NCHRP

Web-Only Document 102:

Future Financing Options to Meet Highway and Transit Needs

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Contractor's Final Report for NCHRP Project 20-24(49)
Submitted December 2006

National Cooperative Highway Research Program
TRANSPORTATION RESEARCH BOARD
OF THE NATIONAL ACADEMIES

ACKNOWLEDGMENT

This work was sponsored by the American Association of State Highway and Transportation Officials (AASHTO), in cooperation with the Federal Highway Administration, and was conducted in the National Cooperative Highway Research Program (NCHRP), which is administered by the Transportation Research Board (TRB) of the National Academies.

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FOREWORD

By Andrew C. Lemer
Staff Officer
Transportation Research Board

This report assesses the viability of a range of conventional and innovative options for financing investments and operations of highway and transit systems. Such options can help reduce the gap between the funds being generated by currently used financing methods and government agencies' estimated needs for funds. The report will be useful to senior federal, state, and local government officials and other policy makers.

The challenges government officials and other policy makers face in their efforts to secure sustainable resources and means for financing the nation's transportation system are immense. Demand is expanding, and its patterns are shifting—exceeding the existing system's capacity. Increasing congestion in urbanized areas lengthens commuting times, obstructs deliveries, and imposes costs on workers and businesses. Our desires to enhance our economic competitiveness, personal mobility, and environmental quality require that we improve the system's efficiency. Current options (for example, user fees, tolls, bonding, and use of general revenue) are unlikely to meet well-documented future resource needs; the Federal Highway Trust Fund is not able to keep pace with even the currently authorized highway and transit programs.

To assist agencies in meeting these challenges, the National Cooperative Highway Research Program (NCHRP) is conducting several research studies on topics requested by the American Association of State Highway and Transportation Officials (AASHTO). This report is the final product of NCHRP Project 20-24(49), "Future Financing Options to Meet Highway and Transit Needs," one of these studies. The NCHRP 20-24 project series was initiated in 1988 to address problems experienced by top management of state departments of transportation (DOTs). As of April 2006, more than 54 specific projects have been undertaken addressing topics in finance, human resources, organization structure, strategic planning, leadership, business practices, and other areas of direct concern to high-level DOT executives.

The objective of NCHRP Project 20-24(49) was to present options for all levels of government to reduce the highway and transit funding deficits on a sustainable basis. A research team led by Cambridge Systematics performed the study in three phases. Phase 1 entailed a review of estimates of investment needs and available revenues available at all levels of government, using information available from the U.S. Department of Transportation (U.S. DOT), AASHTO, and other sources, to identify the likely shortfall over the coming decade. In the second phase, the researchers examined the advantages and limitations of a wide range of conventional and innovative revenue and financing options—such as fuel taxes, tolls, motor-vehicle fees, transit fares, local option taxes, and impact and development fees—considering their ability to maintain purchasing power over time, ease of acceptance and deployment, collection efficiency, and other factors influencing their attractiveness to state and local agencies. In the final phase, the team explored how funding options might be used in combination to reduce the resource shortfall identified in Phase 1, considering costs, risks, and impediments to implementation.

The results presented in this report include an assessment of options for raising revenue; approaches to using innovative financing methods and public-private partnerships for applying these revenue-raising options; and strategies that federal, state, and local government agencies might pursue to reduce the estimated gap between available funds and needs. The researchers reviewed others' estimates of the magnitude of that gap at local, state, and federal levels for the coming decade, 2007–2017. They used these estimates to assess how significant a contribution various revenue and financing options might be able to make toward closing the gap. The report concludes with a discussion of implementation strategies for highway and transit funding initiatives, presenting several case studies of successful initiatives.

Author Acknowledgments

The research reported herein was performed under NCHRP Project 20-24(49) by Cambridge Systematics in cooperation with Mercator Advisors LLC, Alan E. Pisarski, and Martin Wachs. Mr. Gary Maring of Cambridge Systematics was the Project Director and Principal Investigator. The other authors of this report are Iris Ortiz, Arlee Reno, and Lance Grenzeback of Cambridge Systematics; Bryan Grote, James Taylor, and David Seltzer of Mercator Advisors; and consultants Alan Pisarski and Martin Wachs.

Abstract

This report presents options for all levels of government to close the nation's highway and transit investment deficits on a sustainable basis. The study estimated the needs and revenues available at all levels of government from 2007 to 2017; examined existing and emerging revenue options; and demonstrated potential portfolios of funding options to close the revenue gap. The report also discusses necessary implementation steps to help secure the needed additional transportation investment.

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Executive Summary

The objective of this project is to present options for all levels of government to close the nation's highway and transit investment deficits on a sustainable basis. The study was conducted in three phases.

- Phase 1 estimated the needs and revenues available at all levels of government from 2007 to 2017;
- Phase 2 examined existing and emerging revenue options; and
- Phase 3 demonstrated potential portfolios of funding options.

Overall Study Conclusions

- **Motor fuel and vehicle taxes and fees are the mainstay of Federal and state highway programs, are a major contributor to transit funding, and will continue those roles for the horizon of this study**. A major challenge will be to keep them responsive to growing needs, including the impacts of cost inflation.
- **The Federal Highway Trust Fund (HTF) faces a very short-term funding challenge before the end of SAFETEA-LU**. A specific illustrative scenario that would solve both this short-term solvency crisis as well as provide growing funding through the next authorization cycle has been demonstrated in this study.
- **In addition to traditional methods, the significant gap-closing potential of other emerging revenue strategies at all levels of governments has been demonstrated**. The most successful programs to date have blended a menu of funding tools that complement and, in some cases leverage, the traditional sources.
- **The key issue is how to successfully implement these strategies at all levels of government over the next decade to achieve the investments that are needed in our surface transportation systems**. Review of successful implementation at all levels of government suggests that most, if not all of the following steps, will be needed for successful implementation of major revenue-raising initiatives:

  1. Develop a consensus on the scope of current and future transportation investment needs and the importance of addressing them;
  2. Develop a specific plan and program of investments for which additional funding is needed and demonstrate the benefits expected from the proposed investments;

3. Establish clear roles, responsibilities and procedures for executing the plan and proposed improvements;
4. Describe proposed revenue sources in detail and provide clear rationales for their use;
5. Design and carry out a public education and advocacy campaign;
6. Develop sustained leadership and support for the initiative; and
7. Lay out a clear timetable for action.

- **Longer-term, fuel taxes will be vulnerable to fuel efficiency improvements and penetration of alternative fuels and propulsion systems for motor vehicles**. Further, continuing reliance on more use of fossil fuel will likely run counter to long-term environmental and energy needs and policies. Several recent national policy studies have recommended shifting to nonfuel-based revenue sources such as VMT fees over the next 15 to 20 years. Current innovations in tolling and pricing can help lead the way to this transition.

The remainder of the Executive Summary highlights the major findings of each of the three phases of the study. The detailed assumptions and analyses behind the findings and conclusions are included in the main report and its appendices.

The key finding from Phase 1 is that a large gap exists between investment needs for the nation's highway and transit systems and the revenues available to fund those investments.

Needs in this study are calculated by adding noncapital highway and transit operations, maintenance, and administration costs (O&M) to capital investment requirements for the system as reported in the 2004 U.S. DOT Conditions and Performance Report to Congress (C&P) and adjusting for inflation of costs to the current year (including the increasing cost of construction shown in Figure ES.1, Highway Producer Price Index, which has recently been increasing more rapidly than consumer prices). The results show that:

- **A total annual investment of $238 billion is needed to "maintain" the nation's highway and transit systems in 2007, increasing to $319 billion by 2017**;

- **A total annual investment of $293 billion is needed to "improve" the systems in 2007 increasing to $387 billion in 2017**;

- **Available highway and transit revenues for all levels of government to fund these needs are estimated to be only $188 billion in 2007 increasing to $253 billion in 2017; and**

- **These estimates result in an average annual gap to "maintain" the nation's highway and transit systems of over $50 billion and an average annual gap to "improve" of over $100 billion as shown in Figure ES.2**.

Figure ES.1 BLS Producer Price Index
Highway and Street Construction

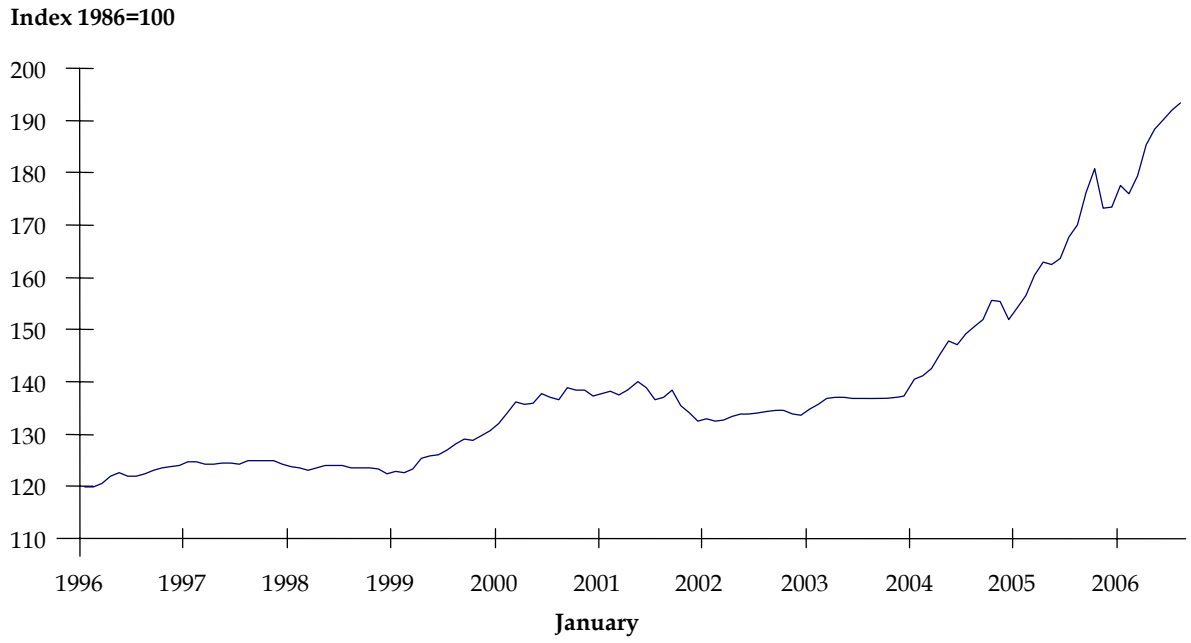
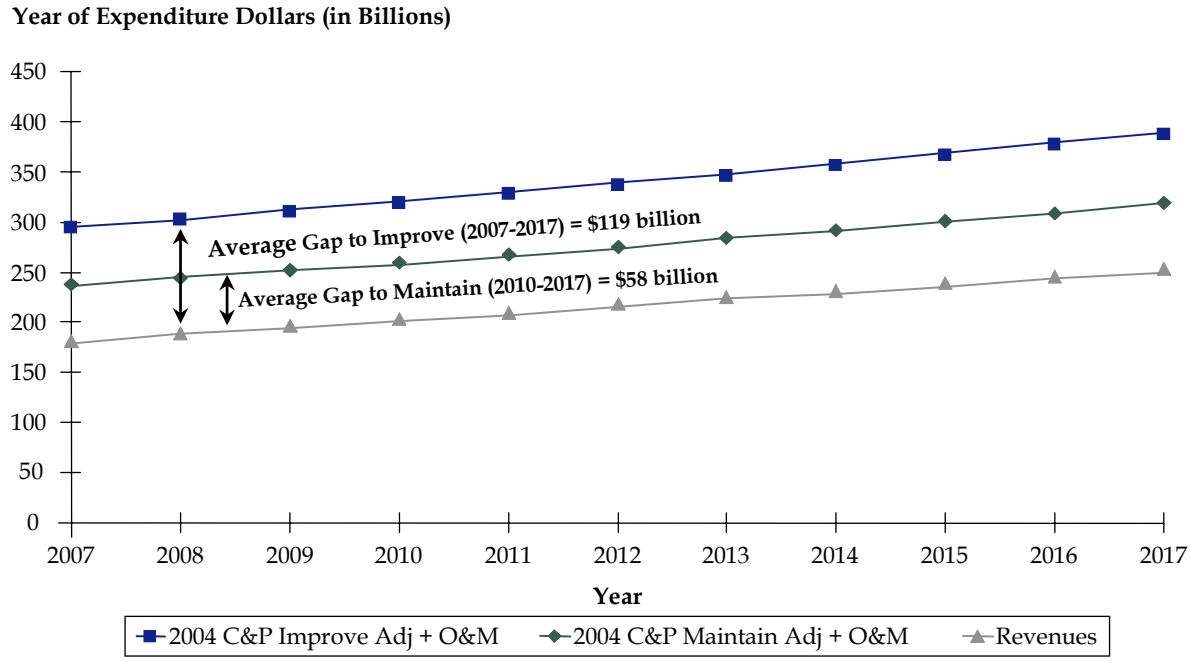


Figure ES.2 Highway and Transit Needs and Revenues
2004 C&P Adj + O&M



The key finding of Phase 2 is that a wide menu of current and emerging funding options are available to Federal, state, and local governments to help close the funding gap.

Table ES.1 provides a comprehensive listing of the specific revenue measures; their potential use for highway and transit funding, both for preservation and new capacity; their likely use as program-wide and/or project-specific tools; their potential yield in qualitative terms (high, medium, low), and a listing of the locations where these measures already are known to be used. A critical review of these options suggests that:

- **Fuel and vehicle taxes provide all of the revenues going into the Highway Trust Fund (HTF) and have consistently provided about 75 percent of current state highway revenues over the last 25 years. They are likely to continue to be the mainstay of Federal and state funding programs for at least the period of this study. Assuring that they keep up with needs, including the inflation of costs, must be a centerpiece of any short-term effort to close the funding gap**. Adopting multiple fuel-oriented taxes (e.g., gallonage, sales taxes, and/or petroleum business or franchise taxes) has proven successful in several states and has future potential. Vehicle registration fees play an important second tier role in most states and will continue to be an important revenue source for the foreseeable future. Several states have found that dedication of motor vehicle sales taxes for transportation purposes can be an important additional tier of vehicle fees that are inflation responsive.

- **Tolling, especially in the most congested urban corridors, is becoming an increasingly important capacity expansion tool**. SAFETEA-LU significantly expanded the authority for states to advance toll and value pricing projects; many more states and local authorities are considering tolling options for capacity expansion, and pricing is emerging as an important congestion management tool.

- **Dedicated state and local taxes such as sales taxes and beneficiary fees have proven very effective for state and local government use for both highway and transit programs and should be considered more widely**. State and local sales tax referenda have been particularly successful for transportation purposes in recent years. Beneficiary charges are more of a niche tool, particularly for faster growing localities, and can be an important part of a local package of strategies. Transit also has utilized an array of other dedicated fees such as rental car fees, mortgage or real estate transfer fees, and lottery revenues.

- **State and local governments continue to rely on general fund appropriations to support surface transportation needs**. Local governments particularly rely on general funds to support their highway expenditures, with about 46 percent of local highway revenue coming from that source in 2004. Competition with other program areas such as health care and education may limit expansion opportunities from general sources.

- **The use of existing and emerging finance tools and public private partnerships (PPP) can play an important role in raising additional investment capital and advancing project delivery**. These tools normally do not represent new resources per se, but rather, can be used to leverage the revenue mechanisms listed in Table ES.1.

Table ES.1 Candidate Revenue Sources

Specific Revenue Tool	Modes: Highway/Bridge: Preservation, Maintenance	Modes: Highway/Bridge: New Capacity	Modes: Transit: Operations, Maintenance	Modes: Transit: Capital	Scope: Program	Scope: Project	Yield: Potential[a] Yield	Locations Used
Fuel Taxes								
Motor fuel excise (per gallon) tax	●	●		●	●		H	All states, Federal
Indexing of the motor fuel tax (can be indexed to inflation or to other factors)	●	●		●	●		H	FL, IA, KY, ME, NE, NC, PA, WV
Sales tax on motor fuel[d]	●	●		●	●		H	CA, GA, HI, IL, IN, MI, NY
Petroleum franchise or business taxes	●	●		●	●		H	NY, PA
Vehicle Registration and Related Fees								
Vehicle registration and license fees	●	●			●		H	All states
Vehicle personal property taxes	●	●			●		M	CA, KS, VA
Excise tax on vehicle sales dedicated to transportation	●	●			●		H	CT, IA, KS, MD, MI, MN, MO, NC, NE, OK, SD, VA; Federal for heavy trucks
Tolling, Pricing, and Other User Fees								
Tolling new roads and bridges		●	●	●		●	M	About half of states (e.g., TX, FL, VA)
Tolling existing roads	●	●	●	●		●	L	VA proposed, others considering
HOT lanes, express toll lanes, truck toll lanes		●	●	●		●	M	CA, CO, GA, MN, TX
VMT fees	●	●	●	●	●		H	OR testing; recommended by 15 state-pooled fund study
Transit fees (fares, park-and-ride fees, other)			●		●		H	All transit agencies
Container fees, customs duties, etc.		●			●	●	M	CA
Beneficiary Charges and Local Option								
Dedicated property taxes	●	●	●	●	●		H	Many local governments
Beneficiary charges/value capture (impact fees, tax increment financing, mortgage recording fees, lease fees, etc.)		●		●		●	L	Many states and localities (e.g., CA, FL, OR, NY)
Permitting local option taxes for highway improvements								
• Local option vehicle or registration fees	●	●			●	●	M	AK, CA, CT[b], CO, HI, ID, IN, MS[b], MO, NE, NV, NH, NY, OH, SC, SD, TN[b], TX, VA[b], WA, WI
• Local option sales taxes	●	●			●	●	H	AL, AZ, AR, CA, CO, FL, GA, IA, KS, LA, MN, MO, NE, NV, NM, NY[b], OH, OK, SC, TN, UT, WY
• Local option motor fuel taxes	●	●			●	●	M	AL, AK[b], FL, HI, IL, MS, NV, OR, VA, WA
Permitting local option taxes for transit								
• Local option sales taxes			●	●	●	●	H	AL, AZ, CA, CO, FL, GA, IL, LA, MO, NV, NM, NY, NC, OH, OK, TX, UT, WA
• Local option income or payroll tax			●	●	●	●	M	IN, KY, OH, OR, WA
Other Dedicated Taxes								
Dedicate portion of state sales tax	●	●	●	●	●		H	AZ, CA, IN, KS, MA, MS, NY, PA, UT, VA
Miscellaneous transit taxes (lottery, cigarette, room tax, rental car fees, etc.)			●	●	●	●	L	Various states and localities
General Revenue Sources								
General Revenue[c]	●	●	●	●			H	Most states and localities

[a] Potential Yield; H= High, M= Medium, L= Low.

[b] Revenues go into General Fund but can be earmarked or used for transportation.

[c] For purposes of this report, the leveraging of tax subsidies through tax credit bonds and investment tax credits is treated effectively as producing revenue from general fund sources for transportation.

[d] In some states, revenues from sales taxes on motor fuel are not dedicated or only partially dedicated to fund transportation needs.

The key finding of Phase 3 is that closing the funding gap is possible but will require a concerted effort at all levels of government.

Table ES.2 highlights the revenue potential of the most promising options at each level of government. The key assumptions for the analysis are that Federal HTF tax changes would start at the beginning of the next authorization period in 2010, except that eliminating HTF exemptions and realizing interest earnings on HTF balances are assumed to be addressed through the budget process beginning in 2008. Other Federal revenue and tax strategies that are independent of surface reauthorization are assumed to start in 2007. State and local revenue enhancements are assumed to be gradually phased in through 2010.

At the Federal level, we see these opportunities:

- **Highway Trust Fund Revenue Measures**
  - **Fuel tax strategies have the largest potential for impacting HTF revenues in the time period considered for this study**. For example, $25 billion could be raised per year and almost $203 billion cumulatively from 2010 to 2017 by retroactively indexing fuel taxes to 1993 to recoup losses due to inflation (i.e., 10-cent fuel tax increase in 2010), and indexing thereafter. Recouping half the inflation loss since 1993 would require a 5-cent increase in 2010 and with indexing forward would raise an average of $14 billion per year and $113 billion cumulatively by 2017. Alternatively, a sales tax on motor fuel could be implemented; for example, a 3 percent sales tax on fuel would raise an average of $12 billion per year.
  - **Imposition of additional Federal vehicle taxes (e.g., reinstituting a Federal light-duty vehicle sales tax) would be the next most effective strategy**. A 3 percent new vehicle sales tax would generate about $18 billion annually and $141 billion cumulatively through 2017.
  - **Eliminating HTF exemptions and recapturing interest on HTF balances would add modest additional resources during this period**. For this study, we have assumed that the cost of the remaining HTF exemptions would be shifted to the general fund starting in 2008, as proposed in the President's 2006 budget and that interest earnings would be credited to the HTF starting in 2008.
- **Other Potential Federal Revenue Measures.**
  - **Other potential Federal strategies that could be used to improve freight and intermodal systems include customs duties, investment tax credits, and container fees**. If proposals for these three tools were implemented in combination, they could raise $7.2 billion per year and $71 billion cumulatively for intermodal freight improvements.
  - **Finally, recent tax credit bonds proposals could raise up to $55 billion over the next decade for a broad array of surface transportation improvements**.

Table ES.2 Potential Contribution of Short-Term Funding Mechanisms to Federal, State, and Local Highway and Transit Needs

Year of Expenditure Dollars

Short-Term Funding Mechanisms	Revenue Generation 2010	Revenue Generation 2017	Average Annual Revenue 2010 to 2017	Revenue Generation Cumulative 2007 to 2017	Comments
Federal Revenue Options to Increase Highway Trust Fund Revenues					
Index Federal fuel taxes retroactive to 1993 to capture full loss due to inflation	$19.4 billion	$31.7 billion	$25.3 billion	$202.6 billion	Would result in 10-cent fuel tax increase in 2010 with indexing to CPI thereafter.
Capture half of the loss due to inflation since 1993	$9.6 billion	$19 billion	$14.1 billion	$113 billion	Would result in 5-cent fuel tax increase in 2010 with indexing to CPI thereafter.
Index Federal fuel taxes starting in 2010	$0.8 billion	$7.6 billion	$4.0 billion	$32.3 billion	Index fuel tax rates to CPI starting in 2010; first year of next reauthorization cycle.
Implement motor fuel sales taxes at the Federal level	$10.8 billion	$14.0 billion	$12.3 billion	$98.4 billion	Assume 3 percent sales tax on motor fuels, starting in 2010.
Reinstitute Federal light duty new vehicle sales tax at rate of 3 percent	$15 billion	$20.4 billion	$17.6 billion	$141 billion	Seven percent tax phased out in 1971. Assume tax is reinstituted at 3 percent in 2010 and deposited to HTF.
Index Heavy Vehicle Use Tax (HVUT) retroactive to 1997	$2.1 billion	$3.7 billion	$2.9 billion	$21.3 billion	Has been fixed at maximum of $550 since 1984; assume indexing retroactive to 1997 to capture one-half loss due to inflation.
Index HVUT starting in 2010	$30 million	$374.3 million	$200 million	$1.5 billion	Assume indexing to CPI implemented in 2010.
Eliminate exemptions to HTF starting in 2008	$1.2 billion	$1.3 billion	$1.2 billion	$12.3 billion	As proposed in President's 2006 budget; shift exemptions to general fund.
Recapture interest on HTF balances starting in 2008	$0.5 billion	$0.5 billion	$0.5 billion	$5.0 billion	Depends on HTF balances; estimates assume minimal balances through next reauthorization cycle.
Other Federal Revenue Options					
Authorize tax credit bonds (modeled after the Senate-proposed "Build America Bonds" – assumes $5 billion in net proceeds per year)	$5 billion; General Fund supported	$5 billion	$5 billion	$55 billion	Debt-oriented financing technique that leverages a Federal tax subsidy to generate new transportation funding.
Utilize 5 to 10 percent of current Customs duties for port and intermodal improvements	$1.7 billion at 5 percent $3.3 billion at 10 percent	$2.2 billion at 5 percent $4.5 billion at 10 percent	$1.9 billion at 5 percent $3.9 billion at 10 percent	$20.0 billion at 5 percent $40.1 billion at 10 percent	These funds would be set aside for port and intermodal purposes; 30 percent assumed to offset highway needs, such as intermodal connectors.
Authorize freight/intermodal investment tax credits (assumes $500 million annual limit on monetization of 20-year tax credit streams)	$1.2 billion	$1.2 billion	$1.2 billion	$13.2 billion	Modeled after the Graves proposal. Only 15 percent of ITCs are estimated to fund highway or transit-related needs such as highway-rail grade crossings.
Container fees	$1.7 billion	$2.7 billion	$2.2 billion	$17.5 billion	Start in 2010; applied on all import and export containers

Table ES.2 Potential Contribution of Short-Term Funding Mechanisms to Federal, State, and Local Highway and Transit Needs (continued)
Year of Expenditure Dollars

Short-Term Funding Mechanisms	Revenue Generation 2010	Revenue Generation 2017	Average Revenue 2010 to 2017	Revenue Generation Cumulative 2007 to 2017	Comments
State Revenue Options					
Index state motor fuel taxes	$1.4 billion	$6.5 billion	$3.8 billion	$31.9 billion	If all states indexed fuel taxes by 2010.
Increase state motor fuel taxes to catch up for inflation losses since 2000	$6.6 billion	$8.6 billion	$7.6 billion	$70.0 billion	If all states were to catch up for inflation losses by 2010; results in average 5.2 cent increase.
Implement motor fuel sales taxes	$8.9 billion	$11.6 billion	$10.1 billion	$94.3 billion	Three percent assumed dedicated to transportation.
Raise motor vehicle registration fees to keep up with inflation	$1.8 billion	$6.4 billion	$4.0 billion	$33.4 billion	If all states were to raise in concert with inflation starting in 2007.
Use vehicle sales tax for transportation	$6.2 billion	$8.4 billion	$7.2 billion	$66.6 billion	If all states who have sales tax dedicate at least 3 percent of vehicle sales tax to transportation.
Portion of state sales tax dedicated to transportation	$9.0 billion	$12 billion	$10.5 billion	$108.8 billion	Assume one-half percent dedication.
Increase tolling/pricing revenues (above current 5 percent per year increase)	$0.2 billion	$2.4 billion	$1.1 billion	$8.9 billion	Estimate based on aggressive use of tolling and pricing opportunities in SAFETEA-LU.
VMT fees (future); transition from short term toll/pricing innovation					High potential but widespread deployment assumed after 2015.
Local Revenue Options					
Increased use of specialized dedicated local taxes, e.g., local option taxes, impact fees, miscellaneous transit fees	$5.3 billion	$17.6 billion	$10.8 billion	$96.2 billion	Assume more aggressive growth rate of last 10 years continues.

At the state and local level we see the following opportunities to raise additional revenue:

- **At the state level, fuel tax strategies also have the largest potential for increasing revenues in the time period considered for this study**. Specifically, about $21.5 billion could be raised per year and $196 billion cumulatively from 2007 to 2017 from the following combined strategies:
  - Index state fuel taxes;
  - Recapture purchasing power back to 2000; and
  - Add sales tax on fuel.

- **Vehicle taxes, another mainstay of state highway revenues, are an effective strategy with the potential to raise about $11 billion annually and $100 billion cumulatively through 2017 by**:
  - Increasing vehicle registration rates in concert with inflation; and
  - Dedicating sales tax on vehicle purchases to transportation.
- **Initiatives to dedicate small portions of state sales taxes to transportation, most notably for transit, have been successful in a number of states and if implemented more widely (i.e., one-half percent of state sales tax dedication) could generate about $10 billion annually and $109 billion cumulatively through 2017**.
- **Additional nationwide use of dedicated taxes such as local option taxes, beneficiary charges, and other special fees for both highway and transit programs could generate an additional $11 billion per year and $96 billion cumulatively**.

Gap Closing Potential of Packages of Funding Measures

The annual and cumulative national gap-closing potential of two illustrative funding packages were tested as described in Table ES.3.

Table ES.3 Description of National Gap Closing Scenarios

Scenario 1 – Aggressive	Scenario 2 – Less Aggressive
This scenario chooses actions from Table ES.2 at their most aggressive levels as follows: • Federal fuel tax increase of 10 cents plus indexing; • Other HTF enhancements; • Freight revenue enhancements; • State fuel tax increases averaging 5 cents with indexing; • State sales taxes on fuel, vehicles, and general one-half cent; • Aggressive tolling; and • Local option taxes, beneficiary charges, transit fees, etc.	This scenario chooses the following actions from Table ES.2: • Federal fuel tax increase of 5 cents plus indexing; • Other HTF enhancements and some freight revenue; • State sales tax on fuel, motor vehicles, and general one-half-cent sales tax; • Tolling; and • Local option, beneficiary, transit fees, etc.

Note: Further scenario detail and impacts are shown in Section 6.0 of the report.

Their gap closing potential is illustrated in Figure ES.3 and the specific results are described below.

- **Scenario 1, a full aggressive package of revenue enhancement strategies at all levels of government, would**:
  - **Fully close both the national annual gap to maintain by 2017 and the cumulative gap to maintain through 2017; and**
  - **Close the national annual gap to improve by 2016 and the cumulative gap to improve through 2017 by almost 75 percent**.
- **Scenario 2, a less aggressive package of revenue enhancement strategies would**:
  - **Fully close both the national annual gap to maintain by 2017 and the cumulative gap to maintain through 2017; and**
  - **Close the national annual gap to improve by 76 percent by 2017 and the cumulative gap to improve through 2017 by about 56 percent**.

In addition to these gap closing scenarios which apply to all levels of government, a specific Federal Highway Trust Fund enhancement strategy was tested as illustrated in Figure ES.4. This illustrative Federal revenue scenario consists of the following measures:

1. Eliminate the cost to the HTF of certain Federal excise exemptions beginning in 2008;
2. Credit interest earnings on HTF balances to the HTF beginning in 2008;
3. Increase the Federal fuels taxes by 5 cents per gallon beginning in 2010 (this would effectively recapture half of the purchasing power lost due to inflation since the last fuels tax increases in 1993); and
4. Index the Federal fuels taxes to the Consumer Price Index (CPI) beginning in 2011.

Implementation of the first two measures beginning in 2008 would generate an estimated $2.6 billion for the Highway Account and $3.6 billion for the HTF overall during the final two years of SAFETEA-LU – revenue likely sufficient to avoid the impending solvency crisis and enable full funding of the authorized amounts for highway and safety programs through 2009. Implementation of the other two measures would put Federal spending on a path supporting highway and transit investments that would fully meet the levels required to maintain system condition and performance. In aggregate, the package of revenue measures in this scenario would generate about $125 billion of additional revenue for highway and transit system investments through 2017.

Implementation of all four measures contained in this scenario would enable significantly higher funding levels in the next authorization cycle. It is estimated that the combined Federal highway and transit funding could increase by about 39 percent from the SAFETEA-LU authorization level of nearly $54 billion in 2009 to about $75 billion by 2015.

Figure ES.3 Annual Gap Closing Potential of Revenue Scenarios

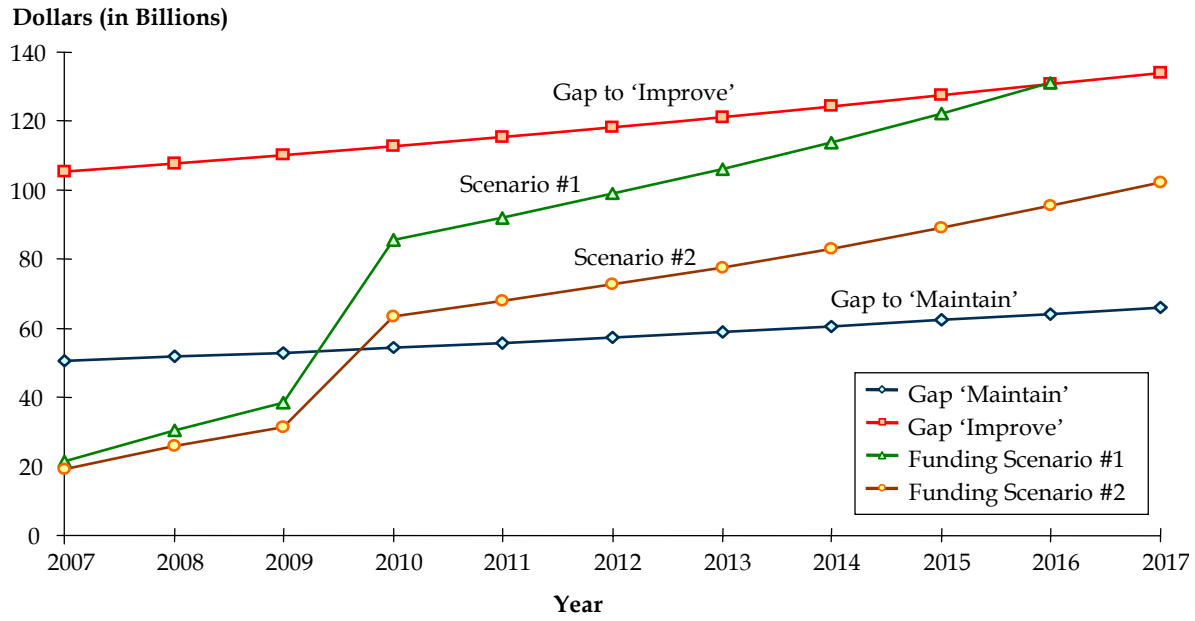
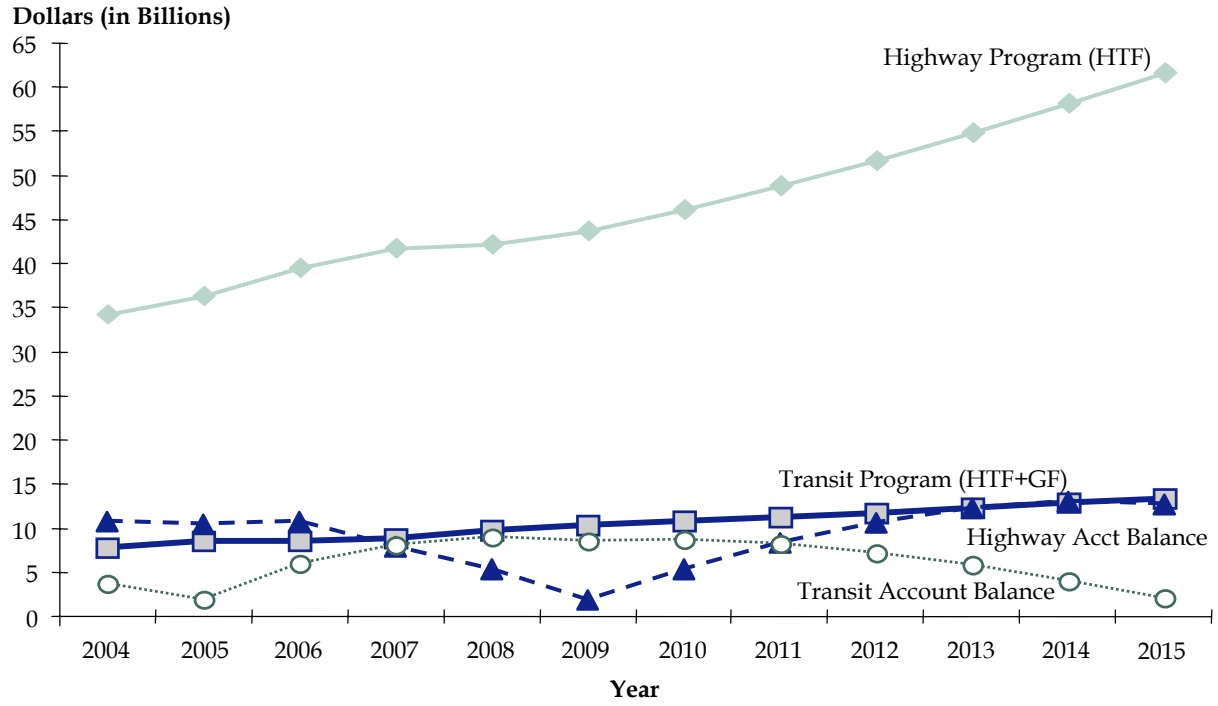


Figure ES.4 Illustrative HTF Revenue Enhancement Scenario

Eliminate HTF Exemptions and Recapture Interest Starting in 2008; Enact 5 Cent Fuel Tax Increase in 2010 and Index Forward



1.0 Introduction

The objective of this project is to present options for all levels of government to close the highway and transit investment deficits on a sustainable basis.

The study was conducted in three phases:

- **Phase 1** involves establishing the needs and the estimated revenues available at all levels of government;

- **Phase 2** involves the examination of existing and new financing options that could be used to close the funding shortfall, including their advantages and disadvantages and limitations, such as their stability and yield (ability to maintain purchasing power over time), ease of acceptance and of deployment, and the efficiency of collection, as measured in administrative cost, compliance cost, and evasion levels; and

- **Phase 3** involves demonstrating what a portfolio of funding options would look like at various levels of government, including methods to maintain the purchasing power of those revenues.

This draft final report includes seven parts after this introduction as follows:

- **Section 2.0** provides estimated needs, revenues, and the shortfall for highways and public transportation for 2007 to 2017. This section differs from most previous needs estimates by dealing with total highway and public transportation needs, whereas the historical needs estimates presented in the U.S. DOT's Condition and Performance Reports and AASHTO's Bottom Line Reports have dealt with capital needs.

- **Section 3.0** presents improved and new revenue options. This is primarily descriptive, but includes examples of recent actions taken to enhance revenues. The emphasis in this section is on a full description and categorization of the revenue sources currently used or proposed for highways and public transportation.

- **Section 4.0** presents a review of current and emerging financing tools that can complement and leverage the revenue sources discussed in Section 3.0. The section also discusses emerging public private partnership opportunities.

- **Section 5.0** provides a summary evaluation of the potentially promising sources of future revenues. This section provides guidance on the relationship of the sources to the criteria that are commonly applied to the evaluation of transportation revenue sources.

- **Section 6.0** estimates the gap closing potential of the promising revenue measures at all levels of government and evaluates two illustrative packages of funding options including measures to sustain the purchasing power of funding programs.

- **Section 7.0** is a task added to the original NCHRP request which deals with the important topic of implementation. Key steps for successful implementation of revenue measures are highlighted and selected state and local case studies for both highway and transit are presented.

- **Appendices** provide details about the forecasts and assumptions.

The report is a compilation of the factual material on alternative revenue sources at all levels of government that can be utilized to help to close the gap between needs and available revenues. It also estimates the potential of individual as well as packages of revenue options to close the gap. Finally, the report provides key information on the important topic of what it takes to implement these strategies.

2.0 Highway and Transit Investment Needs, Revenues, and Shortfalls

This section estimates highway and transit system investment needs, revenues, and the investment gap or shortfall over the period 2007-2017. The investment requirement estimates rely heavily on the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) investment analysis models and methodologies. These include the Highway Economic Requirements System (HERS), the National Bridge Inventory Analysis System (NBIAS), and the Transit Economic Requirements Model (TERM). Revenue trends and estimates rely primarily on the FHWA Highway Statistics series and the FTA National Transit Database. All of the estimates themselves, other than the base data on capital needs, have been prepared for this project.

2.1 Highway and Transit System Investment Requirements

This section provides projections of highway and transit system investment needs over the period 2007-2017. These needs are comprised of capital needs which are developed using methodologies based on the FHWA and FTA models, and operations, maintenance and other needs. A well established process and set of models has been developed and utilized by FHWA and FTA to estimate highway and transit capital needs. AASHTO's Bottom Line analysis of needs has utilized the same types of procedures and models to estimate highway and public transportation capital needs. Less attention in previous studies has been paid to operations and maintenance needs. The estimates of operations and maintenance needs are based on extrapolations of current expenditures on operations and maintenance. Since it is not within the scope of this revenue research to improve on the needs estimates, the operations, and maintenance portion of needs is fully acknowledged to be a simple approximation.

In its 2004 Condition and Performance (C&P) report, FHWA and FTA estimated that an annual capital investment of $89.4 billion in 2002 dollars was needed just to "maintain" the condition and performance of the nation's highway and transit systems.[1] It is the tradition of the C&P reports to present needs in constant or uninflated dollars. When discussing revenues in the short term of this research project (2007-2017), it is not as appropriate to

[1] U.S. Department of Transportation, Federal Highway Administration, and Federal Transit Administration. *2004 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance – Report to Congress*, Washington, D.C., February 2006.

use constant dollars, so all estimates have been converted to current dollars adjusted for inflation. Updating the FHWA estimates using inflation as measured in the consumer price index (CPI), and using an additional technical adjustment to needs due to even higher inflation in the Highway and Street Producer Price Index (PPI), results in an annual capital investment need of $130.7 billion in 2007 just to maintain the conditions and performance.[2,3]

The basis for adjusting needs estimates since the earlier report is to apply both consumer prices, and to apply an additional adjustment to take account of the recent large disparity between producer price increases and consumer price increases. An analysis of consumer or general inflation as measured by the consumer price index (CPI) and highway inflation as measured by the Bureau of Labor Statistics Producer Price Index (PPI) for Highway and Street Construction between 2002 and 2006 shows that the latter has increased at a much faster rate than general inflation; see Figure 2.1.

If both consumer prices and producer prices increased at the same rate, adjustments to a future year from a past year would just index the estimated needs by the inflation adjustment. This would be acceptable because both costs and benefits (as included in the FHWA and FTA models) would have increased by the same percentage amount, and therefore needs could be adjusted very directly to future year costs. However, if producer prices rise faster than consumer prices, then some of the projects that the model systems found to be cost-effective may no longer be cost-effective, and thus, the adjustment must take into account the differences between the rates of inflation for costs (producer prices) and the rates of inflation for benefits (consumer prices). FHWA has addressed this situation by performing sensitivity analysis with regard to changes only in costs or changes only in benefits while the other factors remain the same.

According to recent estimates made by FHWA, an increase of 25 percent of construction costs with no other changes in any factors would increase needs by 11.2 percent for the "improve" scenario, and by 25 percent for the "maintain" scenario. This has been translated to an elasticity of 0.448 and 1.000 for each percent increase in PPI over and above the increase in consumer prices (the CPI), for both the needs to "improve" and to "maintain," respectively. An adjustment for the recent change in producer prices relative to consumer prices was applied to the needs after they were adjusted for consumer price inflation. The additional PPI adjustment to the needs to improve for the 2002-2006 period was estimated at 13.1 percent, based on a PPI growth rate over inflation of 29.2 percent, whereas the PPI adjustment to the needs to maintain was estimated at 29.2 percent.

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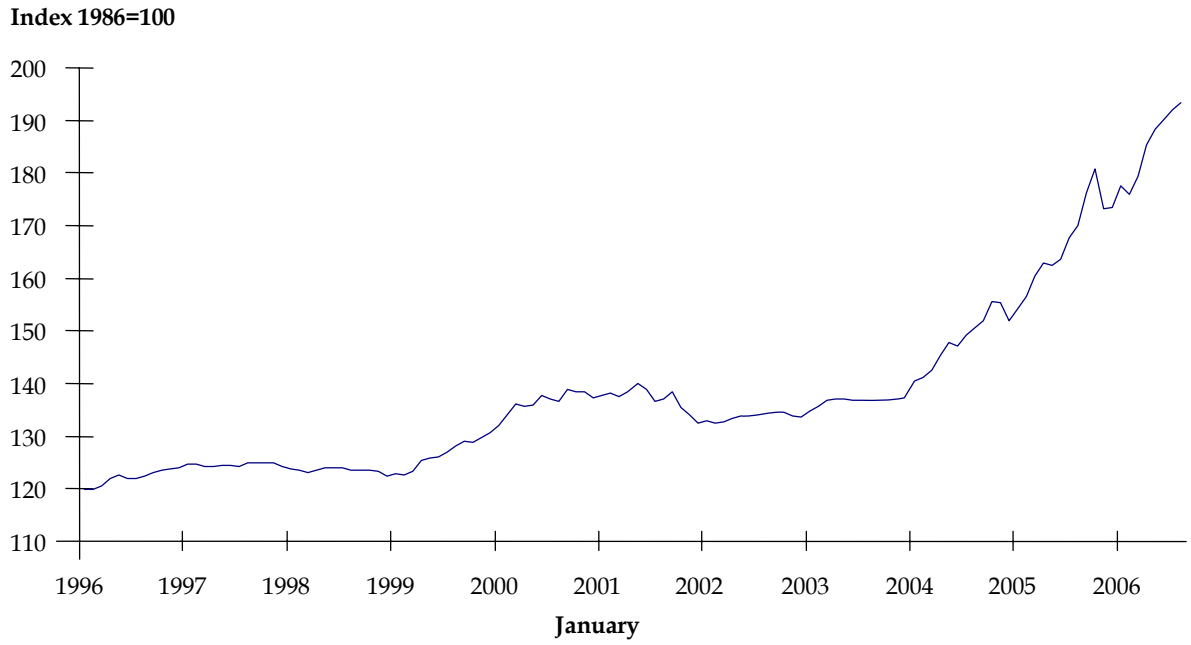
[2] U.S. Department of Labor, Bureau of Labor Statistics. Available at http://www.bls.gov/ppi/home.htm.

[3] Unless otherwise described, estimates are reported in current or year of expenditure (YOE) dollars. Needs estimates were made in constant dollars and were adjusted to year of expenditure dollars using Bureau of Labor Statistics Producer Price indices through 2005 and the Consumer Price Index (CPI) projections for future years (2006 to 2030) from the Congressional Budget Office, January 2005.

Figure 2.1 BLS Producer Price Index
Highway and Street Construction



The PPI adjustment for transit needs, as estimated by FTA for the 2004 C&P report, indicated that a 25 percent increase in transit capital costs would increase the needs for the maintain conditions and performance scenario by 14 percent, and the improve conditions and performance scenario by 9 percent. The adjustment factor to PPI increases over inflation is thus estimated at 0.56 for the "maintain" scenario, and 0.36 for the "improve" scenario. The additional PPI adjustment for the 2002-2006 period was estimated at 16.3 percent and 10.5 percent for the maintain and improve needs, respectively.

The costs of operations, maintenance, administration, debt service, and other noncapital operations, maintenance, and other costs (collectively, "O&M") incurred by state and local governments must be added to annual capital needs to estimate the total expenditures needed to maintain the nation's highway and transit systems. The FHWA reported that $69 billion was spent in 2004 on highway and bridge O&M by state and local governments.[4] The average annual O&M real growth rate (i.e., the rate of growth over and above the change in CPI) over the last 25 years of 1.6 percent has been used to forecast highway O&M needs. This yields an annual highway O&M need of $78.6 billion in 2007. The Federal Transit Administration (FTA) reported that $25.4 billion was spent in 2004 on

[4] Federal Highway Administration, *2004 Highway Statistics*, Table HF-10.

transit O&M by state and local governments.[5] Transit O&M real costs (i.e., the rate of growth over and above the change in CPI) have grown at a rate of 1.7 percent annually over the last 10 years, resulting in a projected annual O&M need of $29.0 billion in 2007. Adding O&M needs to the inflation-adjusted C&P capital needs derived above results in a total annual need to "maintain" of $238 billion in 2007 increasing to $319 billion by 2017.

The operations and maintenance needs estimates are clearly very conservative, since no estimate was made of the current shortfall in operations and maintenance expenditures versus operations and maintenance needs. Such needs have not been systematically estimated across all of the nation's highway and public transportation systems. The FHWA and FTA models and methodologies deal only with capital needs because Federal aid for highways and public transportation are primarily capital programs. The states and the transit industry could consider conducting additional research in these areas of future needs.

With similar adjustments, a higher level of annual capital investment – $185 billion – is needed in 2007 to "improve" the condition and performance of highway and transit systems. "Improve" means making improvements that will have a positive benefit/cost ratio and that will improve United States economic productivity.[6] In the 2004 *C&P Report*, FHWA and FTA estimated that an annual capital investment of $142.9 billion in 2000 dollars was needed to both "maintain" and "improve" the nation's highway and transit systems. When these estimates are updated to 2007 and highway and transit O&M costs are added, an annual investment of $293 billion is needed to meet the "improve" highway and transit system investment requirements, increasing to $387 billion in 2017.

The needs estimating procedures and results are described further in Appendix A. Tables 2.1 and 2.2 show the annual capital and O&M needs by mode as estimated for this study for both the "maintain" and "improve" scenarios.

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[5] Federal Transit Administration, National Transit Database. Available at http://www.ntdprogram.gov/ntdprogram.

[6] In the Federal Highway Administration's periodic *Condition and Performance Report* to Congress and the American Association of State Highway and Transportation Officials' *Bottom Line Report*, an economically productive transportation investment is a project that has a benefit/cost ratio of 1.0 or higher as measured by the Federal Highway Administration's Highway Economics Requirements System (HERS).

Table 2.1 Summary of Investment Needs to "Maintain"
2007-2017 (Billions of Year of Expenditure Dollars)

	FHWA/FTA 2004 C&P Adjusted + O&M								
	Highway			Transit			Highway and Transit		
Year	Capital	O&M	Total	Capital	O&M	Total	Capital	O&M	Total
2007	109.8	78.6	**$188.4**	20.9	29.0	**$49.9**	130.7	107.6	**$238.3**
2008	112.2	81.6	**$193.8**	21.4	30.1	**$51.5**	133.5	111.7	**$245.3**
2009	114.6	84.7	**$199.4**	21.8	31.3	**$53.1**	136.5	116.0	**$252.5**
2010	117.2	87.9	**$205.1**	22.3	32.5	**$54.8**	139.5	120.5	**$259.9**
2011	119.7	91.3	**$211.0**	22.8	33.8	**$56.6**	142.5	125.1	**$267.6**
2012	122.4	94.8	**$217.1**	23.3	35.1	**$58.4**	145.7	129.9	**$275.5**
2013	125.1	98.4	**$223.4**	23.8	36.5	**$60.3**	148.9	134.8	**$283.7**
2014	127.8	102.1	**$229.9**	24.3	37.9	**$62.2**	152.2	140.0	**$292.1**
2015	130.6	106.0	**$236.6**	24.9	39.4	**$64.2**	155.5	145.3	**$300.8**
2016	133.5	110.0	**$243.5**	25.4	40.9	**$66.3**	158.9	150.9	**$309.8**
2017	136.4	114.2	**$250.6**	26.0	42.5	**$68.5**	162.4	156.7	**$319.1**

Table 2.2 Summary of Investment Needs to "Improve"
2007-2017 (Billions of Year of Expenditure Dollars)

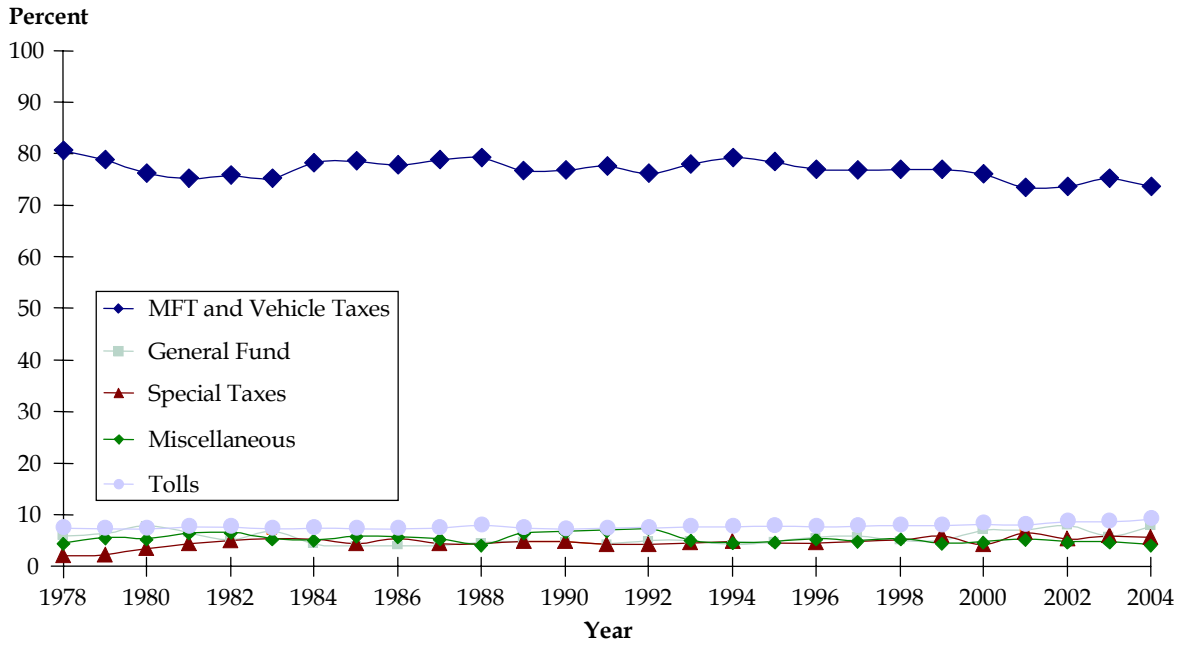
	FHWA/FTA 2004 C&P Adjusted + O&M								
	Highway			Transit			Highway and Transit		
Year	Capital	O&M	Total	Capital	O&M	Total	Capital	O&M	Total
2007	154.8	78.6	**$233.4**	30.5	29.0	**$59.5**	185.3	107.6	**$293.0**
2008	158.2	81.6	**$239.8**	31.2	30.1	**$61.3**	189.4	111.7	**$301.2**
2009	161.7	84.7	**$246.4**	31.9	31.3	**$63.2**	193.6	116.0	**$309.6**
2010	165.2	87.9	**$253.2**	32.6	32.5	**$65.1**	197.8	120.5	**$318.3**
2011	168.9	91.3	**$260.2**	33.3	33.8	**$67.1**	202.2	125.1	**$327.3**
2012	172.6	94.8	**$267.3**	34.0	35.1	**$69.2**	206.6	129.9	**$336.5**
2013	176.4	98.4	**$274.7**	34.8	36.5	**$71.3**	211.2	134.8	**$346.0**
2014	180.3	102.1	**$282.4**	35.6	37.9	**$73.5**	215.8	140.0	**$355.8**
2015	184.2	106.0	**$290.2**	36.3	39.4	**$75.7**	220.6	145.3	**$365.9**
2016	188.3	110.0	**$298.3**	37.1	40.9	**$78.1**	225.4	150.9	**$376.3**
2017	192.4	114.2	**$306.6**	38.0	42.5	**$80.5**	230.4	156.7	**$387.1**

2.2 Highway and Transit System Current and Projected Revenue

The FHWA Highway Statistics and the FTA National Transit Database (NTD) compile summary data on Federal, state, and local funding sources used by state DOTs, local governments, and transit agencies to support highway and transit investments and O&M expenditures. These data sources were used to identify funding sources, levels of annual funding, and historical trends. For highways, data was reviewed for the last 25 years, whereas for transit, data was available in a consistent format for only the last 11 years.[7] The most recent data available from both sources is for 2004, which has been used as the base year for the revenue projections.

Figure 2.2 shows the share of state funding by source for highway investments over the last 25 years. Motor fuel taxes and motor vehicles taxes and fees are the main sources of revenue for highway investments at the state level as they are at the Federal level, accounting for 73 to 80 percent of the total state highway funding over the last 25 years.

Figure 2.2 State Funding Sources
Fiscal Years 1978-2004

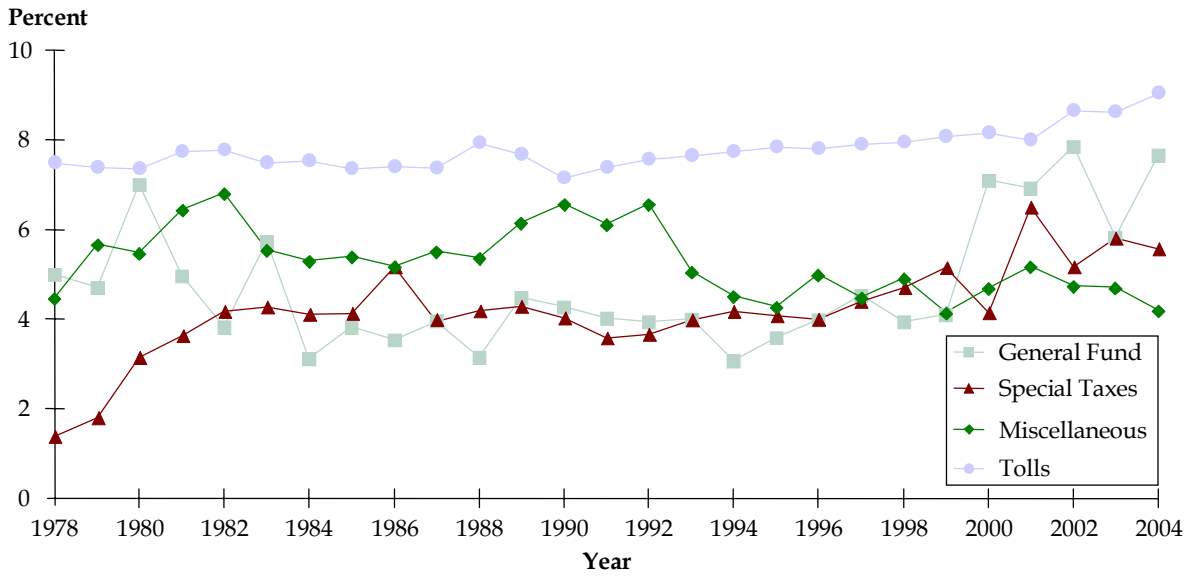


Source: Highway Statistics, Table HF-10.

[7] Because of several changes in NTD data reporting over time, the study team decided to use NTD data starting in 1993 to ensure consistency across funding categories.

Figure 2.3 provides a closer look at state highway funding sources, excluding motor fuel tax and vehicle tax revenues. These funding sources account for about one-quarter of the state highway funding, and each account for 4 percent to 9 percent of the state highway funding. Of the four funding sources shown here (i.e., toll, general fund, specialized taxes, and miscellaneous), specialized taxes are the ones that have increased significantly in terms of funding share over the last 25 years. Specialized taxes accounted for 1.4 percent of the state highway funding in 1978, increasing to 5.6 percent by 2004.

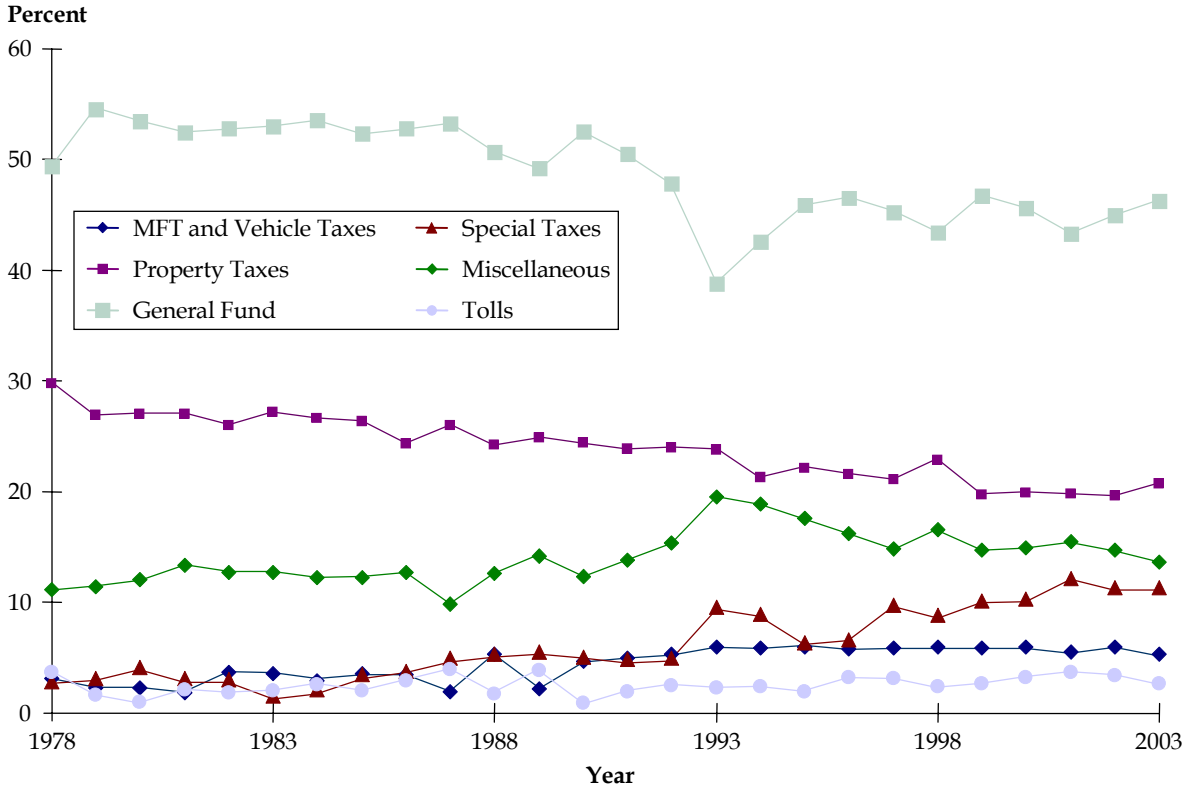
Figure 2.3 Highway – State Funding Sources (Except MFT and Vehicle Taxes)
Fiscal Years 1978-2004



Source: Highway Statistics, Table SF-1.

At the local government level, general fund and property taxes account for most of the highway funding. In 2003, highway funding from general fund and property taxes accounted for about two-thirds of the total highway funds (Figure 2.4). The shares of these revenue sources have declined over the last 25 years, due to increases in the funding share from specialized taxes. Specialized taxes accounted for 2.8 percent of the local highway funding in 1978, increasing to 11.4 percent by 2003.

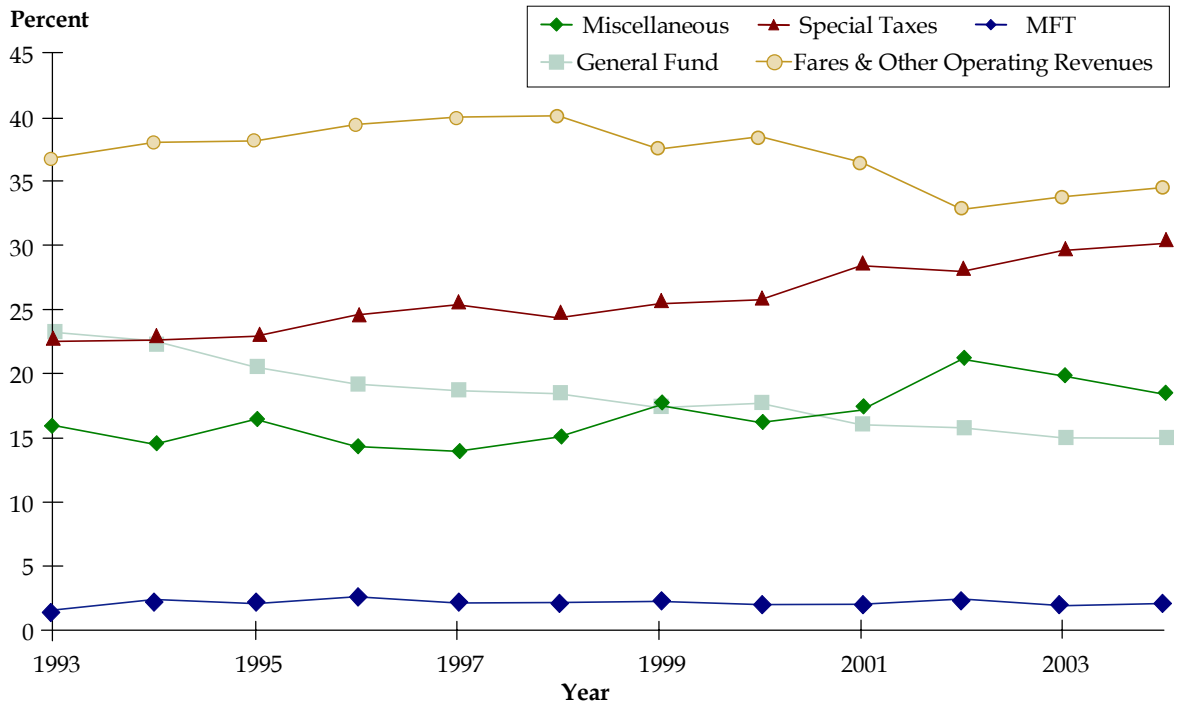
Figure 2.4 Highway – Local Funding Sources
Fiscal Years 1978-2003



Source: Highway Statistics, Table LGF-1.

The share of transit revenues by source (excluding Federal allocations and apportionments) is shown in Figure 2.5. On average, passenger fares and other operating revenues accounted for 37 percent over the last 11 years. This figure also shows that general funding appropriation have declined over time, whereas specialized taxes such as dedicated sales taxes have become an important revenue source for transit investments. Specialized taxes accounted for 22.5 percent of transit funding in 1993, increasing to 30.1 percent by 2004.

Figure 2.5 Transit – State/Local/Agency Funding Sources



Source: NTD Data.

Revenues collected in 2004 at all levels of government totaled $129.5 billion for highways and $38.6 billion for public transportation. As for the needs estimates, these revenue estimates cover all highway and public transportation expenditures.

For this study, a more generic categorization of types of revenues is included rather than the traditional "first structure, second structure, third structure" categorization utilized in the past for highway revenue studies. In those historical revenue studies, first structure referred to motor fuel and similar taxes, second structure to registration and related fees, and third structure to mileage-related fees. For this study, three more generic categories are utilized, based primarily on how the fee is collected in relation to the transportation function. The three major categories of revenues are summarized as follows:

1. **User Fees –** User fees are collected from users, and can be further divided into indirect and direct user fees. Indirect user fee are not collected in association with an actual trip itself, whereas direct user fees are typically applied at the point and time of use. Motor fuel taxes are the largest of the indirect sources. Other indirect user fees include vehicle registration fees and excise taxes, and replacement parts taxes such as the Federal tax on tires for large vehicles. Tolls and transit fares are major examples of direct user fees. Direct freight user charges such as container fees, while now rare, would be identified in this category. For this study, user fees mostly include motor

fuel taxes, motor vehicle fees, tolls, passenger fares, and other miscellaneous use-related revenues[8] for transit. At the Federal level, user fees generated $28.6 billion for highway and about $5.6 billion for transit investments in 2004. At the state and local government levels, user fees for highways and transit were approximately $54 billion and $12 billion, respectively.

2. **Specialized Taxes –** These sources are distinct from user fees because they are applied to and collected based upon nontransportation activities, but are dedicated to transportation. The major sources now utilized in this category are state and local option taxes, including sales and property taxes, but this category also includes leases and some forms of improvement district taxes or fees. This category also includes value capture techniques such as development impact fees and special assessment districts. Their critical difference from general taxes is the assurance given to voters who must approve them that that the money will be spent only on transportation. Admittedly, this is a weak distinction from general taxes (the third category below), except in terms of the interests of the transportation agencies which receive the dedicated resources. In 2004, these specialized taxes provided $15.4 billion for highways, and $9.5 billion for transit at all levels of government.

3. **General Taxes –** These sources are those that are collected and used for broad purposes, of which transportation may be one purpose. The largest sources in this category are income taxes, property taxes, general sales taxes, and other ad valorem taxes that are not dedicated for transportation. For the purpose of this study, general taxes include revenues from the general funds and other miscellaneous/public funds used for highway and transit as reported by the FHWA's Highway Statistics and FTA's National Transit Database. General taxes for highway and transit expenditures were reported at $31.1 billion and $12 billion, respectively in 2004.

Table 2.3 summarizes the actual revenues by government level and by highway and transit levied and used for surface transportation in Fiscal Year 2004 as reported by the Highway Statistics and NTD. Of the $168 billion total, Federal revenues used for highway and transit programs constitute approximately 22 percent of the total, state revenue about 42 percent, and local about 36 percent. Figures 2.6 and 2.7 depict the data in Table 2.3 by percent share for funding type and level of government, respectively.

[8] Other operating revenues include parking fees, concessions, advertising income, and other revenues collected by the transit agency.

Table 2.3 Highway and Transit Revenue Sources Allocated by Type, Mode, and Level of Government
2004 (Billions of Dollars)

	Highway				Transit				Highway and Transit			
Type of Tax or Fee	**Federal**	**State**	**Local**	**Total**	**Federal**	**State**	**Local**	**Total**	**Federal**	**State**	**Local**	**Total**
User Fees	28.6	51.5	2.8	83.0	5.6	0.5	11.0	17.1	34.1	52.1	14.0	**$100.1**
Specialized Taxes	0.3	3.5	11.6	15.4	0.0	3.4	6.1	9.5	0.3	6.9	17.7	**$24.9**
General Taxes	2.0	7.4	21.7	31.1	1.4	3.9	6.7	12.0	3.4	11.3	28.4	**$43.1**
Total[a]	**$30.9**	**$62.5**	**$36.1**	**$129.5**	**$6.9**	**$7.8**	**$23.9**	**$38.6**	**$37.9**	**$70.3**	**$60.0**	**$168.2**

Source: Cambridge Systematics based on data from FHWA Highway Statistics and FTA National Transit Database.

[a]Totals may not add up due to rounding.

Figure 2.6 2004 Highway and Transit Funding by Revenue Source Category

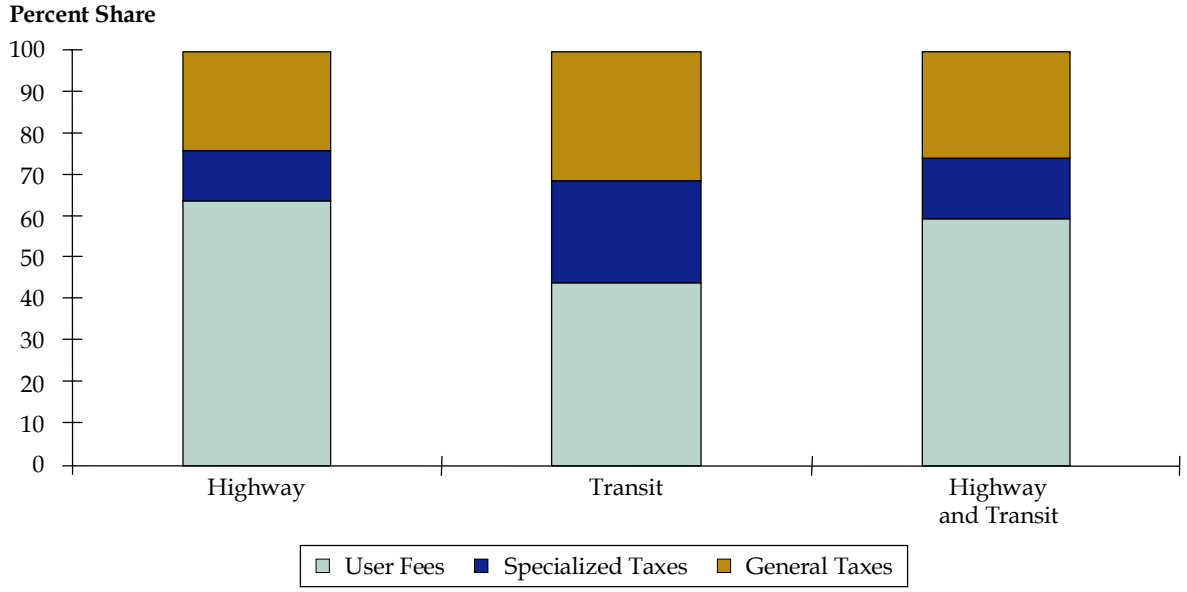
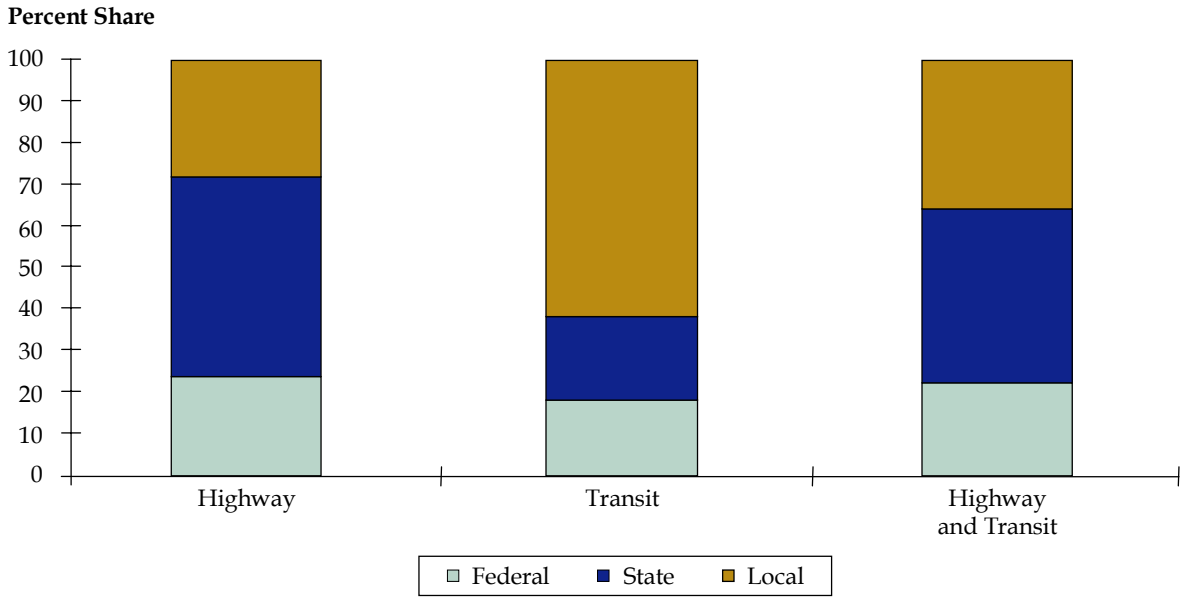


Figure 2.7 2004 Highway and Transit Funding by Level of Government



Revenue Analysis and Projections

The first step to generate the projections of existing revenue sources for the 2007-2017 period consisted of compilation of historical data and an analysis of the historical growth for all revenue sources, from which forecast assumptions were developed. Table 2.4 provides a breakdown of the major revenue categories based on the revenue classification from Highway Statistics and NTD, and overall annual growth rates at the state/local level over the last decade. Further analysis of current state and local revenue sources is included in Appendix D for highways and Appendix E for transit. The projection assumptions out to 2017 are documented in Appendix A.

Table 2.4 Major Revenue Categories from Highway Statistics and NTD and Historical Growth Rates for Last Decade

Highway Revenues	Average Annual Growth	Transit Revenues	Average Annual Growth
Indirect User Fees		Indirect User Fees	
• Motor Fuel Taxes	2.4%	• Motor Fuel Taxes	3.5%
• Vehicle Taxes	4.0%		
Direct User Fees		Direct User Fees	
• Tolls	5.1%	• Passenger Fares	3.5%
		• Other Operating Revenues	6.0%
Specialized Taxes		Specialized Taxes	
• Property Taxes (including Beneficiary Charges)	4.3%	• Sales Taxes	8.5%
• Other Taxes (Sales, Other)	7.5% (State)/ 7.6% (Local)	• Other Taxes (Property, Income, Other)	6.9%
General Taxes		General Taxes	
• General Fund	7.5% (State)/ 7.7% (Local)	• General Fund	0.7%
• Miscellaneous	2.8% (State)/ 2.0% (Local)	• Other Funds	7.5%

For all states combined, funding sources other than motor fuel taxes have increased at a greater rate than motor fuel taxes. State general funds increased by 221 percent, tolls by 83 percent, other by 89 percent, and motor fuel taxes by 75 percent from 1982 to 2001 in real terms (Government Accountability Office (GAO) *Trends in Federal and State Highway Investment*, June 2003). As can be seen in Table 2.2 above and in Appendix A, the fastest growing revenue sources on the highway side are revenues from general fund appropriations and other taxes. Over the last decade, revenues from the general fund have increased at an average annual growth rate of 7.5 percent at the state level and 7.7 percent at the local level. Similarly, the annual growth of revenue from other specialized taxes dedicated to highways has been estimated at 7.5 and 7.6 percent at the state and local levels, respectively. At the same time, motor fuel taxes have increased at only 2.4 percent per year.

For transit investments, revenues from specialized taxes have increased significantly over the last decade. Overall, revenues from dedicated sales taxes have increased at an average annual growth rate of 8.5 percent, whereas revenues from other specialized dedicated taxes (excluding motor fuel taxes) have grown at almost 7 percent per year. Transit fares, meanwhile, have grown at 3.5 percent per year.

The revenue projections were developed using 2004 Highway Statistics and NTD data as the base year. A detailed description of the methodology and assumptions for forecasting revenues from existing sources is provided in Appendix A. Growth assumptions were applied based on the evaluation of historical data and the potential for future growth of each revenue source. For instance, while the implementation of local sales taxes for transit has been a popular trend in the past 10 to 15 years, future uptake may be more limited since many of the significant transit areas already have adopted such measures. Therefore, sales tax growth for transit will be more a function of changes in socioeconomic factors, disposable income, and inflation.

Key resources to generate the revenue projections included forecasts of driving variables from these sources:

- Growth of vehicle miles of travel (VMT) from the FHWA Highway Performance Monitoring System (HPMS);[9]
- Fuel-efficiency projections from the Department of Energy (DOE), (Note: see Appendix C for further analysis of fuel price and efficiency trends);[10]
- Consumer Price Index (CPI) projections from the Congressional Budget Office (CBO);[11] and
- Gross domestic product (GDP) growth rates from the CBO.[12]

Except for tolls, revenues are projected to grow no faster than the economy, i.e., long-run GDP growth, which the CBO estimates at 4.4 percent per year in current dollars. The resulting projections are shown in Figure 2.8.

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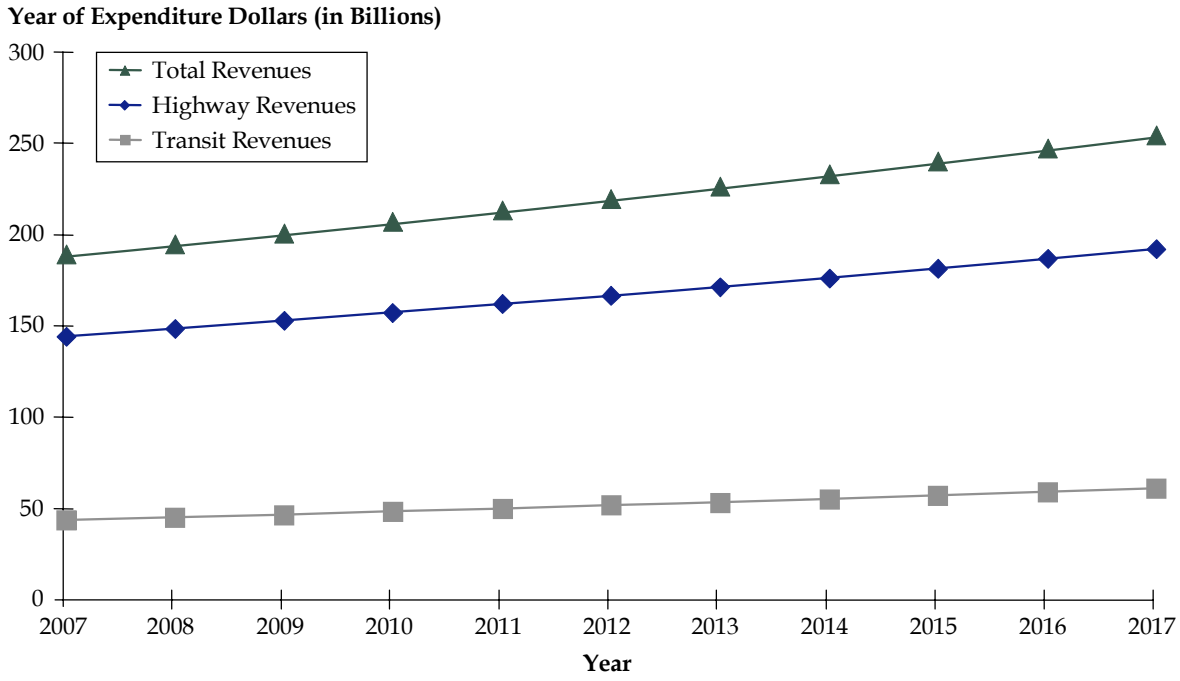
[9] Highway Performance Monitoring System (HPMS)-based vehicle miles of travel (VMT) forecasts as used in the Federal Highway Administration's *Condition and Performance Report* to Congress, February 2006.

[10] Department of Energy. *Annual Energy Outlook 2006 with Projections to 2030*. Table 7, Transportation Sector Key Indicators and Delivered Energy Consumption, February 2006. Available at http://www.eia.doe.gov/oiaf/aeo/aeoref_tab.html.

[11] Congressional Budget Office. *The Budget and Economic Outlook: Fiscal Years 2007 to 2016*. Appendix E, Table E-1, January 2006.

[12] Ibid.

Figure 2.8 Highway and Transit Revenues
Fiscal Years 2007-2017



2.3 The Shortfall

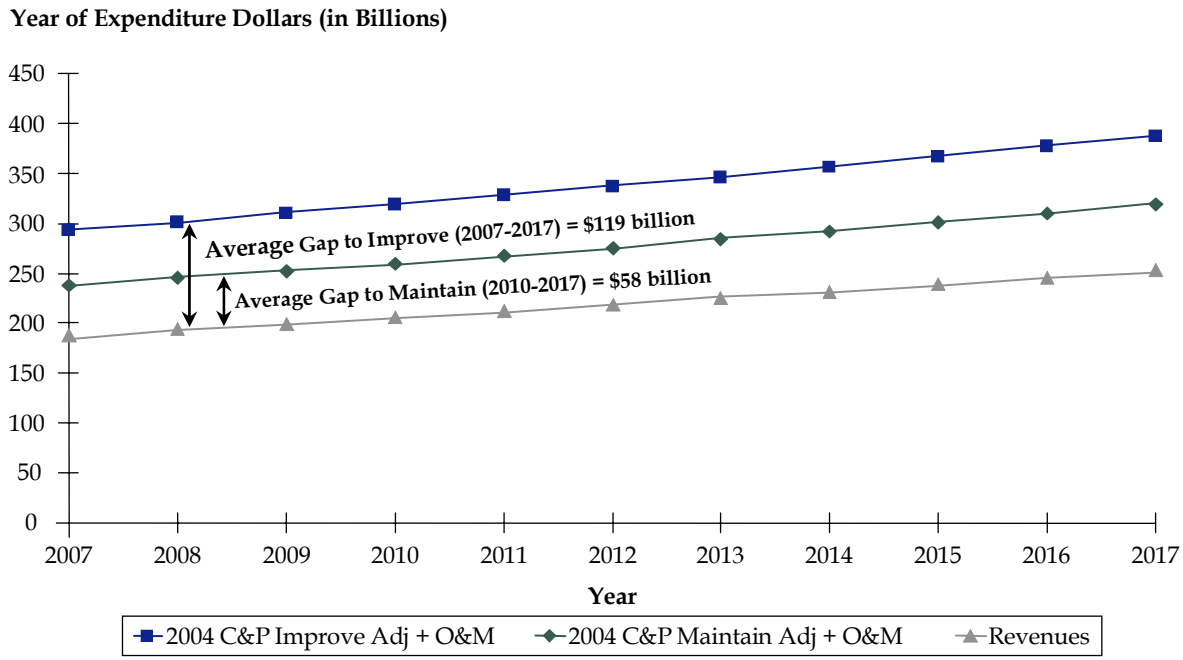
National Shortfall

The shortfall based on the analyses of needs versus revenues shows that to meet the need to "improve" the highway and transit systems, the gap is $105.3 billion in 2007, increasing to $134 billion in 2017. For the need to "maintain," the gap is $50.7 billion in 2007, increasing to $66 billion in 2017. The cumulative gap over the entire 2007-2017 period is projected at $634.7 billion for the need to maintain, and $1.3 trillion for the need to improve. Figure 2.9 shows the annual funding gap from 2007 to 2017. The detailed gap closing analysis is included in Appendix A.

One reason for the shortfall in revenues is that the Federal and most state motor fuel tax rates have not been indexed to inflation and have not been increased as frequently as in the past decades to offset inflation and increased construction costs and to meet the increasing needs.[13]

[13] Florida, Maine, and Wisconsin index their motor fuel taxes to the consumer price index; several other states index to fuel prices.

Figure 2.9 Highway and Transit Needs and Revenues
2004 C&P Adj + O&M

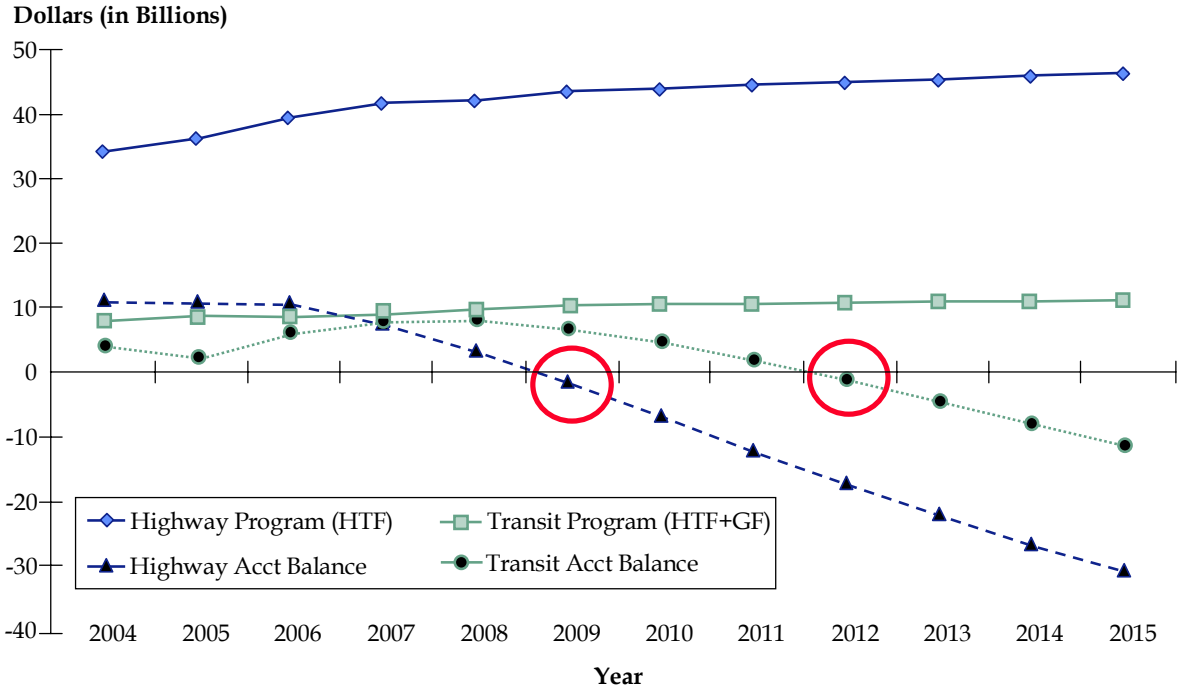


Highway Trust Fund Shortfall

Congress has periodically increased Federal motor fuel taxes to keep pace with the nation's transportation needs, but the last increase of 4.3 cents per gallon was in 1993. Federal motor fuel taxes have lost about one-third of their purchasing power to inflation since then. SAFETEA-LU did not provide for an increase in motor fuel taxes.[14] It achieved temporarily higher funding levels by spending down the accrued balances in the trust fund accounts. Based on current Federal agency revenue projections, the HTF Highway Account will have insufficient balances by 2009 to sustain the authorized program level as shown in Figure 2.5. The shortfall problem accelerates after 2009 assuming that at least modestly growing program levels are desired in the next authorization period to meet growing needs. Figure 2.10 is based on 2007 Treasury Mid Session Review revenue estimates; spending assumptions from 2010-2015 are based on the current services baseline for Federal discretionary outlays at 1.15 percent growth per year.

[14] U.S. Chamber of Commerce, National Chamber Foundation. *Future Highway and Public Transportation Financing*. Washington, D.C., 2005.

Figure 2.10 Estimated Highway and Transit Program Levels and HTF Account Balances Through 2015[a]



[a] Based on 2007 Treasury Mid Session Review revenue estimates; spending assumption 2010-2015 based on current services baseline for discretionary outlays at 1.15% growth per year.

3.0 Improved and New Revenue Options

This section provides an analysis of the major options which could be used by various levels of government to increase funding for surface transportation through 2017. The analysis for this study included options at all levels of government. A comprehensive list and matrix of options was assembled (see Table 3.1) from previous studies and from a review of actual practice at the state and local level, including input provided by panel members. A comprehensive set of options was considered, while realizing that it was important to focus the work on those revenue and financing mechanisms with significant gap closing potential and with a significant likelihood that those sources will be feasible for funding highways and public transportation.

The analysis focused most heavily on the current and emerging revenue measures shown in Table 3.1. Innovative financing and management tools, such as debt instruments and private participation that may help to accelerate project and program development but which are not strictly revenue measures, are covered in Section 4.0. Following Table 3.1 is a textual discussion of each of the revenue tools and selected state or local examples of each tool.

3.1 Review of Specific Candidate Revenue Sources

Revenue tools are presented in the three main categories discussed in Section 2.0: User Fees, Specialized Taxes, and General Sources. In this subsection, each revenue source is described, and examples are given of promising actions taken to enhance or utilize the source.

Motor Fuel and Vehicle User Fees

Motor fuel and vehicle fees (often referred to as user fees although they are not direct point of use fees such as tolls, pricing, or transit fares), are the mainstay of state highway programs as can be seen in Figure 3.1. The data shows that in 14 states, revenues from motor fuel taxes and motor vehicle taxes and fees account for over 90 percent of state highway funding and in the vast majority of states account for more than 50 percent of highway revenues.

Table 3.1 Candidate Revenue Sources

Specific Revenue Tool	Modes: Highway/Bridge: Preservation, Maintenance	Modes: Highway/Bridge: New Capacity	Modes: Transit: Operations, Maintenance	Modes: Transit: Capital	Scope: Program	Scope: Project	Yield: Potential[a] Yield	Locations Used
Fuel Taxes								
Motor fuel excise (per gallon) tax	●	●		●	●		H	All states, Federal
Indexing of the motor fuel tax (can be indexed to inflation or to other factors)	●	●		●	●		H	FL, IA, KY, ME, NE, NC, PA, WV
Sales tax on motor fuel[d]	●	●		●	●		H	CA, GA, HI, IL, IN, MI, NY
Petroleum franchise or business taxes	●	●		●	●		H	NY, PA
Vehicle Registration and Related Fees								
Vehicle registration and license fees	●	●			●		H	All states
Vehicle personal property taxes	●	●			●		M	CA, KS, VA
Excise tax on vehicle sales dedicated to transportation	●	●			●		H	CT, IA, KS, MD, MI, MN, MO, NC, NE, OK, SD, VA; Federal for heavy trucks
Tolling, Pricing, and Other User Fees								
Tolling new roads and bridges		●	●	●		●	M	About half of states (e.g., TX, FL, VA)
Tolling existing roads	●	●	●	●		●	L	VA proposed, others considering
HOT lanes, express toll lanes, truck toll lanes		●	●	●		●	M	CA, CO, GA, MN, TX
VMT fees	●	●	●	●	●		H	OR testing; recommended by 15 state-pooled fund study
Transit fees (fares, park-and-ride fees, other)			●		●		H	All transit agencies
Container fees, customs duties, etc.		●			●	●	M	CA
Beneficiary Charges and Local Option								
Dedicated property taxes	●	●	●	●	●		H	Many local governments
Beneficiary charges/value capture (impact fees, tax increment financing, mortgage recording fees, lease fees, etc.)		●		●		●	L	Many states and localities (e.g., CA, FL, OR, NY)
Permitting local option taxes for high-way improvements								
• Local option vehicle or registration fees	●	●			●	●	M	AK, CA, CT[b], CO, HI, ID, IN, MS[b], MO, NE, NV, NH, NY, OH, SC, SD, TN[b], TX, VA[b], WA, WI
• Local option sales taxes	●	●			●	●	H	AL, AZ, AR, CA, CO, FL, GA, IA, KS, LA, MN, MO, NE, NV, NM, NY[b], OH, OK, SC, TN, UT, WY
• Local option motor fuel taxes	●	●			●	●	M	AL, AK[b], FL, HI, IL, MS, NV, OR, VA, WA
Permitting local option taxes for transit								
• Local option sales taxes			●	●	●	●	H	AL, AZ, CA, CO, FL, GA, IL, LA, MO, NV, NM, NY, NC, OH, OK, TX, UT, WA
• Local option income or payroll tax			●	●	●	●	M	IN, KY, OH, OR, WA
Other Dedicated Taxes								
Dedicate portion of state sales tax	●	●	●	●	●		H	AZ, CA, IN, KS, MA, MS, NY, PA, UT, VA
Miscellaneous transit taxes (lottery, cigarette, room tax, rental car fees, etc.)			●	●	●	●	L	Various states and localities
General Revenue Sources								
General Revenue[c]	●	●	●	●			H	Most states and localities

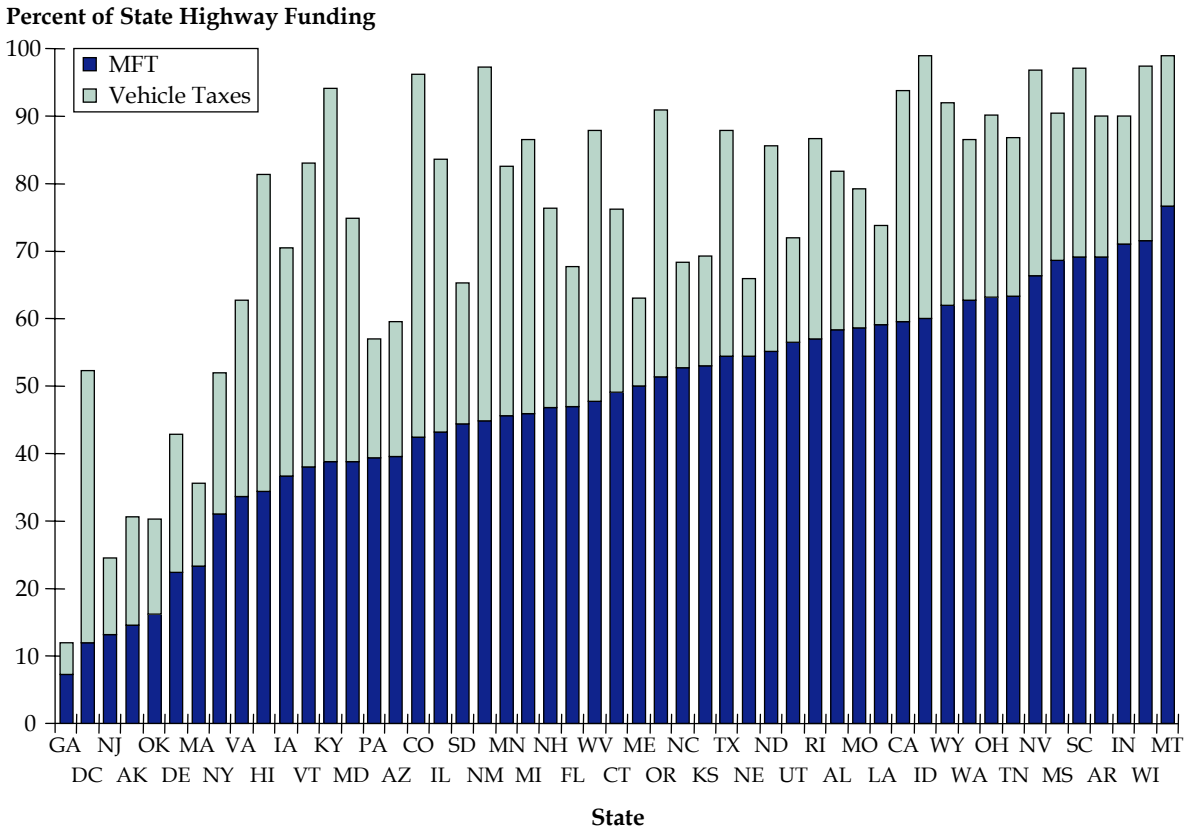
[a] Potential Yield; H= High, M= Medium, L= Low.

[b] Revenues go into General Fund but can be earmarked or used for transportation.

[c] For purposes of this report, the leveraging of tax subsidies through tax credit bonds and investment tax credits is treated effectively as producing revenue from general fund sources for transportation.

[d] In some states, revenues from sales taxes on motor fuel are not dedicated or only partially dedicated to fund transportation needs.

Figure 3.1 Fuel and Vehicle Taxes as a Percent of Total State Highway Funding
Fiscal Year 2004



Source: 2004 Highway Statistics, Table SF-1.

Motor Fuel Taxes

The revenue options related to motor fuel taxes, reviewed in this task as potential sources of additional revenue for transportation investments, include: 1) raising the motor fuel excise tax; 2) indexing the motor fuel tax; 3) sales tax on fuel; and 4) other taxes such as an oil company franchise tax (Pennsylvania) or a petroleum business tax (New York). Local option motor fuel taxes are addressed with other local options taxes under the category of Specialized Taxes below.

Motor fuel taxes account for most of the Federal revenues used for highway and transit programs and for almost half of the revenues used by states to fund highway needs. In 2004, $29.2 billion in motor fuel tax levies were spent at the state level for highways. Furthermore, motor fuel tax revenues exceed two-thirds of the funding used for highways in Arkansas, Indiana, Mississippi, Montana, South Carolina, and Wisconsin. Motor fuel tax revenues are typically dedicated to transportation by statute, and in some states, these

revenues are restricted for highways. In addition to being one of the main revenue sources for state highway expenditures, state motor fuel tax levies also are commonly distributed to local governments and are used to pay debt service on bonds issued for transportation projects.

At the local level, locally generated motor fuel taxes account for a small share of the funding used for highways. Highway Statistics reported that locally generated motor fuel taxes accounted for approximately three percent of the total local revenues for highways. Similarly, motor fuel taxes account for a small share of the revenue used for transit expenditures, accounting for two percent of the state and local revenues. At the local level, motor fuel tax revenues include those levies at the state level that are directly transferred to counties and municipalities, and local option gas taxes approved by voters at the local level.

Motor Fuel Excise (per Gallon) Tax – All 50 states and the District of Columbia levy motor fuel excise taxes on a per-gallon basis. Some states have a fixed rate and an adjustable rate, which could vary with changes in motor fuel price or other factors. As of October 2006, Georgia has the lowest excise tax rate, at 7.5 cents per gallon (note: Georgia has a sales tax on gasoline in addition to the 7.5 cent fuel excise tax), whereas Washington has the highest fuel excise tax rate, at 34 cents per gallon. However, three states (including New York, Connecticut and California) have higher total motor fuel tax rates than Washington after including their other types of fuel-related fees. See Appendix D for further analysis of state motor fuel tax rates.

Examples

Ohio and Washington State are among the states that have increased the motor fuel excise tax in recent years.

- **Ohio –** In 2002, the Ohio Legislature designated a task force to evaluate the status of the state gas tax and to provide recommendations on how to meet the State's transportation needs. As a result, the motor fuel tax rate was increased by 6 cents per gallon to 28 cents per gallon. The motor fuel tax rate was increased gradually, over a period of three years. Other changes enacted in association with the motor fuel tax increase included the elimination of motor fuel tax allocations to the Ohio State Highway Patrol. These revenues are now redirected to local governments. The key factors in the Ohio Legislature's willingness to accept the tax increase – despite an ongoing recession and political pressure to reduce taxes generally – were the perception that Ohio DOT was operating as leanly and efficiently as possible; an acknowledgment that Ohio DOT had made a clear and compelling technical case for major, corridor-level, infrastructure improvements; and a consensus that the tax increase would benefit county and local governments as much as Ohio DOT.

- **Washington –** Motor fuel tax rates have been increased twice during the last five years. First, the motor fuel tax rate was increased by five cents per gallon in 2003, as part of the 2003 "Nickel" Funding Package. This funding package also included an increase of 15 percent in gross weight fees on heavy trucks and a 0.3 percent increase in the sales tax on motor vehicles. The 2003 "Nickel" Funding Package will fund 158 projects over a 10-year period, for a total investment of $3.9 billion. The five cent per gallon increase will expire when the projects are completed and when related debt is retired.

  A second motor fuel tax rate increase of 9.5 cents per gallon was enacted in 2005 as part of the 2005 Transportation Package. This program will fund 274 projects ($7.1 billion) over a 16-year period. The funding package consists of an increase to the motor fuel tax rate of 9.5 cents per gallon over four years, and other revenue tools, including a new vehicle weight fee on passenger cars. It should be noted that there is a continuing effort to repeal the second fuel tax increase.

Indexing the Fuel Tax to Inflation or Prices – Indexing the fuel tax can protect existing fuel tax revenues from the impacts of inflation. Through indexing, fuel tax rates can be adjusted automatically with changing rates of inflation or with other factors. Currently, several states adjust all or a portion of motor fuel tax rates based either on the consumer price index (CPI) or changes in fuel prices. Florida, Maine, and Wisconsin adjust their fuel tax rates based on inflation annually; however, legislation authorizing Wisconsin to adjust the motor fuel tax rate has recently been repealed. Other states, such as Kentucky, Nebraska, North Carolina, Pennsylvania, and West Virginia have a variable component that is adjusted based on the price of motor fuel. Therefore, the variable component is subject to fluctuations in fuel prices.

The impact of fuel price fluctuations is mitigated by: 1) including a fixed fuel tax rate in addition to the variable fuel tax rate; and/or 2) establishing a fuel price ceiling and/or floor for the calculation of the variable fuel tax rate. For instance, North Carolina has a fixed fuel tax of 17.5 cents per gallon, in addition to the variable fuel tax rate (7 percent of the average wholesale price of motor fuel). In Kentucky and West Virginia, the variable fuel tax rate formula sets the average wholesale price of gasoline at a minimum (floor) of $1.22 and $1.30 per gallon, respectively. In addition, some states average fuel prices over a specific period of time to estimate the variable fuel tax rate, and revise the average fuel prices periodically (up to every 12 months), such that states can predict future revenues more consistently and program funding uses accordingly.

Examples

Florida and North Carolina have indexed motor fuel taxes.

- **Florida –** Florida's motor fuel tax is adjusted annually in proportion to annual changes in the Consumer Price Index (CPI). While the motor fuel tax rate has been subject to adjustments since the early 1980s, the procedure to adjust the motor fuel tax rate was last modified in January 1997. The "tax floor" of 6.9 cents per gallon (in 1989 dollars) is indexed annually to the CPI. The state motor fuel tax rate was 10.5 cents per gallon in 2005, and increased to 10.9 cents per gallon in 2006.

  Florida also levies a further gasoline tax surcharge called the State Comprehensive Enhanced Transportation System (SCETS) tax, which also is adjusted to the CPI. The SCETS tax was enacted in 1990, and varies by county. The tax rate is equivalent to two/thirds of all local option fuel taxes, not to exceed four cents per gallon (1990 dollars). Because most counties in Florida levy at least six cents in local option fuel taxes, the SCETS tax rate is now constant in most counties (except for Franklin County, where only five cents per gallon of local option gas taxes are levied). The SCETS tax was 5.8 cents per gallon in 2005, and increased to 6.0 cent per gallon in 2006 (5.0 cent per gallon in Franklin County). The proceeds of the SCETS tax are not shared directly with local governments, but they must be spent in the respective FDOT district and, to the extent feasible, in the county in which the funds were collected.

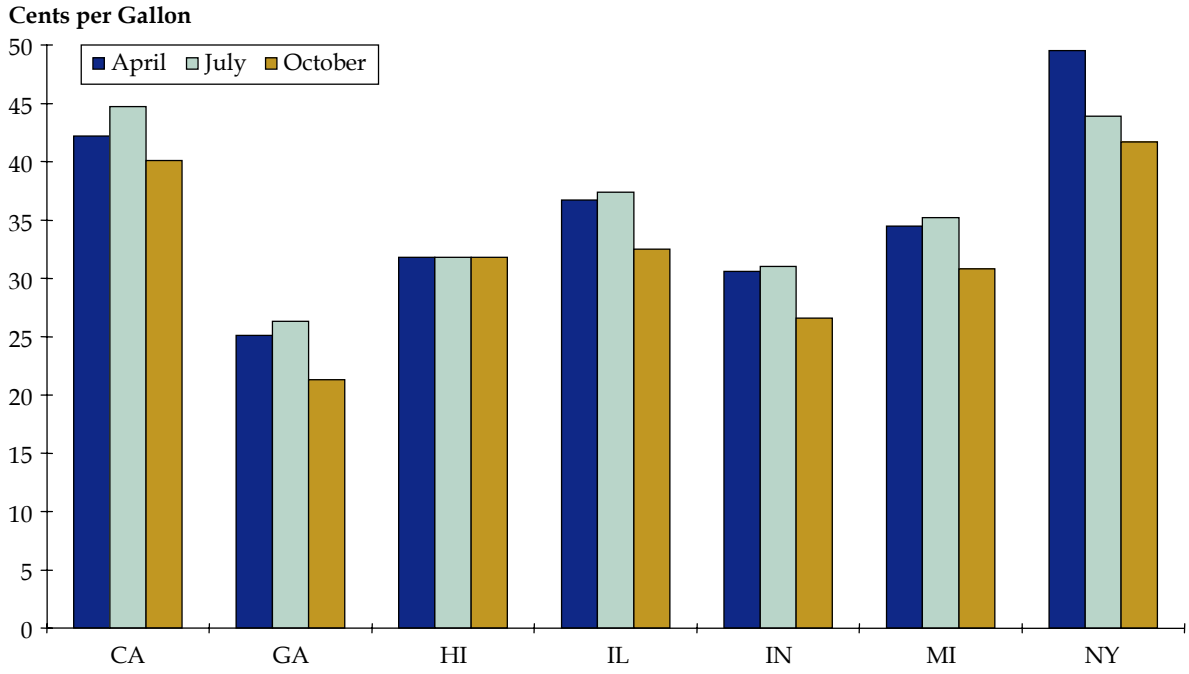
- **North Carolina –** The motor fuel tax rate in North Carolina has two components: 1) a fixed rate of 17.5 cents per gallon; and 2) a variable rate based on seven percent of the average wholesale price of motor fuel, adjusted every six months. Because the variable rate is dependent of the average wholesale price of motor fuel, the variable rate has decreased when gasoline prices have dropped. In July 2002, the motor fuel tax rate went from 24.2 cents per gallon to 22.1 cents per gallon. The new motor fuel rate, effective January 2006, is 29.9 cents per gallon.

Sales Tax on Motor Fuel – In addition to the traditional motor fuel excise taxes, some states also collect sales taxes on motor fuels, including California (6 percent), Georgia (4 percent), Hawaii (4 percent), Illinois (6.25 percent), Indiana (6 percent), Michigan (6 percent), and New York (4 percent). These rates do not include any county or local

taxes that also may be levied on motor fuel in these states. In some instances, revenues from sales taxes on motor fuel are not completely dedicated for transportation, as is the case of California and Georgia, where a portion goes to the general fund. In Indiana and New York none of the receipts of sales taxes on motor fuels are dedicated for transportation. In New York sales tax on motor fuel goes to the general fund; the rate is capped at 8 cents per gallon by recent legislative action.

Revenues from sales taxes on motor fuel are subject to the volatility of fuel prices. Figure 3.2 shows how total motor fuel taxes (in equivalent cents per gallon, and including all types of taxes – from excise to local option) in these states have changed over the first three quarters of 2006. In most states, motor fuel tax rates increased by the second quarter of 2006, when gasoline prices rose significantly, and then decreased by the third quarter, when fuel prices fell. However, in New York, the increases in fuel prices caused the legislature to take action; revenues from the state sales tax on motor fuels were capped at eight cents per gallon. Other cities and counties imposed respective caps to local sales taxes on motor fuels.

Figure 3.2 Quarterly Motor Fuel Tax Rates for States Levying Sales Taxes on Motor Fuels, 2006 (Cents per Gallon)



Source: American Petroleum Institute.

Note: In Georgia, the state sales tax on motor fuels is revised twice a year; quarterly variation is due to sales taxes on motor fuels at the local level.

Examples

California and Georgia have sales taxes on motor fuels.

- **California –** California levies a motor fuel tax of 18 cents per gallon that goes into the Transportation Tax fund. In addition to the excise tax on motor fuel, sales taxes on fuel are collected at the state, county, and local level. The state sales tax rate is 7.25 percent (6 percent state and 1.25 percent county), of which one-fourth percent goes into Local Transportation Funds of counties, and 2 percent goes to the counties General Fund. Revenues from the remaining 5 percent sales tax on gasoline and diesel go into the Transportation Investment Fund (TIF) and the Public Transportation Account (PTA), providing funding for state and local highways and public transportation. The transfer of motor fuel sales tax levies from the General Fund into transportation-related accounts was first introduced in the Transportation Congestion Relief Act of 2000, and made permanent through the passage of Proposition 42 in March 2002. However, the transfer of sales tax revenues into the TIF has been suspended as an emergency measure due to General Fund shortfalls in the past few years. Proposition 42 allows for the suspension of sales tax revenue transfers upon a two-thirds vote by the state Legislature and by the Governor. The 2006 STIP assumes that sales tax revenues will be transferred into the TIF and PTF over the next five years.
- **Georgia –** Georgia levies a four percent sales tax on motor fuels for highway investments, in addition to a motor fuel excise tax of 7.5 cents per gallon. Only the revenues from three percent of the sales tax are dedicated to transportation, with the remaining levies going into the State's general fund. Starting on January 2004, instead of collecting the sales tax at the pump, motor fuel distributors and suppliers must collect a prepaid state tax on all motor fuel sold. The prepaid tax is calculated every six months, based on the average retail sales price of motor fuel. The prepaid tax was estimated at 7.7 cents per gallon in July 2006.

Other Motor Fuel-Related Taxes – A few states have implemented or considered taxes on petroleum products in addition to traditional gallonage taxes. These taxes also can be dedicated and can provide revenues for transportation in a manner similar to other types of fuel taxes.

Examples

Pennsylvania and New York have alternative types of petroleum-related fees.

- **Pennsylvania Oil Company Franchise Tax –** Pennsylvania levies an Oil Company Franchise Tax, which is estimated as 153.5 mills (gasoline) and 208.5 mills (diesel) on the revenue received on the first sale of petroleum products used for motor fuels, expressed in cents per gallon. Petroleum revenues are estimated by multiplying the total gallons of petroleum products by the average wholesale price of gasoline. The oil company franchise tax is collected only between the high and low limits on the wholesale price, which are statutorily set at $0.90 to $1.25 per gallon. The average wholesale price is revised annually, with new oil company franchise tax rates set in January every year. In January 2005, the Oil Company Franchise Tax was estimated at 18 cents per gallon for gasoline, and 23 cents per gallon for diesel. The tax rate increased by 3.2 cents per gallon, because of the average wholesale price increase from $0.919 per gallon in 2003 to $1.17 per gallon in 2004. In January 2006, the tax rate increased again to 19.2 and 26.1 cents per gallon of gasoline and diesel, respectively. Because the oil company franchise tax is now levied on its highest allowed statutory price of $1.25 per gallon, the statutory limit will have to be adjusted if fuel prices rise further. The Pennsylvania Transportation Funding and Reform Commission's recently released recommendations include a proposed increase in this tax by the equivalent of 11.5 cents per gallon to finance the additional needs of highways and bridges in the state.[1]
- **New York Petroleum Business Tax (PBT) –** New York imposes a tax on petroleum businesses operating in the State. The tax rate is expressed in cents per gallon, and adjusted annually by the Producer Price Index (PPI) on refined petroleum products. However, the annual change is capped at 5 percent and in some cases the legislature held the rate constant as part of the annual budget process. In 2005, the PBT rate was 15.2 cents per gallon for motor fuel and 13.45 cents per gallon for automotive diesel. The PBT rate increased by 0.7 cents per gallon in 2006, to 15.9 and 14.15 cents per gallon for gasoline and diesel, respectively. Revenues from the PBT are dedicated to both highway and transit.

[1] Pennsylvania Transportation Funding and Reform Commission Report, November 2006.

Use of Motor Fuel (and Vehicle) Taxes for Transit

Revenues from motor fuel and vehicle taxes and fees are sometimes used to support public transportation. One of the principal sources of Federal funding for transit is, in fact, the Federal motor fuels tax, a portion of which is deposited into the Mass Transit Account of the Highway Trust Fund and supports the programs of the Federal Transit Administration (FTA).

At the state level, there are also examples of revenues from motor vehicle-related taxes and fees flowing to broad-based state transportation funds, a portion of which are used to support various types of transit investment in selected states. As frequently, however, the use of revenues from state motor vehicle taxes and fees, particularly gas tax revenues, has been restricted historically to investments in streets and highways. Currently, 30 states have either statutory or constitutional restrictions that preclude the use of revenues from motor fuel taxes on transit.[2]

Examples of revenues from motor fuel and vehicle taxes and fees flowing to transit include:

- New York MTA – Motor fuels excise tax revenues, vehicle registration fees and driver license fees;
- Arkansas – Rental car taxes;
- California – Sales tax levies on motor fuels;
- Connecticut – Motor fuel excise tax revenues, oil company tax, and motor vehicle fees;
- Delaware – Gas tax, and vehicle registration fees;
- Florida – Motor fuel excise tax revenues, vehicle registrations, and rental car surcharge;
- Iowa – Use tax on sale of motor vehicles;
- Maryland – Motor fuel taxes, motor vehicle excise taxes, and motor vehicle fees;
- Michigan – Gas tax revenues, vehicle registration revenues, sales tax levies on automotive-related items;
- Minnesota – Motor vehicle sales tax;
- Montana – Gas tax, and motor vehicle license fees;
- New Jersey – Motor fuel taxes;
- Oklahoma – Motor fuel taxes;
- Oregon – Non-highway use fuel tax;
- Pennsylvania – Auto rental tax, and vehicle lease tax;
- Rhode Island – Motor fuel excise tax;

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[2] The Brookings Institution. Transportation Reform Series – *Fueling Transportation Finance: A Primer on the Gas Tax*. March 2003. Washington, D.C.

- South Carolina – Motor fuel excise tax;
- Tennessee – Motor fuel excise tax;
- Virginia – Motor fuel excise tax, and motor vehicle sales and use tax; and
- Wisconsin – Motor fuel excise tax, and vehicle registration fees.

Motor Vehicle Taxes and Fees

Motor vehicle taxes and fees include vehicle registration, license and title fees, and excise taxes on motor vehicles, among others. These are commonly dedicated to transportation. In 2004, motor vehicle taxes and fees accounted for almost 27 percent of total state revenues dedicated to highway expenditures, representing the second largest source of revenue for most state DOTs. For half of the states, vehicle taxes accounted for over one-fourth of the highway revenues. In Colorado, vehicle taxes accounted for over 50 percent of the highway revenues in 2004. At the local level, vehicle taxes and fees account for about 2 percent of the total local revenues used for highway needs.

Vehicle Registration or Related Fees – Vehicle taxes include registration and related fees and these are normally the largest source within this category. In 2004, states collected $14.4 billion in vehicle registration fees. Highway Statistics data show that 90 percent of California's motor vehicle-related revenues came from motor vehicle registrations.

Vehicle registration fees vary by vehicle-class. For light vehicles, many states have a flat fee, whereas other states base the vehicle registration fee on weight or a combination of weight, age, horsepower, and value. For heavy vehicles, most vehicle registration fees are based on weight, and are graduated based on each state's unique, legislatively defined schedule for vehicles of different weights. The heavy vehicle fee categories are specific to each state.

License and title fees generated approximately $2.5 billion in 2004. License and title fees generate modest revenues for transportation, and where dedicated for transportation, are mainly used to cover administrative costs, rather than provide a net source of revenue for capital projects or maintenance expenditures.

Personal Property Taxes on Vehicles – Some states and localities levy a personal property tax on vehicles. These fees are in effect registration fees based on the value of the vehicle. These fees have been highly responsive to inflation, because the value of the vehicles owned has continued to increase. These fees have the strong advantage for vehicle owners in that they are deductible for those who itemize when filing their Federal income taxes. Motor fuel taxes, traditional registration fees, and sales taxes which also are major sources for transportation are not deductible. Thus, if a state wishes to raise revenues under the existing Federal tax structure, but with minimal impact on net taxes for its citizens, personal property taxes on vehicles are a very attractive source.

Despite the advantages of such fees to a state and its citizens, opponents of such fees have recently mounted campaigns to reduce or eliminate these fees in Virginia and Washington State. These fees were targets at least partially because of their visibility. An individual

taxpayer has to write a separate check for these fees, whereas a motor fuel tax collected at the pump may be relatively less visible and is paid over many purchases of motor fuel each year.

Excise Tax on Vehicle Sales – Vehicle sales taxes are normally levied as a percentage of the sales price of a vehicle when it is purchased or first registered in a state. Currently, some states collect vehicle sales taxes that are dedicated for transportation, including Connecticut, Iowa, Kansas, Maryland, Michigan, Minnesota, Missouri, Nebraska, North Carolina, Oklahoma, South Dakota, and Virginia.[3,4]

Examples

Nebraska and Missouri tax vehicle sales.

- **Nebraska –** Sales tax collected on the purchase of motor vehicles are dedicated to transportation. The sales tax revenues on motor vehicles are collected by the counties and deposited into the Highway Trust Funds. The Highway Allocation Fund for local governments receives 46.7 percent of the revenues, and the Nebraska Department of Roads receives the remaining 53.3 percent. In FY 2005, $143.0 million were deposited into Nebraska's Highway Trust Fund.

- **Missouri –** In Missouri, a portion of the vehicle sales and use taxes are dedicated for transportation needs. Half of the revenues from the 4 percent sales tax on motor vehicles is distributed among the Missouri DOT (75 percent), cities (15 percent), and counties (10 percent) for transportation expenditures, including public transportation (from the DOT's share). Amendment 3, which was approved by voters in November 2004, redirects the sales tax levies that were deposited into the General Fund to the State Road Bond Fund, which will be used primarily to pay debt service through FY 2009. The transfer of sales tax revenues will be phased over a four-year period, starting in July 2005. After FY 2009, excess revenue in the State Road Bond Fund (after debt service payments are met) can be redirected to the State Road Fund to cover other transportation-related needs.

  A use tax of 4 percent on the purchase is collected on vehicles that are not subject to the Missouri sales tax at the time of purchase. From the 4 percent use tax on motor vehicles, the Missouri DOT receives all levies from 3 percent of the use tax on motor vehicle, and 75 percent of the remaining 1 percent use tax. Cities and counties receive 25 percent of the revenues from the 1 percent use tax. The Missouri DOT received $177.7 million in FY 2004 and $181.5 million in FY 2005 from the vehicle sales and use tax.

Other User Fees (e.g., Tolls and Fares)

Direct user fees such as tolling and pricing have historically contributed a relatively small share of highway revenues – currently about 5 percent of highway revenues at all levels of government – but are receiving a great deal of attention in recent years. For transit, user

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[3] U.S. Department of Transportation, Federal Highway Administration. *Highway Taxes and Fees – How are they Collected and Distributed?* Washington, D.C., 20001. Table S-106. Available at http://www.fhwa.dot.gov/ohim/hwytaxes/2001/index.htm.

[4] In Minnesota, Motor Vehicle Sales Tax transfers from the General Fund for highway and transit expenditures were restored in 2003, after being entirely eliminated in 1991. In November 2006, a constitutional amendment will be presented to voters to dedicate all motor vehicle sales revenues solely to transportation by 2012. More information available at http://www.leg.state.mn.us/

fees in the form of fares and related fees contribute a much larger share, about 28 percent at all levels of government combined, and for transit agencies, they account for well over 65 percent of revenues.[5]

Tolling, Pricing, and Other Direct User Fees

As of December 2005, toll facilities in the United States accounted for approximately 5,100 miles of roads, bridges, and tunnels.[6] In 2004, state and local governments used $6.6 billion in tolls for highway investments or approximately seven percent of total revenues used for highways at the state and local level. Many states are using the promise of tolls as a way of generating new revenue. The most promising candidates for future toll facilities are for new roads or when adding additional lanes to existing roads. Texas has all but made the policy decision to fund new limited-access highway capacity at least partially through tolls, and to refrain from tolling of existing lanes. A number of states are considering the idea, and yet others are not ready to embrace such policies.

Tolling New Roads or Bridges – Users incur a toll for use of new roads, bridges, and special lanes. The toll rate typically does not vary by time of day or day of week. Listed below are some examples of toll road projects from Texas and Florida.

Examples

Texas and Florida have extensive programs to toll new roads.

- **Texas –** In Texas, tolling currently is used primarily in the two large metropolitan areas of Dallas and Houston. The amount of revenue from tolling at all levels of government in Texas ranged from 2.5 to 5 percent in recent years according to Highway Statistics Tables SF-1 and HF-1. In Dallas, the Metroplex Toll Financing System (MTFS) allows TxDOT and/or the North Texas Tollway Authority (NTTA) to make toll projects available for investment by other entities that would then receive returns on their investments, as well as benefit through accelerated project development and completion. Candidate MTFS projects would be those toll projects that can reasonably be expected to generate toll revenues beyond the level necessary to pay debt and expenses. These candidates could be designated MTFS projects and represent an opportunity for local entities to partner in the investment, thereby, sharing in any surplus revenues generated by the toll project. For example, if City A were to contribute 10 percent of the funding for Project X, then that city would receive 10 percent of the surplus revenues from Project X. This surplus revenue could provide an ongoing funding source for the city to use in other transportation projects. In keeping with the premise of regional project support, first choice to invest in a MTFS toll project would belong to those cities and counties directly affected by a project. Contributions are not limited to cash, but include donated right-of-way, design, or other contributions to the value of the total project. Also in Texas, the Texas Mobility Fund is a revolving fund that is designed to back bonds that are pledged towards the construction of highway projects. The proceeds from the sale of these bonds could be used to finance construction on state-maintained highways, publicly owned toll roads, and any other project that is eligible for the State's Highway Fund.[7] As of December 2005, nine toll projects were under construction or underway in the State of Texas, of which the largest is the State Highway 130 (SH 130) around Austin.

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[5] Federal Transit Administration, 2004 National Transit Database. Available at http://www.ntdprogram.gov/ntdprogram/.

[6] U.S. Department of Transportation, Federal Highway Administration. *Toll Facilities in the United States*, 2005. Available at http://www.fhwa.dot.gov/ohim/tollpage.htm.

[7] Texas Department of Transportation, Texas Mobility Fund, http://www.txdot.gov/public_involvement/mobility_fund.htm.

Examples

Texas and Florida have extensive programs to toll new roads. (continued)

The Trans Texas Corridor (TTC) is an ambitious Texas initiative designed to relieve current congestion problems throughout the State while also establishing transportation corridors for the future. Four corridors have been identified as priority segments, all of which run parallel to existing or planned interstate highways. These corridors would parallel I-35 and I-37, sections of I-45, and I-10, and serve as the new I-69 corridor. The plan calls for a network of corridors up to 1,200 feet wide with six lanes for passenger vehicles and four separate lanes for trucks. In addition, the corridor will include six rail lines, with dedicated tracks for high-speed passenger service, high-speed freight service, and shared lines for conventional commuter and freight service. Finally, a 200-foot-wide strip alongside the road lanes and rail lines will be included for the placement of utilities. The total length of the corridors is 4,000 miles, with preliminary construction costs estimated at $125 billion and total project costs considerably higher. Funding for the project will be derived from a variety of sources, including tolls, public-private partnerships, and government funding. Comprehensive Development Agreements (CDA) will likely be used to reduce the time required for the completion of individual segments. A CDA currently is in negotiation with an international consortium for I-35 development.

- **Florida –** Florida, which has an extensive network of toll roads, derived from 8.2 to 11.2 percent of its annual highway revenue for all levels of government from tolling in recent years according to Highway Statistics. Since 1990, Florida's Turnpike opened nine new system interchanges, added 39 lane-miles of widening projects, and made substantial improvements to toll plazas, service plazas and other facilities. The Turnpike also made substantial investments in electronic toll collection (ETC) and intelligent transportation systems (ITS). The current 10-year finance plan, covering the period FY 2003 through FY 2012, has a number of significant widening and improvement projects. These will produce a total of 150 lane-miles of widening and 11 interchange improvement projects.[8] Florida also has a system whereby it encourages the development of new toll projects by leveraging the revenue stream of the Turnpike Enterprise. It does this by providing loans from the Toll Facilities Revolving Fund, and also by providing revenue support for the early years of toll operation for new projects, with flexible and liberal payback terms.

Tolling Existing Roads – Tolling existing facilities is a much more challenging undertaking and is prohibited on the Interstate System with a few exceptions. Although TEA-21 had provision for three states to test putting tolls on existing Interstate's for reconstruction, no state successfully advanced a project. In early March 2003, the Virginia Department of Transportation requested approval to toll Interstate 81 (I-81) from the U.S. Secretary of Transportation and submitted an application for tolling. A toll impact study was conducted to determine the effects of traffic diversion from I-81 to other roadways as a result of implementing different toll scenarios. A DEIS has been completed as of spring 2006; the decision for tolling will be made after the final EIS is submitted to FHWA for approval.

The Interstate reconstruction toll pilot provision was extended in SAFETEA-LU, with changes intended to make it easier for states to take advantage of them. Also, a new program to allow three new Interstate highways to be constructed as toll roads was added in SAFETEA-LU. Several states are now looking seriously at these provisions of SAFETEA-LU.

Special Lanes (HOT, Express, Truck Lanes)

High-Occupancy Toll (HOT) Lanes – These are lanes for which single-occupancy vehicles buy the right to use the excess capacity available in exclusive lanes that are otherwise

[8] Florida's Turnpike, http://www.floridasturnpike.com/

reserved for high-occupancy vehicles (HOV) which pay no tolls. HOT lanes allow a single-occupancy vehicle (SOV) to pay a toll to use HOV lanes which have excess capacity. The first conversion of HOV lanes to HOT lanes opened in San Diego in the mid 1990s, and an extension of that project is now being planned.

In May 2005, the first lanes on I-394 in Minneapolis opened to traffic, and the Interstate 25 (I-25) HOT lane opened in Denver in June 2006. Each of these is described below.

Examples

- **Minnesota – I-394 HOT Lane (MnPASS) –** The first HOT lane to open for quite awhile just opened recently in Minneapolis, where the existing HOV lane on I-394 was converted to a HOT lane. The project extends for nine miles in one direction (11 in the other), with part of the project a single lane in each direction, and the remainder two lanes reversible. I-394 is different from previous HOT lane projects in these ways:
  - Most of it is a single lane in each direction, with only a double-white stripe separating the HOV/Toll traffic from the general purpose traffic. There are zones where there are breaks in the striping to allow drivers to enter or exit the facility. This is in contrast to the single on- and off-points on previous projects.
  - There are two tolling zones, and prices change dynamically every three minutes, based on traffic density in the HOT lanes. Drivers are shown the price to use either one or both tolling zones at the beginning of their trip, with the price at entry guaranteed, regardless of any price changes by the time they get to the new section.
  - Enforcement of the HOV and tolling is done by roving patrol vehicles. Some patrol cars are equipped with enforcement transponders that allow them to query the transponders of vehicles in the toll lane that do not have more than one occupant.[9]
- **Colorado – I-25 HOT Lanes.** The I-25 HOT Lane Project in Colorado opened in June 2006. This project is a conversion of the existing I-25 HOV facility. State law currently maintains free access for HOV2+, motorcycles, Inherently Low-Emission Vehicles (ILEV), and **hybrids**. Colorado DOT currently is seeking a change in state statutes for the hybrids to become tolled. The important constraints on this project are as follows:
  - The full funding grant agreement between the Federal Transit Administration (FTA) and the Regional Transportation District (RTD) specifies that net revenues must go to transit;
  - Bus travel times take precedence over all others using the facility, meaning that the addition of SOV traffic should not impact bus operations; and
  - Entering and exiting loading constraints for the facility into the downtown Denver grid network mean that the pricing for this facility will be on a published toll schedule to be updated periodically, rather than with dynamic pricing.
  - The revenue priorities for this project are to cover operations, maintenance, enforcement, and rehabilitation. The project is not anticipated to generate additional net revenue within the first 10 years of operation.[10]

HOT lanes are not always conversions of existing HOV lanes. The 91 Express Lanes that opened in Orange County, California in the mid 1990s was a public-private venture that involved building four new toll lanes in the median of an existing freeway. On these lanes, HOV 3+ vehicles can drive for free during most hours, and must pay 50 percent of the full toll at the busiest times.

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[9] Minnesota Department of Transportation, MnPass, http://www.mnpass.org/.

[10] Colorado Department of Transportation, North I-25 HOT Lanes Study, http://www.i25hotlanes.com/.

Other toll express lane projects are under consideration around the country, and are being encouraged through SAFETEA-LU with an Express Lanes Demonstration Program. Although these are toll facilities, in many cases, the tolls may not be adequate to pay for the cost of construction. However, such facilities are being considered for their effectiveness at providing congestion-free travel at all times of day, despite the fact that all capital costs may not be paid for by tolls.

Other HOT lane proposals are being developed in the Washington, D.C. area of Virginia, Washington State, Texas, and Florida.

Truck-Only Toll Lanes (TOT) – Toll roadways or lanes for exclusive truck use. TOT lanes have been studied in the Los Angeles region on SR 60 and I-710, both of which are heavily utilized by trucks accessing the Ports of Los Angeles and Long Beach. The preliminary Los Angeles region studies found that urban TOT lane facilities would need to overcome challenges that include truck trips of short lengths, limited travel-time savings during off-peak periods, and significant construction costs and geometric constraints related to adding lanes in an urban environment.

Another TOT lane concept involves urban corridors, which do not necessarily allow longer or heavier vehicles. Such a system of TOT lanes has been recently studied in the Atlanta metropolitan areas, with the findings that TOT lanes had a high potential for relieving congestion, potentially even more than HOV or HOT lanes. Some of the scenarios studied involved the conversion of existing and planned HOV lanes to TOT lanes. Such a policy would be unprecedented, and be politically very difficult to implement. However, the study does point the way towards the potential for TOT lanes in dense urban regions with heavy truck demands.[11]

Vehicle Miles Traveled (VMT) Fees – Some states are anticipating a time when the fuel tax may not be adequate to fund transportation improvement needs, and are researching alternative fees based on vehicle miles traveled. A study on the viability of such a system using the Global Positioning System was conducted by the University of Iowa in 2002.[12] The 2005 National Chamber Foundation study, "Future Highway and Public Transportation Financing" recommended VMT fees as a long-term system of funding that would reduce reliance on the fuel tax. The study recommended a two-tier VMT fee system: a state VMT fee that would gradually replace motor fuel taxes and a local option VMT fee (presumably with variable pricing) to manage congestion in metropolitan areas.[13]

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[11] Georgia State Road and Tollway Authority. *Truck Only Toll Facilities: Potential for Implementation in the Atlanta Region*, July 2005. Available at http://www.georgiatolls.com/.

[12] Forkenbrock, David J., and Jon G. Kuhl. *A New Approach to Assessing Road User Charges*. Iowa City, Iowa: Public Policy Center, The University of Iowa, July 2002.

[13] National Chamber Foundation, "Future Highway and Public Transportation Financing," 2005.

Examples

The Oregon State Department of Transportation is conducting a pilot test designed to demonstrate the technical and administrative feasibility of implementing an electronic collection system for mileage-based user fees and congestion tolls. The on-board technology was demonstrated in May of 2004. The full pilot test began in the summer of 2006 and will continue for one year. A total of 260 trial participants in the Portland metropolitan area have a mileage-recording and global-positioning-system device installed in their vehicles, and are currently purchasing gas at select service stations in Portland equipped with wireless mileage-reading devices. The mileage-recording device in each car tracks miles driven in four categories: miles driven in Oregon; miles driven out-of-state; miles driven in the Portland metropolitan area during weekday rush hour (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.); and miles driven when no satellite signal was available (e.g., miles accumulated in underground parking garages, tunnels, etc.). During the first six months of the pilot test, participants are paying the gas tax as usual. In December 2006, participants will be randomly divided into different test groups: one group will continue to pay the gas tax; a second group will pay a mileage-based fee of 1.2 cents per in-state mile instead of the gas tax; and a third group will pay a mileage-based fee plus a congestion pricing fee for mileage accrued during weekday rush hours in the Portland metropolitan area. The pilot test is proceeding smoothly to date. Occasional equipment failures have been experienced, but the rate has not been unusual or problematic as yet. Following conclusion of the pilot test in summer 2007, Oregon DOT will prepare a report and present the findings to the Oregon State Legislature in 2009. At that time, next steps will be determined; these may include further testing, evaluation of additional geographic regions, or evaluation of different pricing schemes. Oregon DOT anticipates that adoption of a mileage-based fee system will require legislative support and additional funding for installation of vehicle and service-station technology; development of new state and Federal legislation governing administration, enforcement and privacy concerns; and coordination with vehicle manufacturers, the fuel distribution industry, and organizations representing the general public.

Transit Fares and Other Fees – Transit fares and other operating revenues were reported at $10.9 billion in 2004, accounting for 28 percent of the total revenues used for transit expenditures at all levels of government. Although most agencies dedicate these revenues to transit O&M costs, a few agencies, like New York MTA and Chicago Metra Rail, use transit fares to support their capital programs. Other operating revenues also include parking fees, investment income, advertising revenues, leases, and concessions, to mention a few. While these revenues sources represent additional opportunities for agencies to generate additional resources, the revenue potential is limited compared to other sources, such as dedicated taxes.

Examples

- **Chicago Metra –** Since 1989, Metra has dedicated the farebox revenues from a 5 percent fare increase to its capital program. In 2004, the capital farebox financing revenue was $9.1 million. In addition, Metra is required by statute to have an operating ratio (i.e., operating revenues/operating expenditures) of 55 percent.
- **New York Metropolitan Transportation Authority (MTA) –** The New York MTA operates the bus, rapid transit, and commuter rail services in the New York Metropolitan Area. In addition, it operates seven bridges and two tunnels under the Triborough Bridge and Tunnel Authority. MTA toll revenues are used to pay for the operating expenditures and debt service of these bridges and tunnels, and the excess toll revenues are dedicated to support public transit needs (including debt service).

Container Fees – The Alameda corridor freight rail project was the first to institute container fees to help pay for transportation infrastructure improvements. Up to $30 fees are paid on each container that use, or could have used, the corridor. The terminal operators in the ports of Los Angeles and Long Beach have also recently imposed daytime surcharge fees on container movements to encourage shifts to night time operation. California State

Senator Lowenthal recently proposed the implementation of a $30 fee on every 20-foot cargo container moving through the ports of Los Angeles and Long Beach to help fund port and intermodal improvements to serve this commerce. This bill was passed by the state legislature in the summer of 2006 but vetoed by the Governor.

Specialized Taxes

The major sources of specialized taxes are state and local sales taxes, but this category also includes any tax revenue that is dedicated through voter's approval for transportation purposes. This category also includes value capture techniques such as development impact fees and special assessment districts. The critical difference from general taxes is the assurance given to voters who must approve them that that the money will be spent only on transportation. In 2004, specialized taxes provided $15.4 billion for highways (12 percent to total highway revenues at levels of government), and $9.5 billion (25 percent) for transit at all levels of government.

State Sales Taxes for Transportation

Some states dedicate sales tax revenues for transportation expenditures. Transit agencies reported a total of $2.1 billion in sales tax revenues from states in 2004. Six states (i.e., California, Indiana, Massachusetts, New York, Pennsylvania, and Virginia) dedicate a portion of their sales tax levies to transit.[14]

Examples

- The State that most recently joined this list was Massachusetts with the implementation in 2000 of the Massachusetts Bay Transportation Authority's (MBTA) Forward Funding legislation. The Forward Funding legislation dedicates 20 percent of the State's general sales tax revenues to the agency, and makes the MBTA fiscally responsible for its capital and operating expenses. Starting in 2000, debt service is not backed by the full faith of the State, and any bonds issued thereafter are backed by the agency's dedicated revenues (including the sales tax and assessments paid by local communities served by the agency).

- The states of Kansas and Utah allocate a portion of the state general sales taxes for highway expenditures.[15] In 2004, $90.1 million in sales tax revenues were allocated into the Kansas State Highway Fund, accounting for 17 percent of the total revenues into this fund. The sales tax rate dedicated to transportation is one-fourth percent. In Utah, a 1/16 allocation of sales tax revenues is dedicated to the Centennial Transportation Fund since 1997, for a period of 11 years. The fund is used to pay for specific transportation investments.

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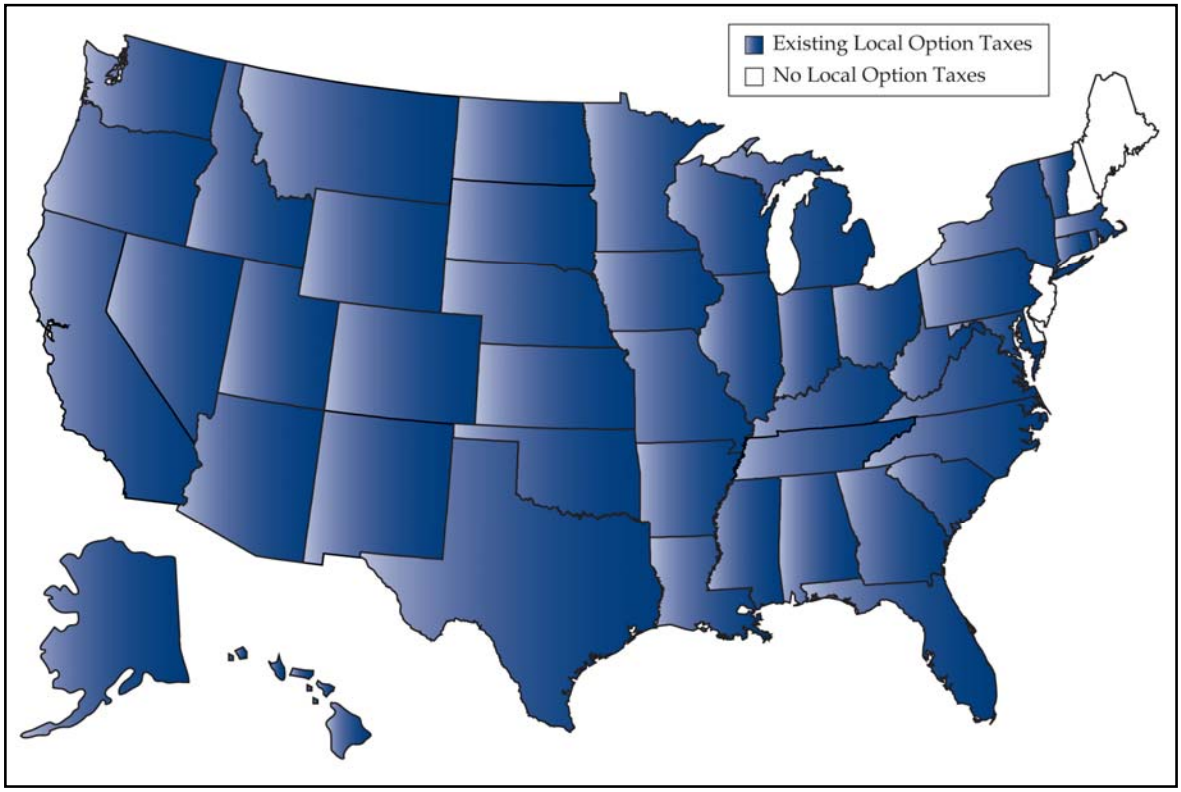
[14] *2005 Survey of State Funding for Public Transportation*. Joint report by the American Association of State Highway and Transportation Officials (AASHTO), the American Public Transportation Association (APTA), and the U.S. Department of Transportation Bureau of Transportation Statistics (BTS), May 2005.

[15] U.S. Department of Transportation, Federal Highway Administration. *Highway Taxes and Fees – How are they Collected and Distributed?* Washington, D.C., 2001. Table S-106. Available at http://www.fhwa.dot.gov/ohim/hwytaxes/2001/index.htm.

Local Option Taxes

Local options taxes have been adopted in one form or another in at least 46 states as shown in Figure 3.3.[16] They include mechanisms such as state authorized local options sales, gasoline, income, and vehicle taxes and fees. Its application and level could be at the local or regional level. These taxes are often dedicated to specific transportation projects or programs.

Figure 3.3 States with Local Option Taxes for Transportation



Source: Institute of Transportation Studies, University of California at Berkeley, "Local Option Transportation Taxes in the United States," March 2001.

[16]Goldman, Todd, Sam Corbett, and Martin Wachs; Institute of Transportation Studies, University of California at Berkeley. *Local Options Taxes in the United States,* March 2001.

Local Option Taxes for Highway Investments

- **Local Option Gas Taxes (Florida) –** Local governments in Florida have the option of implementing up to 11 cent per gallon on local gas taxes for funding transportation improvement projects, including transit. There are three types of local option gas taxes (LOGT): the First LOGT (up to 6 cents on gasoline and diesel), the Second LOGT (up to 5 cents on gasoline only), and the Ninth-Cent Gas Tax (1 cent on gasoline and diesel). Since 1994, the Ninth-Cent gas tax is no longer optional for diesel. Of the 67 counties in Florida, 16 counties levy the maximum rate (i.e., 11 cents per gallon) of local gas tax. Most counties levy at least six cents per gallon from the First LOGT. However, the First LOGT rate is five cents per gallon in Franklin and Union counties, although Union County also collects the Ninth Cent gas tax, which brings its local gas tax to six cents per gallon.
- **Local Option Vehicle Taxes (Ohio) –** Local governments in Ohio can levy up to $20 in vehicle license registration fees, in increments of $5. Revenues from the local motor vehicle license fees must be used for roadway and bridge projects. A study conducted in 2000 by the Ohio Legislative Budget Office found that 67 percent of the counties, 52 percent of the municipalities, and 23 percent of the townships have enacted vehicle license fees.
- **Local Option Sales Taxes (Missouri) –** Local governments in Missouri have the authority (subject to voters' approval) to implement local sales taxes, ranging from one-eighth to 1 percent, for capital improvements and transportation-specific improvements (including roadways, bridges, and transit capital and operations). Table B.1 in Appendix B shows the sales tax proposals included in the ballots in 2005. Of the five proposals, three were approved by voters.

Local Option Taxes – Transit

- **Local Option Sales Taxes (Various States and Localities) –** Most recent ballot initiatives for the approval of sales taxes for public transportation included either the extension or increase of existing sales taxes. Over the last three years, voters in local jurisdictions in Alaska, California, Arizona, Ohio, and Missouri approved the extension of existing sales taxes used for transportation. Sales tax rate increases and new sales taxes have been approved in Arizona, California, Colorado, South Carolina, Texas, Utah, and Washington. Table B.2 in Appendix B summarizes the most recent sales taxes enacted to support transit investments over the last three years. Of the 29 sales tax proposals in those states, 10 provide funding exclusively for transit investments; the others include a combination of transit and highway investments. Specific examples are highlighted below:
  - **San Diego, California –** San Diego County has sustained one of the most successful programs for local and regional transit and multimodal revenue-raising in the country. In 1987, under the leadership of the former Metropolitan Transit Development Board (MTDB), county voters enacted a 20-year one-half cent sales tax yielding $3.3 billion to support specific amounts and projects for transit expansion, highway expansion and local street and roadway improvements, called *TransNet*. In 2003, long-range transit planning, programming, and funding decisions were consolidated within SANDAG to streamline decision-making in committing revenues to transportation improvements. Faced with continued rapid growth and the expiration in 2008 of the original *TransNet* measure, County voters in November 2004 approved a 40-year extension of the one-half cent *TransNet* sales tax which will generate $14 billion. Enactment occurred with over a 67 percent positive vote, meeting the statutorily required two-thirds minimum for enactment of new tax measures. *TransNet* revenues will be split one-third for transit, one-third for highways and one-third for local streets and roads with specific amounts dedicated to bicycle and pedestrian improvements.
  - **Denver, Colorado –** Denver, Colorado also has a highly successful and cost-effective regional, multimodal public transportation system in development. To support continued transit expansion in the region, citizens in November 2004 approved by a 58 to 42 margin, the new 12-year, $4.7 billion *FasTracks* program developed by the Denver Regional Transit District (RTD) along with a 0.4 percent increase in the RTD's existing 0.6 percent regional sales tax. The sales tax increase will be used, in part, to support bonding to leverage the full investment needed to carryout the *FasTracks* program.

    The *FasTracks* Program will support 119 miles of new light rail and commuter rail, 18 miles of Bus Rapid Transit (BRT), 21,000 additional parking spaces at rail and bus stations and expanded bus service in areas of the region.
  - **Phoenix, Arizona –** In November 2004, voters in the Phoenix region passed Proposition 400 extending the Maricopa County one-half cent dedicated sales tax for transit 20 years. Revenues will be used to support creation of a multimodal transit network through $16 billion to be invested in a 27.7-mile expansion of light rail, new and enhanced service on 30 bus routes, creation of 10 new routes, service enhancements on 26 exciting BRT routes, introduction of 14 new BRT routes and a tripling of paratransit service in the region.

Local Option Taxes – Transit (continued)
• **Local Option Property Taxes (Michigan) –** Michigan legislation allows counties to implement property taxes dedicated to public transportation. In 2004, 13 counties in Michigan voted to continue or increase property taxes to support public transportation investments. In 2005, six property tax proposals were approved by voters, including a three mills renewal in the City of Saginaw that was defeated in 2004. Most recently, nine property tax proposals were approved in 2006 elections. • **Local Option Income or Payroll Taxes (Oregon) –** Lane County Transit and TriMet levy 0.6 percent and 0.6418 percent, respectively, in payroll and self-employment taxes, which are dedicated to public transportation. In the Lane County Transit District, payroll taxes generated approximately $21.3 million in 2005. For TriMet, payroll taxes accounted for almost 52 percent of the operating revenues, levying $157.3 million in 2005. In 2003, the Oregon Legislature authorized TriMet to increase the payroll tax rate by 1/100 percent every year, over a 10-year period.

Use of Property Taxes for Transportation, Including Beneficiary Charges

Property taxes play an important role for funding highway needs at the local level. In 2004, about 21 percent of the local highway funding came from property taxes, including local option and beneficiary charges. For example, local governments in Massachusetts and Vermont rely significantly on property tax revenues to support their highway-related investments.

Property tax revenues represented only 1.4 percent of the total transit revenues. Property taxes are frequently used in small communities to support public transportation systems and services. Recent increases in millage levies for transit have been approved in:

- **Holland, Kalamazoo, Kalkaska, Macomb, Manistee, Oakland, Wayne, and Wexford, Michigan** (2006);
- **Flint, Saginaw, and Holland, Michigan; San Carlos, California; Steubenville and Youngstown, Ohio** (2005); and
- **Kalamazoo, Michigan; Lexington, Kentucky;** and **Parkersburg, West Virginia** in 2004.

Beneficiary Charges for Transportation

Beneficiary charges are a special category of property taxes that are targeted to capture the benefits or cost of infrastructure that serves property development. The following mechanisms are the most commonly used by state and local governments.

Impact Fees – Impact fees consist of one-time charges to developers on new development. Revenues from impact fees are used to pay for infrastructure improvements resulting from growth generated by new development, such as water, sewers, roads, parks, schools, and other infrastructure needs. Currently, 27 states have approved legislation that allows

for the implementation of impact fees.[17] In Maryland, Tennessee, and North Carolina, impact fees are authorized through special legislation for specific jurisdictions. The states with the highest number of communities that have adopted impact fees are California, Florida, Washington, Oregon, Colorado, and Texas.[18]

Impact fees for transportation facilities may be calculated based on average trips, numbers of units in a residential project, square footage in a nonresidential project, or other factors.

Examples

- **California –** In California, impact fees are widely used for road projects. The *2006 National Impact Fee Survey*[19] provides information on impact fees for several infrastructure needs levied in 39 jurisdictions in California. Average road impact fees in California are estimated at $4,210 for a single family house, whereas the national average is estimated at $2,305.

  Commonly, impact fees are not used to finance large scale projects, although such large-scale projects would have the greatest impact on property values. Impact fees typically do not generate nearly enough revenue to fully fund a large scale project. Also, since the fees are entirely dependent upon new development, they are highly speculative, and not easily bondable. Therefore, impact fee programs usually build projects on a pay-as-you-go basis. While they may be highly speculative from the viewpoint of backing bonds, there still are advantages to establishing impact fees that could generate revenues over and above toll proceeds. On projects that are not self supporting from toll revenues this can reduce the amount that would have to come from fuel taxes or general funds.

  Impact fees have been used to supplement the funding of large scale projects. In Orange County, California, impact fees are used (in addition to toll revenues) to pay for the debt service from the construction of three toll roads: the San Joaquin Hills Toll Road, the Eastern Toll Road, and the Foothill Toll Road. In 2005, impact fees generated $23.4 million, accounting for 11.6 percent of the total revenues.[20]

- **Florida –** Another example of wide implementation of impact fees is Florida. According to a national survey,[21] at least 68 jurisdictions in Florida levy some form of impact fees, many of which include road impact fees. The average road impact fee is estimated at $2,790 for a single family house.

Value Capture (Assessment Districts and Tax Increment Financing) – Value capture attempts to capture some of the increase in value due to the improvement which benefits the properties impacted. Assessment districts are special property taxing districts where the cost of infrastructure is paid for by properties that are deemed to benefit from the infrastructure. These assessments can be applied to the full value of the subject property,

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[17] Clancy Mullen, Duncan Associates. *State Impact Fee Enabling Acts* (June 2006). Available at http://www.impactfees.com.

[18] University of Minnesota, Center for Transportation Studies. *Development Impact Fees for Minnesota? A Review of Principles and National Practices*. October 1999, page 21.

[19] Clancy Mullen, Duncan Associates. *2006 National Impact Fee Survey* (June 2006). Available at http://www.impactfees.com.

[20] Audited financial statements, Fiscal Year 2005, for the San Joaquin Hills Transportation Corridor Agency and the Foothill/Eastern Transportation Corridor Agency. Downloaded from: http://www.thetollroads.com/home/about_news_annual.htm.

[21] Mullen, op. cit.

or use a Tax Increment Financing (TIF) technique in which bonds are issued to finance public infrastructure improvements, and repaid with dedicated revenues from the increment in property taxes as a result of such improvements. To date, Arizona is the only state that has not enacted TIF laws. The use of TIF was initiated in California in the 1950s, and has been used extensively in other states, such as Illinois, Minnesota, and Wisconsin.[22] Portland, Oregon has used TIF to fund transit investments, such as the Portland Streetcar and the MAX Yellow Line.

Examples
• **Oregon –** TIF has been used to support the construction of the Portland Streetcar. The additional property taxes are collected within two Urban Renewal Areas (URAs): the South Parks Blocks URA and the North Macadam URA. TIF revenues accounted for 22 percent ($19.7 million) of the total cost for the three project segments, including the final segment that is scheduled to begin operations in September 2006. For the MAX Yellow Line, the City of Portland provided $30 million in General Fund notes that must be repaid with TIF revenues generated by the Interstate URA.

Community Facilities Districts (CFD) – CFDs are creative funding mechanisms for infrastructure projects where residential and commercial property owners are charged an annual fee for the benefit of infrastructure in their area. CFDs seem suited to regional projects and programs as they are not tied to a specific facility as is the case with most other beneficiary charges. They have been used in California and to a lesser extent in Arizona, Illinois, New Mexico, and Hawaii. Although they have seen limited use for transportation to date, there may be larger potential in the future.

Other Miscellaneous Dedicated Sources for Transit – Because of the varying philosophies of governance and taxation, arriving at an acceptable mix of revenues to support public transportation has often resulted in the enactment of combinations of unique revenue sources suited to the political and budgetary landscape of individual areas and jurisdictions. Some of the more unique revenue sources committed to transit are highlighted in the examples below.

[22]Sullivan, Gary, Steve Johnson, and Dennis Soden; Institute for Policy and Economic Development, University of Texas at El Paso. *Tax Increment Financing Best Practices Study.* Prepared for the Greater El Paso Chamber of Commerce, September 2002.

Examples

- **Mortgage Recording Tax –** Mortgage Recording Tax (MRT) is collected for transit in the New York City region. The MRT is actually two taxes. The first, designated MRT-1, is a tax of 0.30 percent on debt secured by certain mortgages on property in the MTA service region, a rate that was increased from 0.25 percent on June 1, 2005. The second, MRT-2, is a tax of 0.25 percent on another type of mortgage, those for improvements of residential structures with one to six units. Both taxes are collected by New York City or one of the seven counties within the MTA service region, and transferred to the MTA.

- **Rental Car Taxes –** At the state level, Arkansas, Florida, and Pennsylvania dedicate a portion of rental car taxes for transit. New York dedicates rental car taxes to the Dedicated Highway and Bridge Trust Fund. At the local level, Indiana, Kentucky, North Carolina, and Wisconsin have implemented rental car taxes to support transit.

- **Casino/Lottery Revenues –** New Jersey allocates a portion of its casino revenues to fund elderly and disabled programs. In 2005, $25.3 million were dedicated to transit, accounting for about 5 percent of the total casino revenues. Oregon and Pennsylvania dedicate a portion of lottery revenues for transit. In Oregon, lottery bonds were issued for the TriMet light rail program.

- **Cigarette Tax –** In Oregon, cigarette tax revenues provided $4.2 million to support transit expenses. Pennsylvania also derives transit revenue from the cigarette tax.

Pennsylvania – Pennsylvania is an example of a state that has tapped a wide variety of dedicated revenue sources for transit. There are 42 urban and rural fixed route systems and more than 30 community transit systems serving all counties in the Commonwealth The cost for providing these services comes from Federal, state, and local sources. On average per year, Pennsylvania invests more than $1.3 billion dollars in transit. Of that, 29 percent comes from Federal funding sources; 62 percent from state; and 9 percent from local sources.[23] Local subsidies are generated through various dedicated sources. In FY 2005, the State dedicated approximately $835 million for transit funding. Funds from the state level are primarily from the general fund (which is allocated by legislative formula), Public Transportation Assistance Fund (Act 26 of 1991) and the Supplemental Public Transportation Assistance Account (Act 3 of 1997) for the purpose of rebuilding, replacing, and maintaining transit infrastructure.

- The Public Transportation Assistance Fund (Act 26) generates revenue from several sources. Some of these sources include the Tire Fee - a flat fee of $1 per new highway motor vehicle tire sold, Motor Vehicle Lease Additional Tax - a 3% tax imposed on the total lease price of a motor vehicle in addition to the current tax imposed, Motor Vehicle Rental Fee - a $2 fee per day imposed on the rental of a motor vehicle, and annual transfer of 0.937% from the sales tax.

- The Supplemental Public Transportation Assistance Account (Act 3), which was approved by the Pennsylvania State Legislature and signed into law by the Governor of Pennsylvania on April 17, 1997, allocates revenue to this account at a rate of 1.22 percent of the state sales tax (capped at $75 million).

  Other unique sources of funding in Pennsylvania include the cigarette tax and the lottery. In 2005, funds generated through the lottery accounted for $116.7 million or 13 percent of the total state funding commitment for transit.

The recently released Pennsylvania Transportation Funding and Reform Commission report finds that the Real Estate Transfer Tax is a reasonable surrogate for a transit user fee and has recommended that the tax be increased and dedicated to transit at the local level.[24]

[23] Pennsylvania Transportation Funding and Reform Commission, *Investing in Our Future, Addressing Pennsylvania's Transportation Funding Crisis*, August 2006.

[24] Pennsylvania Transportation Funding and Reform Commission Report, November 2006.

General Revenue Sources

General Revenue – States and local governments also use general fund appropriations to support transportation needs. About 15 percent of state and local transit revenue and 22 percent of highway revenue in 2004 came from general fund allocations.

Highway Statistics data shows that local governments particularly rely on general fund appropriations to support their highway expenditures. In 2004, about 46 percent of the revenues used for highway expenditures at the local level came from the general fund. At the state level, general fund appropriations were reported at only 7.7 percent of the total revenues for highways. Only Massachusetts and Alaska received more than one-third of their highway funding from general fund appropriations in fiscal years 2003 and 2004. For transit, 2004 NTD data shows that general fund allocations accounted for 34.3 percent and 26.2 percent of the local (excluding agency revenues) and state funding, respectively.

3.2 Conclusion

The key conclusion of this section is that a wide menu of current and emerging funding options is available for Federal, state, and local governments to help close the funding gap. Case examples are provided for each of the revenue options reviewed.

4.0 The Role of Innovative Finance and Public-Private Partnerships

The terms "innovative finance" and "public-private partnerships" are used to describe a broad array of policy initiatives designed to enhance the flexibility of Federal-aid funding, facilitate access to the capital markets, and encourage increased private sector participation in project delivery and asset management. This section briefly describes some of the techniques included under those umbrella terms and provides examples of how they can be used to facilitate investment in surface transportation infrastructure.[1]

The strategies outlined below are not presented as alternatives to or substitutes for the revenue enhancement options discussed in Section 3.0. Innovative finance tools and public-private partnerships (PPP) can play a strategic role in efforts to secure resources for highway and public transportation projects, but their ability to reduce the funding gap on a nationwide basis is likely to be quite modest. State and local project sponsors need a broad-based, sustainable source of funding in order to maintain existing infrastructure and address critical mobility needs.

The financing techniques that can be used to facilitate infrastructure investment are discussed in the context of two basic approaches:

1. Leverage Existing Resources; and
2. Create Revenue-Generating Assets.

The two approaches are not mutually exclusive, but with regard to increasing total resources available for highway and transit investment, it is useful to distinguish the debt financing tools in the first category from the project finance strategies in the second.

Section 4.3 of this chapter outlines various PPP structures that can facilitate both financing approaches. The contractual arrangements outlined in the PPP section can help accelerate key investments (increasing public benefits) and improve asset performance (reducing life-cycle costs). Often they are used to advance large and complex projects that are difficult to fund, develop, and operate through "conventional" means. The PPP strategies can involve generation of new revenues – such as those paid by direct users and other project

[1] Additional detail and resources on innovative finance and public-private partnerships are available at www.innovativefinance.org and www.fhwa.dot.gov/ppp/index.htm. See also *Performance Review of U.S. DOT Innovative Finance Initiatives*, July 2002 and *Report to Congress on Public-Private Partnerships*, December 2004.

beneficiaries – but they do not represent revenue sources per se and do not directly address the funding gap.

A summary of the financing and management tools is provided in Section 4.4 along with a brief discussion of some policy issues related to the increased use of innovative finance and PPPs.

4.1 Leverage Existing Resources

State DOTs and transit authorities have pursued and are considering a number of strategies for leveraging available resources to expedite construction of important projects and to induce local governments and private entities to invest in transportation infrastructure.

Federal Grant Management Tools – Over the last 10 years, various policies and regulations governing the distribution of Federal-aid reimbursements for highway projects have been modified to broaden the options for meeting matching share requirements and to provide states with more flexibility in managing how Federal funds are obligated.[2] These fund management tools do not increase the total amount of Federal aid available to states, but they can help to accelerate construction of certain projects (which limits exposure to cost escalation) and may enable some states to reallocate funds that otherwise would have been used to provide the non-Federal match.

Debt Payable from Federal Grants – Bonding against future Federal aid can be a cost-effective way to finance large projects or capital programs if the interest cost and other expenses associated with issuing the debt are less than the potential costs associated with completing construction on a pay-as-you-go basis. Among the benefits to be considered from debt financing are reducing construction cost inflation through faster phasing, achieving nonmonetary benefits such as travel-time savings due to congestion relief, and enhancing local taxes through accelerated economic development. Using the bond proceeds to help finance revenue-generating projects, such as toll roads, can enhance the economics of using this approach.

The Grant Anticipation Revenue Vehicle (GARVEE) borrowing tool was created in 1995 as part of the National Highway System Designation (NHS) Act. A GARVEE can be any "bond, note, certificate, mortgage, lease, or other debt financing instrument issued by a state or political subdivision," whose principal and interest is repaid primarily with Federal-aid funds. As of July 2006, at least 16 states plus Puerto Rico and the Virgin Islands had issued GARVEE bonds for approved Federal-aid projects totaling about $5.7 billion (excluding refunding bonds).[3] Over $5 billion of additional debt payable from

[2] *Innovative Finance Primer*, April 2002. http://www.fhwa.dot.gov/innovativeFinance/brochure/index.htm.

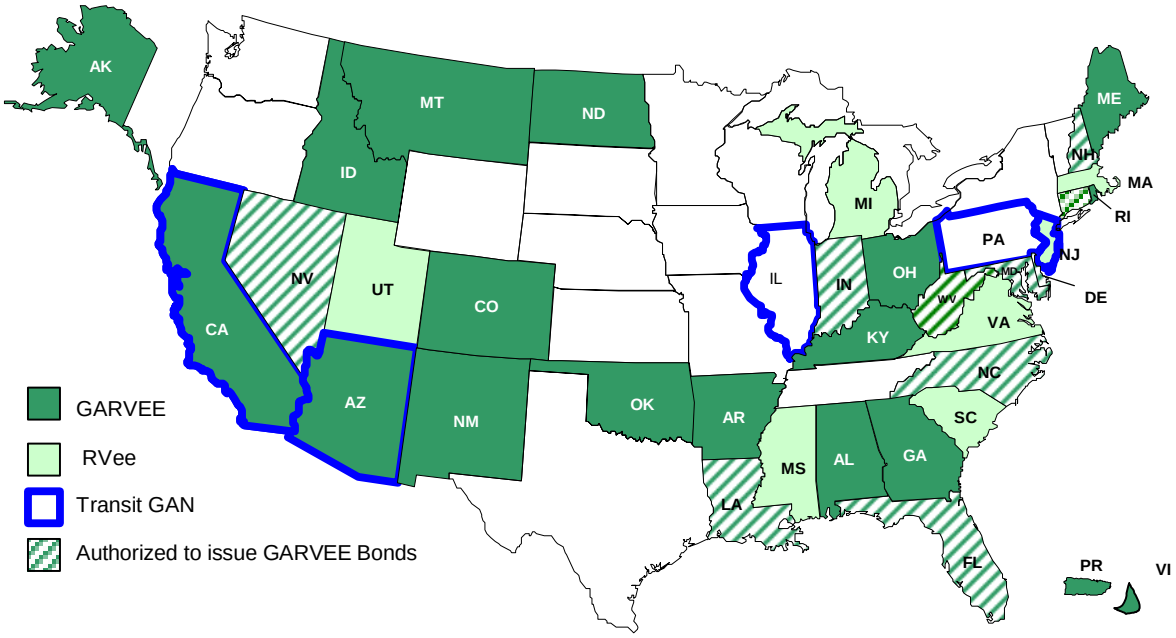
[3] According to FHWA's *Innovative Finance Quarterly*, Fall 2006 edition.

Federal highway reimbursements (Construction Reimbursement Vehicles or RVees) also had been issued. RVees are sometimes referred to as "indirect" GARVEEs because the Federal funds used to pay all or a portion of the debt service are not necessarily linked to the projects being financed. RVees are issued pursuant to state laws and regulations and the proceeds do not have to be used on Federal-aid projects.

Transit agencies can use a similar vehicle – Grant Anticipation Notes (GAN) – to borrow against future Federal Transit Administration grants that are allocated by formula (Section 5307) or by project (Section 5309).[4] Approximately $3 billion of GANs have been issued thus far.

Figure 4.1 shows the states that have issued debt payable from Federal transportation grants.[5]

Figure 4.1 Debt Payable from Federal Grants
2006



Sources: FHWA and Mercator Advisors LLC.

[4] http://www.innovativefinance.org/topics/finance_mechanisms/bonding/bonds_gans.asp.

[5] Primary source is FHWA *Innovative Finance Quarterly*, Fall 2006.

Section 129 Loans – Section 1012 of ISTEA made state loans to certain transportation projects eligible for reimbursement from Federal-aid highway funds. This new opportunity provided states with a means to recycle Federal-aid highway funds by lending them out, obtaining repayments from project revenues, and then reusing the repaid funds on other highway projects. Pursuant to Section 129(a)(7) of Title 23, states can use funds from their annual apportionments to make loans to public and private sponsors of any Federal-aid highway project. The project sponsor must pledge non-Federal revenues from a dedicated source of funding, such as tolls, excise taxes, sales taxes, property taxes, motor vehicle taxes, and other beneficiary fees. Loans can be in any amount, up to 80 percent of the project cost, provided that a state has sufficient obligation authority to fund the loan.

One of the key advantages to Section 129 loans is the opportunity for states to get more mileage out of their annual apportionments. States benefit because every loaned dollar is repaid and recycled into further investment in the transportation system. From a project sponsor's perspective, loans are useful in offsetting up-front capital requirements that might otherwise have to be borrowed in the open market at higher rates. Further, Section 129 loans can serve a credit enhancement function when repayment is subordinated to other borrowing.

State Infrastructure Banks (SIB) – The use of Federal aid to fund loans that can be recycled was broadened in a programmatic way through State Infrastructure Banks. All states and territories and the District of Columbia are authorized under current law to enter into cooperative agreements with the Secretary of Transportation to establish infrastructure revolving funds eligible to be capitalized with Federal transportation funds authorized for fiscal years 2005 to 2009. These revolving funds, which are usually referred to as SIBs, provide an opportunity to leverage Federal and state resources by *lending rather than granting* Federal-aid funds, and they can be used to attract non-Federal public and private investment. Among the advantages to borrowers are that funds may be loaned on a low-interest basis, and SIB loans can be secured by a subordinate lien on pledged revenues. SIBs also are authorized to provide credit enhancement through loan guarantees, reserve funds, and other means.

Thirty-two states and Puerto Rico have SIB programs and the aggregate amount of 491 loan agreements completed through the end of fiscal year 2005 exceeded $5.2 billion. Five states account for 50 percent of the total number of loan agreements and 89 percent of the total amount of loans.[6]

Not all SIBs are structured exclusively as loan revolving funds capitalized with Federal grants and state match. Some, such as in Arizona and South Carolina, rely principally on borrowing through the tax-exempt bond market to obtain lendable funds. Loan repayments then are used to retire the debt that has been issued, rather than being recycled into a "second round" of project loans.

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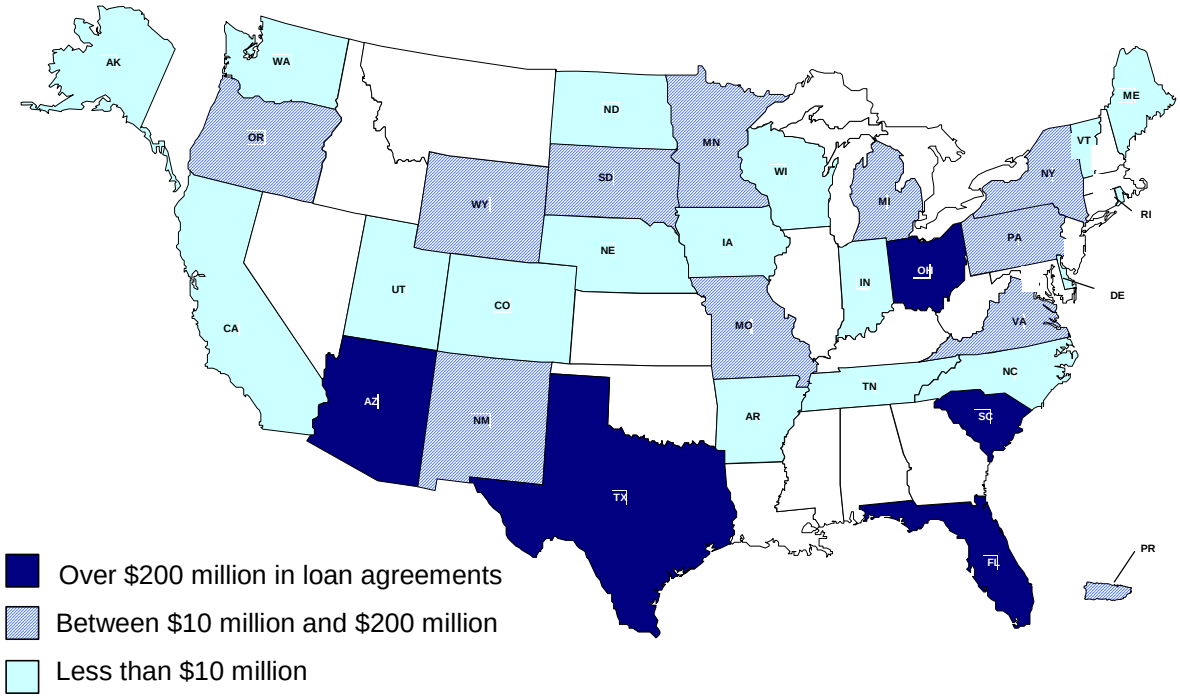
[6] FHWA *Innovative Finance Quarterly*, Fall 2005.

Figure 4.2 State Infrastructure Bank Activity
2005



Source: *Highway Statistics* 2005, released October 2006.

Pass-Through Financing, Availability Payments, or Shadow Tolls – Some states are encouraging local communities and private entities to finance and manage certain transportation improvements by agreeing to reimburse those entities over time for a significant portion of the cost. In Texas, these agreements are known as Pass-Through Financings and the state reimbursement will be based in large part on the number of vehicles that use the new facility.[7] Florida is selecting a private concessionaire to design, finance, build, operate, and maintain a $1 billion tunnel to the Port of Miami, where the concessionaire may be compensated through annual "availability payments" based on various performance standards. Miami-Dade County has contributed $100 million of general obligation bond proceeds to initial studies for the project and is expected to be responsible for a portion of the annual payments over a 35- to 40-year period.[8]

Long-Term Leases of Existing Assets – Public transportation authorities have leveraged various property assets to generate incremental cash or in-kind goods and services for many years. Several highway agencies, for example, have granted access to their

[7] As of October 2006, TxDOT had completed 11 pass-through finance agreements with cities and counties. Additional information: http://www.dot.state.tx.us/publications/tta/pass_through.pdf.

[8] www.portofmiamitunnel.com.

right-of-way to private telecommunications companies in exchange for donations of communications technology (principally capacity on fiber optic lines) or lease payments. Some transit authorities have had success entering into joint development arrangements with private developers that leverage air rights and publicly owned property around rail stations.

A more dramatic development in recent months involves the long-term lease of existing toll facilities in exchange for upfront cash payments and/or a share of future project revenue. A private concession company paid the City of Chicago $1.83 billion in January 2005 for the right to operate the Chicago Skyway for 99 years. In January 2006, that same consortium submitted the winning bid of $3.85 billion for a 75-year lease of the Indiana Toll Road. The Commonwealth of Virginia received $603 million in June 2006 for a 99-year lease of the Pocahontas Parkway. The negotiated concession agreement for that project includes a provision for sharing revenue with the Virginia Department of Transportation (VDOT) if certain conditions are met and it allows VDOT to terminate the concession after 40 years upon payment of certain costs. With regard to generating resources available for transportation investment, a long-term lease of an existing asset should be viewed as a *financing mechanism*, not a *new source of revenue*.

There is considerable debate among transportation policy-makers as to the "value proposition" for long-term operating concessions. Private owners may have more incentive to introduce new technologies, implement operating efficiencies, and control costs in order to enhance the profitability of their franchise. But it also appears that private owners have a much greater willingness to raise tolls (i.e., use "market pricing") and are less sensitive to public criticisms than governmental entities.

Proponents of asset leases have pointed to the capital structure of concessions – taxable loans and private equity – as producing a larger upfront cash infusion than tax-exempt debt financing models for assets managed by government agencies. In 2006, the Harris County Toll Road Authority, a public agency responsible for building, operating and financing 491 lane-miles of toll roads in the Houston metropolitan area, sought to resolve that question through a "controlled experiment." It furnished a set of uniform operating assumptions to three separate investment banking teams to perform a financial valuation of the Authority's toll roads under three different models: i) continued public agency ownership and operation; (ii) a long-term lease to the private sector; and (iii) an outright asset sale to private sector.

The study concluded that all three approaches could generate financial valuations in the same order of magnitude, *if* aggressive leveraging was pursued. The single most important driver of financial value was found to be the assumed toll revenues, which are determined by the toll schedule and traffic volume, and which were fixed for purposes of the experiment. Maximizing the value of an existing toll facility, therefore, is largely determined by the assumed level of toll rates. Other factors, such as relative operating margins, nominal cost of capital and the tax benefits derived from private ownership of the business, were determined to be of much lesser importance.

With the increasing frequency of privatization proposals, public sponsors will need to develop a framework for evaluating these and other policy questions.

Examples of Strategies to Leverage Existing Resources

- **Flexible Match –** In *Pennsylvania*, the use of flexible match accelerated construction of a $3.2 million project that encompassed seven individual transportation enhancement projects. Of the total cost, $1.0 million was funded from private sources. These funds directly offset the non-Federal matching fund requirement; no state funds were directed to this project. The ability to substitute private funds for public matching funds offered PennDOT a means to expedite construction of these projects that otherwise lacked the required match.
- **Partial Conversion of Advance Construction –** The *Connecticut State DOT* advanced a major bridge **project** with a total construction cost of $55.4 million through a phased conversion of a $35.7 million component to Federal funding. Connecticut spread its Federal-aid obligations for the I-95 bridge project over two years, enabling it to redirect some funds to other smaller bridge projects.
- **GARVEE Bonds –** *Oklahoma's* first GARVEE issue of $50 million was sold in March 2004. In August 2005, the State issued an additional $48.9 million in GARVEE bonds as part of the financing for the Governor's identified 12 corridors of "economic significance." These issues are part of an anticipated $799 million program authorized by the legislature in 2000, of which $500 million is expected to be funded with GARVEE bonds. Within these corridors, the State is anticipating issuing a total of $300 million of GARVEE bonds by October 2007, with an additional $200 million planned after that date. It is expected that improvements within these identified corridors will enhance the business climate throughout the State. Examples of the proposed projects include U.S. 77 Broadway Extension in Oklahoma City, I-44 in Tulsa, and U.S. 183 from U.S. 70 to I-40 in Southwest Oklahoma.
- **State Infrastructure Bank –** *Arizona's Highway Expansion and Extension Loan Program* (HELP) has been one of the nation's most active SIBs, ranking third nationally in loan activity. A seven-member HELP Advisory Committee accepts loan applications, reviews and evaluates requests for financial assistance, and makes recommendations to the State Transportation Board on loan and financial assistance requests. To date, the Transportation Board has approved 49 loans totaling $564 million. The program has been used throughout Arizona with loans in 14 of Arizona's 15 counties, benefiting both rural and urban areas. Each of the three major regional areas of the State – Maricopa County, Pima County, and statewide (the other 13 counties) – have received substantial assistance from HELP. Loans have ranged from an $80,000 loan to the Town of Miami for two street widening and resurfacing projects to a $100 million loan to the Arizona Department of Transportation (ADOT) for the purchase of right-of-way for the Regional Freeway System in Maricopa County.
- **Full Funding Grant Agreement –** In order to enhance prospects for securing Federal Transit Administration funding for the first phase of the *Dulles Corridor Metrorail Project*, a group of commercial landowners submitted a petition to Fairfax County to establish a transportation improvement district to provide funding for a local contribution. The petition was approved in 2004 and the tax levy is expected to be sufficient to support $400 million of bonds.
- **Shadow Tolls –** A developer advanced $6.5 million to the *E-470 Public Highway Authority* to pay for construction of a new interchange. The repayment terms are based in part on the number of vehicles that use the interchange.
- **Long-Term Lease of Existing Toll Road –** The State of Indiana recently entered into an agreement to privatize the 157-mile Indiana Toll Road. A joint venture between the Spanish transportation services company Cintra and the major Australian investment bank Macquarie will operate the toll road as a for-profit enterprise under the 75-year deal. The agreement called for the consortium to pay the State $3.8 billion in advance and assume the responsibility for operating and maintaining the toll road to explicit standards. In exchange, the consortium will collect all revenues from operation of the road. The funds that the State derives from the deal will be used to pay for other major transportation projects within the State.

The upfront financial proceeds from an asset monetization need to be weighed against other local public policy considerations to determine whether the transaction is advisable. Among the factors that should be considered are:

- Will control of the asset by a private owner, whose orientation will be to set tolls so as to maximize profitability, be consistent with the public sector desire to increase access and improve mobility?
- Is there any risk of diversion of traffic to non-tolled roads, and to what extent would there be greater congestion on those roads or higher public expenditures for operations and maintenance?
- Will turning over operational control of a toll road for a long-term (50 years or more) period interfere with transportation planning in future years?

4.2 Create Revenue-Generating Assets

Innovative finance and public-private partnerships are expected to play a significant role in advancing new toll facilities and other capital improvements supported by user fees. Outlined below are certain strategies, including the use of credit enhancement, that can facilitate the development and financing of such projects.

In terms of increasing total transportation investment, the contractual arrangements between the public and private entities involved in creating the assets and the form of financing (tax-exempt versus taxable debt and equity) are not as important as the framework established for setting the tolls or user fees. On any given project, the gross amount of revenue generated under a policy goal of simply retiring the construction debt, for example, is likely to be significantly lower than the revenue realized if tolls or user fees are set at the maximum levels the market will bear. One of the challenges faced by state and local authorities developing revenue-generating assets is establishing clear and consistent policies for subsidizing projects that cannot generate sufficient revenue to cover associated costs and for generating and allocating surplus revenue from facilities in more robust markets.

Given limited discretionary funding, many states also may need to supplement their traditional sources of revenue in order to effectively pursue project finance strategies. The Texas Transportation Commission, for example, secured an amendment to the State constitution and other legislation needed to create a Texas Mobility Fund that will be used, in part, to supplement funding for regional toll roads. The revenues dedicated to the Texas Mobility Fund (various driver license and motor vehicle fees) are expected to support approximately $3 billion of bonds.[9]

[9] ftp://ftp.dot.state.tx.us/pub/txdot-info/lao/strategic_plan2005.pdf.

Make Strategic Investments – State DOTs and transit authorities can facilitate the creation of revenue-generating assets by assuming responsibility for a portion of the capital costs or operating expenses that cannot be supported by projected revenues. Based on experience to date, few start-up infrastructure projects are likely to be completely self-supporting. In a recent GAO survey of state transportation officials, for example, the most frequently cited reason for not pursuing tolling was insufficient revenue.[10] Many of the respondents were unwilling (or perhaps unable) to consider tolling unless the projected toll revenue was sufficient to cover the capital costs and the anticipated operating and maintenance expenses. Tolling and user fees, however, can be beneficial from both a financial and operational perspective even in situations where public investment or subsidy is required.

Public sector financial support can be beneficial at various stages of a project life cycle. Some states, for example, have established special funds to help project developers (public and private) offset the costs of environmental analyses and preliminary design.[11] Others have facilitated various project financing efforts by securing specific Federal appropriations, contributing right-of-way, building key feeder roads, or providing commitments to cover certain costs or project risks. The State of California facilitated financing of the Orange County toll road system by agreeing to own and maintain the facilities upon completion. The State of Maryland intends to fund a portion of the Intercounty Connector toll project by leveraging future Federal funding with GARVEE bonds and by seeking a TIFIA loan.[12]

Access the Tax-Exempt Market – One way to secure financing for revenue-generating infrastructure projects is to access private investors in the U.S. municipal market. State and local governments can issue tax exempt revenue bonds through established conduit issuers or newly created public authorities. In the toll road sector, for example, North Carolina and Colorado have recently established state turnpike authorities and in Texas, there are several new Regional Mobility Authorities that are authorized to issue project debt on a tax-exempt basis.

Several highway and transit projects have been funded with proceeds from debt issued by nonprofit corporations, which, pursuant to Internal Revenue Service (IRS) Revenue Rule 63-20 and Revenue Procedure 82-26, are able to issue tax-exempt debt on behalf of private project developers. Examples include toll roads (the Pocahontas Parkway in Virginia and the Southern Connector in South Carolina), the State-supported Massachusetts Route 3 North project, and the Las Vegas Monorail project.

A new option for accessing the tax-exempt market was created under SAFETEA-LU with the establishment of a new class of Private Activity Bonds (PAB) for "qualified highway or surface freight transfer facilities." To be eligible, projects must be Title 23 eligible projects,

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[10] *States' Expanding Use of Tolling Illustrates Diverse Challenges and Strategies*, GAO-06-554.

[11] Virginia Transportation Partnership Opportunity Fund, Texas Toll Equity grants and loans, Florida Toll Facilities Revolving Trust Fund.

[12] http://www.e-mdot.com/News/2006/May%202006/ICC_fed_appr.htm.

international bridges and tunnels, or intermodal rail-truck transfer facilities that receive some form of Federal assistance under Title 23. A national limit of $15 billion is authorized under the program, to be allocated by the Secretary of Transportation on a discretionary basis. The PABs are Federally tax-exempt but purchasers are subject to the alternative minimum tax.

Access the Taxable Debt and Equity Markets – Several states are pursuing opportunities to create partnerships with private consortiums in order to advance development of major improvements. In addition to providing technical and management expertise, the private sector, in certain circumstances, also can access the taxable debt and equity markets to secure project financing. To date, relatively few privately financed infrastructure projects have been completed in the United States, but several are in development in California, Georgia, Texas, and Virginia.

Table 4.1 U.S. Infrastructure Projects in Operation or under Construction that Were Financed with Taxable Debt and Equity

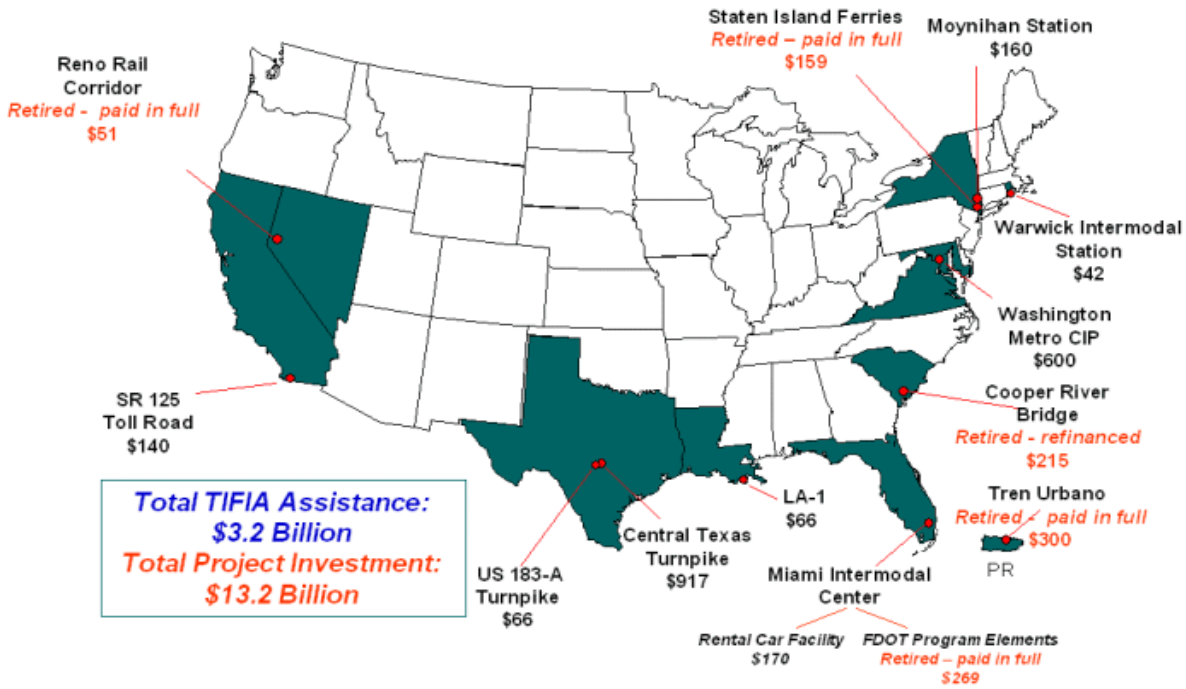
Project	Year Open	Initial Financing (in Millions)
Dulles Greenway (Virginia)	1995	$350
SR 91 Express Lanes (California)	1995	$126
United Toll Systems Toll Bridges (Alabama)	1994 to 1998	$38
Camino Colombia Toll Road (Texas)	2000	$90
Adams Avenue Parkway (Utah)	2001	$12
South Bay Expressway/SR 125 (California)	2007	$621

Utilize the Transportation Infrastructure Finance and Innovation Act (TIFIA) Program – The TIFIA program, which was enacted in 1998 as part of TEA-21 and expanded in SAFETEA-LU, provides Federal credit assistance to major transportation investments in the form of direct loans, loan guarantees, and lines of credit. The program is designed to fill market gaps and leverage substantial private co-investment by providing supplemental and subordinate capital and credit rather than grants. A review of TIFIA undertaken for a 2002 Report to Congress found that the program also was useful in helping project sponsors consolidate political and financial support for certain projects.[13]

Figure 4.3 highlights TIFIA projects approved as of October 2006.

[13] http://tifia.fhwa.dot.gov/.

Figure 4.3 Approved TIFIA Projects
October 2006



Source: Federal Highway Administration.

Utilize the Railroad Rehabilitation and Improvement Financing (RRIF) Program – This U.S. DOT program was enacted in 1998 as part of TEA-21 and was reauthorized and expanded under SAFETEA-LU in 2005. RRIF provides credit assistance to state and local governments, railroads, government-sponsored authorities and joint ventures that include a railroad partner. The direct loans and loan guarantees may be used to acquire, improve, or rehabilitate intermodal or rail equipment or facilities. RRIF also can be used refinance debt previously incurred for these purposes and to establish new intermodal or railroad facilities. Direct loans can fund up to 100 percent of a railroad project with repayment terms of up to 25 years and interest rates equal to the cost of borrowing to the government.

As of October 2006, RRIF loan agreements had been executed for 13 projects with an aggregate loan amount of approximately $517 million.[14] Under SAFTEA-LU the program is authorized to issue up to $35 billion in direct loans and loan guarantees. Up to $7 billion is reserved for benefiting freight railroads other than Class 1 carriers. RRIF currently does not have an appropriation to cover the risk cost to the government of providing the credit assistance. This credit risk ("subsidy") cost must be paid by the applicant at the time the loan or loan guarantee is provided.

[14] http://www.fra.dot.gov/us/content/268.

Examples of Strategies to Create Revenue-Generating Assets

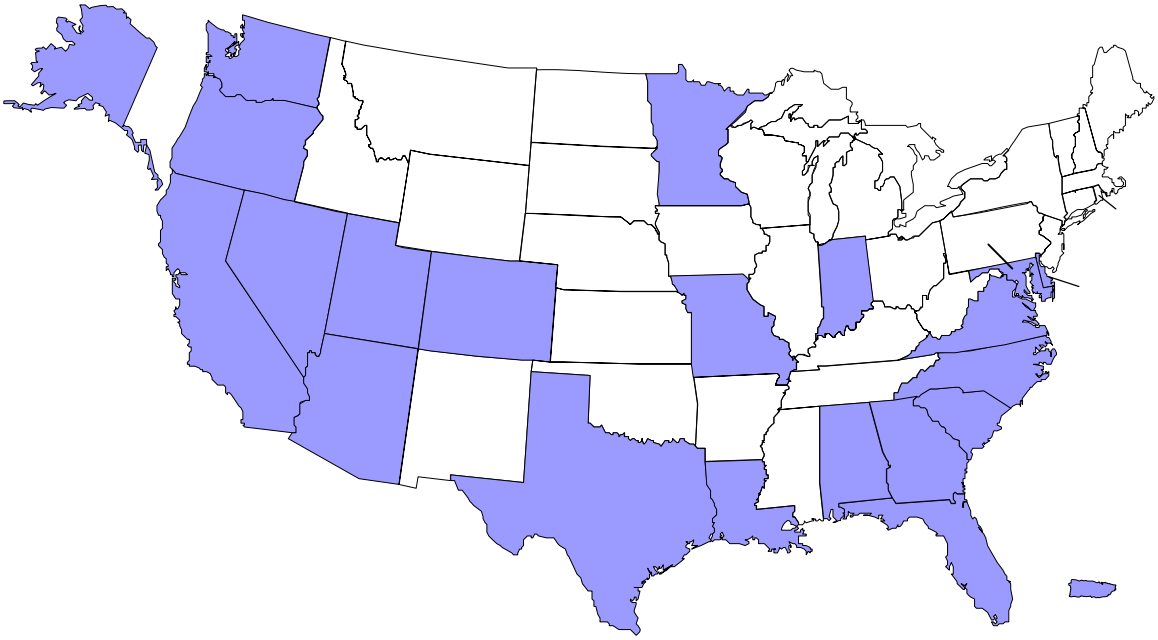
- **Make Strategic Investment –** Approximately $2.3 billion of debt was issued to finance the *Central Texas Turnpike System* project in 2002. Upon completion in 2008 through the final maturity of the bonds in 2042, the project is expected to generate over $8.2 billion of gross toll revenue. That amount will be sufficient to pay scheduled debt service and toll operations, but does not cover all anticipated maintenance costs. Support from the Texas Transportation Commission, therefore, was key to securing financing from private investors (and a loan commitment from TIFIA). State financial support includes investment of $700 million of state highway funds, agreements with local municipalities to secure $512 million of funding for right-of-way acquisition, and a pledge to cover construction cost overruns and to budget for any operational costs that cannot be supported by toll revenues.
- **Supplement Project Revenue –** During the planning stages for E-470, a tolled beltway around the eastern perimeter of Denver, Colorado, the public highway authority formed to develop the project sought and received voter approval to impose a $10 per motor vehicle registration fee. The revenue generated by the fee comprised a relatively small portion of total project funding, but it showed investors there was strong local support for the project and supported authority operations during construction.
- **Provide Access to the Tax-Exempt Market –** The State of Nevada facilitated private financing of the *Las Vegas Monorail* project by serving as the issuer of approximately $600 million of tax-exempt revenue bonds secured primarily by farebox and advertising revenue.
- **Access International Debt and Equity –** The South Bay Expressway, a 9.5-mile toll facility being built in San Diego County, California, will cost approximately $635 million and is privately financed by California Transportation Ventures, Inc. Funding sources include bank loans, a $140 million Federal loan provided by the U.S. Department of Transportation under the TIFIA program, as well as private equity capital. Area developers also have dedicated right-of-way valued at more than $40 million. A link from the Expressway to the existing SR125 costs about $140 million and is being funded by the San Diego Association of Governments (SANDAG).
- **Facilitate User Fee Financing with TIFIA –** The Rhode Island Airport Corporation and Rhode Island Department of Transportation are constructing the $222 million *Warwick Intermodal Facility* at T.F. Green State Airport that includes a consolidated rental car garage, a commuter rail station, parking, and a hub for local and intercity buses. One of the keys to the successful project financing was obtaining a $42 million subordinated TIFIA loan secured primarily by customer facility charges imposed on airport rental car customers.
- **Federal Loan Financing through RRIF –** The *Iowa Interstate Railroad* (IIR) received a $32.7 million Federal loan to help it improve service to rural areas that rely on trains to ship corn, soybeans, steel, chemicals, and other products to market. The loan will pay for track improvements needed to haul heavier freight cars and get products to key shipping points faster and safer. Specifically, the funds from the RRIF program will improve 266 miles of track, replace 180,000 crossties, lay thousands of tons of new ballast, and rebuild 95 highway-rail grade crossings between Council Bluffs, Iowa, and Bureau, Illinois. A portion of the loan also will be used to purchase a rail line that IIR currently is leasing and refinance debt incurred from previous infrastructure improvement projects.

4.3 Use Public-Private Partnerships to Enhance Project Delivery and Asset Management

State and local transportation agencies are using a wide range of contractual arrangements to enhance private sector participation in Project Delivery (development phase through design and construction), Asset Management (long-term operations and maintenance), and Project Finance (debt and possibly equity financings secured primarily by project revenues). These public-private partnerships can provide substantial benefits in terms of accelerating project development and construction, increasing operating efficiency, and limiting public sector exposure to certain risks, such as cost overruns or project revenue shortfalls.

As of October 2006, 21 states and Puerto Rico had adopted enabling legislation authorizing some form of public-private partnership with regard to delivery of transportation projects.[15] These states are portrayed in Figure 4.4.

Figure 4.4 States with Significant PPP Authority
2006

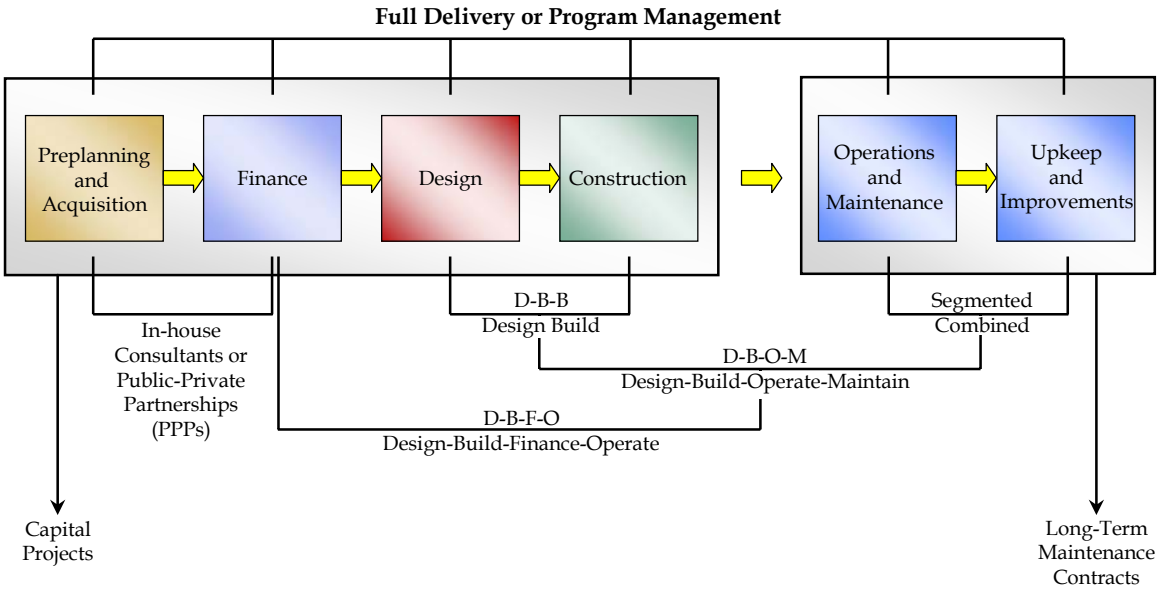


[15] Authorization varies from state to state and is limited in some cases to a specific project. Source: Nossaman Guthner Knox & Elliott. http://www.fhwa.dot.gov/ppp/tools_state_legis_table.htm

The Federal government also is encouraging increased use of public-private partnership approaches to deliver transportation projects. In 2004, FHWA established a new Special Experimental Project (SEP-15) to encourage experimentation in the entire development process for transportation projects. Under SEP-15, states can apply for waivers from Federal-aid rules in several areas, including contracting, right-of-way acquisition, environmental requirements, and project finance. In addition, SAFETEA-LU expanded upon previous Federal legislation by authorizing design-build procurement for Federally assisted projects of any size and allowing transportation agencies to enter into design-build contracts prior to completion of the environmental clearance process under NEPA. The legislation also established a three-project pilot PPP program for FTA-assisted transit projects.

As shown in Figure 4.5, project delivery approaches can combine many phases of the project life cycle.

Figure 4.5 Alternative Contractual Arrangements



Source: Pakkala, Pekka. Innovative Project Delivery Methods for Infrastructure – An International Perspective. Finnish Road Enterprise, Helsinki, 2002.

Outlined below are some basic vehicles for securing benefits from private sector participation in design and construction, asset management, and project finance.

Design-Build Contracting – Design-build is a generic term for a method of project delivery in which the design and construction phases of a project are combined into one contract. Under the traditional design-bid-build (D-B-B) approach, two different contracting efforts are undertaken in sequence to procure architecture/engineering services on a negotiated-price basis and construction services on a lowest-responsible-bid price basis.

Between 1995 and 2002, about 300 highway projects totaling approximately $14 billion were proposed for design-build contracting by transportation agencies in 32 states, the District of Columbia, and the Virgin Islands. A Design-Build Effectiveness Study completed in January 2006 analyzed data from some of the design-build projects that were completed by year end 2002 as well as surveys of project sponsors and other research.[16] The study highlighted certain project features and circumstances that merit consideration of a design-build approach, including:

- Medium to large projects that are more complex in nature and can benefit from the application of innovative concepts in project design and development earlier in the project conceptualization process;
- Projects that have a high sense of urgency (due to natural disasters or facility failures); and
- Projects with a dedicated revenue stream associated with completion (such as toll roads) provide added incentive for the public sector to complete a project on time and within budget.

With regard to generating additional investment capital for transportation, the design-build approach provides an indirect benefit to the extent it facilitates financing of projects that generate user fees or other new revenue. Design-build projects funded with Federal and state funds or with proceeds from bonds secured by public revenues however do not necessarily increase total investment.

Performance-Based Maintenance Contracts (PBMC) – Performance-Based Maintenance Contracts (also referred to as Total Contract Maintenance or Asset Management Maintenance Contracting) are now being utilized by many state highway agencies as a method of performing their routine maintenance workloads. While there are many variations on this contracting technique, PBMC generally consists of identifying routine maintenance needs (e.g., mowing, signs, guardrails, drainage, and emergency response), preparing performance-based requirements, and bundling them to allow a contractor to manage and direct the work effort to meet these standards. The DOT conducts oversight of a PBMC contract generally through random inspections. While some DOTs have procured PBMC with the low-bid process, an alternative is to bid the work as a negotiated, best-value contract.

Design-Build-Finance-Operate (DBFO) – With DBFO procurements, the responsibilities for designing, building, financing, and operating a new transportation facility (often referred to as a "Greenfield" project) are bundled together and transferred to private sector partners. States using this approach generally conduct competitive processes based on conceptual proposals and then negotiate a comprehensive development agreement with the private consortium that offers the "best value."

Several states, notably Virginia and Texas, are pursuing DBFO strategies. But for transaction volume to grow, it will be necessary to resolve some critical outstanding issues concerning the private sector's role in matters such as environmental permitting, acquisition of right-of-way, and the degree of public sector oversight of long-term concession contracts.

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[16] http://www.fhwa.dot.gov/reports/designbuild/designbuild.pdf.

Examples of Project Delivery and Asset Management Initiatives

- **Design-Build Contract –** The $1.59 billion Interstate 15 reconstruction was the *Utah Department of Transportation's* (UDOT) first design-build procurement. The project involved the reconstruction of 26 kilometers of interstate mainline and the addition of new general purpose and high-occupancy vehicle (HOV) lanes through the Salt Lake City metropolitan area. The project also included the construction or reconstruction of more than 130 bridges, the reconstruction of seven urban interchanges, and the reconstruction of three major junctions with other interstate routes, including I-80 and I-215. In addition, the project provides for the construction of an extensive regionwide advanced traffic management system.

  UDOT's decision to use the design-build model was motivated by two factors. The first was the strong public support for completing the project as soon as possible to minimize the period of severe traffic congestion resulting from the diversion of more than half of the traffic from I-15 during the construction period. The second factor was the need to have the project completed before the 2002 Winter Olympics in Salt Lake City. It was generally accepted that use of the design-build contracting methodology was the only way to satisfy these goals.

- **Performance Maintenance Contract –** The *District of Columbia Division of Transportation* (DDOT), with FHWA, entered into a $69.6 million, five-year contract with a private highway asset management firm for the maintenance of city streets, tunnels, pavements, bridges, roadside features (curbs, gutters and retaining walls), pedestrian bridges, roadside vegetations, guardrails, barriers, impact attenuators, and signs in Washington, D.C. The operating concession also includes citywide snow and ice control responsibilities. The maintenance contract is performance-based and requires the contractor to apply rigorous asset management practices.

- **Design-Build-Finance-Operate –** In April 2005, the *Virginia Department of Transportation* signed a comprehensive agreement with Fluor Enterprises, Inc. and Transurban (USA) Inc. to improve the Capital Beltway (I-495) in Northern Virginia. The project will add two high-occupancy toll (HOT) lanes in each direction on a 14-mile segment of the Capital Beltway, from north of the Springfield Interchange to north of the Dulles Toll Road. Before construction can begin, Transurban and Fluor will pay for and complete an in-depth traffic and revenue study and more detailed engineering, which are under way. The study will determine if HOT lanes are economically viable and help to set a fair and equitable toll structure.

  The comprehensive agreement was signed under the Public-Private Transportation Act (PPTA). The PPTA allows Virginia to partner with private companies to build projects more efficiently, with the private sector sharing in the financial risk of project development, construction, and operation.

  When fully built, construction of the four HOT lanes is estimated to cost $900 million, which would be paid for primarily by revenues from the HOT lanes. Transurban's investment would be at least 15 percent of the cost. As a result of Transurban's investment, the Commonwealth will bear little or no financial risk in the construction of the HOT lanes or their operation.

4.4 Summary and Key Policy Issues

Table 4.2 provides a summary of various financing tools and partnering arrangements that can be used to leverage existing resources, create new revenue-generating assets, or enhance operating efficiency.

Table 4.2 Candidate Financing and Management Tools

	Modes				Scope		
	Highway/Bridge		Transit				
	Preservation and Maintenance	New Capacity	Operations and Maintenance	Capital	Program	Project	Locations Used
Finance or Management Tool							
1. Leverage Existing Resources[a]							
Federal Grant Management Tools	●	●				●	Many states
GARVEE Bonds, RVees and Transit GANs	●	●		●	●	●	AK, AR, AZ, CA, CO, GA, ID, KY, MA, ME, MI, MS, MT, NJ, NM, ND, OH, OK, PR, RI, VA,VI
State Infrastructure Banks	●	●		●		●	33 states (Figure 4.2)
Section 129 Loans	●	●				●	TX
Pass-Through Financing/Availability Payments	●	●		●	●	●	CO, TX; Proposed in FL
Long-Term Asset Leases	●	●			●	●	IL, IN, VA
2. Create Revenue-Generating Assets							
Access Tax-Exempt Market through a Public or Nonprofit Issuer[b]		●		●	●	●	CA, CO, FL, NV, NY, SC, TX, VA, WA
Access Tax-Exempt Market with Private Activity Bonds[c]		●				●	Proposed in TX, but none to date ($15 billion national cap.
Access Taxable Debt and Equity Markets		●				●	AL, CA, TX, UT, VA
TIFIA/RRIF Assistance		●		●		●	CA, NV, TX, NY, SC, FL, PR, DE, DC, MD, VA, LA, RI, IA, ME, MN, TN, AK, MO
Use PPPs to Enhance Project Delivery and Asset Management (mechanisms can be used with both #1 and #2 above)							
Design-Build Contracting		●		●		●	As of April 2006, 37 states had some authorization to employ design-build.
Performance-Based Maintenance	●		●		●	●	FL, TX, VA, DC, TN, OK, AK
Design-Build-Finance-Operate (DBFO)		●		●		●	CA, TX, VA

a The financing tools are used primarily for new capital projects, but major rehabilitation and reconstruction needs also may be appropriate to finance over the long term.

b Includes major (greater than $25 million) user fee-backed project financings completed after 1991; does not include system expansions or other project financings undertaken by public authorities prior to 1991.

c Qualified Highway or Surface Freight Transfer Facilities under the SAFETEA-LU private activity bond provision (§11143) include any surface transportation project that receives Federal assistance under title 23 and any facility for the transfer of freight from truck to rail or rail to truck that receives Federal assistance under either title 23 or title 49. While highway and intermodal projects clearly are the focus of this provision, the eligibility link to title 23 programs potentially creates the opportunity to assist other types of surface transportation projects funded under Title 23 as well.

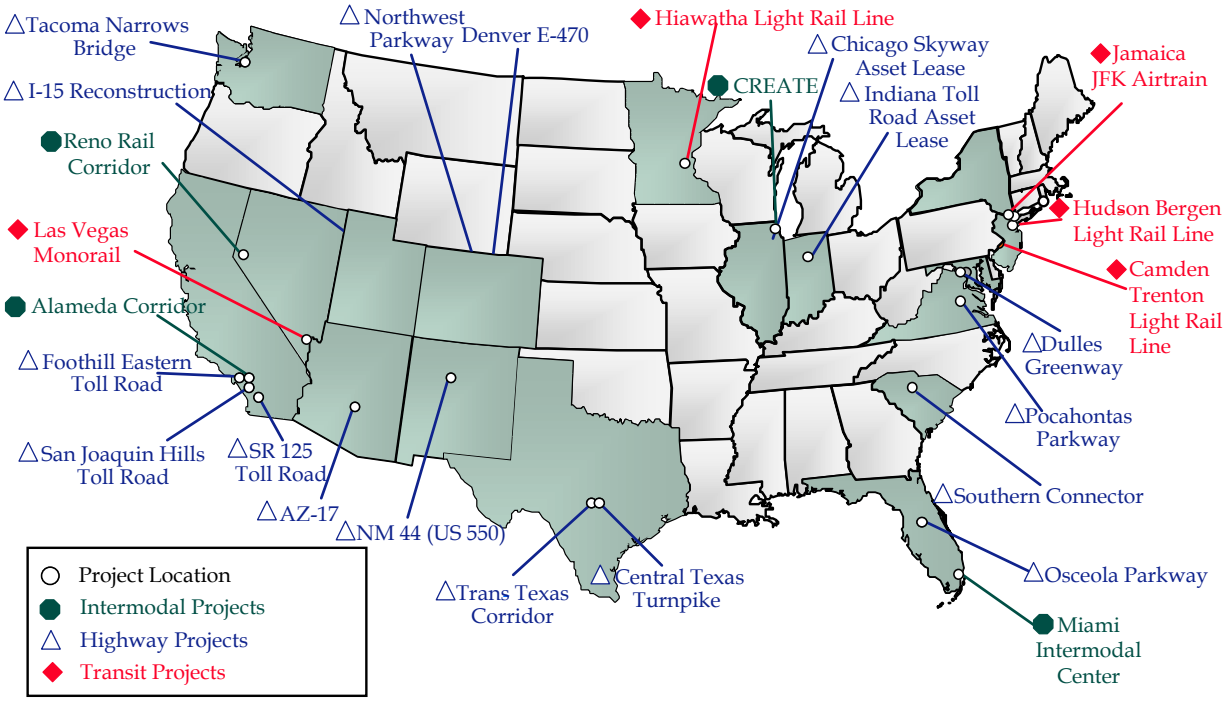
Utilizing innovative finance and PPPs to augment existing programs and accelerate key investments does raise important issues for policy-makers. Two of these issues are briefly discussed below.

Identification and Development of Project Finance Candidates

A major investment bank recently estimated that there is over $200 billion of private capital currently available for investment in U.S. infrastructure projects.[17] It will be difficult to put that money to work in the surface transportation sector, though, without a robust pipeline of viable investment opportunities.

Public Works Financing, a monthly industry newsletter, periodically publishes an inventory of PPP projects. Based on the most recent annual survey, about $32 billion of major highway and transit projects (minimum size of $25 million) were financed using some form of PPPs between 1993 and 2005. Figure 4.6 highlights many of those projects.

Figure 4.6 Benchmark PPP Transactions



[17] JP Morgan presentation, Texas Transportation Forum, June 2006. Estimate is based on purchasing power of private equity and pension funds seeking investment opportunities in infrastructure-related businesses and assets. Areas for investment include toll roads, rail, airports, seaports, energy, water & wastewater, and telecommunications.

Reasons the amount of private investment in the U.S. has not been greater include the complex environmental permitting process for major highway expansions and new transit facilities and local political resistance to the imposition of tolls and other user fees. It took nearly 10 years to obtain environmental clearances and permits for the State Route 125 Toll Road in San Diego, California, for example, because off a law suit and other challenges. Another issue is the use of tax-based resources, such as proceeds from GARVEE bonds, to fund projects that are candidates for financing with user fees or value capture mechanisms.

Some state DOTs have taken steps to address those issues. The Texas Transportation Commission, for example, has created incentives for metropolitan planning organizations to identify candidates for project financing early in the planning process and it has provided significant resources to expedite development of those projects.

Management of Debt and Long-Term Financing Commitments

A concern that is sometimes raised regarding innovative finance strategies is the potential over-reliance on debt financing and other long-term obligations. Some of the techniques discussed above, such as GARVEE bonds, leverage future revenues in ways that could potentially limit operating flexibility.

A brief examination of FHWA's *Highway Statistics* publication indicates that states generally appear to have been prudent in their use of debt for highway purposes. Although the total amount of bonds outstanding for highways at all levels of government has increased significantly (growing from $58 billion in 1993, for example, to more than $136 billion in 2005), over 60 percent of the additional bonding occurred in just six large states that have committed additional resources to transportation.[18] Twenty-eight states had less than one percent growth in total outstanding highway debt over the period 1993 to 2005 and 10 of those states actually reduced their total outstanding obligations over that period.

Figure 4.7 shows total annual disbursements for state highways from 1970 to 2005.[19] The annual amounts used for payment of interest and bond retirements over that period increased from $1.3 billion to $9.6 billion. Figure 4.8 uses the same data but it shows the percentage of total disbursements represented by each category of spending. In aggregate, the percentage of available resources applied to debt service has been very stable over the last 35 years, averaging approximately 10 percent of total disbursements. In 2005, five states devoted more than 20 percent of available resources to debt payments, but for most states (38) debt service was less than the long-term average of 10 percent of total disbursements.

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[18] FHWA Highway Statistics, Series HB-2. The six states are California, Florida, Massachusetts, New Jersey, New York, and Texas.

[19] FHWA Highway Statistics, Series SF-21.

Figure 4.7 Annual Disbursements by State for Highway Purposes
Gross Dollars

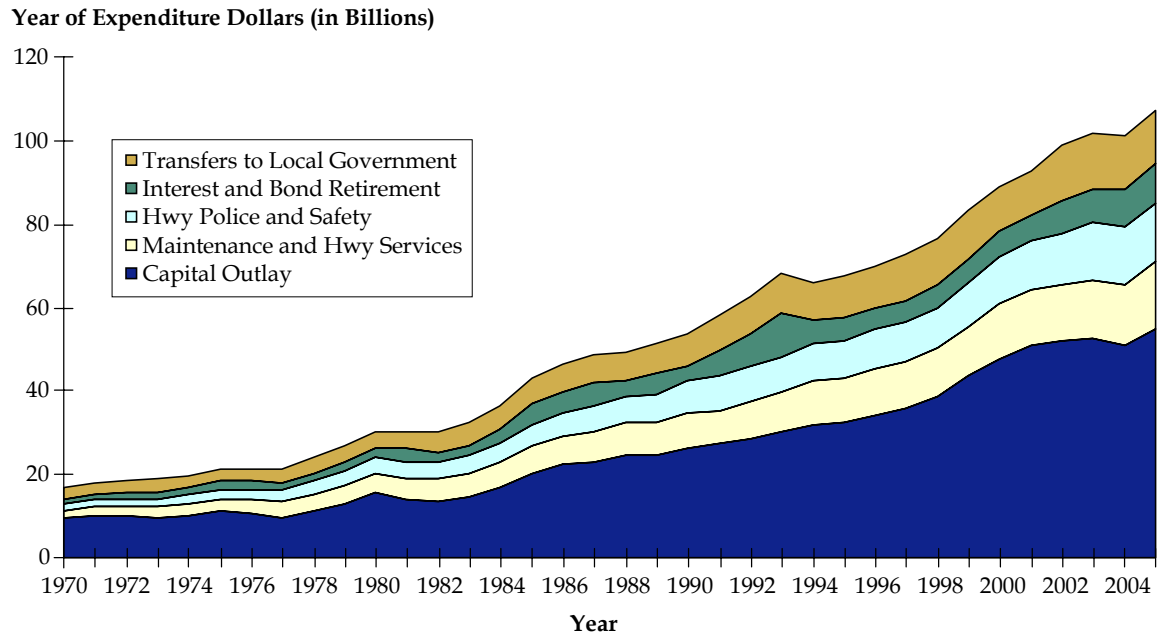
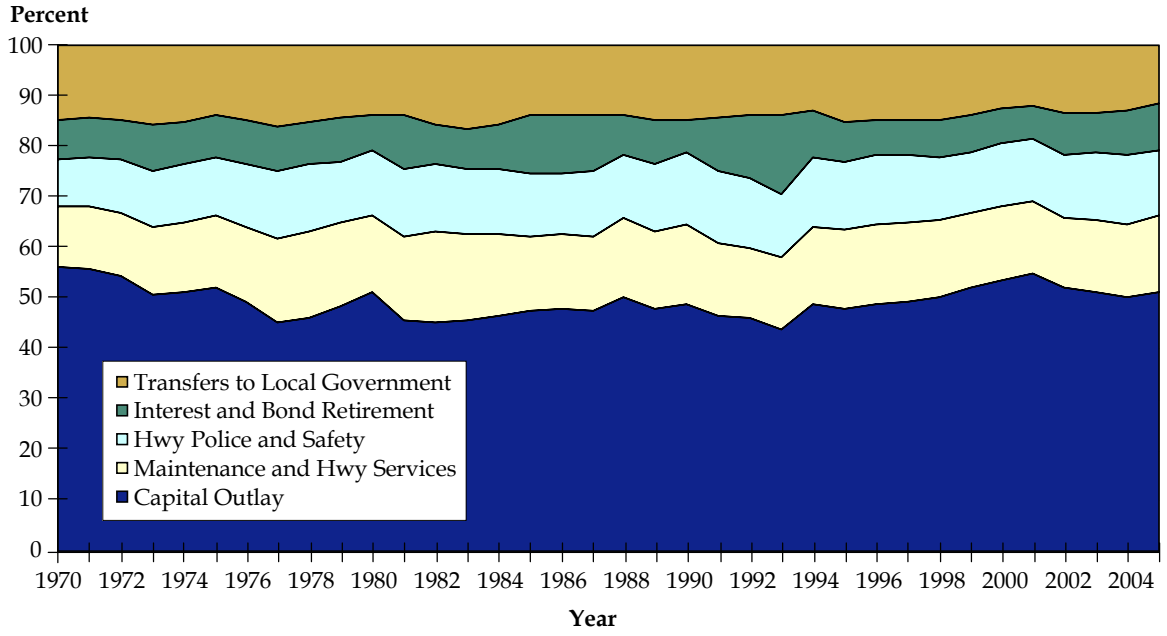


Figure 4.8 Annual Disbursements by States for Highway Purposes
Percentage of Total



5.0 Prospective New and Enhanced Funding Options

All of the most promising alternative revenue sources developed in the study have been evaluated in accord with a comprehensive set of criteria that are commonly applied to transportation revenue proposals. These criteria were identified in the scope of work for this study and are discussed in detail below.

5.1 Criteria for Evaluating Revenue Sources

Alternative revenue sources to close the gaps between revenues and needs have been evaluated in the matrices that are included here using the following criteria: 1) revenue yield, adequacy, and stability; 2) cost-efficiency (includes administrative cost to agencies, compliance costs to taxpayers, and evasion levels); 3) equity with regard to burden across different income groups and equity of revenues and costs attributed to different vehicle classes; 4) economic efficiency, with particular emphasis on efficiency in pricing; 5) political acceptability; and 6) technical feasibility.

Revenue Yield, Adequacy, and Stability

The first criterion, revenue yield, provides the initial and perhaps most significant screen in the evaluation of any alternative proposal to current motor fuel taxes. For the purposes of this evaluation, revenue yield means that the source can provide such a level of revenues that it is very significant in supporting the overall transportation program. Small sources of revenues such as some types of license fees may be helpful, but they are not worthy of major consideration because of low potential yield. Negotiating special project finance packages, such as for a specific mega-project, also does not meet the yield criterion, despite being very helpful in a unique circumstance. Most innovative finance involves borrowing against a future revenue stream, and is further limited to specific important projects. Thus, innovative finance is not an alternative to an enhanced future revenue stream, but rather an element that could enable the revenue stream and the transportation program to be managed more effectively.

Adequacy involves the judgment that current motor fuel taxes and alternative sources should be evaluated with respect to present and future *revenues* in comparison to needs for current and projected *expenditures*. Such a comparison will determine the adequacy of each revenue source in meeting needs, and will differentiate superior sources from those that are merely average or even inferior. Alternative revenue sources should provide at least a comparable or, ideally, larger stream of revenues to states and the Federal government than furnished by the current motor fuel taxes and other current sources. Moreover, alternative sources should have similar or improved stability and predictability in revenue generation in comparison to current sources, such as motor fuel taxes.

Stability refers to whether there are uncertain revenue fluctuations that can impact upon an agency's ability to manage resources. Motor fuel taxes on a per gallon basis have been very stable, because travel by highway does not fluctuate by much from year to year. When the economy slows, consumers and businesses can slow spending on discretionary items or major purchases. Most personal and business travel is nondiscretionary and, in addition, the marginal cost of travel is small in comparison to the fixed costs. Thus, the normal reaction of consumers in a period of economic slowdown is to postpone major expenditures such as purchases of new vehicles, rather than to alter day-by-day trips.

Cost-Efficiency, Including Administrative and Compliance Costs and Evasion

Efficiency refers to the maximizing of benefits in relation to the use of resources (cost of collecting the tax, to both the taxpayers and the government). This implies that administrative costs to agencies and compliance costs to taxpayers incurred by alternative revenue structures should be kept to a minimum. Administrative cost refers to the actual costs incurred by an agency collecting and processing revenue sources. In some cases, this is not the transportation agency itself, and therefore administrative cost is more than an internal management issue. Compliance cost refers to the cost actually incurred by the taxpayer that is additional to the actual payment made. In addition, incentives and opportunities for tax evasion should be minimized as much as possible. Minimizing evasion is important not only in order to protect revenue streams, but also to assure that those who would act illegally do not get a benefit. The society wants at least a level playing field, or a playing field that rewards those who take legitimate actions.

Current motor fuel taxes now tend to do fairly well on these criteria because they are mostly collected at the highest level of the hierarchy of the motor fuels distribution chain: at the major supplier or wholesaler levels. Collecting motor fuel taxes from the largest suppliers (the major petroleum companies) minimizes taxpayer compliance costs because only a few entities file tax returns, and it minimizes administrative costs because collection agencies only need to monitor those few entities. For the ultimate consumer, there are virtually no compliance costs, because the taxes are simply rolled into the price paid at the pump. This also reduces the ability of individuals or businesses to evade the tax (because it already has been paid) and makes it relatively inexpensive to administer.

Equity

Equity is employed as a criterion to assess fairness of tax burden among different economic groups. Theoretically, a tax burden should be commensurate with one's "ability to pay." User taxes, such as ones used to fund transportation, are somewhat less likely to have issues of equity with regard to income level. Equity concerns about the fairness of relative user fee payments by various types of vehicles have been the major sources of debate and conflict in highway taxation. An entire highway industry-specific set of "highway cost allocation" procedures for attributing highway costs among vehicle types has grown up around highway user equity. The Federal government and some states have conducted periodic "highway cost allocation" studies to assess the equity among vehicle classes. Adjustments are then proposed to various user fees in order to achieve more equity.

Equity concerns in terms of the general taxation issues within our society have usually revolved around the relative payments by those with different levels of income. Although motor fuel taxes are somewhat proportional to income, they track less well with regard to income than income taxes or other types of consumption taxes such as general sales taxes, or taxes on surrogate measures of wealth, such as property taxes. The lowest-income groups (at least, those who own vehicles) spend a higher percentage of their incomes on motor fuel taxes than other income groups. The highest-income groups spend a lower percentage than average on motor fuel taxes, because people do not travel more and more miles if their incomes are higher.

Economic Efficiency

This criterion refers to the analysis of marginal cost, or the cost to society of one additional trip made, and whether the price paid for that trip is commensurate with the cost to society. The concept is most familiar in the congestion-pricing context, now sometimes referred to as value pricing. The current motor fuel taxes are not designed to price highway usage in a manner that approximates economic efficiency. In contrast, the road system is an example of a classically defined theoretical "market failure." Because the impacts of additional vehicles on congestion and on losses in travel time increase nonlinearly after some point, the aggregate costs to all other users are not equivalent to the costs of the latest user. Each additional user thus inflicts much higher costs in terms of time penalties on all other users than that user pays in time or operating costs, including fees.

Economic efficiency criteria have not been applied in the real world of highway travel, primarily because traditional ways of pricing travel are very familiar and considered to be more fair than auctioning off scarce roadway space. In addition, up to the current time, the technologies for applying theoretically efficient pricing were not developed enough to allow for reasonable administrative and compliance costs.

Political Acceptability

Political acceptability is in part a combination, or "roll-up," criterion of all others and, on the other hand, a stand-alone threshold in the decision process to employ alternative revenue schemes. Principally, a revenue source is acceptable when it is politically palatable on the key, or most salient, criteria. That implies that the revenue source is adequate, fair, simple, effective, efficient, and easy to administer. While meeting the most important criteria is a necessary component, it may not be sufficient to obtain political acceptability (i.e., garner sufficient popular or legislative support to be implemented). For instance, a straight percentage increase of the current motor fuel tax rates would increase revenue without corresponding losses in the other criteria. However, this would require an act of law and an expenditure of "political capital" that may not be simple to attain; hence, the solution may not be politically easy, although it may appear to be sound on all other criteria.

Technical Feasibility

Technical advancements, including geographic information systems (GIS), global positioning systems (GPS), and electronic transfer mechanisms, have reduced the cost of administration and compliance in a wide breadth of areas, including the field of finance and taxation generally and transportation-related taxation specifically. For instance, there are now successful applications of electronic clearance and payments for trucks at weigh stations and many successes for automated toll collection and smart cards at toll facilities. These technologies improve on past applications on the above criteria of cost-efficiency and economic efficiency by enabling a more simple, straightforward, and accurate allocation of costs, as well as ameliorating a part of the market failure that exists when marginal costs of travel could not be easily measured and distributed. Advances in technologies also can pose difficulties for the traditional method of funding highways by collecting taxes on motor fuels at a fueling station. Electricity and natural gas can be dispensed at people's homes or places of work.

5.2 Evaluating Promising Sources Against Criteria

All criteria were applied to all promising revenue sources in the summary matrices below (Tables 5.1 through 5.6).

For the purposes of presentation, the criteria in the matrices below were combined as appropriate. A last column discusses the types of actions that have been or might be taken to overcome barriers to implementation.

Table 5.1 Promising Sources for Federal and State Highways and Transit
Motor Fuel Taxes

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
Motor Fuel Taxes – Excise Tax (Per Gallon) – Most states have a traditional "cents per gallon" excise taxes on the highway use of motor fuel. Some also have variable rates based on an inflation adjustment or a fuel price adjustment.	Motor fuel taxes are constitutionally dedicated to highways in most states, and therefore, adjustments to these taxes result in higher yields for highway investment.	Motor fuel taxes are very easy to administer and have low costs of compliance. Evasion has been a major issue, but states and the FHWA have curtailed evasion.	The motor fuel tax could add cents per gallon or could be indexed to inflation or to fuel prices as in some states.	Based on history, adjustments through legislation to the motor fuel excise tax have been the method of choice in most states for major new funding resources to fill funding gaps for state highways.
	Motor fuel taxes have been the most important revenue mechanism for highway programs at the Federal and state levels. They also support transit programs at the Federal level and in some states.	Motor fuel taxes at rates sufficient to fund all needs will not add enough to fuel prices to impact travel volumes. Motor fuel prices have recently increased by amounts significantly higher than tax rate increases that could fund all needs, with very minimal impacts on travel behavior.		Flat rate fees per gallon have not been adjusted fast enough to keep pace with needs. Motor fuel taxes may be higher per gallon than in some neighboring states. Opponents of fuel taxes generally raise the issue of diversion of purchases to neighboring states.
Motor Fuel Taxes – Indexing of Fuel Taxes	The yield of motor fuel taxes could be enhanced by indexing to inflation or, in some cases to fuel prices. A ceiling and a floor on the change in the indexed rate is likely.	Motor fuel taxes by themselves are not equitable among vehicle classes, since the largest vehicles may pay less in fuel taxes relative to the costs imposed on highways.	Indexing the rate to inflation is a very promising adjustment since the index to inflation makes partial corrections for economic changes. It could also be indexed to needs estimates or to construction prices, making it responsive to anticipated program costs.	

Table 5.1 Promising Source for Federal and State Highways and Transit (continued)
Motor Fuel Taxes

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
Motor Fuel Taxes – Sales Tax on Fuel	A sales tax on fuel is likely to be more volatile, but could be subject to limits in terms of the maximum or minimum or the rate of change each year.	Motor fuel taxes are mildly regressive among income groups.	A sales tax on fuel also is promising; some states have a portion of the total tax based on sales prices.	Sales taxes on fuel have recently been of greater interest due to the increase in fuel prices.
Other Types of Petroleum Taxes	Other types of motor fuel taxes could be utilized.		Pennsylvania has an oil company franchise tax to collect fees on petroleum fuels. This is currently capped at its maximum allowed rate.	Some believe that petroleum taxes have more voter appeal because of a perception that they are imposed on petroleum companies rather than on individual drivers; however, such taxes are normally passed through to drivers the same as other types of motor fuel taxes.

Table 5.2 Promising Source for State Highways
Vehicle Registration and Sales Fees

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
Registration and Other Vehicle Fees – All states have traditional types of registration fees for light vehicles and somewhat higher and graduated fees for heavy vehicles.	Registration fees provide major revenue sources for states and local governments (through state allocations) and must be adjusted through legislation. In addition to adjusting rates, other options include revising the type of registration fee.	Registration fees are relatively inexpensive to administer in relation to potential yield, but not as inexpensive as fuel taxes. Registration fees can be varied by vehicle size and can be set in rough relation to highway cost responsibility, except for the impacts of different mileage by similar sized vehicles.	Registration fee adjustments are very promising as both a short- and long-term option for funding highways. Registration fees allow for collections from vehicles using alternative fuels without establishing new mechanisms for collection.	Equity among vehicle classes would indicate that parallel adjustments in registration fees should be made applicable to all vehicles.
Registration Fees Based on Value – Personal Property Taxes – A registration fee based on value can be structured as a personal property tax and be deductible from Federal income.	A fee on the value of a vehicle could raise substantial revenue, and could be structured to be deductible for Federal income tax purposes, thus increasing the state's revenue yield without an equal increase in net total tax payments.	Registration fees for light vehicles, if collected on a flat basis, are somewhat regressive by income class. Registration fees for light vehicles on the basis of value are progressive.	Registration fees (in actuality, personal property taxes on vehicles) based on value have the best revenue generating potential and are less costly to taxpayers in the state.	Some states have recently eliminated or reduced such fees despite their advantages in comparison to collecting other state taxes that are not deductible for federal income tax purposes.
Sales Taxes on Vehicles	Sales taxes on vehicles can be useful revenue sources.	Sales taxes on vehicles will be fairly progressive.	Sales taxes on vehicles have substantial revenue raising potential.	All sales taxes already may be deposited into general revenue accounts.

Table 5.3 Promising Source for State or Local Highways
Tolls

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues Potential Strategies to Overcame Barriers
Traditional Tolls Selected highways and selected bridges have historically been toll facilities.	Existing toll facilities have been proven to be reliable and stable generators of revenue. The bonds of toll agencies are highly marketable.	Tolling costs more to administer and for compliance than motor fuel taxes, although these costs are reduced greatly through electronic toll collection.	Tolls and pricing may be considered to be highly promising options for application to new highway capacity in the longer term, with perhaps some limited short-term opportunities.	A few existing toll facilities have been leased to international companies, substituting short-term revenue gains by public agencies for lesser longer-term revenues.
Tolling New Lanes	Legislation may be necessary to enable new types of tolls or pricing initiatives. Electronic pricing could significantly expand future opportunities.	Tolls can be set to achieve equity among vehicle classes. Concerns about the impacts of tolling on equity among income groups have been addressed in several analyses.	Major positive opportunities exist to toll new future capacity. Sometimes this could be accomplished with tolls covering only a portion of needed revenues, which provides more total revenue and capacity than no tolling of new facilities. Special types of toll facilities such as for truck lanes or HOT lanes could be promising.	Acts allowing Regional Mobility Authorities (RMA) and a PPP act could expand future possibilities for tolling. Some states do not yet have a PPP act parallel to that of other states, which would enable private parties to initiate proposals to develop new facilities or to add toll lanes to existing facilities.
Tolling Existing Lanes	Tolling existing lanes could provide very substantial additional revenues.	Tolling existing lanes could provide for greater equity than other sources of new revenues, but is widely perceived as inequitable ("paying twice").	Little short-term opportunity is thought to exist to toll existing free lanes. This does not mean that such opportunities might not exist in the future, particularly with new types of approaches to toll collection and pricing, including electronics and PPPs.	Sentiment is against tolling any currently free highway lanes. Likewise, little opportunity exists for tolling existing free bridges.

Table 5.4 Promising Source for State and Local Highways and Transit
VMT Fees

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
VMT Fees – Fees on VMT could be longer-term options that could supply revenues without being directly tied to fuel consumption.	VMT fees could be set to yield any level of desired revenues. VMT fees do not conflict with the need to reduce energy costs, reduce the balance of payments, or reduce fossil fuel consumption. VMT fees could be indexed to carbon output if a jurisdiction chooses.	VMT fees are slightly more related to vehicle use equity than fuel taxes or registration fees. VMT fees, especially if applied as congestion pricing fees, send stronger pricing signals to travelers.	In the long run, VMT fees and congestion pricing could replace all or a portion of current user fees. Oregon is demonstrating the technologies for collecting VMT fees at the fuel pump.	VMT fees or congestion pricing fees require the technology to collect those fees reliably and also the political will to implement a new approach.
Congestion Pricing – Could be applied as a special kind of VMT fee, with fees varying based on the level of congestion on the road.	VMT fees or congestion-related fees themselves would have to be indexed to respond to inflation. Congestion fees could be indexed to carbon output if a jurisdiction chooses.	VMT fees will require much more administrative and compliance efforts than motor fuel taxes. VMT fees will be about as regressive among income groups as motor fuel taxes, since DOE data show small differences in fuel efficiency by vehicles owned by different income groups. VMT fees must be graduated by vehicle weight and characteristics to raise fees equitably among the various vehicle classes	A 2005 study of highway and transit revenue options for the U.S. Chamber of Commerce's National Chamber Foundation identified VMT fees and congestion pricing fees as a promising option in the long term (15 or more years).	There are not yet any VMT fees or congestion pricing fees in the United States that are not associated with toll facilities.

Table 5.5 Promising Source for State and Local Highways and Transit
Local Option Taxes and Beneficiary Charges

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
Local Option Taxes – Have been widely used in many states to support highway and transit investments. Local governments in most states have implemented some type of local option tax, which must be specifically allowed by state enabling legislation. Local option taxes for transportation investments include motor fuel, vehicle, property, sales, and income taxes.	Sales taxes tend to have the highest yield compared to other local option taxes. Motor fuel and vehicle taxes tend to generate less revenue compared to other local option taxes. Except for motor fuel and vehicle taxes, other local option taxes tend to be indexed with inflation. Sales taxes respond to economic growth. Fluctuations in economic conditions tend to affect sales tax yield. Gasoline taxes and income taxes also could be impacted to some level by fluctuations in the economy.	Collection mechanisms already are in place to levy these taxes at the state or local level. Most local option taxes do not send pricing signals to drivers. Most local option taxes are regressive (except for income taxes). However, sales taxes tend to receive stronger support than other local option taxes. People consider that sales taxes are more "fair," since everyone pays, whether they are vehicle or transit users.	State legislation must be in place that allows local governments to implement local option taxes. Sales taxes have been widely used by transit agencies to support operations and capital investments. Rates of success with ballot measures to fund transportation have been increasing, as documented by the Center for Transportation Excellence.	Commonly, local option taxes require voters' approval. While an expenditure plan that specifies projects and/or programs to be funded with the new local option tax levies is not always required, local option taxes have better chances of success for implementation where expenditures and uses are clearly defined. Implementation plans that are well designed have resulted in very high success rates for ballot measures to enhance transportation revenues.

Table 5.5 Promising Source for State and Local Highways and Transit (continued)

Local Option Taxes and Beneficiary Charges

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
Beneficiary Charges				
Impact Fees – Impact fee legislation exists in 26 states (excluding Florida). Impact fees for transportation improvements are widely used in California and Florida. **Value Capture –** These techniques have been in place since the 50s, starting in California. Only Arizona does not have enabling legislation to allow Tax Increment Financing (TIF) to finance infrastructure needs.	Revenues from impact fees are typically dedicated for certain road and transit improvements that would serve the new development. In addition, revenues from impact fees will be highly dependent on development opportunities in the area where implemented. Value capture tools are subject to increases in property value realized by infrastructure improvements.	Beneficiary charges send modest pricing signals to encourage efficient transportation and land use decisions. These charges can be relatively efficient and equitable if properly structured. Benefit districts can target the specific beneficiaries. While impact fees are directly charged to developers, they pass those charges to buyers, increasing the cost of real estate. TIF allocates a portion of the additional property taxes resulting from the increase in property values. Communities and local agencies could argue that implementation of TIF would take away revenues that otherwise would be used to meet other public needs.	Implementation is subject to enabling legislation that allows the collection of impact fees and the formation of assessment districts. These tools tend to be most applicable in higher growth state or localities.	Impact fees are only applicable to new development. TIF and other property assessments may require the formation of districts, where property tax levies are dedicated for transportation improvement. This may require voters' approval from district residents and business owners. Beneficiary charges have been the subject of numerous lawsuits in many areas.

Table 5.6 Summary of Promising Project Delivery Tools for Highways and Transit at State and Local Levels

Innovative Finance and Public-Private Partnerships

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability	Implementation Issues, Potential Strategies, and Examples
Innovative Finance				
Most states have used one or more forms of the IF financing tools.	IF financing tools are used to leverage capital in the form of debt or equity. They rely on existing or new revenue sources to pay the indebtedness.	Incurring longer-term debt helps advance programs and projects that would otherwise take years to develop if at all.	They are widely applicable and can be used for program and individual project delivery. The applicability of finance tools is market driven, with the financial community rating each project or deal.	States may require enabling legislation to issue GARVEE bonds. Most innovative finance grant management tools are codified under Title 23 U.S.C. and require no special action from states to be used. To test new grant management tools, states may apply to U.S. DOT under the SEP-15 or TE-045 programs. Debt mechanisms must be balanced against long-term revenue sources. Many states cap the amount of debt that can be issued.
Public-Private Partnerships (PPP)				
PPPs are a long-term opportunity to impact on project and program delivery. PPPs are commonly used in Europe to reduce public-sector costs to construct, operate, and maintain highway facilities but are not yet widely used to support similar projects in the United States.	States and other public sponsors increasingly consider private-sector involvement as a way to spur implementation of large projects.	PPPs can facilitate access to private capital and bring innovative cost-saving project delivery methods.	Several states are using PPPs to operate and maintain portions of their highway systems. There is potential for large-scale PPPs. The U.S. DOT has preliminary evaluations which indicate the potential for significant cost savings and improvements in the quality of highway services provided to the public.	Specific project proposals need to be evaluated to determine if it will be cost-effective. May require enabling legislation. More than 20 states have explicit PPP acts that provide means to bring the private sector into funding and management of highways. Virginia's act has fostered a wide range of proposals.

5.3 Summary Review of the Promising Revenue and Financing Options

Revenue Options

Fuel Taxes

As with Federal revenues, the single most effective revenue mechanism for states in the short term is to adjust motor fuel taxes or to innovate with motor fuel taxes, including indexing state motor fuel taxes for inflation, collecting a sales tax on motor fuel, and pursuing other petroleum taxes, such as in Pennsylvania and New York.

Dual fees on fuel and/or petroleum products seem to be an effective strategy in a number of states. Collecting sales taxes on motor fuel, in addition to gallonage taxes appears to be a particularly promising strategy that a number of states and localities have adopted. Taxes on motor fuel sales are particularly attractive today because the price of gasoline is rising, and many observers are willing to bet that the price of gasoline will rise over the next decades. However, there is no guarantee that prices will rise or be stable from year to year. This means that yields from motor fuel sales taxes could fluctuate greatly as prices fluctuate at the pump. If a state were heavily dependent on motor fuel sales tax revenues, it could be difficult to reliably forecast revenues and plan longer-term programs. Several states have implemented upside and downside limits on motor fuel sales tax revenues to protect against boom-and-bust cycles as well as the political fallout from windfall gas tax revenues.

The current high fuel price environment calls for innovation. Roll back of traditional fuel taxes are being touted by politicians. Even indexing has had a recent setback in Wisconsin with repeal of their fuel indexing to inflation which has been in place for a couple decades. Pennsylvania's dual system of fuel taxes and oil franchise taxes seems to be working well, although the adjustable oil company franchise tax is at its statutory maximum level ($1.25 per gallon) and additional revenues are needed.

Vehicle Taxes

States continue to rely significantly on vehicle registration and related licensing fees as an important source of highway revenues, and states periodically increase registration fees, attempting to keep up with inflation and needs. Annual registration fees based on value (or personal property taxes) have been tried in several jurisdictions but have not been particularly successful. Virginia's personal property tax on vehicles became a campaign issue in the governor's race and was subsequently reduced over a period of time. A more promising second tier vehicle-related tax may be use of sales tax on new and used vehicle purchases. Where dedicated to transportation, this tax has shown significant yield potential in several states.

Increased Use of Tolling

SAFETEA-LU significantly expanded the authority for states to advance toll and value pricing projects and many more states and local authorities are considering tolling options, particularly for new capacity. Toll revenues collected by state, local, and certain private operators represent an important, although still small, portion of the overall revenues available to fund highway investments. Despite the more than 50 percent increase in total (nominal) annual toll revenues since liberalization of toll options in ISTEA and subsequent authorizations, the proportion of the total transportation funding represented by tolling has remained about constant, at near 5.0 percent. The dollar contribution at all levels of government has grown from $3.0 billion in 1993 to $6.7 billion in 2004.

From 1994 through 2004, toll revenue collections nationally have grown steadily at an average annual rate of 5.0 percent, a rate higher than inflation. This growth reflects toll increases (which tend to lag inflation), increasing traffic on existing toll roads, and new toll projects coming on-line (as well as those from which tolling was removed). Toll revenues are used for capital investment in the toll highways, as well as operating and maintenance expenses of those highways. In some places, it also is used for other purposes, such as supporting a larger roadway system or subsidizing transit services.

Of the toll revenues collected nationwide each year, about two-thirds is used to fund capital outlays, and of that, about one-fourth represents user-backed capital investment in new stand-alone projects. The rest is for capital reinvestment on existing highways, some of which includes new capacity. There also are a few projects where tolls were put on previously toll-free HOV lanes to increase the utilization of these lanes. These facilities are called high-occupancy toll (HOT) lanes.

Although tolling only represents about 5 percent of all national highway revenues, toll roads have represented 10 percent of new limited access highway miles (lane-miles) in the United States over the last 10 years.[1]

While toll revenues are still a relatively small part of the United States highway program, tolls already are an important source of income for some state DOTs. Bellwether projects in several growing states have shown that tolls can play a significant role in state and local road development. Regarding revenues from state and local toll roads (not including bridges), five states have over $400 million in toll road receipts – Florida and New Jersey with between $800 and $900 million, and Texas, Pennsylvania, New York, Illinois each with around $400 to $500 million. These receipts are often used as the basis of bond issues which can provide an infusion of capital in the short term.[2]

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[1] *FHWA Future Directions of Innovative Finance*; Cambridge Systematics for FHWA, 2004.

[2] *Current Toll Road Activity in the U.S.A. Survey and Analysis*; Perez and Lockwood for FHWA, August 2006.

Constrained revenue streams at all levels of government, together with the opportunity to build and operate toll roads or special toll lanes without toll collection plazas, has led to a resurgent interest in tolling to fund new highway capacity. State DOTs and transit authorities can facilitate the creation of revenue-generating assets by assuming responsibility for a portion of the capital costs or operating expenses that cannot be supported by projected revenues.

Based on experience to date, few start-up highway projects are likely to be completely self-supporting. In a recent GAO survey of state transportation officials, for example, the most frequently cited reason for not pursuing tolling was insufficient revenue.[3] Many of the respondents were unwilling (or perhaps legally unable) to consider tolling unless the projected toll revenue was sufficient to cover the capital costs and the anticipated operating and maintenance expenses. Tolling and related user fees, however, can be beneficial from both a financial and operational perspective even in situations where public investment or subsidy is required. Tolling can be used in combination with Federal or state financing tools such as loan guarantees, bonding, and tax credits to advance such projects. In addition, tolling allows highway operators to use variable pricing techniques to help manage congestion. Progress on tolling will depend on individual decisions of states, regions, and special purpose authorities to move such projects ahead in coming years.

Local Option Taxes and Beneficiary Charges

Local option and beneficiary charges have proven effective primarily for local government use for both highway and transit programs and should be considered more widely. They have been aggressively pursued over the last 10 years and offer significant opportunity in the next 10 years as well although the recent growth rate of these specialized taxes may be hard to sustain. Some form of local option tax already is applied in 46 states although the applications within the states continue to grow. Of the various local options, sales tax initiatives have been the most widely implemented. Approximately 40 percent of all state and local ballot measures with a transportation finance component incorporated a sales tax, either through a new levy, increasing existing rates, or renewing an expiring tax. With a success rate of 54 percent, sales taxes also provided the largest amount of special ballot transportation funding between 2000 and 2005 and are typically a dedicated one-quarter or one-half-cent levy.[4]

Beneficiary charges are a niche tool for both highway and transit programs in faster growing states and localities but can be an important part of a local package of strategies. For example, transit value capture through leasing of excess property around stations and mortgage recording fees in transit service areas are effective tools to capture beneficiaries of transit service.

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[3] *States' Expanding Use of Tolling Illustrates Diverse Challenges and Strategies*, GAO-06-554.

[4] Center for Transportation Excellence, Transportation Finance at the Ballot Box: Voters Support Increased Investment and Choice, 2006.

Financing Tools and Public-Private Partnerships

So called "Innovative" financing tools have emerged rapidly since the mid-1990s. On top of the earlier innovations, SAFETEA-LU reauthorized and expanded the TIFIA program and authorized a new $15 billion Private Activity Bond program. States continue to expand their use of finance tools and public-private partnerships (PPP) to leverage existing resources and spur program and project delivery.

Increasing use of PPPs can complement the introduction of tolling and innovative financing tools. PPPs can play an important role in expediting projects, bringing innovation and, under certain circumstances, even attracting capital. Yet the fundamental resource issue remains. PPPs may facilitate the use of innovative procurement, management and finance techniques, but they are not revenue sources per se. Their ability to address the investment gap depends on generating new, usually project-related, revenue streams. A very recent trend is for existing public toll authorities to enter into a long-term lease (99 years in case of the Chicago Skyway and the Virginia Pocahontas Parkway and 75 years for the Indiana Toll Road) with international companies; in effect, exchanging a long-term toll revenue stream for a short-term infusion of cash for current public projects. In the case of the Chicago Skyway, the cash proceeds did not go for transportation. In the Indiana case, the $3.8 billion raised from the deal will be used to pay for other major transportation projects within the State.

PPPs encompass a range of contractual arrangements by which public (Federal, state, local government, and special authorities) and private entities collaborate in the development, operation, ownership, and financing of a transportation infrastructure project or program. The precise form of these arrangements is shaped by the legal, political, and financial structure of the state or local project sponsor. As discussed earlier, at least 21 states and Puerto Rico have some form of PPP legislation and others are considering it.

■ 5.4 Conclusions

Prospective Revenue Sources

Of the short-term funding mechanisms, increasing, indexing, and applying sales taxes on motor fuel and petroleum products would have the most immediate and substantial impact on revenue shortfalls at the Federal and state level. Indexing the motor fuel tax would improve future yield of transportation revenues by ensuring that motor fuel tax revenues keep pace with costs. Dual taxes (e.g., gallonage and sales taxes) on motor fuel or petroleum products have proven successful in several states.

The current fuel tax-based revenue system is generally viewed as equitable; however, indexing fuel taxes can have significant political challenges. Only a few states have successfully indexed their motor fuel taxes to inflation and as witnessed by Wisconsin's

recent repeal of indexing, they can be politically vulnerable particularly at times of high fuel prices such as now.

Many have raised concern about the future viability of fuel taxes given the potential shift to alternative fuels and propulsion systems, including the possibility of higher prices speeding this trend. The recent report of the Transportation Research Board Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance concluded that such erosion of fuel tax revenues is not expected to be a significant concern in the next 10 to 15 years (the time period for the NCHRP 20-24(49) study) and that fuel price increases alone (without additional regulation) probably will stimulate only a small improvement in fuel economy in this period.[5]

Motor fuel and vehicle registration and related fees, therefore, are expected to continue to play a primary role in highway and transit funding for at least 15 years. Increasing and indexing Federal and state fuel taxes must be part of the short-term gap closing effort. Vehicle registration fees play an important second tier role in most states and will continue to be an important revenue source for the foreseeable future. Introduction and dedication of motor vehicle sales taxes for transportation purposes can be an important additional tier of vehicle fees that are inflation responsive.

SAFETEA-LU significantly expanded the authority for states to advance toll and value pricing projects and many more states and local authorities are considering tolling options, particularly for new capacity. Tolls are often considered an attractive source of transportation revenue because they are viewed by the public as a direct user fee and can be tied to specific new facilities. Variable price tolling can be used to better match demand to supply, potentially reducing the need for expensive capital investment to add capacity. Further, these projects provide a rich learning laboratory for the likely longer term transition away from fuel taxes to direct user charging such at VMT-based fees.

Despite the promise of tolling and pricing, there also are obstacles. Some regions are accustomed to tolling, and implementation of new toll facilities is relatively straightforward. In other regions new to the idea, there can be significant negative public reaction to the idea of tolling, where historically roads have been provided "for free." Newer concepts, such as HOT lanes and express toll lanes also can have a difficult time getting off the ground, as there can be significant issues related to traffic operations and safety, as well as real and perceived concerns related to fairness and equity.

The reality is that the revenues that can be generated by tolling new facilities and highly congested existing facilities are limited by the number of these facilities that will come on line over the next decade. A recent report surveying national toll activity for FHWA[6] concluded that "As Federal and state revenues (not including local) rise during SAFETEA-LU

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[5] TRB Special Report 285, *The Fuel Tax and Alternatives for Transportation Funding*, 2005.

[6] *Current Toll Road Activity in the U.S.A. Survey and Analysis*; Perez and Lockwood for FHWA, August 2006.

to the $130 billion level, toll revenues appear likely to maintain their current share in the short run. The implied rate of investment for the 2,600 miles of toll roads and HOT lanes included in this survey is $4 to $6 billion per year over the next 5 to 10 years compared to the total Federal and state current capital investment in new capacity estimated to be about $13 to $17 billion, thus maintaining its current share as overall spending increases. At this level, the revenues at current toll rates might reach the $7 to 10 billion level. Rising above this level – and increasing in proportional share – is not out of the question, but depends on the response to several issues…" Among these issues are how aggressively tolling will be used with new projects in the pipeline, the willingness to consider tolling on existing Interstate facilities as allowed in the SAFETEA-LU pilots, and how quickly metropolitan networks of HOT/express lanes emerge.

In Section 6.0 of this report, gap closing scenarios are considered that increase tolling's share of total highway revenue. Such scenarios would include aggressive tolling of new capacity plus the possibility of tolling on existing Interstate facilities which states have been historically reluctant to do. But even with relatively aggressive assumptions, the portion of total revenue from tolling would likely only increase a few percent over the next decade and therefore would not be able to significantly fill the gap over the period to 2017.

Local option and beneficiary charges have proven effective for local government use for both highway and transit programs and should be considered more widely. Some form of local option tax already is applied in 46 states although the applications within the states continue to grow. Beneficiary charges are probably a niche tool for faster growing localities and can be an important part of a local package of strategies.

State and local governments will continue to also rely on general fund appropriations to support surface transportation needs. About 15 percent of state and local transit revenue and 22 percent of highway revenue in 2004 came from general fund allocations. Local governments particularly rely on general funds to support their highway expenditures, with about 46 percent coming from that source in 2004. However, given the pressures for spending on education, health care, and other vital services at the state and local level it is probably not reasonable to assume that the general fund share of highway and transit revenues will increase much, if any.

Prospective Financing Tools

The use of finance tools and PPP can play an important role in stimulating additional investment and advancing project delivery as discussed in Section 4.0 of this report but in most cases will not directly generate significant new revenue. These tools typically leverage existing or new revenue streams such as fuel taxes and tolls. SAFETEA-LU extended the TIFIA credit assistance program and authorized up to $15 billion of highway/intermodal private activity bonds to help foster public-private partnerships. At least 21 states and Puerto Rico have adopted some form of PPP authorizing legislation and others are considering such measures.

6.0 Gap Closing Strategies and Estimates

This section reports on options to increase funding for highway and transit systems for the period from 2007 through 2017. It examines potential short-term funding mechanisms at all levels of government as follows:

- Federal revenue options that would directly increase HTF revenues;
- Other Federal options to increase transportation revenues;
- State revenue options; and
- Local options.

Appendix F describes the assumptions used in estimating the revenue that could be generated by these short-term funding mechanisms at all levels of government. As further discussed in Section 7.0, implementation strategies will be key. Resistance to transportation funding increases from various sources is inevitable. Section 7.0 includes some of the key steps from experience around the country that are necessary to successfully propose and enact new or enhanced revenue measures in support of national, state, local, and regional highway and transit programs.[1]

6.1 Federal Revenue Options

Highway Trust Fund Revenues

Indexing Federal Motor Fuel Taxes Starting in 2010

Indexing Federal motor fuel taxes starting in 2010 – equivalent to an increase of approximately 0.385 cents per gallon each year – would raise $0.8 billion in 2010 and $7.6 billion in 2017 annually for the HTF. This option would index today's 18.3 cent Federal gasoline tax to the consumer price index (CPI). The tax rate would increase with inflation to about 21.8 cents in 2017. Of this, 18.38 cents would go to highways and 3.40 cents to transit. Average annual additional funding is estimated at $4 billion, and cumulative revenue over the 2007 to 2017 period is estimated at approximately $32 billion.

[1] It should be noted that several of the transportation revenue options discussed in this section would involve transfers from sources that now accrue to the general fund at various governmental levels, e.g. customs duties and interest on HTF balances.

Increase Federal Motor Fuel Tax by 5 Cents in 2010

This scenario assumes that the current Federal gasoline tax rate will be increased by 5 cents in 2010 to gain half of the purchasing power it has lost since it was last increased in 1993. It is assumed that the motor fuel tax will continue to be indexed to the CPI beyond 2010. In 2010, additional fuel tax revenue from this scenario is projected at $9.6 billion, increasing to $19.0 billion by 2017. Average annual additional funding is estimated at $14 billion, and cumulative revenue over the 2007 to 2017 period is estimated at approximately $113 billion.

Increase Federal Motor Fuel Tax by 10 Cents in 2010

This scenario assumes that the current Federal gasoline tax rate will be increased by 10 cents in 2010, which is equivalent to the tax rate increase from indexing retroactively to 1993, to recapture the purchasing power loss due to inflation. A similar option was originally proposed in 2004 by Chairman Don Young of the House Transportation and Infrastructure Committee to index the 1993 tax rate to the CPI. It is assumed that the motor fuel tax will continue to be indexed to the CPI beyond 2010. In 2010, additional fuel tax revenue from this scenario is projected at $19.4 billion, increasing to $31.7 billion by 2017. Average annual additional funding is estimated at $25 billion, and cumulative revenue over the 2007 to 2017 period is estimated at approximately $203 billion.

Federal Sales Taxes on Motor Fuel

This scenario explores the revenue potential of implementing a sales tax on motor fuel (assume 3 percent) at the Federal-level as is done in a number of states, starting in 2010. Average annual additional revenues are estimated at $12.3 billion. The cumulative revenues from this option through 2017 are estimated at $98 billion.

Eliminate Current Federal Highway Trust Fund Exemptions

Eliminating the HTF cost of current Federal tax exemptions beginning in 2008 would add an average of $1.2 billion annually to the HTF and $12.3 billion cumulatively through 2017. State and municipal vehicles and certain agricultural vehicles are exempted from the Federal motor fuel tax. The Administration's SAFETEA proposal had assumed adoption of this proposal with such exemptions being reimbursed from the General Fund rather than the HTF. Unlike the other HTF revenue enhancement proposals which are assumed to start at the beginning on the next authorization cycle in 2010, the treatment of the cost of exemptions could be dealt with simply as a transfer from the HTF to the General Fund (similar to the ethanol provisions) during any budget cycle. This provision is particularly appealing because it could provide short-term revenue to help avoid the currently projected 2009 shortfall in the Highway Account of the HTF.

Recapture Interest Earnings on the Highway Trust Fund Balances

Recapturing interest earned on HTF cash balances could add an average of about $0.5 billion annually to the HTF and $5.0 billion cumulatively through 2017. This estimate

assumes that both the highway and transit account balances are maintained at "minimum prudent" levels approximately equal to or slightly smaller than today's. Prior to enactment of TEA-21, the HTF was credited with interest earnings on its invested cash balances. The enactment of TEA-21 in 1998 discontinued that practice.

Heavy Vehicle Use Tax

The current Heavy Vehicle Use Tax (HVUT) is between $100 and $550 for heavy vehicles over 55,000 pounds. Revenues from this user fee go into the Highway Account of the HTF. The fee (maximum $500) has remained constant for more than two decades. This scenario assumes that the HVUT would be adjusted for inflation starting in 2010. Cumulative revenues through 2017 from this option are estimated at $1.5 billion. Average annual additional funding is estimated at $180 million.

Another scenario for HVUT assessed the revenue potential of adjusting the current fees in 2010 by indexing back to 1997 to gain half the purchasing power lost since 1984. Under this scenario, cumulative HVUT revenues through 2017 are projected at $23.1 billion, and average annual additional funding is estimated at $2.9 billion.

In both scenarios it is proposed that the cap at 80,000 pounds be lifted as more vehicles now operate at weights over 80,000 pounds under special permit.

Vehicle Tax on Passenger Cars and Light-Duty Trucks

Currently, new heavy vehicles (over 33,000 pounds) are subject to a 12 percent sales tax on the retail price. Revenues from this sales tax on heavy vehicles are deposited into the Highway Account of the HTF. This option analyzes the reimplementation of a Federal sales tax on new passenger cars and light-duty trucks (prior to 1971 there was a Federal 7 percent sales tax on the manufacturer's price of new light-duty vehicles; however, it was not dedicated to transportation). It is recognized that this option, as with other potential revenue measures, may meet some political resistance. For example, passenger vehicle taxes are already widely used by the states as a transportation revenue source and this could be viewed as a Federal intrusion into state taxing mechanisms.

It is estimated that a dedicated 3 percent sales tax on new light-duty vehicles could generate about $15 billion to the HTF in 2010, increasing to $20.4 billion by 2017. Average annual additional funding is estimated at $17.6 billion, and cumulative revenue over the 2007 to 2017 period is estimated at approximately $141 billion.

Other Federal Options to Increase Transportation Revenues

Dedicating 5 to 10 Percent of Current Customs Duties for Investment in Nationally Significant Port and Intermodal Freight Projects

Dedicating 5 percent of current U.S. Customs duties for investment in important port and intermodal freight projects would generate about $1.8 billion annually and $20 billion

cumulatively in revenues for state and local transportation providers. Dedicating 10 percent of current Customs revenues would yield $3.6 billion annually and $40 billion cumulatively through 2017. These estimates were derived from the Mid-Session Review of the President's FY 2007 Budget.

Customs revenues currently go to the General Fund and certain other designated programs. Gill Hicks and Associates, among others, has advocated that a portion of existing Customs duties (e.g., 5 to 10 percent) should be utilized to pay for necessary port and intermodal improvements.[2] Customs revenues are derived from duties on imported goods passing through international gateways. The transportation of these goods imposes significant costs on ports, intermodal facilities, and the surrounding communities.

Although this option would represent a significant new source of revenue for transportation, it would not reduce highway and transit systems investment needs by the full $20 billion (at 5 percent) or $40 billion (at 10 percent) because port and intermodal investment needs are only partially reflected in the current highway and transit needs estimates. Cambridge Systematics estimates that only 30 percent of the redirected Customs revenues would fund projects represented in the C&P highway and transit systems investment needs estimates. Based on this assumption, the average annual additional funding for investments covered by the C&P report is estimated to be between $0.6 billion (5 percent scenario) and $1.2 billion (10 percent scenario), and cumulative revenues over the 2007 to 2017 period are estimated between $6 billion (5 percent scenario) and $12 billion (10 percent scenario).

Tax Credit Bonds

Tax credit bonds are assumed to generate $5.0 billion annually beginning in 2007, for a total of $55 billion through 2017. This sizing mirrors the proposal discussed in the National Chamber Foundation finance report.[3] Under this example, the sale of tax credit bonds over a six-year period would yield $30 billion for investment in surface transportation projects. For the purpose of this study, it is assumed that the bond issuance would be reauthorized every six years, generating an average of $5.0 billion per year in capital investments.

A tax provision normally would not be considered a revenue measure. But by leveraging Federal tax subsidies to generate net new investment in transportation infrastructure, tax credit bonds effectively act as a gap-closing source of general fund revenue.

This funding mechanism has been proposed in several forms, most recently by Senators Jim Talent (R-Missouri), Ron Wyden (D-Oregon), and others in February 2005 as "Build

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[2] *Customs Duties as a Potential Source of Revenue for Marine Transportation System Infrastructure Needs*, Gill Hicks and Associates, August 2003.

[3] National Chamber Foundation. *Future Highway and Public Transportation Financing – Phase II*, November 2005.

America Bonds." The tax credit bonds would be long-term debt obligations issued by states, local governments, or other non-Federal entities such as a Federally chartered non-profit corporation. In lieu of interest payments, investors would receive an annual tax credit, which they could use to offset their Federal income tax liabilities. In most cases the bond issuer would be responsible for securing principal repayment through project or other revenue streams. In some proposals, a portion of the bond proceeds would be invested in an escrow fund to provide for repayment of principal at maturity.

Although state and local governments would issue the tax credit bonds and make the transportation investments with net proceeds, a Federal tax code change would be necessary to enable this mechanism. Also, the Federal tax incentive being utilized to stimulate capital investment effectively is leveraging what otherwise would be general fund resources. For this reason, tax credit bonds are presented as an alternative Federal revenue option (outside the HTF) in this study.

Investment Tax Credits to Fund Intermodal Projects

Investment tax credits represent another form of tax incentive to stimulate capital investment. Several proposals have been advanced in recent years to help finance freight and intermodal projects through this mechanism. A recent example is Senate Bill 3742, the "Freight Rail Infrastructure Capacity Expansion Act," which was introduced in July 2006. It would provide incentives for investments in capacity enhancing freight rail infrastructure through both tax credits and tax deductions. The proposal calls for a 25 percent tax credit for any taxpayer making certain capital expenditures for new freight rail infrastructure. In addition, the proposal would allow such capital outlays (less the amount of any tax credits claimed) to be expensed in the year they are made, rather than depreciated over time.

Qualifying capital expenditures would include those made for the following property types:

- Railroad grading, bridges, tunnels, marshaling yards, etc., excluding the cost of land;
- Addition of mainline track capacity or new and extended sidings to existing right-of-way;
- Construction of new intermodal transfer facilities;
- Technology-based expansions, such as signaling and communications equipment; and
- New locomotives that increase the horsepower capacity of a railroad's fleet.

This tax incentive program is designed to stimulate private capital investment by railroads as well as shippers, intermodal carriers and other companies that make qualified expenditures for capacity expansion projects as described above.

Investment tax credits differ from tax credit bonds in that the taxpayer claiming the credit must be the owner of the property. But like tax credit bonds, they leverage Federal tax subsidies to generate net new investment in transportation infrastructure. Thus, investment tax credits also effectively act as a gap-closing source of general fund revenue and are presented here as an alternative Federal revenue option.

This mechanism is seen as a way for the Federal government to support projects involving freight rail, intermodal, or even intercity passenger infrastructure that might not otherwise be eligible for grant funding under the existing Federal Title 23 or Title 49 programs, yet nonetheless generate substantial public benefits.

The potential of investment tax credits to generate new infrastructure depends on the level of financial subsidy and the extent of investments made and credits claimed. As described in the National Chamber Foundation report, a program modeled after the draft proposal developed by Representative Sam Graves (R-Missouri) could offer substantial support to freight infrastructure.[4] By authorizing investors in eligible projects to claim up to $500 million annually in tax credits over a 20-year period, it is estimated that such a program could generate new private investment capital of about $6 billion over a five-year period. At $1.2 billion per year, this mechanism could generate as much as $13 billion over the 2007 to 2017 period.

This maximum estimate assumes that the annual tax credit rate is established at a level that enables the project sponsor to realize a 70 percent present value subsidy. It also assumes that the tax credits could be transferred to other investors if the project sponsor lacked internal tax capacity or if the project sponsor were a tax-exempt entity such as a public agency. More conventional program structures, with smaller subsidies and less flexible tax credits, would produce substantially less investment potential.

Although this option, depending on the structure, could represent a significant new source of investment capital for intermodal freight transportation, it would not reduce highway and transit systems investment needs by the full amount because intermodal and particularly rail investment needs are not reflected in the current highway and transit needs estimates. Cambridge Systematics estimates that only about 15 percent of the investment tax credit revenue potential would fund projects represented in the C&P highway and transit systems investment needs estimates (e.g., highway-rail grade crossings). At 15 percent of the estimated investment potential of this mechanism, average annual additional funding for highway and transit systems is only about $180 million, and the cumulative impact on C&P highway and transit-related needs over the 2007 to 2017 period is about $2.0 billion.

Container Fees

This revenue option assumes the implementation of a $30/TEU fee on import and export containers moving through the ports, starting in 2010. In California, State Senator

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[4] National Chamber Foundation, *Future Highway and Public Transportation Financing – Phase II*, November 2005. The aggressive assumptions included in this proposal are that investors would claim, in aggregate, up to $500 million annually in 20-year tax credits for qualified projects; that the tax credit streams would be monetized up-front; and that the annual tax credit rate would be established such that the sponsors of qualified investments would receive a 70 percent present-value subsidy for their projects.

Lowenthal proposed the implementation of a $30 fee on every 20-foot cargo container moving through the ports of Los Angeles and Long Beach to help fund port and intermodal improvements to serve this commerce. This bill was passed by the state legislature but recently vetoed by the Governor. If a similar fee is applied at all U.S. ports, average annual additional funding is estimated at $2.2 billion and cumulative revenues are estimated at $17.5 billion through 2017.

6.2 State Government Revenue Strategies

Index State Motor Fuel Taxes

A scenario was developed to estimate the additional revenues generated by indexing state motor fuel tax rates similar to the way the Federal motor fuel tax would be indexed. For the purpose of our estimate, it was assumed that states currently not indexing for inflation would begin indexing their motor fuel tax rates by 2007, with full implementation by 2010. It was assumed that in 2007, 25 percent of the currently non-indexed state motor fuel tax revenues will be indexed to inflation, gradually increasing until all state fuel tax revenues are adjusted for inflation by 2010. Indexing state motor fuel taxes is estimated to generate an additional $31.9 billion between 2007 and 2017, for an average annual additional revenue of $3.8 billion.

Increase Motor Fuel Tax Rate to Account for Inflation Losses Since 2000

According to FHWA Highway Statistics, the average state motor fuel tax rate in 2000 was 19.29 cents for gasoline, and 19.96 cents for diesel.[5] Since that time, some states have increased their motor fuel tax rates through indexing, while others have enacted one-time increases to the excise rate. By adjusting the average state motor fuel tax rate to 2010 dollars would add 5.23 cents for gasoline and 5.41 cents for diesel to the average state motor fuel tax rate. This scenario assumed that the tax rate increase would be gradually adopted through 2010 by states that have not increased their motor fuel tax rate in recent years. In 2010, the additional fuel tax could generate $6.6 billion, increasing to $7.4 billion by 2017, and $65.3 billion cumulatively over the 11-year analysis period.

Another option would be to assume that the additional tax rate will be indexed to inflation beyond 2010. Under this scenario, in 2010, the additional fuel tax could generate $6.6 billion, increasing to $8.6 billion by 2017, and $70 billion cumulatively over the 11-year analysis period. The average annual additional revenue generated by this alternative is estimated at $7.6 billion.

[5] Excludes some variable tax rates and sales taxes on motor fuel.

Sales Taxes on Motor Fuel

A few states currently levy sales taxes on motor fuels, and dedicate all or a portion of these revenues to transportation. This scenario explores the revenue potential of dedicating a portion (assume 3 percent) of sales tax on motor fuels, excluding: 1) states that already collect from this revenue source and dedicate a portion or all revenues to transportation; and 2) states that do not collect sales taxes.[6] For instance, in Georgia, of a 4 percent sales tax collected on motor fuels, 3 percent is dedicated to transportation (i.e., 75 percent of the total revenues).

Average annual additional revenues are estimated at $10.1 billion. The cumulative revenues from this option through 2017 are estimated at $94.3 billion assuming gradual implementation by the states through 2010.

Vehicle

Increase Vehicle Registration Fees

The average vehicle registration fee in the United States is estimated at about $31 (for light-duty vehicles), according to FHWA's *Highway Taxes and Fees* (2001). Vehicle registration fees are class-specific. For light vehicles, about half the states have flat fees, and others have variable fees based on weight, age, horsepower, and value, or some combination of these factors. For heavier vehicles, registration fees are usually based on weight. None of these fees are adjusted to account for inflation, and revenues are expected to increase based on vehicle registration growth and changes in vehicle fleet.

This scenario estimates the revenue potential of adjusting vehicle taxes and fees periodically to keep pace with inflation; full phase in is assumed by 2010. Average annual additional revenue is estimated at approximately $4.0 billion, and the cumulative revenues from this option through 2017 are estimated at $33.4 billion.

Vehicle Excise Sales Taxes

This scenario estimates the revenue potential from implementing a 1 percent sales tax on vehicle sales. The analysis excludes those states already dedicating vehicle sales tax revenues to transportation,[7] and those states where sales taxes are not collected.[8] If states were to dedicate vehicles excise sales taxes for transportation (assume full phase in by 2010), approximately $67 billion would be raised through 2017, and average annual additional revenues are estimated at $7.2 billion.

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[6] The forecast excludes the following states: California, Georgia, and Hawaii. The analysis also excludes those states where no sales taxes are collected, such as Alaska, Delaware, Montana, New Hampshire, and Oregon.

[7] The following states currently dedicate at least a portion of their sales tax on motor vehicles to transportation: Connecticut, Iowa, Kansas, Maryland, Michigan, Minnesota, Missouri, Nebraska, North Carolina, Oklahoma, South Dakota, and Virginia.

[8] Alaska, Delaware, Montana, New Hampshire, and Oregon do not collect statewide sales taxes.

Tolling

In 2004, toll facilities generated $6.6 billion, accounting for 5.1 percent of the total revenues. Under the baseline scenario (i.e., annual growth remains at 10-year average), toll revenues will account for approximately 6.5 percent of the total highway funding. The increasing share of toll revenues as part of the overall highway funding is the result of declining share of motor fuel tax revenues.

Increased use of tolling, including Federal authorization of tolling on Interstate highways, could generate additional annual revenues for state and local government of $20 million by 2007 and $8.9 billion cumulatively through 2017. Cambridge Systematics anticipates the trend toward increased use of tolling will be accelerated by expanded Federal authorization of tolling on Interstate highways and other related provisions such as value pricing. Therefore, the rate of growth in toll revenue is estimated to increase gradually from its current level of 5 percent per year to a rate of 7.5 percent per year by 2015 and 10 percent by 2020. This will generate approximately $8.9 billion in additional toll revenue through 2017, and average annual additional funding estimated at $1.1 billion. At this rate of growth, toll revenues will account for 7.6 percent of the total highway funding by 2017 representing a 50 percent increase in share over the 10-year period.

Tolling can be used in combination with Federal financing tools such as loan guarantees, bonding, and tax credits to attract additional state, local government, and private sector capital investment. This combined strategy can help advance major capital projects that would otherwise have to be delayed or staged if funded on a pay-as-you-go basis.

General State Sales Taxes

Ten states currently dedicate a portion of general sales tax revenues for transportation. This scenario estimates the revenue potential of dedicating one-half percent sales tax to transportation. The amount of revenues dedicated from this funding source varies widely, from 1.7 percent to 20 percent of the total sales tax levies. For instance, Utah dedicates an equivalent of one-sixteenth percent sales tax to transportation, whereas Massachusetts dedicates a 1 percent sales tax for transit (i.e., 20 percent of the total sales tax revenues).

If all states that impose sales taxes on goods were to dedicate one-half percent of state sales taxes collected to transportation by 2010, $9.0 billion would be generated in 2010, increasing to $12.0 billion by 2017.[9] Average annual additional funding is estimated at $10.5 billion, and cumulative revenues over the 2007 to 2017 period are estimated at $108.8 billion.

[9] Excludes Arizona, California, Indiana, Kansas, Massachusetts, Mississippi, New York, Pennsylvania, Utah, and Virginia, where revenues from general sales taxes are being dedicated to transportation. Again, it also excludes the states where no sales taxes are collected, as listed in Footnote 8.

6.3 Local Government Revenue Strategies

If all states permitted local option taxes and if local jurisdictions were to implement these local option taxes, about $96 billion could be raised, of which approximately one-third (i.e., $33 billion) will go to transit investments. This option assumes that the 10-year growth in local specialized taxes (i.e., 8 percent) will be sustained in the future through additional implementation of various local option taxes, impact fees, and other miscellaneous revenue to support highway and transit investments. There are a wide variety of miscellaneous sources that are used and offer additional potential at the local level, including transit lease income, mortgage recording taxes in transit districts, lottery income, cigarette taxes, tire taxes, etc. For the base case we assumed that this rate of growth would abate somewhat due to the fact that many of the higher growth counties in states like California already have enacted these measures.

6.4 State Highway and Transit Revenue Level of Effort

In this study, it was assumed that states would uniformly adopt the revenue measures discussed above. It should be noted, however, that all states are not at the same relative level of effort in revenue generation. Twenty-seven states fall below the national average in at least two of four measures we reviewed in this study. The analysis results are shown in Appendix G, Table G.1. The tables show state highway and transit revenue levels of effort across four measures of revenue generation; per capita, per 1,000 vehicle miles of travel, per $1,000 of personal income, and per $1,000 of state GSP. We estimated what additional revenue would be added if those 27 states were brought up to the average level of effort across a composite of the four measures. The states with lower relative levels of effort collectively would generate $9.7 billion (2005 dollars) annually if they moved up to the national average. Of course there are many factors, other than the four measures selected, that could affect a particular state's needs and revenue picture. It is suggested that states identify appropriate peers and further analyze level of effort based on criteria that are thought to be most significant for their states.

6.5 Summary of Gap Closing Potential of Various Revenue Strategies

Table 6.1 summarizes the gap closing potential of the above revenue strategies at the different levels of government.

Table 6.1 Potential Contribution of Short-Term Funding Mechanisms to Federal, State, and Local Highway and Transit Needs

YOE Dollars

Short-Term Funding Mechanisms	Revenue Generation 2010	Revenue Generation 2017	Average Annual Revenue 2010 to 2017	Revenue Generation Cumulative 2007 to 2017	Comments
Federal Revenue Options to Increase Highway Trust Fund Revenues					
Index Federal fuel taxes retroactive to 1993 to capture full loss due to inflation	$19.4 billion	$31.7 billion	$25.3 billion	$202.6 billion	Would result in 10 cent gas tax increase in 2010 with indexing to CPI thereafter.
Capture half of the loss due to inflation since 1993	$9.6 billion	$19 billion	$14.1 billion	$113 billion	Would result in 5 cent gas tax increase in 2010 with indexing to CPI thereafter.
Index Federal fuel taxes starting in 2010	$0.8 billion	$7.6 billion	$4.0 billion	$32.3 billion	Index fuel tax rates to CPI starting in 2010; first year of next reauthorization cycle.
Implement motor fuel sales taxes at the Federal level	$10.8 billion	$14.0 billion	$12.3 billion	$98.4 billion	Assume 3 percent sales tax on motor fuels, starting in 2010.
Reinstitute Federal light duty vehicle sales tax on new vehicles	$15 billion	$20.4 billion	$17.6 billion	$140.8 billion	Seven percent rate phased out in 1971. Assume tax is reinstituted in 2010 at 3 percent.
Index Heavy Vehicle Use Tax (HVUT) retroactive to 1997	$2.1 billion	$3.7 billion	$2.9 billion	$21.3 billion	Has been fixed at maximum of $550 since 1984; assume indexing retroactive to 1997 to capture one-half loss due to inflation.
Index HVUT starting in 2010	$30 million	$374.3 million	$200 million	$1.5 billion	Assume indexing to CPI implemented in 2010.
Eliminate exemptions to HTF starting in 2008	$1.2 billion	$1.3 billion	$1.2 billion	$12.3 billion	As proposed in President's 2006 budget; shift exemptions to general fund.
Recapture interest on HTF balances starting in 2008	$0.5 billion	$0.5 billion	$0.5 billion	$5.0 billion	Depends on HTF balances; estimates assume minimal balances through next reauthorization cycle.
Other Federal Revenue Options					
Authorize tax credit bonds (modeled after the Senate-proposed "Build America Bonds" – assumes $5 billion in net proceeds per year)	$5 billion; General Fund supported	$5 billion	$5 billion	$55 billion	Debt-oriented financing technique that leverages a Federal tax subsidy to generate new transportation funding.
Utilize 5 to 10 percent of current Customs duties for port and intermodal improvements	$1.7 billion at 5 percent $3.3 billion at 10 percent	$2.2 billion at 5 percent $4.5 billion at 10 percent	$1.9 billion at 5 percent $3.9 billion at 10 percent	$20.0 billion at 5 percent $40.1 billion at 10 percent	These funds would be set aside for port and intermodal purposes; 30 percent assumed to offset highway needs, such as intermodal connectors.
Authorize freight/intermodal investment tax credits (assumes $500 million annual limit on monetization of 20-year tax credit streams)	$1.2 billion	$1.2 billion	$1.2 billion	$13.2 billion	Modeled after the Graves proposal. Only 15 percent of ITCs are estimated to fund highway or transit needs such as highway-rail grade crossings.
Container fees	$1.7 billion	$2.7 billion	$2.2 billion	$17.5 billion	Start in 2010; applied on all import and export containers.

Table 6.1 Potential Contribution of Short-Term Funding Mechanisms to Federal, State, and Local Highway and Transit Needs (continued)

YOE Dollars

Short-Term Funding Mechanisms	Revenue Generation 2010	Revenue Generation 2017	Average Revenue 2010 to 2017	Revenue Generation Cumulative 2007 to 2017	Comments
State Revenue Options					
Index state motor fuel taxes	$1.4 billion	$6.5 billion	$3.8 billion	$31.9 billion	If all states indexed fuel taxes by 2010.
Increase state motor fuel taxes to catch up for inflation losses since 2000	$6.6 billion	$8.6 billion	$7.6 billion	$70.0 billion	If all states were to catch up for inflation losses by 2010; results in average 5.2 cent increase.
Implement motor fuel sales taxes	$8.9 billion	$11.6 billion	$10.1 billion	$94.3 billion	Three percent assumed dedicated to transportation.
Raise motor vehicle registration fees to keep up with inflation	$1.8 billion	$6.4 billion	$4.0 billion	$33.4 billion	If all states were to raise in concert with inflation starting in 2007.
Use vehicle sales tax for transportation	$6.2 billion	$8.4 billion	$7.2 billion	$66.6 billion	If all states who have sales tax dedicate at least 3 percent of vehicle sales tax to transportation.
Portion of state sales tax dedicated to transportation	$9.0 billion	$12 billion	$10.5 billion	$108.8 billion	Assume one-half percent dedication to highway and/ or transit.
Increase tolling/pricing revenues (above current 5 percent per year increase)	$0.2 billion	$2.4 billion	$1.1 billion	$8.9 billion	Estimate based on aggressive use of tolling and pricing opportunities in SAFETEA-LU.
VMT fees (future); transition from short-term toll/pricing innovation					High potential but widespread deployment assumed after 2015.
Local Revenue Options					
Increased use of specialized dedicated local taxes, e.g., local option taxes, impact fees – Highway	$3.5 billion	$11.6 billion	$7.2 billion	$63.4 billion	Assume more aggressive growth rate of last 10 years continues.
Increased use of specialized dedicated local taxes, e.g., local option taxes, impact fees, miscellaneous transit fees – Transit	$1.8 billion	$6.0 billion	$3.7 billion	$32.8 billion	Assume more aggressive growth rate of last 10 years continues.

Federal

Highway Trust Fund Revenue Measures

- At the Federal level, fuel tax strategies have the largest potential for impacting Highway Trust Fund revenues in the time period considered for this study. Specifically, $25 billion could be raised per year and almost $203 billion cumulatively from 2010 to 2017 by retroactively indexing fuel taxes to 1993 to recoup losses due to inflation (i.e., 10 cent fuel tax increase in 2010), and indexing thereafter. Recouping half the loss due to inflation since 1993 would result in a 5 cent increase in 2010 and with indexing forward would raise $14 billion per year and $113 billion cumulatively by 2017. Implementing a 3 percent sales tax on motor fuels at the Federal level could raise $12 billion per year and $98 billion cumulatively by 2017.

- Imposition of additional vehicle taxes (indexing the HVUT and reinstituting a 3 percent Federal light-duty vehicle tax) would be the next most effective strategy.

- Finally, eliminating HTF exemptions and recapturing interest would add modest additional resources during this period, about $17 billion cumulatively. For this study, we have assumed that the remaining HTF exemptions would be shifted to the general fund in 2008, as proposed in the President's 2006 budget proposal and that interest on HTF balances would be recaptured starting in 2008; this would likely alleviate the projected budget shortfall in the HTF Highway Account in 2009.

- A full package of the most aggressive of the Federal HTF-oriented revenue strategies above would generate $47.6 billion per year and almost $384 billion cumulatively from 2007 to 2017.

Other Potential Federal Revenue Measures

- Other potential Federal strategies reviewed to improve freight and intermodal systems include customs duties, investment tax credits, and container fees. If these three tools were implemented in combination, they could raise $7.2 billion per year and $71 billion cumulatively for intermodal freight improvements. Finally, tax credit bonds, with interest subsidized by general revenues, could raise $55 billion over the next 10 years for a broad array of surface transportation improvements.

State

- At the state level, fuel tax strategies have the largest potential for impacting revenues in the time period considered for this study. Specifically, $21.5 billion could be raised per year and approximately $196 billion cumulatively from 2007 to 2017 from the following array of strategies:

  - Index state fuel taxes;
  - Recapture purchasing power back to 2000; and
  - Sales tax on fuel.

- Vehicle taxes, another mainstay of state highway revenues, are an effective strategy with the potential to raise $11 billion annually and $100 billion cumulatively:
  - Increase vehicle registration rates in concert with inflation; and
  - Dedicate sales tax on vehicles purchases to transportation.

- Assuming aggressive pursuit of expanded SAFETEA-LU authority to advance toll and value pricing projects and enhanced financing tools and public-private partnership opportunities, states and other authorities could potentially generate about $9 billion of additional revenue over this period based on aggressive tolling of projects being considered in the pipeline. An additional benefit of additional toll revenue streams is the ability to leverage an early infusion of capital to advance major projects quicker than with a pay-as-you-go strategy.

- Initiatives to dedicate small portions of state sales taxes to transportation, most notably for transit, have been successful in a number of states and if implemented more widely, i.e., one-half-cent of state sales tax dedication, could generate $109 billion cumulatively over the next 10 years nationwide.

Local

- Local option and beneficiary charges have proven very effective for local government use for both highway and transit programs and should be considered more widely. Some form of local option tax already is applied in 46 states although the applications within the states continue to grow. There also are a wide variety of miscellaneous sources that are used and offer additional potential at the local level, including transit lease income, mortgage recording taxes in transit districts, lottery income, cigarette taxes, tire taxes, etc. If we assumed a more aggressive strategy than in the base case forecast (assuming these dedicated fees would continue the aggressive rate of growth of last 10 years), an additional $11 billion could be generated per year and $96 billion cumulatively.

- It is probably not reasonable to assume that government entities will be successful in generating a significantly greater share of general revenues for transportation given the pressure from nontransportation programs such as health care and education so no revenue enhancements are assumed from general funds.

6.6 Packages of Actions to Close the Gap

Two scenarios or illustrative packages of highway and transit revenue measures are developed to illustrate the national gap closing potential of a mix of current and emerging revenue measures at all levels of government.

Scenario 1 – Assume the most aggressive options above for enhancing revenues, specifically:

- At the Federal level, all of the revenue enhancements in Table 6.1 are included (except sales tax on fuel) at their most aggressive levels, e.g., recapturing fuel tax purchasing power lost to inflation since 1993; and
- Include all state and local revenue enhancements from Table 6.1.

The annual and cumulative national gap closing potential of this illustrative aggressive package of revenue enhancement strategies at all levels of government would:

- Fully close both the annual gap to maintain by 2017 and the cumulative gap to maintain through 2017 (see Figures 6.1 and 6.2); and
- Close the annual gap to improve by 2016 and the cumulative gap to improve through 2017 by 75 percent (see Figures 6.1 and 6.2).

Scenario 2 – This package includes many of the same measures but at less aggressive levels of revenue enhancement, specifically:

- At the Federal level, all of the revenue enhancements in Table 6.1 are included but at less aggressive levels, e.g., recapturing only half of the fuel tax purchasing power lost to inflation since 1993, resulting in a 5 cent increase in fuel taxes in 2010.
- Include state revenue enhancements from Table 6.1 as follows:
  - Sales tax on gasoline;
  - Sales tax on motor vehicles;
  - Tolling; and
  - General sales tax at one-half percent.
- Local revenue measures as shown in Table 6.1.

This less aggressive package at all levels of government, also would fully close the gap to maintain but close only 76 percent of annual gap by 2017 and about 56 percent of the cumulative gap to improve (see Figures 6.1 and 6.3).

Figure 6.1 Annual Gap Closing Potential of Revenue Scenarios

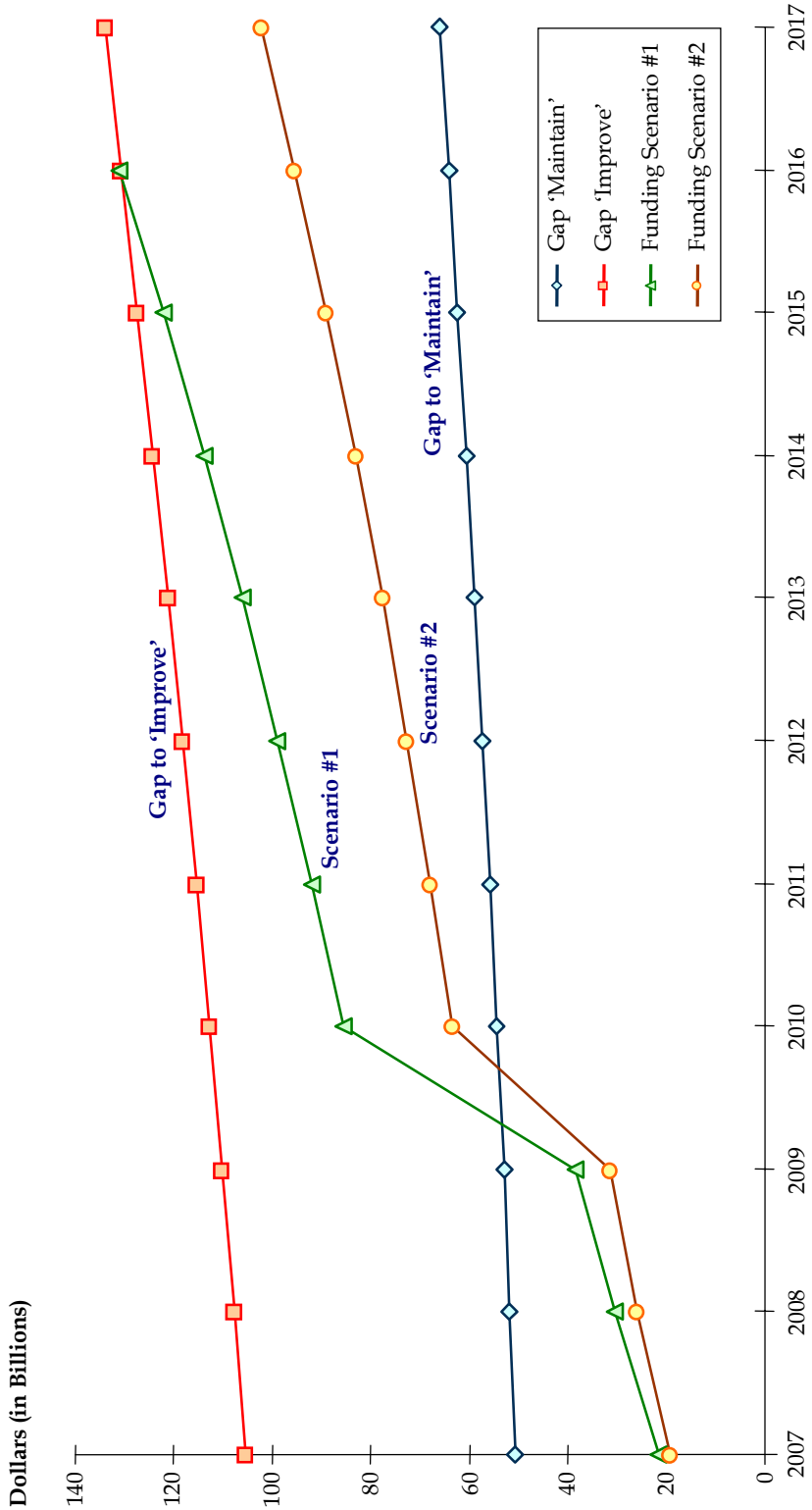


Figure 6.2 Cumulative Gap Closing Potential of Revenue Scenarios (Scenario #1)

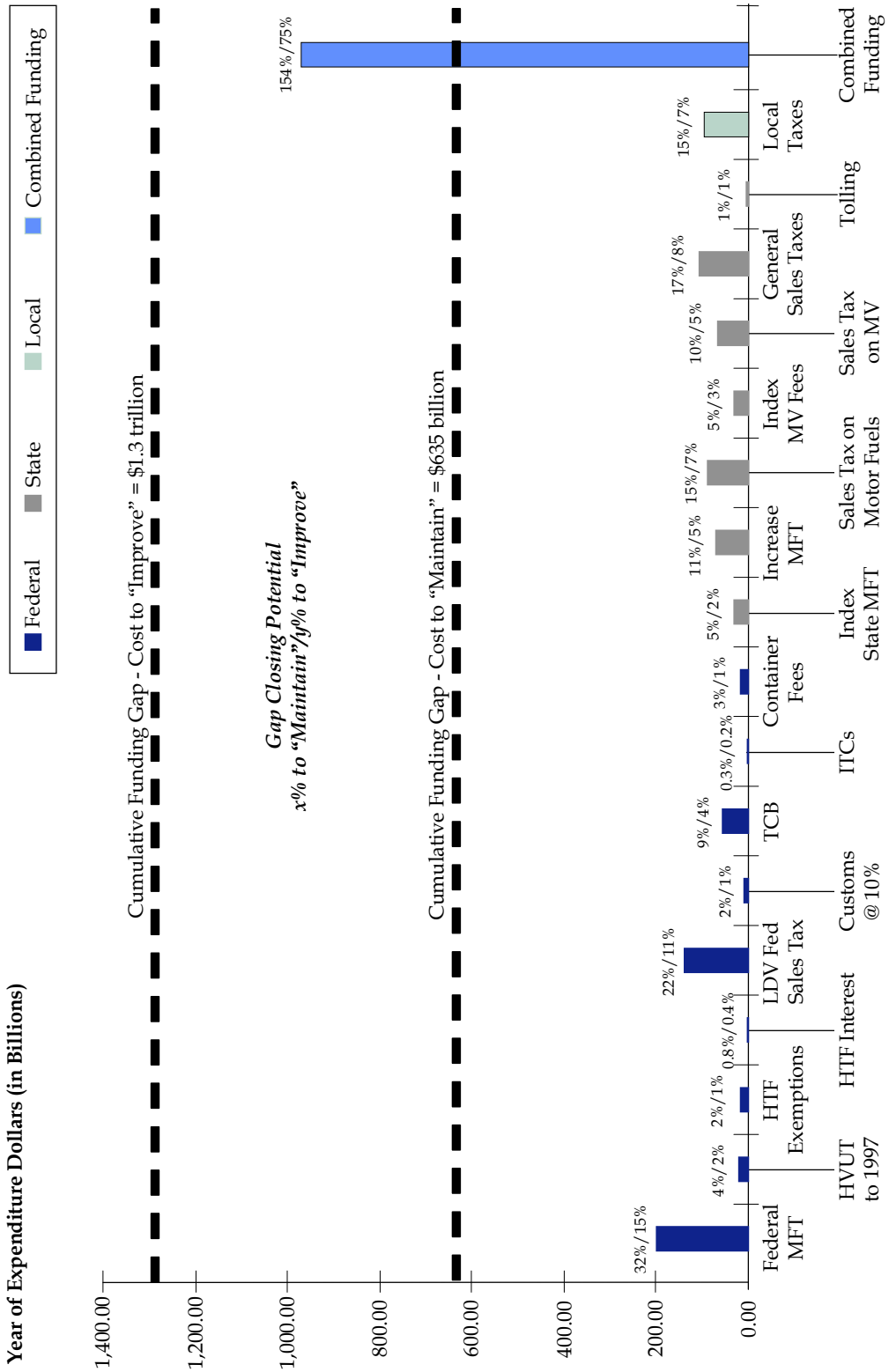
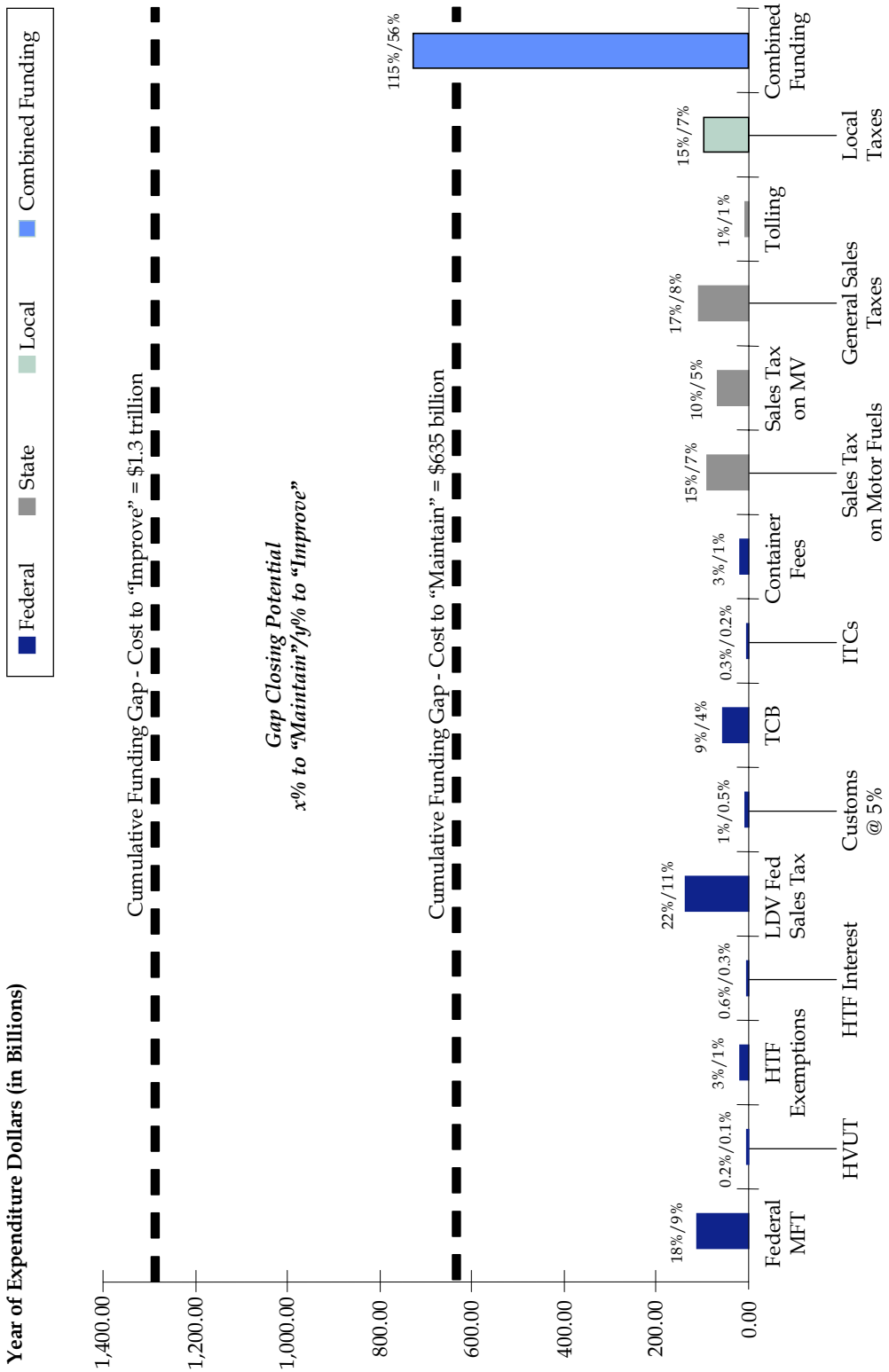


Figure 6.3 Cumulative Gap Closing Potential of Revenue Scenarios (Scenario #2)



6.7 Illustrative Scenario for Ensuring HTF Solvency during SAFETEA-LU and Addressing Needs during the Next Authorization Cycle

Recent projections of current-law HTF revenues indicate that the Highway Account of the HTF may not be able to support the Federal highway and safety program funding levels authorized in SAFETEA-LU. Based on an analysis of HTF revenues contained in the Mid-Session Review of the FY 2007 Budget and assumed expenditures resulting from SAFETEA-LU authorizations, it is estimated that the Highway Account will experience a shortfall of about $2.0 billion by the end of 2009. Although current revenues will support authorized Federal spending for public transportation programs through the end of SAFETEA-LU, it is estimated that the HTF resources dedicated to transit programs will face a similar solvency crisis early in the next authorization cycle (perhaps as soon as 2012). Furthermore, the current Federal revenue streams and funding levels will continue to fall well short of the amounts necessary to support investments that would merely maintain (much less improve) the condition and performance of the nation's highway and transit systems.

In order to demonstrate the potential use of revenue mechanisms described in this study, we have constructed a scenario designed to preclude the impending HTF solvency crisis as well as begin to address critical investment needs in the next authorization cycle and beyond. The options employed are not necessarily recommended and may not be viewed as optimal for budgetary, economic, or political reasons. But they do illustrate how certain measures could be employed to alleviate short- and medium-term funding problems at the national level while longer-term solutions are analyzed and implemented.

This illustrative Federal revenue scenario consists of the following measures:

- Eliminate the cost to the HTF of certain Federal excise tax exemptions beginning in 2008;
- Credit interest earnings on HTF balances to the HTF beginning in 2008;
- Increase the Federal fuels taxes by 5.0 cents per gallon beginning in 2010 (this would effectively recapture half of the purchasing power lost due to inflation since the last fuels tax increases in 1993); and
- Index the Federal fuels taxes to the CPI beginning in 2011 (to prevent a similar loss of purchasing power going forward).

Implementation of the first two measures beginning in 2008 would generate an estimated $2.6 billion for the Highway Account and $3.6 billion for the HTF overall during the final two years of SAFETEA-LU – revenue likely sufficient to avoid the impending solvency crisis and enable full funding of the authorized amounts for highway and safety programs through 2009. Implementation of the other two measures would put Federal spending on a path supporting highway and transit investments that would fully meet the levels required to maintain system condition and performance. In aggregate, the package of

revenue measures in this scenario would generate about $125 billion of additional revenue for highway and transit system investments through 2017.

Implementation of all four measures contained in this scenario would enable significantly higher funding levels in the next authorization cycle as shown in Figure 6.4. It is estimated that the combined Federal highway and transit funding could increase by about 39 percent from the SAFETEA-LU authorization level of nearly $54 billion in 2009 to about $75 billion by 2015. Assuming the continuance of historical relative shares of system investment between Federal and non-Federal levels of government, this scenario could enable Federal funding that reaches about 73 percent of the annual Federal share of the "cost to improve" funding target by 2015, the end of the next Federal authorization cycle. The enhanced Federal funding levels enabled by this scenario are summarized in Table 6.2. The Highway Account of the HTF maintains a prudent balance throughout the next authorization based on this scenario, however, the Transit Account reaches a precipitously low level by 2015; other revenue enhancements such as greater use of General Funds may be needed to sustain the Transit Account at a prudent balance.

Figure 6.4 Illustrative HTF Revenue Enhancement Scenario
Eliminate HTF Exemptions and Recapture Interest Starting in 2008; Enact 5 Cent Fuel Tax Increase in 2010 and Index Forward

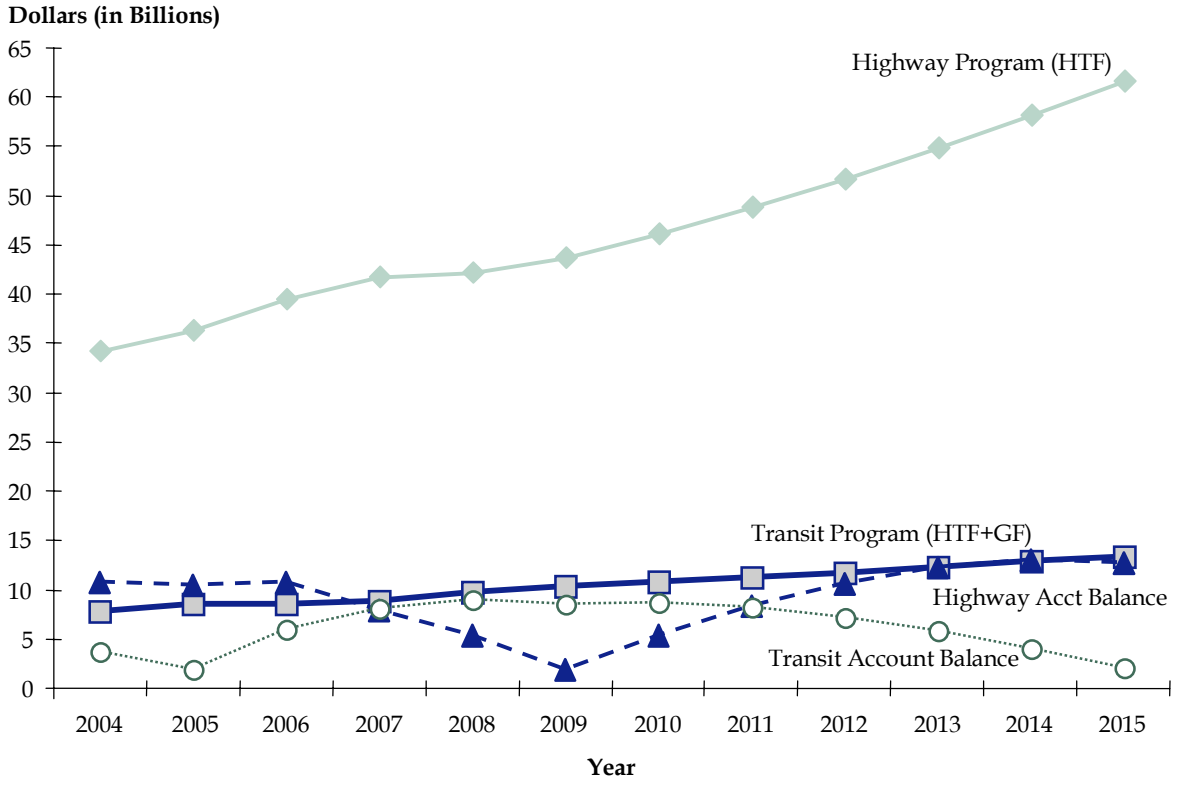


Table 6.2 Projected Federal Funding Levels through Implementation of Proposed Funding Strategies

Surface Transportation Mode	2006 Funding (Estimated)	2009 Funding (SAFETEA-LU)	2015 Funding (Enhanced Scenario)	2015 Funding Target[a]	Percent of Target Achieved
Highway and Safety Programs	$39.5 billion	$43.6 billion	$61.5 billion	$83.9 billion	73%
Public Transportation Programs[b]	$8.5 billion	$10.3 billion	$13.5 billion	$19.2 billion	70%
Total Federal Investment	**$48.0 billion**	**$53.9 billion**	**$75.0 billion**	**$103.1 billion**	**73%**

[a] These amounts represent the estimated Federal share of highway and transit capital funding that would be necessary to attain the annual "cost to improve" investment level, based on historical shares of relative funding by all levels of government.

[b] These amounts include assumed general fund contributions at the current-level in future years.

6.8 Conclusions

The significant gap closing potential of traditional and emerging revenue strategies at all levels of governments has been demonstrated in this section. The real issue is how to successfully implement these strategies at all levels of government over the next 10 years to achieve the investments that are needed in our surface transportation systems. That is the subject of the next and final section of the report.

7.0 Implementation Plan and Strategies

7.1 Implementation Plan for Highway and Transit Funding Initiatives

Over the past decade or more, important lessons have emerged from around the country on the steps that are necessary to successfully propose and enact new or enhanced revenue measures in support of national, state, local, and regional highway and transit programs.

Most funding initiatives come about either through legislative actions or through ballot initiatives and referenda. In the first instance, a legislative body makes the decision on a new or enhanced funding source. In the second case, a ballot measure must be passed to provide for the new or enhanced revenue source. In some special circumstances, highway toll facilities may also come about as a result of public or private project development actions that have previously been enabled by legislation.

Either legislation or initiatives and referenda require the same types of steps in order to achieve success in implementation of new or enhanced revenue sources.

1. Develop a consensus on the scope of current and future transportation needs and on the importance of acting to address them;

2. Develop a specific plan and program of investments for which additional funding is needed and demonstrate what benefits are expected from the proposed investments;

3. Identify clearly established roles, responsibilities and procedures for executing the plan and implementing the proposed improvements;

4. Describe the revenue sources in detail, and provide the rationales for their use;

5. Design and carry out a public education and advocacy plan and campaign;

6. Develop sustained leadership and demonstrable, sustained support; and

7. Plan for and lay out a clear and reasonable timetable.

Some say that revenues will never be raised to support highways and public transportation needs. This viewpoint is demonstrably false, because there have been an enormous

number of successes in these initiatives in recent years. In fact, studies of funding referenda show a very strong and increasing majority of funding issues being approved by voters. Legislatures may be behind the public will in terms of their decisions on whether to enhance funding for critically needed transportation programs. However, state legislatures and local legislative bodies have also taken very positive actions in many states, regions, and local areas to enhance revenues as well as to allow local option taxes and to provide for public private partnerships.

In addition, over the long run, the Federal government has consistently taken actions to increase Federal funding during all reauthorizations of the Federal aid highway and transit programs. Most of the past Federal funding enhancements have also involved increases or adjustments to Federal taxes and fees. The period since 1993 when the last adjustment was made to Federal taxes and fees is an anomaly in terms of the history of Federal actions, rather than a new reality. Federal spending on transportation as well as on other programs has been increasing. The accounts of the Federal highway trust fund have now been spent down, instead of being allowed to accumulate revenues that were not spent promptly on highway and transit needs. Revenues must be adjusted periodically to account for the actual reality of programs.

The recent successes on ballot measures are worth highlighting, because ballot measures may come closest to measuring the willingness of the public to pay more for improvements to highways and public transportation. The percentage of successes on transportation ballot measures have increased very rapidly in recent years, indicating that if the proper steps are followed, revenue enhancements can and will be implemented, The Center for Transportation Excellence (CFTE) has recently summarized the results of ballot measures from 2000 through 2005 in its report *Transportation Finance at the Ballot Box* (2006). CFTE has also summarized the results of transportation-related ballot measures in 2006 on its web site,[1] and ARTBA released a report on the results of ballot measures from the November 2006 elections.[2]

Increased Success in Transportation Ballot Measures

The case studies below demonstrate an overall trend in the use of voter-approved ballot measures to generate local and state funding for transportation. The Center for Transportation Excellence's (CFTE) report *Transportation Finance at the Ballot Box* supports this finding on the electoral trends associated with ballot measure campaigns. Of the 202 transportation measures in 33 states from 2000 through 2005, more than 130 of these were successful. For comparison, during this same period, only 34 percent of all general ballot

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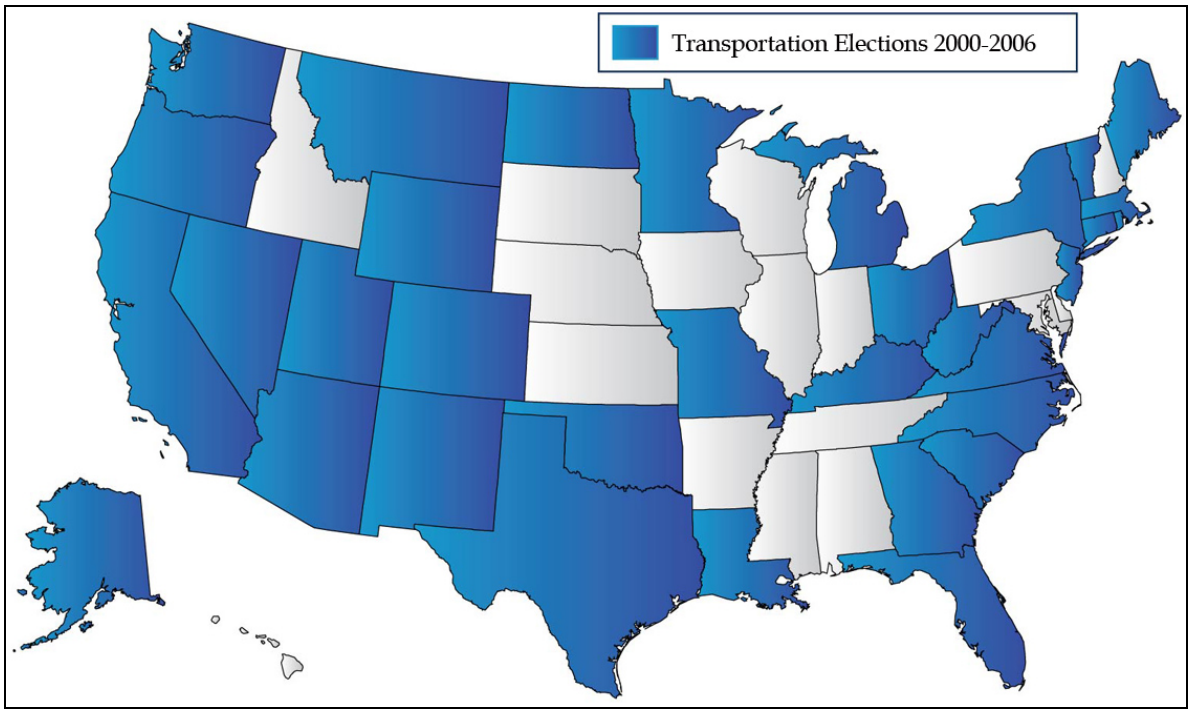
[1] Center for Transportation Excellence, 2006 Transit Ballot Measures. Available at: http://www.cfte.org/success/2006ballotmeasures.asp.

[2] American Road and Transportation Builders Association, Special Ballot Initiatives Report, November 2006. Available at: http://www.artba.org/advocacy/government-affairs/transportations--elections/.

measures were approved.[3] This success for transportation has translated to over $70 billion in approved funding. In 2006, a total of 47 transportation-related ballot measures were presented to voters, 30 of which were included in the November 2006 elections. Twenty-nine of the 47 ballot measures were approved in 2006. ARTBA indicated in its report that the ballot measures approved in November will add over $2.1 billion annually for transportation investments. The increase for transportation-related ballot measures can be attributed to citizen demand as well as the requirement for local communities to come up with matching funds in order to access Federal funding. Figure 7.1 shows states that had ballot measures for transportation in the years 2000 to 2006, based on the analysis by CFTE.

Figure 7.1 States with Transportation Ballot Measures
2000-2005



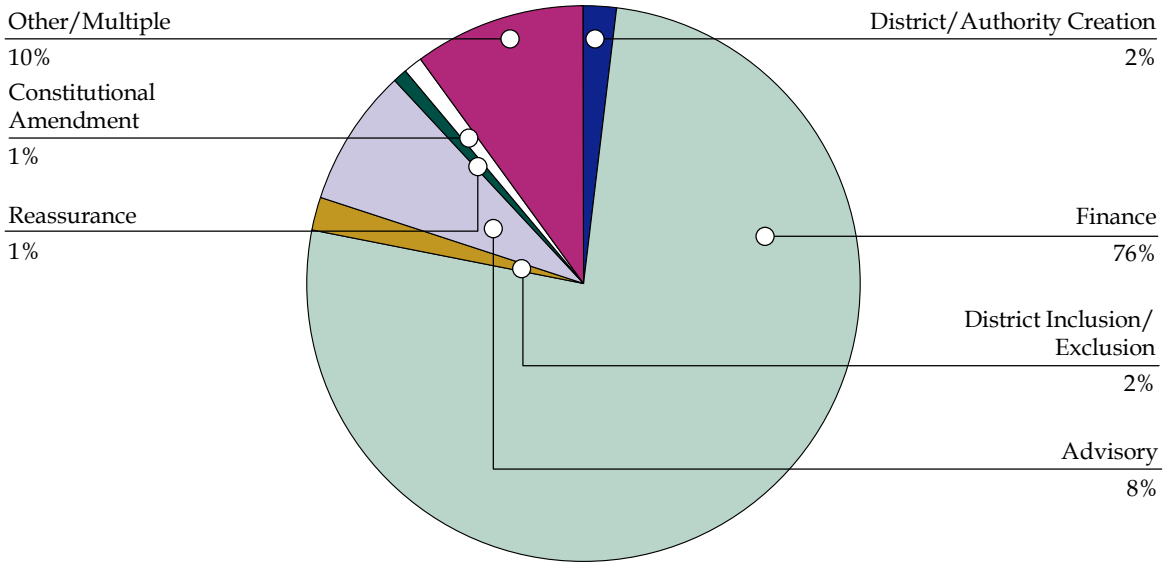
Source: CFTE.

[3] Center for Transportation Excellence, Transportation Finance at the Ballot Box: Voters Support Increased Investment and Choice, 2006.

Types and Structure of Ballot Measures

Ballot measures are generally divided into two broad categories: initiatives and referenda. Initiatives are authorized by 24 states, and require a citizen-led petition process. Referenda are proposals referred to voters by elected or appointed bodies for final approval are the most commonly used type of ballot measure.[4] While 76 percent of the transportation-related ballot measures are associated with generating additional revenues, there are also measures that have asked voters to create a transit authority, to amend the constitution, or to advise on a future project. The types of measures are shown in Figure 7.2.

Figure 7.2 Percentage of Ballots by Type of Measure



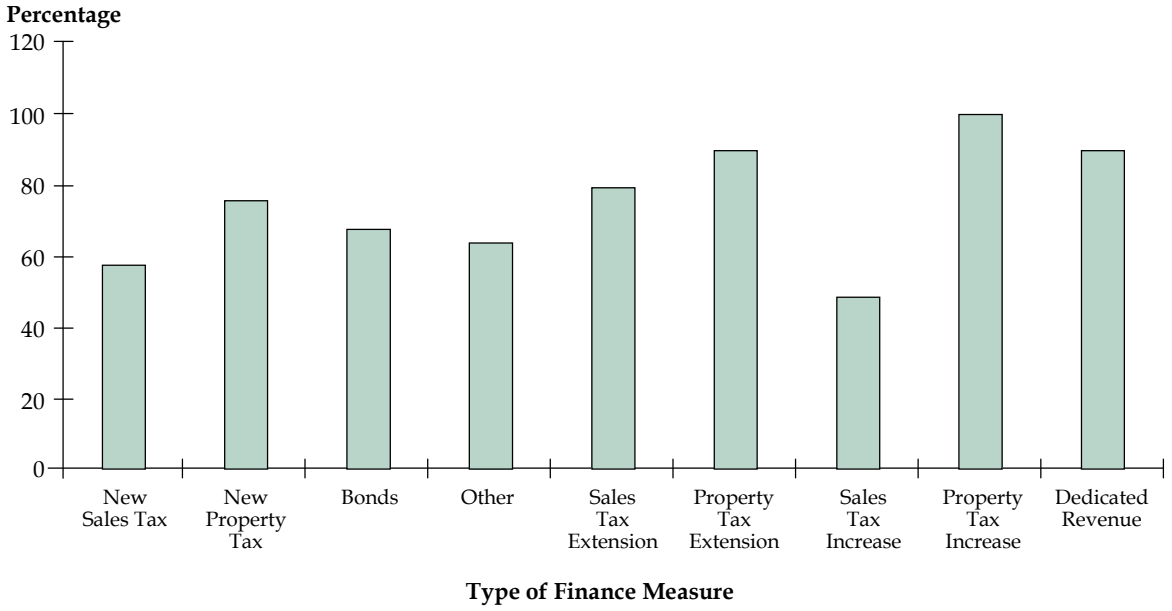
Source: CFTE.

Successful Ballot Measures Related to Finance

Analysis of the multitude of ballot measures by the CFTE between 2000 and 2005 reveal that the most common revenue source mechanisms on ballot measures were sales taxes, property taxes, and bonds. Other tools, such as fees from gasoline taxes, rental cars, and tolls are also utilized. The success rates for the various measure types are shown in Figure 7.3.

[4] Ibid.

Figure 7.3 Success Rate by Type of Measure



Source: CFTE.

Approximately 40 percent of all measures with a finance component incorporated a sales tax, either through a new levy, increasing existing rates, or renewing an expiring tax. With a success rate of 54 percent, sales taxes also provided the largest amount of transportation funding between 2000 and 2005 and are typically a dedicated one-quarter or one-half-cent levy. In 2006, 22 ballot measures at the local level proposed either new or the extension of existing sales taxes; four of these ballot measures were defeated. Property taxes accounted for 17 percent of all ballot measures with a success rate of 80 percent. Voters from Michigan and Oregon voted for new or increased property taxes for transportation in 2006. From 2000 to 2005, no ballot measure increasing an existing property tax for transportation has been defeated; in 2006, a property tax measure was defeated in Salem, Oregon. For measures with both sales and property taxes, 43 percent dealt with increasing the rate, 13 percent called for a new levy, and 13 percent for an extension of an existing tax. Bonds accounted for 16 percent of ballot measures with a success rate of over 65 percent.[5]

The recent successes in ballot measures provide evidence that properly organized campaigns can result in implementation of enhanced revenues. Case study examples below also illustrate successes at the legislative level.

In virtually every case where new revenues have been approved for highways and transit, the steps described below have been taken, usually through conscious, well thought out and energetically executed campaigns. Each is described briefly below.

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[5] Ibid.

Steps in Successful Legislative and Ballot Initiatives for Revenue Enhancements

1. *Develop a consensus on the scope of current and future transportation needs and on the importance of acting to address them.*

Needs and funding cannot be separated, because the perception of a need is the most powerful motivator for funding decisions. The perception of needs must include not only a perception of the benefits of acting, but also an understanding of the costs of not acting. In order to trigger broad-based support for new revenues for transportation investment, a consensus has to be established that there are, indeed, problems that have broad and unacceptable consequences for citizens, business and industry if the problems are not attended to.

Typically, a wide-ranging dialogue is needed on the scope and nature of the transportation challenges and on the consequences of not acting, i.e., a coordinated effort is needed, as described in the later steps, to educate various stakeholders and community leaders through a comprehensive public education campaign.

2. *Develop a specific plan and program of investments for which additional funding is needed and demonstrate what benefits are expected from the proposed investments.*

Legislators, community leaders, and voters must be confident in what specific investments are proposed, what benefits are expected and the rationales for each element of the plan. Experience has shown that legislators or voters are reluctant to support new revenue initiatives unless they include:

- Mixes of improvement types, e.g., highway, transit, nonmotorized;
- Specific improvements and projects;
- Breadth of improvement locations, e.g., resources directed to local as well as regional priorities and problems;
- Clear rationales, including expected benefits as well as the consequences of failing to act; and
- Sound arguments and documentation to deflect issues that critics may raise for the proposed plan and program.

3. *Identify clearly established roles, responsibilities, and procedures for executing the plan and implementing the proposed improvements.*

Intergovernmental roles and relationships must be clearly spelled out regarding how investment decisions are to be made, who and what organization(s) are responsible for

execution of the plan and program and how agencies and organizations are to partner for the plan and program to succeed. There must be no ambiguity, and the legislators and community leaders and citizens must have trust in the agencies and processes to be used in committing the new resources.

In addition, actions must be taken – legislative, regulatory and administrative – to assure that the respective agencies and organizations have adequate authority to collect, expend, encumber revenues, incur debt, contract and undertake other activities necessary to fully execute the plan and program. State legislative actions may be necessary as well as legislative actions by local jurisdictions. Memorandums of Understanding (MOU) and other formal mechanisms may be necessary to assure clear lines of authority and effective procedures are in place.

4. Describe the revenue sources in detail, and provide the rationales for their use.

There are always a wide range of alternative revenue sources for consideration in increasing transportation investment. Selecting the most appropriate sources(s) requires a thorough evaluation of those alternatives across a number of key criteria, and an understanding among stakeholders, citizens and community and political leaders of the rationales for pursuing particular sources. Among the most important criteria in evaluating alternative revenue sources are:

- Revenue yield, adequacy, and stability;
- Cost-efficiency (includes administrative cost to agencies, compliance costs to taxpayers, and evasion levels);
- Equity with regard to burden across different income groups and equity of revenues and costs attributed to different vehicle classes;
- Economic efficiency, with particularly emphasis on efficiency in pricing;
- Political acceptability; and
- Technical feasibility.[6]

Revenue Yield, Adequacy, and Stability

For the purposes of evaluation, revenue yield means that the source can provide such a level of revenues that it is very significant in supporting the overall transportation program. Adequacy involves the judgment that current motor fuel taxes and alternative sources should be evaluated with respect to present and future *revenues* in comparison to

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[6] *Future Financing Options to Meet Highway and Transit Needs.* Interim report by National Cooperative Highway Research Program, Transportation Research Board, and National Research Council, May 2006. These criteria are described in more detail in Appendix A.

needs for current and projected *expenditures*. Such a comparison will determine the adequacy of each revenue source in meeting needs, and will differentiate superior sources from those that are merely average or even inferior. Stability refers to whether there are uncertain revenue fluctuations that can impact an agency's ability to manage resources.

Cost-Efficiency, Including Administrative and Compliance Costs and Evasion

Efficiency refers to the maximizing of benefits in relation to the use of resources (cost of collecting the tax, to both the taxpayers and the government). This implies that administrative costs to agencies and compliance costs to taxpayers incurred by alternative revenue structures should be kept to a minimum. Administrative cost refers to the actual costs incurred by an agency collecting and processing revenue sources. Compliance cost refers to the cost actually incurred by the taxpayer that is additional to the dollar payment made. In addition, incentives and opportunities for tax evasion should be minimized as much as possible.

Equity

Equity is employed as a criterion to assess fairness of tax burden among different economic groups. Theoretically, a tax burden should be commensurate with one's "ability to pay." User taxes, such as ones used to fund transportation, are somewhat less likely to have issues of equity with regard to income level. Equity concerns in terms of the general taxation issues within our society have usually revolved around the relative payments by those with different levels of income.

Economic Efficiency

This criterion refers to the analysis of marginal cost, or the cost to society of one additional trip made, and whether the price paid for that trip is commensurate with the cost to society. The concept is most familiar in the congestion pricing context, now sometimes referred to as value pricing. Economic efficiency criteria have not been applied in the real world of highway travel, primarily because traditional ways of pricing travel are very familiar and considered to be more fair than auctioning off scarce roadway space.

Political Acceptability

Political acceptability is on one hand a combination, or "roll-up," criterion of all others, and, on the other hand, a stand-alone threshold in the decision process to employ alternative revenue schemes. Principally, a revenue source is acceptable when it is politically palatable on the key, or most salient, criteria. That implies that the revenue source is adequate, fair, simple, effective, efficient, and easy to administer.

Technical Feasibility

Technical advancements, including geographic information systems (GIS), global positioning systems (GPS), and electronic transfer mechanisms, have reduced the cost of administration and compliance in a broad array of areas, including the field of finance and taxation generally and transportation-related taxation specifically. Advances in technology

also can pose difficulties for the traditional method of funding highways by collecting taxes on motor fuels at a fueling station. Advances in fuel economy, for instance, including engine technology and lighter materials, can reduce motor vehicle fuel use per mile.

5. Design and carry out a public education and advocacy plan and campaign.

As suggested in step one, above, the act of raising new revenues for transportation investment (or any other worthy public purpose) involves the equivalent of a political campaign since it is likely that formal public approval will be required at some point either through referenda or through the legislative or administrative actions of elected officials.

As with any campaign, both sustained leadership and adequate funding is needed. Typically, such campaigns rely on regular polling to test public response as problems, plans, rationales and revenue alternatives are presented and discussed. In addition, a full range of communications strategies and products are needed to assure that the public education process is comprehensive and continuous.

In successful cases of regional funding initiatives in Houston, San Diego, St. Louis, and Seattle, public education and advocacy efforts have shared several common characteristics that will need to be considered in any effort to bring new transportation revenues to bear. Among the most important of these are:

- Sustained involvement of effective leaders with an emphasis on the participation by individuals from outside the ranks of elected officials;
- Sustained support from key elected officials at all levels;
- Formal involvement of stakeholders and citizens representing the broadest array of interests and organizations;
- Creation of formal coalitions or organizations to coordinate, direct, and channel resources and advocacy activities;
- Financial support from nongovernmental sources involving several hundreds of thousands of dollars to underwrite a sustained, multiyear campaign;
- Participation of experienced public relations and legal professionals to advise and conduct elements of the campaign;
- Extensive and continuous monitoring of public opinion to help shape the investment program, identify the sources of funds, and build the institutional structure to be used; and
- Preparation of a wide range of activities and products for use in presenting issues and proposals to the public, including both electronic and print media strategies, a range of public education materials, and spokespersons and materials needed to make regular presentations to the public and various interest groups.

6. Develop sustained leadership and demonstrable, sustained support.

Every campaign requires enlightened, sustained, and active leadership from individuals and organizations that are recognized as community leaders. Typically, this means champions for the initiative recruited from business and industry as well as politics. It also means, as mentioned above, constant, up to date understanding of public and popular sentiment around the issues involved and the proposals being considered and advocated.

Leadership plays a key role in arriving at final plan and funding proposals, advocating those proposals actively in the community, and responding to criticisms that are inevitably raised when new public revenue-raising initiatives or specific projects are proposed.

7. Plan for and lay out a clear and reasonable timetable.

Transportation revenue initiatives typically take many months to plan, detail, promote, and enact. A typical timetable may involve two years or more, depending on the scope of the issues involved, the knowledge of community leaders and the electorate, and historic levels of "friction" that exist in the political arena over matters of public service priorities, revenue-raising and bipartisanship in consensus building and decision-making.

It is also not uncommon for the initial new transportation revenue-raising initiative to fail on the first attempt at public approval. While the proportion of transportation revenue initiatives approved in recent years has risen, there are always examples of initiatives turned down at the polls, largely because one or more of the steps noted above has not been carried out effectively.

7.2 Case Studies of Successful Initiatives

The case studies which are included here illustrate initiatives which achieved success by following an implementation strategy that was sufficient to result in a new or enhanced revenue source or sources. The case studies span a broad range of efforts for highway funding, for public transportation funding, and for multimodal funding. They illustrate actions that were successful through new legislation, through initiatives or referenda, or through administrative actions.

Ohio Case

In 2002, the Ohio state legislature approved a 6-cent increase to the State's motor fuel tax, to take effect in 2-cent increments over the following three years (2003-2005). This adjusted Ohio's motor fuel tax rate from 22 cents per gallon to 28 cents per gallon. The increase was enabled because of a coordinated effort by Ohio DOT to improve its internal efficiency. The DOT was then able to leverage its credibility for good management to

present a strong case for an increase in the motor fuel tax to be spent on major capital improvements.

The process started in January 1995, when Ohio DOT introduced VISION 2000, a long-range restructuring plan designed to improve the cost-effectiveness and quality of the department's services and to make the department more responsive to customer needs. Over the following years, the department decentralized most decision-making to the district level and consolidated operations by function, decreasing the number of Ohio DOT divisions from 16 to seven. With the reorganization, the number of employees was also reduced from 7,788 to 6,032. By 1999, these changes had generated enough savings that Ohio DOT was able to maintain its highways and bridges and to reallocate $46.4 million from operating costs to new construction. This showed the public and the legislature that Ohio DOT had done what it could to increase funding out of efficiency improvements. However, because of rising prices and increasing vehicle miles of travel in the State, the department still did not have sufficient funding to embark on major, new, corridor-level capacity improvements.

In 2000, Ohio DOT decided to seek an increase in Ohio's motor fuel tax rate to fund new capacity improvements. In late 2001, the department convinced the Ohio state legislature to add a section establishing a Motor Fuel Tax Task Force to a comprehensive appropriations bill. The task force was instructed to report back to the legislature and the governor by the end of 2002 on the need for and feasibility of increasing the State's motor fuel taxes. The bipartisan task force consisted of six legislators representing both parties and houses; the directors of the state transportation, revenue, and public safety departments; municipal groups; professional associations; and members of the public.

The task force estimated the shortfall for maintaining and improving Ohio's roads and bridges to be in excess of $400 million per year. Recognizing the critical importance of the transportation network to Ohio's economy, the task force recommended a 6-cent increase in the motor fuel tax, to be "implemented over the course of a few years to lessen the impact on consumers," that would generate approximately $270 million per year in additional tax revenue. The task force also called for an increase in vehicle license, registration, and title fees to support the Ohio State Highway Patrol. They recommended that the motor fuel tax revenues that had gone to the Patrol be reallocated to county engineers and local municipalities, effectively sharing half of the motor fuel tax increase with the counties and local governments.

The task force's recommendations were reviewed by the Ohio state legislature and gained the backing of Governor Taft, the State Contractors Association, local governments, and many of the State's chambers of commerce. The tax measure was passed by a 2-to-1 vote; significant opposition never surfaced in either house of the legislature.

The key factors in the Ohio state legislature's willingness to accept the tax increase – despite an ongoing recession and political pressure to reduce taxes generally – were the perception that Ohio DOT was operating as leanly and efficiently as possible; an acknowledgment that Ohio DOT had made a clear and compelling technical case for major, corridor-level, infrastructure improvements; and a consensus that the tax increase

would benefit the programs of county and local governments as well as the programs of the Ohio DOT.

The Ohio case demonstrates that it is politically feasible to increase the motor fuel tax, but also establishes the importance of building a prior reputation for prudent management and good stewardship, building a broad constituency, and targeting the proposed increased revenues on needed and publicly visible improvements.

Denver Case

The Denver *FasTracks* program is funded, in part, from a sales tax increase from 0.6 percent to 1.0 percent approved by voters in November 2004. The 58 to 42 percent vote of approval reversed two earlier defeats, including a 1997 58 to 42 percent defeat of a "Guide the Ride" initiative, a similar plan that was not clearly defined and not effectively promoted.

The *FasTracks* campaign was begun a year and a half ahead of the target referendum date and was carried out with the assistance of a well-known, locally based political consulting firm. The challenges to be overcome in pursuing the *FasTracks* program revolved around poor organization and lack of support from key elements of the regional community, including the RTD Board itself, key elected officials and major media outlets as well as poor campaign organization.

Several strategies, both mainstream and unique, were used in advancing *FasTracks*:

- A wide-ranging set of proposed projects and improvements.
- A long lead-time in pursuit of voter support.
- Use of professional campaign management combined with the use of only volunteers to gather signatures.
- Extensive polling.
- An aggressive, $3.5 million TV and radio campaign, with direct mail and outdoor advertising, funded largely by the business community.
- A sustained public education campaign begun even earlier by the Transit Alliance, an existing coalition in support of transit that targeted local events and operates a speaker's bureau.

- An extensive, broad-based coalition of supporting organizations involved in field activities (157 businesses, 26 local governments, 74 local elected officials). Ultimately, over 500 businesses and community organizations and all 31 regional mayors provided support to the plan.

- Significant analysis and promotion of the benefits of the FasTracks program as well as rapid response to issues raised by critics.

In addition, the FasTracks initiative was helped immeasurably by the steadily growing success of the RTD and effective management of an expanding variety of transit services and delivery strategies in the region.

Missouri Case

The use of local option sales taxes has become an integral part of the transportation funding structure in Missouri. Voter-approved sales taxes are used throughout the State to support road and to a lesser extent transit investments. Locally generated tax revenues tend be levied in support of projects that have a direct, local, economic development benefits, whereas state and Federal funds are generally earmarked towards system preservation, safety, and planning. Though Missouri is only one of many states that allow local municipalities to establish local option taxes, the State is notable because of the large amount of revenue that local taxes have generated – $96 per person – and because rural areas of the State have tended to win voter approval for new local option sales taxes as easily as urban areas have.

Over the past three decades, Missouri has gradually expanded the legal authority for local governments to finance transportation projects and services with dedicated sales taxes. In 1971, Kansas City was given the option of adopting a sales tax for transit capital and operations. This ability was extended to other cities and counties in the State in the mid-1980s, and the permissible uses of the taxes were expanded to include a broad range of capital improvements. In the 1990s, these powers were extended to special district governments, including county transit authorities and transportation development districts. In all cases, new taxes must be approved by the voters. Table 7.1 describes local option sales tax measures on Missouri ballots in 2005. Three of the five were approved by the voters.

Due to the distributed and dynamic nature of locally assessed taxes, little information is available about the total revenue raised statewide through local option sale taxes. However, a recent sample of 30 percent of the transportation tax-assessing authorities in the State, including towns, cities, counties and transportation development districts, found that their local option sales taxes generated a total of $124 million per year. This significant sum has helped these municipalities improve their road network, build bridges, construct and maintain light rail lines, and participate in economic development initiatives.

Table 7.1 2005 Ballot Measures for Missouri's Local Option Sales Tax

City/County	Type of Sales Tax	Result	Comments
Poplar Bluff	Sales Tax Increase (0.5%)	Approved (68%)	0.5% increase to provide local matching funds for upgrades to U.S. 67. The tax will expire after 30 years.
City of Moberly	Transportation Tax Extension (0.5%)	Approved (72%)	Extended 0.5% transportation tax for another 10 years. The tax was last extended in 1995.
City of Washington	New Transportation Sales Tax (0.5%)	Approved (54%)	New 0.5% sales tax to add capacity along 12 miles of Highway 100. The proposal also included funds to overlay all city streets. The money from the sales tax will be used for debt service on bonds issued for the road improvements.
St. Francois County	New Transportation Sales Tax (0.25%)	Defeated	St. Francois County was proposing to issue $15-20 million in bonds for high-priority road projects.
Macon, Shelby, Ralls, and Marion Counties	New Transportation Sales Tax (0.5%)	Defeated	These five counties were asked to approve a 0.5% sales tax for improvements on the U.S. 36 corridor. The tax had to be approved in all counties to be implemented. Ralls County was the only county not to approve the sales tax.

Source: American Road & Transportation Builders Association.

Maricopa County, Arizona Case

Maricopa County voters approved a 20-year extension of the area's one-half-cent sales tax in November 2004 to support a wide range of multimodal transportation improvements – highway construction and maintenance, street improvements, bus services, light rail services and nonmotorized facilities. Passage of Proposition 400 overcame significant, well-organized, and well-funded opposition from both anti-tax forces as well as anti-rail forces. Among the strategies involved were:

- A 2000 start to the campaign, four years ahead of voter approval, with the first two years devoted to arriving at a plan that could generate broad support from key constituencies and community leaders. Nearly 2,000 meetings were held with elected officials, business, and civic groups through every phase.

- Guidance for the effort from a broadly representative group of community leaders, the Maricopa 2020/Yes on 400 Committee.
- Involvement of a professional campaign and public affairs issues management firm that subsequently won awards for its efforts.
- A broad-based coalition of active supporters, 4,000 strong, combined with other existing constituency groups that raised over $4 million for the effort.
- Aggressive public responses to Proposition 400 critics coupled with focusing advocacy efforts on the highway portion of the proposal.

Florida Case – Local Option Sales Taxes

Florida's Legislation allows for the implementation of local option sales taxes up to 1 percent in the counties of Broward, Duval, Hillsborough, Miami-Dade, Pinellas, Sarasota, and Volusia for transit. This local option sales tax is known as the Charter County Transit System Surtax. To date, only Duval and Miami-Dade have implemented this local option tax, at the rate of 0.5 percent in both counties.

In the case of Miami-Dade, an initial proposal to implement the Charter County Transit System Surtax had been rejected by voters in 1999. The sales tax proposal was included again in the November 2002 ballot, when it was finally approved by voters.

The key to the successful implementation of the local sales tax in Miami-Dade was the creation of the "People's Transportation and Plan" (PTP). The PTP development included extensive public participation. This plan specifies the uses for the 0.5 percent sales tax levies. Transit investments included in the plan encompass Miami-Dade Transit rail and bus service expansion and improvements. Several public work projects will also be funded, including upgrades to the traffic signal system, which is currently underway. In addition, 20 percent of the sales tax revenues are transferred to municipalities for transit and other transportation improvements.

The county ordinance 02-117, under which the PTP was created, required the creation of the Citizen's Independent Transportation Trust (CITT) to oversee the use and expenditures of the one-half-cent sales tax levies. This ordinance also states that the sales tax revenues cannot be used for projects other than those listed in the People's Transportation Plan. Furthermore, projects already included in the plan cannot be eliminated without approval of the CITT and the County Board of Commissioners. Changes to the People's Transportation Plan are only acceptable "as a result of the MPO process as mandated by Federal and state law" or if approved by both the CITT and the County Commission.

Oregon Case

Currently, Federal and state fuel taxes constitute approximately 60 to 70 percent of road revenues for Oregon. Yet due to increased fuel efficiency, continued inflation, and a general reluctance on the part of voters to increase the motor fuels tax, the purchasing power of gallonage-based tax revenues (in terms of inflation-adjusted revenue per vehicle-mile traveled) has been steadily declining for decades. In response to this problem, in 2001 the Oregon Legislative Assembly passed House Bill 3946, which mandated the formation of the Road User Fee Task Force (RUFTF) and charged it to establish a long-term vision for Oregon road finance.

The RUFTF examined the strengths and limitations of various revenue generating alternatives for replacing the gas tax as the primary source of revenues for repairing, maintaining, and building Oregon's roads. After reviewing multiple options, RUFTF focused on a mileage-based user fee on the basis of strengths that included equity among travelers (a "user pay system"), acceptability and transparency to the public, ease of use for the motorist, and sustainability as a revenue source. In short, the mileage-based fee was determined to be a fair, simple, and affordable way to generate revenue based on actual miles traveled in Oregon. In March 2003, RUFTF presented a report to the legislature that reviewed the alternatives and proposed testing the mileage-based fee in a pilot program. The Federal Highway Administration provided funding for conduct of the pilot program.

Oregon DOT designed the pilot program specifically to demonstrate the technical and administrative feasibility of implementing a mileage-based user fee. The full pilot test began in June 2006 and will continue for one year. A total of 260 trial participants in the Portland metropolitan area have a mileage-recording and global-positioning-system device installed in their vehicles, and are currently purchasing gas at select service stations in Portland equipped with wireless mileage-reading devices. The mileage-recording device in the each car tracks miles driven in four categories: miles driven in Oregon; miles driven out-of-state; miles driven in the Portland metropolitan area during weekday rush hour (7:00-9:00 a.m. and 4:00-6:00 p.m.); and miles driven when no satellite signal was available (e.g., miles accumulated in underground parking garages, tunnels, etc.). During the first six months of the pilot test, participants are paying the gas tax as usual. In December 2006, participants will be randomly divided into different test groups: one group will continue to pay the gas tax; a second group will pay a mileage-based fee of 1.2 cents per in-state mile instead of the gas tax; and a third group will pay a mileage-based fee plus a congestion pricing fee for mileage accrued during weekday rush-hours in the Portland metropolitan area.

A strong public outreach process has been an integral part of this study, including stakeholder meetings, public hearings, and public testimony, an interactive web site, and media reports. Members of the public have raised the following concerns about the mileage-based fee:

- **Privacy –** Oregon DOT has clarified through interviews and articles that the road user fee program collects mileage data only and does not collect location information. Mileage data are transferred only at the time of fueling. This has reduced the level of public concern about the protection of driver's privacy.

- **Revenue –** The mileage-based fee of 1.2 cents per mile was selected as being roughly revenue neutral with the gas tax, based on average vehicle fuel economy data. At the present time, Oregon DOT does not intend to set a higher mileage-based fee that would generate revenue above and beyond what the gas tax would otherwise generate.

- **Environmental Equity –** The mileage-based fee is based on actual miles driven in Oregon. It does not distinguish among different types of vehicles based on either fuel economy or weight. Whether the fee should vary by vehicle type to account for varying environmental and/or road maintenance impacts has been the most significant public policy concern expressed to date. The technology does allow for a variable fee scheme based on vehicle type to be introduced in the future, and this remains an option to be considered going forward.

- **Geographic Equity –** While the current pilot test involves only participants residing in the Portland metropolitan area, some residents of rural Oregon have expressed concerns about the geographic equity of a mileage-based fee if the system were to be expanded statewide. The concern is that rural residents need to drive more miles on average than urban residents on a day-to-day basis, and a mileage-based fee could disproportionately impact rural residents.

- **Congestion Pricing –** The last six months of the pilot test will evaluate the impacts of having a peak-period surcharge (i.e., congestion pricing) in place. Some members of the public do not feel that congestion pricing is equitable. Transportation and land use professionals have asked about the possible intended and unintended consequences of congestion pricing on land uses and travel patterns. No determination has yet been made regarding whether congestion pricing would be recommended for longer-term implementation.

The pilot test is proceeding smoothly to date. Occasional equipment failures have been experienced, but the rate has not been unusual or problematic as yet. Following conclusion of the pilot test in summer 2007, Oregon DOT will prepare a report and present the findings to the Oregon state legislature in 2009. At that time, next steps will be determined; these may include further testing, evaluation of additional geographic regions, or evaluation of different pricing schemes. Oregon DOT anticipates that adoption of a mileage-based fee system will require legislative support and additional funding for installation of vehicle and service-station technology; development of new state and Federal legislation governing administration, enforcement and privacy concerns; and coordination with vehicle manufacturers, the fuel distribution industry, and organizations representing the general public.

Idaho Case

Idaho recently authorized the use of GARVEE bonds for the planning and construction of a comprehensive statewide corridor-improvement project. "Connecting Idaho," the plan endorsed by former Governor Dirk Kempthorne, is a $1.2 billion initiative to reconstruct key elements of the State's major highways using debt backed by future Federal dollars. Though the plan initially faced strong opposition in the state legislature, the enabling legislation passed in April 2005 and the first bond was issued in May 2006.

In October 2002, Governor Kempthorne commissioned the 2020 Blue Ribbon Task Force. This nonpartisan citizen task force was charged with assessing the immediate and long-term needs of the State of Idaho, performing an objective analysis of the organization and structure of state government, and recommending necessary changes to meet the demands of the 21st century. The Task Force submitted its findings to the governor in October 2003. One of the long-term recommendations concerning transportation was that the Idaho state legislature enact legislation authorizing the Idaho Transportation Board to issue GARVEE bonds for the purpose of financing specific transportation projects. The bonds would be payable from Federal highway funds, fuel tax revenues, or other revenues, provided that this was accomplished within the framework of the states' constitutional and legislative mandates regarding public indebtedness.

Though the governor was not initially convinced of the utility of using grant-anticipation bonds, advisors and some legislators demonstrated that the mechanism could be used to secure in excess of $2 billion in funding for highway construction. With this amount of money, more than 30 years worth of projects could be expedited and completed in the next decade. In his January 2005 "State of the State" address, the governor devoted a significant portion of the speech to laying out his "Connecting Idaho" program, an initiative that would use GARVEE bonds to fund an effort to modernize major highways across the State.

The enabling legislation for the "Connecting Idaho" plan was initially submitted to the Idaho Senate where it found strong support. However, even with the governor's vocal endorsement, the bill floundered in the Idaho House where the legislature's distrust of debt was most deeply ingrained. The measure initially failed to move out of committee despite gaining significant public attention and the support of chambers of commerce throughout the State. Only after extensive briefings by Idaho DOT officials, debate, and the governor's strong insistence was the bill revisited, amended, and approved. Amendments trimmed the net bond revenues to $1.2 billion and placed a 20 percent cap on the amount of Federal funds received annually that could be allocated to debt service (the cap will grow to 30 percent for FY 2011). A clause was also added that requires yearly legislative approval of new bond issues for that year's planning and construction projects. At the end of the legislative session in April 2006, the House and Senate approved $200 million of GARVEE bonds for the first set of projects.

The key success factors this case were the persistence of Idaho DOT officials in explaining the need for additional investment in Idaho's highway system and in making the case for use of GARVEE bonds; the commitment of the GARVEE bond proceeds to fund major,

corridor-level improvements across the State, not just in a single area; and the willingness of the governor to champion the effort politically as an important element underpinning Idaho's economic development. Of course, the use of GARVEE bonds is borrowing against future revenues, and no new net funds were accrued. Rather, the investments were moved up in time, and borrowing costs will need to be paid in the future.

Indiana Case

The State of Indiana recently entered into an agreement to privatize the 157-mile Indiana Toll Road. A joint venture between the Spanish transportation services company Cintra and the major Australian investment bank Macquarie will operate the toll road as a for-profit enterprise under the 75-year deal. The agreement called for the consortium to pay the State $3.8 billion in advance and assume the responsibility for operating and maintaining the toll road to explicit standards. In exchange, the consortium will collect all revenues from operation of the road. The funds that the State derives from the deal will be used to pay for other major transportation projects within the State.

In May 2005, Indiana DOT identified to Governor Mitch Daniels a shortfall of more that $2.8 billion in the funding needed for transportation improvements around the State. These high-priority projects ranged from local grade-crossing eliminations to major corridor initiatives like the I-69 extension from Indianapolis to Evansville. There was a strong desire to improve the state economy by investing in the transportation infrastructure while avoiding tax increases and excessive debt incursion. However, given the State's existing revenue streams, Indiana DOT determined that some of these projects would not be completed until 2030 and many might never be funded. In November 2005, the governor proposed leveraging new funding sources, including public-private partnerships, to fully fund and construct all of these projects within the next decade. This initiative was given the name "Major Moves."

In Governor Daniels' proposal, the State would lease the operation of the east-west running Indiana Toll Road to a private partner in order to free the "trapped" value of the facility. The Indiana Toll Road is a major limited-access turnpike crossing the far northern portion of the State from the Chicago Skyway in the west to the Ohio Turnpike at Columbia in the east. For most of the distance across Indiana, the Indiana Toll Road is designated as I-80/I-90. Opened in 1956, the highway is part of a network of pre-Interstate toll roads connecting the Midwest's industrial cities to New York and Chicago. The semi-autonomous Indiana Toll Road Commission ran the Toll Road until 1981, when it was transferred to the Indiana Department of Transportation. Since then, the highway has been operated directly by the State and has frequently incurred operating losses due to political resistance to implementing regular toll increases.

In fall 2005, the Indiana Finance Authority issued a request for proposals to determine interest among prospective bidders. In January 2006, bids were received from four companies: Macquarie-Cintra, Babcock & Brown (Sydney), Itinere (Madrid), and Morgan Stanley (New York). None of the other competing bids came within a billion dollars of the

$3.8 billion that Macquarie-Cintra was prepared to offer. The lone American bid from investment bank Morgan Stanley was for less than half of that amount.

To implement the Major Moves plan, the governor needed legislative approval to lease state assets as well as to spend the proceeds of the deal. Daniels faced opposition from the Democratic minority in both houses as well as legislators from the northern counties that would be most affected by future toll increases. The northern counties were appeased by a deal in which it was agreed that at least one-third of the proceeds of the deal will be reinvested into those counties, with $100 million of that amount going to support a new Regional Development Authority to promote economic growth. The State also agreed to defer toll increases for automobile drivers for a number of years. Toll rate increases were not deferred for truck drivers. An early attempt to forge a strong bipartisan support for the plan by promoting it as a jobs bill was unsuccessful, and the measure was for the most part passed along straight party lines.

In mid-March 2006, both houses of the Indiana legislature approved the Major Moves bill. Four weeks later, on April 12, the Governor executed the lease, which was closed on June 29 upon receipt by the State of the full $3.8 billion. The funds will be drawn down over the next 10 years to finance road and bridge construction throughout the State, including reconstruction of U.S. 31 between Indianapolis and South Bend, the Hoosier Heartland Corridor, bridges over the Ohio River, a "new terrain" I-69 from Evansville to Indianapolis, and nearly 200 other projects. An additional $150 million will be shared by all of Indiana's 92 counties to address local road and bridge needs.

The key factors in this case were a pressing state need to fund major improvements across the State; and a toll road with a high, long-term value to investors because it serves a large and relatively captive market of users. Of course, the future revenues from tolls accrue to the foreign investors rather than to Indiana.

Florida Case – Toll Road Development

Florida has used tolling extensively to provide new urban and interurban highways, to improve capacity, and to maintain high-quality service on its existing toll roads. In recent years, the State has derived between 8.2 to 11.2 percent of annual highway revenue for all levels of government from tolling.[7] Florida's toll agencies have built two-thirds of all new lane-miles and nearly all new limited access highways in the State in the past 15 years. Since 1990, Florida's Turnpike (now called Florida's Turnpike Enterprise) has used toll revenue to open nine new system interchanges, add 39 lane-miles of widening projects, make substantial facilities improvements, and invest in a new electronic toll collection system. The Florida Transportation Commission has recommended that "direct user fees,

[7] FHWA Highway Statistics.

open-road tolling concepts, express lanes …, [and] variable rate pricing" be utilized to accelerate the construction of needed transportation facilities.[8]

Tolling in Florida started with legislation in 1953 establishing the Florida State Turnpike Authority. The Authority's mandate was to finance, build, and operate the Sunshine State Parkway (now the mainline of Florida's Turnpike) from Miami to Orlando. Over the next 50 years, successive pieces of legislation made changes to the name, scope, and reporting structure of the organization, transitioning the independent Authority into a subdivision of the Florida DOT. In 1990, the legislature passed Senate Bill 1316, authorizing the expansion of Florida's Turnpike to include construction of noncontiguous road projects to assist in meeting the State's backlog of needed highway facilities.

In 2001, two studies examined the potential for privatizing the Turnpike based on its record of strong financial returns. Rather than selling the highway, the state legislature chose to maintain the Turnpike organization and use it to construct needed infrastructure. Following recommendations from one of the studies, the legislature granted the Turnpike greater autonomy and increased flexibility to leverage its assets. The charge given to the agency was to pursue innovation and best private-sector business practices, to improve cost-effectiveness and timeliness in project delivery, to increase revenues and expand its capital program, and to improve quality of service to its customers. To reflect the new level of independence and its mandate to act more like a private-sector venture, the Turnpike Authority's name was changed to Florida's Turnpike Enterprise.

The Turnpike Enterprise is now responsible for toll collections on all Florida DOT-owned toll roads in the State (about 80 percent of the statewide total). The Enterprise operates over 600 miles of highway, including the Turnpike mainline, the Homestead extension, and six other roads.

As a semi-autonomous body, the Enterprise is free to utilize private-sector business practices, including public advertising, leveraging nontoll revenues (concessions), utilizing selected exempt (at will) employment, and outsourcing labor. Today, of the roughly 5,000 people who work on the Turnpike, only 400 are state employees. The Turnpike Enterprise remains a public sector entity, controlled by public sector employees who are directly accountable to Florida DOT.

Today, the facilities operated by Florida's Turnpike are operated as a system, with older roads generating surplus toll revenue to establish a solid financial base for the financing and construction of new facilities. While it is not formal policy, it appears that virtually all new limited-access roads in Florida will be built with tolls. The newly integrated electronic tolling system, Sunpass, will facilitate the tolling of new capacity on existing free highways.

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[8] Florida Transportation Commission, Assessment of Florida's Regional and Intermodal Transportation Planning Process, December 15, 2003.

To improve the feasibility of new toll projects, Florida DOT leverages the Florida's Turnpike Enterprise by providing the Enterprise with grants, state infrastructure bank loans, and support of operating and maintenance expenses. Florida has also set up a toll-facilities revolving trust fund that can advance funds to toll road operators to study and plan new revenue-producing road projects. These tools, combined with the credibility and flexibility of the Turnpike Enterprise, give new toll projects in Florida a tremendous advantage compared to new toll road projects in other states.

In Florida's Turnpike Enterprise, Florida DOT has developed an institutional approach that successfully leverages its existing toll road system to generate a stable revenue flow for new projects. The combination of a larger existing system to backstop new projects, a flexible organizational structure, and availability of financing tools such as state infrastructure bank loans, has given Florida the ability to advance new projects that could not have been funded on a pay-as-you go basis, especially in the absence of significant motor fuel tax rate increases.

7.3 Revenue Transition

Although most of the report focuses on shorter term actions that need to be taken to enhance surface transportation funding it is not too early to begin planning the transition from the current transportation revenue system to modified or new transportation revenue systems for the future. One path of phasing and sequencing of actions needed to sustain short-term investment and transition to long-term revenue sources is summarized in Figure 7.4, based on recommendations originally presented in the National Chamber Foundation report.[9] The Chamber report suggests needed actions at all levels of government to help enable this transition.

For states and local governments, transition to new charging systems will inevitably be piecemeal, based on individual needs and political feasibility. The next 10 to 15 years are likely to be a period of significant experimentation with tolling, pricing, and VMT-based road charging systems driven by a number of different factors, including revenue needs as well as demand management. With Federal support for VMT pilots and promulgation of architecture and standards for the technology in the short term, we could see fairly wide implementation of such systems in the period past 2015 as illustrated in Figure 7.4. Eventually, the Federal government may choose to piggyback on state VMT systems as is the case with fuel taxes now.

The current motor fuel tax system has been in place for more than 60 years. It will take time and a broad public education effort to develop and explain the need for a new or modified transportation revenue system and to gain political and public acceptance.

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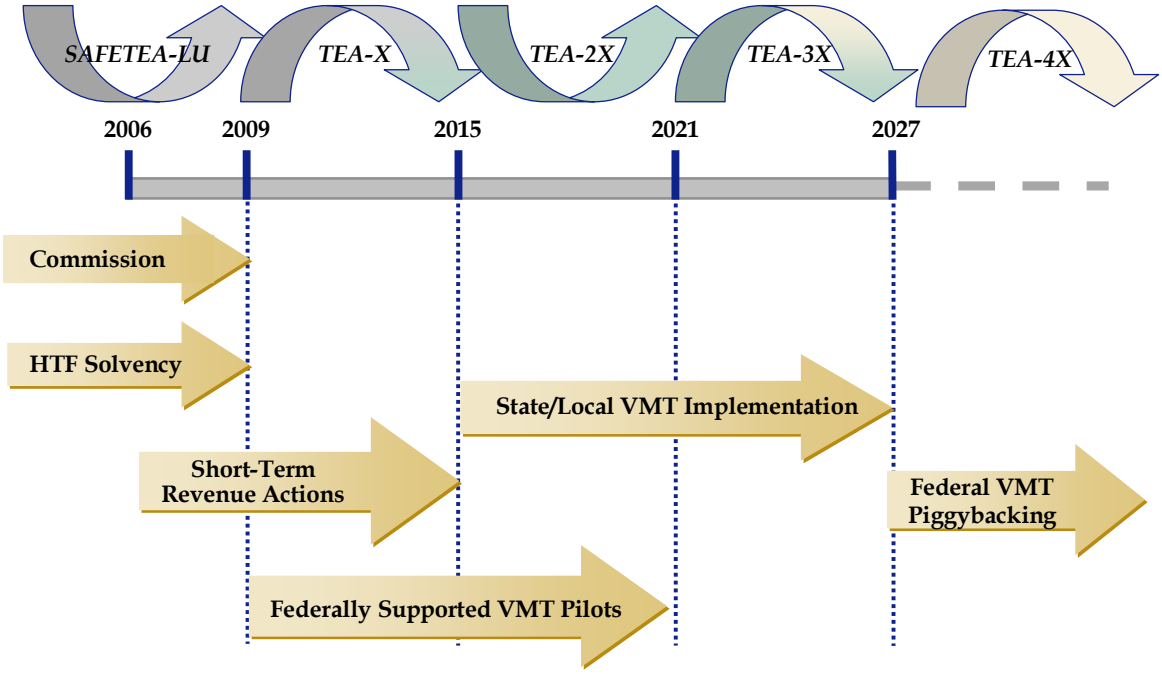
[9] U.S. Chamber of Commerce, National Chamber Foundation. *Future of Highway and Public Transportation Financing*. Washington, D.C., 2005.

Figure 7.4 Timeframe for Transition



The TRB policy report on alternatives for transportation funding suggests that a clear policy rationale may be the most important factor in implementing new or modified revenue mechanisms.[10] The transition will inevitably involve policy discussion of the future Federal role in highway and transit programs, a topic being considered by the National Surface Transportation Policy and Revenue Study Commission authorized in SAFETEA-LU.

7.4 Conclusions

There are no easy solutions to the nation's transportation funding challenges. This study provides information for decision-makers and the public on the extent of the transportation revenue and investment shortfalls and alternative strategies to fund the nation's highway and transit systems. Implementing the recommendations and meeting the nation's transportation needs will require leadership and political will to build a broad consensus for action.

[10] *The Fuel Tax and Alternatives for Transportation Funding, Appendix A*; TRB Special Report 285, January 2006.

Appendix A

Needs and Revenue Forecast Assumptions

This appendix explains the derivation of the highway and transit investment needs and revenue projections discussed in Section 2.0 of the technical memorandum.

Needs

The *2004 Conditions and Performance*[1] report estimated that an annual capital investment of $89.4 billion (in 2002 dollars) was needed to "maintain" the condition and performance of the nation's highway and transit systems. The C&P capital investment costs were updated from 2002 to 2006 using an inflation factor of 12.7 percent which represents the change in Consumer Price Index (CPI). Since both benefits and costs changed by this amount, this CPI adjustment is applied directly to estimated needs. An additional adjustment was included to account for the increase in highway construction costs over that period, as evidenced by the Producer Price Index (PPI) for Highway and Street Construction.[2] According to recent analysis conducted by FHWA and FTA, the elasticity of needs, given a 1 percent increase in PPI over and above the increase in the CPI, is estimated at 1.0 (highways) and 0.56 (transit) for the need to "maintain" scenario.[3] Therefore, the additional PPI adjustment over that period was estimated at an additional 29.2 percent and 16.3 percent for the highway and transit needs, respectively. After these adjustments were applied, the C&P needs to "maintain" in 2007 are estimated at $131 billion. In the past, the PPI and the CPI were increasing at about the same rate. However, the recent experience of the more rapid increase in the PPI requires the additional adjustment. Since not all projects are still cost-effective if costs rise faster than benefits, this "dual" adjustment is needed.

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[1] U.S. Department of Transportation, Federal Highway Administration, and Federal Transit Administration. *2004 Status of the Nation's Highways, Bridges and Transit: Conditions and Performance – Report to Congress*, Washington, D.C., February 2006.

[2] U.S. Department of Labor, Bureau of Labor Statistics. Available at http://www.bls.gov/ppi/home.htm.

[3] Note: We used the different FHWA and FTA elasticity assumptions for the 2004 C&P while recognizing that there is not adequate documentation to explain reasons for the different assumptions by the two agencies

The costs of operations, maintenance, administration, debt service, and other noncapital costs (collectively, "O&M") must be added to annual capital needs to estimate the total expenditure needed to maintain the nation's highway and transit systems. The Federal Highway Administration (FHWA) reported that $69 billion was spent in 2004 on highway and bridge O&M.[4] The average annual O&M real growth rate (i.e., the rate of growth over and above the change in CPI) over the last 25 years of 1.6 percent has been used to forecast O&M needs. This yields an annual O&M need in 2007 of $78.6 billion. Finally, the Federal Transit Administration (FTA) reported that $25.4 billion was spent in 2004 on transit O&M. Transit O&M real costs have grown at a rate of 1.7 percent annually, resulting in a projected annual O&M need in 2007 of $29 billion.[5] The total of highway and transit capital and operating investments needed to maintain the nation's surface transportation systems in 2007 is estimated to be between $238 billion (2004 C&P Adjusted + O&M). Table A.1 displays the breakout of needs by highway and transit.

Table A.1 Summary of Investment Needs to "Maintain" in 2007
Billions of YOE Dollars

	Capital	O&M	Total
2004 C&P Adjusted			
Highway	$109.8	$78.6	$188.4
Transit	$20.9	$29.0	$49.9
Total	**$130.7**	**$107.6**	**$238.3**

Note: Totals may not add up due to rounding.

Additional investment is needed to "improve" the highway and transit systems. The PPI adjustment for the "improve" scenario, as estimated by FHWA and FTA, indicates that a 25 percent increase in highway capital costs, over and above the CPI adjustment, would increase the needs for the improve conditions and performance scenario by 11.2 percent, and by 9 percent for transit capital needs. Therefore, the adjustment factor to PPI increases over normal CPI inflation for the "improve" scenario is estimated at 0.448 percent for each additional 1 percent increase of the PPI over and above the CPI for the highway needs, and by 0.36 for the transit needs. The additional PPI adjustments for the 2004 C&P "improve" needs were estimated at 13.1 percent and 10.5 percent for the highway and transit needs, respectively. The 2004 C&P report estimated that an annual capital investment of $142.9 (in 2002 dollars) were needed to "improve" the nation's highway and transit systems. When these estimates are updated to 2007 and highway and

[4] Federal Highway Administration, *2004 Highway Statistics*, Table HF-10.

[5] Federal Transit Administration, *National Transit Database*. Available at http://www.ntdprogram.gov/ntdprogram.

transit O&M costs are added, an annual expenditure between $293 billion (2004 C&P Adjusted + O&M) is needed in 2007 to "improve" the nation's highway and transit systems. Table A.2 displays the breakout of needs for highway and transit. PPI adjustment factors for both the needs to "maintain" and "improve" scenarios are summarized in Table A.3.

Table A.2 Summary of Investment Needs to "Improve" in 2007
Billions of YOE Dollars

	Capital	O&M	Total
2004 C&P Adjusted			
Highway	$154.8	$78.6	$233.4
Transit	$30.5	$29.0	$59.5
Total	**$185.3**	**$107.6**	**$293.0**

Note: Totals may not add up due to rounding.

Table A.3 PPI Adjustment Factors

	(1) ΔCPI/ΔPPI	(2) ΔCPI	(3) ΔPPI	(4) = (3)-(2) PPI-CPI	(5) = (1)x(4) PPI Adjustment
Highway					
C&P Maintain	25/25 = 1.0	12.7%	41.9%	29.2%	29.2%
C&P Improve	11.2/25 = 0.448	12.7%	41.9%	29.2%	13.1%
Transit					
C&P Maintain	14/25 = 0.56	12.7%	41.9%	29.2%	16.3%
C&P Improve	9/25 = 0.36	12.7%	41.9%	29.2%	10.5%

Needs are traditionally reported by the FHWA in constant dollars. This can sometimes be confusing to readers because highway and transit multiyear revenue are in current dollars. For purposes of this report, all needs and revenues are cited in current year dollars. Tables A.4 and A.5 summarize the needs forecast through 2017, based on FHWA needs estimates to "maintain" and to "improve" the nation's highway and transit systems.

Table A.4 Summary of Investment Needs to "Maintain"
2007-2017 (Billions of YOE Dollars)

	FHWA/FTA 2004 C&P Adjusted + O&M								
	Highway			Transit			Highway and Transit		
Year	Capital	O&M	Total	Capital	O&M	Total	Capital	O&M	Total
2007	109.8	78.6	**$188.4**	20.9	29.0	**$49.9**	130.7	107.6	**$238.3**
2008	112.2	81.6	**$193.8**	21.4	30.1	**$51.5**	133.5	111.7	**$245.3**
2009	114.6	84.7	**$199.4**	21.8	31.3	**$53.1**	136.5	116.0	**$252.5**
2010	117.2	87.9	**$205.1**	22.3	32.5	**$54.8**	139.5	120.5	**$259.9**
2011	119.7	91.3	**$211.0**	22.8	33.8	**$56.6**	142.5	125.1	**$267.6**
2012	122.4	94.8	**$217.1**	23.3	35.1	**$58.4**	145.7	129.9	**$275.5**
2013	125.1	98.4	**$223.4**	23.8	36.5	**$60.3**	148.9	134.8	**$283.7**
2014	127.8	102.1	**$229.9**	24.3	37.9	**$62.2**	152.2	140.0	**$292.1**
2015	130.6	106.0	**$236.6**	24.9	39.4	**$64.2**	155.5	145.3	**$300.8**
2016	133.5	110.0	**$243.5**	25.4	40.9	**$66.3**	158.9	150.9	**$309.8**
2017	136.4	114.2	**$250.6**	26.0	42.5	**$68.5**	162.4	156.7	**$319.1**

Table A.5 Summary of Investment Needs to "Improve"
2007-2017 (Billions of YOE Dollars)

	FHWA/FTA 2004 C&P Adjusted + O&M								
	Highway			Transit			Highway and Transit		
Year	Capital	O&M	Total	Capital	O&M	Total	Capital	O&M	Total
2007	154.8	78.6	**$233.4**	30.5	29.0	**$59.5**	185.3	107.6	**$293.0**
2008	158.2	81.6	**$239.8**	31.2	30.1	**$61.3**	189.4	111.7	**$301.2**
2009	161.7	84.7	**$246.4**	31.9	31.3	**$63.2**	193.6	116.0	**$309.6**
2010	165.2	87.9	**$253.2**	32.6	32.5	**$65.1**	197.8	120.5	**$318.3**
2011	168.9	91.3	**$260.2**	33.3	33.8	**$67.1**	202.2	125.1	**$327.3**
2012	172.6	94.8	**$267.3**	34.0	35.1	**$69.2**	206.6	129.9	**$336.5**
2013	176.4	98.4	**$274.7**	34.8	36.5	**$71.3**	211.2	134.8	**$346.0**
2014	180.3	102.1	**$282.4**	35.6	37.9	**$73.5**	215.8	140.0	**$355.8**
2015	184.2	106.0	**$290.2**	36.3	39.4	**$75.7**	220.6	145.3	**$365.9**
2016	188.3	110.0	**$298.3**	37.1	40.9	**$78.1**	225.4	150.9	**$376.3**
2017	192.4	114.2	**$306.6**	38.0	42.5	**$80.5**	230.4	156.7	**$387.1**

Revenues

This section describes the data, projections, and assumptions used to forecast future revenues. Key resources included:

- Growth of vehicle miles of travel (VMT) from the FHWA Highway Performance Monitoring System (HPMS);[6]
- Fuel-efficiency projections from the Department of Energy (DOE);[7]
- Consumer Price Index (CPI) projections from the Congressional Budget Office (CBO);[8] and
- Gross domestic product (GDP) growth rates from the CBO.[9] The January 2006 forecast shows nominal GDP growth declining gradually from 6.3 percent in 2005 to 4.4 percent in 2014. For the purpose of our revenue forecasts, any revenue source assumed to increase at the GDP rate was assumed to grow at the long-term rate of 4.4 percent rather than the higher short-term rate. This was the maximum annual growth rate projected for any revenue source except tolls.

Data on revenue sources used for highway and transit projects were obtained from the *2004 Highway Statistics* and *2004 National Transit Database*, respectively. Baseline revenues include the following sources: user fees (Federal fuel taxes, state/local fuel taxes, other vehicle taxes, tolls, and transit operating revenues), specialized taxes, and general taxes. The baseline revenue model includes actual data for fiscal year (FY) 2004, with revenue projections beginning in 2005.

User Fees

Federal Fuel Taxes

In 2004, $31.0 billion spent on highways and transit came from the Federal fuel tax. The current Federal gasoline tax rate is 18.4 cents per gallon, of which 15.44 cents are dedicated

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[6] Highway Performance Monitoring System (HPMS)-based vehicle-miles of travel (VMT) forecasts as used in the Federal Highway Administration's *Condition and Performance Report* to Congress, 2004.

[7] Department of Energy. *Annual Energy Outlook 2006 with Projections to 2030*. Table 7, Transportation Sector Key Indicators and Delivered Energy Consumption, February 2006. Available at http://www.eia.doe.gov/oiaf/aeo/aeoref_tab.html.

[8] Congressional Budget Office. *The Budget and Economic Outlook: Fiscal Years 2007 to 2016*. Appendix E, Table E-1, January 2006.

[9] Ibid.

to the Highway Account of the Highway Trust Fund (HTF), and 2.86 cents are dedicated to the Mass Transit Account. The tax rate on diesel fuel is 24.4 cents, and 21.44 cents and 2.86 cents are deposited into the Highway Account and Mass Transit Account, respectively. One-tenth of a cent of both the gasoline and diesel fuel taxes go the Leaking Underground Trust Fund.

The baseline projections assume that the current fuel tax rates will remain constant. The fuel tax yield is adjusted annually assuming a 2.07 percent growth rate, based on VMT annual growth projections from the *Condition and Performance Report*. Revenue projections also are adjusted using fuel efficiency projections from the DOE.

State and Local Fuel Taxes

State and local motor fuel taxes generated $30.9 billion in 2004, as reported in the *2004 Highway Statistics* and the *National Transit Database*. The annual growth of state fuel tax revenue was assumed to be equal to the projected VMT annual growth rate of 2.07 percent from the *Condition and Performance Report*, and adjusted for changes in fuel efficiency, based on fuel efficiency projections from the DOE.

The highway revenue model for state motor fuel tax included an adjustment to account for those states that adjust their fuel tax rates annually. Currently, three states – Florida, Maine, and Wisconsin – adjust their motor fuel tax rates to account for inflation, while few others – Nebraska, New York,[10] North Carolina, and West Virginia – adjust their fuel tax rates based on the average wholesale price of motor fuel. The CPI adjustment was repealed in Wisconsin, and will be eliminated starting in 2007. The revenue model for state motor fuel tax receipts incorporates this adjustment based on the share of motor fuel tax receipts from the states that index the motor fuel tax rates to the motor fuel tax receipts for highway vehicle use. Motor fuel tax receipts by state were obtained from *Highway Statistics* (Table MF-3) for 2000 through 2004. In 2004, 18.4 percent ($5.4 billion) of the motor fuel tax receipts used for highways came from the states mentioned above. The model also assumes that Wisconsin motor fuel tax revenues will not be adjusted by CPI beyond 2006.

Other Vehicle Taxes – Federal

The Federal government levies certain heavy vehicle fees that are deposited into the Highway Account of the HTF. These fees include: a tax based on tire weight; a retail tax on trucks weighing more than 33,000 pounds; and a heavy vehicle use tax. In 2004, Federal vehicle taxes generated $3.1 billion. Other vehicle tax projections from the FY 2007 President's budget show an average annual growth of 5.1 percent through 2011. The historical annual growth of Federal vehicle taxes was estimated at 3.1 percent over the

[10] In New York, the Petroleum Business Tax (PBT) is adjusted annually using the PPI on petroleum products. Highway Statistics include the PBT as part of the motor fuel tax rate, and its revenues as part of the state motor fuel revenues.

last 10 years. We have assumed a 4.4 percent growth rate, which is equivalent to the long-term GDP forecast from the CBO.

Other Vehicle Taxes – State and Local

At the state and local government levels, vehicle taxes generated $17.6 billion in 2004. Historical data from the *Highway Statistics* (Tables SF-1 and LGF-1) indicate that state and local receipts on vehicle taxes have increased at an average annual rate of 4.0 percent over the last 10 years. Revenue forecasts from this source were generated assuming an annual growth rate equivalent to the CPI forecast from CBO.

Tolls

Historically, toll revenues have grown at an average annual rate of 5 percent over the last 10 years. The *2004 Highways Statistics* reported $6.6 billion in toll revenues. This historical growth rate was applied to estimate future tolling revenues for the base case.

Transit Operating Revenues

Transit operating revenues include fares and other operating income (e.g., from advertisement and lease agreements). Fare revenues are assumed to increase at 1.5 percent per year over inflation, based on ridership growth assumptions from the *2004 C&P Report*. The same growth rate also was applied to other operating revenues.

Specialized Taxes

Specialized taxes include property, sales, and other taxes (e.g., local option taxes) that are dedicated for highway and transit expenditures. In 2004, this revenue source generated $24.9 billion, of which $15.4 billion was used for highway expenditures and the remaining $9.5 billion was used for transit. Historically, these sources have tracked closely with the GDP growth rate on the highway side, so the future annual growth of this funding source is assumed to be equal to the long-term GDP annual growth rate, as forecast by the CBO. In the case of specialized taxes for transit, revenues have grown at an average annual rate of 8.0 percent over the last 10 years, mainly because of the increasing number of states and local governments that have passed referenda and legislation in recent years dedicating local taxes to transit agencies. For the purpose of this analysis, we use the CBO forecast of long-term GDP to project the growth of specialized taxes revenues, as most transit agencies already have a dedicated funding source in place, and the impact of additionally implemented local taxes is likely to be limited. The CBO forecast a long-term GDP annual growth rate of 4.4 percent by 2014.

General Taxes

The general taxes category includes General Fund appropriations from all levels of government and miscellaneous revenue. In 2004, general taxes generated $43.9 billion for both highway and transit expenditures.

General taxes were divided into Federal and state/local, and estimated separately for highway and transit uses. Federal general taxes for highway expenditures include some General Fund discretionary appropriations for specific highway projects and investment income. In FY 2004, Federal general taxes for highways were estimated at $2.0 billion; we assume that this amount will remain constant in real dollars throughout the analysis period. The state/local portion of general taxes used for highway expenditures is assumed to grow at 3.7 percent, which assumes that general taxes will increase at the historical real growth rate of 1.5 percent over inflation.

Federal general taxes for transit expenditures for fiscal years 2006 through 2009 correspond to appropriation levels enacted in SAFETEA-LU, and assumed to remain constant beyond 2009. Historically, general funds account for 20 percent of the total Federal funding for transit. State/local general taxes for transit investments are assumed to increase at 3.7 percent, consistent with the highway funding assumptions.

Summary of Revenue Forecast

Tables A.6 through A.8 summarize the results from the revenue forecast model for highway and transit expenditures through 2017.

Table A.6 Highway Revenues
2007-2017 (Billions of YOE Dollars)

	User Fees		Taxes		
Year	Direct	Indirect	Specialized	General	Total
2007	7.6	84.7	17.5	34.5	**$144.3**
2008	8.0	86.7	18.2	35.7	**$148.6**
2009	8.4	88.6	19.0	36.9	**$152.9**
2010	8.8	90.5	19.8	38.2	**$157.4**
2011	9.2	92.4	20.7	39.5	**$161.9**
2012	9.7	94.4	21.6	40.9	**$166.6**
2013	10.2	96.3	22.5	42.4	**$171.4**
2014	10.7	98.2	23.5	43.9	**$176.3**
2015	11.2	100.2	24.5	45.4	**$181.3**
2016	11.8	102.2	25.6	47.0	**$186.6**
2017	12.4	104.2	26.7	48.7	**$192.0**

Table A.7 Transit Revenues
2007-2017 (Billions of YOE Dollars)

	User Fees		Taxes		
Year	Direct	Indirect	Specialized	General	Total
2007	12.4	6.6	10.9	13.5	**$43.3**
2008	12.8	6.7	11.3	14.1	**$45.0**
2009	13.3	6.9	11.8	14.6	**$46.6**
2010	13.8	7.0	12.4	15.1	**$48.2**
2011	14.3	7.1	12.9	15.6	**$49.9**
2012	14.8	7.2	13.5	16.1	**$51.6**
2013	15.4	7.3	14.1	16.6	**$53.4**
2014	16.0	7.4	14.7	17.2	**$55.2**
2015	16.6	7.5	15.3	17.7	**$57.2**
2016	17.2	7.7	16.0	18.3	**$59.1**
2017	17.8	7.8	16.7	18.9	**$61.2**

Table A.8 Highway and Transit Revenues
2007-2017 (Billions of YOE Dollars)

	User Fees		Taxes		
Year	**Direct**	**Indirect**	**Specialized**	**General**	**Total**
2007	20.0	91.4	28.3	48.0	**$187.6**
2008	20.8	93.4	29.6	49.7	**$193.5**
2009	21.7	95.5	30.8	51.6	**$199.6**
2010	22.6	97.5	32.2	53.3	**$205.6**
2011	23.6	99.5	33.6	55.1	**$211.8**
2012	24.6	101.6	35.1	57.0	**$218.2**
2013	25.6	103.6	36.6	59.0	**$224.8**
2014	26.7	105.7	38.2	61.0	**$231.5**
2015	27.8	107.7	39.8	63.1	**$238.5**
2016	29.0	109.8	41.6	65.3	**$245.7**
2017	30.2	111.9	43.4	67.6	**$253.2**

The Shortfall

Tables A.9 and A.10 summarize the funding gap to "maintain" and to "improve," respectively, the nation's highway and transit systems.

Table A.9 Funding Gap to "Maintain"
2007-2017 (Billions of YOE Dollars)

	FHWA/FTA 2004 C&P Adjusted + O&M		
	Gap		
Year	**Highway**	**Transit**	**Total**
2007	44.1	6.6	**$50.7**
2008	45.2	6.5	**$51.7**
2009	46.5	6.5	**$52.9**
2010	47.7	6.6	**$54.3**
2011	49.1	6.7	**$55.8**
2012	50.5	6.8	**$57.3**
2013	52.0	6.9	**$58.9**
2014	53.6	7.0	**$60.6**
2015	55.3	7.1	**$62.3**
2016	56.9	7.2	**$64.1**
2017	58.7	7.3	**$66.0**
2007-2017	***$559.7***	***$75.0***	***$634.7***

Table A.10 Funding Gap to "Improve"
2007-2017 (Billions of YOE Dollars)

	FHWA/FTA 2004 C&P Adjusted + O&M		
	Gap		
Year	**Highway**	**Transit**	**Total**
2007	89.1	16.2	**$105.3**
2008	91.3	16.4	**$107.6**
2009	93.5	16.6	**$110.0**
2010	95.8	16.9	**$112.7**
2011	98.2	17.2	**$115.4**
2012	100.7	17.5	**$118.3**
2013	103.3	17.9	**$121.2**
2014	106.1	18.2	**$124.3**
2015	108.9	18.6	**$127.4**
2016	111.7	18.9	**$130.6**
2017	114.7	19.3	**$133.9**
2007-2017	***$1,113.3***	***$193.6***	***$1,306.9***

Appendix B

Highway and Transit Local Option Taxes for Transportation

In 2001, the University of California at Berkeley published the results of an extensive research that investigated the use of local option taxes for transportation investments. The study explored the different types of local transportation taxes available to local governments, enabling legislation by state, and the state-of-the-practice. This appendix summarizes the 2001 work[1] and then includes examples of recent ballot measures for transportation-related local option sales taxes that have been referenced in the main report.

Overview of Local Option Taxes for Transportation

In 2001, the University of California at Berkeley published the results of an extensive research that investigated the use of local option taxes for transportation investments. The study explores the different types of local transportation taxes available to local governments, enabling legislation by state, and the state-of-the-practice. Since the completion of that study, many local governments have adopted, increased or extended existing local option taxes for transportation.

According to the study, local option taxes for transportation have been adopted in all but four states (i.e., Delaware, Maine, New Hampshire, and New Jersey). The following sections present some of the findings from this study.

Local Option Gasoline Taxes

Figure B.1 shows states that have enabling legislation to implement local option gasoline taxes and the states in which local government have exercised the option. As of 2001, 15 states allowed the use of gasoline taxes at the local level. Municipalities in five of these states had not used local gas taxes for transportation.

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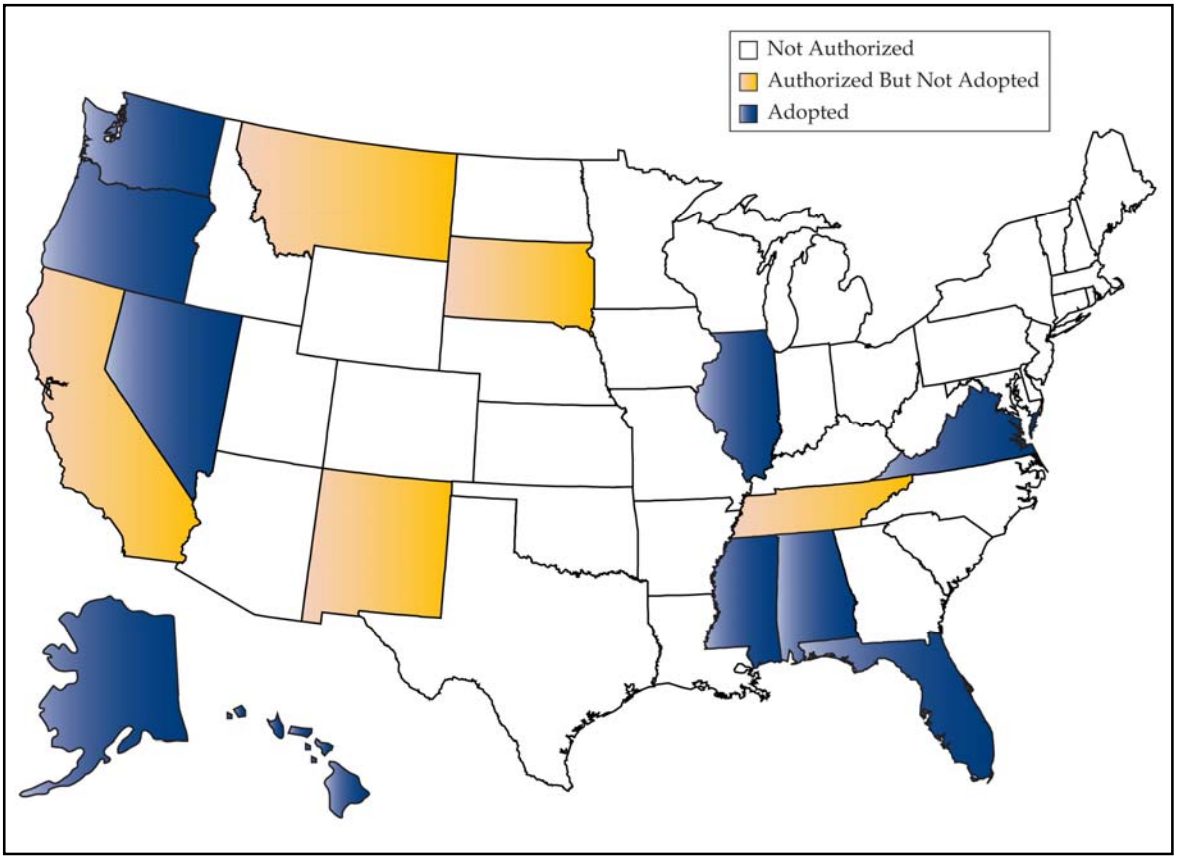
[1] Goldman, Todd, Sam Corbett, and Martin Wachs. *Local Option Transportation Taxes in the United States (Part One: Issues and Trends)*. Institute of Transportation Studies, University of California at Berkeley. March 2001. Available at http://www.its.berkeley.edu/research/localoptiontax/localoptiontaxmain.html.

Figure B.1 Map of Local Option Gasoline Taxes for Transportation

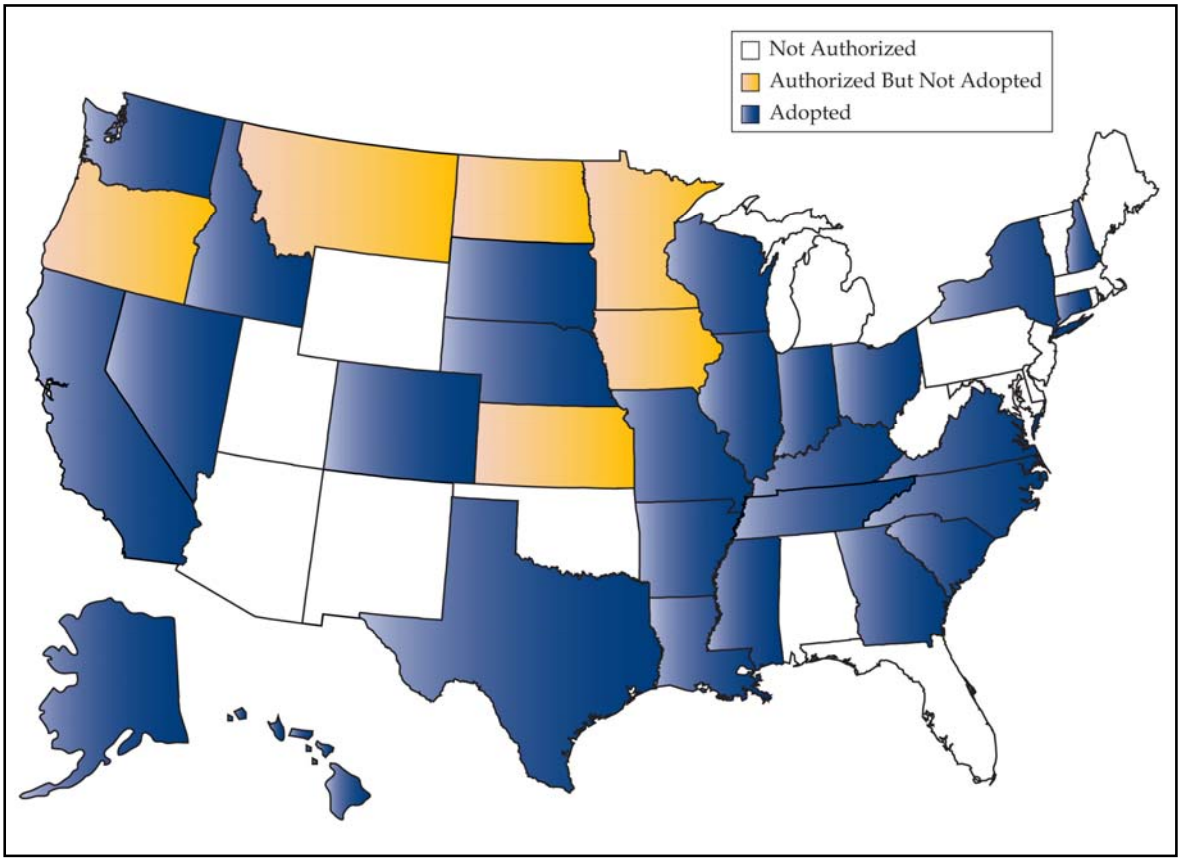


Source: Institute of Transportation Studies, University of California at Berkeley, *Local Option Transportation Taxes in the United States*, March 2001.

Local Option Vehicle Taxes

Thirty-three states authorize the implementation of local vehicle taxes (in the form of vehicle license or registration fee), as shown in Figure B.2. Local governments in six of these states had not adopted this type of local option tax for transportation.

Figure B.2 Map of Local Option Vehicle Taxes for Transportation

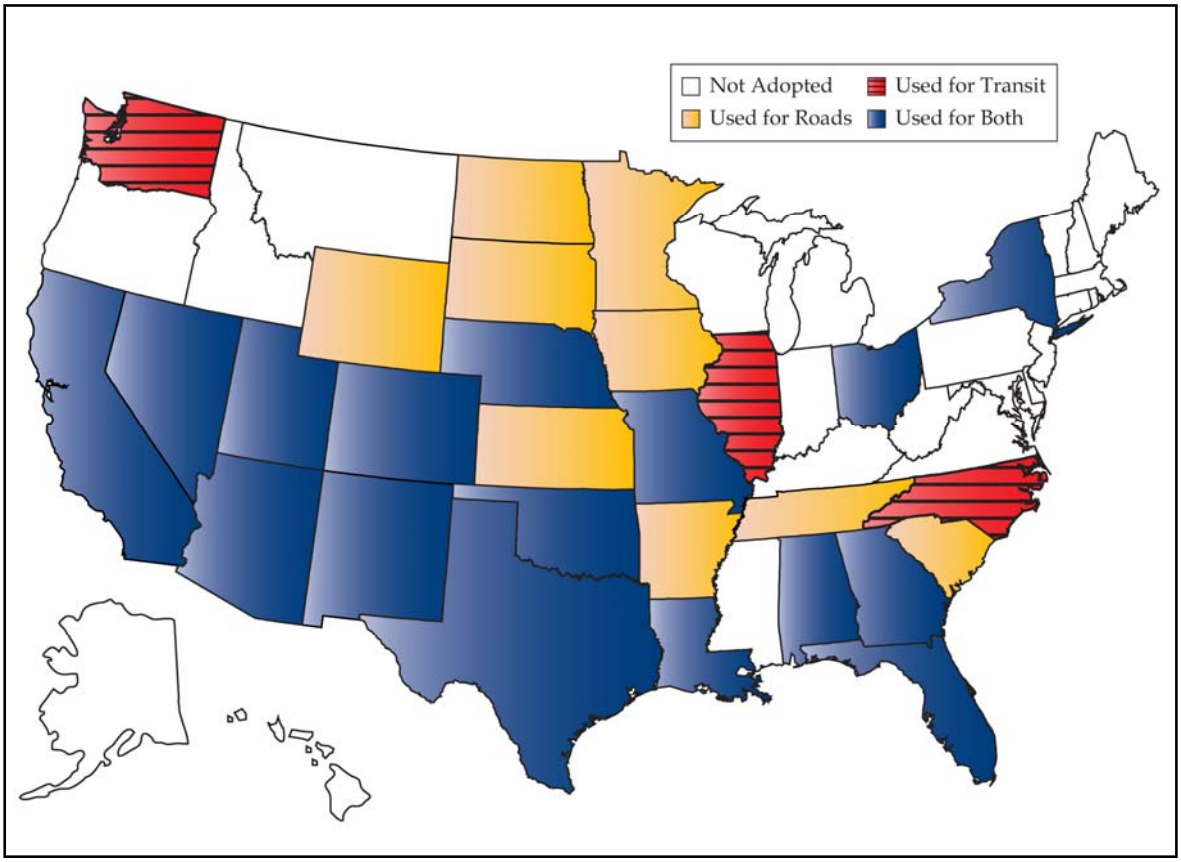


Source: Institute of Transportation Studies, University of California at Berkeley, *Local Option Transportation Taxes in the United States*, March 2001.

Local Option Sales Taxes

Local option sales taxes have become very popular, especially as a funding source for transit agencies. Thirty-three states allow local governments to implement sales taxes for highway and/or transit investments. (It should be noted that in some states, like New York, only a very few counties are using these revenues for transportation.) Figure B.3 shows where this type of local option tax has been enacted by local governments as of 2001.

Figure B.3 Map of Local Option Sales Taxes for Transportation

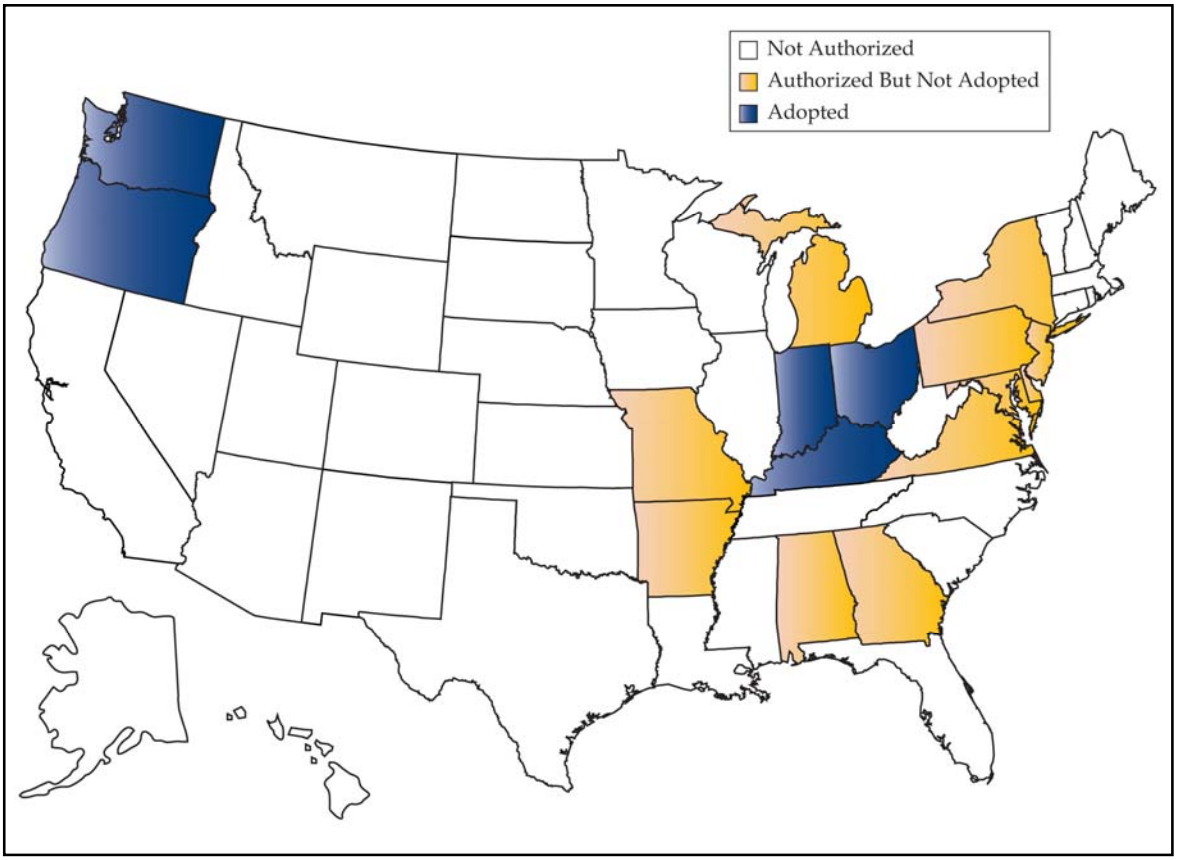


Source: Institute of Transportation Studies, University of California at Berkeley, *Local Option Transportation Taxes in the United States*, March 2001.

Income, Payroll, and Employer Taxes

Figure B.4 shows what states have enabling legislation, and either have or not adopted some type of local income or payroll taxes for transportation. Only five states had implemented this type of local option tax, including Washington, Oregon, Indiana, Kentucky, and Ohio.

Figure B.4 Map of Local Option Employment Taxes for Transportation



Source: Institute of Transportation Studies, University of California at Berkeley, *Local Option Transportation Taxes in the United States*, March 2001.

Recent Examples of Local Option Tax Initiatives

Missouri's Local Option Sales Tax

Local governments in Missouri have the authority (subject to voters' approval) to implement local sales taxes, ranging from one-eighth to 1 percent, for capital improvements and transportation-specific improvements (including roadways, bridges, and transit capital and operations). Table B.1 shows the sales tax proposals included in the ballots in 2005. Of the five proposals, three were approved by voters.

Table B.1 2005 Ballot Measures for Missouri's Local Option Sales Tax

City/County	Type of Sales Tax	Result	Comments
Poplar Bluff	Sales Tax Increase (0.5%)	Approved (68%)	One-half percent increase to provide local matching funds for upgrades to U.S. 67. The tax will expire after 30 years.
City of Moberly	Transportation Tax Extension (0.5%)	Approved (72%)	Extended 0.5 percent transportation tax for another 10 years. The tax was last extended in 1995.
City of Washington	New Transportation Sales Tax (0.5%)	Approved (54%)	New 0.5 percent sales tax to add capacity along 12 miles of Highway 100. The proposal also included funds to overlay all city streets. The money from the sales tax will be used for debt service on bonds issued for the road improvements.
St. Francois County	New Transportation Sales Tax (0.25%)	Defeated	St. Francois County was proposing to issue $15 to $20 million in bonds for high-priority road projects.
Macon, Shelby, Ralls and Marion Counties	New Transportation Sales Tax (0.5%)	Defeated	These five counties were asked to approve a 0.5 percent sales tax for improvements on the U.S. 36 corridor. The tax had to be approved in all counties to be implemented. Ralls County was the only county not to approve the sales tax.

Source: American Road and Transportation Builders Association.

Transit Local Option Sales Taxes

Most recent ballot initiatives for the approval of sales taxes for public transportation included either the extension or increase of existing sales taxes. Since 2004, voters in local jurisdictions in California, Arizona, and Missouri approved the extension of existing sales taxes used for transportation. Sales tax rate increases and new sales taxes have been approved in California, Colorado, Ohio, South Carolina, Texas, Utah, and Washington. Most recently, the cities of Tucson (Arizona) and Canton (Ohio) approved implementation of local sales taxes for transportation. Table B.2 summarizes the most recent sales taxes enacted to support transit investments over the last three years. Of the 30 sales tax proposals in those states, 11 provide funding exclusively for transit investments; the others include a combination of transit and highway investments.

Information posted in the Center for Transportation Excellence web site shows several proposals that were included in the November 2006 ballot for implementing or extending local option sales taxes for transportation in the states of California, Florida, Missouri, Ohio, Texas, and Washington.[2] Three ballot measures in California (Kern, Santa Barbara, and Sonoma and Marin counties) were defeated, as well as a sales tax ballot measure in Broward County, Florida.

[2] Center for Transportation Excellence, http://www.cfte.org/success/2006BallotMeasures.asp.

Table B.2 Recently Approved Local Option Sales Taxes for Transit Investments

State/Location	Type of Sales Tax	Date/Percent Approval	Transit Only? Y/N	Comments
Alaska – Juneau	Sales Tax Extension (1%)	October 2005 (54%)	N	Sales tax extension for 33 months. Revenues will be used for local infrastructure projects, including a new downtown transit center and parking facilities.
Arizona – Phoenix	Sales Tax Extension (0.5%)	November 2004 (57%)	N	Sales tax extension for 20 years to support Maricopa 2020 transportation plan. Sales tax revenues will support both highway and public transportation improvements.
Arizona – Tucson	New Sales Tax (0.5%)	May 2006 (58%)	N	Sales tax to support a regional transportation plan.
California – Contra Costa County	Sales Tax Extension (0.5%)	November 2004 (70%)	N	Sales tax extension for 20 years. Sales tax revenues will support both highway and public transportation improvements.
California – Sacramento County	Sales Tax Extension (0.5%)	November 2004 (75%)	N	Sales tax extension for 30 years. Revenues will support both highway and public transportation improvements. The Transit Congestion Relief program will receive 38.25 percent of the sales tax levies.
California – San Mateo County	Sales Tax Extension (0.5%)	November 2004 (75%)	N	Sales tax extension for 25 years. Sales tax revenues will support both highway and public transportation improvements. Thirty percent of the sales tax levies will be used for transit.
California – Sonoma County	New Sales Tax (0.25%)	November 2004 (67.2%)	N	New sales tax to be levied over 20 years. Sales tax revenues will support both highway and public transportation improvements.
California – San Bernardino County	Sales Tax Extension (0.5%)	November 2004 (79%)	N	Sales tax extension for 30 years. Sales tax revenues will support both highway and public transportation improvements.
California – Marin County	New Sales Tax (0.5%)	November 2004 (71%)	N	New sales tax to be levied over 20 years. Sales tax revenues will support both highway and public transportation improvements.
California – San Diego County	Sales Tax Extension (0.5%)	November 2004 (67%)	N	Sales tax extension for 20 years. Sales tax revenues will support both highway and public transportation improvements.
California - Fresno	Sales Tax Extension (0.5%)	November 2006 (77%)	N	Sales tax extension for 20 years. Sales tax revenues will support both highway and public transportation improvements; projected to generate $1.7 billion over the next 20 years.

Table B.2 Recently Approved Local Option Sales Taxes for Transit Investments (continued)

State/Location	Type of Sales Tax	Date/Percent Approval	Transit Only? Y/N	Comments
California – Orange County	Sales Tax Extension (0.5%)	November 2006 (68%)	N	30-year extension of 0.5 percent sales tax. The extension would raise an estimated $11.8 billion. Sales tax revenues will support freeways, local street and roads, and transit needs.
California – Tulare County	New Sales Tax (0.5%)	November 2006 (67%)	N	New sales tax to be levied at a rate of 0.5 percent for 30 years. The sales tax can be used to fund construction and maintenance of highways and public transportation.
California – San Joaquin County	Sales Tax Extension (0.5%)	November 2006 (77%)	N	Sales tax extension for 30 years. Sales tax revenues will support both highway and public transportation improvements; projected to generate $2.5 billion over the next 30 years.
Colorado – Denver	Sales Tax Increase (0.4%)	November 2004 (57%)	Y	Sales tax increase for 12 years to provide $4.7 billion for transit investments, including light rail, commuter rail, bus rapid transit, and expanded bus service.
Colorado – El Paso County	New Sales Tax (1%)	November 2004 (55%)	N	New sales to be levied at a rate of 1 percent for 10 years, and 0.45 percent thereafter. Ten percent of the revenues will be dedicated for transit projects.
Colorado – Aspen	Sales Tax Increase (0.2%)	November 2004 (77%)	Y	Sales tax increase for 10 years.
Missouri – Kansas City	Sales Tax Extension (3/8%)	November 2006 (54%)	Y	Sales tax extension for 30 years to fund the new Heartland Light Rail system, feeder services, and an aerial gondola tram system.
Ohio – Canton	Sales Tax Extension (0.25%)	May 2006 (57%)	Y	Extension of 0.25 percent sales tax dedicated to the Stark Area Regional Transit Authority.
Ohio – Franklin County	New Sales Tax (0.25%)	November 2006 (51%)	Y	New sales tax to be levied over 10 years. Revenues will go to Central Ohio Transit Authority (COTA) to support bus service expansion.
South Carolina – Charleston	New Sales Tax (0.5%)	November 2004 (59%)	N	New sales tax to be levied over 25 years. Sales tax revenues will support county roads, transit, and the reservation of parks and green space. Eighteen percent of the revenues will be dedicated to the Charleston Area Regional Transportation Authority (CARTA).

Table B.2 Recently Approved Local Option Sales Taxes for Transit Investments (continued)

State/Location	Type of Sales Tax	Date/Percent Approval	Transit Only? Y/N	Comments
Texas – San Antonio	Sales Tax Increase (0.25%)	November 2004 (58%)	N	The Advanced Transportation District (ATD) was created within the City of San Antonio. Half of the revenues from the sales tax increase pay for public transportation needs. The remaining funds go to the City for local transportation improvements and to TxDOT for projects within the city.
Texas - Grapevine	New Sales Tax (0.5%)	November 2006 (73%)	Y	Sales tax revenues will be dedicated to fund commuter rail service connecting to the city of Fort Worth.
Utah – Salt Lake County	New Sales Tax (0.25%)	November 2006 (64%)	N	Sales tax revenues will be used for highway and public transportation needs.
Utah – Utah County	New Sales Tax (1/4%)	November 2006 (69%)	N	Eighty-seven percent of the sales tax revenues will be dedicated to fund the new FrontRunner Commuter Rail service to Salt Lake County
Washington – Finley	New Sales Tax (0.06%)	April 2005 (64%)	Y	The sales tax increase will pay for demand response service provided by Ben Franklin Transit (BFT).
Washington – Spokane	Sales Tax Increase (0.3%)	May 2004 (69%)	Y	Sales tax increase to support existing public transportation services provided by Spokane Transit Authority (STA).
Washington – Everett	Sales Tax Increase (0.3%)	September 2004 (56%)	Y	Sales tax increase to support existing public transportation services provided by Everett Transit.
Washington – King County	Sales Tax Increase (0.1%)	November 2006 (56%)	Y	Sales tax increase to fund bus service.
Washington – Selah City	New Sales Tax (0.3%)	November 2006 (62%)	Y	New sales tax to fund bus service.

Sources: Center for Transportation Excellence; Bureau of Transportation Statistics, *2004 Survey of State Funding for Public Transportation*.

Appendix C

Fuel Tax Vulnerability to Price Changes and Alternative Fuels

Fuel Tax Vulnerability to Price Changes

Figure C.1 shows how the real price of gasoline has fluctuated over the past 28 years in relationship to indicators of the economy. Even though the price of gasoline has increased significantly over the last couple of years, it has not reached the price levels from the early 1980s in real terms. Further, the price of gasoline is much lower in relation to personal income and GDP than in the early 1980s likely resulting in a lower demand elasticity to price. Therefore, in the short term, the impact of fuel price increases is likely to result in minor adjustments to travel behavior, such as reduced personal travel and potentially, some modal shifts where transit services are accessible. The Department of Energy (DOE) for example, assumes that the short term demand elasticity of gasoline due to changes in oil prices is estimated at -0.056, which means that for every increase of 10 percent in oil price, demand for gasoline declines by approximately 0.6 percent; a relatively low elasticity. However, in the long term, significant increases in fuel prices would likely influence the vehicle fleet composition, as drivers would be inclined to purchase more fuel-efficient vehicles. Most analysts, therefore, use higher demand elasticities for the long term.

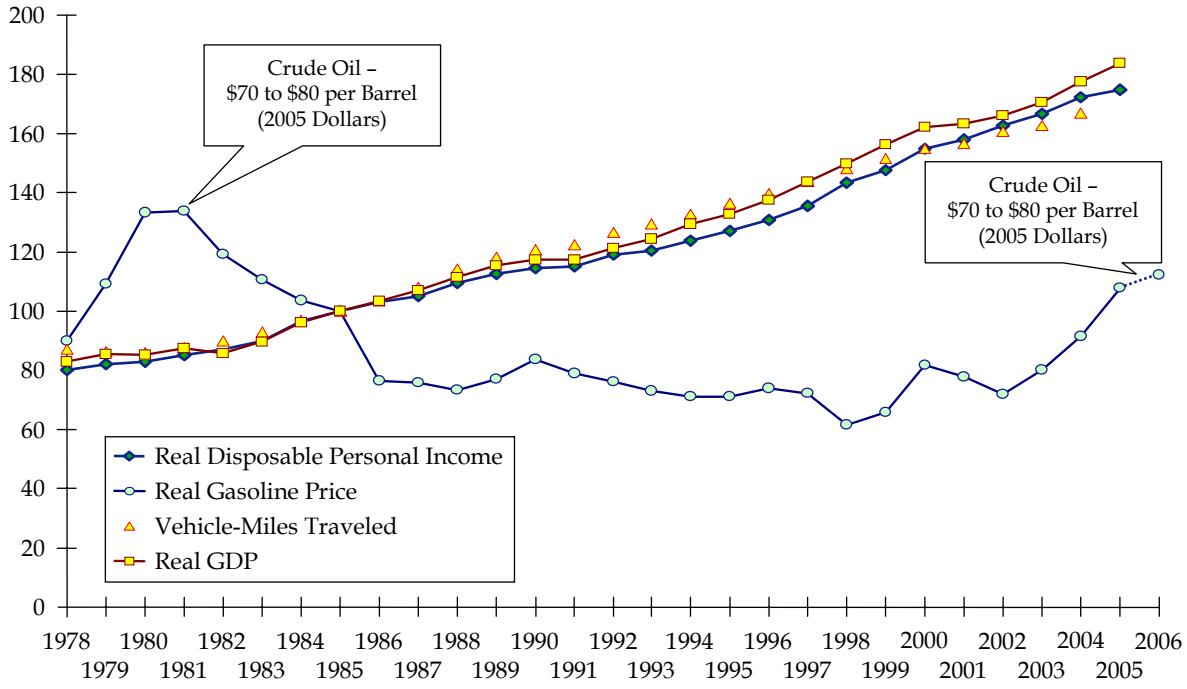
Fuel Tax Vulnerability to Efficiency Improvements and Alternative Fuels

The report of the Transportation Research Board Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance summarizes the future challenge to fuel tax-based revenue as follows:

> "Many public officials and transportation analysts are concerned with what they perceive to be the waning buying power of the motor fuels tax. Because the tax is levied on a per-gallon basis, revenues do not rise and fall with fluctuations in either inflation or vehicle fuel economy. Given the partisan political climate in which it has grown increasingly contentious to propose increased taxes, many are pessimistic about the prospects for significant increases in either state or Federal motor fuel tax levies in the years to come. The result has been a widening gap in many parts of the country between highway spending needs on the one hand and available revenues on the other. In the absence of significant fuel tax increases in the coming years, this gap is likely to widen

further, a trend that may accelerate in coming years with the gradual introduction of alternative fuel vehicles that pay less, or even no, motor fuels taxes."[1]

Figure C.1 Annual Indices of Real Disposable Income, Vehicle-Miles Traveled, Gross Domestic Product, and Real Average Retail Gasoline Price
1978-2005, 1985 = 100



Sources: Energy Information Administration, Household Vehicles Energy Use: Latest Data and Trends, November 2005.

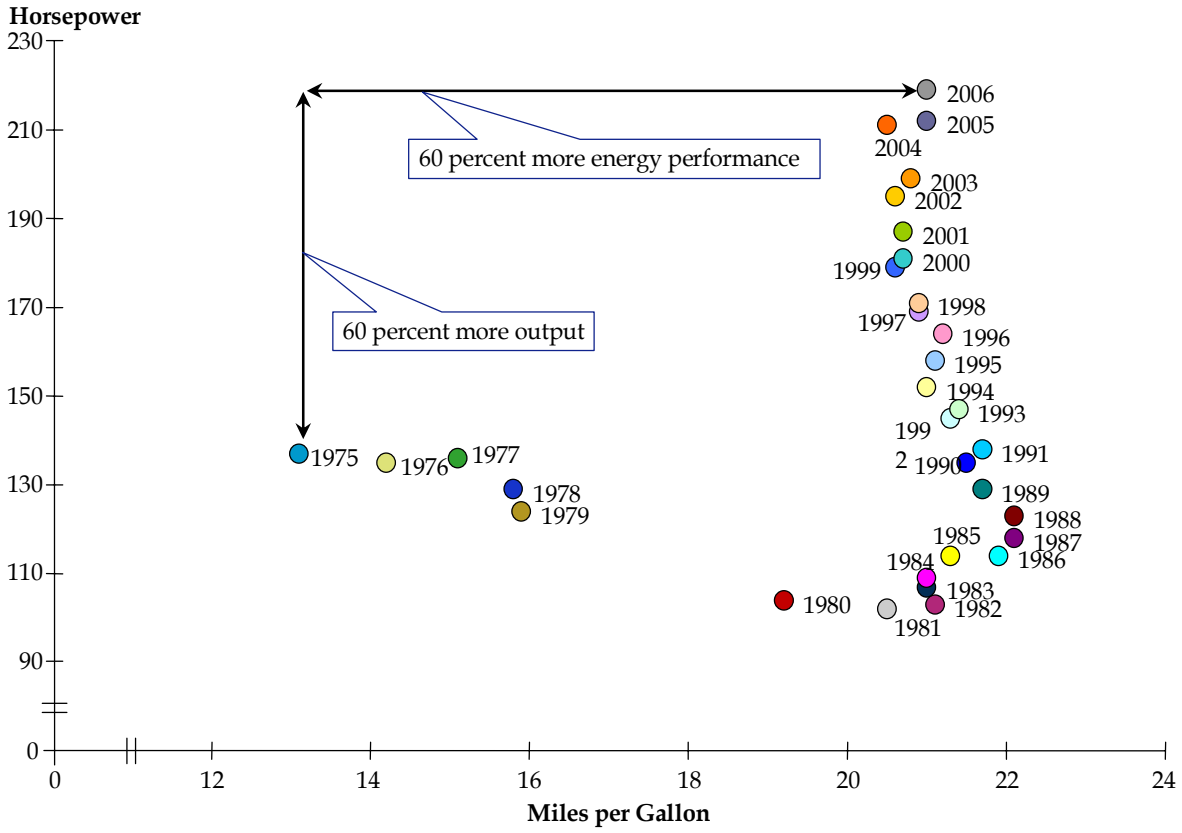
Note: Modified by Cambridge Systematics to include Real GDP (Bureau of Economic Analysis) and to include real fuel prices for 2005 and 2006.

In regard to the possibility of more efficient vehicles for the future, Figure C.2 shows how fuel economy for new light-duty vehicles was dramatically improved from the late 1970s through the late 1980s but has been stagnant or declined slightly since that time. In fact, we are at a nearly 20-year low in new vehicle fuel efficiency. Improvements in technology

[1] *Review and Synthesis of Road-Use Metering and Charging System.* Report commissioned by the Committee for the Study of the Long-Term Viability of Fuel Taxes for Transportation Finance, Transportation Research Board, Washington, D.C. Final draft, March 21, 2005.

have been used for horsepower improvements in the recent period. We have the technological capability to significantly improve fleet fuel economy but even if we start aggressively now, including the introduction of hybrids, it will take a relatively long period for more efficient vehicles to widely penetrate the overall vehicle fleet. For purposes of this report, we have used Department of Energy's miles per gallon forecasts that show a gradual increase over the period of this study as more efficient vehicles penetrate the fleet.

Figure C.2 Sales-Weighted Horsepower and On-Road Fuel Economy for New Light-Duty Vehicles
1975-2006 Model Years



Source: Environmental Protection Agency, Light Duty Automotive Technology and Fuel Economy Trends: 1975-2006, July 2006.

NCHRP Study 8-36(23) found that erosion may accelerate after 2015.[2] In a worst case scenario, growth in vehicle miles of travel (VMT) is offset by a 35 percent decline in motor fuel tax revenues by 2030 because of increasing fuel efficiency and the growing number of vehicles using untaxed fuels (e.g., electricity, hydrogen, natural gas, etc.). This impact is clearly beyond the 2017 of this study but is a long run concern as highlighted both in the recent TRB study noted above and the National Chamber Foundation study cited in the main report.

[2] *Review of the Potential Feasibility of Using Alternative Revenue Sources to Fund Future State Transportation Needs*. National Cooperative Highway Research Program Report 8-36(23), Transportation Research Board, Washington, D.C., 2002.

Appendix D

State and Local Highway Funding Analysis

This appendix presents an evaluation of current funding sources at the state and local level for highway needs by state. Revenue data by state was obtained from tables SF-1 and LGF-1 from FHWA's 2004 Highway Statistics. It also includes recent information from the American Petroleum Institute on gasoline tax rates at the state and local levels.

State Highway Funding

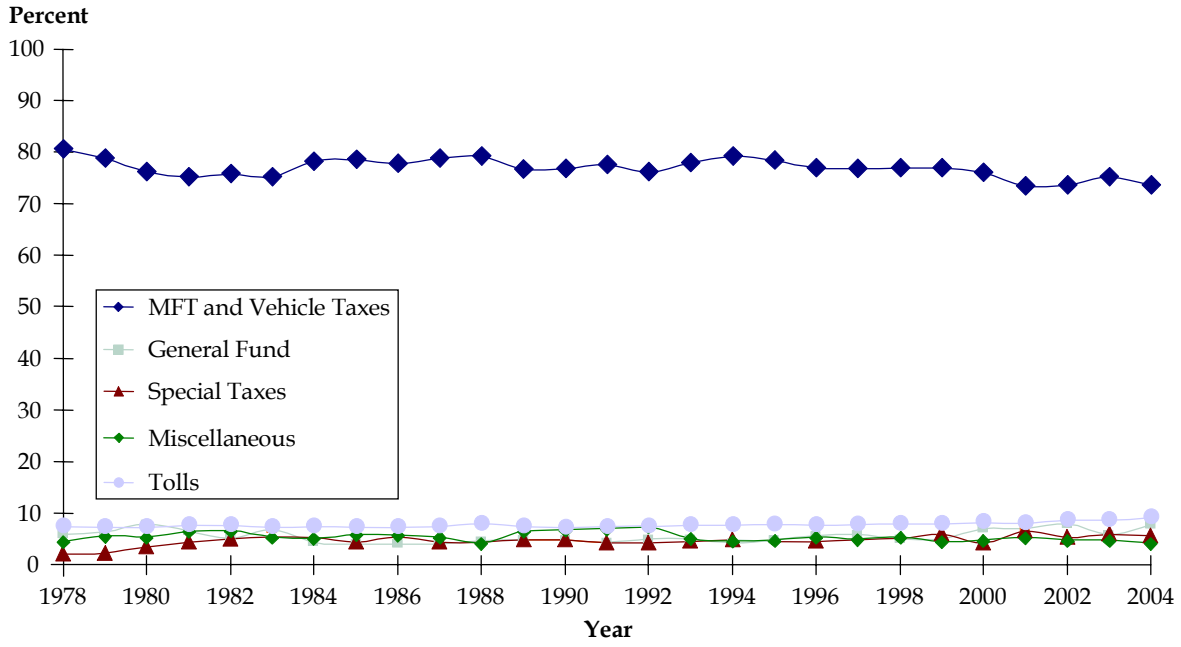
The main sources of revenue for highway investments at the state level are motor fuel taxes and motor vehicle taxes and fees, or, as defined in the report, indirect user fees. In 2004, highway funding from indirect user fees accounted for 74 percent of the total state highway funds, and has fluctuated between 73 and 80 percent over the last 25 years, as shown in Figure D.1.

Figure D.2 provides a closer look at state highway funding sources, excluding motor fuel tax and vehicle tax revenues. These funding sources account for about one-quarter of the state highway funding, and each account for 4 percent to 9 percent of the state highway funding. Of the four funding sources shown here (i.e., toll, general fund, specialized taxes, and miscellaneous), specialized taxes are the ones that have increased significantly in terms of funding share over the last 25 years. Specialized taxes accounted for 1.4 percent of the state highway funding in 1978, increasing to 5.6 percent by 2004.

Figure D.3 shows the funding share that indirect user fees accounted for in FY 2004 by state. The data shows that in 14 states, revenues from motor fuel taxes and motor vehicle taxes and fees account for over 90 percent of the highway funding. In only six states (Alaska, Delaware, Georgia, Massachusetts, New Jersey, and Oklahoma), do these revenue sources account for less than half of the highway funding. In these six states, most revenues for highways came from general fund allocations, and in the case of Delaware and New Jersey, from tolls.

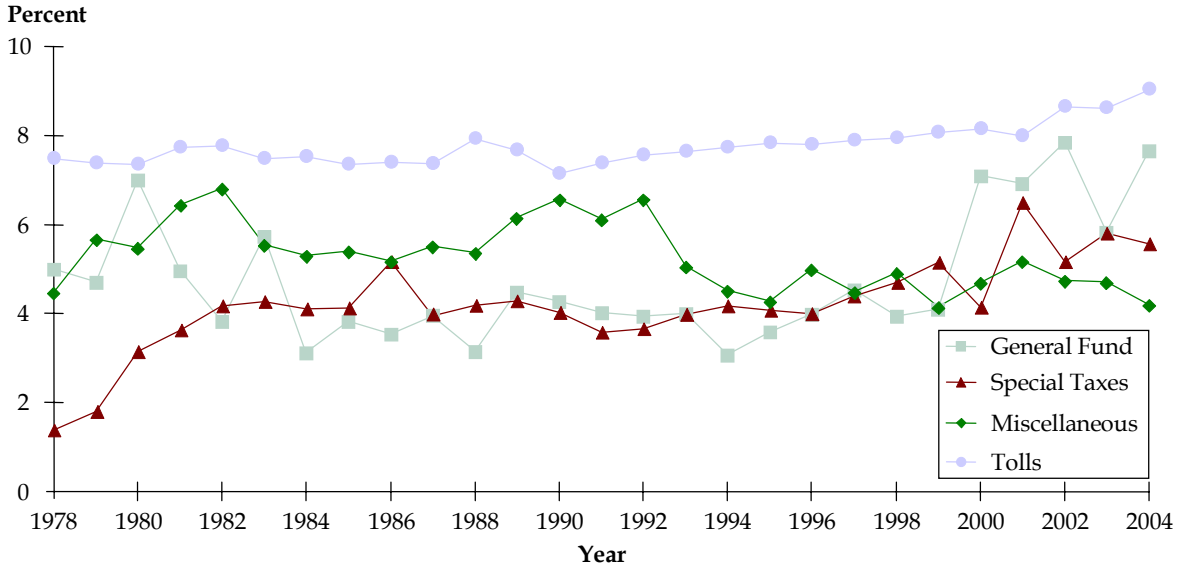
In Nebraska and Arizona, specialized taxes were reported to account for 27 and 40 percent, respectively. Alaska, Georgia, North Carolina, and South Dakota reported revenues from miscellaneous sources accounting for more than 10 percent of the total highway funding.

Figure D.1 State Funding Sources
Fiscal Years 1978-2004



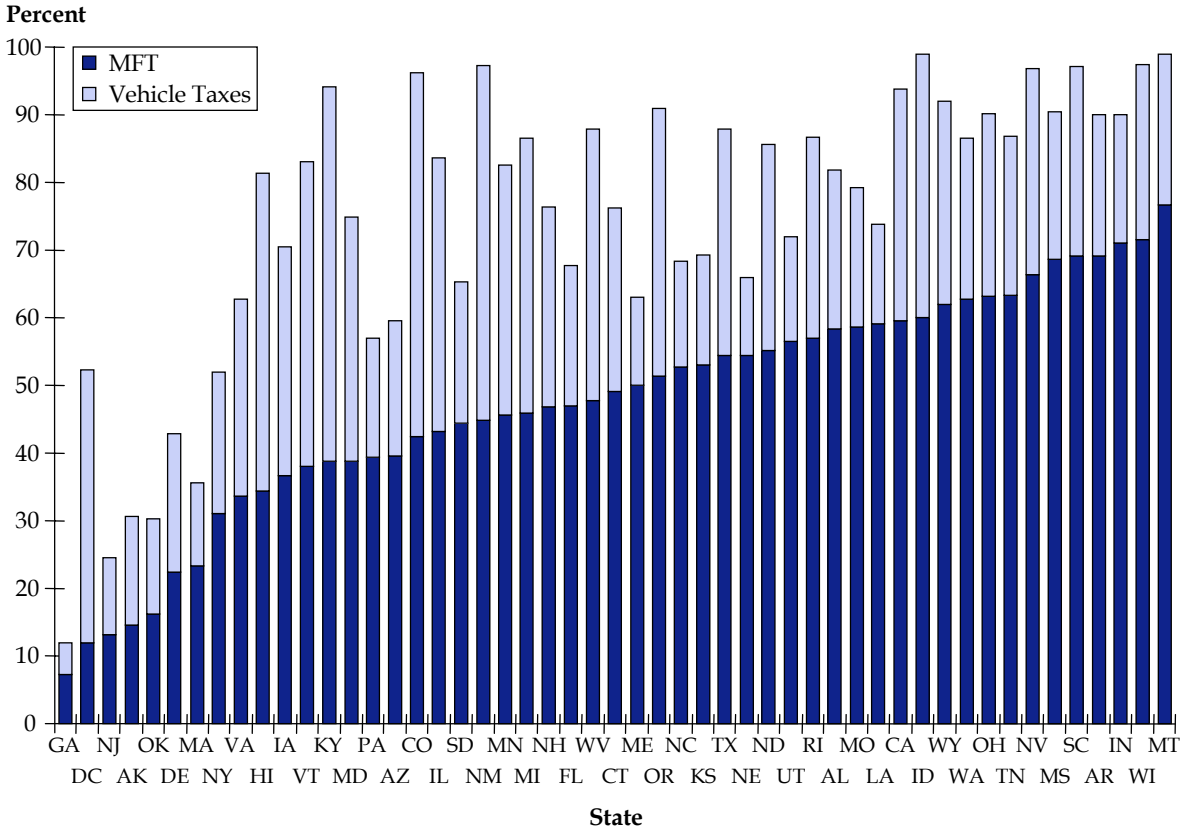
Source: Highway Statistics, Table HF-10.

Figure D.2 Highway – State Funding Sources (Except MFT and Vehicle Taxes)
Fiscal Years 1978-2004



Source: Highway Statistics, Table SF-1.

Figure D.3 State Highway Funding
Fiscal Year 2004

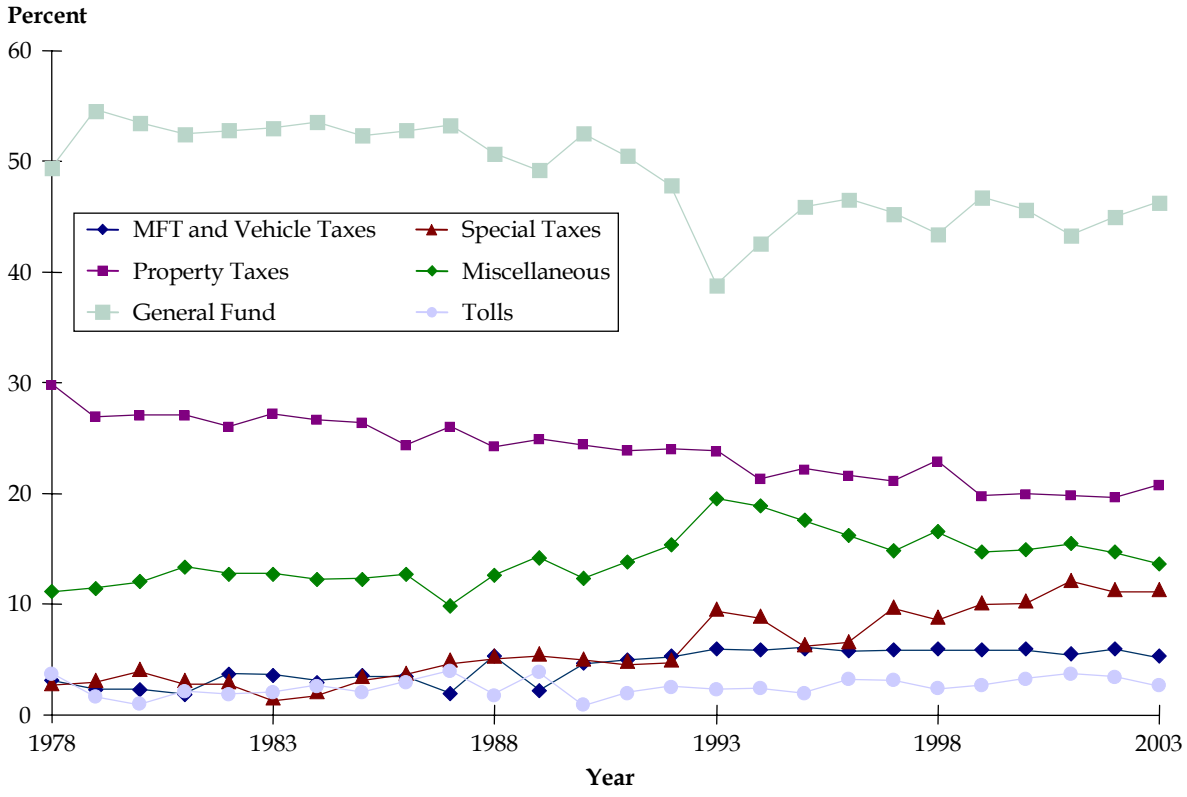


Source: FHWA, 2004 Highway Statistics, Table SF-1.

Local Government Highway Funding

At the local government level, general fund and property taxes account for most of the highway funding. In 2003, highway funding from general fund and property taxes accounted for about two-thirds of the total highway funds (Figure D.4). The share of these revenue sources have declined over the last 25 years, due to increases in the funding share from specialized taxes. Specialized taxes accounted for 2.8 percent of the local highway funding in 1978, increasing to 11.4 percent by 2003.

Figure D.4 Highway – Local Funding Sources
Fiscal Years 1978-2003



Source: Highway Statistics, Table LGF-1.

Figure D.5 shows the funding shares of property taxes,[1] general fund, and indirect user fees in FY 2003[2] by state. Indirect user fees account for more than half of the highway funding in three states (i.e., Indiana, Nevada, and New Hampshire). In 23 states, general funds account for over 50 percent of the revenues allocated by local governments for highway investments. General fund allocations account for 97 percent of the highway revenues in New Jersey.

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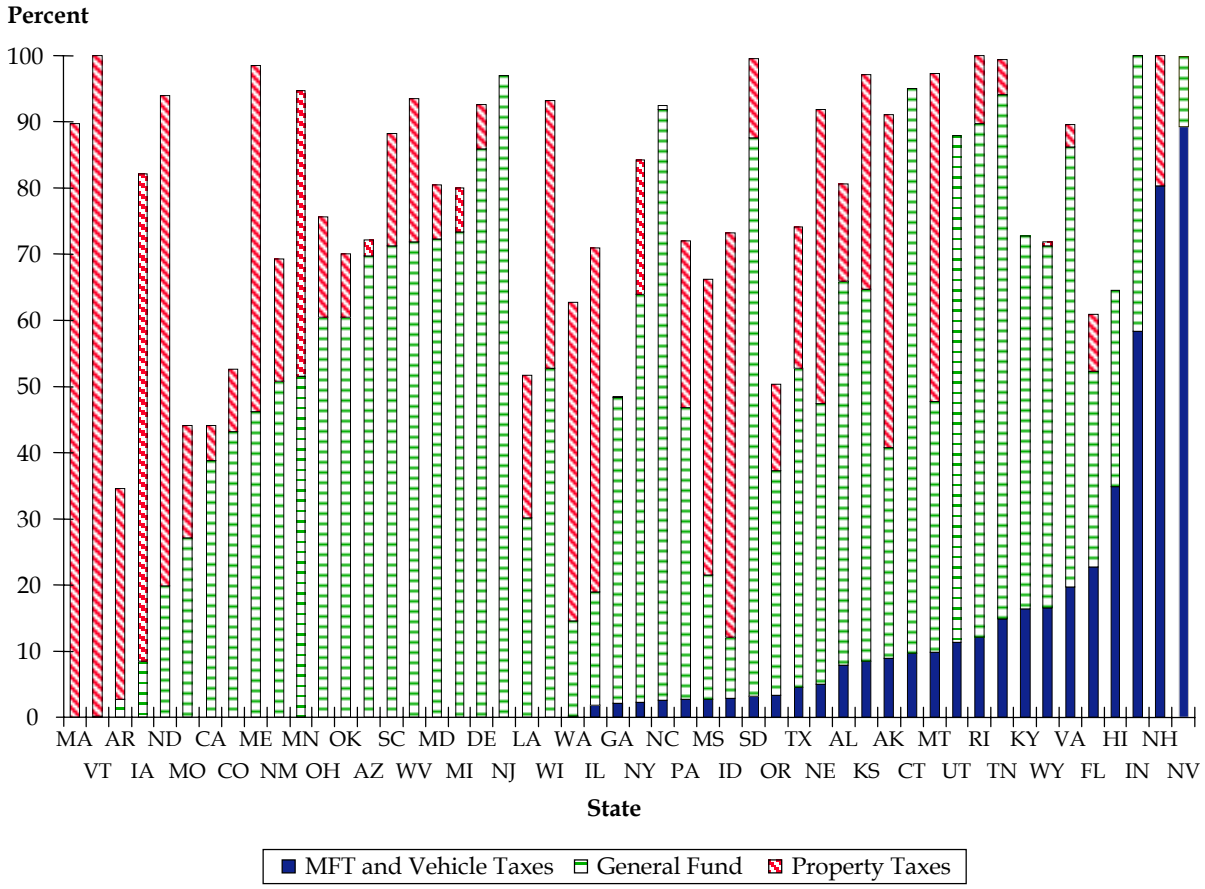
[1] Property taxes are shown separately from other specialized taxes for two reasons: 1) property taxes account for a significant share of highway revenues at the local level; and 2) Table LGF-1 report property taxes separate from other taxes, which allows for more detailed analysis of this type of specialized tax.

[2] Highway Statistic data from local governments lags behind by one year compared to Federal and state data.

Figure D.5 Local Highway Funding
Fiscal Year 2003



Source: 2004 Highway Statistics, Table LGF-1.

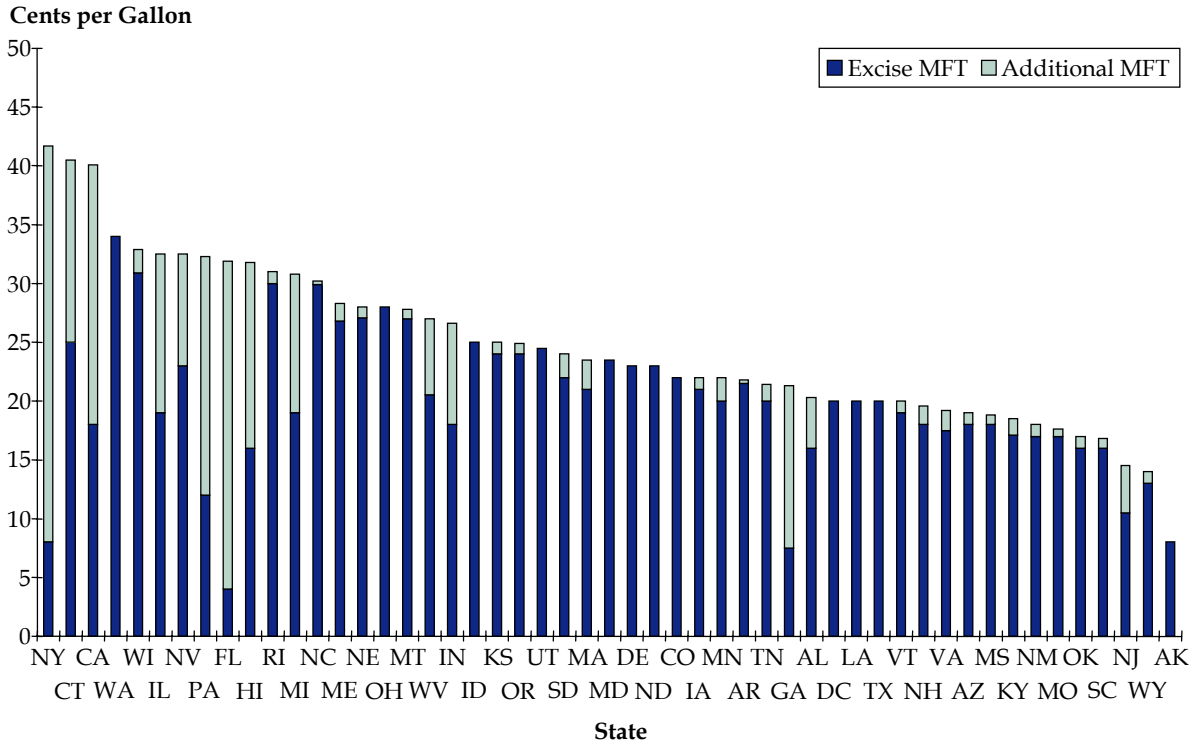
The data shows that property tax revenues accounted for more than 50 percent of the highway revenues in eight states, including Vermont, where all revenues come from property taxes (except for a negligible allocation from the general fund).

A few states (Arkansas, Georgia, Louisiana, and Missouri) reported significant revenues from specialized taxes. In California, about 38 percent of the local revenue for highway came from miscellaneous sources.

Gasoline Tax Rates

Figure D.6 shows the state motor gasoline tax rates as of July 2006 as estimated by the American Petroleum Institute.[3] All states have an excise tax rate, which varies from 34 cents per gallon in Washington to 4 cents per gallon in Florida. In addition to the excise tax rate, some states add other gasoline-related taxes, including sales taxes on gasoline, variable rates based on wholesale price, taxes on oil and petroleum businesses, or tax rate adjustments to account for inflation. The tax rates in Figure D.6 also include average motor fuel tax rates for fuel taxes collected at the local level (it should be noted that not all of these fuel tax revenues are dedicated to transportation). New York has the highest gasoline tax rate (41.7 cents per gallon), whereas Alaska has the lowest (8.0 cents per gallon).

Figure D.6 Gasoline Tax Rates
State plus Local, as of October 2006



Source: American Petroleum Institute.

[3] American Petroleum Institute, Current Fuel Taxes (July 2006). Available at http://api-ec.api.org/frontpage.cfm.

An interesting case of multiple forms of levying taxes on motor fuels is the New York gasoline tax rate, which is comprised of various taxes, including the state excise gasoline tax of 8.0 cents per gallon, the Petroleum Business Tax of 15.9 cents per gallon, a spill tax of 0.3 cents per gallon, and a petroleum-testing fee of 0.05 cents per gallon. In addition, it also includes a tax rate of 17.4 cents per gallon, which is the "cents-per-gallon" equivalent of the average sales tax on gasoline. The New York sales tax on gasoline includes a 4 percent state sales tax, and a 3.25 percent to 5.75 percent county sales tax, for a combined weighted average sales tax of 8 percent. Recent legislation capped the state sales tax portion at 8.0 cent per gallon, effective June 1, 2006. Two cities and 14 counties also decided to cap the local sales taxes as well. The sales tax portion of the motor fuel tax rate in New York is not dedicated to transportation.

Appendix E

Transit Funding Analysis

This appendix summarizes the findings of the transit revenue analysis of the National Transit Database (NTD) data for years 1993 through 2004, and the results from an annual survey of state funding for public transportation prepared by the Bureau of Transportation Statistics (BTS).[1] It provides detail on the revenue sources used to fund transit expenditures by level of government. It should be noted that there are some differences in the estimates of state funding for transit in the NTD and the BTS reports. For purposes of detailed analyses in the report, we have used the NTD as the primary source since it covers transit funding at all levels of government and provides greater detail on revenue sources.

Transit Revenues by Level of Government and Funding Source

State Funding

General fund allocations, dedicated sales tax, and other revenues are the main sources of state funding for transit. In 2001, there was a major shift between general fund allocations and dedicated sales taxes; in that year, the MBTA in Boston move to what they called "Forward Funding": a one-cent statewide sales tax was dedicated to the MBTA, and the agency became financially responsible for its expenditures. Before that, the State would allocate money to cover the agency's expenditures (including debt service). Following is a summary of state transit funding sources from the NTD:

- Average **general fund** allocations over the last four years are estimated at approximately 28 percent of the total state revenues. Actual general fund allocations over the last 10 years have fluctuated between $1.9 and $2.1 billion, with an average annual growth rate of 0.2 percent over the last 10 years.

- **Other funds**' share is estimated at 23.7 percent over the analysis period. Over the last 10 years, the average annual growth of this funding source is estimated at 5.7 percent.

[1] U.S. Department of Transportation, Bureau of Transportation Statistics. *Survey of State Funding for Public Transportation (2005).* Available at both AASHTO web site http://www.transportation.org and at APTA web site http://www.apta.com.

- **Gas tax revenues** at the state-level account for an average share of 7.8 percent of state funding for transit, although the share has been declining slightly in most recent years. The average annual growth of gas tax revenues for transit is estimated at 1.5 percent over the past 10 years.

- **Income tax revenues** at the state-level account for an average share of 3.7 percent of the total state funding for transit. As with the gas tax, the share has been declining over the last 10 years. In 2004, income tax contributions to transit were estimated at $187.0 million, compared to $270.0 million in 1994.

- **Property taxes** provide the lowest share of dedicated funds for transit at the state level, accounting for an average of approximately 1.0 percent of the total revenues. Actual allocations have declined over the years, although there has been an increase in the past two years.

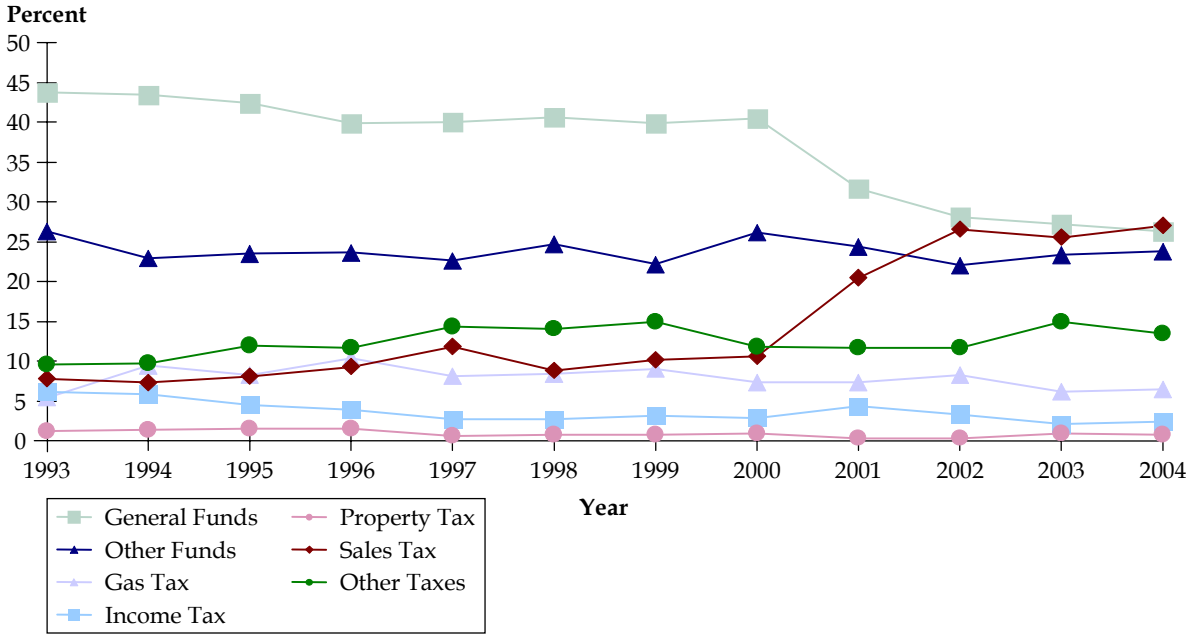
- **Sales taxes** have become one of the main revenue sources at the state-level in recent years. The average share is estimated at about 25 percent over the last four years. Prior to 2000, the average annual growth of sales tax revenues was estimated at 6.5 percent; 2001 and 2002 revenue growth was impacted by the shift from general revenues to dedicated state sales tax for the MBTA. Between 2002 and 2004, the average growth rate is estimated at 2.5 percent, which may account for a slow economy in recent years.

- The share of "**other dedicated taxes**" has increased from 9.5 percent in 1993 to 13.4 percent in 2004. The average annual growth rate is estimated at 8.7 percent over the last 10 years.

- In regard to how the revenues are used at the state level, the share used for operating expenses has increased from 72.5 percent in 1993 to almost 77.5 percent in 2004 with a proportionate decrease in the share used for capital purposes.

Figures E.1 and E.2 show transit revenues by source at the state level, in terms of funding share by source and actual revenues, respectively from the NTD.

Figure E.1 Transit Revenues
State (Share by Source) – Fiscal Years 1993 to 2004



Source: FTA National Transit Database.

Figure E.2 Transit Revenues
State (Millions of Dollars) – Fiscal Years 1993 to 2004

Source: FTA National Transit Database.

Table E.1 shows the total funding provided by states for public transportation in 1990, 1995, 2000, and 2005, as reported by BTS. State funding for transit increased by approximately $2.0 billion in the last five years. Compared to 2000 data, in 2005, 30 states increased funding for transit, and 10 states provided less funding. Four states (Alabama, Colorado, Hawaii, and Utah) have not provided funding for transit over the last five years.

Table E.2 shows the major sources for overall transit funding in 2005, as reported by the BTS state survey. The survey indicates that 19 states used general funds, 15 states used gas taxes, 9 states used vehicle/rental car sales taxes, 8 states used bond proceeds, 8 states used registration/title/license fees, and 6 states used general sales taxes. In Georgia, Illinois, Kentucky, Mississippi, Missouri, Ohio, and West Virginia, all state transit funding comes from the states' General Fund. State transit funding in South Carolina and Tennessee comes entirely from gas tax revenues. All state funding for transit in Iowa comes from one-twentieth of a 4 percent use tax on motor vehicles. In North Dakota, all transit funding from the State comes from vehicle registration fees. Finally, sales taxes are the only state funding source for transit in Indiana, dedicating a 0.775 percent sales tax.

Table E.1 State Funding of Public Transit
1990, 1995, 2000, 2005

State	1990	1995	2000	2005
Alabama	$453,600	–	–	–
Alaska	$1,128,607	–	–	$59,850,000
Arizona	$382,961	$445,000	$329,096	$20,068,000
Arkansas	$400,000	$331,900	–	$2,800,000
California	$113,579,750	$340,162,248	$1,344,778,819	$1,399,800,143
Colorado	–	–	–	–
Connecticut	$87,614,575	$113,241,041	$163,266,135	$206,440,541
Delaware	$7,406,200	NR	$35,685,145	$72,600,000
District of Columbia	$115,007,775	$123,051,000	NR	$212,050,288
Florida	$23,214,100	$89,510,720	$92,724,263	$149,738,231
Georgia	$1,295,589	$1,892,582	$306,393,067	$8,222,757
Hawaii	$350,000	–	–	–
Idaho	–	–	$136,000	$312,000
Illinois	$266,813,600	$264,992,700	$467,622,300	$445,600,000
Indiana	$16,623,895	NR	$29,201,270	$37,046,940
Iowa	$5,367,893	$7,464,513	$10,411,432	$10,140,000
Kansas	$390,000	$1,000,000	$6,000,000	$6,000,000
Kentucky	$468,098	$612,196	NR	$1,400,000
Louisiana	$3,000,000	NR	NR	$4,962,500
Maine	$1,949,042	$392,000	$420,000	$1,555,000
Maryland	$271,066,348	$349,848,000	$273,843,580	$727,433,000
Massachusetts	$357,508,623	$531,895,787	$771,356,465	$1,197,137,541
Michigan	$132,816,959	$124,400,599	$187,197,690	$195,149,300
Minnesota	$38,071,015	$47,988,633	$80,289,455	$254,527,000
Mississippi	$32,000	–	$115,185	$800,000

Table E.1 State Funding of Public Transit (continued)
1990, 1995, 2000, 2005

State	1990	1995	2000	2005
Missouri	–	$1,495,000	$17,029,357	$6,600,000
Montana	$71,250	$75,000	$75,000	$415,197
Nebraska	$1,500,000	$1,529,843	$1,539,135	$1,500,000
Nevada	$320,000	$437,748	NR	$95,000
New Hampshire	$1,166,756	$12,208	–	$225,000
New Jersey	$235,225,000	$458,704,000	$509,237,000	$910,584,000
New Mexico	–	NR	–	$2,830,000
New York	$1,422,752,000[a]	$1,356,600,000	$1,926,571,085	$2,169,005,000
North Carolina	$5,934,875	$22,138,279	$38,246,921	$111,724,897
North Dakota	–	$761,329	$1,665,933	$2,203,657
Ohio	$32,350,882	$29,232,523	$42,348,466	$18,300,000
Oklahoma	$259,042	$951,497	$3,530,125	$3,250,000
Oregon	$6,933,258	$44,689,000	$15,553,262	$26,140,529
Pennsylvania	$425,666,677	$628,400,000	$731,800,000	$835,223,000
Rhode Island	$15,253,694	$19,121,259	$36,822,442	$34,847,617
South Carolina	NR	$4,140,384	$4,234,189	$5,943,000
South Dakota	–	$300,000	$397,061	$1,891,229
Tennessee	$9,860,000	$12,458,000	$22,291,000	$34,196,000
Texas	$8,831,085	$17,200,000	$27,945,051	$29,741,067
Utah	NR	$139,929	–	–
Vermont	$668,644	$860,917	NR	$6,266,976
Virginia	$73,555,000	$78,248,186	$163,959,344	$157,600,000
Washington	$2,220,900	$6,434,900	$84,455,509	$30,423,000
West Virginia	$1,261,903[b]	$1,537,898	$1,395,489	$2,258,243
Wisconsin	$53,439,491	$77,321,415	$100,448,100	$109,438,341
Wyoming	–	$976,736	NR	$2,955,511
TOTALS	**$3,742,211,127**	**$4,760,994,970**	**$7,499,314,371**	**$9,517,290,604**

Source: Bureau of Transportation Statistics.

[a] Calendar-year 1989 figures.

[b] $374,972 of this figure represents direct state operating assistance to public transit. $697,281 is provided by the West Virginia Department of Health and Human Services and the West Virginia Commission on Aging, and is used for the provision of specialized services to the elderly and handicapped. $90,000 is used by the small urban and rural properties as fare box revenue to offset operating expenses.

Table E.2 Major Sources for Overall Transit Funding[a]

State	General Fund	Gas Tax	Motor Vehicle/ Rental Car Sales Tax	Registration/ License/ Title Fees	Bond Proceeds	General Sales Tax	Interest Income	Other[b]
Alaska	98.9%							1.1%
Arizona	0.3%							99.7%
Arkansas			100%					
California		X			X	X		X
Connecticut		X	X	X			X	X
Delaware		X		X				X
District of Columbia	79%				21%			
Florida		X	X	X				
Georgia	100%							
Idaho								100%
Illinois	100%							
Indiana						100%		
Iowa			100%					
Kansas								100%
Kentucky	100%							
Louisiana								100%
Maine					68%			32%
Maryland		34%	33%	23%				10%
Massachusetts	X				X	X		X
Michigan		X	X	X				X
Minnesota	X		X					
Mississippi	100%							
Missouri	100%							
Montana		18%		82%				
Nebraska	X							X
Nevada							100%	
New Hampshire	56%				44%			
New Jersey	31%	66%						3%
New Mexico								100%
New York[c]	1%	6%		2%	21%	7%		63%
North Carolina								X
North Dakota				100%				
Ohio	100%							
Oklahoma	69%	31%						
Oregon	X	X			X			X
Pennsylvania	X		X		X	X		X
Rhode Island		97%			X			X
South Carolina		100%						
South Dakota								100%
Tennessee	100%							
Texas								100%
Vermont								100%
Virginia		X	X			X	X	X
Washington								100%
West Virginia	100%							
Wisconsin		X		X				X
Wyoming							30%	70%
These four states do not use state funds for public transit: *Alabama, Colorado, Hawaii, and Utah*								

Source: Bureau of Transportation Statistics.

[a] A percentage figure is shown when the share or contribution of a particular source could be discerned. Where the exact share cannot be computed, an "X" is placed to illustrate the state's reliance on that source.

[b] "Other" includes state highway funds, trust funds, miscellaneous revenues, fees, taxes, lottery funds, tolls, or other types of assessments.

[c] New York provided updated information as part of this NCHRP study.

Local Funding

At the local government level, the majority of funding for transit comes from general fund allocations and dedicated sales taxes.

- **General Fund –** The share of general fund revenues has declined over the last 10 years, from 48 percent in 1994 to 34 percent in 2004. The average annual growth of general fund allocations at the local-level is estimated at 1.2 percent.

- **Other Funds –** The share of "other funds" increased significantly in 2001, but increased only slightly thereafter. Annual growth rate over the last 10 years is estimated at 10.4 percent.

- **Gas Taxes –** On average, gas tax revenues account for only 1.3 percent of the total transit funds at the local level; however the funding share has increased from 0.6 percent in 1994, to almost 2.0 percent in 2004. The average annual growth rate is estimated at 17.0 percent over the last 10 years, due mainly to additional transit agencies (in Florida and California) dedicating more local gas tax levies to transit.

- **Income Tax –** Income taxes accounted for 1.2 percent of the total local revenues in 2004. The funding share has fluctuated between 0.1 and 4.2 percent over the last 10 years. The highest allocation of income tax revenues occurred in 1998, but it seems to be a one-time event; otherwise, income tax revenues account for approximately 1.0 percent of the total local revenues.

- **Property Taxes –** Property taxes at the local-level account for 3.6 percent of the total local revenues for transit. The average annual growth rate over the last 10 years is estimated at 2.8 percent.

- **Sales Taxes –** The share of sales taxes at the local-level for transit has fluctuated throughout the analysis period from a low of 29 percent in 1993 to a high of 40 percent in 2000. The actual revenue increase in 2000 could be the result of passed referenda to levy sales taxes for transit. The average annual growth rate over the last 10 years is estimated at 5.1 percent.

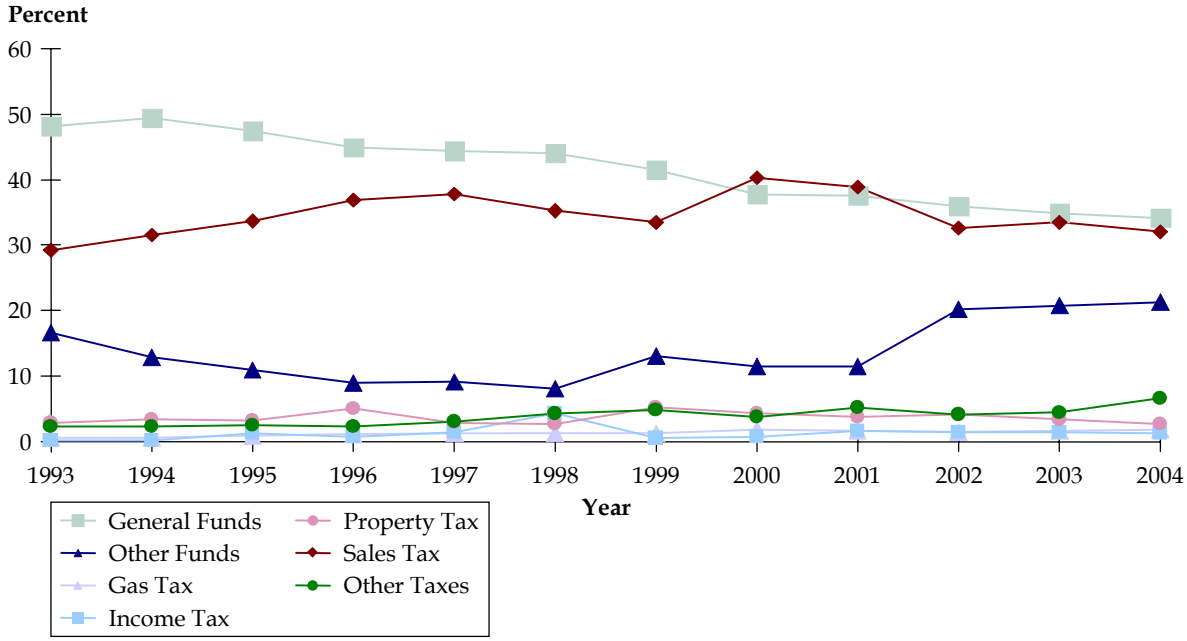
- **Other Taxes –** The use of other dedicated taxes for transit at the local-level has increased over time. In 1993, the share of other taxes at the local level was 2.3 percent compared to other local revenues, increasing to 6.7 percent by 2004.

- In regard to how the revenues are used at the local level, the share used for operating expenses has decreased from 78 percent in 1993 to almost 71 percent in 2004 with a proportionate increase in the share used for capital purposes.

Figures E.3 and E.4 show transit revenues by source at the local level, by share and by actual revenues, respectively.

Figure E.3 Transit Revenues

Local (Share by Source) – Fiscal Years 1993 to 2004



Source: FTA, National Transit Database.

Figure E.4 Transit Revenues

Local (Millions of Dollars) – Fiscal Years 1993 to 2004

Source: FTA National Transit Database.

Agency Funding

At the agency level, most revenues come from fares (user fees). Fares accounted for almost 57 percent of the total agency revenues for transit expenditures in 2004. The share of fare revenues has declined over time, as shown in Figure E.5. The average annual growth of fare revenues is estimated at 3.5 percent.

- **Other Operating Funds –** This source include operating revenues such as lease income, concessions, and parking fees. This funding source accounts for 11.7 percent of the total agency revenues over the last 10 years, increasing at an annual growth rate of 6.6 percent.

- **Other Funds –** The share of "other funds" has fluctuated significantly over the analysis period, from a low of 10.4 percent to a high of 21.1 percent.

- **Gas and Income Taxes –** Dedicated revenues from gas and income taxes at the agency-level do not show a consistent pattern over time.

- **Property Taxes –** Property taxes account for an average of 1.8 percent of the total agency revenues. Actual revenues have increased at an average rate of 5.1 percent per year.

- **Sales Taxes –** Sales taxes dedicated at the agency level account for 12.5 percent of the agency revenues. The annual growth rate of sales taxes over the last 10 years is estimated at 6.6 percent.

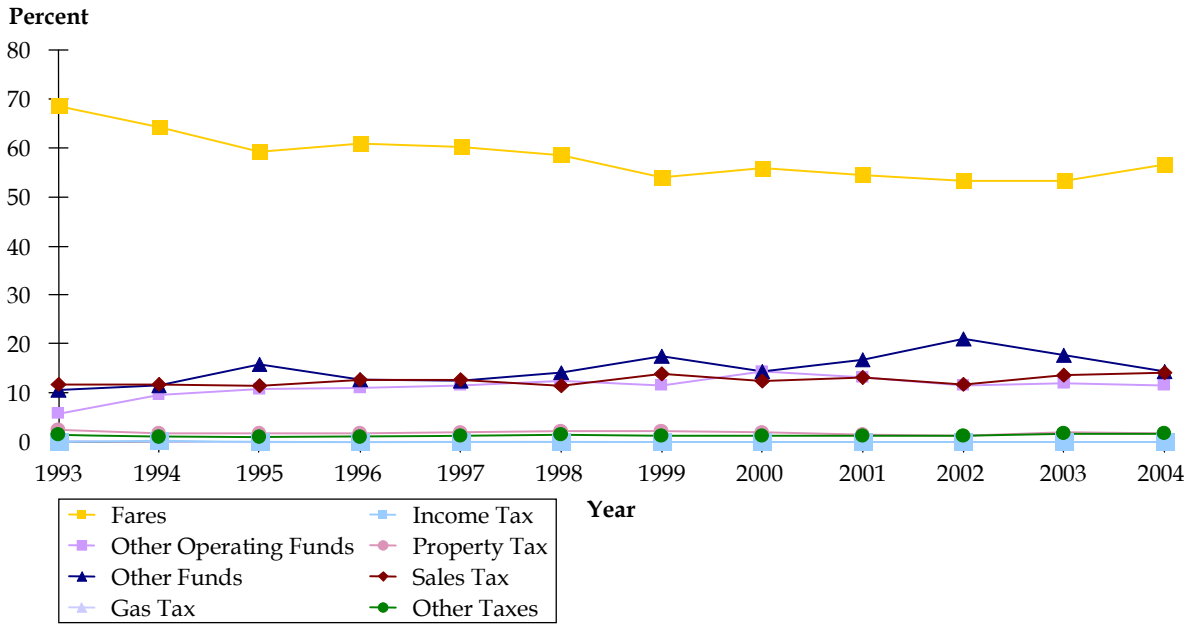
- **Other Taxes –** Other taxes account for an average of 1.3 percent of the agency revenues. Revenues from this source have increased at almost 10 percent annually over the last 10 years.

- In regard to how the revenues are used at the agency level, the share used for operating expenses has decreased from 90 percent in 1993 to almost 83 percent in 2004 with a proportionate increase in the share used for capital purposes.

Figures E.5 and E.6 show transit revenues by source at the local level, by shares and actual revenue respectively.

Figure E.5 Transit Revenues

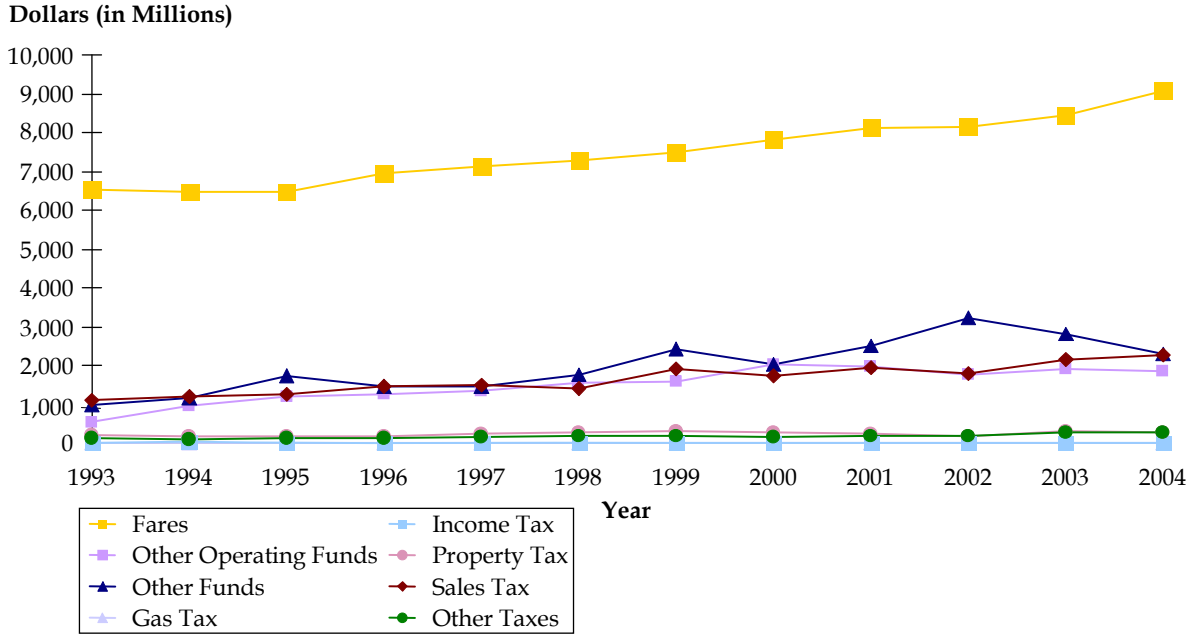
Agency (Share of Funding) – Fiscal Years 1993 to 2004



Source: FTA National Transit Database.

Figure E.6 Transit Revenues

Agency (Millions of Dollars) – Fiscal Years 1993 to 2004



Source: FTA National Transit Database.

Appendix F

Assumptions for Selected Short-Term Revenue Enhancement Projections

Index the Federal Fuel Taxes

Three different options were assessed to fill the gap over the next two reauthorization cycles: 1) starting indexing to the Consumer Price Index (CPI) in 2010; 2) increase Federal motor fuel tax by 5 cents in 2010; or 3) retroactively indexing the Federal fuel taxes to the Consumer Price Index (CPI) going back to the last Federal tax increase in 1993 (adding 10 cents) by 2010. Indexing the Federal fuel taxes to the CPI as estimated by Congressional Budget Office (CBO) starting in 2010 could raise $32 billion in additional Federal revenues, during 2010 to 2017. If the Federal fuel taxes were increased by 5 cents in 2010 to gain half of the purchasing power it has lost since it was increased in 1993, they could raise $113.0 billion for 2010 to 2017. The last option, assumes that the Federal motor fuel tax rates are indexed back to 1993 (as originally proposed by the House Transportation and Infrastructure Committee); this option could raise $202.6 billion in additional Federal revenues for 2010 to 2017. For these three scenarios, the current dollar fuel tax rate on gasoline in 2017 would be 21.8 cents for indexing beginning in 2010; 27.1 cents by adding 5 cents in 2010 and indexing; and 33 cents by adding 10 cents in 2010 and indexing, in comparison to the current 18.3 cents currently credited to the Highway Trust Fund (HTF).

Eliminate Exemptions to the Highway Trust Fund

This proposal assumes that the state and municipal vehicle and agricultural exemptions to highway user fees come from the General Fund rather than the HTF starting in 2008. This gains approximately $1.2 billion per year to the HTF in 2010, increasing to $1.3 by 2017, for a total of $12.3 billion in year-of-expenditure (YOE) dollars.

Recapture Interest on Highway Trust Fund Balances

Prior to enactment of the Transportation Equity Act for the 21st Century (TEA-21), interest earned on the HTF cash balances was credited to the fund. With TEA-21, that interest was credited to the General Fund instead. This estimate assumes that both the highway and the transit account balances are maintained at levels approximately equal to or slightly smaller than today's. If interest earned was recaptured for the HTF, it is estimated that approximately $5.0 billion could be generated between 2008 and 2017.

Federal Sales Tax on Motor Fuel

The revenue potential of implementing a sales tax of 3 percent on motor fuels was estimated using the methodology described below.

- **Estimate VMT by Vehicle Type (LDV and Heavy Trucks) –** Base VMT for 2004 was obtained from Highway Statistics (Table VM-1). Future VMT was calculated by applying a 2.07 percent annual growth rate as forecasted by the 2004 C&P report. The VMT forecast was split by vehicle type using the Department of Energy's (DOE) long-term forecast of VMT by vehicle type. For simplification purposes, it was assumed that light duty vehicle (LDV) and heavy vehicle VMT can be used to estimate gasoline and diesel consumption, respectively.

- **Calculate Fuel Consumption –** Gasoline and diesel consumption was calculated by dividing the VMT projections by fuel efficiency forecast (in miles per gallon) by vehicle type from DOE. The fuel consumption was adjusted by a factor of 98.4 percent to account for exemptions and refunds.

- **Calculate Retail Sales of Fuel –** Fuel consumption was multiplied by the average fuel price as forecasted by DOE; and

- **Estimate Sales Tax Revenue Projections –** Apply sales tax rate (3 percent) to the forecast of motor fuel retail sales.

Index Federal Heavy Vehicle Use Tax

The Heavy Vehicle Use Tax (HVUT) has remained constant since 1984. If the HVUT was indexed for inflation starting in 2010, cumulative additional revenues through 2017 are estimated at $1.5 billion. If in addition, we assumed retroactive indexing of the HVUT to 1997 to capture about half the past loss due to inflation, this could generate about $23 billion additional in cumulative revenues through 2017. In these estimate we also assume

that the HVUT cap at 80,000 pounds gross vehicle weight is lifted; no changes in Federal TS&W laws are assumed but states increasingly allow vehicles heavier than 80,000 pounds off the Interstate system and they would be charged a higher HVUT rate corresponding to their state registered weight.

The effects of increased revenues due to adjustments for inflation were included in the revenue forecast model, by assuming that future revenues will increase at the base growth rate plus inflation.

Federal Vehicle Tax on Passenger Cars and Light Duty Trucks

This revenue option proposes the implementation of a Federal retail sales tax on passenger cars and light duty trucks, similar to the retail sales tax on heavy trucks that now goes into the HTF. The methodology developed to calculate the revenue potential of a 1 percent sales tax on light-duty vehicle retail sales (new vehicles only) is described as follows:

- **Estimate Projected Growth of Automobile Retail Sales –** Using 2004 Woods and Poole forecasts of Automobile Dealer Retail Sales, we estimated the projected growth in vehicle retail sales (4.23 percent to 4.54 percent through 2017).

- **Estimate Percentage of New Auto Dealer Retail Sales that Comes from "Used Vehicles" and "Parts and Service" –** New Automobile Retail Sales data also includes sales from "Used Vehicles" and "Parts and Service." Recent data from the National Automobile Dealers Association (NADA) shows that these account for 40 percent of total auto retail sales.

- **Forecast Auto Dealer Retail Sales through 2017 –** U.S. Census Data shows that auto retail sales in 2005 were $747.2 billion. This figure was adjusted to discount for used vehicles, parts, and service sales. Woods and Poole growth rates were applied to the net auto retail sales.

- **Apply 3 percent sales tax to projected auto dealer retail sales**.

A 3 percent sales tax on light duty vehicles could raise $140.8 billion through 2017 in additional revenues for the HTF.

Utilize (5 or 10 Percent of Current) Customs Duties

Dedication of 5 percent or 10 percent of currently collected Customs duties for port and intermodal improvements is estimated to produce $20 billion and $40 billion, respectively, in current dollars. For purposes of our estimate, 30 percent of these improvements are assumed to be included in the national surface transportation needs estimates. Projects such as intermodal connectors to ports and other intermodal terminals, rail-highway grade crossings, and additional freight rail track that benefits commuter rail would offset a portion of national highway and transit system needs. Fifty percent of Customs duties are assumed to be used for port capacity and security improvements that are not reflected at all in the surface transportation needs estimates. Assuming the other 50 percent is used for intermodal surface access (highway and freight rail), the assumption was made that 30 percent would be used for highway access and 20 percent for freight rail access. Therefore, 30 percent of the dedicated Customs revenue is counted as new revenue to offset surface transportation needs as reflected in our estimates.

Authorize Tax Credit Bonds

The potential distribution of tax credit bond proceeds as grants to state and local government for highway and transit projects, as envisioned in the Senate-proposed "Build America Bonds" proposal and estimated in the National Chamber Foundation finance study,[1] is illustrated in Table F.1.

Table F.1 Annual Induced Capital Investment
"Build America Bonds" Assumptions from National Chamber Foundation Finance Study (Billions of YOE Dollars)[2]

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Sum
Induced Capital	$5.0	$5.0	$5.0	$5.0	$5.0	$5.0	$5.0	$5.0	$5.0	$5.0	$5.0	$55.0

[1] U.S. Chamber of Commerce, National Chamber Foundation. *Future Highway and Public Transportation Financing – Phase II*, Appendix C. Washington, D.C. November 2005.

[2] Ibid.

Authorize Freight/Intermodal Investment Tax Credit

Table F.2 illustrates the funding for freight and intermodal projects that could be generated by an investment tax credit proposal of the type being discussed by various industry groups. This analysis incorporates the following technical assumptions from the National Chamber Foundation finance study:[3]

- Investors in eligible projects may claim, in aggregate, up to $500 million annually in 20-year tax credits for qualified freight/intermodal investments;
- The tax credit streams would be monetized up-front during the 11-year period from 2007 to 2017; and
- The annual tax credit rate would be established such that the sponsors of qualified investments would receive a 70 percent present-value subsidy for their projects.

Table F.2 Annual Induced Capital Investment
Investment Tax Credits Assumptions
(Billions of YOE Dollars)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Sum
Induced Capital	$1.2	$1.2	$1.2	$1.2	$1.2	$1.2	$1.2	$1.2	$1.2	$1.2	$1.2	$13.2

As illustrated above, these assumptions result in the up-front monetization of about $1.2 billion for each 20-year stream of tax credits during the first five years, for a total of $13.2 billion during the 2007 through 2017 period for freight and intermodal projects.

It is assumed, however, that only 15 percent of this investment offsets highway and transit needs as reflected in the U.S. DOT C&P report. Most funding will be for rail intermodal improvements that are not included in the C&P report.

[3] Ibid.

Implementation of Container Fees

Container traffic in U.S. ports has increased at a rate of 6.6 percent over the last decade, according to historical data from the American Association of Ports Authorities (AAPA). It was assumed that this growth trend will continue through 2017, and that a $30 fee per TEU as recently proposed in California[4] will be collected on all import and export container movements starting by 2010 to help fund freight and intermodal improvements.

Index State Motor Fuel Taxes

Similar to the Federal Motor Fuel Tax indexing, a scenario was developed to estimate the additional revenues generated by indexing state motor fuel tax rates. For the purpose of our estimate, it was assumed that states currently not indexing for inflation begin indexing their motor fuel tax rates to the CPI by 2007, with full implementation by 2010. It was assumed that in 2007, 25 percent of the currently non-indexed state motor fuel tax revenues will be indexed to inflation, gradually increasing until all revenues are adjusted for inflation by 2010. Indexing state motor fuel taxes is estimated to generate an additional $31.9 billion between 2007 and 2017.

Increase State Motor Fuel Tax Rates to Account for Inflation Losses Since 2000

An average increase of 5.23 cent per gallon of gasoline and 5.41 cents per gallon of diesel by 2010 would be needed by states to gain the motor fuel purchasing power lost over the last decade at the state-level. This revenue option assumes that the additional motor fuel tax rates will be gradually adopted through 2010 by those states that have not increased their motor fuel tax rate in recent years. A second option assumes that the additional tax rate will be indexed beyond 2010. For the forecast period, the increase in motor fuel tax rates could generate between $65 billion (increasing excise tax only) to $70 billion (increasing excise tax plus indexing beyond 2010).

The methodology used to calculate the annual purchasing power of 1 cent per gallon of motor fuel is described as follows:

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[4] As proposed in the California bill SB 927 by Lowenthal. The bill was passed by the legislature, but recently vetoed by the Governor.

- **Estimate VMT by Vehicle Type (LDV and Heavy Trucks) –** Base VMT for 2004 was obtained from Highway Statistics (Table VM-1). Future VMT was calculated by applying a 2.07 percent annual growth rate as forecasted by the 2004 C&P report. Forecast VMT was adjusted to account only for those states that have not increased their motor fuel tax rates since 2000.[5] The VMT forecast was split by vehicle type using the Department of Energy's (DOE) long-term forecast of VMT by vehicle type. For simplification purposes, it was assumed that light duty vehicle (LDV) and heavy vehicle VMT can be used to estimate gasoline and diesel consumption, respectively.

- **Calculate Fuel Consumption –** Gasoline and diesel consumption was calculated by dividing the VMT projections by fuel efficiency forecast (in miles per gallon) by vehicle type from DOE. The fuel consumption was adjusted by a factor of 98.4 percent to account for exemptions and refunds.

- **Estimate Revenue Forecast –** Gas and diesel tax revenues were calculated by multiplying the assumed tax rate to the fuel consumption estimates.

State Sales Tax on Motor Fuel

Seven states currently levy sales taxes on motor fuels. Some of these states dedicate all or a portion of these revenues to transportation. This scenario explores the revenue potential of dedicating a 3 percent sales tax on motor fuels, excluding 1) states that already collect from this source and dedicate a portion or all revenues to transportation[6], and 2) states that do not collect general sales taxes. Cumulative revenues through 2017 from this revenue option are estimated at $94 billion, assuming gradual implementation through 2010, starting with 25 percent of total potential revenues realized by 2007, and gradually increasing to 100 percent by 2010.

The methodology used to calculate the annual purchasing power of a sales tax on motor fuel is described as follows:

[5] The following states were excluded from the motor fuel revenue forecast: Arkansas, Florida, Iowa, Kansas, Kentucky, Maine, Nebraska, Nevada, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Tennessee, Washington, West Virginia, and Wisconsin.

[6] The forecast excludes the following states: California, Georgia, and Hawaii. The analysis also excludes those states where no sales taxes are collected, such as Alaska, Delaware, Montana, New Hampshire, and Oregon.

- **Calculate VMT and fuel consumption** (as described above for excise motor fuel taxes);
- **Calculate Retail Sales of Fuel –** Fuel consumption was multiplied by the average fuel price as forecasted by DOE; and
- **Estimate Sales Tax Revenue Projections –** Apply sales tax rate to retail sales forecast.

Adjusting State Vehicle Registration Fees to Account for Inflation

This scenario explores the revenue potential of states adjusting vehicle taxes and fees to at least keep up with inflation, phasing in by 2010 and continuing thereafter. It was assumed that in 2007, 25 percent of the vehicle registration revenues will be adjusted for inflation, gradually increasing until all revenues are adjusted for inflation by 2010. The cumulative revenues from this option through 2017 are estimated at $33.4 billion.

Vehicle Excise Sales Taxes

This scenario estimates the revenue potential from implementing a 1 percent sales tax on vehicle sales. The analysis excludes those states already dedicating vehicle sales tax revenues to transportation,[7] and those states where sales taxes are not collected.[8] If states were to dedicate vehicles excise sales taxes for transportation (assume full phase in by 2010), approximately $67 billion would be raised through 2017.

Vehicle retail sales were estimated using the methodology described above for the Federal vehicle tax on light duty vehicles. Nationwide vehicle retail sales forecast were adjusted to discount vehicle retail sales from certain states to which this revenue option is not applicable,[9] that is, 1) states that currently are dedicating vehicle sales tax revenues to transportation, and 2) states that do not collect sales taxes.

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[7] The following states currently dedicate at least a portion of their sales tax on motor vehicles to transportation: Connecticut, Iowa, Kansas, Maryland, Michigan, Minnesota, Missouri, Nebraska, North Carolina, Oklahoma, South Dakota, and Virginia.

[8] Alaska, Delaware, Montana, New Hampshire, and Oregon do not collect statewide sales taxes.

[9] List of states in footnotes 7 and 8.

Authorize Flexible Tolling Provisions

Estimating the future revenue potential of toll projects through 2017 is decidedly conjectural, as it depends on anticipating the policy actions of the Federal government, 50 states, plus numerous counties, cities, and regional agencies. Building on work performed recently for the Federal Highway Administration (FHWA),[10,11] we have used the following methodology to estimate the potential scale of future toll revenues. Current trends in toll revenue were examined, active toll road proposals being advanced around the country were reviewed, and the potential impact of SAFETEA-LU legislation allowing increased tolling and pricing on the existing Interstate Highway System was considered. It is estimated that approximately $8.9 billion in additional revenues could be generated between 2007 and 2017 with a more aggressive toll road scenario. For purposes of this estimate, it was assumed that the annual growth rate in toll revenues would increase from the current 5 percent annually to 7.5 percent annually by 2015 and 10 percent growth annually by 2020. Our methodology takes into account the likelihood that projects on the drawing boards today may not open for five years or more from now. It also recognizes that today's new toll roads are charging rates that are considerably higher than those of long-established facilities such as state turnpike systems, and that some of the newer projects incorporate covenants to raise tolls over time to track inflation. The estimate assumes both more aggressive implementation of new toll roads and implementation of high-occupancy toll (HOT) lanes and new express toll lanes.

General State Sales Taxes for Transportation

Ten states currently dedicate a portion of general sales tax revenues for transportation, ranging from 1.7 percent to 20 percent of the total sales tax levies. This scenario estimates the revenue potential of dedicating one-half percent sales tax to transportation. If all states that impose sales taxes on goods were to dedicate one-half percent of state sales taxes collected to transportation by 2010, about $9.0 billion would be generated in 2010, increasing to $12.0 billion by 2017.

The methodology developed to calculate the revenue potential of a 1 percent sales tax on general retail sales is described as follows:

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[10] Federal Highway Administration, Office of Transportation Policy Studies. *Current Toll Road Activity in the U.S. – A Survey and Analysis.* Prepared by Benjamin Perez and Steve Lockwood. August 2006.

[11] Federal Highway Administration. *FHWA Future Directions of Innovative Finance.* Prepared by Cambridge Systematics with Mercator Advisors LLC. March 2005.

- **Estimate Projected Growth of Retail Sales –** Using 2004 Woods and Poole forecasts of Retail Sales (excluding auto and gasoline sales), we estimated the projected growth in retail sales (4.17 percent to 4.30 percent through 2017). In addition, Woods and Poole historical data was used to adjusted retail sales forecast to account only for those states that we are assuming the sales tax will be applied.

- **Forecast Retail Sales through 2017 –** U.S. Census Data shows that retail sales in 2005 were $2,368.4 billion (adjusted for states currently using general sales tax revenues for transportation and states without general sales taxes). Woods and Poole growth rates were applied to the net retail sales.

- Apply one-half percent sales tax to projected retail sales to estimate potential transportation funding.

Local Dedicated Taxes

In the last 10 years, dedicated fees at the local-level such as local options taxes have grown at over 8 percent. Our base case assumed that no fees except tolls would grow faster than the economy, i.e., GDP growth at 4.4 percent, over the next 10 years. If as an aggressive scenario, we assume localities were able to sustain the higher rate of growth for the next 10 years, $96 billion additional revenues could be generated.

Our assumption is that this local gap closing estimate would include a variety of measures such as local option taxes, value capture/beneficiary charges, and other miscellaneous fees often dedicated to transit (rental car taxes, leases, lottery, cigarette tax, etc.).

Appendix G

State Level of Effort Analysis

An analysis of state highway and transit funding was conducted to estimate funding levels based on four revenue measures: per capita, per 1,000 vehicle miles of travel (VMT), per $1,000 Personal Income, and per $1,000 Gross State Product (GSP). The funding level by measure for each state was compared to the national average.

Data sources used for this analysis include:

- FHWA Highway Statistics, Tables SF-1: State highway funding by state for fiscal year 2004;
- BTS Survey of State Funding for Public Transportation, Table 1.1: State Funding of Public Transit for 2004;
- U.S. Bureau of Census: 2004 population by state;
- FHWA Highway Statistics, Table VM-2: Vehicle-miles traveled (VMT) by state for fiscal year 2004; and
- U.S. Department of Commerce, Bureau of Economic Analysis: Personal Income and GSP by state for 2004.

After the four measures were calculated, we identified the states that fell below the national average for each criterion, and subsequently, we identified the states that fell below the national average for two or more of the criteria evaluated. Then, we estimated the additional revenue required to meet the national average of each criterion and calculate the average required revenue across the four criteria.

The analysis showed that the following states did not meet the national average in all four criteria: California, Florida, Georgia, Hawaii, Indiana, Missouri, New Hampshire, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Texas, and Wisconsin.

Table G.1 summarizes the results of the level of effort analysis. The 27 states that fell below the national average on two or more criteria would have to increase current highway funding levels by an additional $9.4 billion to achieve the average level of effort; additional funding requirements by state range from almost $15 million (New Hampshire) to almost $1.8 billion (California).

Of course there are many factors other than the four measures we selected that affect a particular state's needs and revenue picture. So this can only be considered a crude indicator. It is suggested that states identify appropriate peers and further analyze level of effort based on criteria that are most significant for their states.

Table G.1 State Highway and Transit Funding

(Per Capita, Per 1,000 VMT, Per $1,000 Personal Income, and Per $1,000 GSP)

State	Transportation Funds (Thousands)	Per Capita	Rank	Per Thousand VMT	Rank	Per $1,000 Personal Income	Rank	Per $1,000 GSP	Rank	States Below National Average (2 or more)	Additional Revenue (2004 Dollars)
Alabama	922,848	$203.93	41	$15.63	45	$7.36	31	$6.53	25	X	$231,686,498
Alaska	199,381	$303.12	13	$39.96	4	$8.92	16	$5.54	40		
Arizona	1,610,772	$280.63	18	$28.09	19	$9.79	10	$8.29	9		
Arkansas	617,775	$224.65	34	$19.52	37	$8.70	22	$7.47	15	X	$101,759,373
California	7,095,220	$197.96	42	$21.57	33	$5.62	45	$4.67	45	X	$1,760,739,385
Colorado	1,246,616	$270.90	22	$27.16	20	$7.50	30	$6.19	30		
Connecticut	893,544	$255.37	26	$28.27	17	$5.64	44	$4.90	44	X	$254,732,708
Delaware	588,852	$709.40	2	$63.31	3	$19.86	1	$11.26	3		
District of Columbia	432,043	$779.52	1	$115.46	1	$15.24	2	$5.57	39		
Florida	3,597,597	$206.93	39	$18.31	41	$6.58	40	$5.90	35	X	$604,696,682
Georgia	1,061,195	$118.99	50	$9.42	51	$4.00	51	$3.12	51	X	$1,180,193,701
Hawaii	212,338	$168.24	47	$21.83	32	$5.16	48	$4.23	49	X	$77,190,120
Idaho	317,238	$227.39	31	$21.54	34	$8.46	25	$7.29	19	X	$31,724,586
Illinois	3,438,791	$270.51	23	$31.51	11	$7.79	28	$6.44	26		
Indiana	1,041,456	$167.26	48	$14.32	49	$5.54	47	$4.54	46	X	$480,542,469
Iowa	1,146,304	$388.20	4	$36.35	6	$12.50	5	$10.40	4		
Kansas	750,898	$274.68	20	$25.74	21	$8.84	19	$7.59	14		
Kentucky	1,127,081	$272.12	21	$23.82	24	$9.98	8	$8.47	8		
Louisiana	949,790	$210.75	38	$21.29	35	$7.72	29	$5.93	34	X	$106,556,685
Maine	421,051	$320.19	10	$28.17	18	$10.66	7	$9.73	5		
Maryland	1,882,496	$338.50	6	$34.05	9	$8.54	23	$8.16	10		
Massachusetts	3,750,093	$585.28	3	$68.47	2	$13.88	3	$11.99	2		
Michigan	2,282,894	$225.94	32	$22.09	29	$7.04	35	$6.23	29	X	$174,068,461
Minnesota	1,621,201	$318.10	11	$28.66	15	$8.79	20	$7.22	21		
Mississippi	567,435	$195.62	44	$14.39	48	$7.98	27	$7.36	18	X	$264,819,352
Missouri	1,186,585	$206.02	40	$17.20	42	$6.76	38	$5.76	37	X	$224,818,494
Montana	217,309	$234.44	30	$19.39	39	$8.48	24	$7.88	13	X	$31,756,754

Table G.1 State Highway and Transit Funding (continued)

(Per Capita, Per 1,000 VMT, Per $1,000 Personal Income, and Per $1,000 GSP)

State	Transportation Funds (Thousands)	Per Capita	Rank	Per Thousand VMT	Rank	Per $1,000 Personal Income	Rank	Per $1,000 GSP	Rank	States Below National Average (2 or more)	Additional Revenue (2004 Dollars)
Nebraska	544,733	$311.68	12	$28.41	16	$9.64	11	$8.01	12		
Nevada	656,998	$281.62	17	$33.95	10	$8.34	26	$6.63	24		
New Hampshire	312,635	$240.64	28	$23.66	25	$6.57	41	$6.00	32	X	$14,967,996
New Jersey	2,623,535	$302.07	14	$36.02	8	$7.26	32	$6.39	27		
New Mexico	459,337	$241.37	27	$19.19	40	$9.22	13	$7.22	22	X	$63,315,752
New York	5,004,838	$259.58	25	$36.29	7	$6.78	37	$5.52	42	X	$515,774,522
North Carolina	2,355,849	$275.85	19	$24.56	23	$9.41	12	$7.27	20		
North Dakota	167,042	$262.52	24	$22.00	30	$8.90	18	$7.36	17		
Ohio	2,521,683	$220.23	35	$22.58	28	$7.07	34	$5.93	33	X	$168,771,014
Oklahoma	690,697	$196.02	43	$14.87	47	$7.04	36	$6.18	31	X	$213,360,252
Oregon	782,590	$217.91	36	$21.98	31	$7.13	33	$5.81	36	X	$62,731,727
Pennsylvania	4,079,175	$329.11	8	$37.75	5	$9.88	9	$8.80	6		
Rhode Island	177,998	$164.83	49	$21.01	36	$4.82	49	$4.25	48	X	$72,054,145
South Carolina	493,573	$117.58	51	$9.96	50	$4.32	50	$3.75	50	X	$476,597,410
South Dakota	255,216	$331.18	7	$29.05	14	$10.96	6	$8.59	7		
Tennessee	1,070,913	$181.72	45	$15.10	46	$6.09	43	$4.94	43	X	$377,945,903
Texas	3,867,720	$172.12	46	$16.74	43	$5.60	46	$4.28	47	X	$1,572,487,829
Utah	574,072	$237.15	29	$23.25	26	$8.91	17	$6.95	23	X	$20,990,481
Vermont	179,450	$288.86	16	$22.85	27	$9.09	14	$8.16	11		
Virginia	2,424,327	$324.05	9	$30.74	13	$8.96	15	$7.41	16		
Washington	1,399,168	$225.42	33	$25.13	22	$6.43	42	$5.53	41	X	$162,385,675
West Virginia	636,626	$351.23	5	$31.36	12	$13.62	4	$12.76	1		
Wisconsin	1,175,078	$213.51	37	$19.46	38	$6.64	39	$5.66	38	X	$174,305,984
Wyoming	150,917	$298.32	15	$16.30	44	$8.70	21	$6.26	28		
Total/ National Average	**$71,782,973**	**$244.45**		**$24.23**		**$7.40**		**$6.16**			**$9,420,973,958**