

**A Critical Review of API's Estimates
of Road User Payments and Expenditures**

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ABSTRACT

The extent to which road users pay, via user fees, the full cost of the infrastructure and services they consume has been an issue for several decades. A recent study by the American Petroleum Institute (API) provides an accounting of all the taxes and fees paid by motorists and concludes that payments by road users exceed direct government road expenditures by 50 percent. The API study points out that the Federal Highway Administration's (FHWA) *Highway Statistics* publication, which itemizes road finance data, reports only those receipts used for highways and therefore does not report funds raised from auto-related transactions (such as sales tax when a vehicle is purchased) that are not specifically spent on road construction, maintenance, and attendant services.

This paper examines the accounting methodology used by API and finds two critical shortcomings: incorrect attribution of general taxes as road user payments and neglect of various road-related costs. Combined, these shortcomings inflate the revenue side of the ledger and hold down the expenditure side, resulting in API's conclusion that road-user revenues exceed expenditures by 50 percent. API finds \$37.9 billion in excess funds were generated in 1992 by road users over the cost to provide direct public infrastructure and services.

Our review provides a more complete accounting of the revenues generated by road users as well as those public costs, both direct and indirect, that are attributable to the road system and its use. We present a new accounting and find that total public expenditures on road-related items was \$97.2 billion while public revenues specifically raised from road users amounted to \$75.5 billion. The result is a gap of \$21.7 billion that was spent on road-related items that was not covered by road user fees in the United States in 1992. Thus, road user fees were found to cover only 78 percent of public road-related costs.

INTRODUCTION

For several decades a debate has been brewing over whether or not road users pay the full cost of the infrastructure and services they consume. Recent research has been sparked by concern over suburban sprawl, increasingly tight municipal budgets, and an expanding view of the impacts of our transportation system. Many studies conclude that the amount road users pay through user fees, such as the gas tax and vehicle registration charges, does not cover the full cost that the public sector incurs providing the road infrastructure and attendant services. In particular, local transport expenditures draw on general revenues from sources such as sales and property taxes. An implication of road users paying less than the cost of what they consume is economic inefficiency and inequity.

In a recent salvo in this debate, the American Petroleum Institute (API) published a study (Dougher 1995) that provides an accounting of all government revenues derived from transactions relating to vehicle use and ownership and concludes that these revenues exceed government road-related expenditures by 50 percent. While the API accounting demonstrates that such revenues exceed expenditures, the methodology used appears questionable in the breadth of the revenue sources it considers and the narrowness of the definition of road-related expenditures that it uses. The study combines revenues derived through general fund mechanisms with those obtained through actual user fees, thus expanding the revenue basis beyond that used in other road accounting studies. Further, API uses an estimate of government road-related expenditures reported by the Federal Highway Administration (FHWA 1993) that provides an incomplete estimate of government road-related expenditures (MacKenzie et al. 1992; OTA 1994). The API study has been used, apparently uncritically, by Green (1995) in purporting to show that the social costs of automobile use are not as high as other analysts have found, relative to the benefits conferred.

This paper reviews the accounting methodology used by API and argues that an accounting that includes revenues from vehicle-related transactions garnered through general fund mechanisms is inconsistent with other cost allocation methodologies that have addressed this issue. Further, the accounting of government road-related expenditures used by Dougher (1995) is examined and expanded. The result is a revised accounting that estimates total government road user revenues and expenditures according to the definitions developed in previous research, showing that expenditures do indeed exceed revenues when using appropriate definitions of government road revenues and expenditures.

Previous research on this issue has yielded varying conclusions. Mills (1972) found that highway users paid for all the direct capital and operating costs of urban roads through user fees such as fuel taxes and registration fees. However, examining only urban roads influences the outcome since shortfalls between highway-user revenues and expenditures occur mostly in rural rather than urban areas (Meyer and Gomez-Ibanez 1981). Lee (1987) found that user fees and earmarked taxes at all government levels provided only \$36 billion, or 69 percent of the \$52 billion of highway expenditures in 1985. Several analyses of state scope have identified shortfalls

of road user revenues compared to road spending. Hanson (1992) examined road finances for all levels of government in Wisconsin and found that half of all road expenditures are paid for with local, non-user-fee revenues, of which property taxes were the greatest source. Roelofs and Komanoff (1994) found that road user fees amount to only 65 percent of road expenditures in New York; Komanoff and Sikowitz (1995) found only 77 percent coverage in New Jersey. Nationally, MacKenzie et al. (1992) found that gas taxes and user fees covered 60 percent of what all levels of government spent on building, improving, and repairing roads, and that 90 percent of the gap was paid for by local governments. MacKenzie et al. also report that an additional \$68 billion is spent each year on highway services not represented in FHWA accounting, such as local police, citing analysis by Hart (1986). One broader study concluded that "Society as a whole has had to bear the social and environmental costs [of roads]... in addition to providing direct subsidies" (Pucher 1988, 515). Thus, although details vary, most of the literature to date has concluded that road user fees do not cover all of the direct costs of the road system in the United States.

ANALYSIS OF API ACCOUNTING METHOD

The API study summarizes revenues derived from road users, starting with user fees, such as the fuel tax, vehicle registration, and drivers license fees. Table 1 provides a line-by-line summary of the API accounting, breaking out the total amount collected by source and the portion of the revenue dedicated to roads and the portion used for other purposes. The subtotals of the "collected and dedicated" columns of Table 1 match the revenue amounts listed on the first line of Table 2, which shows a side-by-side comparison of the API and FHWA accounting approaches, along with the revised accounting developed here.

Revenues from Road Users

A key point of the API study is to identify the total amount of revenue derived from road-user fees before any diversions are made. A primary source for the estimates is the Federal Highway Administration's *Highway Statistics 1992* (FHWA 1993a). The approach used by API finds a total of \$69.3 billion for 1992, of which \$48.5 billion, or 70 percent, is dedicated to road expenditures and \$20.9 is applied to other uses. Other uses of federal user fee revenue include deficit reduction, the leaking underground storage tank fund, mass transit, and collection expenses. At the state and local level, diversions include mass transit, collection expenses, and other non-road uses. The FHWA (1993a) figure of \$48.5 billion only accounts for those funds collected through user fees that are actually spent on roads, whereas API lists the full amount collected. API includes \$3.3 billion (Table 1, line 6) of state and local general sales taxes applied to fuel purchases; these revenues are separate from fuel-specific taxes. These amounts are not dedicated to road use, but rather are deposited into a locality's general fund.

The second group of user revenues in Table 1 shows state and local toll revenue. The gross revenue collected from tolls is \$4.2 billion and the portion spent on roads is \$3.3 billion, or 79 percent. The state and local amounts appear aggregated on the second line of Table 2, again with FHWA (1993a) listing only the portion that is spent on road-related items.

Combined, API finds user fee revenue totaled \$73.6 billion, of which \$51.8 billion (71 percent) was dedicated to road expenditures, as reported by FHWA (1993a). Viewed side-by-side, these two accounting methodologies differ by \$21.8 billion.

Which method is appropriate for counting traditional road user revenues? Should one count the full amount paid, as API does, or only the amount actually dedicated to roads as FHWA does? Most full-cost transportation studies, suggest that the full amount paid by road users in distinct user fees be counted. Litman (1995) counted the full amount of user fees, not just the portion used for roads. Likewise, examining the New York City region, Ketcham and Komanoff (1992) provide a full accounting of what road users paid rather than the portion that was spent on roads. Komanoff (1996) stated that all taxes and fees unique to road users should be summed as gross receipts, before any diversions are made, since that is the amount actually paid by road users. Likewise, the OTA (1994) estimate of road user revenues includes all funds collected.

Regarding general sales taxes on motor fuel, Bhatt et al. (1977) excluded a portion of the tax in states such as California, where part of the tax on fuel is a general sales tax, because such a tax is applied to most goods and thus cannot be considered a user's fee. API does count such general sales taxes on motor fuel as if they were user fees, similar to their inclusion of other general taxes as discussed below.

Revenues from Sources not Specific to Road Users

API expands the revenue tally by including funds derived from other taxes paid on vehicle-related transactions, as shown under the "Other Taxes and Fees" heading of Table 1. Here API includes personal property taxes applied to vehicles and general sales tax revenues derived from purchases of vehicles and maintenance expenditures.

API calculated the property tax paid on vehicles at \$12.1 billion in 1992. This amount is the sum of all property taxes and similar assessments paid on passenger vehicles, trucks, and motorcycles, as listed in Table 1, and aggregated in Table 2. FHWA (1993a) lists \$4.5 billion from property taxes, as shown in Table 2. The FHWA accounting was more restrictive, counting only the amount of property tax used specifically for roads. For example, in Kansas a portion of the property tax is legislatively allocated to the state's City and County Road Fund each year, usually ranging between eight and ten million dollars (FHWA 1993b). Further, the property tax revenues reported by FHWA (1993a) include real estate taxes specifically applied to roads; some local governments set aside a portion of property tax receipts on real estate for roads (Benedict 1996).

API next calculates revenue from general sales taxes applied to motor vehicle purchases and maintenance expenditures, finding a total of \$28.6 billion, as itemized in Table 1. Of this revenue, 82 percent is collected at the state level. The total is listed in Table 2 under "Other Taxes and Fees." The corresponding FHWA (1993a) revenue estimate is \$2.8 billion. While API counted all sales tax paid on auto-related purchases, FHWA's accounting guidance requires states and local governments only to report the amount of sales tax, be it from vehicle related sales or not, that is legislatively set aside for road use. For example, in Arizona, if the annual increase in sales tax revenue exceeds seven percent, a portion of the state fund share (by formula) is transferred to the state road fund (FHWA 1993b). As with the property tax, the API and FHWA sales tax values are not comparable because of differing definitions of what is included.

API applies the average sales tax in a state to all vehicle-related sales within the state. However, using the average could significantly overstate actual revenue. For example, in Wisconsin only two-thirds of the counties apply the county-option sales tax. By applying that rate to sales made in all counties in Wisconsin, revenue is overestimated. Thus, API's \$23.5 billion estimate is probably high.

FHWA shows one revenue category that API does not address: General Fund Appropriations (Table 2). The FHWA (1993a) accounting shows \$12.3 billion in this category, 78 percent of which is attributed to local governments, 13 percent to state governments. Most local governments have no mechanism for raising funds for roads from traditional user fee methods. Most local revenue (mainly property taxes) are deposited into a general fund, from which local road expenditures are paid. Some local governments have set-asides built into their property tax structure specifically for roads. Those set-asides end up on the property tax line of FHWA's tabulation. For governments that have no set-aside clause, road spending that is derived from general funds is listed as "General Fund Appropriations" by FHWA.

API calculates total vehicle related property tax and sales tax revenue of \$40.7 billion, 30 percent from property taxes and 70 percent from sales taxes. In contrast, FHWA (1993a) total for these categories is \$19.6 billion, slightly less than half of API's total, and was derived as a sum of road-related expenditures drawn from taxes on a variety of goods and services that are not necessarily related to road use.

Combining receipts from user fees with those from general taxes applied to vehicle related transactions API calculates total revenue of \$114.3 billion in vehicle related revenues. This is shown as the bottom line on Table 1 and the revenue total line on Table 2. This amount is 60 percent more than FHWA's (1993a) reported income of \$71.4 billion. Of this total, API finds that \$51.8 billion, or 45 percent is dedicated to roads, with the remainder going to pay for other government services.

Road-Related Expenditures

Expenditures reported by FHWA include such items as capital, maintenance, traffic services, administration, research, and law enforcement and safety costs (Table 2, Part C). According to FHWA (1993a) these items totaled \$76.4 billion in expenditures. API includes these expenditures in its accounting.

Much of the literature identifies other road-related government expenditures, not accounted for in the FHWA framework. A distinction between expenditure and cost must be drawn here. Expenditures involve financial transactions and may be categorized as either direct, such as road maintenance costs, or indirect. Costs may be financial, but can also be external and not directly or not fully monetized (such as air pollution). The \$76.4 billion listed in the above paragraph refers to the direct financial costs associated with creating and maintaining the public road infrastructure. Indirect costs associated with road use are not taken into account by either API or FHWA.

Debt Financing

API adopts a pay-as-you-go approach to the accounting and so omits debt-related revenues and expenditures. Gomez-Ibanez (1996) and Delucchi (1996) concur that it is appropriate to omit debt-related items from such an accounting. Because the capital expenditures listed by FHWA (1993) include all capital outlays whether financed by bonds or cash on hand, one would not want to count the interest on any 1992 bonds in future years because that would be double counting. The debt and interest reported by FHWA are essentially arbitrarily defined in that they depend solely on the amount of the road system financed by bonds. These financing costs could be included in a full resource cost accounting. In that case, whether roads are paid for by bonds or current revenues would make no difference; either way, capital is being spent and that capital has an opportunity cost. To properly account for such items, one would add annualized capital expenditures, however financed, to annual operating costs. The accounting would then include current year user receipts, current year operating expenses plus the depreciation on the capital stock (Delucchi 1996; Gomez-Ibanez 1996). API does not attempt such an accounting and neither do we. If pursued, it would result in an added expenditure item reflecting depreciation of the capital stock of roadway infrastructure.

Summary of API Accounting

An FHWA-based accounting of government road-related revenues and expenditures can be divided into four distinct pieces. On the revenue side, API includes the full amount of user fees collected before any diversions are made, a total of \$73.6 billion in 1992. Second, the API revenue tally includes vehicle-derived taxes and fees from general revenue mechanisms that are applied to other goods and services as well. This amount totaled \$40.7 billion, resulting in the total vehicle-related revenue estimate of \$114.3 billion reported by API. Third, on the expenditure side, API adopts the FHWA (1993a) accounting of national road-related

expenditures, totaling \$76.4 billion, resulting in a surplus of \$37.9 billion. The fourth item is debt-related items that FHWA (1993a) includes in its accounting, but which can be omitted from a pay-as-you-go accounting as examined here.

REVISED ACCOUNTING OF GOVERNMENT ROAD REVENUES AND EXPENDITURES

We find two components of the API accounting to be troubling: the inclusion of general sales tax and property tax revenues and the adoption of the FHWA (1993a) expenditures, which exclude some local government costs.

Appropriate Definition of User Fees

It is crucial to distinguish taxes from user fees. "Taxes are levies on a measure of economic activity and are intended to raise revenue for general use. In contrast to taxes, user charges are intended to charge an individual or firm for the use of a particular service or facility. ... Sales tax on automobile purchases, repair and fuel should not be considered a part of highway user fees," (according to Kenneth Small, as quoted by Roelofs and Komanoff 1994, A-3).

Bhatt et al. (1977) excluded local property tax on motor vehicles from their accounting for states or local governments that pose such a tax on other property because the tax was not unique to motor vehicles. Further precedent for differentiating between taxes and user fees is found in Meyer and Gomez-Ibanez (1981), who contend that estimating the user component in highway taxes involves differentiating between special charges made for highway use and general taxes levied on consumption, income, or personal property. "One commonly used rule for making such separations is to regard a tax as a highway user charge if collected from highway users or on motor vehicles but not on most other comparable goods and services" (Meyer and Gomez-Ibanez 1981, 193). The authors maintain that highway user charges include federal fuel taxes, vehicle taxes, spare parts and excise taxes, state motor vehicle and driver registration fees, and special fees on trucks. State fuel and motor vehicle sales and property taxes should not be considered as user fees since many states or localities impose sales and personal property tax on a variety of goods.

In a study that examined road expenditures in New Jersey, Komanoff and Sikowitz (1995) developed an accounting that only included taxes and fees that specifically targeted motor vehicle users either directly or through surrogates. They argued that had they "opened the door on the revenue side to sales taxes" (Komanoff and Sikowitz 1995, 23) they would have had to account for government activities that are funded by sales taxes and also treat side-effects and opportunity costs of auto use, such as property tax foregone due to land use as roads.

Roelofs and Komanoff (1994) provide two reasons for not including sales taxes on automobiles as road user receipts. First, sales taxes are not user fees designed to influence or facilitate motor vehicle use but are imposed to collect revenues for general government use.

Second, they maintain that consumer and business dollars spent on motor vehicles would otherwise have been spent somewhere else, thereby generating similar sales tax revenues. Therefore, motor vehicle financial transactions generate little net sales tax revenue for governments. Such sales taxes are "an artifact of an economy characterized by heavy use of cars and trucks" (Roelofs and Komanoff 1994, A-3). In a less road-intensive transport system, consumer spending—and therefore sales tax revenues—would be relatively greater on goods and services unrelated to automobile use.

Therefore, API counting general taxes as if they were user fees is inappropriate. We exclude vehicle-derived sales and property tax revenues from our revised accounting of what road users as such pay for roads.

Results of Revised Accounting

The third column, labeled "ACEEE," of Table 2 gives our revised accounting of U.S. road financing in 1992. The shaded areas in Table 1 represent those receipts identified by API that fall within the appropriate definition of user fees. Sums of these items are listed in the first three rows of Table 2. We also include revenue from parking and traffic violations, mentioned but not quantified by API, which amounts to \$5 billion (OTA 1994, Table 4-3). We exclude the non-user fee revenues included by API, whether or not they are spent on roads (the latter are included by FHWA). The resulting revised total is \$75.5 billion, 66 percent of the total revenue API calculates.

On the expenditure side, we start with those items listed by FHWA (1993a) and used by API totaling \$76.4 billion. These funds reflect direct government expenditures. Indirect government expenditures involve a variety of road-related public costs paid by funds raised through mechanisms not related directly to road use, such as the property tax. Examples include municipal services, such as police not included in FHWA accounting, fire, and judicial expenses, as well as monetary costs of accidents covered by government, and military expenditures to maintain U.S. access to foreign oil. OTA provides ranges of values of these indirect expenditures and a list of these items is presented in Table 2, Part D. OTA (1994, Table 4-D) estimates the cost of road-related municipal services as from \$10.6 billion to \$95.4 billion (1992\$), with the large uncertainty coming primarily from the police component. Military expenditures necessary to maintain a consistent oil flow from unstable regions of the world were estimated to range between \$5.3 billion and \$21.4 billion (1992\$) (OTA 1994, Table 4-5). The total provided in Table 2, Part D uses the low end of all OTA (1994) estimates, summing to \$20.8 billion (1992\$). The low estimate represents 21 percent of all government road-related expenditures. These are real government expenditures, related to road use, and paid for with government funds raised through general revenue methods. Using the high end of the OTA (1994) estimates would yield a total indirect cost of \$121 billion (1992\$).

The revised accounting developed here results in total road user revenues of \$75.5 billion and expenditures of \$97.2 billion, resulting in a gap of \$21.7 billion that governments fund out

of general fund revenues. Thus, this pay-as-you-go snapshot of U.S. road finances shows that user fees covered only 78 percent of public road spending in 1992.

Although a full cost accounting is beyond the scope of this paper, it is important to note that examining government road finances reveals only a portion of the true costs of our transportation system. A full social cost accounting would consider a broader set of costs and benefits, including such items as the impact of vehicle emissions. (See, for example, Apogee 1994; MacKenzie et al. 1992.)

Even without addressing external costs, considering depreciation of the road system can change the balance of revenues and expenditures. Using a 10 percent discount rate, Meyer and Gomez-Ibanez (1981) found that in the 1950s revenues covered expenditures on a pay-as-you-go basis and also exceeded expenditures on an amortized capital basis. By 1975, however, a pay-as-you-go tally showed that revenues covered only 80 percent of expenditures and considering amortized capital costs lowered the estimated coverage to 75 percent.

Moreover, the accounting methodologies reviewed in this paper look only at aggregate costs and revenues. A more revealing accounting would incorporate cost-allocation issues, which examine the costs associated with each vehicle class and what each class pays into the system. Different classes of vehicles impact road infrastructure in varying degrees and emit differing amounts of pollutants. (See, for example, Euritt 1993; FHWA 1981; and Small 1989.)

CONCLUSION

The American Petroleum Institute has joined the debate over whether road users pay the full cost of government expenditures on roads and related services with a study concluding that road users contribute 150 percent of such costs to public coffers. Their conclusion is based on an accounting methodology that includes government revenues from all transactions involving roads and road vehicles. API's revenue estimate included not only user fees such as the fuel tax, but also general taxes applied to vehicles, such as general sales and property taxes, resulting in a total of \$114.3 billion in 1992. Including revenues from such sources is atypical. The more accepted convention is to only count revenues intended to be road user fees; such an approach yields a total government revenues estimate of \$75.5 billion in 1992.

API's calculation of government road-related expenditures is drawn from FHWA's *Highway Statistics*, which shows total government road-related expenditures of \$76.4 billion. FHWA's calculation falls short of capturing all government road-related expenditures. Drawing on OTA (1994), additional government road-related expenditures not reported by FHWA range from roughly \$20 billion to \$120 billion. Adopting the low end of this range yields an estimate of total U.S. public road-related spending of \$97.2 billion.

While API's analysis stated that revenue exceeded expenditures by \$37.9 billion (50 percent), our revised estimate using more conventional accounting definitions shows a deficit of \$21.7 billion (22 percent) in 1992. Thus, even without considering depreciation of the road system and external costs associated with road use, it is clear that road users as such fail to fully pay for the public costs of the road system in the United States.

Table 1. Summary of API Accounting of U.S. Road User Payments in 1992

	(billions of 1992 dollars)			
	Collected	Dedicated to Roads	Diverted to Other Uses	Line notes
Traditional Road-User Fees				
Federal motor fuel tax	19.8	13.9	5.9	1
State motor fuel tax	24.8	20.6	4.2	2
Local motor fuel and vehicle taxes	1.2	0.9	0.3	3
Federal motor vehicle taxes	1.8	1.7	0.0	4
State motor vehicle taxes	18.4	11.3	7.1	5
State and local general sales tax on fuel	3.3	0.0	3.3	6
<i>Subtotal taxes</i>	<i>69.3</i>	<i>48.5</i>	<i>20.9</i>	7
State tolls	3.3	3.0	0.4	8
Local tolls	0.9	0.4	0.5	9
<i>Subtotal tolls</i>	<i>4.2</i>	<i>3.3</i>	<i>0.9</i>	10
Subtotal user fees	73.6	51.8	21.8	11
Other Taxes and Fees paid by Auto Users				
Property tax on pass. vehicles	8.5	0.0	8.5	12
Property tax on trucks	3.5	0.0	3.5	13
Property tax on motorcycles	0.1	0.0	0.1	14
<i>Subtotal property taxes</i>	<i>12.1</i>	<i>0.0</i>	<i>12.1</i>	15
State sales tax on vehicle sales and maint.	23.5	0.0	23.5	16
Local sales tax on vehicle sales and maint.	4.9	0.0	4.9	17
Gas guzzler & misc taxes	0.1	0.0	0.1	18
Parking fees	?	0.0	0.0	19
Violations	?	0.0	0.0	20
<i>Subtotal sales and guzzler taxes</i>	<i>28.6</i>	<i>0.0</i>	<i>28.6</i>	21
Subtotal other taxes and fees	40.7	0.0	40.7	22
Total Payments by Road Users	114.3	51.8	62.5	23

Notes for Table 1.

- 1) From (5) Table 3.
- 2) From (5) Table 3 minus \$2,675 million listed as derived from general sales tax applied to fuel sales at state level. This amount appears instead on line 6; see also note 3.
- 3) From (5) Table 3 minus \$605 million listed as derived from general sales tax applied to fuel sales at local level. This amount appears instead on line 6, see also note 2.
- 4) From (5) Table 5.
- 5) From (5) Table 5.
- 6) See notes 2 and 3.
- 8) From (5) Table 6.
- 9) From (5) Table 6.
- 11) This sum represents all revenues from "traditional" user fees that are applied only to vehicle-related transactions. Total is \$50 million less than (5) due to addition error in (5).
- 12) From (5) Table 8e.
- 13) From (5) Table 8e.
- 14) From (5) Table 8e.
- 16) From (5) Table 9D. \$43 million is set aside as "dedicated" from Montana's sales tax which was enacted as a separate measure on vehicles, rather than a general sales tax, per FHWA instructions. See p. 17 of (5) from further details.
- 17) From (5) Table 9D.
- 18) From (5) p. 19.
- 19) (5) mentions parking fees but does not calculate an estimate.
- 20) (5) mentions violation revenue but does not calculate an estimate.
- 22) This sum represents revenue derived from vehicle-related financial transactions that do not fall under the heading of "traditional" road-user fees because the tax is also applied to other items (except in Montana, see note 16).
- 23) This total is the sum of traditional and general revenues derived from taxes on vehicle-related financial transactions.

Table 2. Alternative Methods of Accounting for Public Road User Finances

	(billions of 1992 dollars)			Line notes
	API	FHWA	ACEEE	
A) Revenues				
<i>Road User Specific Revenues</i>				
Motor fuel and vehicle taxes	69.3	48.5	66.2	1
Tolls	4.2	3.3	4.2	2
Parking taxes and traffic fines	0.0	0.0	5.0	3
Subtotal	73.6	51.8	75.5	4
<i>Other Revenues</i>				
Property taxes and assessments	12.1	4.5	0.0	5
Other taxes and fees	28.6	2.8	0.0	6
General fund appropriations	0.0	12.3	0.0	7
Subtotal	40.7	19.6	0.0	8
Total Revenues	114.3	71.4	75.5	9
B) Debt Financing				
Investment income/other receipts		(6.4)		10
Bond issue proceeds		(9.9)		11
Funds drawn from or placed in reserve		3.4		12
Interest on debt		3.6		13
Bond retirements		4.3		14
Net debt financing costs	--	(5.0)	--	15
C) Traditional Road-Related Expenditures				
Capital outlays	38.7	38.7	38.7	16
Maintenance and traffic services	22.9	22.9	22.9	17
Administration and research	7.7	7.7	7.7	18
Highway law enforcement and safety	7.1	7.1	7.1	19
Subtotal	76.4	76.4	76.4	20
D) Indirect Road Expenditures				
Municipal services (police, fire, judicial)			10.6	21
Military expenditures related to oil use			5.3	22
Strategic petroleum reserve			0.2	23
Accident costs covered by government			4.7	24
Subtotal	--	--	20.8	25
Total Expenditures	76.4	71.4	97.2	26
Net, Revenues minus Expenditures	37.9	0.0	-21.7	27
<i>Percent difference, revenues from expenditures:</i>	<i>50%</i>	<i>--</i>	<i>-22%</i>	

Notes for Table 2.

Sources: FHWA information from (10) (*Highway Statistics 1992*, Table HF-10); API estimates from (5), various tables (see Notes for Table 1); OTA estimates from (24), various tables as noted.

- 1) FHWA includes only those revenues applied to roads (e.g., fuel taxes diverted to transit accounts are not included) and are given net of collection expenses. API includes total fuel and excise tax revenues before diversions. ACEEE estimates are from Table 1 highlighted items, except tolls.
- 2) FHWA includes net toll revenues, after collection costs and diverted funds. API and ACEEE include gross toll revenues, before collection costs and diverted funds.
- 3) Parking and traffic fines and parking taxes from (24), Table 4-3.
- 5) FHWA estimates of property taxes used for road expenditures include only legislative set-asides. API estimates are from (5), Table 8e.
- 6) FHWA estimates of other taxes and fees are general fund revenues derived from a variety of sources, including taxes that legislatively set aside portions of sales tax to be used for roads. API estimates the total sales tax paid by auto users such as on auto purchases and general sales tax applied to fuel.
- 7) FHWA estimated general fund appropriations include revenues derived from a variety of non-road sources. API does not accounting for general funds used for roads.
- 10) FHWA investment income from Federal Highway Trust Fund invested balance.
- 11) FHWA estimates of bond issue proceeds are credited as income. API does not credit bond proceeds; see text.
- 12) Funds drawn from or placed in reserve are credited by FHWA as loss of income in 1992 because 3.4 billion of user fee revenue was placed in reserve.
- 13) FHWA counts interest on debt as an expense.
- 14) FHWA account interest on debt as an expense.
- 16) FHWA listed capital expenditures for roads.
- 17) FHWA listed maintenance expenditures for roads.
- 18) FHWA listed road administration and research costs.
- 19) FHWA law enforcement estimates only include state highway patrol and other state programs, no local expenditures are included. API uses the same estimates.
- 21) From OTA (24), Table 4-5, lower estimate of line items "Police" through "Environmental Regulation," inflated to 1992\$. "Police" estimate was reduced by \$6.922 billion (9) (FHWA 1991, Table HF-10) to account for law enforcement listed by (10) (FHWA 1993) under Table 2, Part C as "Highway law enforcement."
- 22-24) From OTA (24), Table 4-5, inflated to 1992\$.

BIBLIOGRAPHY

- Apogee (Apogee Research). 1994. *The Costs of Transportation: Final Report*. Report prepared for the Conservation Law Foundation. Bethesda, Md.: Apogee Research.
- Benedict, T. (Federal Highway Administration, Washington, D.C.). 1996. Personal communication to Hugh Morris. January 29.
- Bhatt, K., M. Beesley, and K. Neels. 1977. *An Analysis of Road Expenditures and Payments by Vehicle Class: 1956 to 1974*. Washington, D.C.: The Urban Institute.
- Delucchi, M. (Institute of Transportation Studies, University of California, Davis). 1996. Personal communication to Hugh Morris. January 30.
- Dougher, R. 1995. *Estimates of Annual U.S. Road User Payments Versus Annual Road Expenditures*. Research Study #078. Washington, D.C.: American Petroleum Institute.
- Euritt, M. 1993. *Texas Highway Cost Allocation Analysis and Estimates, 1992 to 1994*. Research Report 1919-2 / 1910-3. Austin, Tex.: Center for Transportation Research, University of Texas, Austin.
- FHWA (Federal Highway Administration, U.S. Department of Transportation). 1980. *Federal Law and Material Relating to the Federal Highway Administration*. Washington, D.C.: Federal Highway Administration, U.S. Department of Transportation.
- . 1981. *Capital Cost Allocations and User Charge Structure Options*. Washington, D.C.: Federal Highway Administration, U.S. Department of Transportation.
- . 1986. *Highway Statistics: Summary to 1985*. Report PB-87-191458. Washington, D.C.: Federal Highway Administration, U.S. Department of Transportation.
- . 1990. *Highway Statistics, 1989*. Report FHWA-PB-91-124578. Washington, D.C.: Federal Highway Administration, U.S. Department of Transportation.
- . 1991. *Highway Statistics, 1990*. Report FHWA-PL-91-003. Washington, DC: Federal Highway Administration, U.S. Department of Transportation.
- . 1993a. *Highway Statistics, 1992*. Report FHWA-PL-93-023. Washington, D.C.: Federal Highway Administration, U.S. Department of Transportation.
- . 1993b. *Highway Taxes and Fees: How They are Collected and Distributed*. Washington, D.C.: Federal Highway Administration, U.S. Department of Transportation.

- . 1994. *A Guide to Reporting Highway Statistics*. Washington, D.C.: Federal Highway Administration, U.S. Department of Transportation.
- Flink, J. 1990. *The Automobile Age*. Cambridge, Mass.: The MIT Press.
- Gomez-Ibanez, J. (Kennedy School of Government, Harvard University, Cambridge, Mass.). 1996. Personal communication to Hugh Morris. January 30.
- Green, K. 1995. *Defending Automobility: A Critical Examination of the Environmental and Social Costs of Auto Use*. Los Angeles, Calif.: Reason Foundation.
- Hanson, M. 1992. "Automobile Subsidies and Land Use: Estimates and Policy Responses." *American Planning Association Journal*. Winter: 60-71.
- Hart, S. 1986. "An Assessment of the Municipal Costs of Automobile Use." Pasadena, Calif.: Self-published graduate studies report.
- IEA (International Energy Agency Organization for Economic Cooperation and Development). 1993. *Taxing Energy: Why and How*. Paris, France.: International Energy Agency Organization for Economic Cooperation and Development.
- Ketcham, B., and C. Komanoff. 1992. *Win-Win Transportation: A No-Losers Approach to Financing Transport in New York City and the Region*. New York, N.Y.: Transportation Alternatives.
- Komanoff, C. (Komanoff Energy Associates, New York, N.Y.) 1996. Personal communication to Hugh Morris. January 5.
- Komanoff, C. and M. Sikowitz. 1995. *Crossroads: Highway-Finance Subsidies in New Jersey*. New York, N.Y.: Komanoff Energy Associates.
- Lave, C. (University of California, Irvine). 1996. Personal communication to Hugh Morris. January 30.
- Lee, D. 1987. *Highway Infrastructure Needs*. Cambridge, Mass.: Transportation Systems Center, U.S. Department of Transportation.
- . 1994. *Full Cost Pricing of Highways*. Cambridge, Mass.: Volpe National Transportation Center, U.S. Department of Transportation.
- Litman, T. 1995. *Transportation Cost Analysis: Techniques, Estimates and Implications*. Victoria, British Columbia, Canada: Victoria Transportation Institute.

- . (Victoria Transportation Institute, Victoria, British Columbia, Canada). 1996. Personal communication to Hugh Morris. January 29.
- Lockwood, S., H. Caldwell, and G. Williams. 1992. "Highway Finance: Revenues and Expenditures." *Transportation Research Record* 1359, 11-18.
- MacKenzie, J. (World Resources Institute, Washington, D.C.). 1996. Personal communication to Hugh Morris. January 18.
- MacKenzie, J., R. Dower, and D. Chen. 1992. *The Going Rate: What it Really Costs to Drive*. Washington, D.C.: World Resources Institute,
- Meyer, J., and J. Gomez-Ibanez. 1981. *Autos, Transit, and Cities*. Cambridge, Mass.: Harvard University Press.
- Miller, P., and J. Moffet. 1993. *The Price of Mobility: Uncovering the Hidden Cost of Transportation*. New York, N.Y.: Natural Resources Defense Council.
- Mills, E. 1972. *Urban Economics*. Glenview, Ill.: Scott, Foresman.
- Moretti, F. 1992. *1992 State Highway Funding Methods*. Washington, D.C.: The Road Information Program.
- Newman, M. (Professor Emeritus, Economics, Pennsylvania State University). 1996. Personal communication to Hugh Morris. January 31.
- OTA (U.S. Congress, Office of Technology Assessment). 1994. *Saving Energy in Transportation*. Washington, D.C.: U.S. Congress, Office of Technology Assessment.
- Pucher, J. 1988. "Urban Transportation Behavior as an Outcome of Public Policy: The Example of Modal Split in Western Europe and North America." *Journal of the American Planning Association* 54, 4: 509-520.
- Ridgeway, D. 1990. "An Assessment of the Cost of Private Motor-Vehicle Use to the City and County of Denver." Denver, Colo.: Self-published graduate studies paper.
- Roelofs, C., and C. Komanoff. 1994. *Subsidies for Traffic: How Taxpayer Dollars Underwrite Driving in New York State*. New York, N.Y.: Komanoff Energy Associates.
- Sanders, H. 1991. *Public Works and Public Dollars: Federal Infrastructure Aid and Local Investment Policy*. Washington, D.C.: The House Wednesday Group, Congress of the United States.

- Shaw, P. 1991. *New Federal Transportation Financing and Legislative Directions: No New Taxes or \$31 Billion a Year?* Working Paper No. 36. Berkeley, Calif.: The University of California Transportation Center.
- Shoup, D. 1992. *Cashing Out Employer-Paid Parking*. Washington, D.C.: Federal Transit Administration, U.S. Department of Transportation.
- Shoup, D., and R. Wilson. 1990. "Employer-Paid Parking: The Influence of Parking Prices on Travel Demand." Prepared for the Commuter Parking Symposium. Washington, D.C.: Association for Commuter Transportation.
- Small, K. 1983. *Transportation Taxes in New York State*. State of New York, Legislative Commission on the Modernization and Simplification of Tax Administration and the Tax Law.
- . (University of California, Irvine). 1996. Personal communication to Hugh Morris. January 18.
- Small, K., C. Winston, and C. Evans. 1989. *Road Work: A New Highway Pricing and Investment Policy*. Washington, D.C.: Brookings Institution.
- Snell, R. 1991. *State and Local Highway Finance: Where Does the Money Come From and Why Isn't There Enough?* LFP #78. Washington, D.C.: National Conference of State Legislatures.
- Taylor, B. 1992. *When Finance Leads Planning: The Influence of Public Finance on Transportation Planning and Policy in California*. Dissertation No. 1. Berkeley, Calif.: University of California Transportation Center.
- USDOT (U.S. Department of Transportation). 1983. *Urban Transportation Planning in the United States: an Historical Overview*. Washington, D.C.: U.S. Department of Transportation.