

# Commission Briefing Paper 5A-01

## Trends and Projections of Current Revenue Sources for Highways and Transit

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### Introduction

This paper is part of a series of briefing papers to be prepared for the National Surface Transportation Policy and Revenue Study Commission authorized in Section 1909 of SAFETEA-LU. The papers are intended to synthesize the state-of-the-practice consensus on the issues that are relevant to the Commission's charge outlined in Section 1909, and will serve as background material in developing the analyses to be presented in the final report of the Commission.

This paper presents information on the sustainability of current revenue sources for surface transportation modes including highways, transit, railroads, and intermodal facilities. A broad range of taxes, user fees, and other revenue sources currently support surface transportation programs at all levels of government. The many revenue sources reflect in part historical practices among States and local government agencies and in part differences in the kinds of fees that are most appropriate to finance different types of transportation services. There is increasing concern about whether these current revenue sources can continue to sustain future transportation improvement programs.

### Background and Key Findings

Fuel taxes represent about 90 percent of total revenues to the Federal Highway Trust Fund. Federal fuel tax rates have remained unchanged since 1993. Since that time, however, the real Federal gasoline tax rate has decreased by 28 percent due to inflation as measured by changes in the Consumer Price Index and by 38 percent as measured by changes in the Producer Price Index for Highway and Street Construction. The other taxes supporting the Federal Highway Trust Fund are truck-related taxes. The largest of those taxes, the truck sales tax, increases with the sales price of trucks and truck trailers. The other Federal taxes – the tire tax and the Heavy Vehicle Use Tax -- do not vary with either prices or costs. In total, Federal revenues accounted for 21 percent of the total of \$155 billion spent for highways by all levels of government in 2005.

At the State level, a broader variety of taxes supports highway construction. Fuel taxes are still the largest source of revenues. Other sources of revenue for highways at the State level include vehicle registration fees, motor carrier taxes, tolls, general fund appropriations, other taxes and fees, and the sale of bonds. There are significant differences in the extent to which individual States rely on these various revenue sources. State revenues accounted for 50 percent of total funds spent for highways in 2005.

Local highway revenues come from a variety of sources including motor fuel and motor vehicle taxes, tolls, property taxes, other special taxes, bonds, and general fund appropriations which are

the largest of the local revenue sources. In total, local revenues accounted for approximately 28 percent of total funds for highways in 2005.

Unlike highways where the bulk of funding comes from Federal and State sources, most transit funding is local. Federal transit funding accounted for 17 percent of the total transit funding in 2005. About 80 percent of the Federal revenues were from gasoline taxes deposited in the Transit Account of the Highway Trust Fund and the remainder was from general funds. State funds represented 20 percent of total transit funding in 2005, but unlike the Federal Government, only a small portion of State transit funding was from gasoline and other highway user taxes. Almost all State funds for transit were from either special purpose taxes or State general funds. Local funds accounted for over 60 percent of total transit funding in 2005. Over 45 percent of those funds came from fares and other user fees, 25 percent from special purpose taxes, and the remainder from local general funds.

Freight rail infrastructure and operations are financed almost entirely by the private sector. This is especially true for the Class 1 railroads. Short line and regional railroads have received State and local funding in recent years to provide needed service to their jurisdictions that cannot be provided economically without public assistance. State funding comes primarily from general funds and may be in the form of either loans or direct grants. The statutory authority often is very limited. Several Federal loan and credit assistance programs may be used for railroads, some of which are supported from the Highway Trust Fund and some from General Funds.

Greater flexibility has been provided in SAFETEA-LU to finance intermodal facilities from the Highway Trust Fund. There are no data that break out funding from all sources for intermodal facilities, but the public sector's role has been increasing in recent years. This trend can be expected to continue in the future.

The long-term sustainability of the various revenue sources that support surface transportation has several dimensions including whether revenues increase automatically with general prices in the economy, whether the revenue base will be stable over time, and whether there is the political will to increase revenues if they fall short of investment requirements. The long-term sustainability of the fuel tax, which supports transportation programs at all levels of government, has been questioned for quite some time. First, the fuel tax, which typically is levied on a per gallon basis, fails to automatically keep pace with rising construction costs unless it is indexed to some measure of inflation as is the case in several States. Second, energy, environmental, and economic pressures all point toward improved fuel economy and the substitution of alternative fuels for traditional petroleum-based fuels. These pressures could have substantial long-term implications for traditional fuel tax revenues, although most analysts who have looked at the issue do not believe they will be a large problem for the next 20 years. Third has been the lack of a demonstrated will to raise fuel taxes at the Federal and State levels. In recent years voters have been more willing to impose tolls, sell bonds, or levy special purpose taxes to support transportation investments than to raise fuel taxes. While some of the other revenue sources for surface transportation are more stable than the fuel tax, they currently represent much smaller shares of total transportation financing than the fuel tax, particularly at the Federal level.

## Current Funding for Highways and Transit

A wide variety of revenue sources currently are used to finance surface transportation programs. Fuel taxes, motor vehicle fees and other highway use taxes are used at all levels of government to fund highway and transit programs, with fuel taxes being the most significant of these taxes. State and local agencies also use tolls, general revenues, and a variety of special-purpose taxes to finance highway and transit programs. The private sector owns and operates almost all railroads in the U.S., but a few regional lines have been acquired by public agencies when private firms indicated they would have to abandon those lines.

**Figure 1. Highway & Transit Funding by Level of Government, 2005** Figure 1 shows funding levels for

highway and transit programs by level of government in 2005. Total highway funding was about \$138 billion of which 24 percent was from Federal sources, 48 percent from State revenues, and the remaining 28 percent from local governments. Transit funding in 2004 amounted to \$38.6 billion. Shares from Federal, State, and local governments were 17, 20, and 63 percent respectively.

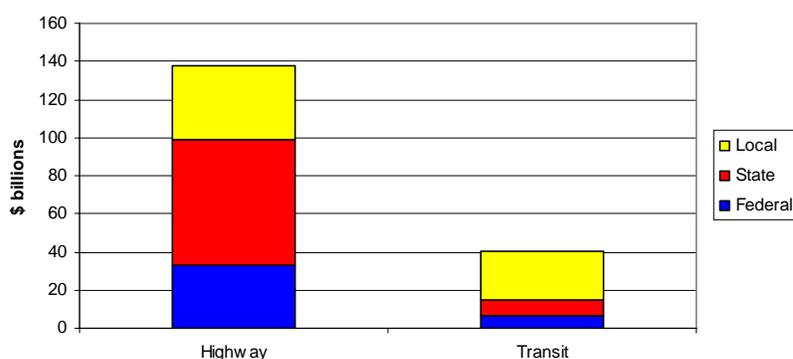


Table 1 presents a more detailed picture of 2005 highway funding. Unlike Figure 1 above, Table 1 includes bond sales by State and local governments. When bond sales are included, revenues for highways in 2005 totaled \$155 billion for all levels of government. Motor fuel and motor vehicle fees account for just over half of those revenues. Tolls represent 5 percent of the total, mostly levied at the State level, and bond proceeds are 11 percent of the total with large amounts being raised at both the State and local levels. Table 2 presents similar information for transit.

**Table 1. 2005 Revenues Used for Highways, By Collecting Agency (Millions of Dollars)**

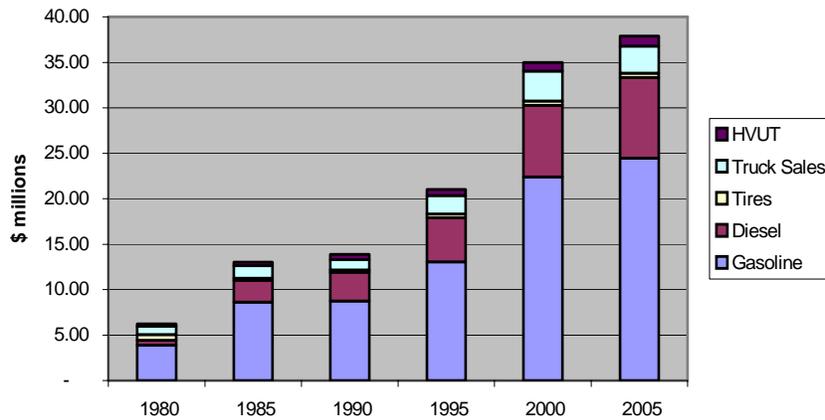
Source	Level of Government						Total	
	Federal		State		Local			
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Motor-Fuel and Vehicle Taxes	\$31,179	20	\$49,176	32	\$2,234	1	\$82,589	53
Tolls	-	-	\$6,356	4	\$1,398	1	\$7,754	5
Property Taxes and Assessments	-	-	-	-	\$7,811	5	\$7,811	5
General Fund Appropriations	\$1,488	1	\$3,384	2	\$17,233	11	\$22,105	14
Other Taxes and Fees	\$388	0	\$4,291	3	\$4,620	3	\$9,299	6
Investment Income and Other Receipts	\$15	0	\$2,897	2	\$5,199	3	\$8,111	5
Bond Issue Proceeds	-	-	\$11,622	8	\$5,400	3	\$17,022	11
Grand Total Receipts	\$33,070	21	\$77,725	50	\$43,895	28	\$154,690	100.0

**Table 2. 2005 Revenues Used for Transit, By Collecting Agency (Millions of Dollars)**

Source	Level of Government						Total	
	Federal		State		Local			
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Fuel Tax	5,484	13.5	459	1.1	183	0.5	\$6,141	15.1
Fares/Other System Revenues	-	-	-	-	11,528	28.4	11,528	28.4
Income Tax	-	-	292	0.7	91	0.2	\$383	0.9
Sales Tax	-	-	2,401	5.9	4,571	11.3	\$6,979	17.2
Property Tax	-	-	0	0.0	565	1.4	\$565	1.4
Other Dedicated Taxes	-	-	994	2.4	1,030	2.5	\$2,027	5.0
Other Public Funds	-	-	1,832	4.5	4,889	12.0	\$6,725	16.6
General Fund	1,371	3.4	2,219	5.5	2,688	6.6	6,278	15.5
Total	\$6,855	16.9	\$8,197	20.2	\$25,546	62.9	\$40,626	100.0

### Federal Revenues Supporting the Highway Trust Fund

**Figure 2. Taxes Supporting the Highway Trust Fund**

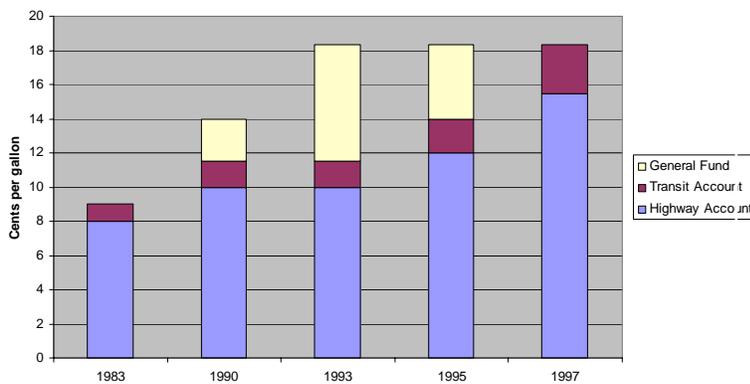


The Federal Highway Trust Fund is supported by taxes on motor fuels and several truck-related taxes. Figure 2 shows trends in revenues from the various Federal highway user taxes since 1980. Receipts from the Federal gas tax (including gasohol) represent about two-thirds of total HTF revenues, diesel taxes 23 percent, and the remaining truck taxes (tire tax, vehicle

sales tax, and Heavy Vehicle Use Tax (HVUT)) about 12 percent.

Figure 3 shows how Federal fuel tax rates have changed since 1983, the first year that a portion

**Figure 3. Federal Gasoline Tax Rates**

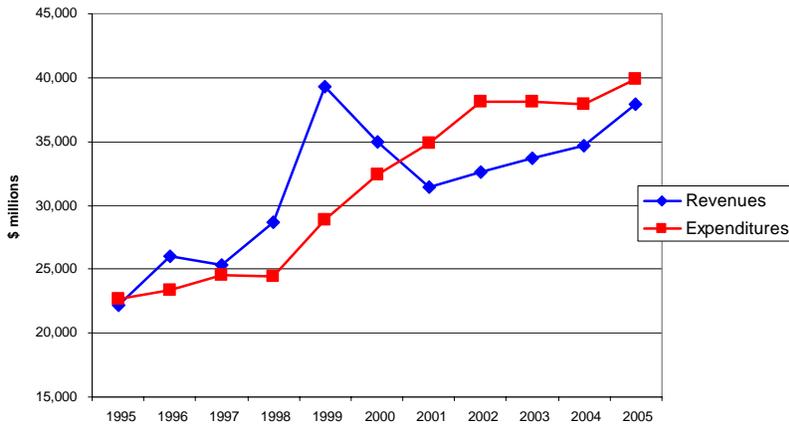


of Federal gasoline taxes was dedicated for transit purposes. In 1990 the gas tax was raised from 9 to 14 cents per gallon with half of that increase going to the General Fund for deficit reduction. In 1993 the gasoline tax was raised another 4.3 cents per gallon, all of which went for deficit reduction. The amount for deficit reduction was reduced to 4.3 cents per gallon in 1995 and in 1997 the remaining 4.3 cents was returned to the Highway Trust Fund. While the

Federal gasoline tax has more than doubled since 1983, the real value is at about the same level in terms of purchasing power.

Highway cost allocation studies have been conducted periodically to estimate the relative costs associated with operations of different vehicle classes. Study results can be used to adjust user fees so that the various vehicle classes come as close as possible to paying their share of highway cost responsibility. Following the 1982 Federal Highway Cost Allocation Study, a 6-cent per gallon “diesel differential” was added to the tax rate on diesel fuel to reflect part of the additional infrastructure costs associated with truck operations. Rates on other truck related taxes were also adjusted and have remained unchanged since 1984. The last Federal Highway Cost Allocation study was conducted in 2000 and concluded that many of the heaviest trucks are paying substantially less than their share of highway costs.

**Figure 4. Revenues vs Expenditures from the Highway Trust Fund 1995-2005** Figure 4 shows the relationship



between HTF revenues and expenditures over the past 10 years. Revenues and expenditures were fairly closely aligned between 1995 and 1997, but between 1998 and 2000 there was a period when HTF revenues exceeded expenditures. Since 2000, however, expenditures have exceeded revenues, which is why the balances in the Highway

Account of the HTF have been declining.

Projections for balances in the Highway and Mass Transit Accounts of the Highway Trust Fund are shown in Table 3. Under current law the Highway Account is projected to have a negative balance of \$700 million dollars at the end of FY 2009. Many factors could affect the actual balance by that time, but the trend is strongly downward, particularly in 2008 and 2009. The status of the HTF after 2009 will depend on decisions made in the next reauthorization that cannot be anticipated at this time.

**Table 3. Projected Cash Balances in the Federal Highway Trust Funds, 2004 - 2009**

	2004	2005	2006	2007	2008	2009
<b>Cash Balance</b>						
Highway Account	10.8	10.6	8.9	7.7	3.5	-0.7
Mass Transit Account	3.8	1.9	6.2	7.0	6.1	4.1
<b>Total</b>	<b>14.6</b>	<b>12.5</b>	<b>15.1</b>	<b>14.7</b>	<b>9.6</b>	<b>3.4</b>

## Trends and Projections in Highway and Transit Revenues

Figure 5 shows the growth in Federal, State, and local highway revenues from 1980 to 2005. The relative shares of total revenues have remained relatively constant over time. Federal revenues were between 21 and 27 percent of total revenues during this period, State revenues between 47 and 53 percent of the total, and local revenues between 24 and 29 percent of the total.

**Figure 5. Federal, State and Local Highway Revenue, 1980-2005**

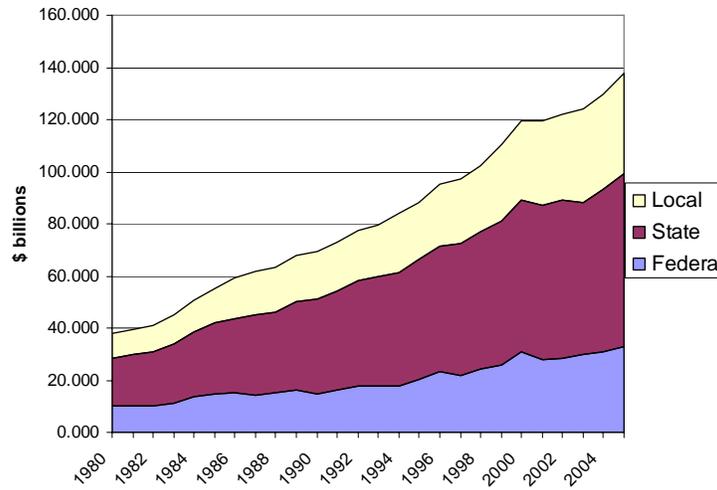
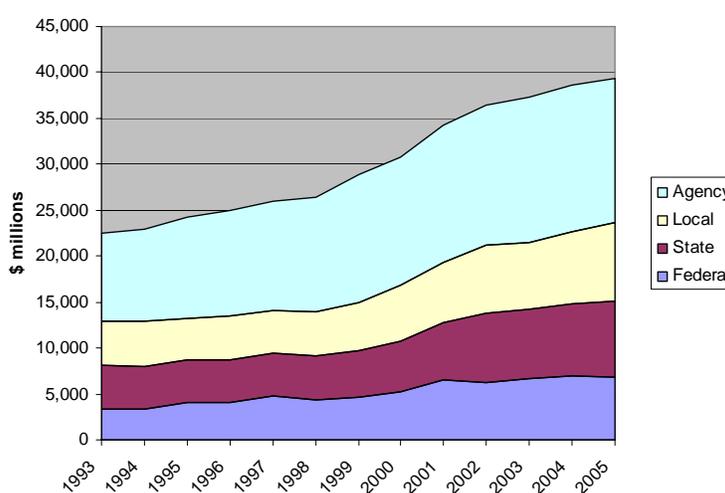


Figure 6 shows the growth in Federal, State, local, and transit agency revenues from 1993-2005. Consistent data on transit revenues are not available prior to 1993. As with highway revenues, the relative shares of revenues have not changed substantially over the 12 year period. Federal revenues have accounted for between 15 and 19 percent of total revenues over the period, State revenues between 18 and 21 percent, local revenues between 18 and 22 percent, and transit agency revenues between 62 and 66 percent of the total.

**Figure 6. Federal, State and Local Transit Revenue, 1993-2005**



**Figure 7. Distribution of State Highway Revenues, 1980-2005**

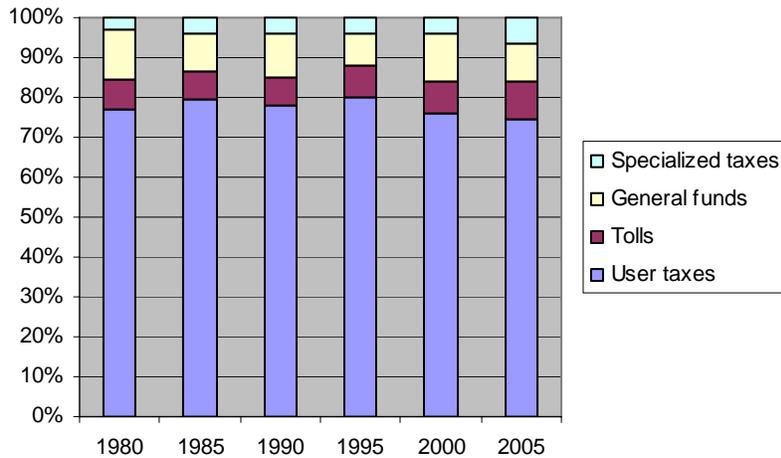


Figure 7 shows the composition of State highway revenues between 1980 and 2005. Fuel taxes, motor vehicle fees, and other traditional highway user taxes account for over 70 percent of total State highway revenues, while tolls, general funds, and other specialized taxes have accounted for the remainder. Shares of each of these revenue sources have remained fairly stable over the period, although other specialized taxes doubled from 3 to 6 percent of total

revenues.

**Figure 8. Distribution of Transit Revenues, 1993-2005**

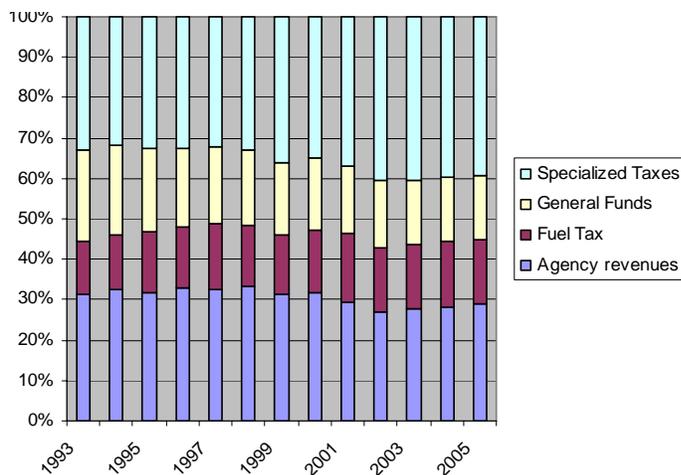


Figure 8 shows the distribution of transit revenues by source since 1993. No one source predominates to the extent that user taxes dominate for highways. Perhaps the biggest change in transit funding has been the growth in property, sales, and other specialized taxes dedicated to transit and the decline in the amount of funding coming from general funds at all levels of government. Specialized taxes now represent the largest source of transit funding, accounting for 40 percent of the total.

A recent National Cooperative Highway Research Board (NCHRP) Report, Future Financing Options to Meet Highway and Transit Needs, has projections of highway and transit revenues through 2017. Table 4 shows baseline forecasts for highway and transit revenues for four types of revenues – direct user fees, indirect user fees, specialized taxes, and direct taxes. These projections assume continuation of existing trends – motor fuel taxes are assumed to grow in proportion to growth in vehicle miles of travel adjusted for projected changes in vehicle fuel efficiency, tolls are assumed to increase at their historical rate of 5 percent a year, specialized taxes are projected to grow at the same rate as long-term GDP, and general taxes are assumed to grow at their historical rates. In the aggregate highway revenues during this period are projected to increase by 2.9 percent annually and transit revenues by 3.5 percent annually. When adjusted for inflation using the conservative Consumer Price Index, real highway revenues are projected to increase by less than 0.5 percent annually and transit revenues by just 1 percent annually. If

trends in construction costs continue to outpace trends in general consumer prices, real revenues for both highways and transit could actually fall relative to construction costs.

**Table 4. Projections of Highway and Transit Revenues, 2007-2017**

Year	User Fees		Taxes		Total
	Direct	Indirect	Specialized	General	
<b>Highway Revenues (\$ billions)</b>					
2007	7.6	84.7	17.5	34.5	144.3
2017	12.4	104.2	26.7	48.7	192.0
Pct. Change	5.0 %	2.1 %	4.3 %	3.5 %	2.9 %
<b>Transit Revenues (\$ billions)</b>					
2007	12.4	6.6	10.9	13.5	43.4
2017	17.8	7.8	16.7	18.9	61.2
Pct. Change	3.7 %	1.7 %	4.4 %	3.4 %	3.5 %

\*Annual Change from 2007 to 2017

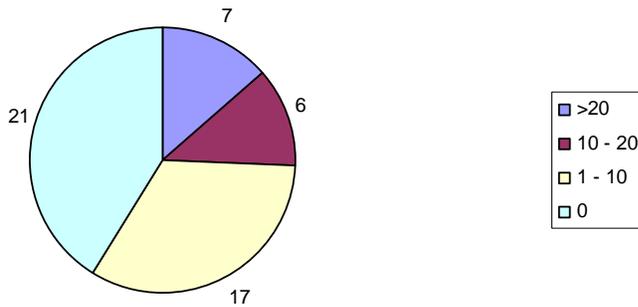
Projections of highway and transit revenues beyond 2017 are more conjectural. Several other briefing papers discuss factors that could affect long term revenues including more stringent fuel economy standards, potentially higher fuel prices, and the switch to alternative energy sources for personal and commercial vehicles. In briefing paper 4C-3 it is estimated that a doubling of fuel economy standards could result in fuel tax revenues remaining virtually constant for the period 2010 to 2050, assuming there were no changes in fuel tax rates. That same paper cites Energy Information Administration projections that a 40 percent increase in the real price of gasoline would lead to a 12 percent reduction in fuel use and hence fuel tax revenues. Shifts to alternative fuels could have even larger impacts on fuel tax revenues unless ways were found to tax those fuels. That would be particularly difficult for plug-in electric vehicles that already are mandated in California, “home-fueling” of vehicles equipped to run on natural gas, or vehicles running on hydrogen. While there is considerable uncertainty about all of these factors, they all hold the potential for seriously eroding fuel tax revenues.

## Conclusions

Fuel taxes historically have been the primary revenue source for Federal and State highway programs, but there are questions concerning whether that role can be sustained in the future. There is always resistance to raising taxes, but the resistance to raising the fuel tax seems particularly strong. Cash balances in the federal Highway Trust Fund have allowed expenditures to exceed revenues for the past several years, but a deficit is projected for the Highway Account of the Highway Trust Fund in 2009 unless either revenues are increased or outlays are reduced.

States likewise are finding that traditional highway user revenues are not keeping pace with highway investment requirements. In many States and local areas voters have expressed a preference for funding specific highway improvement programs from dedicated local option taxes or tolls rather than a general increase in the fuel tax. In fact since 1991 it is estimated that about a third of new limited-access highway mileage has been financed at least in part from tolls. Figure 9 shows the number of States with varying percentages of the highway revenue coming from tolls. In 13 States tolls represent over 10 percent of State highway revenues. Another 17 States have tolls that represent less than 10 percent of their total highway revenues. In States without a tolling tradition, there still is widespread resistance to tolls, but in general there is an

**Figure 9. Number of States with Different Percentages of Highway Revenues from Tolls**



increasing interest in the use of tolls to supplement other highway revenues. One reason that many voters seem to prefer specialized taxes or tolls is that those sources generally are dedicated for specific highway improvements. Voters thus know how and where the proceeds will be spent, unlike fuel taxes that could go anywhere. Most recent studies do not see tolls increasing substantially as a percent of total highway revenues in the next 10 years, but if current federal constraints on tolling the

Interstate System were removed, tolls could become more attractive options for financing high cost transportation improvements. Even if their use doubled, however, tolls would represent only 10 percent of total highway revenues by all levels of government and could make up only a part of the shortfall in highway revenues at the State and local levels.

Recent studies have concluded that motor fuel taxes will remain a viable cornerstone of highway finance for the next 15-20 years. Other revenue mechanisms may be necessary after that time because of anticipated increases in fuel economy, shifts to alternative fuels, and other uncertainties concerning the fuel tax. Revenue uncertainties are not the only issue suggesting that alternatives to the fuel tax be explored. As differentials in vehicle fuel economy grow and as alternative fuels become more widespread, the equity and the efficiency of the fuel tax can be expected to decline. Other more direct user fees such as a mileage-based tax would be preferable to the fuel tax in terms of reflecting the actual use of the highway system, especially if such taxes were also coupled with congestion charges on the most congested highways.

While there are shortfalls in transit funding as there are for highway funding, the long-term viability of the fuel tax is not nearly as important for transit systems as it is for highways. Fuel taxes make up only about 15 percent of total transit revenues, and most of that comes from the Federal Government. Transit has a broader revenue base than highways which is appropriate given the different purposes for which transit is provided. Dedicated local taxes such as sales and property taxes have become an increasingly important part of overall transit funding and that trend can be expected to continue.

**CONSOLIDATED COMMENTS FROM MEMBERS OF THE BLUE RIBBON PANEL OF TRANSPORTATION EXPERTS - PAPER 5A-01**

Several reviewers combined their comments as follows:

The difficulty with assessing the revenue potential of the current structure of financing sources for the surface transportation system, is that while framed in terms of understanding the role and sustainability of the current system, that system is in a high state of flux. In contrast to the current state of flux, however, the charge was to write the papers in the context of the current

frameworks of policy and technology. That is understandable, given the complexity of the overall task facing the Commission.

The following are more specific comments:

**Fuel Taxes** – The financial productivity of the conventional “gas tax” is eroding. That is, there is a growing disparity in costs for replacing and improving the road system and the revenues that the fuel taxes generate. This is for several reasons, among them:

- The political difficulty of raising the gas tax to adjust for inflation.
- The many worthwhile “quality escalations” in the cost of highway construction for improvements in safety, infrastructure design, environmental protections, and the like.
- Improved automotive fuel economy and the growing use of alternative fuels.
- The technological advances in the application of electricity as the “fuel” for the automotive vehicle fleet that will prevent agriculturally-based liquid fuels from taking the position in the revenue system that will be opened by the diminishing role of petroleum based fuels.

Based in these factors, a strong case can be made that the current system of relying predominantly on the fuel tax for financing the U.S. road system, as well as for significant federal funding for transit, is obsolescent and losing its financial productivity and resilience. The effectiveness of the fuel tax is being eroded by the increasing cost of infrastructure and by the improving fuel efficiency of the U.S. vehicle fleet.

More importantly, that effectiveness is on the verge of receiving a frontal assault from major increases in the fuel mileage of today’s production line hybrid-electric vehicles; the Toyota Prius now gets 60 miles per gallon, while its larger sibling the Camry hybrid now gets 35-40 miles per gallon. More importantly, there is the near-term promise of an improvement of 5 to 8 times in fuel mileage as plug-in hybrid-electric vehicles that will get 100-150 miles per gallon fuel mileage equivalent arrive on the showroom floor by the end of this decade.

The overall impetus for these developments stems from the twin drives toward reducing petroleum consumption to reduce, one, our dependence on insecure sources of foreign oil and, two, greenhouse gas emissions.

Given changing technology, the fuel tax dedicated to road financing is likely to erode at an increasingly higher rate, unless there are very large increases in the per-gallon tax, or very high sales taxes are imposed. It is therefore prudent to look at other sources of revenue to sustain the transportation system. The commentary below generally recognizes that we are facing such a watershed in the financing of our transportation system.

What will take the place of the gas tax? Among the options are:

**VMT** – Charges for VMT are looked upon as one of the principal candidates to eventually replace the fuels tax. They are based on the general use of the road system, and may include a weight component above a certain gross weight threshold.

**Tolls** – Tolls generally fall into two categories, facility tolls and system-wide tolls.

Facility Tolls. Tolls for specific facilities have long been a source of financing, particularly for bridges or tunnels. Tolled turnpikes, a staple of the early development of our road system, played a significant role in the pre-Interstate period of 20<sup>th</sup> century road financing, particularly in some of our country’s more populated regions and highly traveled transportation corridors. In recent years they are coming back, sometimes with public financing, but also – and it appears more frequently – with a mix of public and private sources of financing.

Facility tolls can be used to finance the facility itself. Or the toll revenues may be used to cross-subsidize the capital or operating costs of transit services when it is deemed uneconomical or uneconomic to build additional road capacity to serve peak hour road traffic volumes.

System-wide Tolls. At the current level of technology development, it is possible to support the collection of system-wide tolls for all vehicles, or designated classes of vehicles, on a defined network (or “system”) of roads. Currently, system-wide tolling is in place and operating in areas of Switzerland and Germany. Clearly, such a system is feasible and it can be established within the same order of magnitude of technology that supports today’s cellular communications. This type of toll collection is certainly a strong candidate as a future replacement for the fuel tax.

**Congestion Pricing** – While its name stems from its function of regulating the flow of traffic at peak hours, the revenues it generates may also serve the same purposes described under “Facility Tolls” above. Perhaps the most important function of congestion pricing is to keep the traffic moving at the ideal speed to achieve maximum throughput. For at optimal speed, the vehicle throughput may be as high as 2,000 vehicles per hour, compared to the approximately 500 vehicles per hour that move through a congested lane.

**Public-Private Partnerships** – These partnerships can take a wide variety of forms, but most often reflect an investment in a project that is tied to a current value (exchange of property for money), a value to be created by the project (the tolls from a bridge, for example), or rights to develop a larger facility and manage it under a franchise or concession agreement over time.

Highlighting these general sources of revenue does not mean that government funding from general revenues, from system operations, from sales and real estate taxes, motor vehicle fees, or other sources are not important. It is likely, however, that they will not be the dominant revenue sources that drive the transportation system.

Clearly, it is time to prepare for transition to new sources of transportation user fee revenues as the base load of financial support for the U.S. surface transportation system.

That transition must address the following challenges: –

- Mobilizing technological and systems development capabilities that exist now but have not been integrated into the efficient, reliable, interoperable systems that we need to interconnect the various financing approaches and levels of government.

- Overcoming institutional rigidities that are tied to approaches, structures, and technologies that once were effective but now – and particularly in the future – limit our ability to plan, design, fund, and implement the complex systems we will have to create.

A second issue is that we have a blend of sources of financing that includes general revenues, sources that can be classed as user fees, and financing from private capital markets, which can have the characteristics of either, depending on the structure of the particular financing. The challenge here will be to understand and integrate these sources of financing, and use them responsibly in the framework of what might be called a “business approach to administering and financing our transportation system.” Clearly, selling working assets to buttress general revenues is not a prudent use of assets, except in extreme cases. Moving in the direction of these more complex forms of funding and financing will require a degree of sophistication in government accountability, staffing, organization, planning, and analysis more challenging than any we have seen before. To operate a system of the enormity and complexity that we are moving toward will require a step-level improvement in government capabilities at all levels.