The Fuel Tax and Alternatives for Transportation Funding

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Abstract

U.S. highway programs derive most of their funding from special taxes and fees incurred by vehicle operators, including fuel taxes (the largest such revenue source), registration fees, tolls, and other charges. The states and the federal government dedicate most of these revenues to highway spending.

The Transportation Research Board recently completed a study that assessed the revenue-generating prospects of the present funding arrangement, considering possible threats to the viability of these revenue sources from a decline in the tax base and from decline in adherence to the user fee finance principle that was basic to the system at its origin. To judge the merits of the present finance system and alternatives, the study considered how finance arrangements affect the performance of the transportation system by influencing the decisions of travelers and government investment and management decisions.

The study concluded that the risk is not great that the challenges evident today will prevent the U.S. highway finance system from maintaining its historical performance over the next 15 years and that the finance system has contributed to the success of the highway program in delivering a positive return on national investment. However, it identified important failings of highway programs related to unsatisfactory pricing and concluded that the public would benefit from a transition to a fee structure that more directly charged vehicle operators for their actual use of roads.

The study recommends that the federal government and the states should maintain and reinforce the existing user fee finance system until superior alternatives can be developed; that collection of tolls on expressways should be expanded and legal restrictions on tolling on existing state roads built with federal aid and should be removed; and that the states and the federal government should begin to evaluate arrangements for general road use metering and mileage charging.

The Fuel Tax and Alternatives for Transportation Funding[1]

Like all government agencies in the United States, those charged with providing highways and public transit are perennially faced with the challenge of serving growing needs with constrained resources. In the past decade transportation agencies coped first with rapid traffic growth during the economic boom of the 1990s and then with stagnant revenues and state government fiscal crises in the aftermath of the 2001 recession. The federal surface transportation aid program was debated for 2 years after its expiration in 2003 before reauthorization in 2005, as proposals to increase spending clashed with opposition to any increase in federal highway user tax rates to fund the expansion.

Recent circumstances have heightened long-standing worries of transportation officials in the United States that funding sources, particularly fuel taxes, that provided stable and growing revenue for U.S. highway programs for 40 years are going to become unreliable in the future. If petroleum price increases or government interventions to reduce pollutant emissions or petroleum consumption lead to widespread use of more efficient automobile engines or lighter passenger vehicles, maintaining revenue will require that legislatures accelerate rate increases. However, there is concern that the political consensus supporting established transportation funding arrangements may be eroding as the goals of transportation programs become more diffuse and as the public perceives the costs of capacity expansion to be increasing and the performance of the highway system to be deteriorating.

Transportation administrators also are interested in opportunities at hand for fundamentally new approaches that could provide a sound basis for transportation finance and at the same time improve the efficiency and quality of transportation services. Progress in the technologies of toll collection and road

[1] This paper contains a summary of Transportation Research Board Special Report 285, *The Fuel Tax and Alternatives for Transportation Funding* (TRB 2006), authored by the Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance. Readers should refer to Special Report 285 for the complete statement of the committee's conclusions and policy recommendations. The study was sponsored by the state transportation departments through the National Cooperative Highway Research Program, the Federal Highway Administration, and TRB. TRB is a division of the National Research Council, which is the principal operating arm of the National Academy of Sciences and National Academy of Engineering. The Research Council is a private, nonprofit institution that provides science and technology advice under a charter from the U.S. Congress.

use metering has greatly diminished the obstacles of cost and inconvenience which have discouraged imposition of direct charges on the users of most roads in the past. With the application of these technologies, highway services could be paid for by metering each customer's use and charging accordingly, as is the case for utilities such as water or electricity. Development of this revenue source would maintain the established practice of funding highways largely through fees paid by users, allow fees to be much more closely tied to the cost of providing service for each user, and provide information to transportation agencies about which investments in capacity would yield the greatest benefits. Facilities that generated their own revenue would be suited to operation by private-sector franchisees, expanding opportunities to supplement public efforts with private capital and skills to carry out infrastructure projects.

Steps toward these new kinds of transportation finance arrangements are taking place today in the United States and other countries. However, before such arrangements can become major components of the transportation finance system, their effectiveness must be demonstrated to the public's satisfaction, and the institutional capabilities needed to manage them on a large scale must be developed. In the meantime, it will be worthwhile to seek refinements that could improve the finance system's capacity to provide the right level of funding and direct funds to the best uses within the established structure of fees, revenue sources, and assignment of responsibilities among governments.

The Transportation Research Board (TRB) convened the Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance to assess what recent trends imply for the future of traditional transportation finance, identify finance alternatives and the criteria by which they should be evaluated, and suggest ways in which barriers to acceptance of new approaches might be overcome. The first section of this paper outlines present funding practices for U.S. highways. The second section summarizes the conclusions and recommendations of the TRB study about the performance of this system and directions for finance reform. The final section presents some observations about prospects for reform.

U.S. HIGHWAY FUNDING PRACTICES

The two defining features of highway funding arrangements in the United States are the federal structure of the system--that is, the sharing of responsibilities among federal, state, and local governments; and the practice of user fee finance--that is, motorists pay special taxes according to their use of roads and revenue from these taxes covers highway spending, with trust funds established to keep track of the balance between fee revenue and spending. This section presents nationwide data on spending for highways, special taxes and fees paid by highway users, and other sources of funds for highway programs. Except where noted, data and definitions are from the Federal Highway Administration's (FHWA's) annual compilation in the *Highway Statistics* publication series (FHWA 1997, FHWA 2001-2005).

Spending

Governments spent $136.4 billion to construct and operate highways in the United States in 2004. Highways are predominantly an activity of state governments: 60 percent of all spending and 72 percent of all capital spending are by the states (Table 1).

Funding Sources

State and local governments dedicate, by law, certain revenues from highway user fees and other taxes to pay for highways. They also receive federal grants designated for highways and issue bonds with the proceeds dedicated to highways. The difference between revenue from these sources and spending is drawn from general funds.

Identifying the sources of funds for specific government expenditures is inherently ambiguous because revenues are fungible. To say that highway expenditures come from a particular revenue source may be taken to mean that when revenue from the source increases, spending increases, and that spending falls when revenue falls, in like amounts (possibly with a time lag when there is a trust fund, but eventually keeping spending and revenue in balance). The connection between legally dedicated revenues and spending usually is imperfect in the highway program and in similarly funded government activities. For example, it will be seen below that when highway user fee revenues fell sharply in the 1970s, highway spending slowed, but governments temporarily made up part of the shortfall from other sources.

User Fees

Total receipts of highway user revenues as defined by FHWA were $106.8 billion in 2004. FHWA defines this quantity to include revenue from any tax or fee paid by owners or operators of vehicles that use public roads, as a consequence of their use of the roads, and that is not paid by others. For example, FHWA classifies revenue from motor fuel taxes that apply only to fuel consumed on public roads as a user revenue, but not sales tax collected on gasoline if the state collects the tax at the same rate on all gasoline sales regardless of use. The definition does not consider whether the revenues are dedicated to road expenditures.

Fuel taxes are the major user fee and account for nearly two-thirds of the total (Table 2). The share of user fee revenue derived from fuel taxes has been stable for most of the past 40 years. Tolls are collected on roads, tunnels, or bridges in 33 states. Nearly all toll facilities in the United States are operated by publicly controlled special authorities. Most revenues other than fuel taxes and tolls are from vehicle registration and operator license fees. Although the majority of state and local user fee revenues are from fuel taxes, 13 states collected more in registration and license fees than in fuel taxes in 2004.

The large discrepancies between the share of user fees collected by level of government and spending shares by level of government (shown in Table 1) reflect intergovernmental transfers and application of funds other than user fee revenues to highway purposes. The federal government distributes nearly all its revenues to the states and local governments through the federal-aid highway program and federal mass transit assistance, and states distribute a portion of their user fee revenues to local governments.

Present federal excise tax rates are 18.4 cents per gallon for gasoline and 24.4 cents per gallon for diesel fuel. In addition, federal excise taxes are collected on tires, large trucks, and trailers, and trucks pay the annual federal heavy vehicle use tax. Sales-weighted average state fuel tax rates in 2004 were 19.2 cents per gallon for gasoline and 20.0 cents per gallon for diesel fuel. Registration fees and miscellaneous other federal, state, and local taxes and fees (that is, all user fees except fuel taxes and tolls) collected in 2004 averaged $125 per registered vehicle.

State and federal tax and fee schedules discriminate between light and heavy vehicles in an effort to collect revenues from different kinds of vehicles proportionate to relative responsibilities for highway costs. A few states charge trucks a tax based on mileage. Large trucks pay higher average fuel tax per mile than light vehicles because they consume more fuel per mile. The average total user fee per mile is around six times higher for a combination truck than for an automobile (USDOT 1997).

Other Revenue Sources

State and local governments legally dedicate the revenues from particular taxes in addition to highway user fees to pay for transportation programs. Such taxes are most commonly local property taxes and state and local sales taxes. Revenue from taxes dedicated by law to highway use, other than highway user fees, was $15.4 billion in 2004, 11 percent of all highway spending. This ratio has been nearly constant over the past 40 years, although the portion derived from taxes other than property taxes, and in particular the portion from dedicated state sales taxes, has been growing.

In addition to the revenue of legally dedicated taxes, state and local governments appropriate funds from general revenues each year for spending on roads. Comparing these general fund appropriations with total spending is difficult, because many jurisdictions deposit some part of their highway user revenue into their general funds and then make appropriations for highways out of general funds. Highway user fee revenue (whether dedicated to highways or not) equaled 78 percent of highway spending in 2004, and revenue from dedicated taxes other than user fees equaled 11 percent, so the net contribution from general revenue may be defined as the remaining 11 percent.

Local governments account for most highway spending not supported by user fee revenues. In 2004, local user fee revenue plus local highway grant receipts that derived from state and federal highway user fees equaled 32 percent of local highway spending. As a percentage of local spending, local user fee revenue plus grants from states has been declining slowly since the 1970s. Local governments' slight reliance on user fees is the result of historical and practical circumstances. Local jurisdictions may lack legal authority to impose fuel taxes or vehicle fees, and motorists can easily avoid a local fuel tax if neighboring jurisdictions have lower rates. In general, fiscal competition among local governments makes them more susceptible than state governments to loss of a tax base when they try to increase revenue by increasing tax rates independently. In some jurisdictions, a local property tax assessment dedicated to local streets may function essentially as a user fee.

In national totals, the states' revenues from highway users nearly equal their highway spending; however, the balance between revenue and spending varies from state to state.

Debt Finance

Highway finance in the United States is commonly described as a pay-as-you-go system, which is to say that debt finance is little used (except by toll authorities) and spending tends to track revenues. The revenue figures in Tables 2 and 3 exclude bond issue proceeds, and the spending figures exclude interest payments and debt retirement. State and local government bond issue proceeds for highway uses in 2004 (excluding notes with maturities of 2 years or less) were $15.8 billion, equal to 12 percent of spending. Toll facilities are major issuers of bonds.

Funding Trends

In the past 40 years (a period nearly matching the history of the federal-aid highway program in its present form), some marked swings have occurred in finance patterns, particularly in the late 1970s and early 1980s (Table 3). In those years, constant-dollar user fee collections fell precipitously as a result of high inflation, slow growth in highway travel caused by high fuel prices and recession, and improvements in fuel economy caused by regulation and high fuel prices. Spending fell in the same period, especially state government capital spending, at least partially as a result of reduced revenues, although the capital spending decline may also reflect the completion of major components of the Interstate system in the period. Congress increased federal excise tax rates in the 1982 highway act, and many states increased rates in the same period, so by 1991 the ratio of revenues to expenditures had returned to its level of the 1960s. Since the late 1990s the ratio has been declining.

The average of all user fees paid per vehicle mile of highway travel declined (in 2001 dollars) from $0.06 per mile in the 1960s to $0.03 per mile by 1980 (Table 3). The average fee has recovered somewhat, to $0.034 per mile today, but remains well below the peak of the 1960s.

Of the $106.8 billion in highway user revenues collected in 2004 by the federal, state, and local governments, $10.7 billion was devoted to mass transit (either dedicated by law to transit or allocated to transit at the discretion of local government grant recipients). In addition, $10.2 billion was credited to general funds or dedicated to purposes other than highways and transit. The share of state and locally collected highway user revenues that is devoted to purposes other than highways and transit grew from 10 percent in 1991 to 13 percent in 2004.

The ratio of user fee revenue to highway expenditures has been close to 80 percent throughout the except during the late 1970s and early-1980s. As noted above, the total spent on highways exceeds highway user fee revenue primarily because local governments fund most of their street and road expenditures from general or non–user fee revenue sources.

Federal and State Highway Program Structure

Nearly all roads in the United States are owned and operated by the states or by local governments. The primary federal role is providing funding assistance. Periodic federal surface transportation acts authorize multiyear funding authorizations for federal highway and mass transit grant programs. Formulas set by law allocate the federal funds among the states and among major spending categories. The total distributed over the life of each multiyear program is constrained by the amount actually available in the federal Highway Trust Fund, which receives the revenues of federal highway user fees. Although federal highway aid equals only a little more than a fifth of all highway spending, federal grant eligibility rules are an important influence on state and local government project selection methods and on the design, maintenance, and operation of roads.

TRB STUDY CONCLUSIONS AND RECOMMENDATIONS

The TRB study committee was called on to judge the significance of two hypothesized threats to the viability of revenue sources and finance arrangements. The first is that rising fuel prices, new automotive technology, or new environmental and energy regulations will affect revenues and that the financial side effects of these forces, in the absence of reform, will cause a decline in the performance of the highway system. The second is that erosion of adherence to the user fee finance practices that were basic to the system at its origin threaten the viability of finance arrangements and the performance of the transportation system.

The study also identified reforms for the highway and transit finance systems that would be worthwhile regardless of the revenue potential of the present system of highway user fees. In considering options, the TRB committee focused on how finance arrangements affect the performance of the transportation system by influencing the decisions of travelers and government investment and management decisions.

In most recent public discussions of transportation finance in the United States, the desire to increase revenue in order to serve defined needs is identified as the primary motivation for searching for finance alternatives. However, the TRB committee did not estimate how much governments should spend on transportation or attempt to devise revenue mechanisms with the primary goal of supporting an increased level of spending. There is no certainty that finance reform in the direction of improving the efficiency of transportation would increase revenues, although reform would help transportation agencies to efficiently manage capacity and to target investment to projects with the greatest benefit to the public.

The committee's conclusions, summarized below, address the viability of current revenue sources, the merits of current transportation finance arrangements, and the potential value of various reform options. The recommendations propose immediate changes to strengthen the existing highway and transit finance system and actions to prepare the way for more fundamental reform.

Conclusions

Viability of Revenue Sources

The risk is not great that the challenges evident today will prevent the highway finance system from maintaining its historical performance over the next 15 years; that is, it should be able to fund growth in capacity and some service improvements, although not at a rate that will reduce overall congestion.

Threat of Loss of the Tax Base A reduction of 20 percent in average fuel consumption per vehicle mile is possible by 2025 if fuel economy improvement is driven by regulation or sustained fuel price increases. Offsetting the revenue effect of such a gain would not require unprecedented increases in fuel tax rates. The willingness of legislatures to enact increases may be in question, but the existing revenue sources will retain the capacity to fund transportation programs at historical levels. Without new regulations, fuel price increases alone probably will stimulate only a small improvement in fuel economy in this period.

Erosion of Established Finance Practices The committee examined trends in dependence on sources other than user fee revenue for highway funding, diversion of highway user fee revenue to non-highway uses, and devolution of transportation program responsibilities to local governments, which in general are less capable of imposing special taxes on highway users. The analysis showed that finance practices have been remarkably stable and resilient since the creation of the present federal highway program in 1956. For example, the state and local government shares of funding and the ratio of user fee revenue to highway expenditures have been stable over most of this period and the average user fee revenue per vehicle-mile has been nearly constant since 1980. However, some potential sources of stress are evident, particularly in certain states where the local share of responsibility is high. These include pressures to expand use of highway user fee revenue for nonhighway purposes, the growth of transit spending as a share of local transportation spending, and the vulnerability of revenues to acceleration of inflation.

Merits of the Present System The finance system has contributed to the success of the highway program in delivering a positive return on the national investment in highways because fees modestly discourage motorists from making trips of little value, spending is limited by the revenues generated from users, and motorists can see the cost of providing roads in the fuel taxes and registration fees they pay.

To a limited extent, existing user fees discourage motorists from making trips that they value little in comparison with the cost of providing them. These fees are about 7 percent of the cost of operating a motor vehicle and vary with use. More significantly, the revenues generated from users constrain spending. Reliance on dedicated revenue from user fees reduces the risk that total spending will greatly exceed justified levels, since it is unlikely that the revenue would sustain a facility that produced low levels of benefits for users in relation to its costs. Also, in the political process of setting highway budgets and fees, users are unlikely to support fee levels beyond those that benefit them or to support projects that yield low returns. Gaining the efficiency benefits of charging fees to highway users does not require that the revenues raised be dedicated to highways. Nevertheless, dedication of revenues appears, in practice, to have exerted a degree of discipline that has tended to keep spending within bounds and to direct it to worthwhile projects, and that would be absent if spending were not linked to revenue raised from users.

However, highway programs have important failings related to finance. The system does not provide a strong check that individual projects are economically justified. Congestion and pavement and bridge wear costs are tolerated that could be avoided if motorists were charged prices that more closely matched the cost of their use of roads.

Directions for Reform

Although the present highway finance system can remain viable for some time, travelers and the public would benefit greatly from a transition to a fee structure that more directly charged vehicle operators for their actual use of roads. The growing cost of maintaining acceptable service under present funding and pricing practices may at some point compel reforms that would increase efficiency. The transition could proceed in stages, starting with closer matching of present fees to costs and expanded use of tolling. Ultimately, in the fee system that would provide the greatest public benefit, charges would depend on mileage, road and vehicle characteristics, and traffic conditions, and they would be set to reflect the cost of each trip to the highway agency and the public.

The potential benefits of a transition to direct charging are improved operation of the road system and better targeting of investment to the most valuable projects. Revenues from charges set to reflect the cost of providing service would provide an accurate indication of where capacity expansions would have benefit. Governments that own and operate roads could control fees and funding, so dependence on intergovernmental aid would be reduced. Reform in this direction offers the best opportunity for increasing the cost-effectiveness of spending and mitigating congestion.

The committee identified two complementary tracks for practical reform:

- Toll roads and toll lanes: An important opportunity exists today to create an extensive system of tolled expressways and expressway lanes employing existing electronic toll collection technology and variable pricing. Although such a toll program probably would not greatly increase the funds available for highways, it could expedite construction of critical highway improvements, provide a tool for managing congestion, and help gain public acceptance of road pricing.

- Road use metering and mileage charging: This appears to be the most promising technique for directly assessing road users for the costs of individual trips within a comprehensive fee scheme that will generate revenue to cover the costs of highway programs. It uses communications and information technology to assess charges according to miles traveled, roads used, and other conditions related to the cost of service. Unlike conventional tolling, which is applicable only on expressways, road use metering could be used to manage and provide funding for all roads. Conversion to road use metering will require a sustained national effort. Governments must decide on the goals of the effort, authorities for setting fees and controlling revenue, the basis for determining fees, and how best to involve the private sector. Resolution of privacy and fairness concerns will be a prerequisite.

As the finance system evolves, governments can keep it on a course leading to the necessary improvements by adhering to the following rules:

- Maintain the practice of user fee finance, a system in which users of facilities are charged fees or special taxes, rates reflect the costs to serve each user, and expenditures equal the fee revenue.
- Seek opportunities where possible to apply pricing—that is, allow fees to ration access to facilities.
- Align responsibilities so that local governments provide facilities that serve mainly local travel, states serve regional traffic, and the federal government retains only functions that it can perform more effectively than state and local governments.
- Give full consideration to the environmental and equity consequences of reform. Fundamental finance reform that aligned fees more closely with costs would eventually have profound effects on the

locations of households and industries. The overall economic and environmental impacts of reform would be positive, but some individuals and communities would suffer harm if no provisions were made for compensation.

Recommendations

The TRB committee proposed immediate changes to strengthen the existing highway and transit finance system and actions to prepare the way for fundamental reform.

1. Maintain and Reinforce the Existing User Fee Finance System

Because superior alternatives will require time to develop, the United States must continue to rely on the present framework of transportation funding for at least the next decade. Therefore, governments must take every opportunity to reinforce the proven features of the present system, in particular, user fee finance in the highway program. Actions that would help to maintain the effectiveness of the overall system include adjusting user fee rates to provide incentives for more cost-conscious use of highways by operators of large trucks and other vehicles, eliminating fuel tax exemptions that are commonly abused, taking other measures to reduce losses to tax evasion, and providing for advanced-technology vehicles in the user fee structure so that operators of these vehicles contribute to the upkeep of highways on a basis similar to that of other users. Although the federal contribution to funding may decline in the future, the federal government should retain certain core responsibilities, including aid to ensure that the states do not underinvest in routes of national significance, the setting of standards, environmental regulation and enforcement, and research and development.

2. Expand Use of Tolls and Test Road Use Metering

The Federal Role in Promoting Toll Road Development The federal government should encourage states to experiment with arrangements for tolling and private-sector participation in road development. To this end, states should be allowed to impose tolls on existing roads that were built with federal aid and should be allowed flexibility in the design of toll systems.

Road Use Metering and Mileage Charging The states and the federal government should undertake serious exploration of the potential of road use metering and mileage charging. Creation of a structure to support individual states that decide to conduct trials or pilot implementations may be the most practical initial arrangement. However, a program with national focus will be required, with federal leadership and funding aid for research and testing. The first requirement will be technical trials to evaluate the reliability, flexibility, cost, security, and enforceability of alternative designs and to gain information on proper administration of these systems and user acceptance. Once technically proven designs are available, the federal government should support one or more trial implementations that would be on a large scale and fully functional but that would be limited in scope with respect to the region, roads, or vehicles involved. The participating states would require federal technical coordination and financial aid. Evaluation must be integral to the design of trials and must be provided for in schedules and budgets. Designs and pilot implementations should be compatible with the principle that each state and local jurisdiction should control charges on and revenues generated by the roads it owns.

3. Provide Stable, Broad-Based Tax Support for Transit

About one-fourth of all funding for local public bus and passenger rail service in the United States derives from dedicated highway user fee revenues Reforms of highway finance arrangements in the future will give rise to needs for reviewing and adjusting the relationship of highway and transit funding. The following guidelines for reform are proposed:

- Transit systems at present require dedicated, broad-based tax support. Developing such support will be necessary in order to maintain and expand transit services.
- Greatly increasing transfers of highway user fee revenues to fund expanded transit services would risk a loss of travel benefits through declining highway performance that could be greater than the transit benefits gained. This risk imposes a limit on the potential of existing highway user fees as a source of transit funding.
- Federal and state transportation aid should be provided for the purpose of relieving local governments of the burden of serving nonlocal needs rather than subsidizing local services.
- Road pricing instituted in metropolitan areas should be used to increase transit's financial self-sufficiency by eliminating subsidies to highway travel, giving transit the market power to increase fare revenue, and improving bus service quality.

4. Evaluate the Impact of Finance Arrangements on Transportation System Performance

Transportation agencies must develop new capabilities for research, evaluation, and communication with the public in order to manage finance reform successfully over the next few decades. If tolls and mileage charges become important sources of highway funding, agencies will be faced with fundamentally new kinds of management decisions and information requirements. At the same time, the effects of the new charges will provide information never before available about the value of highway facilities. To develop the capability to fulfill the new management and information requirements, an organized program will be necessary. The institutional structure of the program must provide for a joint federal–state effort, guarantee that scientific evaluations of alternatives are carried out, and build public confidence through open processes.

OUTLOOK FOR REFORM

The TRB committee's report highlights four considerations that some other discussions of transportation finance reform in the United States have tended to minimize or overlook. First, it emphasizes the close connection between the structure of finance arrangements and the performance of the transportation system and argues that the motivation for reform should be to gain the benefits of better pricing rather than to seek expedient means of raising more revenue. Second, the report defends the practice of funding highways by means of dedicated revenues from fees or taxes imposed on highway users. Third, the report emphasizes the difficult administrative and institutional problems which must be solved in trials and pilot implementations of new charging and funding schemes: how to gain public acceptance, how to set prices, and how to manage the road system in the new financial environment.

Finally, the report emphasizes that, as tolls and general mileage charges become important sources of funds, pressures will be created for change in all public transportation management practices. Project selection and budgeting will be changed because every project will have a direct impact on the revenue of the jurisdiction owning the road. Government roles will change because state and local governments will expect to control revenues generated by roads they own and to control pricing decisions that will have major local impacts. There will be a risk of doing harm through poor pricing practices, so some form of regulatory oversight may be needed. Expanded private sector participation in provision and operation of highways and transit is to be expected.

The TRB study committee recognized that introduction of a general system of road use metering and mileage charging in the United States would be an enormously challenging undertaking. The potential distributional impacts would be substantial and gaining public support would be a fundamental difficulty. However, it is conceivable that public acceptance might follow from worsening congestion, greater public experience with conventional tolling on expressways, observation of successful implementations elsewhere (for example, the metering scheme for trucks on the Autobahn in Germany), a planning process that is attentive to public concerns, and successful large-scale U.S. trials.

In a provision of the 2005 legislation that reauthorized the federal surface transportation aid program, the U.S. Congress created the National Commission on Future Revenue Sources to Support the Highway Trust Fund. Parts of its charge are to “oversee a comprehensive evaluation of alternatives to replace the fuel tax” and to “make specific recommendations regarding actions that need to be taken to develop alternative revenue sources.” The TRB study recommended that the National Commission set in motion the development process that will be required to guide successful reform. At the least, the Commission's charge is evidence that a need for transportation finance reform is widely recognized.

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TABLE 1 Highway spending in the United States by level of government and function, 2004 (percent distribution) (FHWA 2005)

	Federal	State	Local	Total
Capital outlay	1	37	13	52
Maintenance and traffic services	--	11	16	27
Administration, research, and law enforcement	2	12	8	22
Total	3	60	37	100

Note: Payments of interest on debt and bond retirements are excluded. Spending does not include grants to other levels of government for highway purposes.

TABLE 2 Highway user revenues by level of government and source, 2004 (percent distribution) (FHWA 2005)

	Federal	State	Local	Total
Fuel taxes	31	32	1	64
Tolls	--	6	2	8
Other user taxes and fees	3	24	1	28
Total	34	63	4	100

TABLE 3 Historical trends in highway spending, user fee revenue, and highway travel (FHWA 1997, FHWA 2002, FHWA 2005)

	1961	1971	1981	1991	2001	2004
Expenditures ($, billions)	11	21	40	74	123	136
Expenditures (2001 $, billions)	52	75	71	90	123	128
State govt. expenditures (percent of total)	69	69	60	62	64	60
Capital outlay (percent of total)	64	59	49	50	53	52
Federal aid (percent of expenditures)	25	24	27	20	23	22
Highway user fee revenues (2001 $, billions)	43	63	46	73	99	100
(User fee revenues)/expenditures (percent)	84	85	66	85	80	78
(User fee revenues)/(vehicle miles) (2001 $)	.058	.053	.030	.035	.035	.034
Highway travel (vehicle miles, trillions)	0.7	1.2	1.6	2.2	2.8	3.0

Note: Payments of interest on debt and bond retirements are excluded. Price index is gross domestic product implicit price deflator (BEA 2005).