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U.S. Department of  
Transportation  
Office of the Secretary  
of Transportation

# Inflation-Responsive Financing for Streets and Highways

June 1982

An Urban Consortium Information Bulletin



**Urban  
Consortium**

for Technology Initiatives



# Urban Consortium for Technology Initiatives

## *Member Jurisdictions*

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The Urban Consortium for Technology Initiatives was formed to pursue technological solutions to pressing urban problems. The Urban Consortium is a coalition of 37 major urban governments, 28 cities and 9 counties, with populations over 500,000. These 37 governments represent over 20% of the nation's population and have a combined purchasing power of over \$25 billion.

Formed in 1974, the Urban Consortium represents a unified local government market for new technologies. The Consortium is organized to encourage public and private investment to develop new products or systems which will improve delivery of local public services and provide cost-effective solutions to urban problems. The Consortium also serves as a clearinghouse in the coordination and application of existing technology and information.

To achieve its goal, the Urban Consortium identifies the common needs of its members, establishes priorities, stimulates investment from Federal, private and other sources and then provides on-site technical assistance to assure that solutions will be applied. The work of the Consortium is focused through 10 task forces: Community and Economic Development; Criminal Justice; Environmental Services; Energy; Fire Safety and Disaster Preparedness; Health; Human Resources; Management, Finance and Personnel; Public Works and Public Utilities; and Transportation.

Public Technology, Inc. is the applied science and technology organization of the National League of Cities and the International City Management Association. It is a nonprofit, tax-exempt, public interest organization established in December 1971 by local governments and their public interest groups. Its purpose is to help local governments improve services and cut costs through practical use of applied science and technology. PTI sponsors the nation's local government cooperative research development, and technology transfer program.

PTI's Board of Directors consists of the executive directors of the International City Management Association and the National League of Cities, plus managers and elected officials from across the United States.



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June 1982

Prepared by  
**PUBLIC TECHNOLOGY, INC.**  
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Washington, D.C. 20004

Secretariat to the  
**URBAN CONSORTIUM  
FOR TECHNOLOGY  
INITIATIVES**

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## PREFACE

This is one of ten bulletins in the fifth series of Information Bulletins produced by the Transportation Task Force of the Urban Consortium for Technology Initiatives. Each bulletin in this series addresses a priority transportation need identified by member jurisdictions of the Urban Consortium. The bulletins are prepared for the Transportation Task Force by the staff of Public Technology, Inc. and its consultants.

Ten newly identified transportation needs are covered in this fifth series of Information Bulletins. In priority order they are:

- Growth Management and Transportation
- Intercepting Downtown-Bound Traffic
- Inflation Responsive Transit Financing
- Impact of Traffic on Residential Areas
- Coordination of Parking with Public Transportation and Ridesharing
- Improved Railroad Grade Crossings
- Flexible Federal Design Standards for Highway Improvements
- Traffic Signal Maintenance
- Inflation Responsive Financing for Streets and Highways
- Flexible Parking Requirements

The needs highlighted by Information Bulletins are selected in an annual process of needs identification used by the Urban Consortium. By focusing on the priority needs of member jurisdictions, the Consortium assures that resultant research and development efforts are responsive to local government problems.

Each bulletin provides a nontechnical overview, from the local government perspective, of issues and problems associated with each need. Current research efforts and approaches to the problem are identified. The bulletins are not an in-depth review of the state-of-the-art or the state-of-the-practice. Rather, they serve to identify and raise issues and as an information base from which the Transportation Task Force selects topics that require a more substantial research effort.

The Information Bulletins are also useful to those, such as elected officials, for whom transportation is but one of many areas of concern.

The needs selection process used by the Urban Consortium is effective. Priority needs selections have been addressed by subsequent Transportation Task Force projects:

- To facilitate the provision of transportation services for elderly and handicapped people, five products have been developed: Elderly and Handicapped Transportation: Chief Executive's Summary, Elderly and Handicapped Transportation: Planning Checklist, Elderly and Handicapped Transportation: Information Sourcebook, Elderly and Handicapped Transportation: Eight Case Studies.
- To help improve center city circulation (with the objectives of downtown revitalization and economic development) several projects have been completed. A summary report on Center City Environment and Transportation: Local Government Solutions shows how 7 cities use transportation and pedestrian improvements as tools in downtown revitalization. A report titled Center City Environment and Transportation: Transportation Innovations in Five European Cities discusses exemplary approaches to resolving traffic management problems common to cities with large numbers of automobiles. Another project, addressing the coordination of public transportation investment with real estate development, has culminated in two major national conferences--the Joint Development Marketplaces I and II. The second Marketplace, held in Washington, DC, in July 1980, was attended by a total of over 500 people, including exhibitors from 32 cities and counties and representatives of private development and financial organizations.
- A series of documents relating to the need for Transportation Planning and Impact Forecasting Tools has been prepared: (1) a management-level document for local officials describing manual and computer transportation planning tools available from the U.S. Department of Transportation, (2) a series of case studies of local government and transit agency applications of these tools, and (3) a guide describing ways local governments can gain access to these tools.
- To meet the need to promote the use of Transportation System Management (TSM) measures, a series of five regional meetings was held in 1980 to provide local, State, and Federal officials, and representatives of transit agencies and the business community with the opportunity to exchange information about low-cost TSM projects to improve existing transportation systems.
- To facilitate the dissemination of information on local experiences in Parking Management, a technical report describing the state-of-the-art has been prepared.

- To address the need for information on transit productivity, a seminar on International Transit Performance Measurement was held in September 1980. The seminar included presentations on the state-of-the-art in France, Germany, and the United States. The seminar was co-sponsored by the German Marshall Fund of the United States.
- To encourage improved design in transportation facilities, PTI organized Design for Moving People, the first national conference to bring together leading design professionals--architects, artists, arts administrators--and those responsible for operating and managing many of the nation's largest public mass transportation systems. The meeting was held in May 1981 in New York. Cosponsored by the American Public Transit Association (APTA), the New York Chapter of the American Institute of Architects, AMTRAK, and the Municipal Art Society of New York, the two day conference featured keynote addresses by two of the country's leading architects, case studies, and practical workshops on topics such as financing design excellence, promoting better collaboration between architects and artists, and materials selection--vandalism and maintenance.
- To address the issue of adequate financing for transit and the difficult policy decisions facing operating authorities regarding fare setting and the role fares should play in meeting financial needs, the Urban Mass Transportation Administration (UMTA) and the American Public Transit Association (APTA) sponsored a fare policy seminar, with the help of PTI, for general managers and board members in Region III. The seminar was held in Washington, D.C. in September 1981, at APTA's offices. Consulting experts presented the results of relevant research sponsored by UMTA's Office of Service and Methods Demonstrations.
- To test the effectiveness of the video teleconference as a means of communicating information to local officials quickly and efficiently and to address the need to find less costly alternatives to fixed route transit, PTI organized and staffed a successful teleconference under UMTA sponsorship in 1982. Entitled "Adjusting to Reduced Transportation Budgets: Operational Strategies," the teleconference provided local officials in five cities with information about alternative transportation services suitable for areas where conventional transit service is either impractical or unduly expensive.

Task Force information dissemination and technology sharing concerns are currently addressed by three products--SMD Briefs, Transit Actions and Transit Technology Briefs. SMD Briefs are short reports that provide up-to-date information about specific aspects of on-going projects of UMTA's Office of Service and Methods Demonstrations (SMD). In addition, the SMD HOST Program allows transportation officials from selected jurisdictions to visit one of these projects for on-site training. Transit

Actions cover the on-going projects of UMTA's Office of Transportation Management. Each Action provides timely information that will be especially useful to transit managers concerned with improving their transit systems' efficiency and effectiveness. Transit Technology Briefs report on projects sponsored by UMTA's Office of Technology Development and Deployment. These timely documents provide information that should be of direct benefit in the improvement and productivity of transit system operations.

Additional Technology Sharing occurs through the National Cooperative Transit Research Program (NCTRP) which was organized jointly by Public Technology, Inc., the American Public Transit Association, the Urban Mass Transportation Administration, and the Transportation Research Board to address problems relating to public transportation identified by local and State government and transit administrators.

The support of the U.S. Department of Transportation's Technology Sharing Division in the Office of the Secretary, Federal Highway Administration, National Highway Traffic Safety Administration, and Urban Mass Transportation Administration has been invaluable in the work of the Transportation Task Force of the Urban Consortium and the Public Technology, Inc. staff. The guidance offered by the Task Force members will continue to ensure that the work of the staff will meet the urgent needs identified by members of the Urban Consortium for Technology Initiatives.

The members of the Transportation Task Force are:

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City of San Diego  
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- Gerald R. Cichy  
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## FOREWORD

As this Information Bulletin goes to press, the U.S. Congress is considering legislation that will increase the Federal tax on gasoline and dedicate the new revenue to the construction and maintenance of the nation's bridges, highways, and transit systems. This proposed legislation, if passed, will have a major impact on local highway finance. Therefore, readers should contact their State Department of Transportation or regional Federal Highway Administration office for up-to-date information on the legislation.



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## Chapter 1

### ISSUES AND PROBLEMS

#### INTRODUCTION

Our urban highway system is currently facing a major crisis. Nationwide, the condition of the U.S. street and highway system is rapidly deteriorating, and there is increasing competition for the public funds needed to reverse this trend. Urban streets, especially in older areas, have had to accommodate greater volumes of traffic and heavier loads than they were originally designed to handle, and preventive maintenance has often been routinely deferred. As a result, many streets are reaching the end of their design lives sooner than anticipated. Additionally, growing cities have the problem of how to expand the capacity of their existing street systems.

Between 1970 and 1979, inflation boosted highway construction and maintenance costs dramatically while highway revenues increased much more slowly. One of the primary sources for highway revenues, gasoline taxes, has not kept pace with inflation and has actually declined in recent years, due to lower rates of fuel consumption. These trends of deferring maintenance, increasing costs, and declining revenues, have already caused decay of the overall urban street and highway system.

In 1978, the Transportation Task Force of the Urban Consortium identified Non-Federal Street and Highway Financing as one of its priority research needs, and in response an Information Bulletin was prepared on the sources and scope of funds available for urban street and highways and the issues involved in municipal street and highway financing.<sup>1</sup>

Since that Bulletin was prepared, highway costs have continued to rise, and the problems of urban highway financing have intensified. In the fall of

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<sup>1</sup>Public Technology, Inc., Non-Federal Street and Highway Financing. (Washington, D.C.: January 1980).

1981, the Transportation Task Force identified Inflation Responsive Highway Financing as one of its top ten priority needs. This Information Bulletin updates much of the data contained in the previous Bulletin and elaborates on some of the highway financing issues and problems that face our nation's urban areas. It does not purport to provide specific solutions; it is designed to respond to the needs of local officials for more information concerning Federal, State, and local street and highway financing alternatives.

An Information Bulletin, entitled Inflation Responsive Transit Financing, was also prepared in response to the 1981 needs determination.

## SOURCES OF STREET AND HIGHWAY FUNDS: HISTORICAL OVERVIEW

### Local

Municipalities depend primarily on local revenue sources to pay for their street and highway programs. In 1979, for every dollar received from Federal, State or other government sources, local governments contributed three dollars toward their local street and highway functions. Real estate taxes, retail sales taxes, and short and long term borrowing bring in the bulk of local funds. The remainder comes from a variety of sources, including:

- o Local fuel taxes.
- o Local vehicle taxes.
- o Taxes on for-hire vehicles.
- o Parking meter collections.
- o Off-street parking facilities.
- o Tolls.
- o Traffic fines and forfeitures.
- o Revenue bonds financed by State-shared highway user revenues.

The largest share of outside funds is from the States, which provide 17 percent of all local expenditures for highway functions. In 1980, State expenditures and grants-in-aid for local streets and roads amounted to \$4.6 billion.

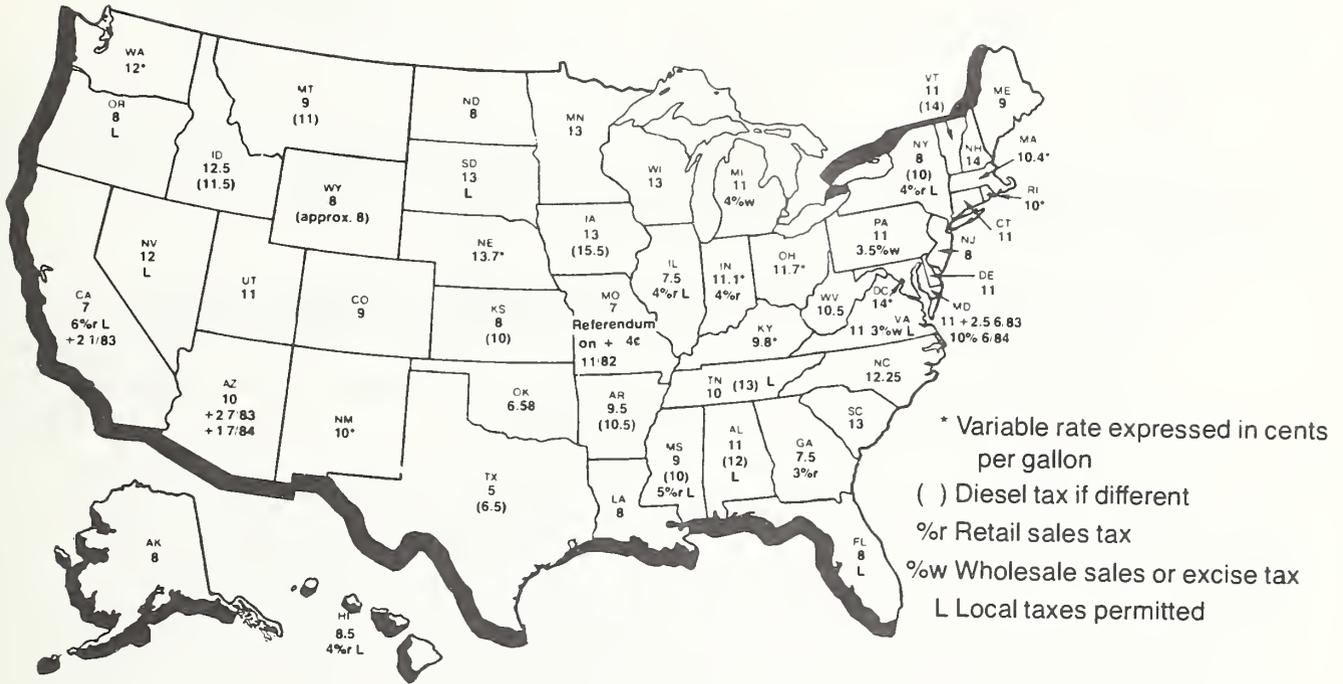
The principal Federal contribution to local systems comes from the Federal-Aid-Urban Systems (FAUS) program. FAUS funds are apportioned to states for "urbanized" and other State designated "urban" areas on the basis of population. Additional allocations are required for urbanized areas with populations over 200,000.

### State

State involvement in highway programs has a long history, and today almost all mileage on the Federal-aid system is owned, operated and maintained by the States or some local jurisdiction. In 1919, Oregon was the first State to pass a tax on motor fuels. In 1980, almost one-half of all State highway receipts, or \$14.1 billion, was generated from highway-user revenues, the bulk of which came from taxes levied on motor fuels. Figure 1 shows each State's gasoline and diesel fuel sales and local tax rates, as of September 1982.

Figure 1

## STATE MOTOR FUEL TAXES EFFECTIVE CENTS PER GALLON



Source: Highway Users Federation, Washington, D.C. 1983.

The other major sources of State highway user revenue are motor vehicle and motor carrier registrations, and licensing and tax fees. In 1980, another 20 percent of State highway receipts were generated from:

- o Appropriations from general funds.
- o Road and crossing tolls.
- o Capital outlay and debt service for construction bonds.
- o Miscellaneous receipts.
- o Other Federal government agency funds.
- o Local county, township, and municipality transfers.
- o Other State imposts.

States, in turn, distribute their funds to local governments for construction, maintenance and administration of streets and highways. State highway financing policies toward local governments vary. The amount transferred may differ among municipalities within each State, and the amount may fluctuate from year to year. Most States establish the amount of funds to be allocated based on a fixed cents per gallon of gasoline and diesel fuel sales, or a percentage of the net receipts on fuel sales, or other motor vehicle tax receipts. In some States, the amount is determined by legislative appropriation.

Formulas for the distribution of State funds are usually based on population. However, other factors such as motor vehicle registrations, motor vehicle fees collected, origin of fuel tax receipts, local street mileage, miles of traffic lanes on local streets, assessed value of real estate, a city's revenue-raising ability, current estimates of local street needs, or other factors computed alone or in various combinations are also used. The States disbursed \$4.1 billion in grants-in-aid to local government and another \$.5 billion dollars for municipal street construction in 1980.

### Federal

The Federal-Aid Road Act of 1916 has provided the basic building blocks for Federal-State relations in highway construction. The primary elements established in this legislation are still valid today:

- o Federal assistance is channeled through State highway departments.
- o States own the highways and are responsible for construction and maintenance.
- o Distribution of funds among the States is by apportionment, based on a Federal-State matching fund formula.<sup>2</sup>

A major juncture in Federal involvement on highway financing came when the Federal-Aid Highway Act of 1956 created the Highway Trust Fund. A major thrust of this legislation was to create a closed, assured mechanism of highway assistance to assure the completion of the Interstate Highway System. The Highway Trust Fund is basically an accounting arrangement whereby certain revenues (i.e., highway user taxes) are deposited in the General Fund of the U.S. Treasury and credited to the Trust Fund account on the basis of actual tax receipts. Receipts are derived from the following Federal excise taxes: gasoline and diesel fuel, 4¢ per gallon; truck and trailer sales, 10 percent of price; highway tires, 10¢ per pound; other tires, 5¢ per pound; tubes, 10¢ per pound; tread rubber, 5¢ per pound; highway use of heavy vehicles, \$3.00 per 1,000 pounds; lubricating oil, 6¢ per gallon, and parts and accessories, 8 percent of price. About 15 percent of the Fund's income comes from interest earned on investment of the Fund's balance. Currently, the Fund has a balance of approximately \$9 billion.

The current highway program is characterized by considerable flexibility among a large number of categorical authorizations that are financed predominantly by the Highway Trust Fund. Table 1 identifies the major provisions for Federal highway funds that are particularly applicable for urban areas.

Federal-aid funding may be used for building new highways, relocating existing highways, reconstructing highways to add lanes or interchanges, rehabilitating highway facilities, supporting highway-related and nonhighway mass transit improvements, and for associated safety or other eligible purposes. Federal-aid funds cannot be used for routine highway maintenance. The Federal-Aid Highway Program is a categorical program with grants-in-aid distributed to States and with some funds earmarked for use in urbanized areas having populations over 200,000. In 1980, States received \$9.6

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<sup>2</sup>U.S. Congress, Highway Assistance Programs: A Historical Perspective. (Washington, D.C.: 1978) pp. ix-x.

Table 1

PROVISIONS GOVERNING THE ALLOCATION OF FEDERAL FUNDS FOR HIGHWAY PURPOSES  
 PARTICULARLY RELEVANT TO URBAN AREAS

STATUS AS OF JANUARY 1, 1981

NAME OF FUND OR AGENCY	AMOUNT OR PROPORTION	OBJECTS OF EXPENDITURE	REMARKS
Federal Highway Trust Fund.....	Taxes specified	-	This fund receives the proceeds of the Federal excise tax on gasoline, diesel fuel, tires, tubes and tread rubber; on new trucks, buses, and trailers; on truck, bus parts and accessories; on lubricating oil; and the gross weight tax on heavy vehicles. (See tables FE-101 and FE-201 in "Highway Statistics".)
U.S. Department of Transportation..... Federal Highway Administration..... Federal-aid Primary, Primary Secondary, and Urban Systems.....	Remainder	Subject to appropriation for purposes given below:	Amounts shown are fiscal 1981 authorizations.
	\$3,200,000,000	To reimburse the States, the District of Columbia, and Puerto Rico for the Federal share of the cost of right-of-way, engineering, and construction on Federal-aid projects. Funds may be used to pay up to 75 percent of the cost of improvements, except in States containing 5 percent or more of public land areas where a greater Federal participation is allowed. (23 U.S.C. 120) Not more than 10 percent may be expended without matching on projects to eliminate railway-highway grade crossings (23 U.S.C. 120d); 2 percent for research and planning (23 U.S.C. 307); and 3-3/4 percent for administration. (23 U.S.C. 10a)	Primary funds first authorized for FY1917; secondary funds FY1928; urban funds, FY1946. "Administrative deduction from 1981 apportionments; 2 percent. Costs of construction engineering may not exceed 15 percent of the Federal share of construction costs. (23 U.S.C. 106c) If requested by the State highway department, not to exceed 50 percent of the annual apportionment of Primary Funds in rural areas may be transferred to the Secondary System in rural areas and vice versa, so long as the transfer does not increase the original apportionment by more than 50 percent. If requested by the State highway department, not to exceed 30 percent of the annual apportionment of Primary Funds in rural areas, may be transferred to the Urban System and vice versa, so long as the transfer does not increase the original apportionment by more than 50 percent. (23 U.S.C. 104d)
Federal-aid Primary System in Rural Areas, including extensions of the Federal-aid primary system in urban areas and priority primary routes.....	\$1,800,000,000	For projects on the Federal-aid primary system in rural areas. (23 U.S.C. 103b) For projects on extensions of the Federal-aid primary system within urban areas defined as areas "including and adjacent to a municipality or other urban place having a population of five thousand or more, as determined by the latest available Federal census, with boundaries to be fixed by a State highway department, subject to the approval of the Secretary." (23 U.S.C. 101) For projects on high traffic sections of highways on the Federal-aid primary system which connect to the Interstate System. (23 U.S.C. 147)	Two-thirds apportioned among the States as follows: one-third in the ratio which the area of each State bears to the total area of all States; one-third in the ratio which the population of rural areas of each State bears to the total population of rural areas of all States according to the latest Federal census; one-third in the ratio which the mileage of rural delivery and intercity mail routes where service is performed by motor vehicles in each State bear to the total mileage of rural delivery and intercity mail routes where service is performed by motor vehicles in all States as certified by the Postmaster General; and one-third as follows: in the ratio which the population in urban areas in each State bears to the total population in urban areas in all the States as shown on the latest Federal census. Provided, no State (other than the District of Columbia) shall receive less than 1/2 percent of each year's apportionment. (23 U.S.C. 104b-1) After July 1, 1965, approval for projects in urban areas of more than fifty thousand population is contingent upon existence of comprehensive transportation planning process in area. (23 U.S.C. 134) 20 percent or more of the funds authorized for the Federal-aid Primary System shall be obligated for projects for the resurfacing, restoration and rehabilitation of highways on such system.
Cont'd			

TABLE 1 (Cont'd)

PROVISIONS GOVERNING THE ALLOCATION OF FEDERAL FUNDS FOR HIGHWAY PURPOSES  
 PARTICULARLY RELEVANT TO URBAN AREAS

STATUS AS OF JANUARY 1, 1981

NAME OF FUND OR AGENCY	AMOUNT OR PROPORTION	OBJECTS OF EXPENDITURE	REMARKS
Federal-aid Urban System.....	\$800,000,000	For projects on the Federal-aid urban system in each urbanized area and in such other urban areas the State may designate. The system shall be located so to serve major centers of activity, and shall include high traffic volume arterial and collector routes. No route on the Federal-aid urban system shall also be a route on any other Federal-aid system. (23 U.S.C. 103d)	Apportioned among the States in the ratio which the population in urbanized areas, or parts thereof, in each State bears to the total population in such urbanized areas, or parts thereof, in all the States as shown by the latest available census. (23 U.S.C. 104b-6)
Federal-aid Interstate System...	\$3,500,000,000	To reimburse the States (except Alaska) and the District of Columbia for the Federal share of the cost of right-of-way, engineering, and construction on Federal-aid Interstate System projects in rural and urban areas. The system shall not exceed 42,500 miles in length (including mileage in Hawaii, but not in Alaska). Any routes included in the Interstate System, if not already coincident with the primary system, shall be added to such system without regard to the mileage limitation (23 U.S.C. 103d). Funds may be used to pay up to 90 percent of the cost of improvements, except in the public lands States where a greater Federal participation is allowed, but not to exceed 95 percent. Not more than 10 percent may be expended without matching on projects to eliminate railway-highway grade crossings (23 U.S.C. 120d); 1-1/2 percent for research and planning (23 U.S.C. 307); and 3-3/4 percent for administration (23 U.S.C. 104a).	Apportioned among the States for the fiscal years 1963 through 1965 in the ratio which the estimated cost of completing the Interstate System in each State bears to the sum of the estimated cost of completing the system in all States, as reported pursuant to 23 U.S.C. 104b-5. For fiscal years 1967 through 1990 funds are apportioned in the ratio which the Federal share of the estimated cost in each State bears to the Federal share of total costs. *Administrative deductions from 1979 apportionment: 2 percent. Costs of construction engineering may not exceed 10 percent of the Federal share of construction costs. (23 U.S.C. 106c)
Urban High Density Traffic Program.....	\$85,000,000	For projects on highways connected to the Interstate System in portion of urbanized areas with high traffic density. (23 U.S.C. 146)	The Federal share payable on any project shall not exceed 90 percent of the cost of such project. (23 U.S.C. 146b)

Source: U.S. Department of Transportation, Federal Highway Administration, Highway Taxes and Fees: How They Are Collected and Distributed. (Washington, D.C. :) 1981.

billion, or about one-third of all State highway revenues, from the Federal Highway Administration. In comparison, municipalities (legally designated incorporated places) received \$614 million, or about 8 percent of all their highway funds directly from the Federal government.<sup>3</sup>

## COSTS OUTPACE REVENUE

During the 1950s, 1960s and early 1970s, the Federal tax on motor fuel remained four cents a gallon, and in most States the per gallon tax rates changed very little. During this time, the United States population was growing, and the number of licensed drivers, vehicle registrations, and vehicle miles of travel was increasing as shown in Figure 2. Because the fuel efficiency of automobiles dropped between 1950 and 1970, more motor fuel was consumed with the result that Federal and State highway revenues steadily increased. Inflation was a minor factor, and if local streets and highway needs outpaced local revenues, most States could distribute more funds to local governments. This picture changed dramatically during the late 1970s and early 1980s. Highway revenues could not keep pace with inflation.

Using 1977 as the base year for calculating, a highway maintenance operation that would have cost \$39 in 1960 increased to \$58 in 1970 and then soared to \$135 by 1980. The most significant increases were in materials and equipment, as shown in Table 2.

Highway construction costs increased at an even faster pace than maintenance. The principal index used to measure the effects of price increases on the cost of highway construction is the "Annual Price Trend for Federal Aid Highway Construction." This information is collected and published by the Federal Highway Administration. The index reflects price changes of highway construction items, such as common excavation, Portland cement, bituminous concrete, reinforced steel, structural steel and structural concrete.

From 1970 to 1979, highway construction costs increased 145 percent, and highway maintenance costs increased 105 percent. In comparison, the Consumer Price Index rose 87 percent and highway revenues increased less than 60 percent. These trends are illustrated in Figure 3.

The most obvious cause of reduced revenues was decreasing fuel consumption. In 1973 and 1974 and again in 1979 and 1980, interruptions in the supply of petroleum resulted in higher motor fuel prices decreasing consumption and highway revenues. In the late 1970s and early 1980s, mandated fuel efficiency standards for new automobiles increased the average vehicle miles per gallon to further reduce fuel consumption.

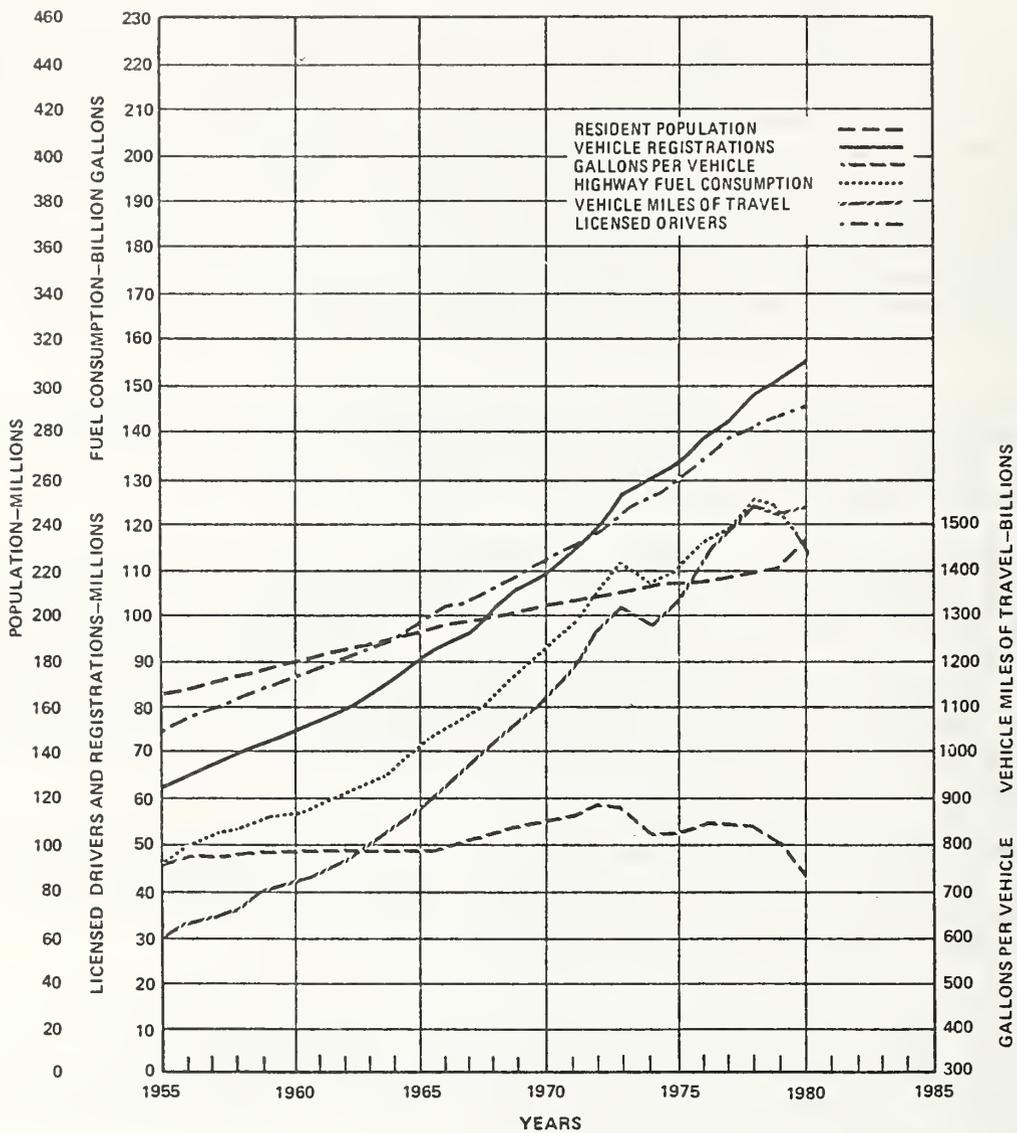
Another reason for reduced revenues is that between 1970 and 1980 the price of gasoline increased almost a dollar, while motor fuel taxes increased an average of only one cent per gallon. Most States' motor fuel taxes are

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<sup>3</sup>Funds to municipalities include payments in lieu of taxes, flood relief, urban area developments, safety, civil defense, some Federal-Aid-Urban funds and other miscellaneous payments.

Figure 2

RESIDENT POPULATION, VEHICLE REGISTRATIONS, FUEL CONSUMPTION,  
 LICENSED DRIVERS, AND VEHICLE MILES OF TRAVEL



Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics. Washington, D.C.: 1980, p. 21.

Table 2  
COST TRENDS  
HIGHWAY MAINTENANCE AND OPERATION

YEAR	LABOR	MATERIAL	EQUIPMENT	OVERHEAD	TOTAL
1960	33.52	46.72	44.80	53.11	38.61
65	40.44	48.96	48.53	58.05	44.18
70	57.59	54.79	54.88	73.69	57.55
71	61.20	57.91	55.59	77.45	60.46
72	65.23	61.37	61.79	81.20	64.89
73	69.87	64.35	68.86	84.95	69.86
74	75.83	84.09	79.05	88.71	78.18
75	81.72	95.60	87.85	92.46	85.24
76	91.08	95.11	94.95	96.21	92.69
77	100.00	100.00	100.00	100.00	100.00
78	106.99	110.17	107.45	103.72	107.83
79	114.51	136.26	120.84	107.48	118.17
80	129.21	157.11	142.60	111.23	134.58

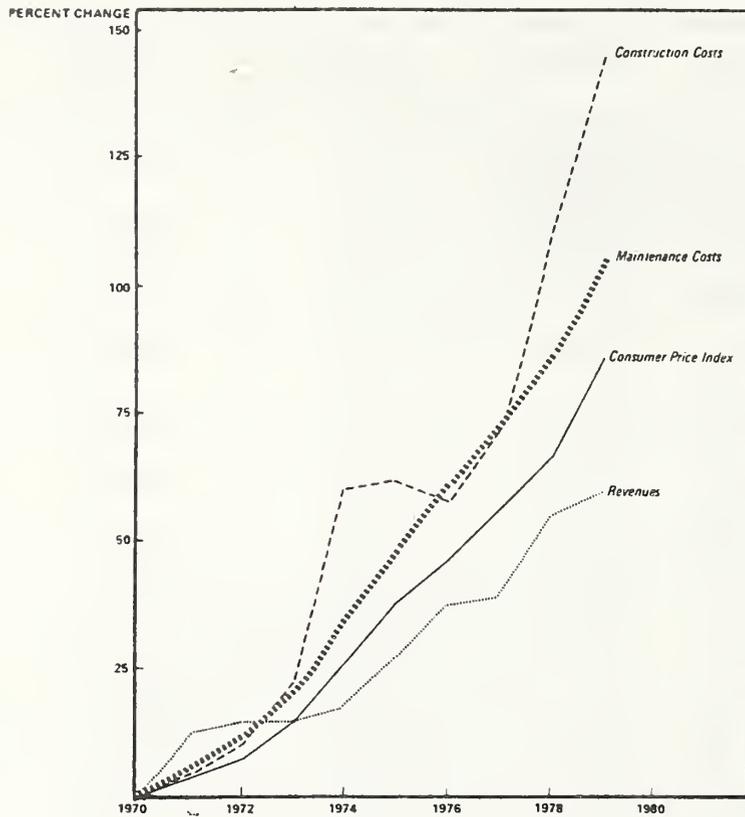
1/ These data are prepared from the unit cost information submitted each year by State highway departments and cover both physical maintenance and major traffic service items, including snow and ice control.

Source: U.S. Department of Transportation, Federal Highway Administration. Highway Statistics. Washington, D.C.: 1980. p. 61.

Figure 3

GROWTH OF HIGHWAY CONSTRUCTION AND MAINTENANCE COSTS

CONSUMER PRICES AND HIGHWAY REVENUES 1970-1979



Source: U.S. General Accounting Office,  
Deteriorating Highways and Lagging Revenues:  
A Need to Reassess the Federal Highway Program.  
Washington, D.C.: 1981, p. 17.

based on consumption, calculated on a cents-per-gallon basis, rather than according to fuel price. In 1960, the average State gasoline tax of about 5.9 cents was 19 percent of the price of gasoline, but by 1980 the tax of about 8.3 cents was only 7 percent of the gasoline price. States have begun to increase these taxes. In 1970, 10 States raised motor fuel tax rates, and in 1980, 12 States did so.

Special tax exemptions at the Federal and State level on gasohol have resulted in significant revenue losses in some areas. For example, Alaska, Arkansas, Louisiana, New Mexico, and Texas received no revenue from gasohol sales. Most other States have preferred tax rates for gasohol. In Iowa, gasohol is taxed at 6 cents per gallon, while gasoline is taxed at 13 cents per gallon. The State of Iowa estimates that between 1979 and 1983, this difference will result in over a \$60 million loss in revenue, of which about \$11 million would have gone to urban jurisdictions.<sup>4</sup>

Increasing costs and decreasing revenue have created particularly acute funding shortfalls for State highway departments, with the result that they can no longer distribute increasing amounts of their funds for urban area needs.

Fortunately, urban metropolitan areas do not depend exclusively on State highway revenues, and their principal sources of funds, local property and sales taxes, are usually inflation sensitive. But since local tax revenues typically go into a general fund, street and highway needs must compete with all other local departments, operations and services, whose costs have escalated also.

The local fiscal problem is further exacerbated by recent tax initiatives, such as Proposition 13 in California and Proposition 2 1/2 in Massachusetts, which rolled back real estate assessments and limited property taxes. Reverberations of these "tax revolt" measures have been felt nationwide, and most officials are reluctant to raise taxes in view of the current mood of the electorate. As a result, most urban areas are faced with limited resources for highway construction and maintenance purposes.

#### LOCAL STREET AND HIGHWAY CONDITIONS

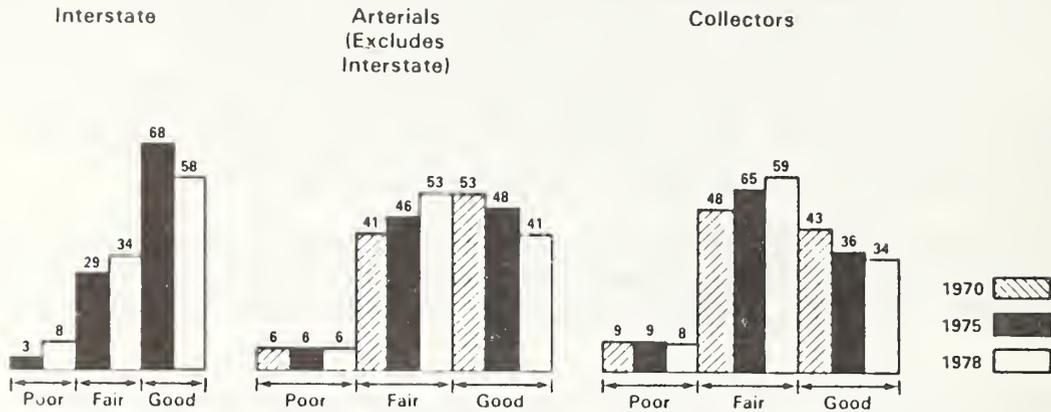
The physical condition of streets and highways is affected by such factors as traffic volume, vehicle type, vehicle axle loadings, sub soil, weather, and maintenance levels and schedules. The principal index used to measure highway conditions is the Present Serviceability Rating (PSR).<sup>5</sup>

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<sup>4</sup>Raymond Kassel, "Gasohol in Iowa: The Iowa DOT Perspective," AASHTO Quarterly (Vol. 59, No. 2 April 1980) p. 5.

<sup>5</sup>The PSR Index is used extensively in the U.S. It is based on subjective measurements of road conditions by trained observers. PSR rankings vary from a high of 5.0 for new or nearly new pavement to 0.0 for completely deteriorated roadways.

Figure 4  
 URBAN PAVEMENT CONDITION  
 (% Miles)



Source: U.S. Department of Transportation, The Status of the Nation's Highways; Condition and Performance. Washington, D.C.: 1981, p.75.

Figure 4 shows that between 1970 and 1978 a shift occurred in the percentages of pavement in good and fair condition in urban areas. In 1970, 53 percent of urban arterials and 43 percent of urban collectors were in good condition. By the end of 1978, the percentages had dropped to 41 percent and 34 percent, respectively. During this time, the percentage of poor pavement remained practically constant, but more pavement mileage shifted down into the fair category. The share of the urban Interstate system ranked as good fell 10 percentage points in only three years. These pavement condition figures are significant, because they indicate that a substantial portion of urban streets and highways will reach the end of their design lives at about the same time.

The rapid deterioration of our urban streets and highway systems in part can be explained by two factors. First, many streets, especially older ones or those in fast-growing suburban areas, were designed and constructed based on travel forecasts that underestimated their use. Such segments of pavements have deteriorated fairly rapidly. Second, while it generally takes 10 to 15 years for new high-quality pavement to deteriorate to fair condition, the rate of deterioration accelerates as the pavement approaches the lower end of its design life expectancy. Thus, if maintenance is deferred or delayed, the end of the usable design life may be reached sooner than anticipated.

## Chapter 2

### ALTERNATIVE FINANCING TECHNIQUES

This section discusses techniques that municipalities are using to finance streets and highways, including the major advantages and disadvantages of each. The strategies are grouped into six major categories and listed in Table 3. Some of these techniques are familiar to local officials, whereas others may be less well known.

#### GENERAL TAXES

Most counties and urban metropolitan areas depend primarily on general fund revenue sources to pay for local street programs. These sources typically include local property and sales taxes supplemented by revenue sharing funds from outside sources. Lotteries, employer payroll, personal income, and excise taxes are also used, but much less frequently. Local highway programs must compete with all other local programs for their appropriations from the general fund. However, in some cities, specific tax revenues, such as motor vehicle sales taxes, are earmarked for streets and highways.

##### Property Tax

Local property taxes are the major source of revenue for local government programs, including streets and highways. In most cases, these taxes are collected by the local tax office, placed into a general fund, and appropriated by local elected officials.

Advantages: Property taxes can produce large amounts of local revenue. If property is assessed accurately and frequently, revenue should increase with inflation. In terms of equity, it is considered mildly progressive.

Disadvantages: Underassessments and infrequent reassessments are common. Property taxes are more unpopular than most taxes with voters. In fact, recent strong public resistance to property tax increases has resulted in severe limits on local property taxing authority. Indiana, for example, has had a freeze on local property tax rates since 1975.

Table 3

TECHNIQUES USED BY LOCAL GOVERNMENTS TO FINANCE ROADWAYS

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General Taxes  
Property Taxes  
Sales Taxes  
Employer/Payroll Taxes  
Personal Income Taxes  
Excise Taxes

Highway User Fees  
Motor Fuel Taxes  
Gasohol Exemptions  
Motor Vehicle Taxes  
Heavy Vehicle Taxes  
Tolls  
Parking Charges

Special Taxes  
Special Assessment District Taxes  
Severance Taxes  
Franchise Taxes

Borrowing

Joint Development  
Air-rights Development  
Development Fees  
Value Capture Taxes

Financial Management  
Budget Indexing  
Cash Flow Financing

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Sales Taxes

After property taxes, sales taxes are the second largest source of local revenue. Practically all of the States levy sales taxes or give the authority to levy sales taxes to local governments. California, Georgia, Hawaii, Illinois, Indiana, Michigan, Mississippi, New York, Northern Virginia, and the District of Columbia apply existing State sales taxes--from which motor fuel is usually exempted--to the wholesale or retail price of gasoline. This ad valorem sales tax is added to the existing Federal and State pennies-per-gallon motor fuel tax. Sales tax can be applied to all taxable transactions, only automotive related items and services, or other selected items, and can be dedicated to finance highways. But in most cases, all sales taxes,

even those collected from motor fuels, typically go into the State or local general fund. Only Georgia dedicates all motor-fuel sales tax revenues, and Illinois and Mississippi dedicate part of these revenues, to streets and highways. Motor fuel sales taxes are essentially a tax based on an index--the index being the price.

Advantages: Sales taxes generally provide a consistent and stable source of revenue. Sales taxes respond more quickly than most taxes to income changes and inflation and are more politically acceptable than most taxes. Administration is not usually a problem.

Disadvantages: Sales taxes tend to be regressive. They may reduce overall consumption, shift consumption from taxes to untaxed items, or create border problems if there are different tax rates in neighboring jurisdictions. For motor fuels, deciding where the tax should be applied--distributor, wholesaler or retailer--may be an issue. If applied at the retail level, taxes would have to be collected at numerous sites, complicating administrative responsibilities.

### Employer/Payroll Taxes

A flat-rate tax on all private employers' payrolls or a tax on all compensation to employees within a taxing jurisdiction are possible employer/payroll tax alternatives. Charitable institutions and State and local public agencies are ordinarily exempted as are Federal agencies. Whether the tax may be deducted from Federal income taxes as a business expense is unresolved.

Advantages: This tax is justified because the single greatest need of city streets and urban highways is to accommodate work related trips. Employers receive direct benefit from streets and highways that are large enough to handle their peak employee traffic. Also, this tax option can generate substantial revenue and is responsive to economic changes, increasing with the growth of jobs and wages.

Disadvantages: Employer taxes are likely to meet strong resistance from the business community. Employers already pay several employee-related taxes, including social security, unemployment, workers' compensation, and pensions.

### Personal Income Taxes

Methods of taxing personal income include flat rate levies on earned income with no exemptions or deductions, a combined corporate and personal income tax, and graduated rate structures. The burden varies depending on the base and the rate structure. Some form of income tax is imposed by 41 States and 4,000 local governments.

Advantages: An income tax may have a potentially larger base than either a property or retail sales tax and thus a correspondingly higher potential yield.

Disadvantages: Already used heavily by the Federal and State governments, income taxes are administratively complex if numerous local jurisdictions are involved.

### Excise Taxes

Excise taxes are similar to sales taxes, but they are generally levied on those items whose consumption is widely regarded as indulgent and/or harmful. These include: alcohol, tobacco, amusements, gambling, and hotels and motels. Los Angeles County estimated that an increase in the beer tax from 4¢ to 12¢ a gallon would have produced almost \$4 million, and an increase in the cigarette tax from 10¢ to 20¢ a pack would have generated over \$23 million in 1980.

Advantages: Because demand for taxed items is generally large and inelastic, excise taxes can produce considerable local revenue.

Disadvantages: Excise taxes can cause interarea competition among neighboring localities. If high rates are imposed, there is a high risk of smuggling. These taxes often weigh most heavily on lower income groups.

## HIGHWAY USER FEES

Highway user fees promote economy and efficiency because they charge those users who directly benefit from highway programs, rather than placing the burden on all taxpayers. Ideally, user charges proportionately allocate the greatest costs to those who receive the greatest benefits and to those most able to afford them. Motor fuel taxes, motor vehicle taxes, bridge and road tolls and parking fees are examples of highway user fees. In most cases, the larger or heavier vehicles pay higher costs and place greater burdens on the street and highway system.

The United States General Accounting Office reported that "one tractor-trailer with five axles loaded to the Federal weight limit of 80,000 pounds causes as much pavement damage as at least 9,600 automobiles." The trucking industry countered that: "heavy rigs, of over 26,000 pounds, represent 1.1% of motor vehicles that use the roads but pay 25% of the taxes to support the Highway Trust Fund." A cost-allocation study, mandated in the Surface Transportation Assistance Act of 1978 to determine whether different types of vehicles are paying their proportionate share of the costs of Federal-aid highways, has been completed recently by the Federal Highway Administration.

### Motor Fuel Taxes

Motor fuel taxes can be levied on gasoline, diesel, gasohol, or other chemical components in motor fuel, such as sulfur or lead. The Federal government collects four cents per gallon for gasoline and diesel fuel. Most States levy a fixed cents-per-gallon tax on motor fuels, although these rates often vary by fuel type.

Several States tax diesel fuel at a higher rate than gasoline. The differential is an attempt to allocate more fairly the costs associated with heavy vehicles that use diesel and to equalize the energy efficiency effects inherent in diesel fuel versus gasoline. But, this differential is highly inequitable to the increasing number of light diesel-powered automobiles.

Most States also dedicate revenues collected from motor fuel taxes to highway use. Seven States (Alaska, Connecticut, Delaware, Louisiana, New Jersey, New York and Rhode Island), however, still place these highway-users fees into the State general fund. In recent years, the variable motor fuel tax has gained widespread attention. This tax escalates to reflect inflation and applies to both percentage fuel taxes and cents-per-gallon taxes that are reviewed and adjusted on a scheduled basis.

Variable motor fuel taxes may be based on a fixed percent of the average wholesale or retail price of fuel, or they may be a cent-per-gallon variable or indexed to fuel prices at predetermined intervals. For example, indexing could provide for a one cent per gallon increase in the motor fuel tax for each ten cent per gallon increase in the average fuel price or could be based on changes in the Consumer Price Index or the Federal-Aid Highway Construction Cost Index, adjusted biennially. Indexing can also be tied to highway needs. These taxes are frequently implemented with a "floor," or minimum tax, and a "ceiling," or maximum tax.

To date, Indiana, Kentucky, Massachusetts, Nebraska, New Mexico, Ohio, Pennsylvania, Rhode Island, Washington, and the District of Columbia have adopted variable or indexed motor fuel taxes. Virginia recently adopted a 2-cents-per-gallon increase and an additional 4 percent tax in Northern Virginia only, to help finance the Washington, D.C. metropolitan area transit system. In addition, Arizona, Colorado, Delaware, Idaho, Iowa, Minnesota, Nevada, New Hampshire, North Carolina, South Carolina, South Dakota, Tennessee, Utah, Vermont and Wisconsin increased their cents-per-gallon taxes in 1981.

Advantages: Motor fuel taxes are the most productive highway-user levy. The cents-per-gallon tax is relatively straightforward and easily administered and understood by the public. The variable rate tax is tied to fuel prices that rise with inflation, like highway costs. Indexing can take more variables into account, to reflect a more realistic picture of the highway financing situation. The variable tax process can be totally automatic and self-adjusting, or it can require legislative review. Variable rate safeguards can be incorporated to establish maximum and minimum limits for the tax rate.

Disadvantages: The straight cents-per-gallon tax is tied to consumption, which is not increasing with inflation and is currently decreasing. The variable rate assumes an inflationary economy, in which fuel prices are increasing. Recently, prices have declined and so have some of the variable rate State's revenues. Variable rates may also be difficult to establish and understand because prices change daily and vary by area. In most cases, neither the cents-per-gallon tax nor the variable rate tax is tied to actual highway construction or maintenance needs. States, such as New Mexico and Washington, that have adopted

variable tax rates have found that it has not produced the necessary increases in revenue. Local officials are also worried that they and the public will lose planning and financial control of highway programs if the taxes are tied to economic indices.

### Gasohol Exemptions

Gasohol is fully exempt from the Federal four cents-per-gallon motor fuel tax. Twenty-two States offer tax advantages for gasohol use. Gasohol exemptions range from penny-a-gallon tax breaks in Connecticut and Nevada to full motor fuel tax exemptions in Alaska, Arkansas, Louisiana, North Dakota, Oklahoma and Pennsylvania. The exemptions were designed to encourage the use of gasohol by reducing the final cost to the consumer. As gasohol sales increase, the economic impacts on revenue become significant. Elimination or reduction of the exemption has already occurred in several States.

Advantages: This exemption is favored by many because it is energy and environmentally sound.

Disadvantages: In the future the exemption may cause a significant revenue loss.

### Motor Vehicle Taxes

Most States assess some type of motor vehicle taxes to supplement highway and road funds. Fees for driver's licenses, vehicle parts and repair excise taxes, vehicle ownership and/or registration fees, motor vehicle inspections, truck weights, record checks, and additional "vanity plate" fees offer fairly predictable sources of income. The administrative costs to collect these taxes are generally high.

Increases in these fees have been common throughout the last decade, and they have kept pace with inflation much better than motor fuel taxes.

Local charges on motor vehicles can take the form of an additional license charge, a personal property tax on private autos, sales tax, or special ownership charges. They are easy to administer because they can be collected through or in collaboration with existing State procedures. Higher fees are generally charged for heavier vehicles.

A tire tax, levied on each tire, is another motor vehicle user tax mechanism. Heavy users of the highways pay more since they purchase tires more often than the infrequent highway traveler.

Advantages: Vehicle taxes are considered progressive taxes, because they tend to tax upper-income automobile-owning households to a greater extent. The administration for these taxes is relatively easy, since State mechanisms may already be in place.

Disadvantages: Because these taxes are collected at the same time and can amount to relatively large sums, they are likely to arouse taxpayer antipathy. Administrative costs are generally high.

## Heavy Vehicle Taxes

Heavy vehicle, or third-structure, taxes have grown out of the realization that heavy vehicles are the source of a disproportionate share of highway costs. The Federal government imposes a tax of \$3 per 1,000 pounds on vehicles of more than 26,000 pounds of gross weight. Some types of State heavy vehicle taxes include:

- o Ton-mile taxes vary according to weight and distance. Wyoming and Colorado use this mechanism. Usually the carrier applies to the State for operating authority and then receives monthly forms for reporting weight and mileage and for submitting payments. The administrative costs include auditing, weigh stations, and Highway Patrol checks. Tax evasion can be a problem for intra-state carriers.
- o Weight-distance taxes are graduated based on vehicle weight or the number of axles. Two examples of States using this are Oregon and New York. In Oregon, all carriers must obtain an operating permit and report monthly mileage, fuel consumption, and fuel purchases to the State. The tax is determined by the product of the mileage and the tax rate per mile, which is graduated according to gross vehicle weight. To assure compliance, weight reports, fuel sales, and other data are audited.
- o Vehicle-mile or axle-mile tax uses a single rate for all vehicles. Distance is the sole determinant of the tax. Ohio uses this tax for vehicles with three or more axles. The number of axles determines the rate, which is multiplied by the mileage data. State auditing procedures and the State Highway Patrol monitor and enforce the program.
- o Gross receipts tax is imposed on the value or gross receipts of the carrier's load. Under this system light valuable loads pay more than heavy, less valuable cargo. Arizona and Montana use the gross receipts tax.

## Tolls

Several State and local jurisdictions use tolls collected on highways, bridges, and tunnels to support their street and highway budgets. However, if a State imposes a toll on an Interstate facility, it must pay back the Federal government its original contribution. Also, toll mileage is not eligible as a factor in calculating Federal-Aid Interstate Allocation funds. Toll prices typically vary by the number of axles or weight of the vehicles, to reflect the greater burden on the pavement. The revenue generated by tolls is usually adequate to cover capital improvements and maintenance for the facilities. In many cases, tolls are continued after the debt incurred to construct the particular road is paid. The rates are often reduced to cover only maintenance costs. States with toll bridges and facilities include: California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Texas, Virginia and West Virginia. Toll revenue is not usually considered part of a State transportation department's operating

budget, because it is typically collected by regional or turnpike authorities that operate outside the domain of the State.

In some urban areas, special HOV lanes enable multi-passenger vehicles to pay reduced or no tolls during commute hours. For example, on both the Bay Bridge and the Golden Gate Bridge approaches to San Francisco, automobiles with three or more passengers ride free, whereas single occupant vehicles pay a toll.

Advantages: Tolls can be substantial revenue producers. Overhead is low, since collection procedures are usually in place. Tolls are considered an equitable charge, especially in urban areas where the streets often operate at or over capacity, resulting in severe congestion.

Disadvantages: Relatively few urban areas have toll facilities or the opportunity for implementing them because their freeway systems are in place. In urban areas, it is very difficult to control toll facilities that have access every mile or so. New legislation establishing toll districts and granting an exclusive franchise to the appropriate entity may be required.

### Parking Charges

Parking charges can be collected from private parking operators, and the tax may be borne by the operator or the parker, depending on the demand. In New York City, a 6% tax yields about \$12 million annually, and in San Francisco a 25% rate brings in \$5.5 million per year.

Revenues from parking stickers, meters, permits, and citations also often provide a large revenue source in urban areas. Most local urban areas have their own vehicle codes for citing motor vehicle infractions. Revenues from these citations can include all or portions of the initial fine, bail, or subsequent fees collected.

Advantages: Parking fees may take some vehicles off the streets by encouraging drivers to use transit. Fees are potentially a large revenue source.

Disadvantages: Parking fees may encourage suburban shopping and employment, where parking is free.

## SPECIAL TAXES

Some States and localities have chosen nontraditional funding alternatives to boost street and highway revenues.

### Special Assessment Districts

This method levies a special charge on properties in designated areas that benefit directly from a specific public improvement. Special assessment bonds have traditionally been used to finance the improvement, with the income from the assessment district pledged as security. When the bonds are retired, the additional assessment is removed (see Bond section).

Alternatively, the assessment can take the form of an annual assessment, business license, or industrial fee. In either case, it can be based on front footage, lot area, appraised value or a combination of factors. It can be levied on all existing uses and future uses or only on new uses.

Residential developments have commonly used special assessments to finance local streets and other infrastructure needs. In some jurisdictions local and collector street improvement districts finance drainage and other improvements that can result in lower maintenance costs and better streets. Also, commercial and industrial assessment districts have been charged for area highway facilities. The rationale is that the greatest single need for urban highway and street construction and improvements is to accommodate peak period traffic to and from work locations. Economic and political impacts resulting from the assessment, including the financial stability and health of the community, rental prices, vacancy rates, and business attitudes should be studied, before initiating this concept.

Advantages: Special assessments can spread improvement costs over a longer period of time. They can be added to property costs, for purposes of computing capital gains taxes. They can be levied on future as well as existing uses.

Disadvantages: The major drawback of special assessment districts is in determining equity in the proportion of benefit received versus the cost charged to a particular property owner. Political opposition from landowners, especially those who feel threatened with assessments for uncertain benefits, can make the initiation process difficult, cumbersome, and time-consuming. Special assessments are not legally classified as taxes and cannot be deducted from Federal or State taxable income as can real estate and other local taxes. Special assessments may be overruled by protests from property owners in the district.

### Severance Taxes

These taxes are imposed on producers of coal, natural gas, petroleum, minerals, and timber to compensate the citizens of a State for the natural resources that are removed. In 1980, 31 States collected a total of \$2 billion in severance taxes. In six of these States, a portion of the revenue is earmarked for highways. But the revenue is generally restricted to the upkeep of roads used in extracting and transporting the products. In 1981, Wyoming enacted a 2 percent severance tax on petroleum and natural gas, of which one-third will be used for highways. This measure is expected to generate \$26.5 million in fiscal year 1982 and \$36.9 million by fiscal year 1984.

In Pennsylvania, part of the dedicated coal severance tax revenue is being used to upgrade badly deteriorated coal-haul roads. Most of the deterioration is attributed to increased traffic by heavy trucks carrying coal from mines to utility plants or rail shipment points. A broader "energy roads tax" is currently under review in several States. It could levy specific user taxes on energy producers who are heavy users of certain roads.

Advantages: Those who receive greater benefits pay the greater share of the costs. States receive direct compensation for removal of their natural resources.

Disadvantages: Severance taxes are opposed by the affected businesses, and costs are eventually passed on to consumers.

### Franchise Taxes

In 1981, Pennsylvania adopted a 3.5 percent franchise tax on gross receipts of oil companies. Revenues collected from the franchise tax flow into the State's Motor License Fund, and officials expect to raise \$192 million the first year. The oil companies are allowed to deduct a portion of these taxes from Federal income taxes. In the long run, probably most of the additional cost will be passed on to the consumers. Connecticut, New York, Rhode Island, and Virginia also have franchise taxes.

## BORROWING

Most State and local governments borrow to finance highway improvements with bonds. Bond sales have averaged about \$2 billion a year since the late 1960s.

### Bonds

Many State and local municipal governments sell bonds to finance highways and roads. Highway bonds are classified according to the quality of the security behind the bond issue.

- o Payment of principal and interest on general obligation bonds are guaranteed by the full faith and credit of the jurisdiction issuing the bond.
- o Repayment on revenue bonds is secured by some form of user fee or tax. Bridges are frequently financed with revenue bonds, because they are backed by a predictable revenue stream via the tolls.
- o Lease-back, lease-purchase, or lease-revenue bonds enable two or more governmental agencies or non-profit corporations to issue a bond with the proceeds from the debt used to construct the improvements. The local agency that uses the facility pays the revenue to service the debt in the form of a lease. When the debt has been retired through the lease payments, the title to the property (improvements) reverts to the local agency.
- o Property secured revenue bonds enable special assessments to be levied against property that benefits from the improvement. The actual payments, however, are mitigated by pledging certain fees, taxes or revenues to repayment of the debt. In some cases, revenue exceeds principal and interest requirements, and assessed property owners are not required to make any payments.

- o Limited obligation bonds enable the payment of principal and interest to be secured by a pledge of the proceeds of a specific tax. A community can design its own financing systems for highway construction or improvements with the bonds secured by a voter approved special tax, such as a sales tax.
- o Assessment bonds are issued to finance construction or improvements within a legally established special assessment district. Benefiting properties within the district are assessed. The bonds are exempt from State and Federal taxes.

Advantages: Bonding permits the programming of facility investment in advance of revenues secured through various taxes. Property secured revenue bonds may broaden the investment market and assist in reducing borrowing costs.

Disadvantages: In some areas there is general unwillingness among local voters to approve general obligation or revenue bonds. Recently, high interest rates have made financing with bonds expensive. State regulations can limit and complicate local borrowing authority. Some States limit borrowing to a percentage of assessed taxable property. Others require bond issues to be approved by a majority of the voters.

#### Interstate Substitutions

The Federal-Aid Highway Act of 1973, as amended,<sup>6</sup> authorizes the withdrawal of nonessential segments of the Interstate highway system in or near urbanized areas and the substitution of public mass transportation or highway projects in or serving the same urbanized areas. As of mid-1980, 22 withdrawals had been approved in 16 urbanized areas. These withdrawals have made more than \$8.2 billion available for substitute public transportation and highway projects in urban areas.

Boston withdrew 23.3 miles of I-95 and I-695 in 1974 when the cost for these segments was \$603.2 million. By December 31, 1979, Boston had spent \$705 million on substitute mass transit projects. Since uncommitted funds are adjusted to reflect increases in construction costs, by 1980 Boston still had \$715 million left for additional transit or highway projects.

Advantages: This is a flexible use of Federal funds for alternative local transportation needs.

Disadvantages: The program will expire in 1983.

<sup>6</sup>Section 103 of Title 23 (Highways) of the U.S. Code.

## JOINT DEVELOPMENT

Joint development refers to the coordinated planning and implementation of real estate projects and transportation facilities in or near transport corridors. The instances of highway-related joint development are relatively few, and most of the literature identifies potential opportunities rather than experience with completed projects.

### Air-rights

One type of joint venture consists of commercial developments above and or below a highway or within an approved right-of-way. Long-term leasing of air-rights is generally more satisfactory to a public agency than selling, because the agency retains control over the property and can enjoy its long-term appreciation. In Boston, the Prudential Center was constructed over the Massachusetts Turnpike.

Another alternative would be to acquire more land than actually necessary for a corridor right-of-way, and lease the excess property. The legal authority, financial resources, and administrative requirements to do this may pose significant barriers. This technique has received limited use by public authorities and has never been employed for highway facilities.

Advantages: Air-rights development can produce revenue for the jurisdiction, while it retains control and long term appreciation benefits.

Disadvantages: Air-rights leasing is usually only economically feasible in high value areas of major cities. A substantial capital outlay may be required to build the deck over the right-of-way required to support the development.

### Development Fees

A wide variety of local development fees have been used to pay for public investments, especially capital improvements for local streets and roads. Assessments can be levied on a square footage basis or divided proportionately among all beneficiaries. These developments tend to be in outlying areas, where the infrastructure is minimal, and improvements are necessitated by the new development. For administrative ease fees may be collected when building permits are issued. Maintenance is usually assumed by the local entity.

Under a similar concept, private developers may be required to participate directly in the construction and maintenance of local access roads or improvements. In many cities, this can be a condition for approval of a final subdivision plan. One urban example is the Dupont Plaza development in downtown Miami, Florida. As determined by the Development Review Impact Study, additional access roads were needed by the commercial project. Neither the State of Florida nor Dade County had funds to provide the connecting streets. Before the County would issue the building permits, the two developers agreed to share the \$20 million cost to build the roads, devising a 20%/80% split, based on the size of their respective developments.

Advantages: If a fee mechanism already exists, it is relatively easy to increase fees to meet increases in costs.

Disadvantages: Fees raise equity concerns because they assign costs associated only with new road construction and not the costs of the rest of the system. Also, fees are usually limited to financing new construction.

### Value Capture Taxes

The value capture tax is a means of deriving revenue from the benefits that accrue from the highway's existence. A tax on service stations, restaurants, motels, or other businesses that have direct access to highways can be imposed. Value capture, authorized in at least 12 States, has been used most frequently in California and Minnesota to finance redevelopment. Los Angeles has 15 value capture financed redevelopment projects. The Embarcadero Subway Station in San Francisco has made use of this technique.

## FINANCIAL MANAGEMENT

With varying degrees of success, financial management strategies have been tried to help relieve highway budget shortfalls. Budget indexing and cash flow financing are two methods.

### Budget Indexing

This mechanism can be used either when a substantial amount of highway user taxes are constitutionally dedicated for non-highway purposes or when non-highway revenues are made specifically available for highway purposes. A legislative body can establish a formula for annually adjusting general fund appropriations for highways.

In one State, there were insufficient funds to meet highway needs after the dedicated revenues for non-highway purposes were subtracted. To correct this problem, the Legislature instituted a Tax Clearance Fund to make up the shortfall out of general revenues for that year.

Texas uses general fund indexing to offset inflation and declining highway revenue growth. A base funding level was initially established in 1977. Now annual cost index adjustments are made by a State committee. To determine the index, weighted costs for highway construction, maintenance, and operation are combined. To determine the amount of general funds needed, motor fuel taxes, lubricant sales taxes, and license fees are subtracted from the established funding level. Thus, as highway costs increase, highway taxes and fees are supplemented with general funds. In 1978, \$114 million, or about 9 percent, of Texas' Highway Department receipts were transferred from the State's general fund.

Advantages: This technique can be useful for meeting unexpected shortfalls in highway-user revenues. It is an equitable distribution of all government revenues.

Disadvantages: It tends to be a stop-gap measure and not a reliable funding option since it requires annual legislative action.

## Cash Flow Financing

Cash flow financial management is a means of making better use of available transportation funds without introducing new revenues. In many States and local jurisdictions unliquidated cash from transportation funds are invested with the interest accruing to the general fund for the benefit of problems other than transportation. In cash flow financing, obligations are limited only by revenue and the amount of cash necessary to make payments, so that the point of control shifts from accrued revenue on hand to the project revenue on hand at some point. The Federal government and the majority of the private sector use some form of cash flow financing.

In 1971, the Florida DOT converted to a cash flow management system. DOT develops a multi-year financial plan and construction program, outlining existing commitments, probable Federal-aid apportionments, and other estimated revenues and expenditures. Performance is monitored, forecasts are updated, and the plan and program are adjusted accordingly. The conversion allowed the State DOT immediately to draw down \$85 million of a \$100 million cash balance and allows Florida to obligate Federal-aid funds early each year. Some of Florida's 67 counties have also converted to a cash flow basis, allowing them to maintain minimum cash balances.

Advantages: Cash flow financing makes better use of available revenues, by increasing output without increasing revenues. It shortens the time between collection of taxes and production of benefits, an economic advantage for taxpayers. It can provide a one-time acceleration of program.

Disadvantages: It involves risk, because it depends on data that is subject to considerable variation and error (e.g., oil availability, oil price, relationship between price and consumption). It may require technical expertise, sophisticated financial management procedures, and program controls that are not readily available. There are also considerable legal and political barriers, since many public agencies are prevented by law from managing on a cash basis, stemming from the popular belief that cash flow management is akin to deficit financing.

## Other Strategies

Other financial management strategies which may be considered:

- o Review and monitor ongoing projects to keep down cost overruns and to ensure contingency funds are released as soon as possible.
- o Increase productivity by using present staff more effectively or reduce staff and increase use of computer aids.
- o Streamline review and regulation process to cut out unnecessary time delays from project inception through design and completion to reduce the impacts of inflation.

## RELATED ISSUES

There is no one answer to the local highway funding shortfall problem. The most effective local highway programs are generally based on a thorough financial analysis of highway needs, revenue sources, and highway costs. They are balanced programs reflecting the relationship of benefits to particular classes of vehicles, motorists, and the general economy. They are likely to tap both user taxes and general funds.

The following are some of the frequently discussed sources of increased Federal and State funding for local streets and highways.

- o General Revenue Sharing allows funds to be distributed on a formula basis, taking into account the differences in fiscal capacity and need, and the magnitude of retained responsibilities or other demographic criterion.
- o Unconditional Federal Tax Relief. The theory is that no Federal tax would end, but rather a major Federal tax that is also used by States would be cut or held down in order to give States and localities an opportunity to raise their own taxes. This approach addresses complaints by States that the Federal government has preempted tax sources States and local jurisdictions could otherwise use more heavily.
- o Tax Sharing on an Origin Basis. This approach provides a permanent State-local entitlement to a specific portion of tax receipts, with shares in the same proportion as the tax revenues. For example, if Texas taxpayers account for 5% of all Federal income tax receipts, Texas would receive 5% of the tax revenue distributed to the States.<sup>7</sup>

### Feasibility

The feasibility of implementing any of the financing mechanisms described in this Information Bulletin will depend on local laws, the political climate, and public attitudes. The legal requirements are specified by State statutes, local ordinances, and legal precedents. Political acceptability will hinge on the formal and informal sentiments and responses and the amount of support for or against the proposal. In general, changes in tax or funding levels require public or legislative review. In this era of tax cuts, governments are hesitant about approving direct taxes on the consumer. Many legislators feel that the creation of new State or local funding mechanisms, especially if it requires any new taxation, would not be well received by the citizenry.

Public attitudes will play a pivotal role in the design of the financing alternative; some attitudes may be deeply ingrained, while others may be changed through education efforts. For example, existing cents-per-

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<sup>7</sup>Taxation and Finance Staff, "Briefing Report: Revenue and Tax Turnbacks." Advisory Commission on Intergovernmental Relations, Washington, D.C.: 1981, pp. 2-3.

gallon fuel, property, and sales taxes are generally understood and accepted by the public. Proposals that would change established procedures or add new types of taxes would require careful examination of their ability to gain public understanding and acceptance.

### Administrative Costs and Requirements

The ease and cost of administering various financing techniques is another major local concern. If a large share of the potential tax yield is required to collect, report, earmark, and disburse funds, highways will not gain as much of the revenue. In most cases, States are adept at collecting motor fuel, vehicle, and excise taxes, lotteries, and sales and income taxes.

Localities may elect to piggyback existing State tax mechanisms, because proposals to increase existing taxes are relatively easy to administer. To add a local surcharge may require an additional State reporting and collection process, or it may require a separate administrative structure. The latter arrangement would likely be complex and costly. In some situations a surcharge on local property taxes, parking charges, or development fees may work better because they are collected and distributed at the local level, and additional levies would be relatively easy to administer. The administrative costs to local industry of payroll taxes should also be considered.

## Chapter 3

### CONTACTS AND CURRENT PROGRAMS

#### U.S. DEPARTMENT OF TRANSPORTATION

There is no specific Federal program or office directly addressing local highway financing concerns. Most Federal highway programs are directed to the States, through which local activities are supported. All Federal highway funds are administered through individual FHWA Regional and State field offices and each State's highway or transportation department. Interested parties should contact the appropriate FHWA office for additional Federal financing information. Table 4 includes FHWA regional contacts, and Table 5 contains a list of FHWA field offices.

#### Federal Highway Administration

The following list identifies programs and contacts that may be of particular interest for local highway officials. The code after each name is for identification purposes and should be included in all written correspondence.

- o Concerned with highway financing statistical data for all levels of government, including historical information, annual publications, and short-range studies.

Contact: Thomas Weeks  
Chief, Highway Users and Finance Branch (HHP-41)  
Room 3300  
400 Seventh Street, S.W.  
Washington, D.C. 20590  
(202) 426-0170

Table 4

**FHWA REGIONAL OFFICES**

<b>Region/ State Time</b>	<b>Administrator</b>	<b>Address/ Telephone</b>
<b>REGION 1</b> 8:00 a.m.-4:30 p.m.	John G. Bestgen, Jr. Regional Administrator	Leo W. O'Brien Federal Building Clinton Avenue & North Pearl Street Room 729 Albany, NY 12207 (518) 472-6476
<b>REGION 3</b> 8:00 a.m.-4:30 p.m.	George R. Turner, Jr. Regional Administrator	31 Hopkins Plaza Room 1633 Baltimore, MD 21201 (301) 962-2361
<b>REGION 4</b> 7:45 a.m.-4:15 p.m.	Rex C. Leather Regional Administrator	1720 Peachtree Road N.W. Suite 200 Atlanta, GA 30367 (404) 881-4078
<b>REGION 5</b> 7:30 a.m.-4:15 p.m.	Donald E. Trull Regional Administrator	18209 Dixie Highway Homewood, IL 60430 (312) 790-6300
<b>REGION 6</b> 8:00 a.m.-4:30 p.m.	Wesley S. Mendenhall Regional Administrator	819 Taylor Street Fort Worth, TX 76102 (817) 334-3221
<b>REGION 7</b> 7:45 a.m.-4:15 p.m.	Calvin C. Berge Regional Administrator	P.O. Box 19715 6301 Rockhill Road Kansas City, MO 64131 (816) 926-7565
<b>REGION 8</b> 7:45 a.m.-4:15 p.m.	Morris C. Reinhardt Regional Administrator	Denver Federal Center Building 40 P.O. Box 25246 Denver, CO 80225 (303) 234-4051
<b>REGION 9</b> 7:45 a.m.-4:15 p.m.	Robert Young Regional Administrator	2 Embarcadero Center Suite 530 San Francisco, CA 94111 (415) 566-3951
<b>REGION 10</b> 8:00 a.m.-4:45 p.m.	M. Eldon Green Regional Administrator	Mohawk Building Room 412 222 SW Morrison Street Portland, OR 97204 (503) 221-2052

Table 5

## FHWA Field Offices

<u>City/ State Time</u>	<u>Field Address Zip Code</u>	<u>City/ State Time</u>	<u>Field Address Zip Code</u>
<b>ALABAMA</b>			
Birmingham 8:45 a.m.-5:30 p.m.	212 Building Room 514 Birmingham, AL 35203	Brandon 7:45 a.m.-4:15 p.m.	250 Monarch Tower Drive Brandon, FL 33602 Marianna, FL 32446
Montgomery 8:45 a.m.-5:30 p.m.	441 High Street Montgomery, AL 36104	Marianna 7:45 a.m.-4:15 p.m.	
<b>ALASKA</b>			
Anchorage 1:00 a.m.-9:00 p.m.	Alaska Railroad Building, Room 108 Pouch 7-2111 Anchorage, AK 99510	Miami 7:45 a.m.-4:15 p.m.	P.O. Box 593 294-AMF Miami, FL 33159
Juneau 11:00 a.m.-7:30 p.m.	P.O. Box 1648 Juneau, AK 99802	Orange Park 7:45 a.m.-4:15 p.m.	2301 Park Avenue Orange Park, FL 32202
<b>ARIZONA</b>			
Phoenix 10:00 a.m.-6:30 p.m.	3500 North Central Ave., Suite 201 Phoenix, AZ 85012	Tallahassee 7:45 a.m.-4:15 p.m.	P.O. Box 1079 Tallahassee, FL 32302 P.O. Box 1523 Tallahassee, FL 32446
<b>ARKANSAS</b>			
Little Rock 8:45 a.m.-5:30 p.m.	700 West Capitol Ave., Room 3128 Little Rock, AR 72201	<b>GEORGIA</b>	
		Atlanta 7:45 a.m.-4:30 p.m.	1720 Peachtree Road, NW, Suite 200 Atlanta, GA 30309 1720 Peachtree Road, NW, Suite 200 Atlanta, GA 30309 1422 Peachtree Road, NW, Suite 700 Atlanta, GA 30309
<b>CALIFORNIA</b>			
Los Angeles 10:45 a.m.-7:30 p.m.	300 N. Los Angeles St., Room 8323 Los Angeles, CA 90012	<b>HAWAII</b>	
		Honolulu 1:15 p.m.-10:15 p.m.	300 Ala Moana Blvd. Box 50206 Honolulu, HI 96850
		<b>IDAHO</b>	
		Boise 10:00 a.m.-7:00 p.m.	3010 W. State Street Boise, ID 83703
		<b>ILLINOIS</b>	
Sacramento 10:45 a.m.-7:30 p.m.	101 North LaBrea Los Angeles, CA 90301	Homewood 7:30 a.m.-4:15 p.m.	18209 Dixie Highway Homewood, IL 60403
San Francisco 10:45 a.m.-7:30 p.m.	P.O. Box 1915 Sacramento, CA 95809		
		Springfield 7:30 a.m.-4:15 p.m.	320 West Washington Street, Room 70C Springfield, IL 62701
		Springfield 7:30 a.m.-4:15 p.m.	320 West Washington Street, Room 70C Springfield, IL 62701
<b>COLORADO</b>			
Denver 10:45 a.m.-7:15 p.m.	555 Zang Street, Room C1322 Denver Federal Center Building 25 Denver, CO 80215 555 Zang Street Denver, CO 80215	<b>INDIANA</b>	
		Indianapolis 7:30 a.m.-4:00 p.m.	575 N. Pennsylvania Street, Room 254 Indianapolis, IN 46204
<b>CONNECTICUT</b>			
Hartford 8:00 a.m.-4:30 p.m. 8:00 a.m.-4:30 p.m.	990 Wethersfield Ave. Hartford, CT 06114	<b>IOWA</b>	
		Ames 8:45 a.m.-5:30 p.m.	P.O. Box 627 Ames, IA 50010
<b>DELAWARE</b>			
Dover 8:00 a.m.-4:30 p.m.	P.O. Box 517 Dover, DE 19901		
<b>WASHINGTON, DC</b>			
7:45 a.m.-4:15 p.m.	666-11th Street, NW Washington, D.C. 20001	Sioux City 8:45 a.m.-5:30 p.m.	P.O. Box 1341 Sioux City, IA 51102

FHWA Field Offices (continued)

<u>City/ State Time</u>	<u>Field Address Zip Code</u>	<u>City/ State Time</u>	<u>Field Address Zip Code</u>
<b>KANSAS</b> Topeka 9:00 a.m.-5:30 p.m.	444 SE. Quincy Street Topeka, KS 66683	<b>MISSOURI</b> Jefferson City 8:45 a.m.-5:15 p.m.	P.O. Box 148 Jefferson City, MO 65101
<b>KENTUCKY</b> Elizabethtown  Frankfort 8:00 a.m.-4:45 p.m.	50 Public Square, Room 6C Elizabethtown, KY 42701  P.O. Box 536 Frankfort, KY 40602	Kansas City 8:45 a.m.-5:15 p.m.	P.O. Box 19715 Kansas City, MO 64141
<b>LOUISIANA</b> Baton Rouge 8:30 a.m.-5:00 p.m.	750 Florida Street, Room 239 Baton Rouge, LA 70801	<b>MONTANA</b> Helena 9:30 a.m.-6:00 p.m.	301 South Park Drawer Helena, MT 10056 501 N. Fee Street Helena, MT 59601
<b>MAINE</b> Augusta 7:30 a.m.-4:00 p.m.	40 Western Avenue, Room 614 Augusta, ME 04330	<b>NEBRASKA</b> Lincoln 8:45 a.m.-5:15 p.m.	100 Centennial Mall North, Room 487 Lincoln, NE 68508
Houlton	P.O. Building, Room 217 Houlton, ME 04730	<b>NEVADA</b> Carson City 10:45 a.m.-7:30 p.m.	1050 E. William Street, Suite 300 Carson City, NV 89701
<b>MARYLAND</b> Baltimore 8:00 a.m.-4:30 p.m.	31 Hopkins Plaza, Room 1633 Baltimore, MD 21201 711 West 40th Street Suite 220 31 Hopkins Plaza Room 816A Baltimore, MD 21201	<b>NEW HAMPSHIRE</b> Concord 8:00 a.m.-4:45 p.m.	55 Pleasant Street, Room 219 Concord, NH 03301
<b>MASSACHUSETTS</b> Boston 8:15 a.m.-4:15 p.m.	31 St. James Ave., Room 211 Boston, MA 02116 100 Summer Street, Suite 1517 Boston, MA 02110	<b>NEW JERSEY</b> Trenton 8:00 a.m.-4:30 p.m.	25 Scotch Road Trenton, NJ 08628
<b>MICHIGAN</b> Lansing 8:00 a.m.-4:45 p.m.	P.O. Box 10147, Room 211 Lansing, MI 48901	<b>NEW MEXICO</b> Albuquerque  Santa Fe 9:30 a.m.-6:30 p.m.	P.O. Box 9253 Albuquerque, NM 87119  U.S. Court House, Room 117 Santa Fe, NM 87501
<b>MINNESOTA</b> St. Paul 7:30 a.m.-4:00 p.m.	7th and Robert Streets, Suite 490 St. Paul, MN 55101	<b>NEW YORK</b> Albany 8:00 a.m.-4:30 p.m.	Leo W. O'Brien Building Clinton Avenue & North Pearl Street Albany, NY 12207 Leo W. O'Brien Federal Building, Room 729 Clinton & North Pearl Street Albany, NY 12207
<b>MISSISSIPPI</b> Jackson 8:45 a.m.-5:15 p.m.	666 North Street, Suite 105 Jackson, MS 39202	Buffalo 8:00 a.m.-4:30 p.m.  New York City 8:00 a.m.-4:30 p.m.  Syracuse 8:00 a.m.-4:30 p.m.	111 Huron Street, Room 614 Buffalo, NY 14202  U.S. Customs Court & Federal Office B. 26 Federal Plaza, Room 507 New York City, NY 10007  U.S. Courthouse & Federal Building 100 S. Clinton Street, Room 525 Syracuse, NY 13202

**NORTH CAROLINA**

Charlotte  
8:00 a.m.-4:30 p.m.

800 Briar Creek Road  
Charlotte, NC 28205  
310 New Bern Avenue, P.O. Box 26806  
Raleigh, NC 27611

Raleigh  
8:00 a.m.-4:30 p.m.

**NORTH DAKOTA**

Bismarck  
8:45 a.m.-5:30 p.m.

Federal Building, P.O. Box 1755  
Bismarck, ND 58501

**OHIO**

Akron  
8:00 a.m.-4:30 p.m.

2 South Main Street, Room 265  
P.O. Box F60  
Akron, OH 44308

Columbus  
7:30 a.m.-4:15 p.m.

P.O. Box 15008  
Columbus, OH 43125

**OKLAHOMA**

Oklahoma City  
9:00 a.m.-5:30 p.m.

200 N.W. 5th Street  
Oklahoma City, OK 73103

**OREGON**

Portland  
10:45 a.m.-7:30 p.m.

222 SW Morrison Street, Room 412  
Portland, OR 97204

Salem  
10:45 a.m.-7:30 p.m.

530 Center Street, NE., Suite 100  
Salem, OR 97301

**PENNSYLVANIA**

Harrisburg  
8:00 a.m.-4:30 p.m.

228 Walnut Street, P.O. Box 1086  
Harrisburg, PA 17108

Philadelphia  
8:30 a.m.-5:00 p.m.

434 Walnut Street, Room 1030  
Philadelphia, PA 19106

Pittsburgh  
8:00 a.m.-4:30 p.m.

Federal Office Building, Room 2202  
Pittsburgh, PA 15222

Scranton  
8:00 a.m.-4:30 p.m.

U.S. Post Office Building, Room 310  
North Washington Avenue  
Scranton, PA 18503

**RHODE ISLAND**

Providence  
8:00 a.m.-4:30 p.m.

U.S. Post Office  
Exchange Terrace, Suite 250  
Providence, RI 02903

**SOUTH CAROLINA**

Columbia  
8:15 a.m.-4:45 p.m.

Strom Thurmond Federal Building  
1835 Assembly Street, Suite 758  
Columbia, SC 29201

**SOUTH DAKOTA**

Pierre  
9:00 a.m.-5:30 p.m.

P.O. Box 57501  
Pierre, SD 57501

**TENNESSEE**

Knoxville  
9:00 a.m.-5:30 p.m.

E. Magnolia Avenue  
Knoxville, TN 37914

Memphis  
9:00 a.m.-5:30 p.m.

167 North Main Street  
Memphis, TN 38103

Nashville  
9:00 a.m.-5:30 p.m.

801 Broadway  
Room A-926

**TEXAS**

Austin  
8:45 a.m.-5:35 p.m.

300 East Eighth Street, Room 826  
Austin, TX 78701

Dallas  
8:45 a.m.-5:30 p.m.

1100 Commerce Street, Room 306  
Dallas, TX 75242

Fort Worth  
8:45 a.m.-5:35 p.m.

819 Taylor Street  
Fort Worth, TX 76102

Houston  
8:45 a.m.-5:35 p.m.

2320 La-Branch Street, Room 2117C  
Houston, TX 77004

Lubbock  
8:45 a.m.-5:35 p.m.

1205 Texas Avenue  
Lubbock, TX 79401

San Antonio  
8:45 a.m.-5:35 p.m.

727 E. Durango  
San Antonio, TX 78206

**UTAH**

Salt Lake City  
9:45 a.m.-6:30 p.m.

125 South State Street  
P.O. Box 11563  
Salt Lake City, UT 84147

**VERMONT**

Montpelier  
8:00 a.m.-4:30 p.m.

P.O. Box 568  
Montpelier, VT 05602

**VIRGINIA**

Arlington  
7:45 a.m.-4:15 p.m.

1000 N. Glebe Road  
Arlington, VA 22201  
1000 N. Glebe Road  
Room 414

Hampton  
8:00 a.m.-4:30 p.m.

132 East Queen Street, Room M-103  
Hampton, VA 23669

Richmond  
7:45 a.m.-4:15 p.m.

P.O. Box 10045  
Richmond, VA 23240

Roanoke  
7:45 a.m.-4:15 p.m.

P.O. Box 121, Room 735  
Roanoke, VA 24011

**WASHINGTON**

Olympia  
11:00 a.m.-8:00 p.m.

711 S. Capitol Way, Suite 501  
Olympia, WA 98507

Vancouver  
11:00 a.m.-8:30 p.m.

610 East Fifth Street  
Vancouver, WA 98661

**WEST VIRGINIA**

Charleston  
8:00 a.m.-4:30 p.m.

550 Eagan Street, Suite 300  
Charleston, WV 25301

**WISCONSIN**

Madison  
7:30 a.m.-4:15 p.m.

P.O. Box 5428  
Madison, WI 53705

**WYOMING**

Cheyenne  
9:45 a.m.-6:45 p.m.

20th and Evans Avenue  
Cheyenne, WY 82001

- o Provides information on Federal and State gasoline tax distribution and local exemptions.

Contact: W. Johnson Page  
Highway Users and Finance Branch (HHP-41)  
Room 3300  
400 Seventh Street, S.W.  
Washington, D.C. 20590  
(202) 426-0187

- o Distributes official highway information, including the "Monthly Motor Gasoline Reported by States," a cumulative tabulation of gross gallons of gasoline reported by wholesale distributors in each State.

Contact: Federal Highway Administration  
Office of Public Affairs  
Room 4208  
400 Seventh Street, S.W.  
Washington, D.C. 20590  
(202) 426-0677

- o The Highway Cost Allocation Study, mandated by Section 506 of the Surface Transportation Assistance Act of 1978, was completed by FHWA in May 1982. The study assesses highway system costs attributable to the various classes of vehicles and makes recommendations based on the Study's findings.

Contact: Anthony Kane  
Chief, Transportation and Socio-Economic Studies Division  
Room 3326  
400 Seventh Street, S.W.  
Washington, D.C. 20590  
(202) 426-2923

## STATE AND LOCAL CONTACTS

The State is the major source of outside revenue for local highway funds. However, each State has its own unique methods and formulae for raising revenues and distributing funds for local streets and highway construction and maintenance projects. In recent years, many States have also changed their taxing and apportionment strategies, some more than once. The following five States recently have adopted innovative legislation to raise highway revenues and apportion highway funds.

### Arizona

The State of Arizona passed new transportation financing legislation in 1982. The legislation allows for increases in a variety of highway user taxes and fees and will generate significantly greater revenues for urban street and highway construction and maintenance projects while also providing additional funds for rural areas. The motor fuel tax will increase from 8 to 10 cents per gallon in 1982, to 12 cents in 1983, and to a maximum of 13 cents in 1984.

The new revenue apportionment formula will be more favorable to local urban areas, distributing 50 percent to the State (ADOT), 30 percent to the cities and towns, and 20 percent to the counties. Under the previous distribution system, ADOT received 57 percent, cities received 17 percent, and counties received 15 percent. The 1982 legislation stipulates that the two largest urban areas in Arizona will also receive 7 percent of the ADOT share with a split of 70 percent to Phoenix and 30 percent to Tucson and another 15 percent of the ADOT share allocated to specific limited access highway systems with 75 percent for Maricopa County (Phoenix) and 25 percent for Pima County (Tucson). In dollars and cents, the recent legislation means that Phoenix will receive a four-fold increase in State highway user revenues.

Contact: Edward M. Hall  
Street Transportation Administrator  
City of Phoenix  
251 West Washington, Room 910  
Phoenix, Arizona 85003  
(602) 262-7956

### California

In 1981, the California State Legislature approved Senate Bill 215, which significantly augments State and local revenues for highway use. Senate Bill 215 increases the per gallon tax on gasoline and diesel fuel from 7 cents to 9 cents on January 1, 1983, and it apportions a larger percent of the new revenues to cities and counties. In addition, driver's license fees were increased \$6.75 to \$10; vehicle registration fees increased \$11 to \$23; California identification card fees increased from \$3 to \$6; trip permit fees for out-of-state trucks increased from \$5 to \$10; and truck weight fees will increase approximately 50 percent. This bill also capped the amount of highway revenues that can spill over into the State's General Fund to \$30 million per year until FY 1986-87 when no further spillovers into the General Fund will occur.

Of particular local significance is the adopted SB 215 Local Option Fuel Tax. This provision gives each county the option to levy penny per gallon tax increments on local motor fuel purchases. Agreement is necessary between the county and its associated cities on how much to increase the tax and how to allocate the funds. Proposition 13 may require 2/3 of the voters to approve the measure before any county can adopt the tax. Several California counties, such as Alameda, Contra Costa, Santa Clara, and San Diego have begun investigating the possibility of levying the Local Option Fuel Tax.

Contact: Robert I. Remen  
Deputy Director  
California Transportation Commission  
1120 N Street  
Sacramento, California 95814  
(916) 445-1690

The Metropolitan Transportation Commission has determined the current and future costs for the nine Bay Area counties' street and road maintenance needs and is working with county officials and local groups to explore financing options.

Contact: Wes Wells  
Project Leader  
Metropolitan Transportation Commission  
Hotel Claremont  
Berkeley, California 94705  
(415) 849-3223

Santa Clara County is establishing a local Highway Financing Task Force to investigate the potential for the Local Option Tax. How much to tax, how to allocate funds, and what type of projects or improvements to finance will be explored by the Task Force.

Contact: Lou Montini  
Director of Transportation Department  
Santa Clara County Transportation  
1555 Berger Drive  
San Jose, California 95112  
(408) 299-2362

### Indiana

The State of Indiana has recently developed several strategies to raise highway revenues. Indiana State Highway Fund revenues are equally divided between the State and local governments, with the local share apportioned according to vehicle registration and mileage formulae. In July 1980, a variable gas tax took effect. The 8 cent per gallon tax was changed to an 8 percent tax. This rate was later increased to 10 percent on the first dollar and 8 percent thereafter, with a ceiling of 14 cents per gallon. The rate is based on the average Statewide pre-tax price of gasoline and is adjusted twice a year in January and July. As of January 1982, the rate was 11.1 cents per gallon. The State estimates an additional \$30 million of revenue is generated by each cent increase.

In 1980, the Indiana legislature also passed a "local option" wheel and excise tax. Any county may adopt both a wheel tax (between \$5 and \$10) on heavy trucks and an excise surcharge (between one and ten percent) on automobiles. To date, no counties have adopted these options.

In 1982, Indiana increased allowable truck weights from 72,000 to 80,000 pounds and adopted an indefinite property tax on heavy trucks. This tax is based on the average Statewide rate for local property taxes. All out-of-state trucks must purchase fuel-use permits to pass through Indiana. The State will ask each of these trucks to allocate their mileage for State assessment purposes.

A separate "distressed road fund" amounting to \$10 million in 1982, \$5 million in 1983, and \$5 million in 1984 has also been established in Indiana to enable specified poor counties to receive interest-free loans for highway construction and maintenance.

Contact: Daniel Novreske  
Deputy Director of Administration  
Indiana Department of Highways  
11th Floor  
State Office Building  
Indianapolis, Indiana 46204  
(317) 232-5523

## Ohio

In 1981, the State of Ohio passed a Motor Vehicle Fuel cents per gallon tax and a variable rate tax. Effective July 1, 1981, the tax increased from a fixed 7 cents per gallon to 10.3 cents per gallon with three annual adjustments scheduled for March of 1982, 1983, and 1984. The annual variable rates will be based on a 5-step formula determined by the Federal Highway Maintenance Index costs and Ohio's fuel consumption rate for 1975 and the preceeding year. The underlying premise is that if fuel consumption declines, the need for additional taxes will be offset by increases in construction and maintenance costs. The Legislature imposed a ceiling of 5 cents per gallon for a total Motor Vehicle Fuel tax of 12 cents per gallon. Although the proportional distribution of revenues to local governments was not changed, substantial increase in all revenues is expected.

Contacts: (Program Background & Implementation)  
Richard A. Levin  
Director, Research and Statistics  
Ohio Department of Taxation  
State Office Tower  
P.O. Box 530  
Columbus, Ohio 43216  
(614) 466-3960

(Program Administration)  
Frank Healy  
Supervisor, Motor Fuel Tax Section  
Ohio Department of Taxation  
State Office Tower  
P.O. Box 530  
Columbus, Ohio 43216  
(614) 466-3503

## Washington

In 1977, the State of Washington adopted a variable rate motor fuel tax of 21.5 percent of the average retail price before taxes, subject to a 9 cents per gallon floor and a maximum rate of 12 cents per gallon. Every six months, in January and July, rate adjustments are made, and local apportionments changed on a percentage basis. Previously, the rate was 9 cents a gallon, and apportionments were on a numerical basis.

By 1979, the variable tax had reached its authorized ceiling, but highway construction and maintenance demands were still not being met. In 1981, the State Legislature imposed a new rate of 10 percent, with a 16 cents per gallon limit. By mid-1982 the rate was still 12 cents a gallon, because of reductions in the price of gasoline and fuel consumption.

Contact: Robert Chandler  
Financial Management Section  
Engineering Department  
City of Seattle  
Municipal Building  
4th and James  
Seattle, Washington 98104  
(206) 625-5512

## OTHER PROGRAMS AND CONTACTS

### Highway Users Federation

The Highway Users Federation is a non-profit organization that works with private businesses, highway officials, and the public to promote mobility for highway users. Its membership includes automobile, trucking, rubber, and petroleum companies. The Federation monitors highway finance and funding issues, including current State motor fuel tax rates, prices for Federal-aid highway construction, and Federal and State legislation.

Contact: Marshall Reed  
Transportation and Safety Division  
Highway Users Federation  
1776 Massachusetts Avenue, N.W.  
Washington, D.C.  
(202) 857-1227

### U.S. Conference of Mayors

The U.S. Conference of Mayors has developed a program to help cities decide whether to withdraw uncompleted or planned Interstate Highway segments and to substitute other highway or transit projects for them. The deadline for approval of withdrawals by the U.S. DOT and the selection of substitute projects by local and State

officials is September 30, 1983, as mandated by the 1973 Federal-Aid Highway Act, as amended. Planning information, technical assistance and a handbook (see Bibliography) are available.

Contact: Transportation Programs  
United States Conference of Mayors  
1620 I Street, N.W.  
Washington, D.C. 20006  
(202) 293-5156



## Chapter 4

### ANNOTATED BIBLIOGRAPHY

Batchelder, J. H., et al. "Application of the Highway Investment Analysis Package." Transportation Research Record 698. Transportation Research Board. Washington, D.C.: 1979.

This paper discusses the application and evaluation of the Highway Investment Analysis Package (HIAP), as installed in Wisconsin. The HIAP is a computerized cost-benefit and cost-effectiveness model developed by FHWA to aid State and local officials in allocating limited highway funds. The package was found to be useful and efficient for estimating and displaying the consequences of alternative highway investments.

Block, Arnold J., Wm. H. Crowell, and Michael Gerrard. The Interstate Highway Trade-In Process. (Draft) Vol. I, II and III. Transportation Training and Research Center, Polytechnic Institute of New York: 1982.

The first of this three volume study reviews the legal and policy background of the Interstate trade-in concept and discusses how the process worked in Boston, Cleveland and Middlesex County, New Jersey. The second volume, Synopsis of Trade-ins in Twenty Urban Areas, presents detailed case studies of the trade-in and substitution process. The third volume, Policy Implications, assesses the impact of the program.

Cook, K.E. "State Highway Finance." Transportation Research Circular, Number 218. Transportation Research Board. Washington, D.C.: 1980.

In 1978 the TRB Executive Committee identified transportation finance as one of the ten most critical issues in transportation. This report defines the highway finance issue and reports solutions suggested at the TRB Annual Meeting.

Cooper, Thomas W. "State Highway Finance Trends." Journal of the Institute of Transportation Engineers (July 1982).

This article discusses current State legislation concerning motor fuel and motor vehicle taxation, especially the various types of variable motor fuel tax mechanisms now in use.

Public Technology, Inc. Non-Federal Street and Highway Financing.  
Washington, D.C.: 1980.

This Information Bulletin concentrates on issues and problems of funding streets and highways by urban municipal governments, excluding Federal funding sources.

Reed, Marshall F., Jr. "Principles of Highway Finance," Transportation Research Record 813. Transportation Research Board. Washington, D.C.: 1981.

This paper identifies basic principles of State highway financing and examines eight indexing tax plans that are designed to keep tax revenues in pace with inflation.

Sinha, Kumares et al. "Financing County Highways." Transportation Research Record 813. Transportation Research Board. Washington, D.C.: 1981.

This paper examines the problem of revenue shortfall in local highway construction and maintenance, using Indiana as a case study. Projected needs are compared with projected revenue under existing conditions. Possible financing and administrative strategies are recommended.

U.S. Conference of Mayors. Interstate Substitutions: A Handbook for Mayors. Prepared for the U.S. Department of Transportation, Office of the Secretary. Washington, D.C.: 1980.

This handbook was prepared in consultation with Federal, State and local officials to help cities understand and use the Interstate Highway System withdrawal process and to meet the 1983 deadline.

U.S. Congress. Highway Assistance Programs: A Historical Perspective. Congressional Budget Office. Washington, D.C.: 1978.

This paper gives a comprehensive description of the history of Federal support for highways, the rationale underlying highway support, program modifications and potential future legislation.

U.S. Department of Transportation, Federal Highway Administration, Office of Program and Policy Planning. "Capital Cost Allocations and User Charge Structure Options": Highway Cost Allocation Study, Working Paper Number 12. Washington, D.C.: July 1981.

As part of the Highway Cost Allocation Study, this paper assigns highway costs to various groups of users in order to devise equitable and efficient highway user charges to collect corresponding revenues from each group. The major premise is that costs should be assigned to users based on the costs they cause or occasion.

U.S. Department of Transportation, Federal Highway Administration, Office of Program and Policy Planning. Highway Cost Allocations Study, Final Report. Washington, D.C.: May 1982.

U.S. Department of Transportation, Federal Highway Administration. Financial Considerations in State Transportation Programs. Washington, D.C.: 1980.

This brochure outlines the major financial constraints in State transportation programs and identifies short-range and long-range financial planning strategies and other planning and programming management considerations. Several require local support.

U.S. Department of Transportation, Federal Highway Administration, Office of Program and Policy Planning. Financing Federal-Aid Highways. Washington, D.C.: 1979.

FHWA has updated this report three times since its initial publication in 1974. The report provides procedural information on funding for the Federal-Aid Highway program.

U.S. Department of Transportation, Federal Highway Administration, Program Management Division. Highway Investment Practices and Trends. Washington, D.C.: 1981.

This paper discusses highway revenue sources, disbursements and the types of highway improvements funded at the National, State and local levels. Funding trends and the influence of factors such as fuel price increases and inflation are included.

U.S. Department of Transportation, Federal Highway Administration. Highway Statistics, 1980. Washington, D.C.: GPO (published annually).

This book of statistics contains a wealth of information on highway revenue sources and distribution of funds. The major chapters are on motor fuel, motor vehicles, driver licensing, roadway extent, characteristics and performance, and highway finance, including a separate section on local road and street finance.

U.S. Department of Transportation, Federal Highway Administration. Highway Taxes and Fees: How They are Collected and Distributed. Washington, D.C.: 1981.

This publication contains tabular information on State motor fuel laws, fee schedules for registering motor vehicles, and other State taxes and Federal fees collected for use in highway activities and the distribution of these taxes and fees.

U.S. Department of Transportation, Federal Highway Administration, Office of Public Affairs. "Monthly Motor Gasoline Reported by States." Washington, D.C.

These reports contains cumulative tabulations of gross gallons of gasoline provided by wholesale distributors in each State. Data are taken from State taxation records and include highway use, nonhighway use and losses.

U.S. Department of Transportation, Federal Highway Administration, Planning Services Branch. "Traffic Volume Trends," Washington, D.C.

Based on hourly traffic count data collected at approximately 4,000 locations nationwide, the information is used to determine the percent change in traffic volume by month and year. The reports are published monthly.

U.S. Department of Transportation, Federal Highway Administration. Transportation Cash Flow Financial Management. Washington, D.C.: 1981.

This report includes two papers. The first paper, "Transportation Cash Flow Financial Management at the State Level," was prepared by the TRB subcommittee on Transportation Programming, Planning and Evaluation and discusses cash flow financial management systems and their advantages and limitations. The second paper, "Summary of Florida Department of Transportation's Experience Using Cash Flow Management," describes Florida's 10-year experience with cash flow management.

U.S. Department of Transportation, Office of the Secretary. The Status of the Nation's Highways: Conditions and Performance. Report to the U.S. Congress, Committee on Public Works and Transportation. Washington, D.C.: 1981.

This report is the sixth in a series of biennial reports to the Congress on the Nation's highway needs. Prepared in cooperation with the States, the report presents an assessment of the physical condition, performance, and changes that have occurred in the highway system since 1970.

U.S. General Accounting Office, Comptroller General. Deteriorating Highways and Lagging Revenues: A Need to Reassess the Federal Highway Program. Washington, D.C.: 1981.

This report summarizes recent trends in State and Federal highway financing, the effects of these trends on highway programs, and the actions taken or proposed to obtain additional funding. Reassessment of the Federal-aid highway program is also covered.

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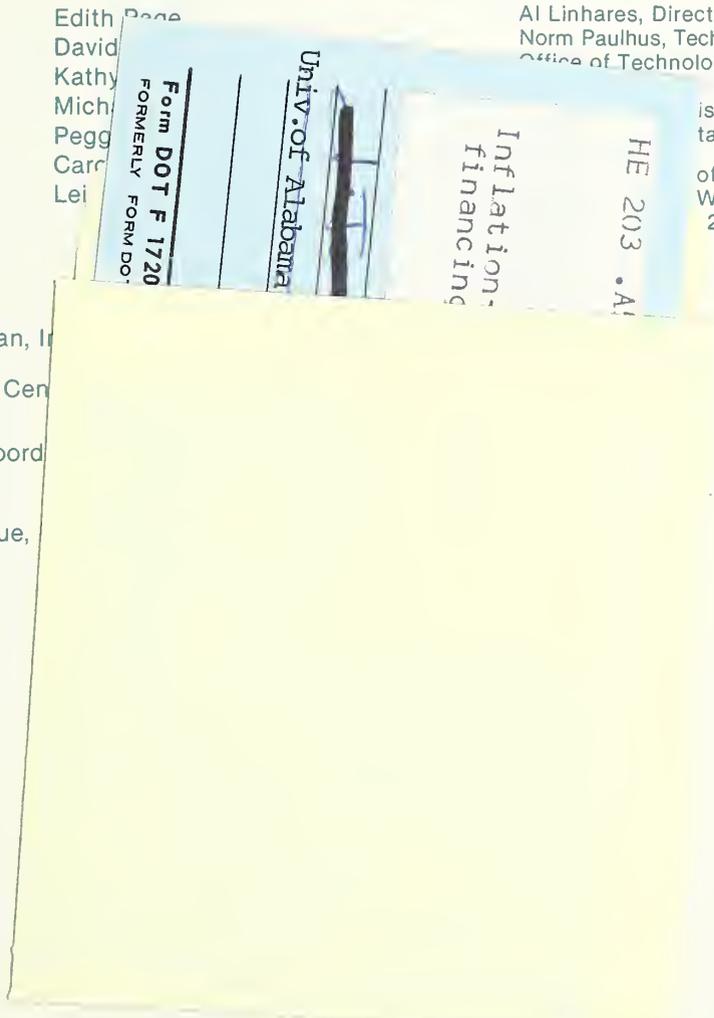
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