (led by Nevada at 8.9 percent and Oregon at 7.2 percent), and the unemployment rate is at the national

[4]Ibid., pp. 21-23; and Advisory Council on Intergovernmental Relations, *1986* State *Capacity and Effort* (Washington, DC: 1989), pp. 5-7.

Figure 3-1--State Fiscal Capacity and Effort



[a]Average level for all States is 100.

SOURCE: Office of Technology Assessment, 1990, based on Advisory Commission on Intergovernmental Relations data.

average. Alaska has the only soft economy in the region, due to the drop in energy production.

The variability of economic strength among the 50 States is a product of factors that are difficult to control and that change over time. The impact of falling energy prices during the mid-1980s highlights the vulnerability of States like Alaska, Texas, Oklahoma, and Louisiana, which depend for income on one primary source. However, recent employment figures compiled by the U.S. Department of Labor show that the economies of several States (e.g., Texas and Louisiana) hard hit during the early and mid-1980s may be rebounding, while growth has slowed in States like Massachusetts and New Hampshire, which had, until recently, enjoyed vigorous economic healths Resource-poor States, like Alabama, Mississippi, West Virginia, and Montana, remain economically weak and have difficulty generating additional revenue; many are already taxing residents more heavily than the national average. States like California and Connecticut, with strong resource and industrial bases, have the option of choosing whether to enact new taxes or fees to raise additional funds.

Constitutional and Legal Constraints

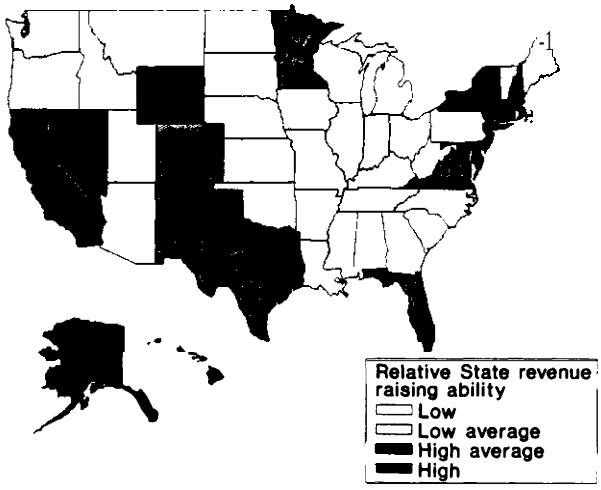
In most States constitutional provisions or statutes limit revenue, spending, and debt and bond financing for public works. Some States have strict statutes that make increasing levies for public services a lengthy and difficult process.

Revenue and Spending Limits

Many States restrict the financing authority of their local governments and require them to balance budgets. However, over the past decade, 20 States have limited their own fiscal authority as well, by statute or constitutional amendment, in response to

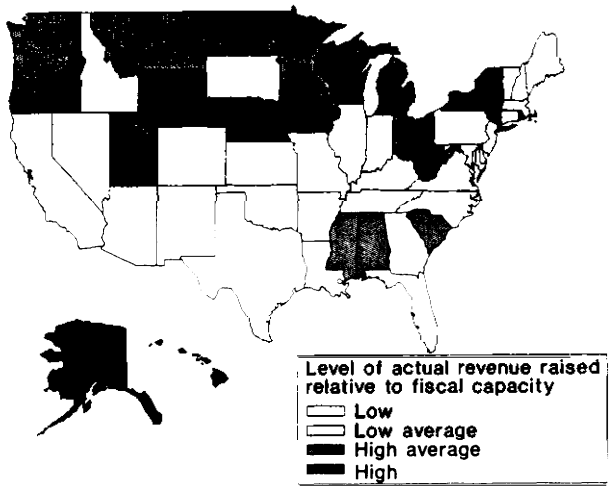
[5]John Berry, "Jobless Rate Masks State Shifts," *The* Dec. 27, 1989, p. F1.

Figure 3-2--State Fiscal Capacity, 1986



SOURCE: Office of Technology Assessment, 1990, based on Advisory Commission on Intergovernmental Relations data.

Figure 3-3--State Fiscal Effort, 1986



SOURCE: Office of Technology Assessment, 1990, based on Advisory Commission on Intergovernmental Relations data.

taxpayer revolts against government spending. For example, Massachusetts's Ballot Question 3, passed in 1986, restricts growth in State revenues 'to the average growth in Massachusetts wages and salaries over the preceding 3 years.[6]

California's Gann Initiative, approved by voters in 1979, restricts annual growth in tax-funded appropriations to a percentage increase no greater than the State's population growth plus the increase in the U.S. Consumer Price Index or per capita income in California, whichever is lower. Local officials soon found they could not fund legally required improvements and sought legislative relief, leading to passage of the Mello-Roos Community Facilities Act in 1984. The new law enabled local governments to create special assessment districts to finance construction and operation of public facilities if two-thirds of the local voters approve.[7] In July 1989, the California General Assembly approved an initiative for the 1990 ballot, which would again expand spending flexibility.

Debt Limits

For the majority of States, constitutional and statutory limits on borrowing also bound spending. State borrowing limits take widely varying forms, with nine States prohibiting the use of general debt altogether, and four States (Maryland, New Hampshire, Tennessee, and Vermont) setting no borrowing limits and requiring merely a simple majority vote of the legislature. For instance, in Alabama, the Governor authorizes borrowing up to $300,000, but specific bond issues must be authorized by constitutional amendment.[8] In Pennsylvania, bonds for capital projects that are itemized in a capital budget do not require a referendum if such debt will not cause the net outstanding debt to exceed 1.75 times the average annual tax revenues deposited in the previous 5 years. Minnesota requires approval of a bond issue by two-thirds of each house and a majority of the voters at any general election, except for short-term borrowing, qualified school bond loans, and transportation bonds pledging fuel taxes.

[6]Government Finance Research Center, *Constitutional, Statutory, Other Impediments to Local Infrastructure Finance*, prepared the National Council on Public Works Improvement (Washington, DC: October 19S7), p. 26.

[7]Larry C. Ledebur et al, Changing Stare *in Public Works*, prepared for the National Council on Public Works Improvement (Washington, DC: September 19s7), p. 38.

[8]Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism*, 1989 ed., VOL 1 (Washington, DC: 19S9), p. 120.

Most States currently employ a broad range of taxes, although they rely most heavily on income and sales taxes. Sales taxes bring in the most revenue (48.5 percent of total State tax revenues in 1987), but income tax revenues (39.2 percent of the total) are growing faster.[9] Strapped by spending requirements, States have recently turned more frequently to benefit or user charges and fees for specific purposes and are gradually allowing local governments more flexibility to tax.

Income Taxes

Personal income taxes are levied in 43 States with wide variations in tax rates and the value of exemptions (see figure 3-4). In 1987, income tax revenue ranged from a high of 43 percent of total tax revenue in Delaware to below 15 percent in several Southern States.[10] In addition, 46 States collect corporate income taxes, although their average per capita yield of $83 is far less than the average yield of $309 from personal income taxes. Income taxes are more sensitive to economic swings than sales taxes, making them a less reliable revenue source.

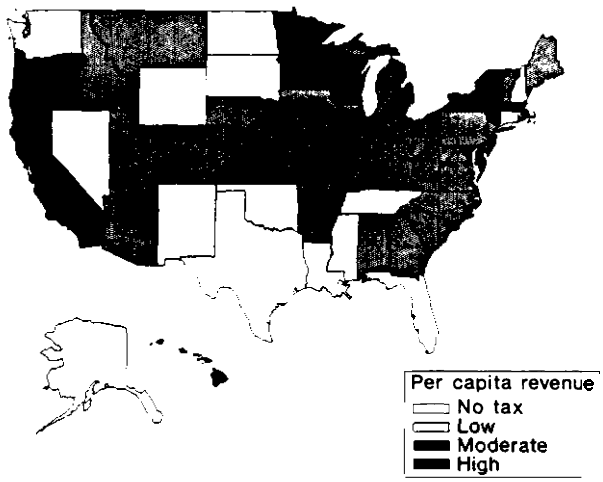
Sales Taxes

Currently 45 States impose general sales and gross receipts taxes; these yielded almost one-half of State tax revenue in 1987. Tax rates range from a low of 3 percent in Colorado, Georgia, North Carolina, and Wyoming to a high of 6.5 percent in Washington and 7.5 percent in Connecticut[11] (see figure 3-5).

STATE TRANSPORTATION PROGRAMS

Most State Departments of Transportation (DOT) were formed to administer highway programs and became increasingly important as the Federal Interstate highway program got under way in the 1950s. Over the past two decades, most have broadened their responsibilities to include other modes of transport as well. However, many aspects of State transportation programs are shaped by Federal policies and their modal orientation.

Figure 3-4--State Income Tax Revenue, 1$87



SOURCE: Office of Technology Assessment, 1990, based on U.S. Bureau of the Census data.

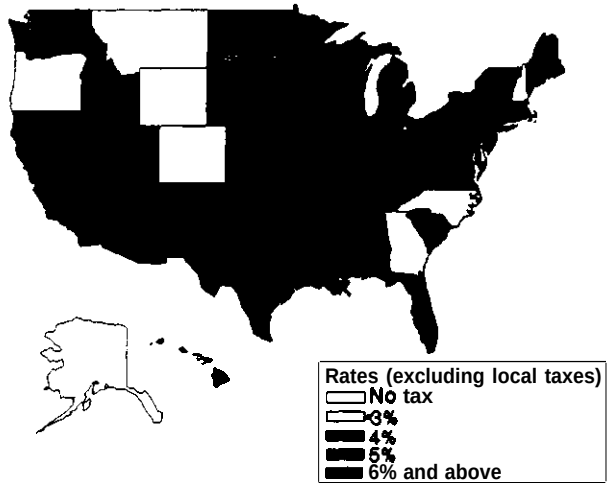
State highway and transportation departments administer a wide variety of State-funded programs and, with the Federal Highway Administration, the Federal-Aid Highway Program. States allocate 60 percent of all highway outlays and are responsible for about 22 percent of the Nation's highway mileage and 43 percent of the bridges.[12] State legislatures establish allocation formulas and priorities for State aid as well as for specific highway and bridge projects.

Revenue sources include user fees, sales taxes, tolls, and lotteries, and State policies range from sharing revenue with local governments and allowing them considerable autonomy on projects to maintaining tight fiscal control and requiring adherence to strict State guidelines. A few States, notably Alaska, Delaware, North Carolina, Virginia, and West Virginia, bypass local governments and assume responsibility for practically all highway and bridge construction and maintenance.

Issues—State highway departments operate under Federal- and State-aid program guidelines. Many State DOT officials are frustrated by delays in

[9]U.S. Bureau of the Census, *Government Finances* p. xv.
[10]Ibid., p. 21.
[11]Advisory Commission on Intergovernmental Relations, op. cit., footnote p.
[12]National Association of Counties, *Linking* (Washington, DC: PP.

Figure 3-5—State Sales Tax Rates,[a] 1988



[a]Numbers are rounded to the nearest whole number.
SOURCE: Office of Technology Assessment, 1990, based on Advisory Commission on Intergovernmental Relations data.

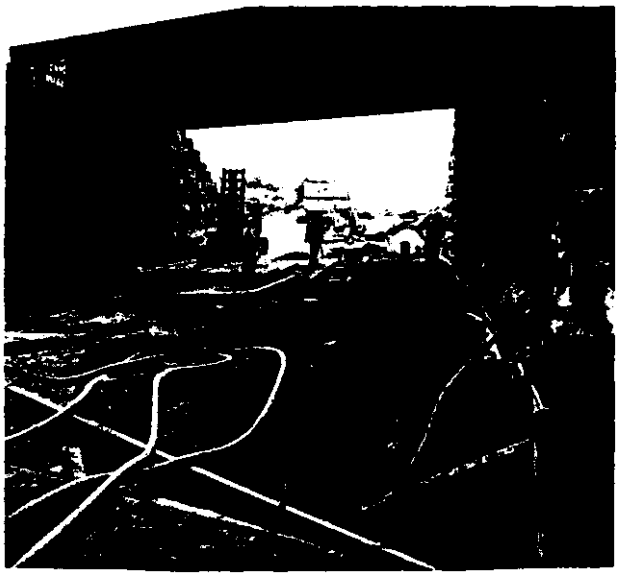


Photo credit: Port Authority of New York and New Jersey

Repairs to roads such as this one may involve underground pipes as well as surface work.

Federal project approval and by grant requirements, which they feel prevent them from directing aid to their most critical needs. States also decry the slowness of spending from the Highway Trust Fund, contending that it is outrageous for the Federal Government to collect gasoline taxes and not use them for their intended purpose.

The challenges facing each State are shaped by its geographic and economic characteristics. Large rural Western States must divide limited funds between maintaining their many Interstate miles and improving other important highways and bridges. States with large urban centers must provide funds to rehabilitate urban highways and bridges and to relieve congestion in suburbs, as well as for highway and bridge improvements in rural districts.

States confront numerous legislative and planning issues. **A** few States are trying to strengthen State and regional land use and capital improvement programs by linking highway financing programs to land development and by requiring private sector contributions for road improvements. Some have encouraged private construction of toll roads or bridges. **A** handful of States with major urban areas are looking at ways to link **highways with other** transportation modes to improve metropolitan mobility and reduce air pollution caused by congestion. Methods of addressing these issues are discussed later in this chapter.

Airports

Although airports are largely a local enterprise, 13 States own or operate commercial airports, including Maryland, Alaska, and Hawaii. Almost all States have aid programs, usually small, for purposes of airport development and/or improvement. Funds come from State aviation fuel taxes or general appropriations.[13] Many States target aid to smaller, nonmetropolitan airports, which are less likely than urban airports to be economically self-sufficient. Since 1946, Minnesota's State Airport Fund, supported by taxes on fuel and airline property and aircraft registration fees, has offered capital matching grants to local airports.

responsible for annual inspections of all (4,300) general aviation airports to collect safety information required by the Federal Aviation Administration (FAA), and many maintain statewide airport development plans. Although States play a key role in airport regulation, financing, and planning, Federal aid goes directly to airports, bypassing State agencies. State aviation

[13]Terry Brusson and Judith Hackett, *State Assistance Local Public Works* (Lexington, KY: The Council of State Governments, 19S7), p. 10.

Photo credit: Minnesota Department of Transportation

This terminal in Cook, MN, was constructed using a combination of local money and aid from a State Airport Fund. The facility has **aground-level** public area and a residence **for the airport manager on the second floor.**

officials maintain statewide capital improvement planning and coordination would be more effective if Federal grants were allocated at the State level. To test this proposition, a 2-year demonstration project has recently begun in three States (Illinois, Missouri, and North Carolina) in which State agencies will administer Federal block grants for reliever and general aviation airports.[14]

Compared to the private sector and the Federal Government, States play a relatively minor role in financing, operating, or regulating railroads. Nonetheless, at least 20 States provide assistance to local rail service from earmarked excise taxes and general appropriations, and 45 States have a recent State Rail Plan that includes an inventory of facilities and ranking of proposed projects .15 The bulk of State aid takes the form of grants or loans to small short-line height carriers that provide essential service to localities. Mississippi has a Railroad Revitalization Program that makes interest-free loans to local governments or railroad companies to rehabilitate track and upgrade other equipment. States that own tracks (usually because they have been abandoned) either operate the railroad, as in West Virginia, or, more commonly, contract with an operating railroad.

A few large, urbanized States, such as California, Illinois, New York, Maryland, and Pennsylvania, subsidize or provide intercity passenger train service to relieve highway congestion and air pollution. Such arrangements are likely to increase. Since 1985, California's DOT has operated a successful service between downtown San Francisco and San Jose. Connecticut DOT, in cooperation with Amtrak, will begin commuter service soon over a 33-mile route from New Haven to Old Saybrook.

Issues—Enabling legislation to permit public-private partnerships or other forms of private sector participation may be needed in many States, especially if efforts to develop high-speed rail transportation between major population centers to ease highway and airport congestion are to succeed.

Although 7 urban States contribute 80 percent of total State aid, at least 40 States provide local mass transit with some funds from general revenues, a dedicated portion of the general sales tax, or motor fuels and vehicle taxes. In 1988, State grants totaled $3.9 billion[16] and, for the first time, surpassed Federal aid, which was $3.3 billion.

Intercity bus service is subsidized in 9 States, 13 support ridesharing, and several target aid to specific users such as elderly or handicapped persons or to rural and small urban areas. While all States have technical assistance programs funded by Urban Mass Transit Administration grants, at least seven supplement Federal funds to expand this service. 17

issues—Keen competition for Federal revenue and the extreme difficulty of resolving urban air quality problems are indicators that States are likely to be pressed to increase their roles in financing transit, in supporting transportation planning, and in technical assistance.

[14]Ed Scott, staff associate, National Association of State Aviation Officials, personal communication, Dec. 14, 1989.

[15]American Association of State Highway and Transportation Officials, *State Rail Program Survey* (Washington, DC: 1989).

[16]American Association of State Highway and Transportation Officials, *1988 Survey of State Involvement in Public Transportation* (Washington, DC 1988).

[17]Ibid.

Photo credit: Metropolitan Transit Development Board of San Diego

San Diego constructed light rail lines without Federal funds, using money from the State of California, including revenues from the State gas tax.

Photo credit: Port of Long Beach

At the Port of Long Beach, CA, containers are removed from the ship to a dockside transfer area. From there, trucks pick up the containers and take them to the federally funded railroad transfer facility pictured here.

Ports and Waterways

Because of the importance of ports for economic development, 28 of the 40 States located on navigable waterways have provided grants for construction of landside port facilities and water cargo terminals during the last 12 years.[18] Three States, Georgia Maryland, and Louisiana, accounted for over 40 percent of the $1.7 billion total in State aid. Although the East and Gulf Coast States provided the most funds, the Mississippi Valley and West Coast States have also invested in port development In addition to general obligation bonds, State support has come from appropriations, transportation trust funds, and user fees. Louisiana dedicates partial proceeds from State motor fuel taxes, and Alaska dedicates watercraft fuel taxes and bond proceeds for port improvements.[19] Maryland and Hawaii tap their State Transportation Trust Funds. State program responsibility is in the departments of transportation, economic development, or State port authorities. In addition to financial support, the State agency frequently coordinates the public works components of major port improvement projects.

The Water Resources Development Act of 1986 established local cost-sharing provisions for channel widening or deepening projects, which had previously been financed solely from Federal funds. Currently, the deeper the channel, the larger the required local match. The Act stipulated that the local share of the costs should be recovered from increased user fees, but so far States have paid the local share from other sources, on the premise that increased fees would hurt their ports' competitive positions.[20]

States have no specific responsibility for the Nation's 12,000 miles of commercially significant inland waterways. The Army Corps of Engineers builds and maintains the locks and dams, and most inland waterway terminals are privately owned.

Issues—Federal technical expertise and funding has supported many State port and industry operations that now need to develop their own independent resources. Public-private partnerships and innovative user-fee arrangements are likely to be sought. Intermodal connections need improvement in many **states.**

[18] American Association of State Highway Transportation Officials, *Information* n *Standing Committee* on Water (Washington, June 1989).

[19] Brusson and Hackett, op. cit., footnote p.

[20] American Association of State *Highway and* Transportation Officials, *op.* cit., footnote *18,* p. 30.

State Transportation Funding

In addition to Federal grants, State revenues for construction and improvements to transportation infrastructure come from two principal sources: user fees, including fuel taxes, registration fees, ticket taxes, and tolls; and broad-based taxes. Financing is by annual appropriations (pay-as-you-go) or debt (general obligation or revenue bonds). Although most States rely primarily on traditional revenue sources and financing mechanisms, many have developed new sources and financing strategies, including collaboration with the private sector.

Benefit Charges-Motor Fuel Taxes and Other Vehicle Charges

User fees or broader benefit charges, principally motor fuel or gas taxes, form the financial base for most State transportation programs, especially for highways. In 1988, Federal, State, and local gas taxes provided $29 billion of the $52 billion State and local governments spent on highway capital, maintenance, and traffic services.[21] The remaining revenues came from a variety of other sources[22] (see table 3-2). Nonetheless, current gas taxes expressed in adjusted dollars are below their 1965 levels; increases of 2 to 4 cents per gallon are needed to bring their purchasing power up to that of 1965 levels.[23]

During the 1980s, 47 States (all except Alaska, Georgia, and New York) raised the per-gallon gas tax-some substantially and more than once—to keep pace with rising construction and maintenance costs. The yield from a penny of gas tax varies widely among States, depending on the amount of gasoline consumed, which is the product of State population, road mileage, and number of vehicles per capita California's 9-cent per-gallon tax, which is low by national standards, yields $1.1 billion, while Connecticut's 20-cent per-gallon tax produces only $320 million (see table 3-3 for State by State information).

Most States levy a flat per gallon tax on gasoline and diesel fuel. However, some States established variable rates, based on fuel prices, in the early 1980s, hoping revenues would track gas prices and provide a rising revenue stream; but as gasoline prices fell in the mid-1980s, so did revenue from variable rates. To compensate, some States tie the tax rate to an index based on changes in motor fuel use and construction costs. For example, Michigan, Ohio, and Wisconsin have enacted taxes that adjust automatically to fuel consumption levels and the Federal Operations and Maintenance Cost Index. The revenue raised reflects highway use and maintenance costs relatively well.

Earmarking Gas Taxes—Twenty-seven States earmark all gas tax revenue for highway use, both to guarantee a reliable revenue source and to ensure that motorists can see the benefits of the taxes. Frequently, State highway improvement programs are tied to increases in the gas tax. (See box 3-A for a description of Iowa's program.) Eight States dedicate gas tax revenue to a transportation trust fund, which may include transit.[24] At least nine States, mainly in the south, west, and midwest, return fuel tax and other benefit charges associated with flying to localities for airport development.[25]

A few States fold all gas tax revenue into the general fund from which all governmental programs are financed. Florida, Massachusetts, New Jersey, New York, South Carolina, Oklahoma, Arkansas, Texas, and California use a share of the gas tax revenue to fund other programs. In 1987, the Texas State highway fund loaned $280 million to the State general fund for education, and transferred $32.4 million to prisons and the State workers' compensation fund.[26] In recent years, fiscal pressures have generated an increase in State legislation to use gas tax and other vehicle-related charges for nonhighway purposes. **OTA concludes that these efforts are likely to continue, despite the opposition of transportation advocates, because gas taxes are broad-based and reliable revenue sources.**

Fees—Although most States exempt motor fuels from State sales taxes, eight collect substantial revenue by applying the sales tax

[21] Thomas Cooper, Federal Highway Administration, personal communication. Jan. 4, 1990.

[22] The Road Information Program, 1989 *State* Highway *Methods* (Washington DC: 1989), p.18.

[23] Thomas W. Cooper, Federal Highway Administration, and Judith A. Depasquale, Florida Department of Transportation, "Local Option Motor Fuel Taxes," draft document, May 1989, p. 3.

[24] American Association of State Highway and Transportation Officials, op. cit., footnote 16, p. 2.

[25] Aslan Institute, *Federal and State Roles in Infrastructure* (Washington, DC: National Council on Public Works Improvements, *1987), p. 72.*

[26] The Road Information Program, *op.* cit., footnote 22, p. 48.

Table 3-2—State Highway Funding Sources, 1988 (In percent)

State	Federal aid	Motor fuel taxes	Vehicle registration	Miscellaneous truck fees	Drivers license	Bonds	General fund	Miscellaneous
Alabama	47.4	28.5	8.0	—	—	8.7	—	7.4
Alaska	60.0	a	—	—	—	—	40.0	—
Arizona	23.1	34.6	8.7	10.8	0.7	6.9	1.4	13.8
Arkansas	28.9	46.9	14.3	4.1	1.2			4.6
California	46.0	23.0	—	—	—	—	—	31.0
Colorado	35.7	49.1	5.2	5.1	0.8	—	—	4.1
Connecticut	37.8	22.2	9.4	—	1.4	22.8		6.4
Delaware	35.5	21.7	—	2.4		—	40.4	
District of Columbia	38.0	16.0	8.0	—	1.0	23.0	14.0	—
Florida	38.0	a	18.0	—	—	—	—	44.0
Georgia	28.6	29.7	—	—	—	16.3	.5	23.9
Hawaii	38.0	33.1	5.7	0.4	—	—	—	22.8
Idaho	40.6	33.8	13.0	8.4	0.8	—	—	3.4
Illinois	24.6	33.4	27.0	—	1.6	4.0	4.3	4.1
Indiana	28.0	53.0	13.0[b]	—	—	—	4.0	2.0
Iowa	26.1	33.7	24.7	—	1.2	—	—	14.3
Kansas	41.0	27.0	19.8	1.0	1.0	—	5.6	4.6
Kentucky	21.5	32.5	5.0	0.3	0.5	14.9		25.3
Louisiana	31.0	20.0				43.0	6.0	0.0
Maine	25.6	37.0	16.2	—	1.4	4.8	5.0	10.0
Maryland	25.0	27.0	8.0	1.0	—	—	—	39.0
Massachusetts	12.7	51.8	26.9[b]	—	—	—	0.1	8.5
Michigan	23.0	45.5	24.5	1.0	0.5	—	—	5.5
Minnesota	30.8	33.4	20.7	—	1.3	—	—	13.8
Mississippi	47.0	35.0	—	—	—	—	—	18.0
Missouri	27.5	36.6	20.3	0.4	1.2	—	—	14.0
Montana	40.6	41.0	—	9.8	—	—	—	8.6
Nebraska	29.7	42.0	12.0	—	—	—	—	16.3
Nevada	28.0	34.0	9.1	10.2	1.2	14.8	—	2.7
New Hampshire	33.0	41.7	22.3[b]	—	—	—	—	3.0

Table 3-2—State Highway Funding Sources, 1988 (In percent)—Continued

State	Federal aid	Motor fuel taxes	Vehicle registration	Miscellaneous truck fees	Drivers license	Bonds	General fund	Miscellaneous
New Jersey	44.4	10.8			9.6	35.2	—	
New Mexico	30.2	34.9	9.0	11.5	1.0	—	—	13.4
New York	30.0	[a]	—		—	10.0	60.0	—
North Carolina	23.2	52.5	16.6	—	3.2	—		4.5
North Dakota	44.0	34.8	15.1	1.7	1.3	—	—	3.1
Ohio[c]	46.5	32.7	0.1	—	—	—	—	20.7
Oklahoma	45.9	48.8	0.2	—	—	—	2.3	2.8
Oregon	20.0	27.0	10.0	20.0	2.0	12.0	—	9.0
Pennsylvania	30.6	25.4	12.3	0.6	1.8	2.6	—	26.7
Rhode Island	51.0	[a]	—	—	—	13.0	36.0	—
South Carolina	32.2	52.2	9.2	1	1.1	—	0.2	5.0
South Dakota	44.6	36.4	2.2	—	—	—	—	16.8
Tennessee	35.6	37.6	16.2	—	—	7.0	—	3.6
Texas	31.7	37.9	21.7	—	—	—	—	8.7
Utah	41.5	46.6	6.4	.3	1.6	—	0.3	1.3
Vermont	35.2	25.0	18.9	—	—	—	—	20.9
Virginia	19.9	35.1	5.8	2.0	—	—	—	37.2
Washington	35.1	42.8	15.8	—	—	3.2	—	3.1
West Virginia	41.3	30.4	9.4	—	0.5	—	—	18.4
Wisconsin	21.5	46.9	17.0	—	1.5	4.2	—	8.9
Wyoming	36	4	4					34

[a]State motor fuel tax flows into the general fund.
[b]Indicates vehicle registrations and drivers' licenses.
[c]1987 data (1988 data unavailable).

SOURCE: The Road Information Program, *1989 State Highway Funding Methods* (Washington, DC: 1989).

Table 3-3--State Gas **Tax Rates and Yields, 1989**

	Gas tax (cents per gallon)	Yield per penny ($ millions)		Gas tax (cents per gallon)	Yield per penny ($ millions)
Alabama	13	20	Montana	20	4
Alaska	8	2	Nebraska	22	7
Arizona	17	17	Nevada	18	5
Arkansas	14	12	New Hampshire	14	5
California	9	120	New Jersey	11	35
Colorado	20	15	New Mexico	16	8
Connecticut	20	16	New York	8	50
Delaware	16	3	North Carolina	21	38
District of Columbia	18	2	North Dakota	17	3
Florida	10	61	Ohio	18	42
Georgia	8	34	Oklahoma	16	17
Hawaii	11	4	Oregon	16	13
Idaho	18	5	Pennsylvania	12	45
Illinois	16	44	Rhode Island	20	5
Indiana	15	25	South Carolina	16	17
Iowa	20	14	South Dakota	18	3
Kansas	15	12	Tennessee	21	24
Kentucky	15	17	Texas	15	85
Louisiana	16	23	Utah	19	7
Maine	17	6	Vermont	16	3
Maryland	19	24	Virginia	18	33
Massachusetts	11	28	Washington	18	21
Michigan	15	41	West Virginia	20	11
Minnesota	20	18	Wisconsin	21	20
Mississippi	18	13	Wyoming	9	2
Missouri	11	26			

SOURCE: Office of Technology Assessment, 1990, based on data from the Highway Users Federation; and The Road Information Program 1989. *State Highway Funding Methods* (Washington, DC: 1989).

to gasoline. In 1988, such taxes yielded $l.2 billion in California.[27]

Fees for driven' licenses, vehicle registration, inspections, truck weights, record checks, and vanity license plates are other revenue sources for State transportation needs.Tbgetherthesefeescontribute approximately 20 percent of all State highway revenues.[28] Most fees are assessed on a flat rate, and they do not reflect aspects of highway use, such as the weight of the vehicle and mileage driven. However, several court rulings have found that some State flat-rate fees are unconstitutional. For example, in 1987, the U.S. Supreme Court ruled that Pennsylvanians truck fees were illegal, and that the State must refund the $500 million collected. The court held that the flat-rate fee was not related to road use and that the State discriminated against out-of-State trucks by reducing fees for trucks registered in Pennsylvania.[29]

Tolls--The Pennsylvania Turnpike between Harrisburg and Pittsburgh was the first modern highway financed with tolls. Currently, tolls are charged on numerous bridges and tunnels, and 28 States operate 36 toll roads. In most cases, tolls pay the debt service on State or local revenue bonds used to finance construction of a specific road, and some also fund maintenance and operations.

Although legislation prohibits tolls on federally financed highways, the 1987 Surface Transportation and Uniform Relocation Assistance Act and amendments permitted test projects in nine States to use Federal funds for up to 35 percent of costs and toll financing for the balance. The projects, in California, Colorado, Delaware, Florida, Georgia, Pennsylvania, South Carolina, Texas, and West Virginia, reflect the Federal interest in encouraging financing based on benefit charges.[30]

States have many uses for toll revenues. New Jersey has formed a fund from excess toll revenues

[27]Ibid., p. 30.

[28]Ibid., p.

[29]Ibid.

[30]James McCarthy, chief, Policy Evaluation Branch, U.S. Department of Transportation, personal communication, Sept. 25, 1989.

Box 3-A—Iowa's RISE Program[1]

To increase support for streets and roads, the Iowa Legislature created the Revitalize Iowa's Sound Economy (RISE) program in 1985. The program's primary goal was to encourage private investment; and local politicians, business leaders, and developers joined State lawmakers in crafting the program.

Initially, the RISE Fund received a 2-cent per gallon portion of the State's motor vehicle fuels tax, totaling about $32 million each year. By law, 50 percent of the funds go to primary roads, 25 percent to secondary roads, and 25 percent to city streets. County and municipal governments may submit applications for either grants or loans, and the Iowa Department of Transportation (IDOT) may initiate projects as well. The State Transportation Commission, an arm of IDOT, accepts the applications, evaluates them, and offers grants and/or loans to the selected projects.

Assistance is available for three kinds of projects:

- *immediate opportunity projects*, for cases in which a developer's or firm's decision to locate or remain in a region hinges on an immediate commitment of public project funds;
- *local development projects*, for projects that support local economic development but do not require immediate funding; and
- *regional development projects*, for projects of relatively large scale and cost, extending beyond the scope of a single jurisdiction or site.

As its main allocation criterion, the Transportation Commission considers a project's potential to create or retain jobs in a region by attracting new development. In addition to promoting post-project economic growth, RISE also encourages local involvement by requiring jurisdictions to cover at least 20 percent of project costs. Frequently localities contribute more than the required 20 percent, and participation has reached as high as 70 percent. IDOT approved funding for 172 projects from among 312 applications between 1985 and 1989, and estimates that RISE has helped to leverage over $732 million in planned new capital investment from such diverse businesses as clothing manufacturing and barcoding.

Early in 1989, the State legislature modified the program, because funds designated for county road projects had a large uncommitted balance, and those designated for primary roads and city streets were completely committed for projects. The portions of Iowa's fuel tax allocated for primary roads and city streets remained the same, but the county road portion dropped substantially since economic development opportunities occur less frequently in counties. RISE loans have flexible terms. For example, in 1986, the city of Davenport undertook a $13.2 million road and utilities improvement project in a new economic development area at a highway junction. The RISE fund awarded Davenport a $2.5 million grant and a $2.5 million loan, giving the city 10 years to repay the loan at 2 percent interest. Loan payments will be low in the initial years and increase as development proceeds in the targeted area, and revenues from the development district accrue.[2]

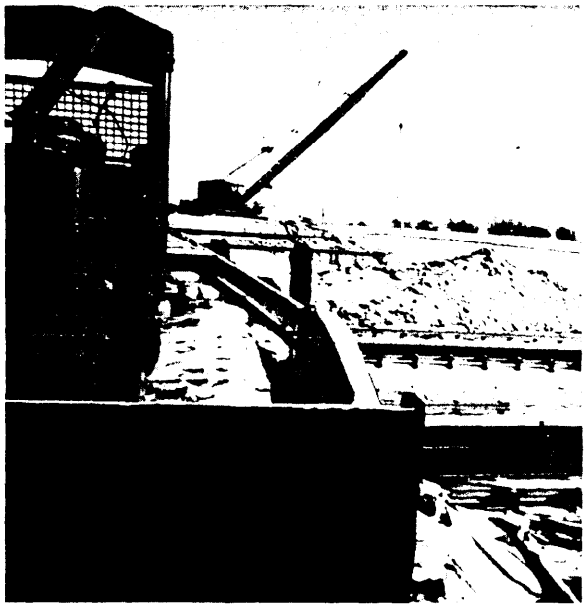


Photo credit: Iowa Department of Transportation

Highway construction in Davenport, IA, funded by the RISE program.

[1]Material on the IUSE program is based on Iowa Department of Transportation, *Transportation Improvement Program: 1989-1993* (Ames, IA: December *1988).*

[2]Apogee Research, Inc., *Financing Infrastructure: Innovations at the Local Level* (Washington, National League of Cities, December 1987), pp. 46-s1.

Photo credit: State of Washington Department of Transportation

A rural airport in Washington, financed by the local government in cooperation with the State development program.

to finance other needed State highways.[31] In 1986, Florida instituted a Toll Facilities Revolving Loan Fund that provides venture capital to localities to plan and construct toll roads and is repaid from tolls. The State appropriated $2.7 million in 1986 and $20 million in 1987. (See chapter 4 for further details of private toil-financed highway projects.)

***Earmarked Taxes*—Twelve States (California,** Arizona, Colorado, Florida, Georgia, Illinois, Missouri, Nevada, New York, Ohio, Texas, and Washington) permit local jurisdictions to levy a general sales tax dedicated for transportation improvement. In most cases, the localities can further target the funds for mass transit improvement. For example, in California up to 0.5 cents of sales tax revenue is returned to eligible counties for transit use.[32]

***Aviation Taxes*—Minnesota, Michigan, and Wis-**consin are among the States that earmark revenue collected from taxes on aviation fuel and airline property, and fees from aircraft registration to finance State airport development and capital improvement programs. Washington State finances an airport development program, focused on rural areas, with dedicated State aviation fuel tax revenue.[33]

Appropriations From the State General Fund

Most States use general fund appropriations for transportation capital improvements only for supplemental or emergency financing, although a few States support transit capital investments with general fired revenues. New York State appropriated $170 million in *1987* to transit projects, and Georgia appropriated $600,000 from general funds. States providing aid to local airports tend to use general fund appropriations in addition to benefit charges. For instance, California set up a revolving loan fund in 1979 with general appropriation seed money of $1 million a year for 5 years.[34] In 1988, about 6 percent of State transportation capital expenditures came from general funds[35] (see table 3-2 again). Because general appropriations require legislative action and are subject to changing State priorities, they are not a reliable source of financing for long-term capital projects.

Financing With State Bonds

Currently, States use general obligation bond financing less for transportation than they once did. In 1973,29 percent of State long-term debt was for highway improvements compared to 8 percent in 1984.[36] Bonds financed less than 10 percent of State capital expenditures for transportation projects in 1988.[37] Several factors have contributed to the downward trend in general obligation bond financing. First, many States have strict debt limitations restricting the use of **general** obligation bonds. Furthermore, States tend to give first priority for bond financing to school, prison, and hospital construction because gas taxes and other user fees provide a ready source of support for transportation. Finally, relatively high interest rates in the 1980s increased the costs of borrowing. Since bond issues must have voter approval in most States, they became more sensitive political issues.

[31] Apogee Research, Inc., *Trends* in *Financing Public Works* Council on Public Works Improvement, 1986). p. 49.
[32] Advisory Commission on Intergovernmental Relations, op. cit., footnote 8, vol. 1, p. 62.
[33] Busson and Hackett, op. cit., footnote 13, p, C-18.
[34] Ibid., p. C-2.
[35] National Association of State Budget Officers, *State Expenditure* *1988* (Washington, DC: 1988), p. 85,
[36] J. Richard Aronson and John L. Hilley, *Financing State and Local Governments* The Brookings Institution 1986), p. 167.
[37] National Association of State Budget Officers, op. cit., footnote 35, pp. 85-87.

Use of revenue bonds for transportation purposes will probably increase, both because of constraints on general obligation bonds and because tolls and other types of benefit charges provide reliable revenue streams for debt service. Michigan relies solely on revenue bonds backed by proceeds from gas taxes, driver's license fees, and motor vehicle registration to support long-term highway needs. In the fall of 1988, Florida voters passed a constitutional amendment allowing the State DOT to use gas tax revenues to repay revenue bonds to purchase rights-of-way and to build and rehabilitate bridges.[38]

Trust Funds

Most States earmark specific revenue, usually gas tax and registration fees, for a trust fund-a permanent account to be used solely for *transportation* or highway expenditures. In 1984, New Jersey established a comprehensive transportation trust fund to finance long-term improvements (see box 3-B). The Maryland Consolidated Transportation Fund, fed by the gas tax, a motor vehicle titling tax, license and registration fees, and a portion of the State corporate income tax, finances highways and public transportation. In 1986, Alabama established a Municipal Government Capital Improvement Fund to make grants to local governments for construction of public buildings and streets. The improvement program was to be funded from the State Oil and Gas Trust Fund when it reached $60 million. Currently, the fund stands at $45 million; the State anticipates it will be several years before it reaches $60 million.[39]

Public-Private Partnerships

Most existing public-private partnerships are between local governments and developers, and State governments are just beginning to develop such arrangements for financing capital investments in transportation. Before States or localities enter into public-private partnerships, they must have the legal power to take certain actions, and many have enacted or are considering legislation to provide the necessary authorizations. Some of the most important include:

- power of contract-the ability to enter into a service contract,
- power to convey—the ability to sell or lease existing facilities to a private company,
- power to purchase-the ability to purchase facilities from the private vendor at some point in the future, and
- bond authority to finance the facility.

In 1986, 19 States had statutes specifically authorizing privatization of one or more types of infrastructure. Arizona adopted a policy of joint sponsorship of certain highway projects as part of its 1984 transportation program and will assume only 50 percent of the cost of construction of freeway interchanges and grade separations not on the State plan.[40] Texas has authorized the formation of transportation corporations in which private property owners form nonprofit corporations to accept property and money to support highway developments. A landowner interested in having a road built must apply to the Right of Way Division of the Department of Highways. If the Division approves the need for the road, the applicant submits a plan and articles of incorporation for approval by the Highway Commission. Four corporations have been approved, two in Austin and two in Houston.[41]

Caltrans, the California DOT, has recently been authorized by the State legislature to develop partnerships with private firms to design, build, and operate four demonstration projects for State-owned rights-of-way. Caltrans is soliciting proposals from private developers who are guaranteed leases for up to **35 years** to operate the facility and the option to recoup their investment through toll revenue or through the value added by the transportation facility to associated private development.[42]

Lotteries

The State of New Hampshire established the first modem State lottery in 1964, and by 1989,28 States and the District of Columbia used lotteries to raise revenue. Gross receipts range widely; in 1986 Vermont lottery receipts were just $12 million, while California's lottery brought. in $1.6 billion.

[38]The Road Information Program, op. cit., footnote 22, p. 38.

[39]Gene stabler, assistant treasurer, State of Alabama, personal communication, Sept. 28, 1989.

[40]Chambers Associates, Inc., *Report of the Private Sector Advisory Panel on Infrastructure* Advisory Report to the Senate Budget Committee (Washington, DC: May 1987), p. IV-7.

[41]Ibid., p. IV-21.

[42]California Department of Transportation, Office of Privatization, *Privatization* (Sacramento, CA: October 1989), p. 1.

Box 3-B—New Jersey Infrastructure Financing[1]

Crafting an acceptable multipurpose infrastructure funding program appears to be among the most difficult of political tasks. In 1982 and early 1983, then-Governor Thomas Kean's innovative proposal for a New Jersey Infrastructure Bank (NJIB) was widely hailed. Disputes over control of the bank and its financial stability killed the idea, however, by the end of 1983. In 1984, the Governor rejected an alternative legislative proposal that gave the legislature more power over the bank. Ultimately the stand-off led to the establishment of a number of individual trust funds. Together these have provided more aid to local wastewater treatment and resource recovery systems than the Infrastructure Bank was projected to provide.

1982-83: The New Jersey Infrastructure Bank—The NJIB would have helped finance four categories of public works: wastewater treatment, water supply, solid waste disposal, and transportation. The majority of the funding would come from equity loans, which themselves would be funded by Federal Clean Water Act grants.

However, localities were loath to see their Federal grants converted into loans and disliked the requirements to set user fees or taxes high enough to meet costs. Moreover, the legislature, which had played no role in designing the program and would play none in program oversight, questioned the reliability and continuity of the funding sources. The lack of oversight was a special sticking point, because of the proposed bank's size (almost $1 billion in capital) and its power to make allocation decisions. The NJIB was designed to be an independent authority with close connections to the executive branch, prompting the legislature to demand the responsibility of determining the bank's rules and regulations. This demand was incorporated into the alternative proposal that was rejected.

1984-85: The Infrastructure Programs Enacted—The New Jersey State Legislature ultimately enacted three category-specific programs. The *New Jersey Transportation Trust Fund*, established in 1984, uses revenue bonds backed by dedicated motor vehicle fuel taxes to fund a $320.3 million program. The Trust Fund undertakes direct spending programs and finances State aid to counties and municipalities for transportation system improvements.

The *Resource Recovery and Solid Waste Disposal Program*, first established in 1980 and substantially expanded in 1985, authorizes grants and low- or no-interest loans to local governments to cover 10 percent of costs for developing resource recovery facilities and landfills. The State Department of Environmental Protection manages the program, which is backed by $168 million ($135 in general obligation bonds and $33 million transferred from the general fund). Local payback of the loans starts 1 year after operations begin at new facilities.

The *New Jersey Wastewater Treatment Trust Fund*, established in 1985, is an independent financing authority with the power to issue bonds backed by the Trust's loan agreements with borrower localities. These agreements, in turn, are secured by user-fee covenants, a State-appropriated reserve fund, and municipal bond insurance. Funds to localities come from two sources: the Wastewater Treatment Trust, an independent authority; and the Wastewater Treatment Fund, which is administered by the State Department of Environmental Protection. These programs are considered successful, although officials note that while nearly every eligible jurisdiction is eager to apply for a grant, many hesitate to apply for loans, because local financial solvency is a major concern.

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[1]Material on New Jersey infrastructure financing is based on the following reports: Council on New Jersey Affairs, *New Jersey Issues: Papers From the Council on New Jersey Affairs* (Princeton, NJ: Princeton Urban and Regional Research Center, Woodrow Wilson School of Public and International Affairs, March 1988); and Sophie M. Korczyk, "State Finance for Local Public Works: Four Case Studies," OTA contractor report, Dec. 19, 1988.

Prize money and administrative costs can claim up to three-quarters of the receipts. Though lottery revenue has in the past proven a very unpredictable source of funding, it can fill important gaps. Most States direct lottery revenues into general funds, but several States earmark at least a portion of lottery revenue for public works infrastructure (see table 34).

Table 3-4—Net Revenue From State Lotteries Used for Infrastructure

State	Net revenue (millions)	Dedicated use
Arizona	$42.2	Transportation
Colorado .. ..0.	$26.1	Parks, recreation, capital construction
Iowa	$26.3	Economic development
Oregon	$21.3	Economic development

SOURCE: Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism*, 19SS ad., vol. 2 (Washington, DC: July 1988), pp. SS-90.

Political Strategies for Transportation Funding

To help assure continued support for transportation improvements, several States have taken the lead and established long-range capital financing programs, based on bonds, increased gas tax revenues, or a package combining revenue sources. Successful financing programs are typically sold to voters and decisionmakers by a structured effort that includes establishing needs and priorities, evaluating alternatives, and developing political support. (See box 3-C for an example.) Six basic steps characterize successful efforts:

- identifying specific needs, the purpose of the program, and those benefited or otherwise affected;
- structuring the program and ranking projects;
- evaluating and establishing the financing program;
- setting up collection and accounting procedures for revenues and managing the program;
- coordinating with other public agencies and private sector leaders; and
- developing political support in advance.

STATE ENVIRONMENTAL PUBLIC WORKS PROGRAMS

Because local jurisdictions have historically been responsible for environmental infrastructure, the State role has been small, consisting primarily of setting public health standards and providing some financing and technical assistance to local districts. Supplying drinking water and managing solid waste have been almost entirely local tasks, However, for most of the past 20 years, States have acted to pass through and administer Federal grants to localities or special districts for wastewater programs. Since the passage of the Water Pollution Control Act in 1972, the Federal Government has provided construction grants for wastewater facilities, to help localities meet the standards mandated by the Act as rapidly as possible. The legislative intent was always that eventually State and local governments would assume full funding responsibility. The Farmers Home Administration of the Department of Agriculture has also played a significant role in water and wastewater treatment plant financing for rural areas and has supported State technical assistance programs as well,

charged with administering and enforcing Federal water purity regulations, and almost three-quarters of the States also support local improvement programs through grants, loans, and bond banks. Such assistance includes aid to local governments for purchasing land to protect underground water supply sites (Massachusetts), bond funds to support water supply contamination abatement (Maryland), and low-cost loans for controlling water supply and wastewater pollution (Kentucky). State management and technical assistance is provided by circuit riders who advise communities without engineering expertise and try to encourage inefficient small-scale systems to consolidate.

issues—Drinking water problems are increasingly moving from local jurisdictions to the State. Many problems demand regional solutions, because water-quality issues extend beyond political boundaries (much of Florida is facing drinking water problems, for example). **Moreover, the costs and technical requirements necessary to meet Federal Clean Water regulations exceed the financial and engineering capabilities of many local jurisdictions.**

Wastewater Treatment

States establish design, operations, and treatment standards and assist local governments with planning and engineering advice; some provide special

Box 3-C—Citizen Outreach Pays[1]

The New York Department of Transportation (NYDOT) and related agencies conducted an aggressive citizen outreach campaign in 1988 to encourage statewide support for transportation improvements. The agencies held public forums to ask residents how to pay for expansion and rehabilitation, and used capital improvement planning techniques to determine consistent and credible priorities around the State. Subsequently, NYDOT discussed its plans with public officials throughout the State to ensure their support for the designated improvements. In November 1988, voters overwhelmingly approved a $3 billion bond issue to rehabilitate the State's highways and bridges. The outreach and planning efforts developed for the campaign have helped NYDOT maintain good relations with constituents. Moreover, the Department now requires its regional directors to estimate project costs thoroughly, assess infrastructure condition accurately, and draft their programs in accordance with explicit NYDOT statewide construction goals.

[1]Material in this box is based on Ted Thompson, New York Department of Transportation, personal communication, April 1989.

Photo credit: New York State Department of Transportation

A Citizen's Forum conducted by the New York Department of Transportation.

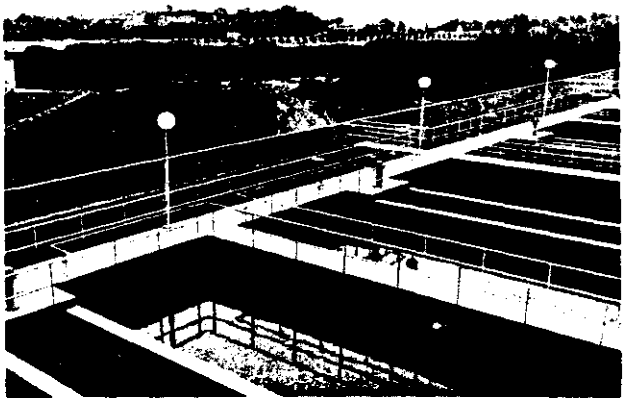

Photo credit: S.C. Delaney/U.S. Environmental Protection Agency

Large municipal wastewater treatment plants, such as this one in Washington, DC, have played *m* important role in cleansing water resources of pollutants.

technical assistance to small districts. Financially, States play a key role. They allocate Federal construction grants based on an annual State needs study, with over one-half of the States providing a share of the local match. States may use Environmental Protection Agency (EPA) funds for authorized wastewater treatment construction grants until 1990. However, between 1991 and 1994, all Federal funds must be used as seed money for self-sufficient **State** revolving funds (SRFs), from which local districts can borrow to build wastewater treatment facilities. After 1994, States will have full responsibility for administering and funding wastewater treatment construction loan programs and for providing financial and technical assistance to local districts. **EPA estimates that a $68** billion additional investment is required to meet current national treatment needs .43

Issues—After Federal support for SRFs ends in 1994, States will be responsible for expanding the loan fund base as well as for enforcing all Federal wastewater regulations. EPA is expected to extend current water-quality regulations to cover combined sewer overflows and bypasses, significantly increasing State regulatory responsibilities and local investment needs. In this rapidly changing framework, States play a vital role in providing local districts with financial advice and technical support. However, State technical expertise is often limited, because salaries for engineering and financing experts are lower than in the private sector,[44] and funding resources are thin. Federal aid for State environmental planning and program administration has been severely curtailed, and most States have not replaced it. Costs **are likely to exceed the capabilities of many local jurisdictions. Furthermore, few resources are available to encourage new technology or operating improvements.**

Solid Waste

Currently, the States' primary role is in enforcing EPA standards. A few States, including New Jersey, Wisconsin and Michigan, have programs to aid local districts in landfill siting and acquisition or resource recovery. **Because of the regional and statewide implications of solid waste disposal issues, the State role in providing technical assistance and political support will probably expand.**

Federal policies require States to assume a much larger role in administering and financing wastewater programs, and between 1982 and 1986, Federal funds as a portion of State budgets for water programs fell from 49 to 33 percent.[45] Some State governments-Texas, Ohio, Oklahoma, and West Virginia, for example-have a history of providing grants and loans to localities to supplement Federal programs. By 1981, 41 States had established programs (usually modest) of grants and/or loans to help meet the 25-percent local share of Federal matching grants.[46] More recently, many States have expanded loan and grant programs or established State-run bond banks. The programs have varied forms of capitalization (bonds or appropriations), eligibility requirements (need or fret-come, first-serve), loan terms, and interest rate subsidies. Almost all offer grants or large subsidies for hardship cases. Local self-sufficiency is the goal of several States, but most provide periodic infusions of capital from the general fund, bond issues, or

[43]U.S. Environmental Protection Agency, Office of Municipal Pollution Control, *1988 Needs Survey—Report to Congress* (Washington, DC: February 1989), p. 1.

[44]Jon L. Craig, chief, Water Quality Service, Oklahoma Department of Health, personal communication, Oct. 26, 1989.

[45]National Governors' Association, *Funding Environmental Programs: An Examination* (Washington, DC: 1989), p. 2.

[46]Congressional Budget Office, *The Policy Considerations for the* 1980's (Washington, DC: 1983), p. 58.

Box 3-D—Texas: State Water Loans and the State Revolving Fund[1]

With experience from a loan program that goes back 30 years, Texas has been able to move quickly to change to the State Revolving Fund (SRF) program. In 1957, the Texas Legislature authorized $200 million in general obligation bonds to establish the Texas Water Development Fund (TWDF) to make loans to local governments for the construction of dams, reservoirs, and other water storage facilities. Over the years, Texas voters and the Texas Legislature have approved additional bond issues and State appropriations for the program and expanded its functional scope. In 1971, voters authorized a bond issue to capitalize a Texas Water Quality Enhancement Account within the TWDF for the express purpose of supporting wastewater treatment. Between 1971 and 1988, the State authorized 316 Water Quality Enhancement loans, totaling about $173 million.

The TWDF offers loans for both wastewater treatment projects and water supply projects. Eligible borrowers include all political subdivisions as well as nonprofit water supply corporations.[2] To be considered for a *wastewater treatment loan*, the borrower must meet either of two conditions: 1) qualify as a "hardship case," with a low credit rating that precludes borrowing or issuing bonds on the open market; or 2) present a project that is regional in nature. To be considered for a *water supply loan*, a borrower must meet either of the two conditions noted above, or else submit a project intended to convert from a groundwater to surface water supply system.

The lending rate is usually one-half of a percent above the cost of funds, but the managing board can establish lending rates on a case-by-case basis if special local needs warrant. The TWDF monitors each loan carefully, seeks legal and financial advice when necessary,[3] and cooperates closely with applicants. No local government has defaulted on a loan over the program's 30-year history.

In 1988, the Environmental Protection Agency (EPA) issued Texas a $105 million capitalization grant, which Texas matched with an additional $21 million. Though the SRF funds reside in a separate account outside the State treasury, the same staff administers both TWDF and SRF loans.

The federally supported loan program offers loans only for wastewater treatment programs. Though SRF loan applicants do not have to meet either of the two TWDF threshold requirements, the SRF eligibility requirements are stiff. All SRF loans require that the State provide matching funds equal to or greater than 20 percent of the capitalization grant. In addition, approved projects under the SRF must be consistent with specified Clean Water Act requirements, and the State must establish an EPA-approved State environmental review program. Before using SRF funds for any allowable discretionary projects, the State must address projects identified under the National Municipal Policy of the Clean Water Act.[4] A final distinction between the two programs is that TWDF loan repayments are used to retire outstanding bonds. Because the loan repayments are not directly funneled into additional loans to local governments, the TWDF is not a true revolving fund. Notwithstanding these differences, Texas' experience with a loan program has allowed the State to adjust quickly to the SRF.

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[1]Material on Texas' loan programs is based on D. William Graham et al., *Tax Reform and State Revolving Funds: An Analysis of the 1986 Tax Reform Act*, Report From the Government Finance Research Center to the U.S. Environmental Protection Agency (Washington, DC: Government Finance Officers Association, Mar. 10, 1989); and Kevin Ward, Texas Water Development Board, personal communication, Aug. 3, 1989

[2]Loans to political subdivisions may be financed with tax-exempt bonds, but loans to nonprofit corporations are funded with taxable bonds.

[3]Evelyn Shields, *Funding Environmental Programs: An Examination of Alternatives* (Washington, DC: National Governors' Association, 1989), p. 10.

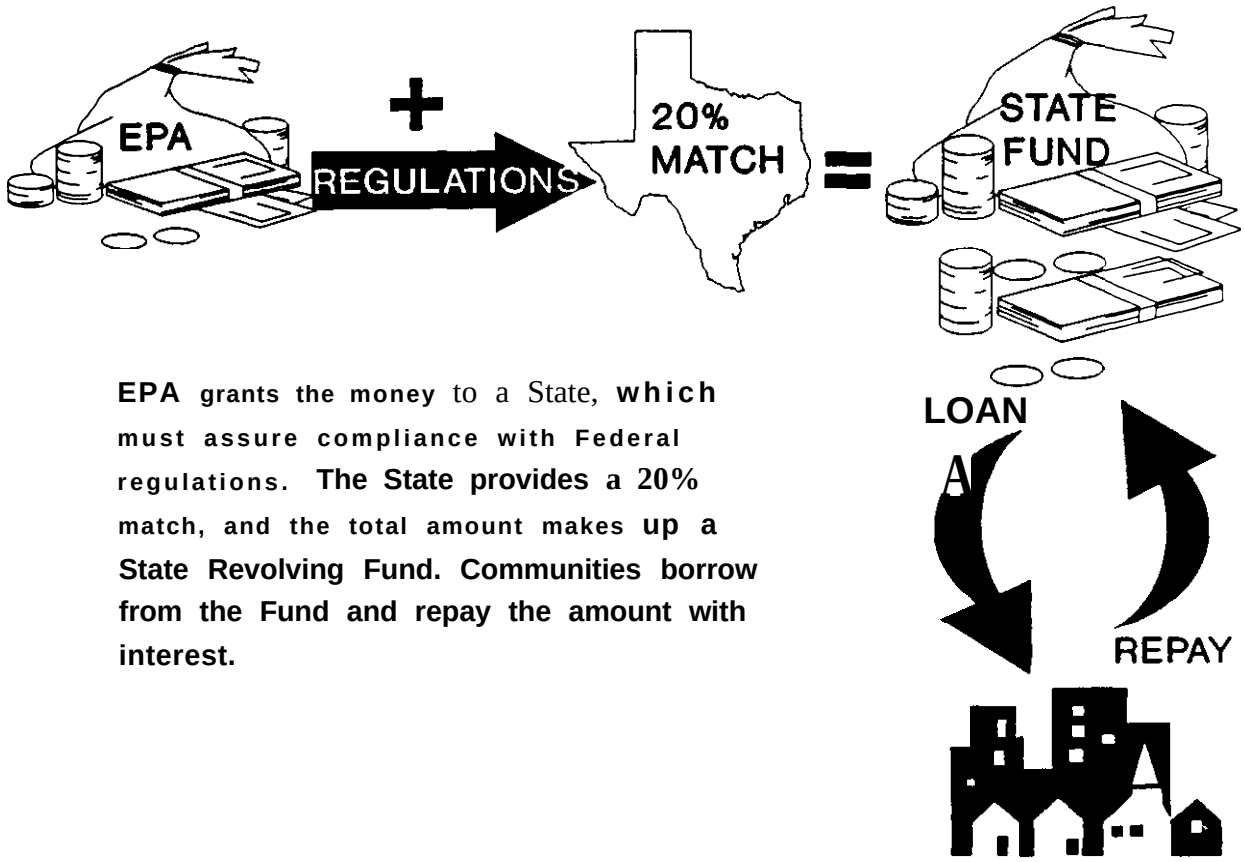
[4]William Kramer, chief, Policy and Analysis Branch, Office of Municipal Pollution Control, U.S. Environmental Protection Agency, personal communication, Nov. 27, 1989.

earmarked taxes .47 (Box 3-D describes the Texas Loan Program.)

State **Revolving Loan Funds**

EPA modeled the SRF program after existing State programs, and under EPA guidelines, States must add a matching 20 percent share to the Federal grant and enforce current EPA project regulations. The SRF can make loans to communities at or below market interest rates for 10 to 20 years. Loans can be used to finance new projects, refinance ongoing projects, or to "leverage" or guarantee other bonds. In effect, local districts borrow from a State agency that is responsible for managing the SRF, and the

Figure 3-6—How a State Revolving Loan Fund (SRF) Works



EPA grants the money to a State, **which must assure compliance with Federal regulations. The State provides a 20% match, and the total amount makes up a State Revolving Fund. Communities borrow from the Fund and repay the amount with interest.**

SOURCE: Office of Technology Assessment, 1990.

loan repayment stream feeds a self-sustaining loan fund (see figure 3-6).

In early 1990, 42 States and Puerto Rico had EPA-funded SRF projects under way.[48] The Federal grants total $1.4 billion, and individual State grants range from $188 million in Texas to $4.6 million in Vermont and South Dakota.[49] Utah was the first State to begin construction of an SRF-financed project; administrators credit the fast start to experience gained managing the State-based program, begun in 1984. In 1988, Tennessee awarded $8.3 million, including a $2 million State match, to six community water pollution control projects on the State's project priority list. Interest rates vary according to an ability-to-pay index developed by the University of Tennessee. Several States plan to leverage the capital grants to multiply the effectiveness of the Federal funds—New York, for example, plans to use its capital grant to secure bonds up to five times the amount of the capitalization.

The success of the SRF program from the State and local perspective depends on several factors. Chief among them are: Federal funding levels through 1994, successful financial management of the program by the State, and State support of local projects. Currently, Federal funds are authorized to provide $1.2 billion for capitalization grants in each of 1989 and 1990, and $2.4 billion for 1991,50 with amounts beginning to decrease in 1992, and falling to zero after 1994. Actual 1989 appropriations were

[48]U.S. Environmental Protection Agency, Office of Municipal Pollution Control, *SRF Update* p.

[49]Ibid., pp.

[50]The of Cities reports that billion would provide less than 25 percent of State and local costs of meeting the Clean Water Act mandates.

$941 million,[51] however; **and States** worry **that in future years** appropriated funds will also be lower than authorized levels.

States face three important financial/institutional issues related to SRFs. The first, is the required 20 percent match. In most cases, these funds are raised from general obligation bonds and/or general appropriations, depending on the State fiscal philosophy.

Second, State SRF officials are managing complex programs that require a high level of legal and financial expertise. Loan structuring, portfolio management, and compliance with Federal and State statutes demand sophisticated knowledge of local and national conditions and capital markets. The transition to a loan program will be unwelcome and difficult for many communities, and they will need more State help, particularly in establishing higher rate structures to cover full project costs and ensure loan repayment. For some poor communities, raising rates to permit conventional loan repayments will be impossible, and State officials will be called on to develop alternative financing plans. EPA funds available to States for program planning and administration are being drastically cut, handicapping those that need the funds for management staff and technical assistance.[52]

Third, States face the challenge of how and where to raise the additional capital to finance projects and meet Federal regulations--only some of which pertain directly to the objectives of the program. As one State wastewater program manager commented: "**having this many regulations is pretty hard for** local jurisdictions to stomach for a LOAN—and the Feds just added a new regulation on maintaining a drug-free work environment."[53] Utah SRF officials estimate that Federal contract conditions stipulating environmental reviews, wage rates, and access for the handicapped will increase local project costs by approximately 20 percent[54] and are compensating local districts by reducing interest rates **3** points. Costs are a problem now even with Federal support; difficulties will intensify when Federal funding ends in 1994. In most States, the SRF programs are not expected to meet all the financing needs, and EPA estimates that **20 States** will face a combined financing burden of nearly $57 billion.[55] Moreover, operating costs are expected to increase rapidly as more complex treatment processes are introduced, requiring higher user fees and ultimately making capital financing more difficult. Finally, State officials can buffer the Federal/local tensions arising from unanticipated changes in Federal regulations, which often hamper local program management and financing.

State Bond Banks

Vermont established the first State-sponsored bond bank in 1970, and at least 10 States have since followed suit: Alaska, Illinois, Kentucky, Maine, Michigan, New Hampshire, New Jersey, Nevada, North Dakota, and Oregon. Such banks reduce interest costs to local communities by pooling a number of small, local issues into one large, more easily marketable bond. State bond banks offer the greatest local savings when the State guarantees the consolidated bond issue with a reserve fund supported by the State general fund.[56] Furthermore, having a group of communities participate in the bond issue spreads the risk and lessens the chance of default, thus lowering interest costs. Underwriting costs are lower because of the larger issue and superior credit rating of the State bond bank,[57] and small town officials, inexperienced in finance, benefit from the expertise of State bond bank specialists.

Other Bond Financing

Bonds are the primary source of State matching funds for EPA SRFs, and now finance more construction of environmental facilities than Federal grants. During the 1980s, municipal bonds raised an

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[51] Don C. Niehus, environmental planner, Office of Municipal Pollution Control, U.S. Environmental Protection Agency, personal communication, k. 11, 1989,

[52] National Academy of Public Administration, Financing Strong *State* Water Proceedings of a National Workshop, Mar. 20-21, 1989 (Washington, DC: Us. Environmental Protection Agency, Office Of Water, August 1.

[53] Craig, op. cit., footnote 44, Mar. 9, 1989.

[54] U.S. Environmental Protection Agency, Office of Municipal Pollution Control, *SRF* 1988), p. 2

[55] Apogee Research, Inc., The *Cost of Environmental* (Washington, U.S. Environmental Protection Agency, Office of the Comptroller, m press).

[56] Chambers Associates, Inc., op. cit., footnote 40, p. II-11.

[57] The National Conference of State Legislatures, *Capital Budgeting Finance* (Denver, CO: 1987), p. 101.

Photo credit: S.C. Delaney/U.S. Environmental Protection Agency

This debris deposited by storm water illustrates why new environmental standards will require control of overflow resulting from storms.

average $3.8 billion per year in capital for wastewater projects alone.[58]

However, projections of future needs are daunting. EPA estimates that if future capital requirements for wastewater and water supply facilities are financed entirely with new bonds, municipalities will have to double the environmental public works debt they currently issue—from $4.5 to $9 billion a year.[59] Based on data from 1977 through 1985, this level of increase is not unusual. However, capital requirements for environmental programs compete with other public investment needs, and the limited ability of some small jurisdictions to issue new debt poses other problems. EPA estimates nearly 7,000 cities and towns, or 26 percent of all communities with populations under 2,500, could have difficulty meeting the fiscal standards for new bond issues.[60]

Despite the complexities of debt financing, numerous States have established environmental programs financed by State bond issues to assist local jurisdictions. California's Clean Water Bond Fund is authorized to issue up to $323 million in general obligation bonds to finance water treatment, reclamation, and conservation projects. The Illinois Anti-Pollution Bond Fund, established in 1970 with a $750 million bond authorization, funds wastewater facilities that would normally not be eligible for Federal aid. Maine has a Small Projects Community Assistance Program to finance wastewater projects that can be constructed for under $100,000; it is funded by a 1987$1 million bond issue. The State also sold $198 million in industrial development bonds in 1983 to capitalize the Finance Authority of Maine, which supports local pollution control and water supply system construction. Maryland supports a loan program to improve Chesapeake Bay water quality with a $25.4 million general obligation bond. West Virginia funds a solid waste disposal site program with revenue bonds, while Wisconsin provides financing for wastewater treatment facilities with $100 million in bonds and annual support from the general fund.[61]

A few States have financed major environmental programs through general appropriations, and some have used appropriations for the State share of initial SRF capitalization. To cite some examples: Massachusetts appropriated $750 million to assume the local share of EPA construction grants for wastewater facilities in 1985. In 1986, the Georgia Legislature appropriated $21 million for financing the State revolving loan program. Wisconsin added $63 million from the general fund in 1987 to support local wastewater treatment facilities, and Minnesota supported its Solid Waste Processing Facilities Capital Assistance Program with $20.2 million appropriated by the legislature between 1980 and 1988.

Earmarked Taxes

Although many States dedicate fuel taxes to transportation, it is unusual for a State to dedicate tax revenues to environmental programs. In 1985, the Washington State Legislature established the Centennial Clean Water Program and dedicated an 8-cent per-pack tax increase on cigarettes to finance it, based on the relative popularity of "vice" taxes. Since the first grants were made in 1987,$36 million has been paid out of the fund to 120 recipients. The program can accumulate funds and need not spend all that is raised annually; an "insurance" provision

[58] Apogee Research, Inc., op. cit., footnote 55.

[59] Ibid.

[60] U.S. Environmental protection Agency, Office of Policy, Planning, and Evaluation, *Business Agriculture* (Washington, DC: September 1988), p. 2-15.

[61] Busson and Hackett, op. cit., footnote 13, pp. C-19.

ensures that any shortfall in revenue is covered by general fund appropriations. Minnesota's 4-cent per-pack tax on cigarettes brings in approximately $16 million each year. Maryland levies a tax on boat sales, yielding $14 million annually, which is dedicated to the State's Clean Water Program,[62] and Missouri dedicates 0.1 percent of its State sales tax to water programs.

State-imposed fees raise only 8 percent of State outlays for environmental programs, although their use has increased as States look for politically acceptable supplements to general revenue sources. Because State responsibility for environmental services is primarily administrative and regulatory, State fees are applied to permit reviews and facility inspections, and charges are levied for emission of pollutants. Revenues are used for operating and administrative costs.

Public-Private Partnerships

Privatization of solid waste recovery facilities has been successful in some communities, and based on this experience, States see public-private ventures as an option for other types of environmental projects. However, Federal Tax Code changes have made some private-public projects more expensive because of restrictions on the use of tax-exempt bonds, and the repeal of tax credits and provisions allowing rapid asset depreciation (see chapter 2).

States encourage private investment by loosening existing State statutes and by not enacting additional barriers. Some States are currently adopting comprehensive statutes, which include granting local governments the right to enter into long-term service contracts with a private entity and to sell or lease facilities to private interests. Privatization is encouraged if the State acts to exempt public-private ventures in the environmental area from being classified and regulated as public utilities. At least four States (Alabama, Arkansas, Kentucky, and Minnesota) exempt public-private ventures from some or all local taxes.[63]

The New Jersey Wastewater and Water Supply Privatization Acts enacted in 1985 are among the most comprehensive privatization statutes. The Acts establish procedures through which local governments may contract with private entities for up to 40 years for financing, design, construction, and operation or management of wastewater or water supply systems.

MULTIPURPOSE STATE LOAN PROGRAMS

Throughout the United States, capital financing for transportation and environmental public works is usually provided categorically, with each public works function having its separate financing mechanisms. This approach gives each sector autonomy to finance its own improvements, but it complicates the coordinated capital infrastructure planning and budgeting important for economic development and environmental protection. Several States have established multifunctional infrastructure financing programs to promote economic development; in general, these are small programs oriented toward depressed areas. For example, Kentucky has instituted a $20 million Infrastructure Revolving Loan Fund with subsidized interest rates for local communities. Colorado set up a Local Government Impact Assistance Fund financed by mineral severance taxes in 1977 to help local communities cope with rapid expansion.[64] Since 1986, California has made loans or grants to rural counties for roads and water supply systems from the Rural Economic Development Fund.[65] Wyoming has one of the oldest multipurpose loan funds and Washington State has one of the newest (see boxes 3-E and 3-F).

STATE MANAGEMENT AND PLANNING

During the last 20 years, State governments generally have assumed more responsibilities related to public works, adopted modern management techniques and technologies, diversified their revenue bases, and upgraded their professional staffs. States are increasingly adroit at dealing in the international credit markets and in utilizing new financing techniques. Of particular interest are improvements in fiscal management and capital budgeting and planning. Thirty-six States now

[62] National Governors' Association, op. cit., footnote 45, p. S4.
[63] Chambers Associates, Inc., op. cit., footnote 40, p. IV-15.
[64] Ledebur et al, op. cit., footnote 7, p. 61.
[65] Ibid., p. 62.

Box 3-E—The Wyoming Joint Powers Act Loan Program[1]

The Wyoming Joint Powers Act (JPA) loan program[2] is a striking example of how the geography, financial and natural resources, and political climate of an individual State can foster a unique program. Wyoming's loan program provides funding for a broad range of public works: water and sewer projects, transportation projects (including airports), solid waste facilities, and even housing, hospitals, energy facilities, and schools. No priorities are set among these categories, and both existing facilities and newly proposed facilities are eligible for loans. The application process is simple, and the barriers to acceptance are few.

The main impetus for creating the JPA loan program was concern over the boom and bust energy cycles that characterize Wyoming's natural resource-based economy. Wyoming's dependence on natural resources also influenced the program's method of capitalization. With no State income tax and a sparse population, Wyoming relies heavily on earmarked funds established with current, resource-based revenues. JPA loans are backed primarily by the State Mineral Trust Fund, which is funded by mineral royalties and the State severance tax. The Wyoming Farm Loan Board, comprised of five members including the Governor, the State Treasurer, and the State Auditor, administers the loans.

JPA interest rates, which can range from 6 to 12 percent and are currently at 8.5 percent, are a big break for very small rural jurisdictions, which could never have access to such low rates on the open market. Loans are secured by pledges from the local jurisdictions to charge facility users adequate fees to cover costs. If higher fees are not initially affordable for users, the State provides interim aid to ease the transition. Since 1974, the Wyoming Farm Loan Board has awarded 266 JPA loans totaling more than $127 million; 54 percent of the funds have gone to water and sewer projects, 10 percent to transportation, and the remaining 36 percent to medical, educational, energy, and solid waste facilities.

As of 1988, virtually every jurisdiction applying had been awarded a loan. Program staff works closely with the applicants to counsel them on the most prudent application strategies, and local jurisdictions recognize the importance of cooperation in tapping a finite fund.

The wide availability of the loans has helped avoid arguments over targeting and distribution. The relative harmony between the legislative and executive branches is notable, especially since project selection is largely an executive branch undertaking. Relations between the two branches are eased because the program is funded with earmarked revenues, freeing the legislature from annual budget discussions. Second, the local jurisdictions are generally happy with the program, which pleases legislators. Last, the Farm Loan Board office makes an effort to be as accessible as possible in administering the program. One observer reports that: ". . . legislative oversight over executive branch actions is less important—and less stringent—in a State where an individual farmer seeking a loan can expect to discuss it directly with the governor, as is common with the Farm Board Loans."[3]

The legislature may take a more active oversight role in the loan allocation process if—or when—competition for the loans heats up, and the $100 million loan ceiling is approached. More competition seems likely, since the number of applications is steadily growing because of increasing public works needs, greater awareness of the program, and the fact that social service programs are requiring more of the State budget.

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[1]Material on the Wyoming loan program is based on Sophie M. Korczyk, "State Finance for Local Public Works: Four Case Studies," OTA contractor report, Dec. 19, 1988.

[2]The loan program is called a "joint powers" program because it allows local jurisdictions to cooperate in applying for a loan for a jointly used facility. Most applications, however, are made by single jurisdictions.

[3]Richard Miller, director, Wyoming Legislative Service Office, quoted in Korczyk, op. cit., footnote 1, p. 47.

Box 3-F—Washington State Public Works Trust Fund[1]

The Washington State Public Works Trust Fund (PWTF) is a rare example of a successful multipurpose infrastructure funding program. It emphasizes project self-sufficiency, comprehensive planning, and allocation according to ability to pay as well as severity of need.

The PWTF grew out of a 1982-83 statewide survey of Washington State infrastructure needs that pointed to serious gaps in the State's management of infrastructure. Capital spending for public works was at its lowest in 20 years and was expected to continue declining, while projected needs would require at least a 250 percent spending increase. These findings prompted the legislature to direct what is now the Washington State Department of Community Development (DCD) to prepare a plan for replacing and repairing local public works holdings.

As required by its mandate, DCD surveyed over 600 local jurisdictions about their needs and available resources. DCD found that total projected needs reached $4.3 billion, but that local resources could only meet 53 percent of this. The legislature responded by setting up a new loan program and charging DCD with examining ways to finance, manage, and administer the loans. DCD's subsequent report, *Financing Public Works: Strategies for Increasing Public Investment*, provided the design for the Public Works Trust Fund.

Washington State's strongly populist and activist tradition and cooperation between the legislative and executive branches contributed to the success in establishing the program. The legislature and DCD made a point of reaching out to localities, including them in the design process, and linking the program directly to local needs and resources. Though the PWTF stemmed from a legislative initiative, the legislature and the executive branch worked closely together to establish the fund. Key to establishing the effective program design were efforts to:

- involve all interested parties,
- maintain good communication,
- address common concerns, and
- tailor the program to common goals.

DCD annually invites all Washington cities, counties, and special-purpose districts to apply for low-interest (1 to 3 percent) loans drawn from the PWTF. The PWTF draws its funds from three sources: water, sewer, and garbage collection taxes; a portion of the real estate excise tax; and ultimately, loan repayments. A 13-member Public Works Board evaluates the applications. The Association of Washington Cities, the Association of Washington Counties, and associations of water, public utility, and sewer districts nominate elected officials and public works managers. Three members from each of the lists as well as four members of the general public with special public works expertise are appointed to the board. The Governor selects one of these latter four to chair the board.

[1]Material on the Washington State Public Works Trust Fund is based on Isaac Huang, Washington State Department of Community Development, interview, June 1989; and Sophie M. Korczyk, "State Finance for Public Works: Four Case Studies," OTA contractor report, Dec. 19, 1988.

prepare long-range capital plans as a basis for annual or biennial budget decisions.[66]

Planning Land Use

The coordination of public works functions with land use development policies can promote efficiency and maximize the benefits of investment. The low-density sprawl and traffic congestion that typify so many metropolitan regions mark the widespread lack of such planning and coordination. Although land use and public works decisions are generally made at the local level, States can be important players.

State policies on land use and public works planning vary widely, influenced by the political climate, the intensity of growth and environmental pressures, the **State** economy, and available resources. At one extreme, Idaho takes a minimalist

[66]National Conference of State Legislatures, *Capital and The* November p. 24.

The board passes its annual project recommendations on to the State legislature. After approving a project list based on the board's list of priorities, the legislature passes an appropriation from the Public Works Assistance Account to cover the cost of the loans granted. The Governor then signs the appropriation into law.

An important goal in the design of the PWTF was to discourage localities from deferring maintenance and repair, a side-effect of traditional grant allocation systems, which dole money out to the neediest localities. The PWTF program calls for the Public Works Board to base less than one-half (40 percent) of a locality's score on needs, and a full 60 percent of the score on the jurisdiction's demonstrated commitment to help itself. The board evaluates local effort by reviewing the jurisdiction's maintenance strategy, the percentage of local funds dedicated to public works, and the overall system of financial management. Since 1986, the PWTF has provided 194 loans totaling $100 million. Local jurisdictions have matched this amount with about $128 million in local funds for the completion of the projects.

In addition to proving its own commitment, a local government must meet two other requirements before it can be considered for a loan. First, the locality must levy at least a 0.25 percent real estate excise tax earmarked for infrastructure spending. Second, it must develop its own Capital Improvement Plan (CIP) for the specific infrastructure category (i.e., roads, bridges, water systems, storm sewers, and sanitary sewers) for which the loan is being sought.[2] In the 1991 loan cycle, eligibility requirements will tighten further. DCD will require a comprehensive CIP covering all of the five categories of infrastructure for which loans are offered, rather than the current single category-specific CIP.

The legislature and DCD understood that strict requirements for local effort could bias the selection process in favor of larger and better funded jurisdictions. In the program's early years, DCD addressed this issue by interpreting and enforcing application requirements liberally. More recently, however, DCD has placed stronger emphasis on local planning by beefing up the requirements to include the long-range local comprehensive CIP. To compensate for the potential bias problems posed by tighter requirements, DCD now offers zero-interest loans of up to $15,000 for the development of local long-range CIPs. If the no-interest loans are the "carrot" for the small jurisdictions, the "stick" is that without comprehensive CIPs, not even small jurisdictions will be able to apply for regular PWTF construction grants after 1991.

To prevent political and geographic considerations from skewing allocation decisions, the legislature and DCD designed a data-driven and rational selection process. First, loans are available only to projects intended to address existing needs; the funds may not be used for growth-related projects. Such targeting allows the Public Works Board to avoid the touchy issue of determining where growth ought to occur. Second, the effects of political interests are muted by the stipulation that in reviewing the Public Works Board's list, the legislature may delete projects, but not add any.

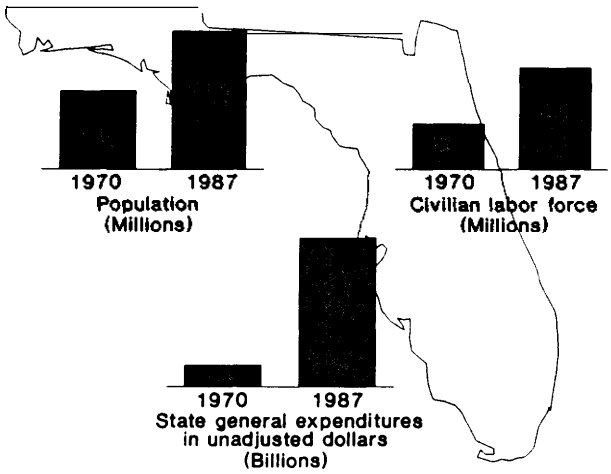
[2]The Public Works Board defines the minimum elements of an acceptable Capital Improvement Plan as: 1) needs assessment, 2) prioritization of major capital improvement projects for the coming 5 years, 3) project cost estimation, 4) proof that the plan has been updated in the past 5 years, 5) proof that the plan was developed with some general public input, and 6) formal adoption of the plan by a local legal entity.

approach toward the State's role in land use and infrastructure planning. It has no State planning office and provides no support for regional or local comprehensive planning, reflecting a distaste for intervention in local affairs and the State's flagging economy. Both State and local resources are so limited that planning is not a major issue; what State planning there is, is done on a departmental basis.[67]

On the other hand, a few States, especially those with sustained growth, have taken steps to coordinate regional land use policies and infrastructure development. Tennessee has had a State Office of Planning and legislation that permits regional planning agencies since 1935. Currently, the State is divided into nine regional development districts, which are responsible for data collection, land use and facility planning, air and water quality, and for fostering regional planning among counties and cities. However, the impact of regional planning is limited. Although coordination has improved in the development of regional sewer and water facilities, the development districts are not designated by the

[67]Campbell Associates, "Regional Planning," OTA contractor report, June 1989, A-5.

Figure 3-7--Growth In Florida, 1970-87



SOURCE: Office of Technology Assessment, 1990, based on Bureau of the Census data.

State as the **official** metropolitan transportation planning agencies, and they have only minor roles in transportation planning. Moreover, regional planning in Tennessee, as in many other States, suffers from competition among agencies because planning functions and enforcement authority are scattered among numerous State, metropolitan, and local agencies.

For the last decade, Florida has been a national leader in promoting regional growth management policies to link land use and infrastructure development. Faced with rapid population growth (see figure 3-7) and inadequate roads and sewer and water systems, Florida requires planning and development reviews at the State, regional, and local levels. While the State has established a strong institutional framework for State and regional planning (see box 3-G), it does not play a large role in financing local public works. In contrast, New Jersey's State transportation and environmental financing programs (see box 3-B earlier in this chapter) were designed to support its efforts to link regional capital improvements for infrastructure with land development.

TECHNICAL ASSISTANCE PROGRAMS

State technical **assistance** programs, such as circuit riders described earlier, can bolster local managerial and technical knowledge at modest cost, and are especially valuable in States with troubled economies and in those with small, isolated jurisdictions. As the mayor of a small town put it:". . . one of our bigger problems is that we don't know where to turn to for expertise, for help. [And if we do hire a private consultant] we have no one that tells us whether this person is doing the best job for us, or if they are doing what will make them the best fee."[68] Helping local officials spend public works funds wisely can be as important as procuring the funds.

Technical assistance services range from statewide databanks to financing and technology workshops. Three State assistance programs examined by OTA use their land grant universities to support local managerial and technological capabilities. However, each program is unique, reflecting its State's distinctive geographic, demographic, and financial conditions. New Mexico's program focuses primarily on mobilizing expertise within the University of New Mexico's Engineering Research Institute to develop local officials' managerial and technical skills (see box 3-H). Designers of the Nebraska and Oklahoma assistance programs, on the other hand, placed special emphasis on cultivating private sector participation in administering the local programs as well as using the programs to spur private sector investment.

Nebraska's Center for Infrastructure Research was established in 1988 at the University of Nebraska's College of Engineering and Technology, specifically to forge an alliance between technology producers and technology users. Consequently, the center places a high priority on transferring academic research results to industry and local government in the fields of solid waste management, bridge and road maintenance, and construction materials. Program officials describe their research efforts as "market-driven";[69] they focus their studies on community needs by consulting with local officials and

[68]Mary Simone, mayor, Rocksprings, TX, in U.S. Congress, Office of Technology Assessment, "Transcript of Proceedings—State and LAlCal Infrastructure Management and Financing Workshop," unpublished typescript, July

[69]Martha Gilliland, director, Nebraska *Center* for Infrastructure Research, personal communication, February 19$9.

private sector representatives before determining the research agenda.[70]

The Oklahoma Infrastructure Institute, established in 1988, is administered jointly by the University of Oklahoma and Oklahoma State University. Oklahoma was hard hit by the mid-1980s oil price fall, and the Institute's objectives have been shaped largely by the State's distressed economy. Program officials hope that improving Oklahoma's infrastructure will rejuvenate depressed areas by attracting new business. Preliminary program literature states that ". . . all aspects of infrastructure planning, financing, construction, rehabilitation, and management will be critical for achieving State economic development goals."[71]

FINDINGS AND CONCLUSIONS

States coping most effectively with infrastructure financing issues and Federal requirements are those that have both the fiscal capacity and political will to raise capital from public and private sources and an available pool of technical and financial know-how. However, some States must struggle just to provide current levels of environmental and transportation services; they do not have the financial capability to satisfy local and Federal demands for improvements. Five factors determine a State's ability to plan and pay for needed infrastructure improvements.

The first is the strength and balance of the State economic base, of paramount importance in determining its ability to raise both public and private funds. New England and the Mideast States have had strong economies in recent years, enabling them to raise State and local revenues and to offer attractive opportunities for private investment. States that lack a strong economic base, like West Virginia, or are dependent on one resource, like Louisiana, have a very hard time raising both public and private investment funds. In addition, poor jurisdictions within such States cannot afford to pay for engineering, planning, and financial expertise.

The second is the rate of population growth, a double-edged sword for many States-on the one hand, it generates heightened demand for services, while on the other, it provides a broader tax base. Growing States and communities are able to make significant demands on private developers for infrastructure investment-a practical impossibility in nongrowth areas where the real estate market is weak, and private investors see little opportunity to recoup an investment in infrastructure.

The combination of population size and density is a third and pivotal factor in determining how well States can raise additional revenues. Low-population, low-density States have greater difficulty financing public programs. The tax base is limited compared to the scale of needed investments; their menu of revenue sources is usually small; and they lack staff with specialized expertise, forcing them to rely, if they can afford it, on outside consultants. **OTA finds that those States most vulnerable to cuts in Federal transportation and environmental grants and in need of access to technical and financial expertise are large, rural Western States, such as North Dakota, South Dakota, and Montana; States with poor economic bases such as Alabama, Mississippi, and Louisiana; and States like New Mexico and Alaska, with large areas of federally owned land or dependent on the volatile extractive industry (see** chapter 2, figure 2-7). Although these States contain less than 11 percent of the Nation's population, their problems are pressing, and many Federal programs provide little effective special assistance. **For example, current Federal programs do not give special recognition to the needs of States with low fiscal capacities who are willing to tax themselves, nor take cognizance of States with substantial fiscal capabilities but low tax effort (see figure 3-3 earlier in this chapter).**

The land area or special topographic characteristics of a State or county-which determine the need for bridges, viaducts, or tunnels, for example—comprise the fourth important variable, especially when considering funding for roads and bridge improvements. Although this factor is taken into consideration in allocating Federal highway aid, the formula does not compensate for it.

Finally, the State political environment includes factors that can override physical and economic variables; spending and debt limits imposed by voters can hobble the ability of an economically

[70] University of Nebraska-Lincdn, *Summary* *Workshop* (Lincoln, NE: January 1989).

[71] Mark Meo, *Draft Discussion* *Infrastructure Institute* OK: University of Oklahoma, May 1988),

Box 3-G—Florida Emphasizes Planning

Florida grows by an average of 900 new residents each day. The State is in the midst of a political and financial struggle over growth management after enacting one of the Nation's strongest land development regulatory programs and taking a stand in favor of comprehensive planning. Although State and local officials are having problems finding the funds to implement the new planning and public works requirements, Florida's program can be instructive to other States that are considering a stronger role in growth management.

The State's role in planning began in 1975 with passage of the Local Government Comprehensive Planning Act, which required all local governments to prepare, adopt, and implement local comprehensive plans that included transportation and environmental public works. The initial results of the act were disappointing; most local plans contained only vague goals and policies, which made implementation difficult. In 1982, a State Study Committee

Photo credit: Ed Chappel/Westinghouse Communities, Inc.

Florida has enacted strict land-use planning and budgetary requirements, and new development continues to flourish.

identified the absence of strong State and regional planning as a major reason the local plans were ineffective and recommended overhauling the 1975 legislation.[1]

Convinced of the need for strong State and local controls, the legislature adopted the Local Government Comprehensive Planning and Land Development Regulation Act of 1985. The provision is the requirement that each of the State's 67 counties, in conjunction with their respective cities, submit a comprehensive 5-year development plan to the State Department of Community Affairs (DCA) for approval. The plans must conform to State comprehensive and regional plans and must spell out in detail what types of development are allowed and where, and where public works systems will go and how they will be financed. Each district must adopt a multi-year capital improvement program and an annual capital improvement budget. The teeth in the legislation is the "concurrency" requirement stipulating that a specified service level for highways, sewers, and other public facilities must be available at the time of the impact accompanying any new development. Within a year after plan adoption, a local government may not issue a development permit that will result in a reduction in the level of service for any facility identified in the plan.[2] In effect, the State is requiring local governments to provide services according to a comprehensive plan that is tied to a capital improvement budget. Twice a year, local districts may consider comprehensive plan amendments. The penalty for noncompliance is a cut off of State funds, primarily revenue sharing.

DCA began reviewing the mandated local plans in July 1988. Of the 201 plans received, 56 have been approved and another 18 are close to approval.[3] It is too soon to tell what will occur when local governments begin to carry out the plans. Some builders, particularly upset with the concurrency regulations, claim all development will be stymied unless local standards are lowered or the State substantially increases funding for public works.

Although local and State officials agree on the need for comprehensive planning, local governments want the State to take a bigger and more responsible role in financing needed public works, estimated to cost as much as $1.6 billion annually through the year 2000. The State has resisted local pleas for an increase in the State gas tax rate. Local governments frequently have not included transportation projects, funded by the State Department of Transportation (DOT), in their local comprehensive plans because the funding schedule for the projects has been unpredictable.[4] To remedy this, 1989 legislation enables local governments to count on State funding for the first 3 years of DOT's 5-year plan. The legislature has also given local governments authority to levy a l-cent local sales tax dedicated to infrastructure and a l-cent local gas tax for roads, although both levies are subject to local referenda, which makes them unpopular with elected officials. Nine counties have passed the sales tax and 13 have defeated it; prospects for passage are improving in some large urban counties. The State is encouraging local governments to make greater use of impact fees on developers.

[1] Daniel W. O'Connell, "Local Government Comprehensive Planning and Land Development Regulation Act," *Florida Environmental and Urban Issues*, vol. 13, No. 1, October 19S5, p. 4.

[2] State of Florida, "Senate staff Analysis and Economic Impact Statement," accompanying Senate Bill 2A, June 3, 1989, p. 1.

[3] Michael Richardson, legislative director, Florida state Department of Community Affairs, personal communication, Oct. 6, 1989.

[4] State of Florida, op. cit., footnote 2, p. 4.

strong State to finance infrastructure improvements. States with laws that permit districts to pursue a variety of financial strategies tend to manage better. OTA **finds that despite strict spending limits in some States, voters in many States have supported the use of general or dedicated revenues for well-defined transportation or environmental programs to address specific priorities. Successful efforts to raise fuel taxes or establish State bond banks are products of strong political leadership and commitment and the willingness of a State's voters to pay for public services.**

The expanding needs of social programs, such as education, health care, and criminal justice, for general revenues and debt financing are forcing most States to finance public works capital from benefit charges (e.g., user fees and special assessments) and to make local projects self-sufficient through loan program rather than grants. Currently, transportation is funded substantially from user charges, and environmental programs increasingly from debt backed by user fees. Greater use of benefit charges reflects a shift in attitude toward who should pay for public services; when there were fewer demands on government, broad-based taxes were able to carry most of the burden. The current trend is for State governments to rely more heavily on benefit charges for pay-as-you-go spending and to back revenue

Box 3-H—The New Mexico Infrastructure Development Assistance Program[1]

The New Mexico Infrastructure Development Assistance Program (IDAP), created by the New Mexico State Legislature in 1988, provides technical assistance, training, and technology development to communities around the sparsely populated State. The State's smaller cities and counties are often strapped for technical know-how.[2]

IDAP was built from the bottom up. The Local Government Division of New Mexico's Department of Finance and Administration contracted with the University of New Mexico's Engineering Research Institute to survey assistance needs of the State's 99 cities and 32 counties. With the information collected, the Engineering Research Institute drafted the IDAP Plan, a 5-year assistance program, to be updated annually. The plan identifies strategies for improving local governments' abilities to develop, operate, manage, and maintain a range of public works infrastructure, including roads; bridges; public buildings; water supply systems; wastewater, solid waste, and hazardous waste facilities; airports; and electric and gas utilities. Equally important, it aims to help communities develop the ability to implement their own financing mechanisms in the face of dwindling Federal aid.

IDAP is administered by a program manager from the University's Engineering Research Institute and advised by an Infrastructure Council made up of volunteer representatives from both public and private sector organizations. By coupling public and private talent, IDAP provides three basic types of services: education and training in public works management, outreach programs for information-sharing (including some limited field assistance), and technology transfer and development. New Mexico's State university system, State and local public agencies, and professionals from the private sector share the responsibility for providing these services.

In addition to fostering better managerial capability, IDAP coordinates its efforts with regional planning organizations throughout New Mexico to ensure uniformity of expertise and minimal duplication of effort. Because the program offers no money to the State's political subdivisions, its cost to the State is modest—$100,000 in 1988 and $150,000 in 1989.

So far, local public works managers have been eager to avail themselves of IDAP workshops and conferences. IDAP officials hope that State legislators will authorize greater support for technical assistance as New Mexico communities come to realize the benefits of good management. If convinced that bolstering local managerial capacity pays off, the legislature could ultimately condition eligibility for State financial assistance on good local infrastructure management.

[1]Material on the New Mexico Infrastructure Development Assistance Program (IDAP) is based on New Mexico Engineering Research Institute, *New Mexico Infrastructure Assistance Program Five Year Plan: 1989-1993* (Albuquerque, NM: University of New Mexico, 1988); and Norman Falk, IDAP program manager, personal communication, Aug. 18, 1989.

[2]In 1983, only Albuquerque had a population over 100,000, and only eight cities across the State held 25,000 or more, according to the Bureau of the Census.

bonds for long-term improvements. (See table 3-5 for advantages and disadvantages of financing strategies.) OTA **concludes that benefit charges are attractive and effective strategies, because of their revenue potential, voter acceptability, and service management opportunities. However, these charges have major socioeconomic trade-offs that need further consideration, including administrative issues, equity, and revenue reliability in the case of a political backlash, an economic downturn, or real hardship.** For example, States with low economic bases and/or small populations have major difficulties developing sufficient capital solely from user fees.

Reflecting the swing toward benefit charges, all but three States have raised gas taxes and other motor vehicle user charges over the last 10 years to pay for transportation improvements. The gas tax is a relatively large revenue producer, and increases are more acceptable to voters for supporting transportation improvements than raising general taxes. Although earmarking revenues for special purposes restricts their fiscal options if priorities change, States find earmarking a good way to ensure a stable revenue stream. Gas taxes and other vehicle user charges are frequently used to finance public transit; and a number of States use aviation-related taxes and fees to support airport development. Some States use gas tax revenues for nontransportation programs, although transportation advocates feel strongly that these funds should be reserved for transportation.

OTA concludes that because gas taxes and other transportation charges are politically acceptable and proven reliable revenue sources,

Table 3-5-Major Infrastructure Financing Mechanisms: Advantages and Disadvantages

	Advantages	Disadvantages
fund appropriation . .	*Administrative:* appropriations reflect current legislative priorities *Equity:* all taxpayers contribute to capital projects *Fiscal:* no debt incurred, so projects cost less during periods of inflation	*Administrative:* infrastructure must compete with other spending priorities each year; cannot plan long-term projects around uncertain funding *Equity:* no direct link between beneficiary and who pays, and current generation pays for capital projects that benefit future generations
General obligation bonds	*Equity:* capital costs shared by current and future users *Fiscal:* bonds can raise large amounts of capital; general obligation bonds usually carry lowest available interest rates	*Administrative:* States often impose debt ceilings and require voter approval *Fiscal:* adds to tax burden, especially if interest rates are high
Revenue bonds	*Administrative:* do not require voter approval and are not subject to legislative limits *Equity:* debt service paid by user fees, rather than from general revenues	*Administrative:* require increased reporting and restricted by Tax Reform Act limitations *Fiscal:* usually demand higher interest rates than general obligation bonds
State gas tax.	*Administrative:* established structure allows tax increase without additional administrative expense *Equity:* revenues are usually earmarked for transportation, so users pay *Fiscal:* revenues relatively high compared to other user taxes	*Administrative:* revenue fluctuates with use of gas *Equity:* fiscal burdens are not evenly distributed between urban and rural areas *Fiscal:* revenue does not rise with inflation or reflect differences in infrastructure use that may determine capital needs
Other dedicated taxes	*Administrative:* voters prefer dedicated taxes *Fiscal:* provides relatively reliable funding source not subject to annual budgeting	*Administrative:* reduces districts ability to meet changing needs *Fiscal:* major economic downturns can reduce revenues significantly
State revolving funds	*Administrative:* promote greater State independence in project selection *Fiscal:* debt service requirements provide incentives for charging full cost for services; loans can leverage other sources of funds; loan repayments provide capital for new loans	*Administrative:* States bear increased administrative and financial responsibility *Equity:* poor districts cannot afford loans *Fiscal:* repaying loans will mean increases in user charges or taxes

SOURCE: Office of Technology Assessment, 1890.

States are currently better able to finance transportation improvements than environmental programs. Highways, aviation, and (to some extent) transit have dedicated revenue sources, while State revenues earmarked for environmental programs are unusual. Because a large share of environmental capital currently comes from Federal grants, future funds for environmental needs will have to come from State general revenues, user fees, or new, earmarked taxes, unless a new Federal program is enacted.

States are providing local governments with nonfinancial support, such as enabling legislation to permit local option taxes or to facilitate public-private ventures and other types of innovative strategies. Some States have established comprehensive planning requirements, and others have created bond banks to assist local districts to reduce the costs of acquiring capital. Several States are offering technical assistance and help with capital budgeting, and others have established infrastructure research programs.

No State has a broad-based tax or revenue base for environmental services. However, most States have established EPA-capitalized revolving loan programs for construction of wastewater facilities and are working out the technical, administrative, and institutional difficulties inherent in such a complex financial activity. States will be hampered by coming cuts in Federal funds to support their administrative costs and must also accommodate the needs of those districts too poor to afford a loan and expand the supply of capital, both now and when Federal grants end in 1994.

Despite the success of several small, multipurpose, State infrastructure programs-Wyoming (box 3-E) and Washington (box 3-F), for example—it seems unlikely that States will fund and administer transportation and environmental programs jointly to any significant extent.. **Traditional differences in**

Photo credit: Port uthority New York and New Jersey

acil ties are an effective way to ensu e consiste eve es fo eti ng cap al deb and o operations and mai e ance

sources of fundıng and Federal/State/local nst tutional relationships are great, creat ng road blocks to comprehensive nfrastructure program integration OTA s research indicates that pol cymakers search ng for new fund ng and man agement strategıes may find greater success n pursu ng separate programs to support envıron mental and transportatıon publ c works

Photo credit: American Society of Civil Engineers

Chapter 4
Local Governments: Where the Buck Stops

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Chapter 4

Local Governments: Where the Buck Stops

If we can convince ourselves that light beer tastes better and is less filling, we ought to be able to convince voters to support higher quality services.[1]

Local officials and managers are on the firing line. They face day-to-day management problems and expenses for system operations and maintenance, complaints about inadequate roads and crowded airports, Federal penalties for environmental deficiencies, and constituent hostility to the tax increases needed to pay for resolving these problems. According to one method of calculation, over 83,000 local government units (see table 4-1) operate in the United States. These range from densely populated cities and rapidly growing urban counties to tiny towns and sparsely populated rural counties. They include a multitude of single-purpose special districts, among which are the Nation's 600 highway districts, 356 airport authorities, 163 port authorities, and numerous water supply districts.[2] Local governments encompass a staggering array of sizes, economic characteristics, and functions; in the Chicago metropolitan area alone, over 1,200 governmental units--6 counties, 113 townships, 261 municipalities, 313 school districts, and 501 special districts-may be found.

Officials of these local governmental bodies are deeply committed to improving aging public works facilities to support both essential services and local economies. To meet the relentless demands for better services, local officials from Weehauken to San Jose pursue the elusive dream of adequate, reliable, and politically acceptable financing. Finding that traditional strategies for funding public works are no longer enough, local officials are seeking to make projects more self-supporting and to involve the private sector. However, each community must match its plans to its political and economic framework-and abide by Federal regulations and State laws as well. Many are making extraordinary efforts, and some have been successful in developing and funding programs to meet their most pressing needs.

Table 4-1--Number and Types of Local Governments, 1987

County	3,042
Municipal	19,200
Township	16,691
School district	14,721
Special district 0	29,532
Total	63,166

SOURCE: U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States, 1989* (Washington, DC: 1989), p. 266.

However, OTA did not find *any* jurisdictions that claim to be doing more than staying even on meeting public works needs. Local problems vary with the jurisdiction's size, age, and economic and geographic characteristics. Cities must maintain transportation networks built to serve commercial and residential areas developed years ago. As public works facilities age, maintenance costs rise, sapping funds that might be used for modernizing or rehabilitating their systems. Traffic congestion and delay are increasing frustrations for commuters and commercial activities, and affect the quality of life in major urban and suburban jurisdictions. Communities must also take steps to comply with new water quality and wastewater treatment requirements; a number still do not meet current air quality standards.

Yet to balance their budgets as required by State laws, local governments have had to cut expenditures, raise taxes, and tap a variety of alternative sources of revenue. With most attributing their actions to curtailments in Federal and State funds,[3] 52 percent of the Nation's cities reduced capital spending in 1987, 44 percent did so in 1988,[4] and

[1]Whit Van Cott, commissioner of water, Toledo, Ohio, in U.S. Congress, Office of Technology Assessment, "Transcript of Proceedings—Environmental Infrastructure Workshop," unpublished transcript, Sept. 14, 1989, p. 132.

[2]Douglas R. Porter et al., *Special Districts—A Useful Technique for Financing Infrastructure* (Washington, DC: The Urban Land Institute, 1987), *pp. 4-6.*

[3]Douglas D. Peterson, Ciry *Conditions in 1988*, Research Reports on America's Cities (Washington, DC: National League of Cities, 1988) p. iii.

[4]Ibid., p. 19.

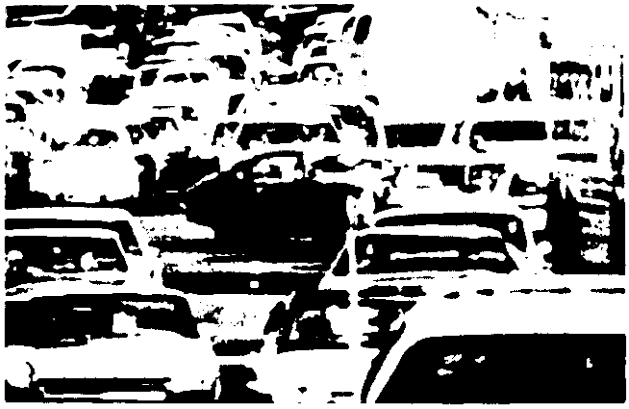
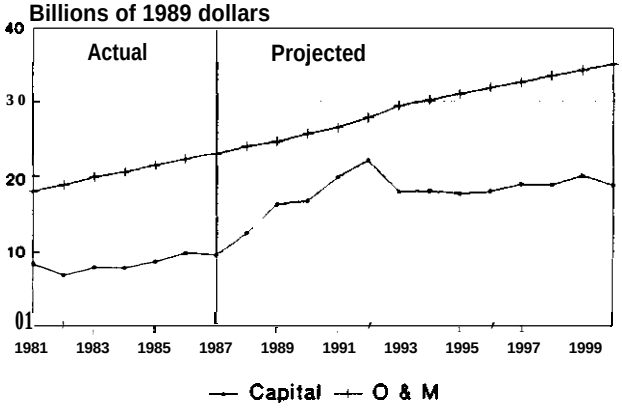


Photo credit: Department of Transportation

Traffic jams are so much a part of daily routine in urban regions that congestion-related words, such as bumper-to-bumper and rush hour, have become part of the American vocabulary.

Figure 4-1--Local Government Expenditures To Maintain Currant Levels of Environmental Quality and Comply With New Regulations



SOURCE: Office of Technology Assessment, 1990, based on reformation provided by Apogee Research, Inc.

one-third in 1989.[5] Counties also report a widening gap between public works needs and revenues, despite efforts to increase local receipts through special assessments, impact fees, and public-private partnerships.[6]

Local officials' public works responsibilities are complicated by Federal and State policies beyond their control. These include:

- New environmental requirements that will increase both local capital and operating expenses (see figure 4-l).
- Reductions in Federal support, on which local governments had come to rely, especially wastewater treatment construction grants and revenue sharing funds. The cuts have been major blows to local governments; in most cases, State support and increases in local taxes and fees have not filled the revenue gaps.
- Requirements to fund special social programs.
- Federal tax code changes in the 1980s that made public works partnerships less attractive to the private sector and increased the cost of borrowing.
- State limitations on property tax increases and borrowing. Such laws have thwarted local efforts to raise additional revenue to support public works.

Box **4-A** details tax, spending, and debt limitation issues confronting local jurisdictions.

Lacking both financial and management resources, small districts have been particularly hard hit, and their fiscal resources will be further strained by new environmental requirements. Although some small jurisdictions are wealthy, most have low tax bases, low per-capita incomes, and virtually no public resources or access to private investment funds. Their per-unit costs for public works are often higher than those for larger districts that benefit from economies of scale-it costs nearly four times as much to provide 1 gallon of clean drinking water in a community of 500 as it does in a city of 500,000, for example.[7] Because of their small size and economic characteristics, some jurisdictions find it difficult-almost impossible-to borrow money in commercial credit markets. Compounding their financing problems, small jurisdictions lack professional expertise and experience in managing public works. Officials are dependent on consultants-for evaluations of their systems and advice about technological options and financing strategies, because salaries in the private sector are so attractive that few engineers enter State and local governments (see figure 4-2). States do provide some technical and financial support (see chapter 3); however, not

[5]Douglas D. Peterson, *City Fiscal Conditions* in *1989,* Research Reports on America's Cities (Washington DC: National League of Cities, *1989),* p. v.

[6]Apogee Research, Inc., *Counties: Public Works* Leaders (Washington, DC: National Association of Counties, July 1987), p. 6.

[7]Apogee Research Inc. and Wade Miller Associates, *Problems in Financing and Managing Small Public Works* (Washington, DC: National Council on Public Works Improvement, September 1987), p. ii.

Box 4-A—Tax, Spending, and Debt Limitations

During the 1960s and 1970s, local governments increased property taxes substantially to finance both services and their bonding debts for public works construction. Angered by rising taxes, taxpayers in a number of States pushed through legislation to limit local government use of the property tax. Local jurisdictions in 25 States faced limits before 1970 on the tax rates they could impose on local property owners; 8 more States had set limits by 1985.[1] California's Proposition 13 and Massachusett's Proposition 2 1/2 are the best known. Proposition 13 precludes local jurisdictions from increasing property taxes for nondebt purposes and, until modified, precluded any new debt obligations supported by property tax revenue. Proposition 2 1/2 limits local property tax rate increases in cities and towns to 2 1/2 percent per year until the rate reaches 2 1/2 percent of real estate market value. Communities with tax rates exceeding the ceiling have to reduce their tax rates 15 percent annually until they reach the 2 1/2 percent ceiling.[2] (See chapter 3 for further information.)

Arizona, California, Iowa, Maryland, New Mexico, and Oregon also restrict increases in assessments, requiring local governments to increase tax rates rather than relying on automatic revenue increases resulting from rising property values. California, Iowa, and New Mexico exert even stronger control over localities by limiting both the tax rate and assessment increases.

Local governments have successfully persuaded some States to mitigate the impact of such property tax limitations. For example, Massachusetts increased aid to local governments by 12 percent annually between 1981 and 1988 as a means of compensating local governments for much of the revenue lost as a consequence of Proposition 2 1/2 as well as the loss of revenue sharing.[3]

In addition to property tax caps, localities in a handful of States must abide by either general revenue or expenditure limits. Maryland, Minnesota, Mississippi, and Missouri set limits on the amount of revenue that local governments are allowed to collect from property tax and other nonproperty tax sources. Arizona and California restrict the amount of money that a jurisdiction can appropriate or spend annually.[4]

Many States impose constitutional and statutory constraints that limit the ability of local governments to issue general obligation bonds. Although most municipalities maintain levels of indebtedness far below the imposed limits, jurisdictions with low or declining credit ratings find that the limits figure in their discussions with credit analysts. The impact of State ceilings is less significant when jurisdictions have the option to choose between general obligation bonds and revenue bonds that do not fall under State regulations.

By 1986, 42 States had imposed some type of constitutional or statutory limits on local government's ability to issue general obligation bonds. The typical forms of regulation are a cap on debt levels or referenda requirements. While a few States tie debt limits to tax revenue, most tie them to a percentage of the value of a municipality's real property. In several States, the established debt limit can be exceeded for water and sewer construction, economic development, or other specified purposes. A few States tie debt limits to tax revenue.

General obligation borrowing is also constrained by interest rate limits and/or referendum requirements. Interest rate limits are not always crucial, since States frequently are willing to adjust limits as needed to respond to the credit market.[5] On the other hand, referendum requirements, imposed by the majority of States, can be strong constraints on local borrowing. For example, although Virginia counties have no limits on local borrowing, voters must approve every general obligation bond issue—a very effective restraint. California requires voters to approve all bond issues by a two-thirds majority.

A few States have neither debt nor interest rate limits and require only a simple majority vote of elected officials or the electorate. The per capita general obligation debt of these States does not show a consistent pattern compared to each other or to the national average. Willingness to borrow is thus more a reflection of State philosophy than of restrictions incorporated in constitutions or statutes.

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[1]Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism*, 1988 ed., vol. 2 (Washington, DC: 1988), p. 102.

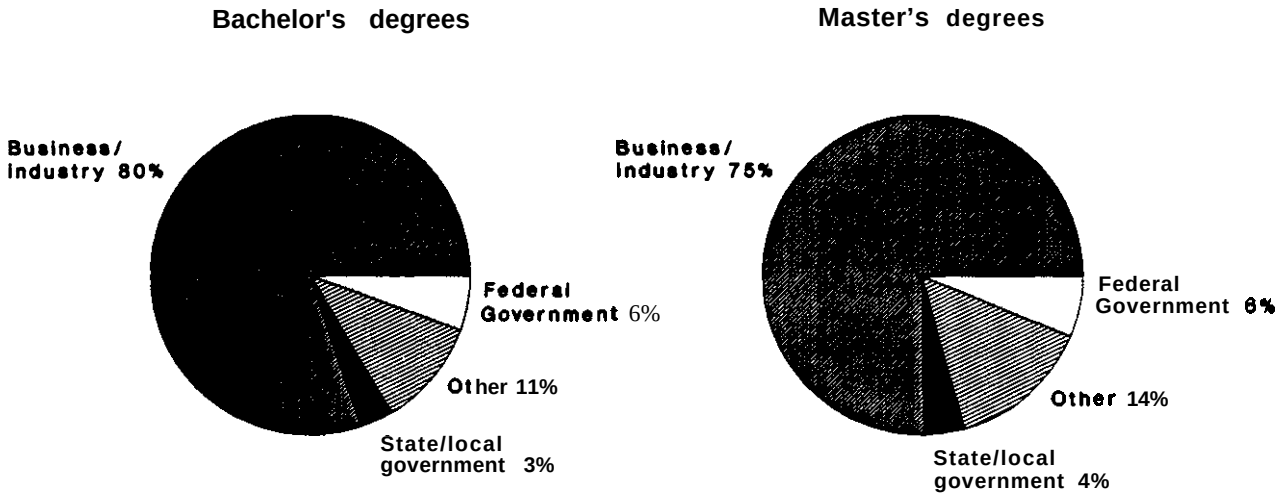
[2]Sophie M. Korczyk, "State Finance for Local Public Works: Four Case Studies," OTA contractor report, December 1989, p. 59.

[3]Ibid., pp. 59-60.

[4]Advisory Commission on Intergovernmental Relations, op. cit., footnote 1, p. 102.

[5]Government Finance Research Center, *Constitutional, Statutory, and Other Impediments to Local Government Infrastructure Finance*, prepared for the National Council on Public Works Improvement (Washington, DC: October 1987), p. 42.

Figure 4-2--Destinations of Engineering Students



SOURCE: Office of Technology Assessment, 1990, baaed on 19S2 National Science Foundation data.

all States have sufficient programs, and small districts' difficulties are compounded when the State is also struggling economically and cannot help. Rock Springs, Texas, typifies the multiple problems **facing** such towns (see chapter 1, box l-A).

LOCAL TRANSPORTATION RESPONSIBILITIES

Local officials have long known what their State and Federal counterparts often appear to overlook—that local public services must function smoothly as a system for the national economy to remain healthy. If local businesses falter, the economic health of the State is affected, and eventually the economic vigor of the Nation is sapped. The international market for citrus provides one example of the interconnections between local infrastructure and the national economy. Grapefruit is picked and placed in intermodal containers in Florida groves. The containers are loaded on tractor-trailers for the trip by local and State roads to a railroad yard, where they are transferred to a special container train. Once or twice **a week, these** special trains speed across a tier of southern States to a rail transfer facility near a major local port on the west coast. Within hours, the containers are transferred once again to tractor-trailers, trucked over local roads to the port's dock, and loaded on a waiting vessel. If the transportation system is functioning properly, 5 days after being picked in Florida, the grapefruit may be crossing the ocean on the way to Japan, providing a valuable boost to the U.S. balance of trade.

Local governments have responsibility for 70 percent of the Nation's roadway mileage.[8] They receive funding support from the Federal Government, which provides 24 percent of total national highway expenditures, and State governments, which provide an additional 52 percent.[9] State and Federal programs are usually administered through State Departments of Transportation (DOT) or Highways. When additional capital funds are necessary, local governments depend on their own general revenues, and increasingly on dedicated taxes. Most communities have backlogs of road and bridge maintenance and repair projects and seek greater State support or permission to levy user fees, such as the local gas taxes allowed in 16 States.[10]

To be eligible for Federal aid, local street and bridge projects must conform to categorical grant requirements; these requirements and concerns about liability are strong incentives to utilize traditional designs and technologies, rather than innova-

[8]Federal Highway Administration *Our Nation's Highways—Selected Facts* (Washington, 1987), p. 4.

[9]Ibid., p. *m*.

[10]Thomas Cooper and Judith DePasquale, Federal Highway *-~, "Local Option Motor Fuel Taxes," unpublished manuscript, 1988.

Photo credit: Jeff Stine courtesy of E-470

To comply with Federal requirements, contractors in Colorado replaced a wetland, filled in during highway construction, with this man-made pond.

tive solutions. Moreover, with the exceptions of the 3- and 4-R programs,[11] Federal funds are restricted to new capital projects, precluding their use to finance traffic management improvements that could reduce congestion, such as upgraded signals, ramp metering, and real-time traffic monitoring. When adjusted for inflation, Federal expenditures in 1989 for highways and bridges were at the same level as in 1980 (see chapter 1, table 1-2), although construction and repair *costs* have escalated. Yet the Federal Highway Trust Fund, fed by motor fuel taxes, had a $9 billion balance in 1988;[12] this balance was estimated to rise almost another $1 billion during 1989. In this context, local officials deem it unfair that Federal fuel taxes collected from their jurisdictions are being held in the Trust Fund and are not returned to them for the intended purpose.

In addition, State and Federal planning and construction requirements, such as detailed environmental impact studies and construction wage rate standards, delay projects, increase costs, and discourage innovation. Although streets and highways are essential to intermodal connections, local highway departments have little incentive to seek intermodal solutions to areawide transportation problems since Federal and State funds are allocated by mode, and interjurisdictional coordination is difficult to achieve.

Weak land-use planning and development controls in many growth areas have resulted in traffic that exceeds the capacity of even new roads. Officials in rural areas face the dilemma of maintaining many miles of lightly traveled roads and numerous bridges at service standards necessary for heavy trucks carrying seasonal agricultural products only a few weeks a year.

Convenient automobile transportation and the lure of suburban living bring with them crowded highways and air pollution in metropolitan areas. Peak-hour congestion occurs daily, and gridlock strikes in the case of an accident or when repair work is necessary; indeed, when asked what he would change to improve his business, an official of a large international shipping line replied:". . . reduce local traffic congestion."[13] Routine maintenance must be carefully scheduled and managed to avoid major disruptions. The New York State DOT routinely adds 40 to 50 percent to the budget for each major highway improvement project to cover the costs of measures to maintain traffic flow during construction.[14]

While new technology can bring some short-term improvements to traffic congestion problems,[15] changes in lifestyle and institutional arrangements will be necessary for long-term solutions in regions where problems are most severe. In southern California where a one-way commute to work can take almost 2 hours on a bad day, several major employers have begun telecommuting programs under which employees work at home or in a regional office and communicate electronically.[16]

[11]In 1976, a special category of Interstate highway funds was authorized for Resurfacing, Restoration, and Rehabilitation (3 R). In 1981, the fourth R, Reconstruction was added.

[12]U.S. General Accounting Office, *Highway Trust Fund: Condition and Outlook for the Highway Account* (Washington, DC: May 1989), p. 4.

[13]Richard Powell, regional director for Southern California, American President Lines, personal communication, Nov. 8, 1989.

[14]New Jersey Transportation Coordinating Council and New York Metropolitan Transportation Council, "Regional Transportation: Current Conditions and Future Prospects," unpublished document, April 1989, p. 64.

[15]For further information, see U.S. Congress, Office of Technology Assessment, "Advanced Vehicle/Highway Systems and Urban Traffic Problems," science, Education and Transportation Program staff paper, September 1989.

[16]John Seymour, vice president, Pacific Bell, at "Technology for Tomorrow's Transportation, A Policy Conference," Costa Mesa, CA, unpublished remarks, Nov. 9, 1989.

Mass Transit

Local governments manage transit systems as an operating department or through a public transit authority. During the 1980s, ridership increased for rail systems, but decreased 11 percent for buses.[17] Nationally, farebox revenues cover less than 40 percent of operating Costs; [18] and service is subsidized from general funds, from earmarked sales or employment taxes, and from State sources (see chapter 3). Federal capital grants have financed a large proportion of bus and subway car purchases, bus maintenance facilities, and the renovation or construction of rail systems. Growing numbers of express bus lanes and crowded "Park and Ride" facilities show intermodal linkages will be used when they are provided and convenient

Federal grant categories and a community's most critical transit needs do not always fit smoothly. Some cities receive more capital funds than they need, discouraging operating efficiency and proper maintenance, while others, often those with older rail systems, are in desperate need of capital equipment and track rehabilitation, and are underfunded.[19] Transit operators find it hard to understand why Federal transit aid is declining when a $5.2 billion balance exists in the Mass Transit account of the Highway Trust Fund.

Transit benefits are diffuse, affecting many only indirectly through easier access to downtown and reduced air pollution and auto congestion. These indirect benefits make it difficult politically to establish an adequate and reliable local revenue base. The French Government addressed this issue by levying a local payroll tax, with rates ranging from 2 percent in Paris to 0.5 percent in small jurisdictions, on all businesses with nine or more employees. Receipts are dedicated to transit and finance about one-third of all capital and operating costs. Major improvements in French transit service over the past 15 years are attributed to the revenues from this broad-based tax.[20]

In contrast, many public policies in the United States are disincentives to support for mass transit.

Photo credit: American Society of Civil Engineers

The frustrations and fatigue of commuting in heavy traffic can take atoll on productivity in the workplace.

Transit officials are not typically an integral part of local and regional transportation and land-use decisionmaking, and in many communities, land-use policies allow metropolitan sprawl, creating transit needs unsuited to conventional fixed-route bus and rail service. Policies that require employer-provided parking make it difficult to increase transit ridership and improve productivity. Even Federal tax policy favors auto drivers, because employer-paid transit subsidies are considered taxable benefits, while parking privileges are not. State and Federal motor fuel taxes are relatively low, suppressing the cost of gasoline to motorists and providing a further disincentive to transit use.

Airports

Over one-half of the Nation's large and medium commercial airports and a greater percentage of small commercial facilities are owned and operated by municipal and county governments. Most major airports are largely self-supporting, except for the essential air traffic control services provided by the Federal Government They use landing fees, airline rents, and revenue from parking and concessions to fund facilities and services. Nonetheless, they must comply with Federal, State, and local regulations and be responsive to airline and passenger concerns

[17] J.F. Hornbeck, *Federal Policy* *Surface Transportation Infrastructure* (Washington, DC: Congressional Research Service, p. 5.

[18] Thomas D. Hopkins, "Benefit Charges for Financing Infrastructure," OTA contractor report, July *1989.*

[19] Congressional Budget Office, *New Directions* for *the* *Public Works* (Washington, 1988), p. 37.

[20] Slobodan Mitric, "Organization of urban Public Transport in France: Lessons for Developing Countries," paper presented at the Transportation Research Board meeting, Washington, *DC,* January 1987.

Photo credit: Massachusetts port Authority

Paking fees area key source of income for major airports.

as well. While over one-third of the Federal Airport and Airway Trust Fund annual appropriation goes for air tile control improvements, a little over one-quarter is allocated directly to airports for expansion and renovation.[21] Nearly 90 percent of capital improvements at reliever and general aviation airports are paid for from the Trust Fund.[22] Other Federal- and State-aid programs are targeted at small airports important to communities for economic development.

Capacity and noise problems and ground access difficulties (inadequate parking, highway access, and mass transit connections) beset many large airports. Reliever and general aviation airports are targets for developers seeking large sites for commercial and residential developments. The aviation trust fund balance was $5.8 billion in 1988, and is expected to reach $6.8 billion in 1989,[23] to the frustration of airline operators and airport managers. However, even when ample funding is available, airport expansion plans often draw hostile reactions from citizens who fear that increasing airport capacity will bring more traffic and higher noise levels. Friction between airports and citizens has put many local airport improvement plans on prolonged hold.

Local governments have minimal direct responsibility for railroads, because the private sector operates freight service, and intercity passenger trains are run by Amtrak. However, rail facilities are strategically located and an integral part of most cities. Many believe that they represent a neglected option for moving people or goods within and between metropolitan areas.

Trains could play a large and important role in improving urban and national mobility, as the success of Amtrak's Metroliner between Washington, DC, and New York City, and the important commuter rail services in States like California, Illinois, and Pennsylvania illustrate. However, rail companies claim that trains cannot compete, except in a few situations, with cars, trucks, and planes, which can use public rights-of-way-that is, highways and airports. Recently, a few private companies, seeking profitable opportunities to use abandoned track, have begun to plan new commuter service in heavily traveled corridors. Before railroads can play a larger role in local transportation, rail service must be integrated with other transportation modes, and public and railroad executives must learn to work harmoniously. Numerous institutional and legal issues affecting public and private sectors, such as liability for accidents, must also be addressed.

Ports and Waterways

Ports and waterways can be of major importance to local economic development. Coastal port competition in the East is particularly vigorous, because of the major shift in international trade to the Pacific rim. Generally, port facilities are owned and managed by a municipality or a public authority; inland waterway terminals are frequently privately owned. Ports raise operating funds primarily from user fees and use revenue bonds to acquire capital; some also receive local and State general fund appropriations.

[21] Congressional Budget Office, *The Status Airport Airway* (Washington, DC: 1988), P. xi.

[22] National Council on Public Works Improvement, Fragile *Public Works* February 1988), p. 90.

congressional Budget Office, op. cit., footnote 21, p. 36.

Photo credit: Port Beach

introduction of double-stack container cars has revitalized many freight railroads and is a fast growing type of commercial transportation.

Federal funds cover the majority of navigation infrastructure costs.

Many older ports are at a critical juncture; they need to modernize and expand facilities to remain competitive, but cannot support the necessary investment without raising fees substantially, which would undermine their competitive position. Under the Water Resources Act of 1986, costs for channel dredging must be partially borne by the local port operator; previously, the Army Corps of Engineers had full responsibility for dredging. Furthermore, the disposal of dredged material has become a major environmental and cost issue for industrial ports.

The Nation has more ocean and inland ports than required by modern shipping equipment and goods transport patterns. Industry officials advocate the targeting of limited public funds for facility improvements for high-priority, deep-water ports and main-system projects on the waterways. However, decisions on which ports have the highest priority and what constitutes the main inland waterway system are controversial and problematic.

The transportation linkages between ports and the pipeline, rail, and truck services that move products over land to terminals are critical to the efficiency and attractiveness of the port to shippers. However, despite the obvious importance of these connections, few ports have integrated transportation systems, and port officials often find negotiating with private carriers difficult. Furthermore, frequently only one rail carrier serves a port, curtailing the options for shippers of bulk products if service is unsatisfactory.

LOCAL ENVIRONMENTAL RESPONSIBILITIES

Funding and supply of environmental services is provided almost solely at the local level; historically service fees and general taxes have supported these public works. New Federal standards and the phasing out of Environmental Protection Agency (EPA) construction grants will increase costs (see table 4-2), most of which will be passed on to individual users. Local governments financed 76 percent of these services in 1981,82 percent in 1987, and their share is expected to rise to 87 percent by the year 2000.[25] Lack of funds led many cities to postpone both rehabilitation of old plants and new construction, and now costs have risen dramatically. This situation does not bode well for large, older cities, like New York and Boston, which face huge infrastructure maintenance deficits and major costs for upgrading outdated wastewater treatment facilities to meet EPA standards.

Drinking Water Supply

The Nation's drinking water is provided by a few large municipal systems, by special districts, State-chartered corporations, independent nonpolitical boards, homeowners associations, and a variety of public and private companies. More than 43 percent of the population is served by 0.5 percent of all systems, while 64 percent of the systems together seine less than 3 percent of the U.S. population. Over 80 percent of large systems are publicly owned; privately owned systems and private wells serve almost one-third of the Nation's population. Control of the water supply system is a significant local political issue because it is closely tied to local land development.[26]

[24]Brian Frennea, director, Inland Rivers Ports and Terminals I.Ix., personal communication, Nov. *28,* 19s9.

[25]Apogee Research, Inc., The *Cost Environmental* (Washington, Us. Environmental Protection *Agency, in press),*

[26]Information derived *from* Miller Associates, Inc., T' *Nation's Works: Report on Waser Supply.* prepared for the National Council on Public Works Improvement (Washington, DC: May *19S7).*

Table 4-2—Increase[a] in Household User Charges in Municipalities Attributable to Environmental Regulations[b]

Size of municipality	Number of municipalities	Distribution of municipalities (in percent) (up to 50 percent increase in charges)	(50-100 percent increase in charges)	(over 100 percent increase in charges)
Up to 2,500	26,315	45	35	20
2,500-10,000	6,279	90	10	0
10,000-50,000	2,694	80	20	0
50,000-250,000	463	100	0	0
Over 250,000	59	80	20	0
Percent of all municipalities		56	29	15
Percent of total population living in incorporated areas[c]		83	15	2

[a]No jurisdictions will have lower costs.
[b]Because of many simplifying assumptions, the potential increase in user charges may be underestimated.
[c]According to the 1982 Census of Governments, approximately 15 percent of the U.S. population live in unincorporated areas.

SOURCE: Office of Technology Assessment, 1990; based on data in U.S. Environmental Protection Agency, Office of Policy Planning and Evaluation, *Municipalities, Small Business and Agriculture* (Washington, DC: 1988), p. 2-14.

Capital for water supply facilities comes from a variety of sources, including general funds, user charges, debt issues, stock issues, and intergovernmental aid. Tax levies can be based on property, income, earnings, and special assessments, and Federal funding has generally supported less than 10 percent of total expenditures. Service is financed from hookup and user fees and general tax revenue without any substantial subsidy from State government.

Many communities face drinking water supply and quality problems. For some, water supply is either threatened by pollution or is inadequate. Local governments in the Western States compete for limited regional water supplies. Older cities, particularly in the Northeast, must replace obsolete treatment facilities to meet current standards. Moreover, most communities will have to revamp their treatment systems to meet **EPA's** new water quality standards. Although the standards are not yet final, local officials estimate that the costs of filtration to remove specific contaminants and to monitor water quality will be massive. Some local officials contend that their existing systems provide an acceptable level of purity and that Federal requirements to test for contaminants may not be necessary for public health needs.

Policies of pricing water at low, subsidized rates, particularly in the Northeast and Midwest, have contributed to current revenue shortfalls, the absence of capital reserve funds, and overconsumption.[27] To raise the capital needed for water treatment improvements, many communities will have to increase water charges substantially. Full-cost charges make good economic sense for many communities, and fee structures can be used to manage water use. However, managers in small or older jurisdictions may find the necessary fee increases higher than property values will support. Districts that can raise fees enough to pay for investment capital may run up against State-imposed debt ceiling or Federal bond caps.

State-of-the-art engineering knowledge is needed to comply with Federal and State water quality regulations and to operate modern facilities, yet only the largest and wealthiest cities can attract the necessary engineering and technical talent. Small districts suffer most from a lack of technical and financial expertise, and while consolidation and regional solutions hold promise for such systems, communities resist giving up their independence. If aid is not available and Federal deadlines are not relaxed, noncompliance is a likely alternative for many jurisdictions.

Wastewater Treatment

Local governments have primary responsibility for wastewater treatment; they own and operate nearly 16,000 wastewater treatment plants, which treat more than 37,000 million gallons of sewage a day. Private industry treats only a small additional fraction of this amount and then discharges its effluent into local treatment facilities or waterways. Federal capital grants have helped finance about 25 percent of construction costs for local treatment plants, and State aid contributes an additional 5

[27]National Council on Public Works Improvement, op. cit., footnote 22, p. 54.

Photo credit: S.C. Delaney

To protect water quality, the Environmental Protection Agency requires State and local governments to develop programs for controlling indirect "non-point source" pollution, such as the agricultural runoff pictured here.

percent, with local monies supplying the balance.[28] Operating costs are covered by user fees, ad valorem taxes, hookup fees, and some State aid, with user fees covering between 40 and 70 percent of the operating costs, depending on the region.

Federal and State financial assistance and stricter treatment regulations have improved local wastewater treatment substantially over the past 20 years, yet the backlog of local needs for system renovation, expansion, and construction is massive. EPA estimated that a capital investment of $68 billion would be necessary to satisfy the needs of the 1988 population,[29] excluding costs of addressing combined overflow problems, stormwater management, nonpoint source control, and estuary protection. The end of EPA construction grants in 1990 will bring increased financial responsibilities for both State and local governments, and the latter will have to compete for limited State loan funds to finance system improvements.

Many jurisdictions lack the engineering expertise to resolve the technical problems related to assessing needs, evaluating innovative or alternative systems, siting facilities, and deciding on action plans to meet Federal and State regulations. Furthermore, local governments have few alternatives to raising user fees substantially-in most cases doubling them—to cover operating and maintenance costs and to pay debt service. Many facilities are currently so poorly operated and maintained that they are unlikely to last their design lives. Small, low-income communities **and** older cities may lack the economic base to raise rates or local subsidies sufficiently, and will need outside help or face noncompliance.

solid **Wrote**

Solid waste collection and disposal have been managed by local governments and the private sector. Local user fees have paid the operating costs, and bonds and commercial loans have financed new landfills and incinerators. **All** localities are contending with problems related to increasing per-capita generation of solid waste, limited permitted landfill capacity, and siting new solid waste facilities.[30] As the scope of such problems has increased, the Federal Government has enlarged its role, focusing on regulation of landfills, incinerators, and waste-to-energy facilities. States are also adopting stricter regulations for landfills and incinerators, and both State and local governments are developing programs to stimulate recycling and encourage waste reduction.

Eighty percent of the Nation's landfills currently operating will be full in two decades,[31] although many will close before then because they cannot meet regulations. Design features to ensure that landfills are environmentally sound, such as liners, leachate collection and treatment facilities, and methane gas collection systems, increase capital costs significantly. Local citizen and political oppo-

[28] Information derived from Research Ire., *Public Works: Report on Wastewater Management*, prepared for the National Council on Public Improvement (Washington, 19s7).

[29] U.S. Environmental Protection Agency, Office of Municipal Pollution Control, *1988* Needs *Survey—Report to Congress* (Springfield, VA: National Technical Information Service, February 1989), p. 1.

[30] U.S. Congress, Office of Technology Assessment, Facing Americans *Trash: Next for Municipal Waste?* OTA-O-424 (Washington, DC: U.S. Government Printing Office, October 1989), p. 303.

[31] Ibid., p. 271.

sition to siting landfills or incinerators is often extreme, extending the facility replacement process over many years. National efforts to increase demand for recycled materials have not been coordinated with policies encouraging waste separation and collection.[32]

LOCAL GOVERNMENT FISCAL PROGRAMS

Public works construction in cities and counties has historically been financed with revenues from broad-based local taxes and Federal and State grants. More recently, local jurisdictions have turned to user fees, developer impact charges, and revenues from special districts to help fund capital investments and operating and maintenance costs. Despite political risk and State limitations, most local governments have also had to raise property taxes, and some have introduced or raised income or sales taxes and service charges over the last several years to finance public works. Dedicated Federal and State funds have long supplemented local transportation programs. This has been much less true for environmental services, which are funded primarily through local revenues and service charges.

Property Tax

The property tax has always been the mainstay of local government revenue structure; in 1988, property taxes generated over 70 percent of the tax revenue collected by all local governments.[33] Cities, which usually have a more diversified tax base than counties and towns, rely on property taxes for approximately 50 percent of their revenue. Although the average effective tax rate on single-family homes valued at $100,000 decreased from $1,260 in 1981 to $1,150 in 1987,[34] 41 percent of cities increased property taxes in 1988 and in 1989—a significant number, since many States place legal limits on community property tax levies[35] (see box 4-A).

property tax limits have forced local governments to press State legislatures for authority to levy additional taxes. The retail sales tax is considered the most productive local, nonproperty tax and has proven most acceptable to voters. Since New York City adopted a general sales tax in 1934, local governments in 30 States have levied the tax; in 1986, these revenues made up approximately 16 percent of total local income.[36] Since all but five States set **a cap** on the local sales tax, attempts to increase it require substantial political effort (see box 4-B); and despite the need for additional revenue, only 8 percent of cities increased sales taxes in 1988 and 5 percent in 1989.[37]

Although most communities place sales tax revenue in the general fund, some dedicate a portion to special functions, usually regional transportation, including mass transit; currently, 11 States give local sales tax authority to 117 transit or transportation districts.[38] The Denver Regional Transportation District levies a 0.6-percent sales tax, and the Metropolitan **Atlanta** Rapid Transit Authority benefits from a l-percent sales tax dedication, of which 50 percent must be used for capital spending. In Ohio, counties may impose a transit tax of up to 1.5 percent;[39] in 1980, the Central Ohio Transit Authority in Columbus switched from a dedicated local property tax to a retail sales tax.[40] Since 1972, a portion of the sales tax paid in King County, Washington, has gone directly to Seattle METRO for operating and capital expenses. Currently, the 0.6 percent of the region's 8.1-percent tax dedicated to METRO produces $114 million annually and is a key source of agency revenue.[41]

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[32] Ibid., p. 317.

[33] U.S. Department of commerce, Bureau of the Census, (Washington, DC: November 1988), p. xv.

[34] Advisory Commission on Intergovernmental Relations, *Significant Features of Fiscal Federalism*, 1989 ed., vol. 1 (Washington, DC: January 1989), p. 72.

[35] Peterson, op. cit., footnote 5, p. 30.

[36] Advisory Commission on Intergovernmental Relations, *Significant Features Fiscal Federalism*, (Washington, DC: July 1988), p. 66.

[37] Peterson, op. cit., footnote 5, p. 23.

[38] Advisory Coremission on Intergovernmental Relations, op. cit., footnote 34, pp. 58-59.

[39] Ibid., p. 63.

[40] Public Technology, Inc., *Inflation Responsive Transit* prepared for the Urban Consorti"um for Technology Initiatives and the U.S. Department of Transportation (Washington, DC: 1982).

[41] Jean Baker, budget director, Seattle, communication, June 1989.

Box 4-B—What It Takes To Pass a Sales Tax Increase

In the fall of 1985, voters in Arizona's Maricopa County (Phoenix) overwhelmingly approved, by a 72- to 28-percent margin, a 1/2-cent sales tax to pay for a 20-year, $4.1 billion urban freeway system for the Phoenix metropolitan area. Congestion on city streets had brought travel delays and high accident and insurance rates, and made the voters willing to take action.

As part of the approved package, the Regional Public Transportation Authority (RPTA) was established to develop a plan to improve public transportation. In the spring of 1989, RPTA asked voters to approve another 1/2-cent sales tax increase for a 30-year, $5.6 billion program, which included extensive bus route expansion and surface and elevated, automated rail transit systems. This proposal was overwhelmingly defeated by a 61- to 39-percent margin.

The affected neighborhoods objected to the elevated rail system, and cost estimates were considered unrealistic. Many thought the transit proposal needed greater public input and a better review process; others, including an organized citizen group, Voters Against Senseless Transit, claimed that the sales tax, which everyone would pay, would finance a system that would benefit relatively few. The transit plan was seen as a boon to developers active in the transit corridors. Despite increasing air quality problems in Phoenix, the transit campaign did not make a strong, well-documented case for the regional benefits of the costs for transit over continuing to rely on private vehicles. Additionally, over the last several years, Arizona had raised its gas tax 4 cents (all dedicated to highway use), and many citizens believed this was sufficient to finance needed transportation improvements.

In contrast to Maricopa County, in 1988, San Diego voters approved a 1/2-cent local sales tax for multimodal transportation improvements, expected to cost $2.25 billion over the next 20 years. Previous transportation improvements in San Diego, such as the light rail project, had been financed largely by State sales and gas taxes. Traffic congestion and air pollution problems convinced San Diego voters that a combination of highway and transit improvements was the only viable solution for the region. The transportation package included $750 million in improvements each for highways, transit, and local streets, a combination that garnered widespread support for the proposal from all types of communities. The tax increase was specifically for funding projects that had been studied and adopted as key elements in the regional transportation improvement plan. Voters knew what they were voting for and believed they would be getting their money's worth from the sales tax increase.

Income Tax

Local governments in11 States may levy personal income taxes. and 3 States allow local payroll taxes. In 1988, more than 3,500 districts (over two-thirds of them in Pennsylvania) collected income taxes.[42] Large cities, such as New York, Detroit, St. Louis, Cleveland, and Philadelphia, are most likely to rely on income taxes, which generally account for about 15 percent of total city tax revenues.[43] Few cities earmark income tax for special uses, although Cincinnati, Ohio, and Newport, Kentucky, use income tax revenue to support transportation.[44] only 3 percent of cities initiated or increased income taxes in 1988, reflecting local resistance to any type of tax increase. For example, the 1989 Virginia General Assembly authorized several heavily urbanized northern Virginia counties to levy a l-percent income tax to finance needed transportation improvements, but the counties encountered heavy business and taxpayer opposition, and none expects to levy the tax.

Traditionally, local governments have levied fees or charges on users of certain types of public services to cover all or a portion of the costs and, to a lesser extent, to ration service. Typically, water, sewer, and solid waste disposal services, mass transit, bridges, and public parking garages are at least partially financed with user charges; fees often do not cover ail costs, especially for services with large capital expenses. Legal restrictions and public resistance to tax increases have driven many local governments to raise these fees and apply them to more services to replenish general funds and to pay for specific programs and improvements. Citizens seem to find "paying for what you get" more acceptable than paying higher general taxes.[45]

[42]Advisory Commission on Intergovernmental Relations, op. cit., footnote 34, p. 46.

[43]Peterson, op. cit., footnote 5, p. 30.

[44]Public Technology, Inc., op. cit., footnote 40.

[45]Hopkins, op. cit., ootnote 18, p. 1.

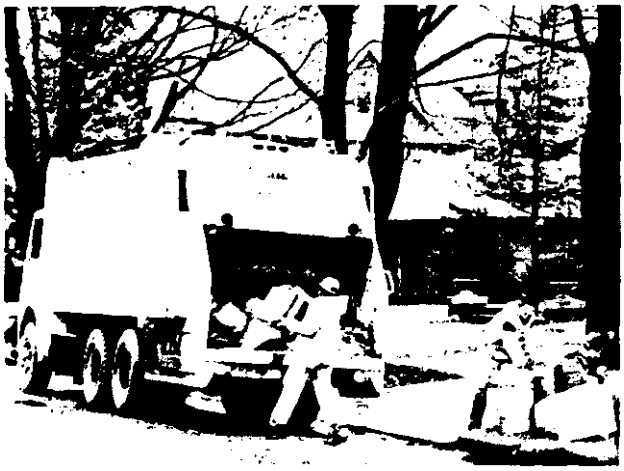

Photo credit: American Public Works Association

Taxpayers are often willing to pay full costs for direct services, such as garbage collection.

User charges grew at an annual rate of 11 percent between 1977 and 1984,[46] and currently, about 15 percent of State and local revenues come from such fees.[47] In 1988, 62 percent of cities raised garbage collection fees, 57 percent increased sewer service fees, and 55 percent boosted water charges.[48] Large cities are more likely to have increased fees than jurisdictions in the 10,000- to 50,000-population range, probably because they offer more services appropriate for fees. Moreover, implementing user charges that recover full costs of service requires a sophisticated capability that small jurisdictions usually lack. Regionally, user charges contribute most to local revenues in the South and the Plains areas, which have a tradition of low property taxes .49

User charges are best suited to finance those services for which users can easily be identified and charged, or for which it is easy to deny service to those who do not pay. Environmental services fall into this category. Less direct fees, such as the gas tax or vehicle registration fees, are used to capture some of the costs for facilities like local streets and highways, where users cannot be excluded from using the service. User fees provide local administrators with a useful management tool; service use can be manipulated through rate policy-charging higher rates for water used during dry months when demand is high and higher transit fares during peak hours when job-holding commuters must get to work, for example.

While user charges are attractive revenue options, local officials must build solid political support for increases or risk a public backlash (see table 4-3), and must resolve complex management and policy issues. First, they must decide what types of services they want to finance with user fees instead of general fund revenues and how to calculate true, full costs given available data and expertise. Charlotte, North Carolina, and Phoenix, Arizona (see box 4-C), are examples of communities that made substantial efforts and instituted M-cost accounting programs. Second, fee setting requires policy decisions on which services are to be self-supporting and which require subsidies for low-income groups. Finally, the extent to which user fees can be used to control service demand and still be equitable is a consideration.

Table 4-3--Local Options for Addressing the Costs of Federal Environmental Standards

Option 1: Search for Funds From State and Federal Governments and Private Sector
Prognosis: Limited additional public funding except as loans; private investment attracted only in growth areas
Option 2: Raise Additional Funds Locally by Increasing:
• **User fees**
Prognosis: Potential for tax-payer acceptance where need is clear and fiscal capacity exists; regressive aspects and equity issues must be addressed; good potential for reducing service demand.
• **Developer charges**
Prognosis: Good potential as a source of capital, but limited to growth areas and where State laws permit
• **General taxes**
Prognosis: Tax-payer resistance, perhaps leading to State legal restrictions on increases.
• **Dedicated taxes (e.g., portions of sales, income, or "sin" taxes)**
Prognosis: Potential for tax-payer acceptance if need established and fiscal capacity exists.
• **Revenue-backed debt**
Prognosis: Potential for tax-payer acceptance unless debt service costs push taxes or fees too high.
Option 3: ***Reallocate Funds From Other Local Programs***
Prognosis: Political battles between conflicting goals; likelihood of smaller allocations all around.
Option Fail With Federal Standards
Prognosis: Federal enforcement action, fines and litigation; extensions or waivers; possibility of increased health risks.

SOURCE: Office of Technology Assessment, 1990.

[46] J. Richard Aronson and John L. Hilley, *Financing State and Local* Governments (Washington, DC: The Brookings Institution, 1986), p. 156.
[47] Hopkins, op. cit., footnote 18, p. 7.
[48] Peterson, op. cit., footnote 5, p. 25.
[49] Advisory Commission on Intergovernmental Relations, *1986 State Fiscal* (Washington, DC: 1989).

Box 4-C—Phoenix's User Fee Program

A Phoenix resident teeing off at a municipal golf course or obtaining a water hookup permit has paid a user fee that covers all or a substantial part of the cost of the service. In 1981, the combination of high inflation, limitations on revenue sources, and climbing expenditures for public services drove city officials to overhaul their user-fee systems to improve efficiency and increase revenues. Now, Phoenix has one of the Nation's strongest user fee programs, which recovers approximately $247 million annually, a $3 million increase over the previous fee revenues,[1] thanks to full cost accounting, strict political accountability, and a thorough annual review process.

Currently, the city recovers from users the full cost of services such as land fill and sewer and water service, which previously had been paid for out of the general fund. Cost accounting is centralized under the control of the city auditor, whose staff develop separate cost models for each of 209 services. The models start with the direct service costs—primarily personnel and materials—and add depreciation estimates and indirect costs, such as debt service, and a share of the city's overhead and central management expenses. The complex, systematic assessment of indirect costs distinguishes the Phoenix system from those of other cities that charge user fees. For some services, the indirect costs can be significant—running one-half the direct labor costs.[2]

The essential decisions about which public services are suitable for user fees and what the cost recovery rates shall be are made publicly by the city council. Cost recovery rates for public works range from 100 percent recovery for aviation, water, and sewer services, to 25 to 30 percent for public transit.[3]

Detailed review and consultation precedes the city council's action on these difficult political issues. Analysis by the city departments in cooperation with the Auditor's Office is followed by staff discussions with fee payers and citizen advisory committees. Through this process, the basis for fees is fully aired, and the public has the opportunity to comment on the fee proposals prior to council action. For instance, during discussion of an adjustment to the building safety permit fees, the Homebuilders Association agreed to a fee increase on the condition that the city staff speed up the plan review process.[4]

The user-fee process works well politically because fees are reviewed routinely every year, allowing minor adjustments at regular intervals rather than infrequent but major rate-hike proposals. Furthermore, city departments monitor closely the costs that go into their fee bases and look for more efficient ways to perform services because of the close scrutiny by users.

[1]James A. Flanagan and Susan J. Perkins, "Annual User Fee Review Program of the City of Phoenix, Arizona," *Government Finance Review*, June 1987, p. 13.

[2]Thomas D. Hopkins, "Benefit Charges for Financing Infrastructure," OTA contractor report, July 24, 1987, p. 68 (available from NTIS).

[3]Ibid., p. 67.

[4]Flanagan and Perkins, op. cit., footnote 1, p. 18.

Special Improvement Districts

The majority of special districts are formed to provide a specific public works function-water supply, sewage treatment, highways, airports, and deep-water port facilities-and have at least partial administrative and fiscal autonomy and are not constrained by State debt limits. Special district assessments account for approximately 10 percent of total local revenue, a relatively small share, but in some States, such as California , Illinois, Pennsylvania, Texas, Massachusetts, and Washington, special districts generate both capital and operating funds for local public works.[50] Like user fees, special districts, through their charges and assessments, shift most of the financing for their services from all taxpayers to those who benefit directly. One of the important *advantages* of special districts is that they can provide services in developing or rural areas or small towns where local governments are not willing or have limited financial or administrative capacity to expand. However, proliferation of fiscally autonomous special districts creates issues of public accountability and policy coordination with other types of infrastructure and other jurisdictions.

The Mount Laurel, New *Jersey, Township Municipal Utilities Authority serves* fast-growing suburban communities outside Philadelphia, and is typical of many special districts. Created in 1969 when it absorbed an existing private water and sewer system, the authority operates five wells, two water treatment plants, and three wastewater treatment

[50]U.S. Department of Commerce, op. cit., footnote 33, pp. 51,60, 68, S5, 90, 94.

plants, relieving the township of administrative and financial responsibilities.[51]

Although special district financing is best suited to growth areas, since 1965 *Missoula County, Montana,* a slow-growing rural area, has been raising capital through Rural Special Improvement Districts (RSIDs) for a variety of public works needs including roads, sewage treatment plants, and water projects.[52] Missoula has two categories of RSIDs. Neighborhood RSIDs are setup to improve facilities in already developed areas, and developer RSIDs are created when 51 percent of the land is owned by an entity intending to improve the land for development. As of 1987, almost 900 RSIDs had been established, many for small improvements and others for projects costing as much as $1.6 million. Missoula has also created perpetual maintenance RSIDs to pay for upkeep of existing facilities.

Capital improvement plans provide local governments with a structure to survey needs and establish priorities, coordinate intergovernmental projects, develop financing strategies and schedules, and sell the program to the public. Most cities and large counties operate under a 5- to 6-year capital improvement plan that is updated annually. Usually, the jurisdictions have a large backlog of capital projects, and this type of planning process is essential to maximize their limited funds.

In contrast, small communities are unlikely to use any type of capital budgeting plans, although the fiscal impact of necessary capital improvements may be greater for them than for large jurisdictions. Research on planning strategies in small towns under 10,000 in Wisconsin, Massachusetts, Montana and Maine indicates that less than 5 percent practice any form of capital improvement programming.[53] While small communities recognize that capital needs exist, responsibilities for public works are often divided between towns and independent districts, which are likely to deal with capital needs on an individual and ad hoc basis, because of the division of responsibility and because of their small staffs, limited fiscal capacity, and voter resistance to large expenditures.

Political Strategies

heal authorities are growing more conscious of the necessity for citizen outreach and basic public relations skills to raise awareness about infrastructure needs and gain funding approval. Commitment and persistence are key. As one example, the Chicago Regional Transportation Authority (RTA) had conducted studies from 1985 to 1987 to assess conditions of the RTA system, identify needs, and estimate the cost of needed capital equipment and reconstruction. The agency drafted a Strategic Plan, which it took to the State legislature with a request for a tax increase to support transportation improvements. Though supported by key legislators and the Governor, the bill failed. RTA redoubled its efforts the following year, drafting a concise but pointed summary of the Strategic Plan, engaging media consultants, and mounting an aggressive community outreach effort. Over a 3-month period RTA presented its program to civic, business, and government groups around the State. These techniques proved decisive in 1989; 1 day prior to adjournment and by a narrow margin, the legislature authorized $1 billion over 5 *years* for the RTA system.[54]

Officials in other jurisdictions that have succeeded in passing major capital improvement plans have planned equally carefully, allocating resources for public education so as to achieve the necessary political consensus. Box 4-D describes Cincinnati's recent efforts, and other examples include Phoenix and San Diego (box 4-B), and New York State (chapter 3, box 3-B).

REGIONAL PLANNING

Although the economic and operating efficiencies to be gained by regional planning for land use and public works are widely recognized, the political reality is that most of these decisions are made by local elected officials and are based on the salient local priorities. In many European countries, where governmental authority flows from the top down, local planning and infrastructure decisions are

[51] Porter et d., op. cit., footnote 2. p. 24.

[52] Apogee Research, Inc., *Financing Infrastructure: Innovations* at *the Local Level (Washington,* DC: National League of Cities, December 1987). p. 56.

[53] Sally A. Rood and Philip Rosenberg, ● 6CW1M Budgeting: Small Town Practices in Four Sates," prepared for the National Council on Public Works Improvement, unpublished manuscript, October 1986, p. 5.

[54] Theodore G. Weigle, executive director, Regional Transportation Authority, personal communication, Aug. 16, 1989.

Photo credit: Chicago Rapid Transit District

Chicago's rapid transit system faces a variety of needs. The ceiling in this administrative office collapsed a year before the picture was taken; and the deteriorating rail station is on Chicago's Northwestern line, the system's busiest route.

required to conform to district or regional plans. In the United States, planning and public works decisions are made by local governments, and regional planning organizations are usually advisory only. In most States, general-purpose planning agencies, such as Councils of Governments or Regional Planning Councils, have no specific governing or taxing authority, no veto power, and membership is voluntary. Because their products reflect the consensus of their local members, regional agency plans are often criticized as vague and overly general. "Regional planning only works when it's a win-win for all the districts; when everyone gets more or less what they want. When there are hard choices and winners and losers, regional planning--forget it."[55] As a result, regional planning operates in political limbo--acknowledged as an exemplary goal, but lacking the teeth to be effective.

Despite the institutional weaknesses of regional planning, policymakers have persisted in trying to make it work to improve the efficiency of public investment in infrastructure and other services. During the 1960s and 1970s, Federal and State governments encouraged comprehensive and functional regional planning. Provisions were added to many Federal programs requiring regional bodies to set priorities for, and review the use of, Federal funds. In 1973, DOT promulgated a requirement that Metropolitan Planning Organizations (MPOs) be established to review urban area transportation planning. DOT funded these regional activities; other Federal agencies, particularly those supporting housing and environmental programs, followed suit, including planning grants with program funds. During this period, most States passed legislation allowing the formation of regional planning organizations, and some provided modest appropriations. As a result of Federal and State support as well as local interest, the number of regional councils and planning associations jumped from 36 in 1%1 to 659 in 1978.[56]

[55]Mary Boergers, member, Maryland House of Delegates, personal communication, July 7, 19S9,

[56]Campbell Associates, "Regional Planning," OTA contractor report, June 19S9, app. B, p. 1.

Box 4-D—The Cincinnati Infrastructure Commission[1]

Throughout the early 1980s, city engineers in Cincinnati *warned* **of infrastructure decay** but failed to mobilize widespread support for action. In 1986, the mayor and city council turned to the business community to help draw **attention** to public works by establishing the Cincinnati Infrastructure Commission. Hoping to focus citizen concern **on the need** for repairs to roads, bridges, and sewers, and stimulate willingness to pay, the mayor and city council involved community leaders.

The effort paid off; within a year the commission had produced a comprehensive report on the city's public works, with recommendations for maintenance and repair and suggestions for financing, including a ballot referendum to raise the city income tax by 0.1 percent with proceeds earmarked for infrastructure repair, upkeep, and improvement. Six months later Cincinnati voters passed the tax increase, anticipated to yield $6.9 million per year for infrastructure maintenance. The tax may be used only **for projects that will take or less to** complete and will be rescinded if revenues are used for any other purpose. One commission member cited this emphasis on manageable, relatively short-term projects as a key factor in making the referendum attractive to voters.[2] Though the tax increase passed by a narrow margin, the approval was significant because the decade had otherwise been characterized by tax revolt.

The commission chairman, the chief executive officer of Procter& Gamble, selected as commissioners 10 business and community leaders from such corporations as Cincinnati Bell, General Electric, and Arthur Andersen, as well as the president of the University of Cincinnati. Five committees were formed to review streets and roads, parks and recreation, water and sewers, buildings, and financing. For each of these categories, volunteer project engineers assembled teams to draft portions of the report. Project engineers could staff their teams however they chose, though in most cases one member of the team was selected by the city Department of Public Works.

After completing their reports, the team leaders submitted them to the commissioners, who condensed the findings and presented a final report to the mayor and city council.[3] The commission's independent status gave its work an appeal that the municipal government could not muster. Passage of the tax increase highlights the importance of clearly defining needs and articulating priorities. As one Cincinnati Infrastructure Commission team leader noted:". . . people are willing to pay higher taxes if they know exactly what they will get for their money.'[4]

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[1]Material on the commission is based on Cincinnati Infrastructure Commission, "City of Cincinnati Infrastructure Commission Report," presented to Cincinnati City Council, unpublished document, Dec. 3, 1987; and Ronald w. Roberts, "Cincinnati's Dream Team," *Civil Engineering,* July 1989.

[2]William Victor, Cincinnati Infrastructure Commission, personal communication, Sept. 6,1989.

[3]Though the commission issued its complete report in late 1987, the group has remained intact to monitor progress and ensure proper program implementation.

[4]Roberts, op. cit., footnote 1*P"4"

However, during the 1980s, many Federal programs funded regional planning, such as the Housing and Urban Development's section 701 grants and EPA's section 205 grants, were eliminated or cut back. Financial support for regional planning has also waned in many States and generally is under 30 percent of agency budgets and as low as 10 percent.[57] The impact on regional planning organizations has been severe; professional staffs have been cut, services reduced, and essential databases have become out-of-date. Although regional agencies have been inventive in raising money by selling technical services, applying user fees, or charging special membership assessments, local revenues are not adequate to maintain even basic planning activities.

On the positive side, many agencies have highly skilled and knowledgeable staffs, who contribute essential technical expertise and provide valuable services to their constituents. Indeed, one reason many regions have coped as well as they have with the transportation impacts of rapid growth is the transportation planning process DOT has fostered through the work of regional MPOs. In a few places, regional agencies have achieved enough influence to overcome political differences. For example, in 1988, the major urban county in Arizona adopted a new air pollution control plan; since then the State legislature had adopted four of the five priority recommendations of the Maricopa Association of

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[57]Ibid., p. 3.

Box 4-E—SANDAG: Financing Means Planning Power

Although State and local districts are often reluctant to share authority with a regional organization, San Diego's Association of Governments (SANDAG) is an exception. Designated as the State Metropolitan Planning Organization (MPO), SANDAG plays a key role in both transportation planning and financing. In 1987, San Diego voters approved a general sales tax increase for capital projects identified in the Regional Transportation Improvement Plan (TIP), and the State designated SANDAG as the chief administering agency in charge of allocating the $100 million annual tax revenue. By virtue of its role as San Diego's MPO, SANDAG prepares the TIP, and thus it can develop and finance the implementation of its own plan—an unusually strong role for a regional agency. SANDAG's financial independence has greatly increased its power within the region and may well alter its other roles. Making financing options part of the planning process ensures that SANDAG gives careful attention to setting priorities among TIP projects, with the result that plans are realistic and likely to have public support. In addition to transportation planning, SANDAG has initiated an effort to identify all regional public works needs and to develop a regional financing plan.

Governments' plan.[58] Box 4-E provides another example. Regional planning is greatly strengthened if the regional agency has the capability to finance its recommendations and to tie infrastructure decisions to land-use development policies. Unless State governments provide them with more power, regional planning agencies will remain peripheral to most infrastructure decisions, as one Governor recently recognized publicly:

> **The critical challenges facing** Virginia cannot be addressed **without formal, regional cooperation by our localities.** We must use State resources in a manner **that cuts waste and improves efficiency.** Such cooperation will not **happen** by accident.[59]

The diversity of regional planning can be seen in case studies of six regional planning organizations and two State planning programs in appendix C.

BENEFIT-BASED FINANCING STRATEGIES

Local governments have traditionally paid for infrastructure with funds raised largely from broad-based taxes plus some user fees levied on groups that benefit directly from specific services. Pressed for funds but constrained by voter opposition to tax increases, local governments have turned to developer charges and special districts-all ways to focus the costs of constructing infrastructure on the beneficiaries.

Developer charges are money, land, or construction services required of a developer seeking governmental approval of a project.. The charges compensate local governments for the costs of providing public facilities needed by the development and are used to achieve some of the same goals as growth limitation by regulation. Traditional forms of developer participation have included land dedications for highway rights-of-way, schools, and parks. In recent years, developers in fast-growing locations have been required to build or provide funds for school buildings, fire stations, and sewage treatment facilities. Generally, developers pass these charges on to buyers by raising prices.

Despite the advantages to local governments of developer charges, their use is not widespread because to have an effective program, State enabling legislation, local ordinances, and most important, a strong real estate market are necessary. Communities in California, Florida, and Colorado are the principal users, although examples exist in other States. There is no standard program; every community has a different process, including the following:

In *Broward County, Florida, the* county undertakes an "adequacy review" to assess the impact of any proposed development on the comprehensive land-use plan and a wide range of public facilities, including the regional transportation network, local roads, water management and water supply, wastewater treatment and waste disposal, air quality,

[58] Ibid., app. A-4, p. 4.

[59] Gerald Baliles, former Governor of Virginia, quoted in Arlington, Virginia Journal, July 24, 1989, p. A9.

schools, and parks.[60] The developer must show that existing facilities are adequate to support the proposed development or provide for them through fees or exactions paid to the county.

Initially opposed by developers, the Broward County system is now accepted because it applies a systematic procedure to all developers and reduces costly administrative delays. Impact fees are levied prior to development for roads, parks, and schools. Road impact fees are set, based on a computer model that contains information about existing volume and capacity for all major roads and calculates the amount of traffic generated by the proposed development. The developer must pay a proportionate share of the costs of increasing the capacity or constructing any necessary road improvements; fees are deposited in a dedicated fund earmarked for that service area. Park and school construction fees are set by a similar process of impact assessment. Water supply and wastewater treatment facilities must be constructed by the developer.

Orlando, Florida, has refined its system of developer fees, using them as partial security for revenue bonds for improvements to the wastewater treatment system.[61] Funds paid by developers and deposited in an Impact Fee Account, plus user charges, provide debt service payments on the bonds. The city has established a reserve account to cover shortfalls if revenues are insufficient or a growth slowdown occurs.

In Fresno, California, developer fees pay for all public works improvements needed in designated growth zones of the city.[62] The initial developer Of a growth zone must pay an accelerated fee (approximately established base fee) for improvements. Once the total improvement cost is collected, the fee is reduced to the base rate, and the developers who paid at a higher rate are reimbursed.

Upper Merion Township, Pennsylvania, a suburb of Philadelphia, has established itself as a Transportation Improvement District with authority to charge developers impact fees based on the number of tips generated by the new development.[63] The fees are deposited in a highway/traffic capital improvement fund and dedicated to making the necessary improvements. Developed by a local traffic task force, the system enables the community to raise revenue for road improvements without affecting the township's bond credit rating, thus reserving the township's bonding capacity for other capital projects.

While special districts are not a new concept in public finance, local governments, particularly in growth areas, have recently modified and expanded their use. Between 1982 and March 1987, *Pleasanton, California,* raised approximately $145 million for infrastructure construction through general obligation bonds backed by special district assets.[64] After a special improvement district has been approved by the property owners or the city, the full costs of all improvements, including interest costs and engineering fees, are calculated, and the amount is apportioned among the property owners. Benefit zones are designated within some improvement districts according to the proximity to the improvement. Assessments are made in proportion to acreage rather than assessed value to prevent confusion with property taxes, and property owners may choose either to pay the assessment in a lump sum or in annual installments. In one district that had three zones for allocating highway improvement costs, assessments ranged from $13,700 to $50,000 per acre. If a parcel falls into a multiple-improvement district, the owners can be assessed charges of $200,000 per acre.[65]

Tax Increment Financing

Based on the special district concept, tax increment financing is practiced in many States, most frequently in California. The procedure involves freezing, as of a base date, the real estate tax base in a designated benefit area. Tax revenues at the pre-investment level continue to flow to the general fund, but any increased revenues resulting from

[60] Douglas R. Porter and Richard B. Peiser, *Infrastructure Community* Development Component Series Urban Land Institute, 1984), pp. 15-17.

[61] U.S. Environmental Protection Agency, Administration and Resources Management, *Case Studies* (Washington, DC: September 1989), p. 68,

[62] Porter and Peiser, op. cit., footnote 60, p. 18,

[63] Apogee Research Inc, op. cit., footnote p. 80.

[64] Ibid., p. 35,

[65] Ibid., p. 37.

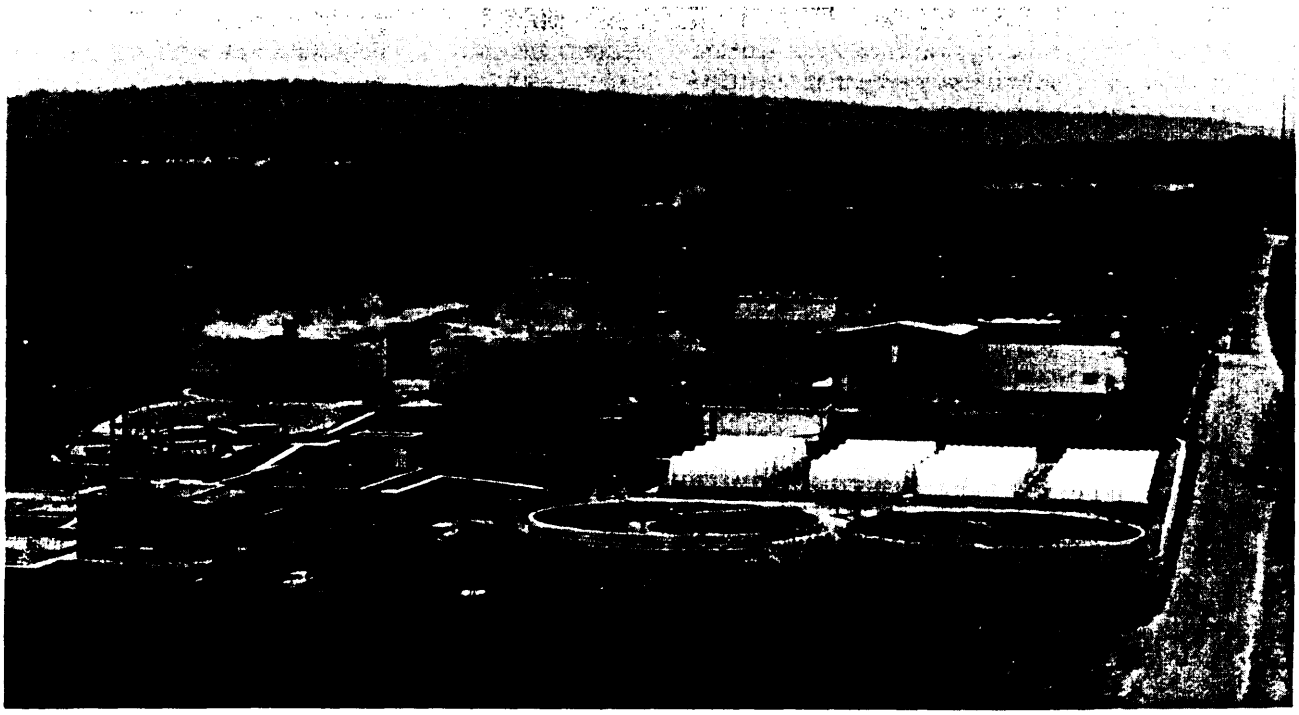

Photo credit: Upper Merion Township

The Matsunk Sewer Expansion Project in Upper Merion, Pennsylvania, was financed through the Township's sewer access rights program.

property values rising above the base are earmarked for debt service on the improvements. Since the mid-1970s, California jurisdictions have had authority to finance redevelopment with the additional tax revenues generated by the projects. Los Angeles has used tax increments to finance numerous redevelopment projects, both in the central business district and in residential neighborhoods.

Orlando, Florida, has based its $19 million financial plan for the redevelopment of its downtown area on tax increment financing.[66] Revenue bonds to finance the needed capital investments are backed by an irrevocable lien on the increment in the property tax revenue. In 1986, the tax increment revenue, which is paid into a redevelopment trust fund, was $2.3 million.

Davenport, Iowa, is financing a portion of $13.2 million in improvements in an economic development project with tax increment revenue.[67] Improvements include four new Interstate highway ramps, two bridges over the highway, and improvements to local roads. One-half of the income from the tax increment district is earmarked for repayment of a $2.5 million loan from the RISE Fund (a State transportation funding program described in chapter 3, box **3-A).**

While local governments are eager to tap private resources for public works capital, the private sector is reluctant to participate because such projects are not usually profitable; thus, involuntary developer charges are more typical means of acquiring private capital. However, occasionally, private investors are willing to participate in financing public works that they determine can lead to profits. For example, in the tiny town of *Belen, New Mexico,* a developer agreed to subsidize a new water supply plant until the customer base grew and the system was operating at capacity and covering full costs.[68]

[66] Ibid., p. 68.

[67] Ibid., p. 46.

[68] U.S. Environmental Protection Agency, op. cit., footnote 61, p.%.

Purchasing Access Rights

As a way to avoid bond issues and to accumulate capital in advance for a water or wastewater facility, some local governments sell access rights in prospective plants. For example, the township of *Upper Merion, Pennsylvania,* initiated a Sewer Access Rights Program to build up capital to finance expansion of a sewage treatment plant. Developers were allowed to purchase credits for an equivalent dwelling unit (200 gallons per day) for $3,200. The price of the credits increased as construction costs rose, creating an incentive to invest early. Moreover, nonparticipants had no guarantee of sewage treatment capacity for their developments. So far, the township has collected $23 million from the program, $5 million in paid credits, $6.5 million in signed contracts for additional rights, $5 million contributed by the township to purchase reserve capacity for its own uses, and $6.5 million from neighboring communities that plan to use the facility.

In 1983, officials in *Houston,* Texas, established a similar pre-purchased wastewater treatment plant program. In exchange for the payment of a capital recovery charge, private developers are guaranteed access to a contracted amount of future system capacity. Between 1983 and 1987, the city collected nearly $70 million, which it leveraged into $180 million in improvements to treatment plants.[70] Private developers have never liked the program, and the downturn in the local economy has made the pre-payment plan burdensome. However, the capacity credit system signals clearly where additional capacity is needed and prevents overinvestment in facilities where demand is limited. Moreover, new capacity has been provided efficiently; the city expanded several small treatment plants rather than building a new, larger, regional plant.

In the early 1980s, *Escondido, California, was* not in compliance with State wastewater regulations and was the subject of a lawsuit filed by the neighboring city of San Diego for nonperformance on a wastewater service contract. The city was also experiencing intense developer pressure. Although Escondido was in technical default on its municipal debt, voters had vetoed bond financing, higher user fees, and conventional public-private partnerships.[71] To finance the needed upgrading of the sewer plant, the city opted to sell future capacity, raising $16 million in 3 months by selling rights at $1,650 per unit, for either cash payments or letters of credit payable in 2 years. The city assures a sell-back price based on a guaranteed 33-percent increase for the first year and an 18-percent return for rights held for 5 years. In April 1989, access rights sold for $3,300 per unit. The program has the support of both citizens and developers, although there is some opposition from anti-growth groups.

Privatization

Enthusiasm for ownership of environmental facilities has waned since the passage of the 1984, 1986, and 1988 Tax Reform Acts (see chapter 2 for details), and solid waste management is one of the few areas in which private ownership is still considered profitable. In *Hempstead, New York,* a private firm is scheduled to install a recycling facility in a building provided by the town. The firm will make a capital investment for equipment of between $500,000 and $750,000. The town has agreed to sell its recyclable to the company for a guaranteed price for 3 years,[72] at which time the town will buy the equipment from the company, unless the contract is renewed. Other nearby communities are permitted to use the recycling plant.

In transportation, suburban traffic congestion and the lucrative prospect of the combination of toll revenues and increased land values have made the construction of private, for-profit toll roads more attractive. However, prospective investors must overcome a multitude of time-consuming financing and institutional hurdles. In 1988, the Virginia Legislature passed a bill enabling the construction of private toll roads, and the *Toil Road Corporation of Virginia* received approval in 1989 from the State Transportation Commission to construct a 14-mile toll road from Dunes Airport to Leesburg, Virginia. In addition to completing the acquisition of capital and purchasing the right-of-way, the corporation must get approval of toll rates and financing plans from the State Corporation Commission. Private

[69] Apogee Research, Inc., op. cit., footnote 52, p. 135,

[70] Apogee Research, Inc., "Public-Private Partnerships for Environmental services: Anatomy, Incentives, and Impediments," prepared for the U.S. Environmental Protection Agency, Office of the Comptroller, Resource Management Division, unpublished manuscript, Oct. 17, 1988, p. 17.

[71] U.S. Environmental Protection Agency, op. cit., footnote 61, P. 65.

[72] Apogee Research, Inc., op. cit., footnote 70, p. 23.

entrepreneurs are also attempting to develop a commuter rail service on abandoned railroad track in northern Virginia.

Highway E-470, a 50-mile circumferential on the eastern side of *Denver, Colorado,* exemplifies a successful public-private venture, but it also illustrates the complexity of financing a major urban highway. Private participation is limited to right-of-way contribution, the payment of impact fees, and membership on advisory panels. Nonetheless, the collaboration has been a major factor in public acceptance of the financing package (see box 4-F).

Issues Related to Benefit Financing

Despite the advantages to local governments of shifting public works costs onto individual developers, users, and property owners, such benefit-based strategies pose a number of complex practical and policy issues.

- Equity: The issue of equity has several dimensions. First, developer charges and special district assessments frequently require advance payment for improvements. These can be a heavy burden for small developers and even exclude them from the market. Second, new residents pay housing prices inflated to cover required developer improvements. Benefits of a highway or other community improvement often come to both old and new residents, making equitable cost allocation a challenge. Finally, user fees are basically regressive. Raising such charges to cover more fully the costs of essential services, such as drinking water or transit can create serious policy dilemmas for local officials. Low-income citizens may be disproportionately hurt by new or increased fees, unless the fees include provisions for low-income and other special groups and encourage efficiency. However, if carefully structured, benefit charges may be no more regressive and can be less so, than subsidy by broad-based taxes.[73]
- Cost *Allocation:Determining* the full costs of public works and developing-a rational system for allocating costs among all direct and indirect beneficiaries are complex and difficult tasks. For example, the more extensive the use of developer fees and benefit charges, the cloudier the lines become between who are direct or indirect beneficiaries, and who are not.
- *Administrative:* Establishing a cost accounting and budgeting system that measures and allocates user and developer impact costs requires expertise usually found only in major metropolitan areas. Setting equitable fee schedules and making choices between charging average and marginal costs can be very complex. **Administrative** systems that must accommodate both public and private funds in special district accounts involve equally complicated problems.
- *Uncertain Revenues:* Uncertain revenues and accumulation of debt without adequate budget control and financial planning can be serious problems for public works authorities and special districts. Unforeseen rises in interest rates and economic downturns can create shortfalls in user-charge revenues and devastate financing plans that assume stable interest rates and economic growth.
- *Political Decisionmaking:* Public works programs financed by developer charges, access rights, and special district assessments can remove important budget and development decisions from the political process. Since these funds are earmarked, they do not necessarily reflect changes in community priorities or development goals. Strong regional or State planning programs can balance this independence.
- *Regional Planning and Budgeting:* If developer charges and special district assessments are used to finance infrastructure, developing and following comprehensive land-use and capital improvement plans become very important. High fees can encourage development to leapfrog over regulated areas into other less restrictive districts, exacerbating the problem of providing infrastructure in the long term. Especially in jurisdictions near State boundaries, this is a difficult and politically sensitive issue.
- *Strategy Selection:* Local financing strategies must conform to State laws, economic conditions, and the willingness of the community to **accept anew** scheme. Most of the strategies that shift costs from general purpose government to individuals or special districts work best in growth regions, where the real estate market is

[73] Hopkins, op. cit., footnote 18, pp. *22-23.*

Box 4-F— Denver's E-470 Highway

In 1988, after years of planning and negotiations, the State of Colorado authorized the E-470 Public Highway **Authority to** design, finance, and oversee the construction of E-470 as a limited-access tollway. The authority, composed of an elected official from the three counties and the city (Denver) along the route, was empowered to set tolls, levy *development* fees, **and** establish local improvement districts. From the outset of the planning stage, no Federal or State support was available to cover the estimated $1 billion cost, and crafting a workable local financing package required regional cooperation and private sector support.

scheduled to open its first segment in 1991, Highway E-470 is financed by a $722 million bond issue approved in 1986,[1] and toll revenues are expected to cover the bulk of the debt service once the highway is completed. **Developers who own property along the route are contributing approximately two-thirds of the-right-of-way as well as paying impact** fees to the authority. The authority has designated a 3-mile wide corridor along the E-470 route as **a value capture area because of its strong economic potential, and** planned to collect 25 percent of the increased property and sales taxes resulting from the corridor development, However, a slump in the regional real estate market has delayed implementing the value capture program. The authority considered imposing a $2 per employee head tax on local employers as another form of beneficiary charge, but the idea was abandoned after strong local opposition developed.

Funds for the first 5.5 miles, a $68 **million segment, will come from bond funds, the revenue from a** $10 increase **in vehicle registration fees charged within the three-county region, and developer impact** fees.[2] The Union Bank of Switzerland is providing a guarantee that bond holders will be repaid from tolls, once the first segment is opened in 1991. The provisions of the Public Highway Authority stipulate that any fees or taxes imposed are short term and must be removed when toll revenues reach **a** sufficient level to pay the debt and cover ongoing operations. Once a separate fired is established to handle maintenance and improvements, the tolls will be eliminated.

Promoted as **a public-private partnership, the authority** has formed an Executive Advisory Committee including four authority members and four developers. Two other groups are also advising the authority--a task force, which brings together private citizens, developers, and the planning directors of the four jurisdictions, and a landowners committee representing property owners along the southern portion of the route, the first section to be **built.**

Photo credit: Colorado Department of Transportation

Construction **of Happy Canyon Bridge, part of Denver's E-470 Highway project, is under way.**

[1] E-470 Authority, *E-470 Report* February 1-9.

[2] John E. Arnold, executive director, E-470 Authority, personal communication, Aug. 9, 1989.

strong. Without a healthy demand for growth, the governing body has little leverage.

CONCLUSIONS

Local governments are in the unenviable position of having primary responsibility for providing and maintaining public works services and coping with numerous Federal and State regulations on how projects must be built and severe restrictions on their ability to raise and manage funds. In most cases, traditional broad-based taxes, principally on property, no longer produce sufficient revenue to finance essential public services, which range from education to maintaining streets and sewer systems. As a result, many communities have cut back expenditures to balance budgets, frequently deferring both maintenance and capital improvements for public works, and creating large backlogs of projects in the process. In States where such actions are legal, local jurisdictions have diversified and expanded their revenue sources, raising nonproperty taxes and user fees, and tapping private capital to finance new growth.

Costs have risen across the board and a variety of Federal and State actions have spumed the search for additional local revenue. First, higher costs dictate that a larger portion of local general tax revenue is needed for education, law enforcement, housing, and social welfare programs, all of which have no other revenue source and are not suitable for benefit charges. Second, cutbacks during the 1980s in Federal construction grants, revenue sharing, and support for social programs, coupled with higher standards for environmental services, have added significantly to local costs for public works. Finally, property tax increases, particularly to support growth or expanded facilities, have met with stiff resistance from local voters, often leading to State constitutional or legal limits on taxes.

Local Revenue Sources

Property tax increases seem to have neared the upper limits of acceptability in many jurisdictions, at least for the near term. **However, dedicated local income and sales taxes have proven to be successful revenue raisers for some communities, and increments added to these taxes have become important sources of revenue for local public services.** Earmarking portions of tax increases for specific improvements, such as public transportation, is often key to winning public acceptance. On the other hand, once a source of funds is earmarked, it cannot be used for other needs even if surplus funds accumulate. Nonetheless, these sources, too, generate citizen resistance, and few communities raised their rates during 1988.

In many growth regions, governments are shifting costs for infrastructure expansion needed for new development directly to the private sector, through developer charges, sales of access rights, and special district assessments. The private sector is initiating for-profit ventures in a few districts, primarily solid waste projects, although transportation services that have potential for operating revenues and land development profits may successfully attract direct private investment **Based on current political and economic trends, OTA concludes that new infrastructure, particularly in growth areas, will be financed increasingly from various benefit charges, including direct user fees and taxes, such as the fuel tax, that target beneficiaries.**

Increasing benefit charges for public works services has some compelling advantages over raising broad-based taxes. **First, citizens seem willing to accept the principle of paying for services, making it politically easier to charge higher fees for public services and require developers to pay for facilities needed by their projects.** Many developers find" these strategies systematic, predictable approaches that save time and money. **Second, charging fees for services and programs that are closer to full costs may cut demand and hold steady or even reduce capital requirements. Third, the community** often can collect capital funds up front, avoiding the necessity for bond issues, and eliminating interest costs and reserving debt for other public facilities. Finally, benefit-based strategies allow local governments to design projects that are relatively self-supporting, making them less dependent on State and Federal programs, with their attendant strings.

Despite their advantages, strategies that shift infrastructure costs to beneficiaries pose some complex and difficult public policy issues. If recovery of the full cost of services is necessary to a jurisdiction, how should fees be structured and administered so they are not an excessive burden on the poor? Determining service costs accurately and allocating them equitably among direct and indirect beneficiaries are also difficult and complex problems, especially when service benefits are diffused

(as in public transit for example) among users and non-users. The equity of a new resident paying up front for services, through higher land prices, when long-time residents are also likely to benefit from growth is a further issue. Finally, while establishing independent special financing districts is a politically attractive option, doing so removes many fiscal and land-use decisions from the political process and may make it difficult to address new issues as they arise. Each of these issues embodies important political and policy concerns that must be weighed and resolved before governments embrace these new types of public works financing.

Small Districts and Low-Growth Areas

In many small, rural communities and low-growth jurisdictions, such as older, central cities, private capital and credit are unavailable, and residents have limited ability to pay higher user fees. **OTA concludes that benefit-based and private sector strategies are not appropriate or workable for most small, rural communities and low-growth areas. This is an especially severe problem for funding environmental public works, since these lack any substantial Federal or State support. Policymakers need to consider alternatives for such districts, which cannot depend for revenue on a strong real estate market or the profitability of private venture. Many** such communities need additional technical and management expertise as well. Considerably more State involvement and assistance is likely to be needed to address these problems, since Federal programs and resources are spread very thin already.

The task of complying with new Federal environmental standards hits hardest at small, poor communities lacking resources and expertise, and large, older cities with public works facilities needing major upgrades. Small jurisdictions are frustrated by their lack of resources and **Federal** standards that they fear may be more strict than their local public health needs justify. **A** requirement to build a new wastewater treatment system or replace a solid waste facility that still has extra capacity may raise local costs beyond the value of the homeowners' land in a small, rural town. For an older city with a backlog of deferred maintenance and rehabilitation needs, even full-cost accounting may not generate sufficient funds. Furthermore, higher service charges could be a decisive factor for a local business considering a move to a lower-cost jurisdiction.

The Federal challenge is to permit local choices within a framework that implements national public health and safety goals, maintains accountability, and sustains economic vigor. **Most local jurisdictions have no dedicated, reliable, outside funding source for environmental projects, as they have for transportation in the form of Federal and State allocations of fuel taxes and other benefit charges (see chapter 1, table 1-9). Developing public support for new taxes or significantly higher user charges to fill this gap requires substantial time and effort and may fail, even when the local economy can support them.** Furthermore, local options for funding environmental services have more limiting trade-offs associated with them than the options for funding transportation. OTA concludes that without stepped-up State or Federal assistance, noncompliance with EPA standards is a likely outcome for districts that cannot generate adequate funds.

Debates in State legislatures from Maine to California emphasize that infrastructure-related problems, such as traffic congestion, water supply, and air quality, long ago transcended local boundaries, to become regional issues.[74] However, despite requirements for comprehensive regional planning, enacted as part of Federal grant programs over the last couple of decades, **OTA finds that regional planning organizations currently have such basic shortcomings that most are ineffective.** Generally, these organizations are underfunded, lack authority to prepare and implement plans, and are highly dependent on the expertise and personalities of individual personnel.

If regional planning groups are to become constructive, effective forces, their basic weaknesses need to be addressed. First, regional agencies need reliable funding, in addition to the limited revenue they can generate, to maintain core staff and technical and service capabilities. Cutbacks in Federal funds for housing and environmental programs have left DOT funding as the primary support for regional planning. **The lack of funding for comprehensive environmental planning is of**

[74]Campbell Associates, Inc., op. cit., footnote 56, p. 5.

particular concern as States assume responsibility for revolving funds to support local environmental infrastructure. Second, the regional impacts of infrastructure issues create the need for coordinated capital improvement planning and budgeting. **OTA concludes that because of local government ambivalence about cooperating with neighboring jurisdictions, State leadership and funding will be necessary for regional planning activities to be effective. Federal program requirements or incentives could spur the States to take action.**

Appendixes

Appendix A
Federal Spending and Tax Collection by State

This table compares Federal tax collections by State with Federal spending for all purposes in each State, including large agricultural subsidies and payments in lieu of taxes for Federal facilities, such as military bases and Indian reservations. Those States that have high per-capita incomes, such as New Jersey and Delaware, generally pay more in Federal taxes per person than the Federal Government spends per capita in the State. On the other hand, the Federal Government pays out more than it collects in taxes from States that receive large Federal payments.

Table A-1--Per-Capita Federal Spending and Tax Collection by State, 1987 (in dollars)

	Federal spending per capita	Federal tax Collections per capita		Federal spending per capita	Federal tax collections per capita
Alabama	3,411	2,513	Montana	3,589	2,684
Alaska	5,421	4,630	Nebraska	3,344	3,011
Arizona	3,710	3,034	Nevada	3,437	3,573
Arkansas	3,084	2,371	New Hampshire	2,878	3,857
California	3,642	3,801	New Jersey	3,002	4,827
Colorado	3,732	3,453	New Mexico	4,911	2,561
Connecticut	4,236	5,135	New York	3,380	4,100
Delaware	2,829	3,880	North Carolina	2,588	2,809
District of Columbia	23,360	4,805	North Dakota	4,467	2,823
Florida	3,443	3,413	Ohio	2,894	3,291
Georgia	3,080	3,034	Oklahoma	3,077	2,933
Hawaii	4,394	3,201	Oregon	2,765	2,979
Idaho	3,171	2,473	Pennsylvania	3,188	3,371
Illinois	2,672	3,606	Rhode Island	3,502	3,501
Indiana	2,656	3,015	South Carolina	3,031	2,478
Iowa	3,009	2,911	South Dakota	3,751	2,463
Kansas	3,538	3,383	Tennessee	3,151	2,757
Kentucky	2,782	2,456	Texas	2,829	3,305
Louisiana	2,650	2,605	Utah	3,396	2,357
Maine	3,461	2,767	Vermont	2,690	2,940
Maryland	5,113	4,067	Virginia	5,317	3,501
Massachusetts	4,358	4,270	Washington	3,883	3,457
Michigan	2,538	3,601	West Virginia	2,807	2,363
Minnesota	3,115	3,421	Wisconsin	2,536	3,154
Mississippi	3,324	2.047	Wyoming	3,134	3,165
Missouri	4,124	3,209	Average	3,384	3,430

SOURCE: Lillian Rymarowicz, *Fe&@ T- Payments by State Residents and Federal Expenditures in Individual States, Fiscal Year 1987,* Report for Congress (Washington, DC: Congressional Research Service, June 1, 1988).

Appendix B

Fiscal Capacity and Effort Measures

Fiscal capacity is a concept developed by the U.S. Advisory Commission on Intergovernmental Relations (ACIR) to measure the relative revenue-raising abilities of States and their local governments, including taxes and nontax revenues, such as user charges. ACIR defines fiscal capacity as the relative amount of revenue States would raise if they used a "representative" tax and revenue system, consisting of national average tax rates and charges applied to 30 commonly used tax and revenue bases. Therefore, State capacities vary because of differing tax base characteristics, such as property values, sales tax receipts, and mineral production. For example, the effect of lower energy prices would adversely affect the fiscal capacity of those States that rely on energy-related taxes and user charges to raise a significant share of State revenue. The method developed by ACIR is only one of several methods to measure fiscal capacity, and some believe an analysis based on per-capita income, though much simpler, is equally useful.

ACIR also measures fiscal effort, or relative tax burdens, across States. Revenue effort is defined by ACIR as the burden that each State places on each revenue base relative to the national average.

Table B-1 shows State capacity and effort indexes and rankings as developed by ACIR. Because the ACIR analysis is based on 1986 data, changes have undoubtedly occurred in the index, but the general trends and relationships remain valid.

Table B-l-State Fiscal Capacity and Effort, 1986

	Fiscal capacity[a]		Fiscal effort[a]	
	Index (1OO=U.S. average)	Rank	Index (1OO=U.S. average)	Rank
Alabama	75	48	102	16
Alaska	287	1	139	2
Arizona	96	24	96	31
Arkansas	73	50	91	41
California	117	10	96	30
Colorado	115	11	88	45
Connecticut	139	3	86	46
Delaware	119	9	98	25
District of Columbia	123	6	129	3
Florida	102	15	84	48
Georgia	92	32	98	23
Hawaii	109	12	102	17
Idaho	76	47	94	38
Illinois	97	20	97	29
Indiana	86	40	97	27
Iowa	84	41	114	6
Kansas	95	26	95	34
Kentucky	77	46	94	37
Louisiana	94	29	99	22
Maine	92	33	94	39
Maryland	107	14	98	26
Massachusetts	122	7	96	32
Michigan	96	25	114	7
Minnesota	101	17	113	8
Mississippi	65	51	109	9
Missouri	95	28	82	49
Montana	88	37	101	19
Nebraska	91	35	104	12
Nevada	137	4	76	50
New Hampshire	121	8	68	51
New Jersey	125	5	94	35
New Mexico	102	16	94	36
New York	109	13	141	1
North Carolina	86	38	90	43
North Dakota	93	30	103	15
Ohio	92	34	100	21
Oklahoma	95	27	92	40
Oregon	92	31	103	14
Pennsylvania	90	36	98	24
Rhode Island	97	23	102	18
South Carolina	77	45	101	20
South Dakota	77	44	96	33
Tennessee	82	42	90	42
Texas	101	18	84	47
Utah	79	43	108	10
Vermont	97	22	97	28
Virginia	100	19	89	44
Washington	97	21	106	11
West Virginia	74	49	103	13
Wisconsin	86	39	128	4
Wyoming	157	2	119	5

[a]Based on State and local tax bases and other revenue sources, such as user charges.

SOURCE: Advisory Commission on intergovernmental Relations, *State Fiscal Capacity and Effort* (Washington, DC:1989), p. 13.

Appendix C

Case Studies of Regional Planning Agencies

OTA examined a cross-section of multipurpose regional planning organizational to evaluate their effectivenew and reviewed the status of regional planning in two States-Tennessee and Idaho. Although the regional agencies were highly individual, the study revealed much about the current status of regional planning and highlighted areas that need to be strengthened.

Generally, the more formal authority a regional agency has, the more status and clout it has within the region. The regional agencies with the best records for implementing plans were lead agencies for at least two or more regional infrastructure programs. For example, designation by the State as the Metropolitan Planning Organization (MPO) as the lead agency for water and air quality programs or for economic development defines an agency's institutional role, guaranteeing its involvement in those programs and opening the door for wider participation.[2] The MPO designation is the most important, because it brings with it U.S. Department of Transportation planning funds and the authority to prepare the mandated regional transportation improvement plan.

However, in many regions **a different agency is designated as lead for each separate responsibility, reflecting the lack of agreement by the State and** locality on who should speak for the region. None of the regional agencies studied had responsibility for planning all major infrastructure **categories. Moreover,** although regional agencies prepare comprehensive **plans and coordinate** Federal **and** State projects, functional planning **responsibilities arc frequently distributed to different agencies. As** a result, functional plans are not tied to comprehensive regional plans. Even within one infrastructure category, authority is frequently dispersed. In transportation, some States have chosen to establish multiple, single-county MPOs instead of one regional agency, where several counties form the metropolitan area. In Tennessee, none of the regional planning agencies has been designated as an MPO.[3]

Authority is dispersed for several reasons. The Federal Government may disperse authority by designating a different agency to perform a task than the State uses. Most State agencies favor organizationst o w h i c h t h e y customarily delegate program responsibilities. Local elected officials prefer to involve their own districts in decisionmaking and are not eager to have an agency designated by the Federal or State government take the lead. As an example, in Michigan, the State recently established a State economic development agency, but the Federal Government continues to fired the original planning agencies.

Regional planning organizations can establish a leadership role by using their technical and analytic expertise to provide needed local services to address local priorities. The data collection and analytic work of many regional agencies provide the technical foundations for numerous regional **decisions, and the organization is often the only source for reliable regional data To maintain this role the** agency has to maintain its databases and retain qualified staff, difficult tasks if funding levels are low. In addition, most regional planning agencies operate one or more regional service programs, such as ridesharing or programs for aged persons; these bring additional status, some income, and enhance their credibility within the region.

Regional agencies may provide another valuable service if they **function as a regional** *ombudsman* **-available to** identify problems and provide a forum for discussing **controversial issues of regional significance. Some agencies go a step further and help to resolve regional conflicts, although success in this role depends heavily on the stature** of the Executive Director. In 1988, the North Central Texas Council of Governments successfully resolved air quality issues within the region, achieving agreement on a plan that avoided Environmental Protection Agency sanctions, for example.

[1]Maricopa Association of Governments (Phoenix, Central Texas Council of Governments, Baltimore Regional Planning council, San Diego Association of Governments, Southeast Michigan Council of Governments, and Tampa Bay Regional Planning Council.

[2]Campbell Associates, "Regional Planning," OTA contractor report, June 1989, p. 15.

[3]Ibid., app. A-5, p. 7.

Appendix D

Contractor Reports

Copies of contractor reports done for this project are available through the U.S. Department of Commerce, National Technical Information Service (NTIS), Springfield, VA 22161$_{s}$(703) 487-4650.

1. Apogee Research, Inc., "Impact of Federal Funding Changes on State/Local Infrastructure Financing Resources."
2. Government Finance Research Center, "Federal Tax Policy and Infrastructure Financing."
3. Thomas D. Hopkins, "Benefit Changes for Financing Infrastructure."