

The Future of Transportation Infrastructure Investments

Determining Best Practices for States' Funding and Financing Mechanisms



*A Report Prepared for Associated
Equipment Distributors*

Sarah Beason
Irina Calos
Meghan Stubblebine

The Future of Transportation Infrastructure Investments: Determining Best Practices for States' Funding and Financing Mechanisms

Sarah Beason
Irina Calos
Meghan Stubblebine

College of William & Mary
Thomas Jefferson Program in Public Policy
Williamsburg, Virginia

This report was prepared for
Associated Equipment Distributors (AED)

All findings and recommendations presented in this report are those of the authors and do not necessarily represent the views of AED, the Thomas Jefferson Program in Public Policy, or the College of William & Mary.

The authors of this report would like to thank Associated Equipment Distributors for this opportunity and for their advisement during this project. Further thanks are owed to this project's academic advisors, Dr. Sarah Stafford and Dr. Rui Pereira for their guidance, as well as the general support provided by the Thomas Jefferson Program in Public Policy at the College of William & Mary. The authors are also very grateful for the work and dedication of the project's research assistants, John Snouffer and Matthew Hough.

Foreword



There are several unfortunate truths surrounding surface transportation infrastructure in the United States. First, the nation's road, bridge, and transit investment needs are enormous. Second, the federal government, states, and municipalities are not investing enough to keep up with deteriorating conditions, let alone improve the transportation system. Third, the failure to invest adequately is having a negative impact on the U.S. economy, the environment, and public safety, and will undermine future economic growth and job creation. And fourth, the federal highway program is at risk of imminent collapse because user fee revenues coming into the Highway Trust Fund (HTF) are inadequate to support current transportation investment levels, let alone to expand the nation's transportation capacity.

The Congressional Budget Office reported in July 2013 that due to inadequate HTF resources, Congress "would need to reduce the authority to obligate funds in 2015 to zero in both the highway and transit accounts." In other words, this "Year Zero" scenario will put an entire year's worth of federal highway and transit investment at risk, create enormous uncertainty for transportation planners, and send economic shockwaves through the construction industry. Associated Equipment Distributors (AED) estimates Year Zero would jeopardize at least \$2.4 billion in equipment market activity (i.e., dealer revenue from sales, rental, and product support) and close to four thousand equipment dealership jobs.

The long-term outlook for the federal program is equally dim. An AED-sponsored report by researchers from the College of William & Mary's Thomas Jefferson Program in Public Policy (TJPPP) released in 2013 projected that over the next two decades, HTF revenues will fall \$365 billion short of the amount necessary to maintain annual federal highway spending at current levels adjusted for inflation (approximately \$40 billion per year).

Saving the federal highway program is AED's top policy priority for 2014. Getting the HTF back on firm fiscal footing will either require tens of billions of dollars in transfers from the general fund to the HTF, creating new user fee revenues (e.g., increasing the gas tax, implementing a vehicle miles traveled tax, etc.), or coming up with other new financing and funding strategies. With that in mind, one of the purposes of this report was to help inform the highway debate by helping lawmakers understand the full range of available sources of money. To do this, our research team conducted a comprehensive survey of all the ways all 50 states are paying for infrastructure. Beyond simply identifying who is doing what where, our researchers also dug down to help give insights about which mechanisms work and which do not. We hope this report proves useful as members of Congress and staff as they tackle the federal transportation crisis in the months ahead.

But whatever the outcome of the highway debate in Washington, D.C., it is clear that in the years ahead states will have to step up to the plate and invest more in infrastructure themselves. Thus, the other objective of this study was to create a tool to help equipment distributors and other transportation supporters advocate more effectively at the state level. Significantly, this report allows you to compare what your state is doing against how other states are raising money for infrastructure (the first thing you should look at is the state-by-state chart on the last page of the report). Armed with this information, AED members can engage aggressively with their state and local elected officials to educate them about the array of tools available to pay for infrastructure and to identify new revenue sources.

While we are very pleased with the data and ideas our researchers have brought to the table, the conclusions and proposals contained in this report are those of the researchers, not AED. As such, this document should not be regarded as a statement of association policy, objectives, or recommendations for highway and transit reauthorization legislation. We merely wish to inform the debate and give lawmakers fresh perspectives on how elected officials at every level of government can solve the nation's infrastructure crisis.

We thank our TJPPP researchers – Sarah Beason, Irina Calos, and Meghan Stubblebine - for their excellent work and thorough analysis. Thanks to William and Mary professors Sarah Stafford and Rui Pereira for supervising and coordinating the project. And a word of gratitude to 2012 AED Chairman Larry Glynn (Cummings, McGowan & West in St. Louis) for lighting the intellectual spark that led to this study and for his input along the way.

Finally, this report would not have been possible without the support of equipment distribution companies throughout the United States, who - by belonging to AED - have allowed the association to play a leadership role in the continuing surface transportation debate. We thank them for their involvement in the association, their financial support, and their confidence.

Christian A. Klein
Vice President of Government Affairs & Washington Counsel
Associated Equipment Distributors
Washington, D.C.
January 2014

Table of Contents

EXECUTIVE SUMMARY	7
INTRODUCTION	9
PART I. FUNDING MECHANISMS	12
I. Background on Infrastructure Funding	12
a. Federal Transportation Infrastructure Funding Mechanisms.....	12
b. Challenges.....	13
c. State Infrastructure Funding.....	15
II. Introduction to Infrastructure Funding Mechanisms	16
a. Fuel Taxes	18
b. Tolls	19
c. General Fund Revenues	20
d. Vehicle Registration, Licensing, Titling and Permitting Fees.....	20
e. Vehicle Miles Traveled Fees.....	20
f. Freight-related Fees and Taxes.....	21
III. Assessment of the Effectiveness of Current Funding Mechanisms.....	21
a. Fuel Taxes.....	22
i. Fuel Taxes: Virginia’s Comprehensive Overhaul of Taxing Mechanisms for Transportation Funding.....	32
b. Tolls	34
i. Tolls: The San Francisco-Oakland Bay Bridge	39
c. General Fund Revenues	41
i. General Fund Revenues Case Study: Trends in Wyoming.....	43
d. Vehicle Registration, Licensing, Titling and Permitting fees.....	44
i. Registration and Titling Fees: Maryland’s Approach.....	47
e. Vehicle Miles Traveled Fee	48
i. Vehicle Miles Traveled Fees: Oregon’s VMT Fee Trials.....	55
f. Freight-related Fees and Taxes.....	57
i. Motor Carrier Taxes: Texas’s Model.....	61
g. Conclusion of the General Assessment.....	62

IV. Recommendations to Increase Revenues from Funding Mechanisms.....	62
a. General Advice for All Funding Mechanisms	62
b. Fuel Taxes.....	63
c. Tolls.....	66
d. General Fund Revenues	68
e. Vehicle Registration, Licensing, Titling and Permitting Fees	68
f. Vehicle Miles Traveled Fee.....	68
g. Freight-Related Fees and Taxes.....	72
h. Concluding Recommendations Regarding Value Judgments.....	72
PART II. FINANCING MECHANISMS	74
I. Background on Infrastructure Financing.....	74
a. Federal Financing Mechanisms	74
II. Introduction to Surface Transportation Financing Mechanisms.....	76
a. State Revolving Funds (SRFs) and State Infrastructure Banks (SIBs).....	76
b. Public-Private Partnerships (PPPs).....	77
c. Bonds.....	80
III. Assessment of the Effectiveness of Current Financing Mechanisms	81
a. State Revolving Funds and State Infrastructure Banks.....	82
i. State Infrastructure Bank: Florida’s State Infrastructure Bank: A State Account	85
b. Public-Private Partnerships.....	87
i. Concession-based PPPs: Indiana Toll Road	92
ii. Infrastructure Investment Funds: Chicago Skyway	95
iii. Active Government Involvement: Virginia’s Infrastructure Growth.....	96
c. State-issued Bonds	99
i. Bonds: Texas’s Issuance of General Obligation Bonds.....	101
d. Conclusion of the General Assessment	104
IV. Recommendations to Increase Financing for Infrastructure	104
a. General Advice for All Financing Mechanisms	104
b. State Revolving Funds	106
c. Public-Private Partnerships	108
d. Bond Distribution	112

e. Concluding Recommendations Regarding Value Judgments	113
CONCLUSION	114
BIBLIOGRAPHY	116
APPENDIX	128
Appendix A: National Trends in Revenues from Funding Mechanisms	129
Appendix B: State Trends in Revenues from Funding Mechanisms	136
Appendix C: State Trends in Use of Funding Mechanisms	168

EXECUTIVE SUMMARY

A healthy transportation infrastructure provides significant benefits and spillover effects to public safety as well as economic growth and productivity, including prices. The vast majority of voters recognize that transportation infrastructure is very important. Unfortunately, the quality of U.S. roadway infrastructure has decreased drastically in recent years, falling from #5 in 2002 to #24 in 2011 in worldwide rankings for infrastructure quality. This infrastructure deterioration reflects the inadequacy of transportation funding investments. Although federal transportation funding, particularly the Highway Trust Fund, has increased since the 1950s, its real value has declined significantly in recent years. Federal funds account for a significant portion of transportation investment, with states responsible for almost half of transportation infrastructure revenues. In an era of tight federal budgets and growing debt, states will likely have to shoulder more of the burden. Therefore, states should implement innovative, sustainable, and flexible funding and financing mechanisms to facilitate transportation infrastructure investment.

States have an opportunity to capitalize on their use of funding mechanisms and increase their revenue source for transportation infrastructure. Generally, states should diversify funding sources to stabilize their revenue streams, focus on user fee based mechanisms, and accompany implementation efforts with educational initiatives. Beyond these general recommendations, states can improve the viability of specific funding mechanisms. States can rescue fuel taxes by increasing and indexing rates to preserve purchasing power. Indexing to construction costs may better account for changes in the purchasing power of states' transportation funds. Alternatively, states can index to the consumer price index or wholesale or retail prices of fuels. The fuel tax alone may not sufficiently sustain states' baseline revenue requirements for transportation infrastructure. A variety of other funding mechanisms are available as worthy options to supplement the gas tax. States can apply or establish sales taxes on fuel and transportation-related sales, such as tires and vehicle repair parts. Electronic tolling may be instituted to optimize collection of revenues and to adjust for congestion. Registration, licensing, titling, and permitting fees could be increased. More general funds should be dedicated to transportation funding. Beyond these traditional funding mechanisms, states should consider and conduct trials to explore the viability of the vehicle miles traveled fee—particularly if these fees also account for weight or number of axles.

Although funding mechanisms are always preferable in supporting transportation infrastructure, political realities and economic difficulties sometimes make raising revenues difficult. States should therefore consider using financing mechanisms to spur transportation infrastructure growth as well. There are three major financing mechanisms: state revolving funds, public-private partnerships, and bond distributions. In using these financing mechanisms, states should diversify investment means by using all available financing mechanisms. Otherwise, reliance on any one financing mechanism may reduce the long-term sustainability of available funds. States can improve their use of the three major mechanisms. First, state revolving funds must be properly managed. Fund managers should maintain interest rates above the level of inflation to allow the capital base to grow. States also must define project selection criteria to include a risk assessment of how likely an applicant is to pay back the loan. For public-private partnerships, states should strive to maximize upfront payments, ensure a consistent stream of revenue during the lifetime of the asset, and create a regular selection

process in order to choose the best projects rather than the ones first offered to the state. Many of the risks of public-private partnerships can be properly allocated with conscious risk sharing in the contractual agreements for these projects. Finally, although bonds are a less risky finance option, states still should use them responsibly by not overselling bonds to the point where the state is overstretched to pay back its debts.

This report offers a toolset to legislators on how to determine the best funding and financing mechanisms for their particular state. There is no perfect mechanism that can be used for every constituency. However, this report lays out the benefits and risks inherent in any funding and financing strategy, and can help legislators make an informed decision. Supporting roadway infrastructure is critical for the future of America. Whether legislators are interested in improvement of road safety or generation of economic activity, investment in American roads is a sound choice for working to meet these goals.

INTRODUCTION

Surface transportation infrastructure is inadequate even to maintain the U.S. highway system. As a result, almost a third of U.S. highways have fallen into “poor” or “mediocre” condition.¹ Traditional, accepted methods of surface transportation funding and financing are not being used to their full potential to maintain and improve infrastructure. Although total federal, state, and local expenditures on transportation infrastructure are around \$91 billion annually, the Federal Highway Administration (FHWA) estimates that this is \$79 billion short of the *annual* expenditures necessary to improve and sustain the system.² Other studies have found that the gulf between current revenues and outlays needed to both improve and maintain our surface transportation infrastructure is as high as \$185 billion per year.³

Failing to invest in improving pavement and bridges imposes significant costs on the economy. According to the American Society of Civil Engineers (ASCE), in 2010, it was estimated that deficiencies in our surface transportation infrastructure cost Americans nearly \$130 billion, and if trends continue, these costs will rise to \$210 billion in 2020 and \$520 billion *annually*, an increase of 82% and 351%, respectively.⁴ By 2020, cumulative costs would result in a near \$900 billion decrease in our GDP, and near \$2.7 trillion by 2040.⁵ Furthermore, deficient road infrastructure costs commuters an additional \$324 in operating costs on average.⁶ In Washington D.C., motorists pay an additional \$833.⁷ In addition, even delaying repairs disproportionately burdens the economy. The cost of reconstructing a road that has not been maintained for 25 years can be 3 times more than the cost of maintaining and preserving the same road, which could actually increase the life of the infrastructure.⁸

Congestion alone is currently costing the economy 3% of U.S. GDP.⁹ In 2012, 42% of the country’s major urban highways were congested, costing Americans over \$120 billion in wasted fuel and time—nearly \$820 for each person who regularly commutes by car and over \$100 billion in wasted fuel and lost time.¹⁰ In 2010, drivers wasted 1.9 billion gallons of fuel and spent 4.8 billion hours sitting in traffic.¹¹

More significantly, insufficient transportation infrastructure reduces America’s economic competitiveness on the global stage. Since 1960, the U.S. has decreased its spending on transportation infrastructure as a percentage of its GDP by 50% to only 2%. By contrast, China,

¹ American Society of Civil Engineers, *Report Card for America’s Infrastructure*, (2013), 48.

² Ibid. 50

³ National Conference of State Legislatures, *On the Move: State Strategies for 21st Century Transportation Solutions*, (2012), 4.

⁴ American Society of Civil Engineers, *Failure to Act: The Economic Impact of Current Investment Trends in Surface Transportation Infrastructure*, (2011), 4.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

⁸ ASCE, *Report Card for America’s Infrastructure*, (2013), 49.

⁹ NCSL, *On the Move*, 30

¹⁰ David Schrank, Bill Eisele, and Tim Lomax, Texas A&M Transportation Institute, *TTI’s 2012 Urban Mobility Report*, (December 2012), 12.

¹¹ Ibid.

India, and Europe, spend close to 9%, 8%, and 5% of their GDP on infrastructure, respectively.¹² Accordingly, the World Economic Forum's Global Competitiveness Report placed the United States 24th out of all countries in the quality of its infrastructure in 2011.¹³

Adequately funding America's highways will more than just reverse funding shortfalls—it will actually spur job growth and economic activity far beyond the initial investment. Moody's Analytics estimates that for every dollar invested in infrastructure spurs a \$1.59 increase in GDP.¹⁴ The San Francisco Federal Bank places this figure higher for highway investments, and estimates that every \$1 of highway spending increases GDP by \$2.¹⁵ Securing funding and reinvesting in our infrastructure now will also avoid ballooning costs associated with insufficient investment. Ultimately, investment in surface transportation will have positive spillovers that will affect every facet of the economy. In addition to spurring economic development, transportation infrastructure investment is also projected to “raise property values, which reflects an improvement in living standards.”¹⁶ States' investing in transportation can also create jobs, from 13,000 to 27,800 for every \$1 billion in highway infrastructure investment.¹⁷ Conversely, if funding continues at current pace, ASCE estimates that there will be 3.5 million fewer jobs than there would be with sufficient levels of investment. Improving infrastructure and reducing stop-and-go congestion may also benefit the environment by decreasing emissions up to 12%.¹⁸

To make these investments, states cannot rely on federal funding alone. Federal funding for state-administered transportation infrastructure is already insufficient and is likely to decrease given long-term structural problems with the federal Highway Trust Fund (HTF). More importantly, 73% of state lawmakers are pessimistic about federal transportation funding assistance, rating the federal government's involvement as “poor” or “needs improvement.”¹⁹ Therefore, states must play an even greater role in transportation infrastructure funding reform.²⁰ However, more than half of state infrastructure personnel assert that their state does not have “a strategic investment plan for infrastructure.”²¹

This report evaluates how states can adequately invest in their highway infrastructure by developing a strategic transportation infrastructure investment plan using funding and financing

¹² U.S. Department of the Treasury (U.S. DOT) and the Council of Economic Advisors, *A New Economic Analysis of Infrastructure Investment*, March 23, 2012, 30. <http://www.treasury.gov/resource-center/economic-policy/Documents/20120323InfrastructureReport.pdf>.

¹³ United States Conference of Mayors, *U.S. Metro Economies Outlook—Gross Metropolitan Product, and Critical Role of Transportation Infrastructure*, (July 2012), 6.

¹⁴ Bradley D. Belt and Joshua Nimmo, Milken Institute, *Catalyzing Pension Fund Investment in the Nation's Infrastructure*, (April 2013), 6.

¹⁵ Sylvain Leduc and Daniel Wilson, Federal Reserve Bank of San Francisco, “Highway Grants: Roads to Prosperity?” *FRBSF Economic Letter*, November 26, 2012, <http://www.frbsf.org/economic-research/publications/economic-letter/2012/november/highway-grants/>.

¹⁶ *Ibid.* 9.

¹⁷ Belt & Nimmo, Milken Institute, *Catalyzing Pension Fund Investment in the Nation's Infrastructure*, 4.

¹⁸ U.S. DOT, *A New Economic Analysis of Infrastructure Investment*, 20.

¹⁹ National Conference for State Legislatures, *State Legislative Infrastructure Priorities 2012-2013*, (October 2012), 4.

²⁰ U.S. Environmental Protection Agency, *Infrastructure Financing Options for Transit-Oriented Development*, (2013), 6.

²¹ NCSL, *State Legislative Infrastructure Priorities 2012-2013*, 4.

mechanisms. To evaluate each mechanism, the report considers revenue sustainability and stability; political viability; timelines; ease and cost of administration; whether the mechanism promotes efficient use; negative or positive externalities; and equity and fairness concerns.

Funding mechanisms are direct revenue streams or sources for infrastructure development. Governments typically rely on funding mechanisms such as gasoline taxes, vehicle registration fees, and tolls to raise revenue to fund transportation, which have historically provided significant revenue. These traditional funding mechanisms alone, however, are insufficient and can “limit the flexibility and cost-effectiveness of infrastructure” funding.²² For example, the gas tax is poised to lose its viability in 15 years.²³ Furthermore, operators are paying less than the true cost of their use of highways based on stagnate user fee rates, which essentially encourages overuse. In turn, this presents more costs especially based on population growth projections from 313 million in 2012²⁴ to over 420 million in 2050.²⁵ As a result, insufficient and unindexed gas taxes, increasing miles traveled coupled with decreasing gasoline use, and increasing construction costs have undermined the real value of these mechanisms.

Governments may also rely on financing mechanisms to leverage their funds through innovative partnerships with the private sector, state infrastructure banks, and revolving funds. Unlike funding mechanisms that represent direct revenue sources, however, financing mechanisms allow governments to leverage funds for transportation investment needs without simultaneously providing the underlying funds to support the investment upfront; instead, states must rely on funding or other financing mechanisms for the funds to leverage. Furthermore, leveraging these funds is costly and diverts funds away from highway investment. More than 20% of eight states’ highway revenues were used to service their transportation financing debt.²⁶ In 2011, total debt servicing for states amounted to \$7.5 billion, or 5% of total disbursements of state funds for highways.²⁷ Additionally, the failure to adequately leverage funds, insufficient cooperation with the private sector, and overreliance on federal action and funds have all resulted in underinvestment.

By adopting a strategic plan that incorporates both funding and financing mechanisms that are reliable and sustainable based on the recommendations below, states can begin to better provide for the public health and safety of its drivers as well as encourage economic growth.

²² U.S. DOT, *A New Economic Analysis of Infrastructure Investment*, 1.

²³ American Association of State Highway and Transportation Officials “Perspective on the future of transportation infrastructure,” Presented at the DHS Aging Infrastructures Workshop in New York, New York, (July 23, 2009), 11.

²⁴ Census, “Population Estimates, National Totals: Vintage 2012,”

<http://www.census.gov/popest/data/national/totals/2012/index.html>.

²⁵ Juong Lee, American Association of State Highway Transportation Officials, “Opportunities in Freight Infrastructure Financing,” Presented at the 2nd Annual Bi-State Regional Freight Summit, Fort Smith, Arkansas, November 18, 2009, 12, <http://www.transportation.org/Documents/Lee-2009-11-18.pdf>.

²⁶ Smart Growth American & Taxpayers for Common Sense, *Repair Priorities: Transportation Spending Strategies to Save Taxpayer Dollars and Improve Roads*, (June 2011), 13.

²⁷ See Appendix A.

PART I. FUNDING MECHANISMS

I. Background on Infrastructure Funding

The first section of this Part briefly outlines the federal government's role in highway infrastructure investment and introduces the challenges that states face as a significant provider of highway funding. Section II addresses the various traditional and nontraditional funding mechanisms that are available to states. Finally, Section III evaluates these mechanisms and makes recommendations about which funding mechanisms states should favor.

a. Federal Transportation Infrastructure Funding Mechanisms

The federal government has been a significant source of funding for surface transportation infrastructure investment throughout the nation. The portion of overall highway spending that the federal government has accounted for has ranged from 17% in the late 1950s to above 30% in the 1960s.²⁸ The long-term average for federal funding of highways has been 25%.²⁹ Up to 98% of federal funds are raised from user fees such as fuel taxes.³⁰ The 2% to 3% of federal funds that come from non-user fees are generally sourced from general funds or interagency transfers.³¹

The primary source of federal funding for state highway investments is the Federal-Aid Highway Program, funded through the HTF.³² For example, the HTF represented almost 90% of federal surface transportation funding in 2007.³³ The HTF is a user-supported fund that relies on fuel taxes and other user fees. Historically, the HTF has been able to provide reliable, stable, and substantial funding based on these funding mechanisms. For every cent per gallon that the federal government taxes on gas, diesel, and alternate fuels, approximately \$1.8 billion is deposited into the HTF every year.³⁴ Of the \$1.8 billion raised from a one cent tax on motor fuels, \$1.4 billion is raised from the tax on gasoline alone and the remaining funds are raised from taxes on diesel, liquefied petroleum gas, and various natural gas-derived fuel sources.³⁵

Revenue sources for the HTF have expanded beyond user fees, but they still account for the vast majority (89%) of the revenue deposited in the Fund.³⁶ HTF also relies on various other taxes for revenue that are not roadway user fees. The federal sales tax of 12% on the retail price of trucks and semitrailer chassis and bodies over 33,000 pounds gross vehicle weight (GVW) and trailers over 26,000 pounds GVW provided \$3.8 billion to the HTF in 2007.³⁷ The federal

²⁸ National Surface Transportation Infrastructure Financing Commission (NSTIF), *Paying Our Way: A New Framework for Transportation Finance*, (March 2009), 35.

²⁹ *Ibid.*

³⁰ *Ibid.* 36.

³¹ *Ibid.* 36.

³² "The Highway Trust Fund," Federal Highway Administration, accessed Nov. 9, 2013 <http://www.fhwa.dot.gov/policy/olsp/financingfederalaid/fund.cfm>.

³³ NSTIF, *Paying Our Way*, 38.

³⁴ *Ibid.* 40.

³⁵ *Ibid.* 39; The Highway Trust Fund."

³⁶ "The Highway Trust Fund."

³⁷ NSTIF, *Paying Our Way*, 41; "The Highway Trust Fund."

Heavy Vehicle Use tax imposes an annual tax of \$100 for trucks 55,000 GVW and an additional \$22 for each 1,000 pounds in excess, capping the tax at \$550 per year; in 2007 this tax raised \$1 billion for the Fund.³⁸ The federal government also relies on an excise tax on tires at 9.45 cents per each 10 pounds in excess of 3,500 pounds and accounted for \$500 million in the HTF.³⁹ In addition, the HTF receives revenue from the payments of certain penalties and fines. Since 1984, payments for motor carrier safety fines and penalties have been allocated to the Fund.⁴⁰ Penalties for certain Internal Revenue Code violations related to highway-user taxes also have been allocated to the HTF since 2004.⁴¹

These funds allow the federal government to support much needed highway investment. For most projects that benefit from federal aid covers 80% of a state-supported project's costs, and state and local funding provide the remaining 20%.⁴²

b. Challenges

The HTF, as mentioned above, heavily relies on motor fuel taxes for the vast majority of its revenue stream. These fuel taxes, however, have lost value for numerous reasons. Generally, federal fuel tax rates are fixed and are infrequently adjusted to account for inflation or construction costs, which greatly impact the purchasing power of these revenues.⁴³ The federal excise taxes on gasoline and diesel were last adjusted in 1993 and have remained at 18.4 and 24.4 cents per gallon respectively since then.⁴⁴ The federal tax on gasohol was last increased in 2003 to match the gas tax at 18.4 cents per gallon.⁴⁵ Furthermore, the fact that government investment has increased nominally does not accurately portray the real purchasing power of those funds. Instead, the National Surface Transportation Infrastructure Financing Commission (NSTIF), accounting for an increase of almost 50% in vehicle miles traveled since 1988, calculated a 7% decrease in real highway spending since 1988.⁴⁶ As shown in Figure 1, this has resulted in much smaller expenditures per mile traveled. Similarly, accounting for increasing construction costs, the Institute on Taxation and Economic Policy (ITEP) estimated that the federal gas tax has lost 33% of its purchasing power since 1993.⁴⁷

³⁸ NSTIF, *Paying Our Way*, 41.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Federal Highway Administration (FHWA), *Federal-aid Program Overview: Funding Basics and Eligibility 2* (Aug. 2012), available at <http://www.fhwa.dot.gov/federal-aidessentials/companionresources/44funding.pdf>.

⁴³ NCSL, *On the Move*, 5.

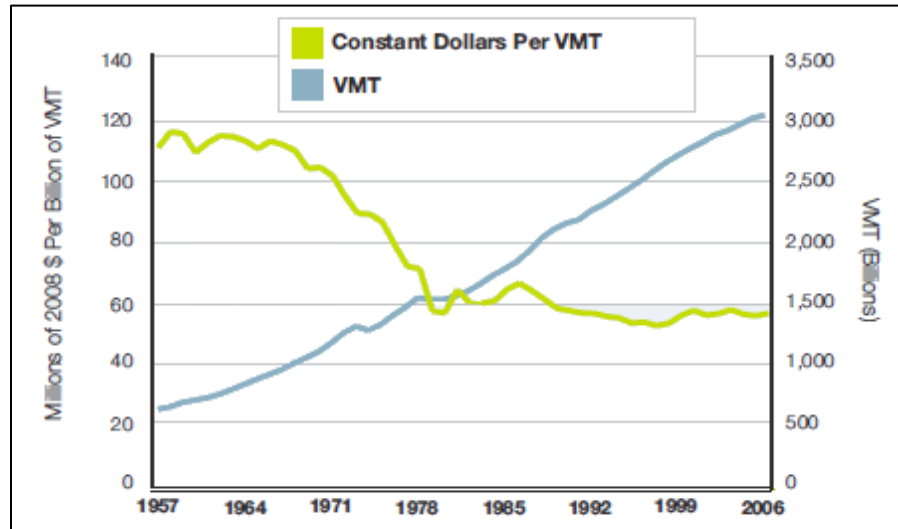
⁴⁴ U.S. Energy Information Association (EIA), "Explanatory Notes," *Petroleum Marketing Monthly*, tbl. EN1 (November 2013), <http://www.eia.gov/petroleum/marketing/monthly/pdf/mgt.pdf>.

⁴⁵ Ibid.

⁴⁶ NSTIF, *Paying Our Way*, 34.

⁴⁷ NCSL, *On the Move*, 5.

Figure 1: Vehicle Miles Traveled Adjusted Highway Spending, 1957-2006



Source: National Transportation Infrastructure Financing Commission (using VMT fee data from FHWA Highway Statistics)

In addition, increasing fuel efficiency and the use of alternative fuels further diminishes the value of fuel taxes.⁴⁸ The U.S. Energy Information Agency (EIA) has estimated that fuel efficiency for most vehicles will increase by a third by 2030, *assuming* that there is no significant technological advancement or major shift in public transportation behavior based on concerns about climate change or fuel price volatility.⁴⁹ More importantly, the Congressional Budget Office (CBO) has projected that increasing fuel efficiency, which the government has encouraged, may result in gas tax revenues being diminished by 21% by 2040.⁵⁰

Despite diversifying its revenue sources over time to rely on more than merely fuel taxes, the stability and adequacy of the HTF has continued to diminish in recent years.⁵¹ Although total spending on highway spending across all levels of government increased 38% from 1988 to 2006—that is, from \$125 billion to \$172 billion—government investment has not kept up with increasing infrastructure needs.⁵² In fact, the American Association of State Highway and Transportation Officials (AASHTO) has estimated that the federal government needs to spend between \$225 billion and \$340 billion per year.⁵³ Ultimately, AASHTO projects a federal funding gap of \$400 billion for surface transportation investment through 2016 based on 2011 spending figures.⁵⁴ Other estimates project that annual spending at all government levels must increase at least \$57 billion to as much as \$118 billion just to maintain the current federal and

⁴⁸ Ibid.

⁴⁹ NSTIF, *Paying Our Way*, 41, 46.

⁵⁰ NCSL, *On the Move*, 5.

⁵¹ NSTIF, *Paying Our Way*, 38.

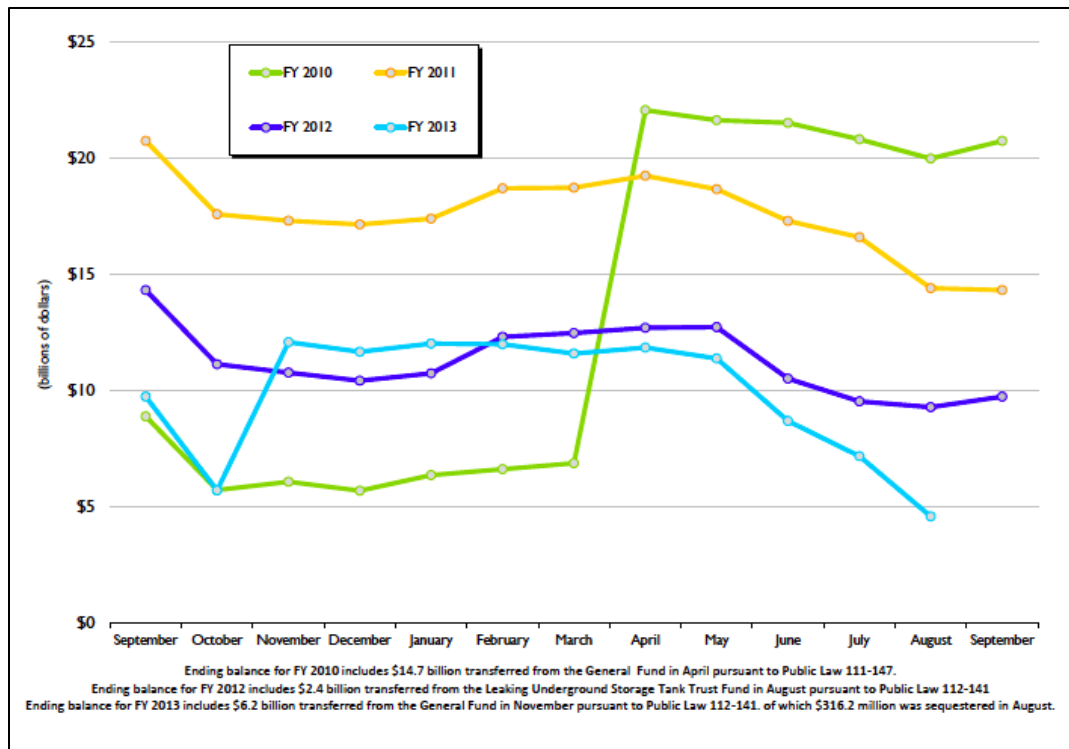
⁵² Ibid. 34.

⁵³ This includes not only highway investments but also bridge, public transportation, freight rail, and intercity passenger rail. Joung H. Lee, Associate Director for Finance and Business Development, AASHTO, *Revenue Sources to Fund Transportation Needs* 13 (Feb. 16, 2011).

⁵⁴ Ibid. 15.

state transportation infrastructure.⁵⁵ To improve the system as well as maintain it, governments must spend an additional \$113 billion to \$185 billion per year.⁵⁶

Figure 2: Federal Highway Account Balance, Fiscal Years 2010-2013



Source: Federal Highway Administration

Although the federal government dedicated funds to transportation projects to encourage investment during the economic recession, the impact of those funds was very limited. For example, the American Recovery and Reinvestment Act of 2009 allocated almost \$48 billion for transportation projects, but this did not cover the funding gap for even a single year.⁵⁷

c. State Infrastructure Funding

States commit about twice as much as funding for highway infrastructure than the federal government.⁵⁸ Like the federal government, every state has fuel taxes and has heavily relied on those taxes for highway investments. Fuel taxes provide almost 40% of highway revenues in most states.⁵⁹ And like the federal government, this reliance is undermining the continued stability and reliability of states' highway revenues. Many states rely on fixed rate fuel taxes that have remained constant and thus lose purchasing power because they do not account for inflation

⁵⁵ NCSL, *On the Move*, 4.

⁵⁶ *Ibid.*

⁵⁷ *Ibid.* 5.

⁵⁸ *Ibid.*

⁵⁹ *Ibid.*

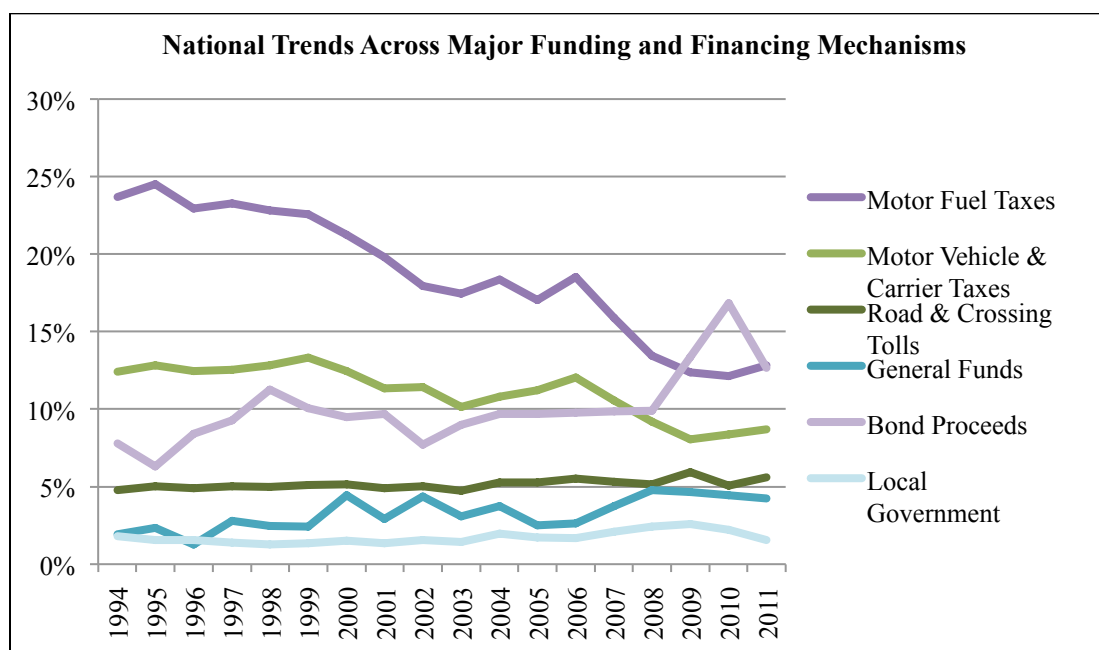
or increased construction costs. ITEP estimated that states' tax rates have effectively decreased by 20% since states' last gas tax increases after accounting for increased construction costs, which means that the purchasing power of fuel tax revenues has declined by \$10 billion per year nationwide.⁶⁰

The declining value of federal funding for highway infrastructure heightens the importance of state funding, and the financial crisis has further stressed state resources. In fiscal year 2010, 17 states cut their transportation budgets midyear.⁶¹ Nevertheless, states must implement flexible and cost-effective funding mechanisms to promote highway infrastructure investment to promote public safety as well as economic growth and development.

II. Introduction to Infrastructure Funding Mechanisms

There are numerous funding mechanisms that states can and do use to generate revenue streams for transportation infrastructure investment. These mechanisms are most easily categorized as traditional and nontraditional funding mechanisms. In many ways, this categorization is based on whether a mechanism is commonly used. Major traditional funding mechanisms include fuel taxes; tolls; general fund revenue; and vehicle registration, licensing, and permitting fees. The only major nontraditional funding mechanism is the vehicle miles travelled (VMT) fee. This Section will address each of these mechanisms in greater detail below.

Figure 3: Revenues from Major Funding Mechanisms



Source: Federal Highway Administration Data

⁶⁰ Ibid.

⁶¹ AASHTO, *Revenue Sources to Fund Transportation Needs*, 5.

Other noteworthy traditional funding mechanisms include inspection fees, advertising fees, rental car taxes, state lottery gaming funds, oil company taxes, vehicle excise taxes and other transportation-related taxes. For example, some states raise advertising revenue by leasing interior and exterior space to advertising companies, and some state transportation departments have considered directly collecting the funds without having to operate through an advertising company. However, the opportunities to implement direct collection and potential revenue seem limited.⁶² Similarly, the sale of naming rights for highways and transit stations have been used to raise revenues, but they are not substantial sources of revenue for states transportation funds.⁶³ Moreover, they raise important concerns of overcommercializing certain historic or popular facilities or of inviting potentially objectionable names.⁶⁴ Several states also rely on rental car taxes, but states such as Wisconsin, Arkansas, Florida, and Pennsylvania dedicate the revenues to transit.⁶⁵ New York, however, does dedicate its revenue from rental car taxes to highway funding, specifically the Dedicated Highway and Bridge Trust Fund.⁶⁶

Transportation-related excise taxes are another revenue source for transportation infrastructure. In particular, battery or tire taxes can be imposed either as a percentage of sales prices or a flat fee, in addition to a general sales tax. These revenues could be used to fund transportation (rather than just the disposal costs of batteries and tires), especially when considered to be a proxy user fee: the more one drives, the more batteries and tires that need replacing.⁶⁷ Excise taxes on other transportation-related goods, such as automobile parts or repairs, are another alternative. Twelve states have an excise tax on cars, with a promising overall growth potential for revenue.⁶⁸ Such taxes could be more regressive than a general sales tax given the weight of such services for used cars, and they are not likely to affect driving.⁶⁹ Sixteen states impose a value-based property tax on motor vehicles, although it mainly generates local revenue.⁷⁰ Yet this revenue is not generally earmarked for transportation, and they have generally proven unpopular: few states now impose such property taxes.⁷¹ States also rely on other types of taxes to raise transportation revenue, such as vehicle rental taxes and bicycle taxes.⁷²

Additional nontraditional funding mechanisms include emissions fees; impact fees; transportation utility fees, such as parking; and traffic camera fees. Emission fees could be imposed on the amount of pollution a vehicle emits, but measuring the actual amount of emissions is difficult; proxies could include a fee based on fuel efficiency or type of fuel.⁷³ Countries in Western Europe calculate added or adjusted vehicle taxes and fees according to CO₂ emissions per kilometer driven, with the intent of encouraging manufacturers to produce vehicles

⁶² David L. Sjoquist et al., *Implications of Alternative Revenue Sources for Transportation Planning* (Dec. 2011), 17-18, <http://www.dot.ga.gov/doingbusiness/research/projects/documents/10-15.pdf>.

⁶³ Ibid.

⁶⁴ Ibid.

⁶⁵ Sean Slone, The Council of State Governments, *Transportation & Infrastructure Finance*, 16.

⁶⁶ Ibid.

⁶⁷ Sjoquist et al., *Implications for Alternative Revenue for Transportation Planning*, 52.

⁶⁸ Ibid. 46.

⁶⁹ Ibid. 47.

⁷⁰ Ibid. 45.

⁷¹ Ibid.

⁷² NSTIF, *Paying Our Way*, 78, 95.

⁷³ Sjoquist et al., *Implications for Alternative Revenue for Transportation Planning*, 49-50.

that discharge fewer air pollutants.⁷⁴ Alternatively, states can charge developers transportation impact fees to fund the transportation infrastructure that supports their development; generally, this revenue can be allocated only to fund development-related transportation projects and may not be used to fund existing transportation deficits.⁷⁵ States may also impose transportation utility fees, which are assessments on property designed to estimate transportation demand, to spread the costs of funding local roads or other such transportation that approximates a user fee.⁷⁶ The actual fee could be a flat fee for each property related to transportation or based on a formula including units of housing, number of parking spaces, or square footage.⁷⁷ The actual amount of revenue depends on local usage, and implementing such fees may require legislative approval, feasibility studies, and environmental clearance based on what is provided and the state or locality.⁷⁸ Lastly, several states have installed traffic cameras to collect fines for traffic violations. Generally, the cameras are used to detect vehicles speeding or running red lights and have produced a substantial stream of revenue, with each intersection averaging \$39,000 to \$50,000 annually in collected fines.⁷⁹ Illinois, for example, estimated that \$50 million in profit could be raised for the state from traffic camera collected fines.⁸⁰ At least six states, however, have limited or banned the use of traffic cameras due to privacy and legality concerns.⁸¹ Moreover, most states allocate these revenues to general funds, not transportation funds.⁸²

States have many options to pursue in their efforts to increase revenues to dedicate roadway infrastructure. States are most likely to use a combination of some of the available major traditional and nontraditional funding mechanisms: fuel taxes; tolls; general fund revenue; and vehicle registration, licensing, and permitting fees; and the VMT. These major mechanisms are explained more in depth below.

a. Fuel Taxes

The largest single source of transportation infrastructure funding is the fuel tax on gasoline, diesel, and alternative sources. In fact, every state imposes an excise tax on motor fuels.⁸³ States heavily rely on these traditional revenue sources for up to 40% of their highway revenue.⁸⁴ More importantly, many states require fuel tax revenues to be spent on transportation. Constitutions or laws, in almost 30 states, require fuel tax revenues to be allocated to highway or other transportation infrastructure projects.⁸⁵ Other states require revenues to be used for only the transportation mode from which they were raised, whereas other states allow the revenues to be

⁷⁴ NGA, *How States and Territories Fund Transportation*, 17.

⁷⁵ U.S. Environmental Protection Agency, *Infrastructure Financing Options for Transit-Oriented Development* (2013), B-49.

⁷⁶ *Ibid.* B-4.

⁷⁷ *Ibid.*

⁷⁸ *Ibid.* B-4-5.

⁷⁹ NGA, *How States and Territories Fund Transportation*, 17

⁸⁰ *Ibid.*

⁸¹ *Ibid.*

⁸² *Ibid.*

⁸³ NGA, *An Infrastructure Vision for the 21st Century* (2009), 17.

⁸⁴ NCSL, *On the Move*, 5.

⁸⁵ NGA, *An Infrastructure Vision for the 21st Century*, 17.

used to fund multimodal transportation projects.⁸⁶ Nevertheless, some states do not limit fuel tax revenues to highway spending. For example, one fourth of Texas's gas tax revenue is dedicated to public schools.⁸⁷ Alaska's constitution, however, does not allow dedicated revenues at all.⁸⁸

Currently, the average state excise tax on gasoline is 23.52 cents per gallon and 23.48 cents per gallon on gasohol; both ranging from 8 cents per gallon in Alaska and Georgia to 38.16 cents per gallon in California.⁸⁹ In addition to taxing gas-derived fuel sources, every state taxes diesel fuel. The current average state excise tax on diesel is 24.32 cents per gallon, ranging from 8 cents per gallon in Alaska and Georgia to 54.90 cents per gallon in Connecticut.⁹⁰ Most states—27 states—also have taxes on some form of alternative fuel, including ethanol, natural gas, propane, hydrogen, electricity or biodiesel.⁹¹

Fuel taxes not only vary by fuel source but also by how they are levied. Thirty-three states rely on a fixed-rate tax, which means that a flat fee is imposed that usually takes the form of cents per gallon.⁹² Approximately 16 states have variable fuel taxes.⁹³ Six states have indexed their fuel taxes to inflation to account for purchasing power,⁹⁴ whereas a few states' fuel taxes are indexed to increases in the cost of building and maintaining transportation facilities.⁹⁵ Meanwhile, fourteen states have variable rates based on the fuel source's wholesale or retail price.⁹⁶

b. Tolls

Thirty-three states collect tolls on state highway systems as well as on roads, tunnels, and bridges.⁹⁷ Two general categories of tolls are (1) those on existing facilities and (2) toll funding for new highway and bridge capacity. The successful tolling of existing facilities has occurred in the conversion of High Occupancy Vehicle (HOV) lanes to High Occupancy Tolloed (HOT) lanes.⁹⁸ Alternately, tolls can be used for building and operating *new* highway facilities. These tolls provide revenue to maintain this road network and retire the bonds issued to pay for its capital cost of building.⁹⁹

⁸⁶ AASHTO & NCSL, *Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation* (2011), 28-29.

⁸⁷ *Ibid.*

⁸⁸ *Ibid.*

⁸⁹ EIA, "Explanatory Notes."

⁹⁰ *Ibid.*

⁹¹ NCSL, *On the Move*, 8.

⁹² Institute for Taxation and Economic Policy (ITEP), *State Gasoline Taxes: Built to Fail, but Fixable* (July 2013), 7.

⁹³ Citizens for Tax Justice (CTJ), "Good News for America's Infrastructure: Gas Taxes are Going Up on Monday," (Jun. 27, 2013),

http://www.ctj.org/taxjusticedigest/archive/2013/06/good_news_for_americas_infrast.php#.UoGhgPmkry4.

⁹⁴ NGA, *How States and Territories Fund Transportation*, 7.

⁹⁵ *Ibid.*

⁹⁶ ITEP, *State Gasoline Taxes: Built to Fail, but Fixable*, 6.

⁹⁷ NGA, *How States and Territories Fund Transportation*, 8.

⁹⁸ *Ibid.*

⁹⁹ *Ibid.*

A newer approach to direct fees is “road pricing”: tolling schemes that ration scarce road space by discouraging demand and encouraging competition of facilities and services. When applied to entire road networks in central city areas, road pricing is known as “cordon pricing.”¹⁰⁰ Alternatively, “congestion pricing” is a tactic states have adopted to charge users to drive in certain areas, with the option of setting certain times.¹⁰¹ These schemes can vary by time of day based on set timeframes or in response to traffic congestion, as well as by type of vehicle.¹⁰² Various vehicle lanes can be targeted for these schemes, including truck-only toll lanes (TOT) or shared-use lanes like High Occupancy or Express Toll Lanes in which tolled vehicles share lanes with nontolled high occupancy lanes or express buses.¹⁰³

c. General Fund Revenues

Several states also rely on their general fund revenue to fund transportation investment. The general fund revenue is raised through traditional methods for any state funding need, such as sales taxes, property taxes, income taxes, and other state taxes and fees.¹⁰⁴ Overall, general funds account for up to 4% of states’ highway spending.¹⁰⁵

d. Vehicle Registration, Licensing, Titling and Permitting Fees

Like fuel taxes, every state collects registration fees for vehicles, trailers, and related transportation equipment.¹⁰⁶ The state imposes a small fee for titling, registering, licensing or permitting a motor vehicle in the state.¹⁰⁷ States’ implementation of these fees can vary widely from a flat-fee system to a schedule of rates.¹⁰⁸ Some states have applied higher fees for specific highway users such as heavy trucks, first-car registrations, or car rentals.¹⁰⁹

These fees also have been used to capture alternative fuel vehicles that contribute less to highway infrastructure by avoiding the gas tax. At least nine states have an annual flat fee for vehicles powered by alternative fuels, and some states have a special registration or license fee for alternative fuel vehicles.¹¹⁰

e. Vehicle Miles Traveled Fees

A VMT fee is the most direct manifestation of the user fee principle. VMT fees, a type of mileage-based pricing, charge drivers based on actual use of the state’s highway infrastructure.¹¹¹ There are numerous variations of the VMT fee system. The most basic iteration of VMT fees

¹⁰⁰ Ibid.

¹⁰¹ Ibid. 11.

¹⁰² Ibid.

¹⁰³ Ibid.

¹⁰⁴ Sjoquist et al., *Implications of Alternative Revenue Sources for Transportation Planning*, 17-18.

¹⁰⁵ NGA, *Innovative State Transportation Funding and Financing* (2008), 7.

¹⁰⁶ Slone, *Transportation & Infrastructure Finance*, 12.

¹⁰⁷ Sjoquist et al., *Implications of Alternative Revenue Sources for Transportation Planning*, 48.

¹⁰⁸ NSTIF, *Paying Our Way*, 75.

¹⁰⁹ NGA, *How States and Territories Fund Transportation*, 7.

¹¹⁰ NCSL, *On the Move*, 8-9.

¹¹¹ NGA, *How States and Territories Fund Transportation*, 7.

charge drivers a fee per mile traveled, whereas other variations impose fees that also account for the vehicle's weight or time and location, as well as miles traveled.¹¹² VMT fee collection methods also vary—fees can be collected through a GPS receiver in a vehicle¹¹³ or fees can be collected at the fuel pump where mileage is wirelessly transmitted when the vehicle is refueling.¹¹⁴

Although VMT fees have only recently been considered seriously by most states, proponents of the fee project that VMT fees will replace fuel taxes as the future of transportation funding. VMT implementation will require states to set specific policy frameworks on how they should collect taxes, calculate mileage, transmit data, if they should replace fuel taxes, and if such fees should be voluntary or required, especially based on significant privacy concerns.¹¹⁵

f. Freight-related Fees and Taxes

There are a variety of fees that states impose on motor carriers, or operators that transport freight. Generally, the FHWA data on state-imposed fees and taxes on motor carriers included special gross receipt taxes, distance and weight-distance taxes, license taxes, flat business or occupation license fees, certificate and permit fees, as well as any other special fee or tax imposed on motor carriers.¹¹⁶

Specifically, funding mechanisms associated with the freight industry include container fees that charge a fee for every container that enters the United States through ports;¹¹⁷ tonnage or ton-mile fees that assess fees on freight vehicles based on their weight;¹¹⁸ and waybill or bill of lading taxes that are “taxes or fees on the cost of transportation service.”¹¹⁹ In addition, states can levy surcharges on fuel taxes, excise taxes on tires, or taxes on truck lanes. Moreover, the freight context may be a popular platform for the recommended VMT mechanism that would be based not only on miles traveled but also weight.¹²⁰

III. Assessment of the Effectiveness of Current Funding Mechanisms

States have a variety of funding mechanisms to choose from to increase their revenues. Although there are dozens of minor funding mechanism options to choose from, only the major funding mechanisms are evaluated here because these mechanisms' have the most available research and data. This section offers an analysis of the benefits and costs of all of the major funding mechanisms: fuel taxes; tolls; general fund revenue; vehicle registration, licensing, and permitting fees; VMT fees; and freight-related taxes and fees. Beyond a general analysis of each

¹¹² NGA, *An Infrastructure Vision for the 21st Century*, 19.

¹¹³ *Ibid.*

¹¹⁴ *Ibid.*

¹¹⁵ *Ibid.* 11-14.

¹¹⁶ FHWA, *Report Identifying State Taxation of Motor Carriers*, <http://www.fhwa.dot.gov/policyinformation/hss/guide/ch5.cfm>.

¹¹⁷ National Cooperative Freight Research Program (NCFRP), *Dedicated Revenue Mechanisms for Freight Transportation Investment* (2012), 17.

¹¹⁸ *Ibid.*

¹¹⁹ *Ibid.*

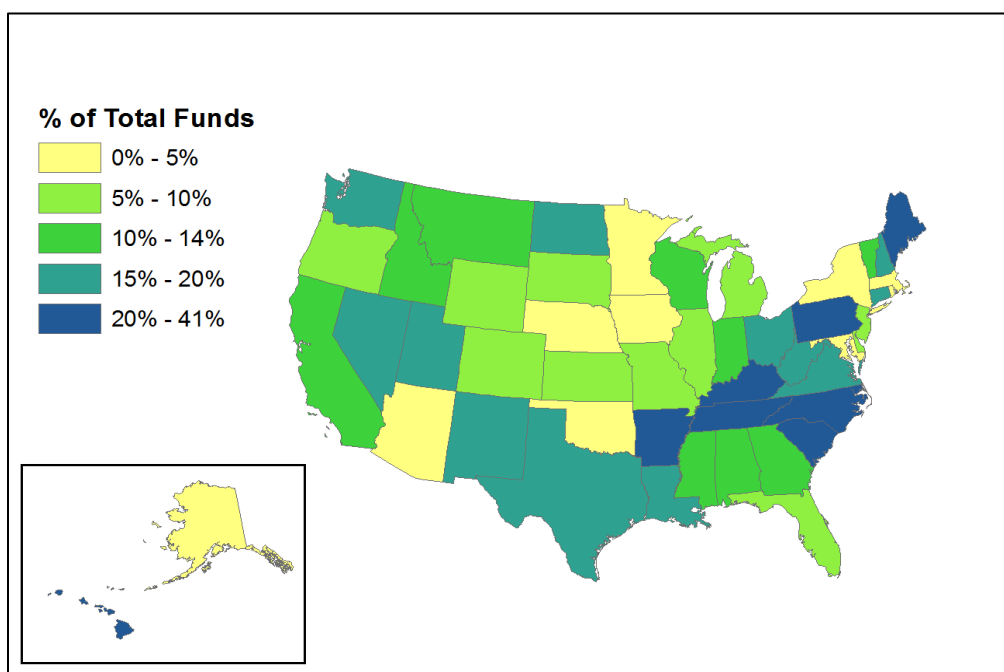
¹²⁰ NGA, *An Infrastructure Vision for the 21st Century*, 19.

mechanism, case studies are included in each mechanism's evaluation to provide an indication of how effective these mechanisms are in practice.

a. Fuel Taxes

Traditionally, fuel taxes have accounted for a significant amount of highway revenue in most states, and every state has implemented a fuel tax on gasoline, diesel, and gasohol, as well other alternative fuel sources.¹²¹ Since 1994, motor fuel taxes have provided states with approximately \$24.5 billion in revenues on average every year, which is over 19% of overall highway revenues.

Figure 4: Gas Tax Revenues as a Percent of States' Total Revenue Receipts Dedicated to State-Administered Highways in 2011



Source; Federal Highway Administration Data

Generally, fuel taxes are attractive funding mechanisms because they have low administrative and compliance costs.¹²² These costs are low because fuel taxes are built-in to the price paid at the pump and therefore difficult to evade.¹²³ Historically, fuel taxes have provided stable and predictable revenue streams for the construction and operating of roadway and transit systems. States have generally relied on fuel taxes because they are able to generate significant revenue streams at a relatively low cost to users.¹²⁴ For example, if federal fuel taxes on gas and

¹²¹ EIA, "Explanatory Notes."

¹²² NGA, *Innovative State Transportation Funding and Financing*, 8.

¹²³ Ibid.

¹²⁴ Ibid.

diesel fuels were increased by one cent, the federal government could raise an additional \$1.8 billion every year.¹²⁵

Unlike the federal gas tax that has remained unchanged since 1993, states have successfully increased their fuel taxes and thus revenues for highway spending. State voters have typically been more receptive to fuel tax increases because the benefits are more visible and tangible at the state level than the national level. In 2005, for example, Washington adopted a 9.5 cent per gallon increase in the gas tax that was phased in over a four-year period and was expected to raise an additional \$8 billion over 16 years.¹²⁶ As recently as July 2013, 9 states increased their gas taxes—California (3.5 cents per gallon), Connecticut (3.84 cents per gallon), Georgia (0.6 cents per gallon), Kentucky (2.4 cents per gallon), Maryland (3.5 cents per gallon), Massachusetts (3 cents per gallon),¹²⁷ Nebraska (1.7 cents per gallon), North Carolina (0.1 cents per gallon), and Wyoming (10 cents per gallon).¹²⁸ A few months later the District of Columbia also reformed its gas tax in October 2013.¹²⁹

Most of these changes, however, were not direct increases to a fixed-fee gas tax. Instead, the taxes in California, Kentucky, Georgia, North Carolina, and, in part, Nebraska increased automatically because their taxes are variable and adjust to increasing gas prices.¹³⁰ Connecticut's increase was not a recent initiative, but had been enacted in 2005 as part of a proactive bill to authorize special tax bonds dedicated to transportation.¹³¹ The increased gas tax in Maryland occurred after the legislature imposed a new sales tax on gas as well as indexing the tax to inflation.¹³² In addition, the indexed tax is capped and cannot increase more than 8% each year.¹³³ The District of Columbia similarly switched from a fixed tax of 23.5 cents per gallon to an 8% tax based on the wholesale price of fuel.¹³⁴ In fact, only Wyoming—which legislated the largest increase—directly increased its tax rate from \$0.14 to \$0.24.¹³⁵ Wyoming Governor Matt Mead promoted the gas tax increase, asserting that it would bring in an extra \$70 million each year for transportation projects.¹³⁶ At the same time, two states decreased their gas taxes—Vermont and Virginia.¹³⁷ However, these downward adjustments really reflect shifts in the states' tax policies.¹³⁸ Vermont effectively decreased its gas tax by 6.9 cents over two years, but

¹²⁵ Ibid.

¹²⁶ NGA, *An Infrastructure Vision for the 21st Century*, 17.

¹²⁷ NCSL, "Transportation Funding and Financing Legislative Database," last accessed Nov. 5, 2013, <http://www.ncsl.org/research/transportation/ncsl-transportation-funding-finance-legis-database.aspx>.

¹²⁸ Ryan Holeywell, "Just in Time for the Holidays, 8 States Raise Gas Taxes," *Governing*, July 1, 2013, <http://www.governing.com/blogs/view/Just-in-Time-For-Holiday-Eight-State-Gas-Taxes-Rise.html>; Wenqian Zhu, "Eight States Raise Their Gas Tax," *CNNMoney*, July 2, 2013, <http://money.cnn.com/2013/07/02/news/economy/state-gas-tax-increase/>.

¹²⁹ Office of the Chief Financial Officer, D.C., "Tax Rates and Revenues, Other Taxes," <http://cfo.dc.gov/page/tax-rates-and-revenues-other-taxes>.

¹³⁰ Holeywell, "Just in Time for the Holidays, 8 States Raise Gas Taxes."

¹³¹ Connecticut Senate Bill 2000, Public Act No. 05-4 <http://www.cga.ct.gov/2005/ACT/Pa/pdf/2005PA-00004-R00SB-02000SS1-PA.pdf>.

¹³² Holeywell, "Just in Time for the Holidays, 8 States Raise Gas Taxes."

¹³³ "Transportation Funding and Finance Legislation Database."

¹³⁴ Office of the Chief Financial Officer, D.C., "Tax Rates and Revenues, Other Taxes."

¹³⁵ Holeywell, "Just in Time for the Holidays, 8 States Raise Gas Taxes."

¹³⁶ Ibid.

¹³⁷ Zhu, "Eight States Raise Their Gas Tax."

¹³⁸ Holeywell, "Just in Time for the Holidays, 8 States Raise Gas Taxes."

this change resulted from a new formula that had previously increased the tax by 6 cents, effectively returning the gas tax rate to its previous level.¹³⁹ However, Vermont did increase its diesel tax by 3 cents per gallon.¹⁴⁰ Conversely, the lower tax in Virginia was adopted as part of the Commonwealth's diversified tax reform for transportation spending.¹⁴¹

Although state gas taxes have experienced more change than the federal gas tax, states' limited ability to modify fuel taxes to the extent needed may undermine their continued viability as a dominant funding source. To this end, voter receptiveness to tax increases is not limitless and may prevent states from increasing fuel taxes to the necessary levels. Last year alone five states tried and failed to raise or index their fuel taxes.¹⁴² This trend continued into 2013, despite other states' successful tax increases. Idaho failed to increase its gas tax rate by 2 cents per gallon every year for five years; in addition, the state would have increased diesel tax by 3 cents per gallon each year for five years along with other increases in alternate fuel source taxes.¹⁴³ Indiana, Nevada, and Montana similarly were unable to increase its gas tax by 2 cents per gallon.¹⁴⁴ Montana's legislative increase from 27 cents to 29 cents dedicated 1 cent to highway repairs and maintenance, which would have accounted for an additional \$4.936 million in gas tax revenues to highway spending each year.¹⁴⁵ New Hampshire was unsuccessful in its attempts to increase its gas tax by 5 cents per gallon that would have been dedicated to a ten-year transportation improvement plan.¹⁴⁶ Texas also failed to raise its gas and diesel taxes.¹⁴⁷ States' limited abilities to increase the gas tax are particularly notable when gas prices are high. In 2012, for example, several states considered "reducing, capping or suspending their gas taxes" to alleviate stress on citizens' finances from record high gas prices.¹⁴⁸ Yet even those states, such as Mississippi, were unsuccessful in their attempts to lower their taxes on gas and diesel.¹⁴⁹

Even when states have successfully increased their gas tax, the increases have not been significant enough to maintain the continued sustainability and reliability of fuel taxes. Generally, fixed-rate fuel taxes, which 33 states use,¹⁵⁰ are losing their purchasing power because they do not account for inflation or increasing highway-related costs, such as road construction costs that have increased 55% over the last two decades.¹⁵¹ Although 28 states have raised their gas tax rates since 1992, only three raised it enough to even keep pace with inflation, and none of them have increased it enough to account for significantly higher costs of construction, maintenance, and operation.¹⁵² As shown in Figure 5 below, inflation due to increases in the CPI may sometimes decrease the purchasing power of fuel taxes more than increases in the cost of just highway construction, shown as the Highway Construction Cost Index (HCCI). However,

¹³⁹ Ibid.

¹⁴⁰ "Transportation Funding and Finance Legislation Database."

¹⁴¹ Holeywell, "Just in Time for the Holidays, 8 States Raise Gas Taxes."

¹⁴² NCSL, *Major State Transportation Legislation, 2012* (2012), 2.

¹⁴³ "Transportation Funding and Finance Legislation Database."

¹⁴⁴ Ibid.

¹⁴⁵ Ibid.

¹⁴⁶ Ibid.

¹⁴⁷ Ibid.

¹⁴⁸ NCSL, *Major State Transportation Legislation, 2012*, 2.

¹⁴⁹ "Transportation Funding and Finance Legislation Database."

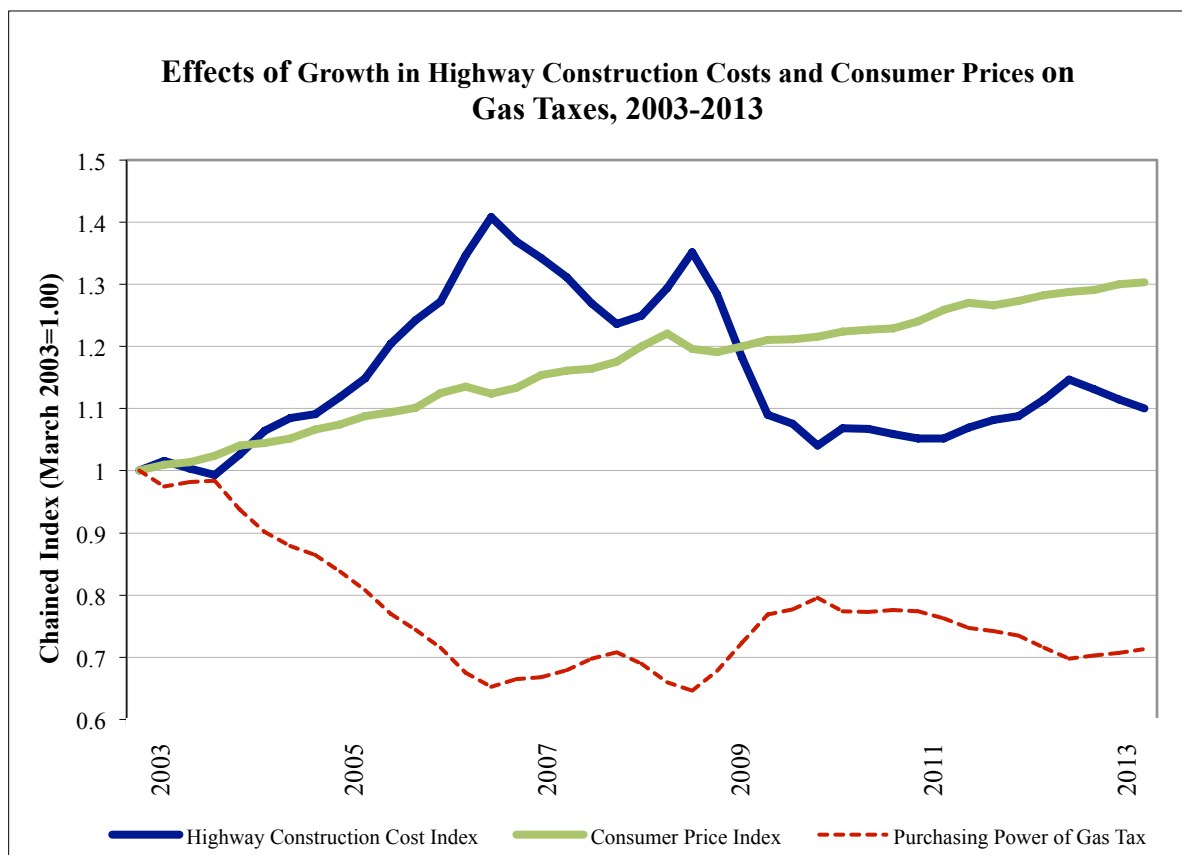
¹⁵⁰ ITEP, *State Gasoline Taxes: Built to Fail, but Fixable*, 1.

¹⁵¹ Zhu, "Eight States Raise Their Gas Tax."

¹⁵² NGA, *An Infrastructure Vision for the 21st Century*, 17.

increases in both of these indexes results in even greater erosion of purchasing power than either individual factor.

Figure 5: Erosion of Purchasing Power Due to Inflationary Forces



Source; Federal Highway Administration Data

Several states have implemented variable fuel taxes that allow for greater flexibility by automatically adjusting to changes in purchasing power over time as well as providing the same benefits of fixed-rate fuel taxes concerning longstanding use, public familiarity, and relatively low operating costs, albeit higher than a fixed-rate tax.¹⁵³ Some variable fuel taxes are linked to the wholesale price of fuel. In North Carolina and Kentucky, the gas tax is tied to the average wholesale price because it tends to rise with inflation.¹⁵⁴ Virginia recently replaced its 17.5 cents per gallon fuel tax with gas and diesel taxes calculated as a percentage of wholesale prices.¹⁵⁵ Pennsylvania's fuel tax is also indexed to the wholesale fuel price, but Pennsylvania capped the wholesale fuel price used to calculate the fuel tax at \$1.25 so the fuel tax rate has remained unchanged since 2006;¹⁵⁶ however, as of November 25, 2013, Pennsylvania removed the cap,

¹⁵³ NCSL, *On the Move*, 7.

¹⁵⁴ *Ibid.* 6.

¹⁵⁵ "Transportation Funding and Finance Legislation Database."

¹⁵⁶ NCSL, *On the Move*, 7.

which will allow the tax to increase significantly to reflect current gas prices.¹⁵⁷ Other states have indexed their fuel taxes as a percentage of the retail sales price of fuel. Georgia collects a 4% fuel tax “using a weighted average indexed retail sales price” for each fuel source to impose a cents per gallon tax rate that is determined every six months.¹⁵⁸ Vermont recently imposed variable gas tax of 4% that is based on the average retail price of gas.¹⁵⁹

Calculating fuel tax rates based on fuel prices may allow for automatic adjustments, but these schemes also subject state highway revenues to gas price volatility. It is not uncommon for the price of gasoline to increase or decrease by 20% or more from one year to the next, and even greater fluctuations have been known to occur.¹⁶⁰ For example, in 2008, the spot price of a barrel of oil reached a maximum of \$145 in July, but by December, it had fallen to \$30.¹⁶¹ In a study of retail gas prices and tax revenue in California when it switched from a sales tax to an excise tax, during a six-month period, drivers paid a sales tax ranging from 13.2 cents per gallon (when gas was \$1.82) to 32.5 cents per gallon (when prices peaked at \$4.48).¹⁶²

States have enacted a variety of measures to protect themselves from this risk. Almost 30 states implemented price-gouging laws to control gas prices,¹⁶³ whereas Connecticut, Florida, Kentucky, Pennsylvania, and West Virginia enacted statutory floors and/or ceilings for the tax rate or the price to which the rate is indexed to account for the scheme’s susceptibility to price volatility.¹⁶⁴ West Virginia’s calculations are also based on the average wholesale price of fuel that cannot fall below \$2.34 per gallon or fluctuate more than 10% per year.¹⁶⁵ If states overcompensate by imposing constraints that are too stringent, the state may inadvertently, but effectively, transform its variable fuel tax into a fixed-rate tax, losing the advantage of flexibility and sustainability derived from indexed taxes.¹⁶⁶ Moreover, price-indexed taxes do not completely maintain purchasing power because transportation infrastructure costs seem to increase more steadily than gas prices on average.¹⁶⁷ Not surprisingly, the effect of such fuel price volatility on transportation funding can be dramatic and make forecasting revenues and planning capital budgets even more difficult. Over the past decade, California generated about \$6 billion per year from gas taxes, relying on a fixed tax of 18 cents per gallon until it implemented its gas sales tax; although they produced similar revenues, the revenue from the flat, cents per gallon tax fluctuated by about 1.2% each year, whereas the revenue generated by the gas sales tax fluctuated by an average of 13.5%.¹⁶⁸

¹⁵⁷ Gas Tax Debate Draws Close in Pennsylvania as Debate Continues in Three More States, Citizens for Tax Justice (last updated November 26, 2013).

¹⁵⁸ NCSL, *On The Move*, 6.

¹⁵⁹ “Transportation Funding and Finance Legislation Database.”

¹⁶⁰ ITEP, *State Gasoline Taxes: Built to Fail, but Fixable*, 7

¹⁶¹ Josh Goodman, “Maryland Governor O’Malley Takes a Risk on Gas Tax,” Stateline, <http://www.pewstates.org/projects/stateline/headlines/maryland-governor-omalley-takes-a-risk-on-gas-tax-85899375418>.

¹⁶² Michael Madowitz and Kevin Novan. “Gasoline Taxes and Revenue Volatility: An Application to California,” *Journal of Energy Policy* 59 (2013): 663-673.

¹⁶³ NCSL, *On the Move*, 7.

¹⁶⁴ *Ibid.*

¹⁶⁵ *Ibid.*

¹⁶⁶ *Ibid.*

¹⁶⁷ *Ibid.*

¹⁶⁸ Madowitz & Novan. “Gasoline Taxes and Revenue Volatility: An Application to California.”

As an alternative to fuel price indexing, states commonly tie their fuel tax rates to inflation. Indexing fuel taxes to inflation, by basing the tax on the CPI for instance, allows states to recoup some of the lost purchasing power. CPI adjustments alone would have increased gas taxes so that they would currently be around \$2.94 per gallon.¹⁶⁹ Florida's fuel tax is indexed to CPI with a statutory floor of 6.9 cents per gallon and partially dedicates its revenue to transportation funding.¹⁷⁰ However, even this increase would not sufficiently accommodate increases in labor and material costs for highway projects, which have often grown quicker than CPI.¹⁷¹ Maine moved away from inflation-indexed fuel taxes in 2012 primarily based on the belief that the rate was simply too high; as a result, the state lost \$5.9 million in revenue in the first fiscal year alone and is projected to lose \$10.8 million and \$15.7 million in the 2013-2014 and 2014-2015 fiscal years; these are significant losses for a state that relies on gas taxes for almost two-thirds of its highway budget.¹⁷² Nevertheless, other states adopted inflation adjusted fuel tax schemes in 2013—Maryland's Transportation Infrastructure Investment Act of 2013 indexed its fuel tax to inflation effective 2014, and Massachusetts indexed to inflation effective 2015.¹⁷³

A couple of states rely on neither fuel prices nor inflation as the basis for their variable fuel taxes. Iowa annually indexes its fuel rate based on the state's volume of gas consumption, specifically as the percentage of the fuel sold.¹⁷⁴ However, Iowa's fuel tax scheme is intended to be revenue-neutral.¹⁷⁵ Nebraska also represents a unique fuel tax scheme that, unlike Iowa, directly seeks to ensure adequate revenue for highway infrastructure projects.¹⁷⁶ Each year the tax formula is adjusted so that fuel tax revenues match transportation expenditures, specifically the legislative appropriations from the Highway Cash Fund.¹⁷⁷ Another alternative that no state currently uses is calculating fuel taxes based on a construction cost index; at least one state—Arkansas—is considering this recommendation. A state-specific construction cost index may be a more accurate method of indexing given the fact that increases in road construction costs frequently outstrip inflation at varying rates among states.¹⁷⁸ Since the recession, however, construction costs have declined, at least in the aggregate on a national level, compared to the CPI. Therefore, indexing gas taxes to a combination of state-specific construction cost indexes and consumer price indexes may be the most reliable way to ensure that neither inflation nor the growth of construction costs erode the purchasing power of the tax.

In addition to excise taxes on motor fuels, states commonly impose other fuel-related taxes. Many states also levy a sales tax on gas by either applying the general sales tax to motor

¹⁶⁹ Slone, *Transportation & Infrastructure Finance*, 8.

¹⁷⁰ NCSL, "Motor Fuel Sales Taxes and Other Taxes on Fuel Distributors and Suppliers" (June 2012), <http://www.ncsl.org/research/transportation/fuel-sales-taxes-and-other-related-taxes.aspx#chart1>.

¹⁷¹ Slone, *Transportation & Infrastructure Finance*, 8.

¹⁷² Steve Mistler, "Maine Lawmakers Grapple with Falling Gas Tax Revenues," Portland Press Herald, May 25, 2013, http://www.pressherald.com/politics/lawmakers-grapple-with-falling-gas-tax-revenues_2013-05-25.html.

¹⁷³ "Transportation Funding and Finance Legislation Database."

¹⁷⁴ NCSL, *On The Move*, 6.

¹⁷⁵ *Ibid.*

¹⁷⁶ *Ibid.* 7.

¹⁷⁷ *Ibid.*

¹⁷⁸ Slone, *Transportation & Infrastructure Finance*, 8.

fuels or by imposing a special sales tax on motor fuels. Motor fuels are subject to the general statewide sales tax in California (5% on diesel; reduced rate of 2.25% on gas), Florida (6%), Hawaii (4%),¹⁷⁹ Illinois (6.25%), Indiana (7%), and Michigan (6%).¹⁸⁰ In 2012, Arkansas passed a constitutional amendment to pay for \$1.3 billion of highway-related bonds by temporarily increasing the general sales tax.¹⁸¹ However, attempts to keep a higher sales tax to fund transportation infrastructure in Arizona failed that same year.¹⁸² At least 4 states dedicated sales tax revenue to transportation in 2013. Maryland's Transportation Infrastructure Investment Act of 2013 allows for 4% of general sales tax revenues to the state's Transportation Trust Fund.¹⁸³ Massachusetts followed a narrower, more focused approach by dedicating all the sales tax revenue collected from vehicle sales to transportation.¹⁸⁴ Virginia implemented a comprehensive tax policy overhaul that increased sales taxes 0.3%, from 4% to 4.3%, and designated the revenues for transportation purposes including highway as well as increased the percentage of sales and use tax revenues dedicated to transportation from 0.5% to 0.675% over a four-year period.¹⁸⁵ Lastly, Utah has dedicated 30% of sales tax revenue growth to transportation in addition to dedicating other portions of the sales tax revenue to transportation purposes.¹⁸⁶ However, implementing or dedicating sales taxes for transportation purposes may not be ideal because they are entirely divorced from the user fee principle and are regressive.¹⁸⁷

Other states have levied special sales taxes on motor fuels—California (1.87% on diesel) and New York (8 cents per gallon).¹⁸⁸ Moreover, some of the variable fuel taxes mentioned above also are described as sales taxes, such as Florida's CPI-adjusted fuel sales tax and Virginia's sales tax based on wholesale price of fuel.¹⁸⁹ Prior to 2010, California also imposed a special sales tax on gasoline, but was replaced with an excise tax that is annually indexed to be revenue-neutral.¹⁹⁰ California's switch away from a sales tax to an excise tax increased the state's spending flexibility because sales tax revenue, under California law, could not be used for debt servicing, whereas excise tax revenues could.¹⁹¹

In addition to sales taxes, Georgia imposes a 4% prepaid state tax on motor fuels that is based on a six-month weighted average of retail sales price;¹⁹² Tennessee levies a "special privilege tax" of 1 cent per gallon on all petroleum products and Vermont charges a 2% tax on

¹⁷⁹ Unlike the other states here listed, Hawaii imposes a "general excise tax" on sellers of all goods and services instead of a general sales tax on purchasers of those goods and services. "Motor Fuel Sales Taxes and Other Taxes on Fuel Distributors and Suppliers."

¹⁸⁰ Ibid.

¹⁸¹ NCSL, *Major State Transportation Legislation, 2012*, 4.

¹⁸² Ibid.

¹⁸³ "Transportation Funding and Finance Legislation Database."

¹⁸⁴ Ibid.

¹⁸⁵ Ibid.

¹⁸⁶ Institute on Taxation and Economic Policy, *Building a Better Gas Tax: One of State Government's Least Sustainable Revenue Sources* 6 (2011).

¹⁸⁷ Ibid.

¹⁸⁸ EIA, "Explanatory Notes."

¹⁸⁹ "Motor Fuel Sales Taxes and Other Taxes on Fuel Distributors and Suppliers."

¹⁹⁰ Ibid.

¹⁹¹ NCSL, *On The Move*, 6.

¹⁹² GA Regulation 560-9-2-0.18-.14 Methodology for Computing Prepaid State Tax Rates, https://etax.dor.ga.gov/salestax/prepaidstr/TSD_Motor_Fuel_Computing_Prepaid_State_Tax_Rates_Regulation_5609201814.pdf.

the retail price of gasoline and 3 cents per gallon tax on diesel as “motor fuel transportation infrastructure assessments.”¹⁹³ A significant portion of states—at least 12—also levy an excise tax on vehicle sales as a percentage of the sales price when it is either purchased or first registered.¹⁹⁴ Nebraska dedicates the entirety of vehicle sales taxes to transportation.¹⁹⁵ Half of the revenue raised from Missouri’s 4% sales tax on vehicles is designated for transportation purposes.¹⁹⁶

Taxes on fuel distributors and suppliers are common fuel-related tax schemes that are frequently dedicated to transportation spending. These tax initiatives range greatly amongst the states. Connecticut collects a tax based on oil companies’ earnings; the petroleum products gross earnings tax is currently 8.1% of quarterly earnings, but is capped at \$3 per gallon.¹⁹⁷ Similarly, New Jersey imposes a 2.75% “petroleum products gross receipts tax” for all companies involved in refining or distributing petroleum products distributed within the state; New York levies a “petroleum business tax” on distributors; and Pennsylvania charges an “oil company franchise tax,” a variable tax indexed to the wholesale price of fuel that cannot exceed \$1.25 or fall below \$0.90 cents per gallon.¹⁹⁸ Nebraska generally taxes distributors as well as producers, suppliers, importers, and wholesale and retail fuel sales 5% of the average wholesale fuel price.¹⁹⁹ Alternatively, New Mexico imposes a “petroleum products loading fee” on gas and diesel distributors and Hawaii collects a \$1.05 “environmental response, energy, and food security tax” for every barrel of petroleum product that a distributor sells.²⁰⁰

Essentially all of these additional fuel-related taxes are entirely or partially dedicated to transportation spending. California, New Jersey, New York, Pennsylvania, Vermont, and West Virginia totally dedicate the revenues to transportation purposes, whereas Connecticut, Georgia, Illinois, Indiana, Michigan, New Mexico, and Tennessee allocate only a portion of the revenues to transportation.²⁰¹ Only Hawaii does not dedicate these revenues to transportation.²⁰² In addition, some states dedicate a portion of their general sales taxes to transportation—California, Indiana, Massachusetts, New York, Pennsylvania, and Virginia.²⁰³ However, some states prohibit dedicating and designating revenue; therefore, revenues are allocated to the state’s general funds and then disbursed, which may make it harder for states to use the funds for transportation purposes.²⁰⁴ Missouri, for example, could not use a portion of its sales tax revenue for debt servicing associated with the State Road Bond Fund without first amending its state constitution.²⁰⁵

¹⁹³ “Motor Fuel Sales Taxes and Other Taxes on Fuel Distributors and Suppliers.”

¹⁹⁴ Slone, *Transportation & Infrastructure Finance*, 14.

¹⁹⁵ *Ibid.*

¹⁹⁶ *Ibid.*

¹⁹⁷ “Motor Fuel Sales Taxes and Other Taxes on Fuel Distributors and Suppliers.”

¹⁹⁸ *Ibid.*

¹⁹⁹ *Ibid.*

²⁰⁰ *Ibid.*

²⁰¹ *Ibid.*

²⁰² *Ibid.*

²⁰³ NGA, *An Infrastructure Vision for the 21st Century*, 17.

²⁰⁴ Slone, *Transportation & Infrastructure Finance*, 14.

²⁰⁵ *Ibid.*

Nevertheless, state fuel taxes are largely unsustainable because they have lost their purchasing power and are not able to satisfy state infrastructure needs. States' fuel taxes lost purchasing power is estimated at \$10 billion per year on average, with states such as Oklahoma experiencing purchasing power losses of \$300 million each year.²⁰⁶ Although variable taxes allow states to better adjust to their spending requirements than fixed-rate fuel taxes, even these often do not fully account for changes in states infrastructure investments. One primary challenge is that fuel tax rates currently do not reflect ever-increasing costs of construction and maintenance, which means that fuel tax revenue simply is not enough. Whereas transportation-related construction costs have increased by 63% since 1990, two dozen states have not raised their gas tax in over a decade. As a result, fuel tax revenues are increasingly stressed to satisfy state transportation infrastructure needs. ITEP found that gas taxes are actually 17% lower than 1990 levels when adjusted for inflated construction costs.²⁰⁷

Improved fuel efficiency and alternative fuel vehicles also undermine fuel taxes' purchasing power. The EIA has projected that alternative vehicles will account for 49% of the new vehicle market by 2035,²⁰⁸ which has serious implications for the sustainability of a transportation system that relies heavily upon motor fuel taxes. In response, many states have imposed taxes or assessed fees on alternative fuel sources or alternative vehicles based on a user fee principle, specifically dedicating the revenues, in whole or part, to highway spending.²⁰⁹ In fact, more than half of all states impose a tax on ethanol, natural gas, propane, hydrogen, electricity or biodiesels.²¹⁰ At least 9 states impose an annual flat fee on alternative vehicles to make up for lost revenues from traditional fuel taxes; often these fees are associated with an annual permit or decal.²¹¹ Alternatively, California, Idaho, Kansas, Louisiana, and New Mexico allow alternative vehicle drivers to choose whether to pay fuel taxes or an annual fee.²¹² California and Idaho, as well as Oklahoma and Utah, tax alternative fuels and specifically dedicate all of the revenue to transportation in addition to imposing an optional or required annual fee for alternative fuel vehicles.²¹³ Idaho, for example, imposes a state gross retail tax on alternative fuels as well as 11 cents per gallon equivalent surtax on alternative fuels.²¹⁴ Arkansas, Kansas, Louisiana, and New Mexico differ only because the revenue is only dedicated in part to transportation funding.²¹⁵

Fuel taxes not only are losing purchasing power but also have experienced less revenue growth than other funding mechanisms. Between 2001 and 2006, gas tax revenue grew only 11% whereas tolling grew 41.6%, bond proceeds 26.6%, general funds 18.2%, and other taxes and

²⁰⁶ ITEP, *Building a Better Gas Tax*, 1.

²⁰⁷ *Ibid.* 2.

²⁰⁸ NCSL, *On the Move*, 8.

²⁰⁹ *Ibid.*

²¹⁰ *Ibid.*

²¹¹ *Ibid.*

²¹² *Ibid.*

²¹³ *Ibid.* 8 fig.2.

²¹⁴ "Transportation Funding and Finance Legislation Database."

²¹⁵ NCSL, *On the Move*, 8 fig.2.

fees 28%.²¹⁶ Based on these growth trends, fewer states are projected to rely on fuel taxes as their dominant source of transportation funding unless fuel taxes are significantly increased.²¹⁷

One of the primary hindrances to fuel tax increases is the general lack of public support. Legislators frequently confront public criticism to any proposals that suggest increasing the gas tax. In Maryland, a survey of a bipartisan group revealed that an overwhelming majority of the respondents (76%) disapproved of the gas tax increase.²¹⁸ Massachusetts is similarly experiencing substantial backlash to the automatic increases of its gas tax as a result of it being indexed to inflation. Over 100,000 residents have signed a petition initiated by the coalition “Tank the Gas Tax” to repeal the automatic gas tax increases after the tax increased 3 cents per gallon in 2013.²¹⁹

Another concern with fuel taxes is that they are not really user fees. Unlike tolls that are directly tied to the use and maintenance of a particular road or bridge, fuel taxes are collected from all fuel customers who do not necessarily use the transportation infrastructure that those funds are then used to build, maintain, or improve.²²⁰ And unlike VMT fees, fuel taxes are not equally collected from drivers based on their use of the state’s transportation infrastructure, but are instead collected based on the number of gallons of fuel that customers purchase.²²¹ The National Governors Association (NGA) asserts that managing fuel taxes is more costly because they are not directly correlated to highway use or capacity.²²² Furthermore, this disconnect means that customers with more fuel-efficient cars are paying less, and in some states owners of alternate fuel vehicles are not paying anything, regardless of how much they travel and thus use the state’s infrastructure.²²³ Therefore, fuel taxes may not represent the most efficient or fair funding mechanism for transportation infrastructure when compared to congestion pricing or VMT fees that account for demand.²²⁴

Fuel taxes also raise some fairness concerns. In locations that have fewer alternatives to driving, such as rural states, fuel taxes tend to be more unpopular.²²⁵ The regressive nature of fuel taxes also leads to questions about their fairness.²²⁶ Although the U.S. Census of 2010 found that state gas tax revenues as a share of personal income were at their lowest since the late 1920s,²²⁷ low-income families still spend a larger portion of their income on fuel taxes.²²⁸ This disproportionate impact on low-income workers is exaggerated by the fact that they may have to

²¹⁶ NGA, *Innovative State Transportation Funding and Financing*, 9.

²¹⁷ Ibid.

²¹⁸ Meredith Somers & Andrea Noble, "O'Malley approval rating sinks after Maryland gas-tax increase," Washington Times, Oct. 17, 2013, <http://www.washingtontimes.com/news/2013/oct/17/omalley-approval-rating-sinks-after-maryland-gas-t/>.

²¹⁹ Dan Ring, "Automatic gas tax increase law sought to be repealed by Massachusetts Republicans," Mass Live, Oct 1, 2013, http://www.masslive.com/politics/index.ssf/2013/10/republicans_in_massachusetts_a.html.

²²⁰ NGA, *Innovative State Transportation Funding and Financing*, 8.

²²¹ Ibid.

²²² Ibid.

²²³ Ibid.

²²⁴ Ibid.

²²⁵ Ibid. 6.

²²⁶ NCSL, *On the Move*, 7.

²²⁷ ITEP, *Building a Better Gas Tax*, 6.

²²⁸ Ibid. 5.

drive farther for work. Unlike some of the wealthiest taxpayers who only contribute 0.03% of their income to state gas taxes, low-income taxpayers contribute more than ten times more of their income, 0.4%, to gas taxes.²²⁹

Despite the gas tax's shortcomings, states are beginning to reform their use of the gas tax to better serve their goals and the community. Virginia is leading the way in reform for a better gas tax.

i. Fuel Taxes: Virginia's Comprehensive Overhaul of Taxing Mechanisms for Transportation Funding

Virginia's 2013 Transportation Funding Bill (HB2313) sought to address its transportation funding shortfall after CNBC dropped Virginia from its rank as the first to the third best state in which to do business, which was caused in part by the Commonwealth's congestion and inadequate long-term transportation funding in 2012.²³⁰ The bill begins to address some of the issues that plague the state's transportation network by offering new and diversified sources of funding that will raise an estimated \$5.9 billion for transportation projects over the next 5 years.²³¹ HB2313 greatly diversifies transportation funding mechanisms. However, due to how recently the bill was enacted, its impacts on transportation revenues and its potential shortcomings are not yet clear.

Before the bill's passage, no major transportation-funding bill had been passed in the Commonwealth in 27 years, and its gas tax remained at 17.5 cents per gallon—the 9th lowest in the country.²³² Because the gas tax was not even indexed to inflation, the real tax per gallon had less purchasing power than when it was instituted. Due to increases in fuel economy since 2000, the revenue collected per vehicle mile traveled also had decreased by 6.4%.²³³ Furthermore, the Code of Virginia requires maintenance payments to localities to be annually adjusted to account for inflation. Thus, the expenditures are indexed, while revenues are not.²³⁴ This resulted in the state transferring half a billion dollars from its road construction to maintenance accounts in 2012. In fact, the Commonwealth had relied on transfers of over \$3.3 billion to address maintenance deficits and projected that all construction funding would be depleted by 2017.²³⁵

In response, the bill repealed the state's 17.5 cent per gallon gas tax with a 3.5% wholesale tax on gas and a 6% wholesale tax on diesel so that taxes would rise with inflation.

²²⁹ Ibid. 9-10.

²³⁰ Scott Cohn, "Best States for Business," CNBC, July 10, 2012, <http://www.cnbc.com/id/47818860>.

²³¹ Nathan Hurst, "Congress Eyes Virginia's Model for Funding Transportation Projects," Roll Call, Oct. 21, 2013, http://www.rollcall.com/news/congress_eyes_virginias_model_for_funding_transportation_projects-228557-1.html

²³² Joseph Henchman, "State/Local Road Spending Covered by User Fees and User Taxes" Tax Foundation Tax Policy Blog (Jan. 22, 2013), <http://taxfoundation.org/blog/statelocal-road-spending-covered-user-fees-user-taxes-categories-separated-out>; Nick Kasprak, Weekly Map: State Gasoline Tax Rates (Jan. 22, 2013), <http://taxfoundation.org/blog/weekly-map-state-gasoline-tax-rates>.

²³³ "Traffic Volume Trends," Federal Highway Administration, http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm

²³⁴ Code of Virginia, Sections 33.1-23.5:1 and 33.1-41, <http://leg1.state.va.us/cgi-bin/legp504.exe?000+cod+TOC3301000000100000000000>.

²³⁵ "Governor McDonnell's 2013 Transportation and Reform Package Fact Sheet," 2013, <http://www.governor.virginia.gov/utility/docs/Transportation%20funding%20fact%20sheet.pdf>

Virginia also increased its sales tax by 6%, from 5% to 5.3%, to devote more revenue to transportation. The sales taxes are protected from gas price volatility by basing the rate on the average wholesale price of gas and will be adjusted every 6 months. From July 1 to December 31, 2013, the Commonwealth set the tax rate set at 11.1 cents per gallon for gas, and 20.2 cents per gallon for diesel. The tax is thus not strictly a percentage sales tax, nor is it a flat tax, despite the tax remaining flat for 6 months at a time.²³⁶ The reform also sought to assuage concerns about the regressive nature of the sales tax by exempting food purchases from the increase.

The resulting bill reflects the amount of compromise that the legislature engaged in to achieve significant reform of the Commonwealth's transportation funding. The Governor's original bill requested a sales tax increase of 16%, from 5% to 5.8%, but the final legislation resulted in a sales tax of 5.3%. The initial legislation also pushed for an annual \$100 "Alternative Fuel Vehicle Fee," which was lowered to \$64 (making the per mile taxes roughly equivalent for hybrids and standard cars). Previously the state charged a \$50 fee on all-electric vehicles only.²³⁷ Current state Delegates are seeking to overturn the recently increased hybrid vehicle fee through.²³⁸ Moreover, Virginia's governor wanted to retain the 17.5 cents per gallon tax on diesel, but the 6% wholesale tax on diesel results in a 20.2 cent per gallon tax. Despite the Governor's wishes, the final legislation compensates for the higher diesel tax rate's effects on diesel powered cars and trucks up to 10,000 pounds by providing owners with a refund equal to the difference between the gas and diesel tax rates. Further compromise was made on the proposed "vehicle titling tax," or the sales tax on new vehicles. The original bill proposed an increase from 3% to 4.3%, whereas the final bill included a titling tax of 4.15%, to be phased in over 4 years. Negotiated amendments were also reached on the Transient Occupancy Tax in Northern Virginia, as well as a "regional congestion relief fee."²³⁹ The areas most affected by congestion and in need of major transportation projects, Hampton Roads and Northern Virginia, saw their sales taxes rise an additional 0.7%.

The bill may disproportionately impact the relative burden of paying for roads for nondrivers, residents of areas with heavily used transportation infrastructure systems, and less affluent residents. As a result, a median income household earning \$51,000 will pay \$80 more per year on average, about 0.2% of their income, while households in the bottom 20% of the income distribution (making less than \$21,000 per year) will pay between 3 and 6 times more of their income than the top 1% of households.²⁴⁰

²³⁶ Peter Bacque, "Virginia's gasoline tax drops today," Richmond Times Dispatch, Jul. 1, 2013, http://www.timesdispatch.com/business/auto/virginia-s-gasoline-tax-drops-today/article_2be28baa-ccc5-51c9-b64a-76ba39a967af.html

²³⁷ Delegate William J. Howell, "HB2313 Revenues and appropriations of State; changes to revenues collected and distribution, report," Apr. 13, 2013, <https://leg1.state.va.us/cgi-bin/legp504.exe?131+sum+HB2313>

²³⁸ Olympia Meola, "Repeal of Va. Hybrid Vehicle Tax in the Works," Richmond Times Dispatch, Oct. 17, 2013, http://www.timesdispatch.com/news/state-regional/virginia-politics/general-assembly/repeal-of-va-hybrid-vehicle-tax-in-the-works/article_3fd0161e-3664-11e3-baa9-001a4bcf6878.html

²³⁹ "Governor McDonnell Makes Amendments to Strengthen Major Transportation Package," March 26, 2013, <http://www.governor.virginia.gov/news/viewRelease.cfm?id=1736>.

²⁴⁰ The Commonwealth Institute for Fiscal Analysis, *Destination Unknown: Navigating Virginia's New Transportation Funding Package and Issues Ahead*, Aug. 2013, <http://www.thecommonwealthinstitute.org/2013/04/11/virginias-transportation-funding-package-heading-toward-destination-unknown/>

Ultimately, Virginia's transportation-funding overhaul demonstrates that states can increase revenues for highway investment despite having an evenly divided legislature and political concerns on important fiscal issues.²⁴¹ To win passage, Democrats had to accept diverting \$200 million from the general fund annually for transportation, meaning that less will be available for other services such as schools and police. Republicans had to agree to raise taxes.²⁴² Virginia's transportation funding reform bill will raise much needed revenue for transportation, and other states, including Maryland, Illinois, and West Virginia are attempting to make similar reforms based on wholesale taxes.²⁴³ Members of the West Virginia House of Delegates even went to Virginia to be briefed by House Speaker William Howell on the bill's passage. More importantly, Senator Barbara Boxer has stated support for structuring a new federal gas tax based on Virginia's new model.²⁴⁴

b. Tolls

All drivers are familiar with the common tolling funding mechanism. In order to use a state road, the driver has to pay a certain amount for access to the road. With the advent of new tolling technology, the standard pay station to pay the toll is only one option available to states for tolling purposes. Electronic tolling systems, like EZ-Pass and FasTrak, allow states to have traditional tolling across all roads and/or institute value pricing on specific lanes during specific times of the day or week.²⁴⁵ Because of these new technological options, states have a couple of options for increasing revenue: either increase the toll for road usage or institute new value pricing tolls for specific lanes or times.

Regardless of the method used by states, there are substantial benefits to toll usage. States have access to new revenues, either through new tolls or increasing tolls. The Government Accountability Office (GAO) endorses tolling, explaining that "roadway tolling has the potential to provide new revenues, promote more effective and rational investment strategies, and better target spending for new and expanded capacity for surface transportation infrastructure."²⁴⁶ The GAO offered Florida as an example of tolls generating high revenues, finding that tolling generated up to 11% in total roadway revenue receipts.²⁴⁷ Florida has remained on the cutting edge of tolling technology, improving its standard toll plazas while adding electronic tolling and "intelligent transportation systems, a collection of 16 technology-based systems that can be integrated into infrastructure facilities and vehicles themselves to help alleviate congestion, improve safety and enhance productivity."²⁴⁸ This continued effort to stay current with

²⁴¹ Meola, "Repeal of Va. Hybrid Vehicle Tax in the Works."

²⁴² Frederk Kunkle & Laura Vozzella, "Virginia lawmakers approve sweeping transportation plan," Washington Post, Feb 23, 2013, http://www.washingtonpost.com/local/va-politics/va-lawmakers-approve-landmark-transportation-plan/2013/02/23/712969d8-7de4-11e2-82e8-61a46c2cde3d_story.html.

²⁴³ Sean Slone, "Virginia's Transportation Funding Plan Could Have Influence on Other States, In Washington," CSG, Oct. 23, 2013, <http://knowledgecenter.csg.org/kc/content/virginia%E2%80%99s-transportation-funding-plan-could-have-influence-other-states-washington>

²⁴⁴ Ibid.

²⁴⁵ Urban Land Institute, *When the Road Price is Right: Land Use, Tolls, and Congestion Pricing*, 19, <http://www.uli.org/infrastructure-initiative/when-the-road-price-is-right/>.

²⁴⁶ U.S. Government Accountability Office (GAO), *Physical Infrastructure: Challenges and Investment Options for the Nation's Infrastructure* (2008), 18, <http://www.gao.gov/assets/130/120031.pdf>.

²⁴⁷ Slone, *Transportation & Infrastructure Finance*, 29-30.

²⁴⁸ Ibid.

technology allows Florida to fully reap the revenues of tolling. In addition to generating more revenue, the GAO finds that tolls tend to be more profitable by their nature.²⁴⁹ Because bonds generally fund tolling infrastructure, toll “projects must pass the test of market viability and meet goals demanded by investors.”²⁵⁰ Transportation organizations, such as AASHTO, also promote tolling as a strong funding option compared to other choices.²⁵¹

Part of the reason tolling generates so much revenue is because tolling is one of the few funding mechanisms that does not alter drivers’ behavior.²⁵² Although people generally say that tolling will change their driving habits, empirical studies generally show that the amount of behavior changed is smaller proportionally to the percentage increased in the toll.²⁵³ In a study of a Puerto Rican toll, in which discounted toll tickets were offered to users, “only about 20% of daily commuters purchased discount tickets.”²⁵⁴ The study found that drivers’ demand for road usage is relatively inelastic regardless of the price of the toll.²⁵⁵ People certainly will not embrace a higher toll, but they generally will continue to pay for it if they need to use the road.

The recent trend towards tolls, however, is not just due to their revenue generation and minimal behavioral impact. Technological advancements allow for more flexible pricing, which can further increase revenue and decrease political angst. These flexible pricing strategies, called variable or value pricing, allows the state to “charge] the customer based on how much he or she values the service, instead of based on the cost to provide the service.”²⁵⁶ The access to technology opens up many new opportunities. First, net revenues will increase under electronic tolling structures in the long run. Electronic tolling is less expensive to administer than traditional tolling with toll booths.²⁵⁷ Electronic tolling “eliminates the revenue losses from cash “leakage” (an inevitable cost in cash toll lanes), and, when priced appropriately, recovers the costs associated with additional processing and lost revenue from those attempting to defraud the system.”²⁵⁸ Additionally, a study found that “toll rates are 20 to 40 percent higher than they would have been without electronic toll collection.”²⁵⁹ This is due in part to decreased tax salience, since commuters are not as aware of the toll rate as they are with cash transactions.²⁶⁰ Second, electronic tolling is widely viewed as more economically efficient than many mechanisms, including fuel taxes,²⁶¹ because tolls can be tailored based on the number of miles

²⁴⁹ GAO, *Physical Infrastructure*, 18.

²⁵⁰ *Ibid.*

²⁵¹ NSTIF, “Paying Our Way: A New Framework for Transportation Finance” (presented at the AASHTO Annual Meeting in Palm Desert, California, on Oct. 25, 2009), <http://www.transportation.org/Documents/AASHTO2009.ppt>, 8.

²⁵² Yoram Shiftan, “A Pricing Experiment to Evaluate Price Sensitivity to Toll Roads,” *International Journal of Transport Economics*, 28 (2001): 81-94, <http://trid.trb.org/view.aspx?id=688612>.

²⁵³ Sjoquist, *Implications of Alternate Revenue Sources for Transportation Planning*, 72.

²⁵⁴ Shiftan, “A Pricing Experiment.”

²⁵⁵ *Ibid.*

²⁵⁶ Urban Land Institute, *When the Road Price is Right*, 5.

²⁵⁷ *Ibid.*

²⁵⁸ Daryl S. Fleming, *Dispelling the Myths: Toll and Fuel Tax Collection Costs in the 21st Century* (Reason Foundation, Nov. 2012), http://reason.org/files/dispelling_toll_and_gas_tax_collection_myths.pdf, 5.

²⁵⁹ Amy Finklestein, “E-Z Tax: Tax Salience and Tax Rates” (NBER Working Paper No. 12924, 2007), <http://www.nber.org/papers/w12924>, abstract.

²⁶⁰ *Ibid.*

²⁶¹ “A Guide to Transportation Funding Options.”

and costs of the tolled road.²⁶² Third, electronic tolling is already widely used, so states can benefit from looking at other states on how to successfully implement new tolling systems. For example, 15 states already operate the EZ-Pass Network²⁶³ and even more have some form of other electronic tolling.²⁶⁴ The trend appears to be moving towards electronic tolling.²⁶⁵ For example, Pennsylvania intends to have electronic tolling by 2018 because of the benefits of “[c]ustomer convenience,” “[i]mproved mobility,” “[c]leaner environment,” “[e]nhanced safety,” “[o]perational efficiencies,” and “[m]inimal impact to adjacent properties.”²⁶⁶ Pennsylvania is cognizant, however, that not everyone wants to use electronic tolling; the commonwealth will still allow users to pay tolls at traditional toll booths.²⁶⁷

Importantly, the flexibility of variable pricing from electronic tolling also allows the state to set and meet other goals, such as reducing traffic.²⁶⁸ States can implement congestion pricing, which helps states limit traffic, through the creation of high-occupancy toll (HOT) lanes.²⁶⁹ HOT lanes are priced at a higher toll for lanes that are normally reserved for high-occupancy vehicles (HOV); this can be particularly effective during peak time periods.²⁷⁰ An additional charge for HOT lane use can reduce congestion and “maintain a predetermined level of service” for drivers.²⁷¹ Drivers tend to be amenable to HOT lane opportunities. In a study of I-85, which loops around Atlanta, Georgia, found that the study’s representative constituents, at the median, would be willing to pay a \$3.00 toll to save 35 minutes in the commute.²⁷² Additionally, in a study on public opinion of how to manage traffic in D.C., 60% of people in the deliberative forums supported toll express lanes on all major highways.²⁷³ This is significant compared to the only 10% support for a VMT fee.²⁷⁴ The Metropolitan Washington Council of Governments National Capital Region Transportation Planning Board finds that support for a toll managed lanes network grows somewhat the more it is discussed, whereas a vehicle-miles travelled charge loses support after discussion.²⁷⁵ Similarly, in a survey of two thousand drivers from Georgia, drivers favored tolls over other revenue sources like the gas tax and VMT fee.²⁷⁶ Surveys tend to

²⁶² Robert Poole, “Interstate 2.0: Modernizing the Interstate Highway System Via Toll Finance” (Sept. 12, 2013), <http://reason.org/studies/show/modernizing-the-interstate-highway>.

²⁶³ E-ZPass Delaware, “Stop Stopping! E-ZPass is taking more people more places than ever before - nonstop!”, http://www.ezpassde.com/where_use_ezpass.shtml.

²⁶⁴ “All-Electronic Tolling Implementation,” Pennsylvania Turnpike Commission, http://www.paturnpike.com/aet_public/aet.asp.

²⁶⁵ Ibid.

²⁶⁶ Ibid.

²⁶⁷ Ibid.

²⁶⁸ ULI, *When the Road Price is Right*, 5.

²⁶⁹ NGA Center for Best Practices, *State Policy Options for Funding Transportation*, <http://www.nga.org/files/live/sites/NGA/files/pdf/0702TRANSPORTATION.PDF>, 11.

²⁷⁰ GAO, *Physical Infrastructure*, 18-19.

²⁷¹ Ibid.

²⁷² Sjoquist et al., *Implications of Alternate Revenue Sources for Transportation Planning*, 112.

²⁷³ Transportation Planning Board, *What Do People Think About Congestion Pricing? A Deliberative Dialogue with Residents of Metropolitan Washington* (Jan 18, 2013), http://www.mwcog.org/transportation/activities/congestionpricing/materials/Key%20Document/CongestionPricingReport-Draft_1-18-13_ForWeb.pdf, 8.

²⁷⁴ Ibid. 44.

²⁷⁵ Ibid. 9.

²⁷⁶ Sjoquist et al., *Implications of Alternate Revenue Sources for Transportation Planning*, vii-x.

find that the public views tolls as a fair option and that tolls enjoy more support when the revenues are tied to specific transportation purposes.²⁷⁷

Drivers view tolls are more equitable than most funding mechanisms as well. Toll shows a more direct application of the user fee principle, where drivers have a better understanding that the money they just spent will go towards paying for construction or maintenance of the road they are driving on.²⁷⁸ Additionally, the flexibility of tolls allows for more equity across many different factors. Toll can be tailored to the cost of that specific road “rather than being averaged across all types of roads, from neighborhood streets to massive Interstates.”²⁷⁹ The price of tolls also can be altered based on the type of vehicle²⁸⁰ and by levels of congestion. For example, in a study of HOT lanes on California’s SR 91 highway, the current toll system saved Orange County’s poorest residents over \$3 million compared to a sales tax.²⁸¹

All of these reasons—increased revenue, reduced congestion, and the public view—contribute to the political palatability of tolling. The Hamilton Project of the Brookings Institution explained that “the revenue streams that emerge from these facilities are a side effect, not the primary reason for the prices. This changes the nature of the public discourse significantly. Leaders can explain these facilities as improving transportation system performance, not first and foremost as a way to increase government spending.”²⁸² Beyond revenues, reduced congestion can greatly improve political reasons for implementing a toll.²⁸³ Variable pricing, and HOT lanes in particular, can benefit both congestion reduction and revenue generation.²⁸⁴ When states lack the funds to build tolling facilities, legislatures also have the opportunity to use tolls as a financing mechanism by granting construction rights and leasing tolling facilities to private parties. According to the GAO, “Tolling potentially can also leverage existing revenue sources by increasing private-sector participation and investment through such arrangements as public-private partnerships.”²⁸⁵

Despite the myriad of benefits tolls offer states, they do have serious limitations. Toll currently do not offer a large revenue stream for states. Based on data compiled from the FHWA, tolls only collect a little over 5% of total revenue from funding mechanisms nationwide.²⁸⁶ UCTM similarly found that tolls bring anywhere between 5% and 7% of total highway revenues.²⁸⁷ This low collection may be explained for two reasons. First, legislatures do not regularly increase toll prices and face depreciating toll receipts as years pass. The GAO listed

²⁷⁷ Ibid. 54, 60-62.

²⁷⁸ University Transportation Center for Mobility (UTCM), “A Guide to Transportation Funding Options” (2007), <http://utcm.tamu.edu/tfo/highway/summary.stm>.

²⁷⁹ Ibid.

²⁸⁰ Ibid.

²⁸¹ Slone, *Transportation & Infrastructure Finance*, 33-34.

²⁸² Jack Basso & Tyler Duvall, Proposal 9: Funding Transportation Infrastructure with User Fees (The Hamilton Project, Feb. 2013), http://www.brookings.edu/~media/research/files/papers/2013/02/thp%20budget%20papers/thp_15waysfedbudget_prop9.pdf, 6.

²⁸³ Ibid. 5.

²⁸⁴ Robert W. Poole, Jr., Poole, *Interstate 2.0: Modernizing the Interstate Highway System via Toll Finance* (Sept. 2013), http://reason.org/files/modernizing_interstates_toll_finance.pdf, 32.

²⁸⁵ GAO, *Physical Infrastructure*, 18.

²⁸⁶ See Appendix A.

²⁸⁷ “A Guide to Transportation Funding Options.”

some concerns for lack of political will for tolling because of the view it is “double taxation,” inequitable to some groups, or insufficient because it cannot cover total project costs.²⁸⁸ Second, states also may rely too heavily on PPPs for tolling or potentially may grant too much of their tolling rights to private parties. As will be discussed below, tolls are a common funding/financing mechanism employed in PPPs and often cause some political tension with drivers who would rather not pay a private company to use a road. Additionally, the magnitude of tolls being used in PPPs suggests that the impact of PPPs on solving the overall fiscal crisis in transportation will be relatively modest and uneven from place to place.²⁸⁹

Building new tolls can face even more opposition. Tolls face tough opposition when they are instituted on existing lanes because it is viewed as “paying twice.”²⁹⁰ Opposition even arises for making an existing lane an HOT lane; in fact, one state already had to give up its proposal to convert an existing lane to an HOV lane because of equity concerns.²⁹¹ Legislation is also often required to implement new tolls.²⁹² This legislative requirement can be a burden if a state needs to find statutory authority to build a toll.²⁹³ In addition to public opposition and legal hurdles, traditional tolls that lack electronic abilities can be expensive to administer.²⁹⁴ All types of tolling generally are best suited for funding individual projects, or individual roads, rather than broadly funding state roadway infrastructure.²⁹⁵ Tolls generally are also only effective in nonrural areas, such as cities and suburbs.²⁹⁶ Tolling lightly used roads probably would be ineffective because revenue generated may not meet administration costs. Another difficulty of tolling is the necessary side effect of traffic diversion. Although congestion may be reduced on main roadways, states must figure out how to address new pressure on nontolled roads.²⁹⁷

Electronic tolling and variable tolling may be limited as well. Because many states do not have electronic tolling, and some no tolling at all, a number of states would need to take on the burden of installing and implementing a whole new electronic tolling system. The Midwest tends to have fewer tolling facilities, as evidenced by Figure 6 below, showing tolling facilities across the country below.²⁹⁸

²⁸⁸ GAO, *Physical Infrastructure*, 18.

²⁸⁹ NSTIF, *Paying Our Way*, 75.

²⁹⁰ “A Guide to Transportation Funding Options.”

²⁹¹ NGA, *State Policy Options for Funding Transportation*, 8-11.

²⁹² “A Guide to Transportation Funding Options.”

²⁹³ GAO, *Physical Infrastructure*, 18.

²⁹⁴ “A Guide to Transportation Funding Options.”

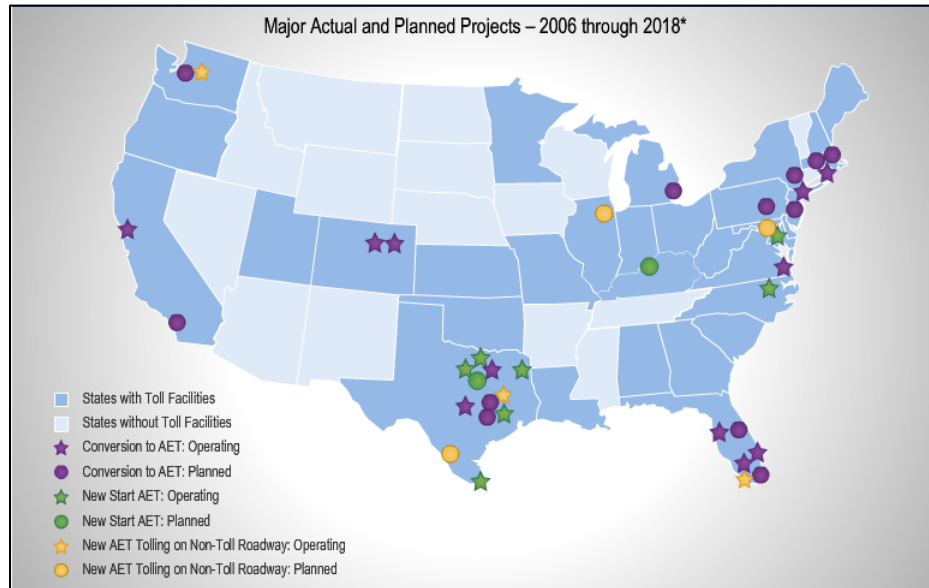
²⁹⁵ Ibid.

²⁹⁶ Poole, *Interstate 2.0: Modernizing the Interstate Highway System via Toll Finance*, 32.

²⁹⁷ Sjoquist et al., *Implications of Alternate Revenue Sources for Transportation Planning*, 29-30, 86-87.

²⁹⁸ “All-Electronic Tolling Implementation.”

Figure 6: National Implementation of All-Electronic Tolling, 2016-2018



Source: Pennsylvania Turnpike Commission

The lack of tolling in many parts of the Midwest may be due to feasibility issues for rural roads. In addition to feasibility, one of the primary benefits of electronic tolling—variable pricing—may not be as popular as traditional tolling. In the above survey of Georgian drivers, drivers did not find HOT lanes and variable tolling as intuitive as standard tolling to drivers.²⁹⁹ These less transparent options may be less politically viable compared to the standard toll lane.

Tolls, particularly electronic tolls, offer a stable revenue source for state roadway infrastructure. Technology has increased states' abilities to generate revenue alongside achieving other state goals such as reducing congestion. However, states must be cognizant of the limitations of tolling and the shifting public opinion of its implementation.

i. Tolls: The San Francisco-Oakland Bay Bridge

The Bay Area Toll Authority (BATA) manages the seven state-owned bridges in California's Bay area.³⁰⁰ Responsible for administering and maintaining seven bridges makes BATA no stranger to the requirements of updating roads and finding the money to do so.³⁰¹ California recently increased the toll prices for the Bay Area bridges effective July 2010 in order to improve bridge safety against seismic conditions.³⁰² After the imposition of the toll increase, toll revenues increased by 6.9% in fiscal year 2010-2011, and then 3.2%, and 1.6% across all

²⁹⁹ Sjoquist et al., *Implications of Alternate Revenue Sources for Transportation Planning*, vii.

³⁰⁰ "About BATA," Bay Area Toll Authority, <http://bata.mtc.ca.gov/about.htm>.

³⁰¹ In 2005, Assembly Bill 144 mandated "a comprehensive financial plan for the Toll Bridge Seismic Retrofit Program, including the consolidation and financial management of all toll revenues collected on state-owned bridges in the San Francisco Bay Area under the jurisdiction of the Bay Area Toll Authority. See The San Francisco-Oakland Seismic Safety Projects, "FAQS," <http://baybridgeinfo.org/faq>.

³⁰² "Tolls & Traffic," Bay Area Toll Authority, <http://bata.mtc.ca.gov/tolls/schedule.htm>.

bridges.³⁰³ Because of the toll increase and the new toll on carpoolers, the 3-year increase marked a continued increase for the state after six years of losses from 2004 through 2010.³⁰⁴ The Bay Area bridges offer electronic and manual toll collection, with the toll typically priced at \$5.³⁰⁵ The toll price is based on “a \$1 base toll, \$1 for Regional Measure 2 and a \$3 seismic retrofit surcharge.”³⁰⁶ Under this new toll system, the state of California raised \$642 million from the tolls of all the seven Bay area bridges in fiscal year 2011 to 2012.³⁰⁷ For weekend drivers, a toll of \$5 was instituted.³⁰⁸

The San Francisco-Oakland Bay Bridge (“Bay Bridge”) is a key example of how states try to both raise revenue and control congestion. The Bay Bridge differs from other area bridges because it adjusts its toll rate based on congestion pricing during the week.³⁰⁹ In 2013, the state charged \$6 for cars traveling over the peak times during the week and only \$2.50 for carpools of three or more during peak times; cars traveling during nonpeak times in the week were only charged \$2.50.³¹⁰ “The new toll schedule was intended not only to raise the equivalent amount of revenues as a flat \$5 toll would have raised, but also to serve as a mild form of congestion pricing.”³¹¹ Congestion pricing probably was implemented for the Bay Bridge because it “is the region’s workhorse bridge, carrying more than a third of the traffic of all of the state-owned bridges combined.”³¹² The toll only is charged against drivers traveling westbound in the five available lanes to Oakland, California.³¹³

The Bay Bridge’s tolls create substantial revenue. Through its service to over 45 million drivers during fiscal year 2012 to 2013, the State of California generated over \$228 million collected in toll revenue.³¹⁴ Even prior to the toll increase, the Bay Bridge provided substantial revenue to the state. A 6 day closure of the Bay Bridge in 2009 led to a net loss of \$1.9 million for the state.³¹⁵ In addition to large state revenues, the local Bay Area business community appeared to support a toll. The UC Berkley study found that businesses did not change their behavior in response to the toll increase, and in fact, “[b]usinesses with highly paid labor forces and those dependent on timely deliveries were broadly supportive of congestion pricing because for them, saving time and expanding the size of the commute shed are important business

³⁰³ “Historic Toll-Paid Vehicle Counts and Total Toll Revenues,” Bay Area Toll Authority, <http://bata.mtc.ca.gov/tolls/historic.htm>.

³⁰⁴ Elizabeth Deakin et al., *Bay Bridge Toll Evaluation: Final Report* (University of California Berkeley, Nov. 2011), http://apps.mtc.ca.gov/meeting_packet_documents/agenda_1764/Bay_Bridge_Toll_Evaluation_Final_Report_final.pdf, 7.

³⁰⁵ “About Tolls & Traffic,” Bay Area Toll Authority, <http://bata.mtc.ca.gov/tolls/index.htm>

³⁰⁶ *Ibid.*

³⁰⁷ *Ibid.*

³⁰⁸ *Ibid.*

³⁰⁹ *Ibid.*

³¹⁰ “Bridge Facts: San Francisco-Oakland Bay Bridge,” Bay Area Toll Authority, <http://bata.mtc.ca.gov/bridges/sf-oak-bay.htm>.

³¹¹ Deakin et al., *Bay Bridge Toll Evaluation*, 7.

³¹² “Bridge Facts: San Francisco-Oakland Bay Bridge.”

³¹³ *Ibid.*

³¹⁴ *Ibid.*

³¹⁵ Jeff Shuttleworth, “Bay Bridge closure cost \$1.9-million in toll revenue,” *Pleasanton Weekly*, Nov. 3, 2009, <http://www.pleasantonweekly.com/news/2009/11/03/bay-bridge-closure-cost-19-million-in-toll-revenue>.

considerations.”³¹⁶ Even the public did not appear to be upset about the toll. Although the public did not welcome the toll, a survey found that a “common initial reaction to the toll increase was resigned acceptance; and over time this settled into a broader acceptance of the increase.”³¹⁷ Resigned acceptance is not as negative of a response as occurs with other funding mechanisms, such as the gas tax or the later discussed vehicle-miles traveled fee.

Despite the benefits to larger businesses and increases in revenue, the toll did face some critics. Although the public generally accepted the increased toll, there were general “[c]oncerns about whether the funds were being well spent and costs controlled persisted throughout the year.”³¹⁸ These concerns appeared to have been the result of “relatively low public awareness of the reasons for the toll increases or how these charges relate to transport costs and financing mechanisms.”³¹⁹ Additionally, the congestion benefits may be overstated—at least in the short term. After the first year of the toll increase, traffic only decreased by 1% compared to the previous year.³²⁰ However, the bridge did benefit from traffic volume shifting from peak times into off peak times, leading to improved traffic functioning compared to pre-toll increase data.³²¹

On the whole, ignoring the unrelated safety issues impacting the bridge,³²² the increased tolls appeared to have been a net benefit for the Bay Bridge. Tolls offer an opportunity to increase revenues with the business community’s support and a generally neutral view. Public support could even be improved with a greater focus on education about how the tolls are used. On the whole, the Bay Bridge toll offered some of the fewest negatives compared to other funding mechanisms across the board.

c. General Fund Revenues

Funding surface transportation infrastructure from a state’s general fund is a commonly used, though not particularly popular, funding source. This is primarily because general fund revenue is not a funding mechanism at all, but a choice by the state legislature to pay for its infrastructure through general fund revenues. Traditionally, general fund revenues tend to be used as an emergency or stopgap measure. General funds are often used to fill in transportation infrastructure funding gaps when other revenue sources are unable to pay for infrastructure needs.

Funding transportation from general fund revenues does have its advantages. The general fund revenue can be a large revenue source because of the large tax base and growth potential.³²³ In addition to providing a large revenue source, the general fund can add some stability to building and maintaining transportation infrastructure. Pulling money from the general fund may

³¹⁶ Deakin et al., *Bay Bridge Toll Evaluation*, ES-3.

³¹⁷ Ibid.

³¹⁸ Ibid.

³¹⁹ Ibid.

³²⁰ Ibid. ES-1.

³²¹ Ibid.

³²² Glen Martin, “Bridge Over Troubled Bolts: UC Berkeley experts raise safety concerns about new Bay Bridge,” *California Magazine*, Aug. 28, 2013, <http://alumni.berkeley.edu/california-magazine/just-in/2013-10-27/bridge-over-troubled-bolts-uc-berkeley-experts-raise-safety>.

³²³ Ibid.

be beneficial for both the state and developers who are interested in building infrastructure projects. Both the state and developers can plan on a regular amount of funding each year. This regular planned amount could allow for more stability in the infrastructure development market. The general fund also may be a more equitable way to fund roads. An argument can be made that everyone benefits from transportation infrastructure because of the movement of goods on roads that everyone purchases, which makes taxes funding infrastructure actually less regressive because income and property taxes tend to be more progressive.³²⁴

General fund revenues have serious risks and limitations. Primarily, general fund revenue may fluctuate more than the average transportation funding mechanism because the sources of general fund revenue are more adversely impacted by the economic cycle.³²⁵ Beyond fluctuations, the states may get pressure to redirect transportation infrastructure funds to other parts of the budget. Unlike the gas tax and other surface transportation infrastructure taxes and fees, “[g]eneral fund revenues do not have that restriction and thus can be used to fund transit and other non-highway transportation.”³²⁶ Additionally, although some argue that general funds are more equitable for funding infrastructure, others disagree with this assessment. Some critics may view this approach as less equitable to all constituents because everyone will be required to pay taxes or fees towards transportation infrastructure, not just the drivers who use the infrastructure.³²⁷ Drivers certainly receive a larger overall benefit than the nondriving constituents. Additionally, because all constituents pay into the infrastructure funds, this means that the state cannot influence drivers’ behaviors by linking a tax to a certain type of driving behavior.³²⁸

Regardless of the benefits or risks of this funding mechanism, general fund usage only has so much ability to fund transportation projects. Only local projects tend to be supported more by general fund revenue, where nearly half of highway infrastructure expenses were funded through general fund revenue in 2004.³²⁹ This might be because there is not enough money available for larger projects; for the 32 states that use general fund revenues, general fund revenue only accounted for about 6% of state highway infrastructure funding.³³⁰ Even for the state that most heavily relied on general funds, Alaska only dedicated \$329 per capita towards roadway infrastructure from the general fund in 2011.³³¹

³²⁴ Ibid.

³²⁵ Ibid.

³²⁶ Ibid.

³²⁷ Ibid.

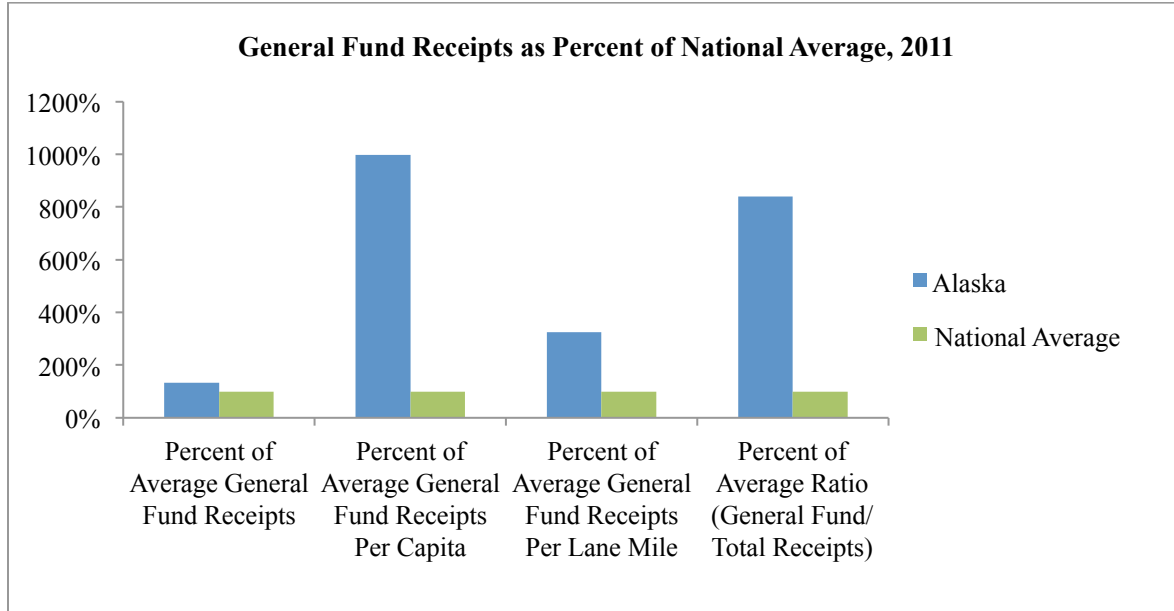
³²⁸ Ibid.

³²⁹ Ibid.

³³⁰ NGA Center for Best Practices, *How States and Territories Fund Transportation*, 7.

³³¹ See Appendix B.

Figure 7: General Fund Receipts: A Comparison of Alaska Against the National Average



Source: Federal Highway Administration Data

However, Alaska's statistic is more of an anomaly than the trend. For the years 1994 through 2011, only fourteen states spent over \$1,000 per lane mile.³³² From 1994 through 2011, states nationwide funded roadway infrastructure from the general funds anywhere from 1.25% to 4.77% of total receipts.³³³ Adjusted to 2012 dollars, this amount ranged anywhere from just over \$1.3 billion in 1996 to over \$7.3 billion in 2008.³³⁴ The high both in total revenues raised and proportion of overall receipts occurred in 2008, at the worst point in the economy, suggesting that states had to pick up where other funding mechanisms failed due to lower spending. Similarly, the highest dollar amount spent occurred only one year later when the economy still was struggling.

All of this data suggests that the state has the capacity to dedicate more funds when the economic climate demands it, but general funds are not the regular choice for states to fund roadway infrastructure.

i. General Fund Revenues Case Study: Trends in Wyoming

The use of general funds generally is not a primary funding mechanism for states. States that use general funds effectively, like Wyoming, primarily use them as a stopgap to fund transportation when other funding mechanisms fail to deliver enough funds. Wyoming has a history of using cash from its General Fund to fund transportation projects across the state. A study by the Wyoming Management Audit Committee found that 17% of annual revenue for

³³² Ibid.

³³³ See Appendix A.

³³⁴ Ibid.

highway projects since 2008 has come directly from general funds, being used to pay for 125 projects.³³⁵ Wyoming's use of general funds peaked during the worst of the recession, where it spent over \$181 million and over \$118.5 million in 2008 and 2009, respectively.³³⁶

Wyoming's state government is attempting to move away from its reliance on general funds, though. In February of this year, Governor Mat Mead signed a bill that would raise the state gasoline tax by \$0.10 per gallon, raising \$70 million per year, of which two-thirds or about \$47 million would go directly to the state.³³⁷ This is expected to halve the amount transferred from general funds (Wyoming anticipates expenditures of \$100 million per year from the GF).³³⁸ There had been several attempts to raise the gasoline tax in the preceding four to five years, but none succeeded.³³⁹ Additionally, House Bill 0171 expanded the state definition of what constituted gasoline, applying the increased taxes to a wider set of fuels.³⁴⁰ Because of Wyoming's traditionally heavy dependence on Federal funding, the loss of earmarked Congressional appropriations in recent years forced the state to begin using General Funds to make up the difference in 2005.³⁴¹ This trend is in the process of being reversed by the Governor, however.³⁴²

Wyoming uses funds from the general fund to levy programs in other areas using cash that is later repaid. After recently passing an increase to its state fuel tax, Wyoming chose to pass its increase for the express purpose of lessening its dependence on general funds. This should help increase Wyoming's current proportion of user fees, inclusive of fuel taxes, of only 24% of all revenues received.³⁴³ In 2011, 24/7 Wall St. ranked the states, considering factors such as deficit management and debt per capita. In these rankings, Wyoming was deemed the best run state in the nation.³⁴⁴ Ultimately, Wyoming has sustainably used its funding mechanisms and its general funds when necessary. Taxes benefit the causes they are imposed upon, reliance on the general fund as a primary funding source is being reduced, and more sustainable methods of funding are being utilized.

d. Vehicle Registration, Licensing, Titling and Permitting fees

As mentioned earlier, every state collects fees for vehicle registration, licensing, or permitting that provide major revenue sources. In fact, 13 states collected more in registration

³³⁵ Wyoming Management Audit Committee, *WYDOT and General Fund Appropriations for Highways* (May 2008), <http://legisweb.state.wy.us/progeval/reports/2008/wydot/WYDOTfullreport.pdf>, 12.

³³⁶ See Appendix A.

³³⁷ Associated Press, "Gov. Mead Signs Fuel Tax Increase Into Law," Feb. 15, 2013, <http://www.sheridanmedia.com/news/gov-mead-signs-fuel-tax-increase-law62526>.

³³⁸ Wyoming Management Audit Committee, *WYDOT and General Fund Appropriations for Highways*, 23.

³³⁹ "Wyoming Raises the Fuel Tax," Wyoming Fuel Tax News 3 (March 2013), http://www.dot.state.wy.us/files/live/sites/wydot/files/shared/Fuel_Tax_Administration/FTA%20Quarterly%20Newsletter%20MAR%202013.pdf, 1.

³⁴⁰ Ibid.

³⁴¹ Wyoming Management Audit Committee, *WYDOT and General Fund Appropriations for Highways*, 8-9.

³⁴² AP, "Gov. Mead Signs Fuel Tax Increase Into Law."

³⁴³ Wyoming Management Audit Committee, *WYDOT and General Fund Appropriations for Highways*, 4.

³⁴⁴ Douglas A. McIntyre et al., "Wyoming named best run state for second year in a row," Dec. 1, 2011, <http://www.wyomingbusiness.org/news/article/wyoming-named-best-run-state-for-second-/5985>.

and license fees than state fuel taxes in 2004, bucking older trends.³⁴⁵ As of November 2013, 17 states had considered or were considering legislation that would increase these fees, including Virginia that successfully raised its titling tax.³⁴⁶

Generally, these fees are either flat rate or based on the vehicle's gross or empty weight. States' registration fees for motor vehicles and motorcycles vary from \$4 to \$95 for every year.³⁴⁷ Numerous other fees may accompany the registration fee for a vehicle such as license tag fees for vanity tags. In addition, most states collect fees for operating and regulatory licenses for certain industries and professions. Regulatory licenses are typically required for car dealers, driving instructors, title service agents, and wreckers, just to name a few. Operating licenses are required to legally operate vehicles within a state.

Registration, licensing, and permitting fees all provide several benefits, primarily the potential to yield significant revenues. For example, Oregon raised over \$100 million in registration and operating fees from July to November 2013.³⁴⁸ Generally, these fees are well established as a key funding source for states' transportation needs and are relatively inexpensive to administer, although they are more expensive to administer than motor fuel taxes.³⁴⁹ It is also relatively easy to "piggyback" other fees onto registration fee administration and collection.³⁵⁰ In addition, they can be tailored to charge based on vehicle size or weight to account for the user fee principle based on the cost that their use imposes on the highway system.³⁵¹ Nevertheless, they are not as equitable as a mileage-based fee that accounts for actual use, such as a VMT fee.

Similarly, many states impose title fees on motor vehicles as well as trailers. Title fees may be flat fees or they vary based on the purchase price or fair market value of the vehicle. Title fees range from \$8 to \$99 per year.³⁵² Because these fees are tied to the vehicle's value, they are essentially adjusted to inflation.³⁵³ Moreover, these fees may be subject to a federal income tax deduction, which may make them more attractive than alternative mechanisms that do not offer that benefit.³⁵⁴

These fees' flexibility allows states to adapt to new technologies including alternative fuel vehicles without the added expense of creating a new collection mechanism.³⁵⁵ Some states have implemented special registration or licensing fees for alternative fuel vehicles.³⁵⁶ In Nebraska, for example, owners of alternative fuel vehicles have paid an annual fee of \$75 since

³⁴⁵ NGA, *Innovative State Transportation Funding and Financing*, 5.

³⁴⁶ "Transportation Funding and Financing Legislative Database."

³⁴⁷ NCSL, "Registration and Title Fees by State (2012 Chart),"

<http://www.ncsl.org/research/transportation/registration-and-title-fees-by-state.aspx>.

³⁴⁸ Oregon Department of Transportation, Fund Apportionments: Receipt Distribution for Fiscal Year 2013-2014, http://www.oregon.gov/ODOT/CS/FS/docs/hwyrev_apport/apport_fy14.pdf.

³⁴⁹ "A Guide to Transportation Funding Options: Registration and Other Vehicle Fees."

³⁵⁰ NSTIF, *Paying Our Way*, 76.

³⁵¹ Slone, *Transportation & Infrastructure Finance*, 12.

³⁵² NCSL, "Registration and Title Fees by State (2012 Chart)."

³⁵³ Slone, *Transportation & Infrastructure Finance*, 14.

³⁵⁴ "A Guide to Transportation Funding Options: Registration and Other Vehicle Fees."

³⁵⁵ Slone, *Transportation & Infrastructure Finance*, 12.

³⁵⁶ NCSL, *On the Move*, 9.

2012 if they do not use a fuel source that is subject to fuel taxes.³⁵⁷ That same year, Virginia imposed an annual \$50 license tax on alternative fuel vehicles,³⁵⁸ and in 2013, the Commonwealth imposed a \$64 annual registration fee on hybrid, alternative fuel, and electric vehicles.³⁵⁹ Similarly, North Carolina imposed a \$100 registration fee for plug-in electric vehicles and \$50 registration fee for hybrids.³⁶⁰ Washington charges the highest fee of \$100 for annual registration renewal (but Washington plans to eliminate this fee when it implements a VMT).³⁶¹ Most of these fees have been dedicated to highway spending on maintenance and operation.³⁶²

Measures imposing higher or additional fees on alternative fuel vehicles may draw the ire of environmentalists or those who wish to reduce reliance on foreign oil. These initiatives may be especially problematic if the state has implemented other incentives to encourage alternative fuel use. For example, at least 8 states provided tax deductions or credits for alternative fuel vehicles; 15 states provided monetary incentives such as reduced registration fees for electric vehicles; and 27 states tax alternative fuels at a reduced rate.³⁶³ Residents may perceive the state to be setting contradicting policies if they simultaneously incentive alternative fuel and electric vehicles as well as charging higher fees for those same vehicles. In 2013, Arizona, Idaho, Nevada and Texas all failed to impose such fees.³⁶⁴

Furthermore, although loosely tied to road capacity and the user fee principle, these fees do not depend on actual use of the state's transportation infrastructure and may be difficult to justify as such.³⁶⁵ Unlike use-based mechanisms, registration and other vehicle fees do not encourage more efficient use of the highway system. Moreover, these fees are very visible, more so than the gas tax incorporated into the price of fuel, as lump sum payments made every year or two years.³⁶⁶ In 2008, Idaho's governor promoted the increase of the state's revenue from the \$24 to \$48 range to a flat fee of \$150.³⁶⁷ Originally, 58% of the voters supported the increased fees compared to the 72% that opposed an increase in the fuel tax; however, the governor ultimately withdrew his proposal after public opposition to the plan increased dramatically.³⁶⁸ Nevertheless, they may be more favorably received than gas tax increases because they can be listed as itemized deductions on federal income tax filings.³⁶⁹

Registration and titling fees can be a prominent source of revenue for states seeking to increase transportation infrastructure revenues. Maryland is a key example of a state that successfully raises transportation infrastructure revenues through these fees.

³⁵⁷ Ibid.

³⁵⁸ Ibid.

³⁵⁹ "Transportation Funding and Finance Legislation Database," (VA H 2313).

³⁶⁰ Ibid. (NC S 402)

³⁶¹ NCSL, *On the Move*, 9.

³⁶² Ibid.

³⁶³ Ibid.

³⁶⁴ "Transportation Funding and Finance Legislation Database."

³⁶⁵ Sjoquist et al., *Implications for Alternative Revenue for Transportation Planning*, 48.

³⁶⁶ Slone, *Transportation & Infrastructure Finance*, 14.

³⁶⁷ Ibid. 12.

³⁶⁸ Ibid.

³⁶⁹ Ibid. 14.

i. Registration and Titling Fees: Maryland's Approach

In the fiscal year 2011, Maryland received 10.1% of its Transportation Trust Fund revenues from registration fees.³⁷⁰ When combined with titling fee revenues, these fees outweighed the state's reliance on motor fuel taxes by almost 5 percentage points (24.9% compared to 20.2%).³⁷¹ Just two years later, the state relied on titling and registration fees for 30% of its transportation revenues while motor fuel tax revenues failed to grow and only remained at 20%.³⁷²

Maryland charges registration fees based on the type and size of the vehicle. For example, personal vehicle registration fees are either \$101 or \$153.³⁷³ Vanity tag fees of \$25 per year are also imposed and dedicated to the Transportation Trust Fund.³⁷⁴ Other registration and tag fees, such as commemorative or organizational, are also dedicated exclusively to the Trust Fund. The revenues collected from registration fees increased from \$92.8 million in 1985 to \$374.1 million in 2011.³⁷⁵ The drastic increase occurred in 2005 after the legislature raised registration fees increasing revenue from \$198.8 million in 2004 to \$351.3 million in 2005.³⁷⁶ However, these revenues are typically used to cover administrative costs, not to fund infrastructure improvements.

Additionally, Maryland dedicates commercial operator's licensing fees, driver's license renewal fees, and regulatory licensing fees to the Trust Funds.³⁷⁷ Thirty percent of the state's uninsured motorist fee, which is \$150 for the first day and \$7 for every additional day, also is deposited in the Transportation Trust Fund.³⁷⁸ License fees raised \$37.1 million in 2011, which is up from the original \$8 million raised in 1985 but less than the high of \$42.9 million collected in 2009.³⁷⁹ In contrast to the widespread dedication to the transportation fund, Maryland's vehicle emission inspection program fee of \$14, \$25 salvage inspection fee are not designated for transportation purposes.³⁸⁰

Like registration fees, Maryland relies on titling taxes for a significant portion of its Transportation Trust Fund revenues.³⁸¹ In 2013, titling fees alone almost produced as much revenue for the Trust fund as motor fuel taxes (19% compared to 20%).³⁸² Since its creation in

³⁷⁰ *Maryland Transportation Revenues* ch.10 at 200,

http://dls.state.md.us/data/polanasubare/polanasubare_natresenvntra/Volume-III-Chapter-10.pdf.

³⁷¹ *Ibid.*

³⁷² Maryland Department of Legislative Services, *Transportation Revenue Options: Presentation to the House Ways and Means Committee* 4 (Dec. 11, 2012),

http://dls.state.md.us/data/polanasubare/polanasubare_natresenvntra/Transportation-Revenue-Options.pdf.

³⁷³ *Maryland Transportation Revenues*, 204.

³⁷⁴ *Ibid.*

³⁷⁵ *Ibid.* 207.

³⁷⁶ *Ibid.*

³⁷⁷ *Ibid.* 206.

³⁷⁸ *Ibid.* 204.

³⁷⁹ *Ibid.* 207.

³⁸⁰ *Ibid.* 204.

³⁸¹ *Ibid.*

³⁸² Maryland Department of Legislative Services, *Transportation Revenue Options: Presentation to the House Ways and Means Committee*, 4.

1933, the titling tax has been increased five times from its original rate of 1% to its current rate of 6% in 2007.³⁸³ The current 6% rate is based on the vehicle's fair market price and a statutory floor of \$32 is in place.³⁸⁴

Nevertheless, the state allows numerous exemptions from these fees—such as government-owned vehicles; mobile homes over 35-feet long; rental vehicles; emergency response vehicles owned by certain non-governmental agencies; school busses owned by certain non-governmental entities; and vehicles owned by nonprofit organizations to assist disabled persons.³⁸⁵ The state also allows plug-in electric vehicles to receive a 100% tax credit for the titling fee.³⁸⁶ Although using licensed dealers to administer and collect titling fees may lessen the stress on the state, allowing them to retain 1.2% of the fee further undermines the revenue the state can raise from the fees.³⁸⁷

All of the revenues that Maryland raises from the titling tax go to transportation purposes. One third of the revenues are dedicated to the state's Transportation Trust Fund and the remaining two-thirds are committed to the Gasoline and Motor Vehicle Revenue account.³⁸⁸ In fiscal year 2011, this meant that the Trust Fund received \$184 million and the Gasoline Motor Vehicle Revenue account received \$368 million from titling taxes alone.³⁸⁹ Maryland clearly has established a strong revenue source that consistently dedicates funds to transportation infrastructure funding year after year.

e. Vehicle Miles Traveled Fee

The VMT fee is the most popular and controversial new funding mechanism among transportation funding policymakers. As mentioned above, the VMT fee is a broad term for any fee applied to the number of miles one vehicle has driven. There are a number of iterations of the VMT, and in fact, one of the fee's main benefits is its flexibility in application. This section first will provide a brief explanation of the most popular variations of the VMT and then will explain both the pros and cons that broadly apply to all of these VMT types.

States have countless options on how to track the number of miles its constituents have driven and appropriately charge them a fee based on those miles. The most well-known administration model uses Global Positioning Systems (GPS) located in drivers' cars to track miles driven and then using fuel pumps to collect the VMT fee.³⁹⁰ Some suggested GPS models have included coarse-resolution GPS-based mileage metering and high-resolution GPS-based mileage metering.³⁹¹ The coarse-resolution monitoring may assuage some constituents with

³⁸³ *Maryland Transportation Revenues*, 202.

³⁸⁴ *Ibid.* 195.

³⁸⁵ *Ibid.*

³⁸⁶ *Ibid.* 197.

³⁸⁷ *Ibid.*

³⁸⁸ *Ibid.* 200.

³⁸⁹ *Ibid.*

³⁹⁰ GAO, *Physical Infrastructure*, 16.

³⁹¹ American Association of State Highway and Transportation Officials, "AASHTO Perspective on the Future of Transportation Infrastructure" (July 23, 2009), <http://www.transportation.org/Documents/Lee-2009-07-23.pdf>, 17.

privacy concerns because it only relies on general-location identification and metering.³⁹² For states with constituents that are uncomfortable with placing GPS systems in their cars, a number of models use either wireless transponders or odometers to measure miles traveled. For example, vehicles and fuel pumps can be equipped with wireless transponders that communicate odometer mileage to a central office or data center.³⁹³ The data center can then determine the mileage fee and add it to the cost of fuel purchased.³⁹⁴ This method can easily refund users' gas tax so that they are not taxed twice. A car's odometer could be checked during annual inspections (such as during a safety inspection) or drivers could self-report their odometer readings.³⁹⁵ For self-reporting, odometer inspections could be required every other year³⁹⁶ or they even could be optional: a state could apply an assumed mileage amount as base, and drivers could choose to schedule an odometer inspection to individualize their reported mileage.³⁹⁷

There are many other less widely discussed options as well. For example, states that are unsure about the switch to VMT fees may implement a compromise through a VMT fee that simultaneously relies on fuel consumption-based mileage estimates as well.³⁹⁸ Ideally this type of VMT fee would be transitional in nature and the state could eventually pull away from using any gas fee.³⁹⁹ Other options include relying on cars' already installed on-board diagnostic (OBD II) systems, either through directly monitoring through OBD II-based mileage metering or working with cellular towers as well through OBD II/cellular-based mileage metering.⁴⁰⁰ Similarly, states could track miles driven through RFID-based tolling, which would involve tracking and transferring data through radio frequencies.⁴⁰¹ International pilot projects offer possible methods as well. Based on New Zealand's VMT fee program, drivers could purchase a prepaid number of miles and display a paper license akin to a vehicle registration sticker on the windshield.⁴⁰² Although this method is the least sophisticated, it has been in use in New Zealand for over 35 years.⁴⁰³

In addition to the countless options of how to administer the VMT fee, the primary benefit of the fee is the substantial and sustainable revenue source it provides the state. The VMT fee is the only funding mechanism that most policymakers believe could fully replace the gas fee.⁴⁰⁴ Estimates suggest that a VMT fee of 1 to 2 cents per mile could replace the state gas fee.⁴⁰⁵ For those policymakers who think it might take upwards of nine cents per mile to replace the gas fee, the VMT fee is still a popular option to at least supplement the gas fee to add more

³⁹² Ibid. 18.

³⁹³ U.S. Government Accountability Office (GAO), *Highway Trust Fund: Pilot Program Could Help Determine the Viability of Mileage Fees for Certain Vehicles* (Dec. 2012), <http://www.gao.gov/assets/660/650863.pdf>, 15.

³⁹⁴ Ibid.

³⁹⁵ AASHTO, "Perspective on the Future," 17.

³⁹⁶ American Planning Association (APA), *Rebuilding America: APA National Infrastructure Investment Task Force Report* (Oct. 2010), <http://www.planning.org/policy/infrastructure/pdf/finalreport.pdf>, 22-23.

³⁹⁷ AASHTO, "Perspective on the Future," 17.

³⁹⁸ Ibid.

³⁹⁹ Ibid. 18.

⁴⁰⁰ Ibid. 17.

⁴⁰¹ Ibid.

⁴⁰² GAO, *Highway Trust Fund*, 15.

⁴⁰³ Ibid. 17.

⁴⁰⁴ NCSL, *On the Move*, 9.

⁴⁰⁵ Ibid.

funding to the already decreasing transportation infrastructure funds.⁴⁰⁶ Statistics support the likelihood that the VMT fee would continue to generate more and more revenue. The overall miles traveled have increased substantially over the years: 2.4 trillion miles were traveled in 1993; over 3 trillion miles were traveled in 2007, and approximately 2.9 trillion miles were traveled in 2009.⁴⁰⁷ The U.S. population is expected to increase from 305 million in 2005 to over 420 million in 2050.⁴⁰⁸ The growth potential is enormous for both the number of people driving cars and the number of miles driven per car.

Possibly more importantly, VMT fees are a very sustainable revenue source. Although the effectiveness of the gas fee has dwindled over the past few decades, VMT fees could maintain the same levels of revenue regardless of how many alternative-fueled vehicles are on the road. According to the International Energy Agency, alternative vehicles will hold 49% of the market share of new vehicle sales by 2035.⁴⁰⁹ In addition to the increasing market share, Corporate Average Fuel Economy standards are expected to double fuel economy by 2025.⁴¹⁰ Although this will severely harm the effectiveness of the gas fee, overall revenue under VMT fees would not be affected by alternative vehicles with better gas mileage.⁴¹¹ VMT fees are simply more sustainable, presuming that the fee is indexed with inflation so that its purchasing power consistently remained the same.⁴¹²

Beyond providing a sustainable revenue source, VMT fees also work to achieve other policy goals of the state: environmental sustainability and congestion reduction. Environmentalists contend that VMT fees can help regulate congestion and emissions.⁴¹³ For vehicles in worse emissions classes, the state could choose to implement a higher fee per mile.⁴¹⁴ Fees could also be increased for the size, weight, or load distribution of the vehicle.⁴¹⁵ Under a GPS or RFID tolling administered system, the state could mark certain roads as high-congestion zones in real time and charge higher VMT fees in those areas depending on the time of day.⁴¹⁶ The VMT fee's flexibility allows for similar adjustments for many factors, such as applying higher fees for less fuel efficient vehicles⁴¹⁷ or assigning higher fees for heavier vehicles⁴¹⁸ that often inflict more damage on roads.

VMT fees arguably meet another policy goal of the state: equitable individual infrastructure funding. According to the GAO's 2012 report on VMT fees, U.S. and foreign pilot projects show that a VMT fee "can lead to more equitable and efficient use of roadways."⁴¹⁹

⁴⁰⁶ Ibid.

⁴⁰⁷ American Association for State Highway and Transportation Officials (AASHTO), "Opportunities in Freight Infrastructure Financing" (Nov. 18, 2009), <http://www.transportation.org/Documents/Lee-2009-11-18.pdf>, 12.

⁴⁰⁸ Ibid.

⁴⁰⁹ NCSL, *On the Move*, 54.

⁴¹⁰ GAO, *Highway Trust Fund*, 8.

⁴¹¹ AASHTO, "Opportunities in Freight Infrastructure Financing," 16.

⁴¹² "A Guide to Transportation Funding Options."

⁴¹³ AASHTO, "Perspective on the Future," 16.

⁴¹⁴ AASHTO, "Opportunities in Freight Infrastructure Financing," 16.

⁴¹⁵ Ibid.

⁴¹⁶ GAO, *Physical Infrastructure*, 16.

⁴¹⁷ Ibid.

⁴¹⁸ NCSL, *On the Move*, 61.

⁴¹⁹ GAO, *Highway Trust Fund*, 5.

According to AASHTO, the VMT fee “[i]mprove[s] equity in transportation finance by aligning the level of fees owed with the benefits derived (or costs imposed) through use of the system.”⁴²⁰ This is because the fee is a more direct indication of transportation infrastructure use than either fuel taxes or registration fees.⁴²¹ It is also viewed as fairer than a lot of funding mechanisms because it applies the gas tax’s “users-pay principle.”⁴²² This view of equity may contribute to the public’s perception of VMT fees.

Although VMT fees are widely viewed as very controversial, a study actually found that the VMT fee is supported by 41% of the population under the assumption of a one-cent-per-mile fee that varied depending on each car’s emissions.⁴²³ Tying VMT fees to environmental impact may be the key to this success. According to the study’s author, Dr. Asha Weinstein Agrawal, “the fact that a mileage tax could be tolerable to about half the population is quite striking and goes against the conventional wisdom.”⁴²⁴

Based on all of these benefits, most policymakers view the VMT fee as the funding mechanism that will be used in the future. The National Surface Transportation Policy and Revenue Study Commission cited three case studies that found the VMT fee as the next “long-term replacement for the fuel tax” after its review of Oregon’s VMT study and trial.⁴²⁵ Some policymakers contend that the future is here and that the VMT fee is technologically feasible to use right now.⁴²⁶

For all of these benefits and the widespread view that VMT fees will eventually be used, there is at least the same number of concerns. The VMT fee has met a lot of resistance.⁴²⁷ The top concern is the political feasibility of implementing a VMT fee. This lack of political will results from three concerns: privacy fears, and institutional challenges, and technological incapacity.

Much of the concern of lacking political will is due to constituents’ privacy concerns.⁴²⁸ Some people feel uncomfortable with having GPS in their cars with the state’s capability to track their whereabouts, regardless of the purpose of the GPS. In order for VMT fees to be widely accepted, the state would have to convince “motorists that detailed information on their travel patterns will not be accessible to others.”⁴²⁹ UTCM found that these privacy concerns are unsubstantiated,⁴³⁰ but they remain active in public debate regardless.

⁴²⁰ AASHTO, “Perspective on the Future,” 16.

⁴²¹ “A Guide to Transportation Funding Options.”

⁴²² NSTIF, *Paying Our Way*, 68.

⁴²³ Ryan Holeywell, “Is Raising the Gas Tax Truly Politically Unpalatable?” *Governing*, April 22, 2013, <http://www.governing.com/blogs/view/gov-gas-tax-increase-hike-politically-unpalatable.html>.

⁴²⁴ *Ibid.*

⁴²⁵ Slone, *Transportation & Infrastructure Finance*, 35.

⁴²⁶ NSTIF, *Paying Our Way*, 68.

⁴²⁷ NCSL, *On the Move*, 13.

⁴²⁸ GAO, *Physical Infrastructure*, 16.

⁴²⁹ Slone, *Transportation & Infrastructure Finance*, 35.

⁴³⁰ “A Guide to Transportation Funding Options.” For example, cell phones already have the ability to track users, yet are widely used regardless of this privacy concern.

Beyond basic privacy concerns that possibly could be mitigated based on the state's choice of administration, institutional challenges are large and complex. If a state were to implement a VMT fee, it would have to choose how to administer its system and how its system would be impacted as more states choose to implement VMT fees.⁴³¹ States would have to choose whether and how it would phase in VMT fees, how state agencies would be impacted and react to the more frequent collection of taxes, and many of the other new details that would result from an entirely new tax system.⁴³² According to the Council of State Governments (CSG), “[m]any Vehicle Miles Traveled fee concepts assume a third-party collection agency would actually receive information on mileage traveled in each jurisdiction, bill the motorist and distribute the funds among the jurisdictions based on miles traveled and the appropriate tax rate.”⁴³³ Under this model, states would need to determine how to work with a nongovernmental entity in tax collection. Because of the interstate travel of so many vehicles, states may have to coordinate how to collect taxes equitably among each other.⁴³⁴

Even after basic decisions have been made, states would need to remain vigilant in the early stages of implementation to determine how it would need to adjust road prices in order to be efficient and to not disproportionately affect groups like the freight industry.⁴³⁵ Needless to say, this decision-making and implementation process could be quite costly to administer.⁴³⁶ UTCM found that administrative costs would be greater than for the gas tax, but that the overall long term costs are too uncertain to forecast.⁴³⁷ States must determine mileage fees that account for ongoing administrative costs. For example, a pilot project in the Netherlands estimated that administrative costs accounted for 7% of total VMT revenues.⁴³⁸ This could be “substantially higher”—as much as a third of revenues—in the U.S. because drivers pay significantly less in transportation costs than drivers in the Netherlands.⁴³⁹ U.S. studies show that there could be large administrative costs specifically within the pilot studies as well. In Iowa's VMT fee pilot study with 2,400 participants, 618 study-related incidents were reported and required at least one service visit to correct.⁴⁴⁰ In sum, the implementation of VMT fees would require states to create a whole new policy framework, in which it would determine at the least how to collect the taxes, how the per car mileage would be collected, how the data would be transmitted, and whether it would fully replace the gas tax or only supplement it.⁴⁴¹

Limited technology realistically may slow future implementation of VMT fees. The National Surface Transportation Policy and Revenue Study Commission found a number of technological challenges that must be resolved, including: “[i]dentifying a method for calculating

⁴³¹ Slone, *Transportation & Infrastructure Finance*, 35.

⁴³² Ibid.

⁴³³ Ibid.

⁴³⁴ Michigan Ohio University Transportation Center, *The Impact of Energy Efficient Vehicles on Gas Tax (Highway Trust Fund) and Alternative Funding for Infrastructure Construction, Upgrade, and Maintenance* (2012), http://ntl.bts.gov/lib/46000/46200/46268/MIOH.UTC_TS51_2012-Final_Rpt_Impact_of_Energy_Efficient_Vehicles_on_Gas_Tax_etc.pdf, 38.

⁴³⁵ AASHTO, “Perspective on the Future,” 31.

⁴³⁶ Ibid.

⁴³⁷ “A Guide to Transportation Funding Options.”

⁴³⁸ GAO, *Highway Trust Fund*, 21.

⁴³⁹ Ibid.

⁴⁴⁰ Ibid.

⁴⁴¹ NCSL, *On the Move*, 13.

the mileage traveled in each taxing jurisdiction; [i]dentifying the way this mileage information would be transmitted to the tax collection agency; [i]dentifying the way the system would deal with equipment failures as a result of either malfunction or tampering; [e]stablishing policies for dealing with evasion of Vehicle Miles Traveled fees; [and] making sure communication of the data is seamless.”⁴⁴² Coordinating between and certifying private vendors and collectors will be no easy task. The state potentially may have to coordinate VMT fee processes across at least three separate parties: one party may manage data collection, another may process data, and another may bill users. In addition to state coordination, the GAO explained that states would need to determine how to manage “technical difficulties in retrofitting vehicles with the necessary technology.”⁴⁴³

This political feasibility has been evidenced in the low success rates of states trying to advance the VMT fee. As of 2012, 18 states have attempted to implement a trial VMT fee pilot project.⁴⁴⁴ In 2012 legislative sessions, only 5 states introduced legislation relating to VMT fees⁴⁴⁵ and only 8 states reported that they are likely to introduce a VMT in the next decade.⁴⁴⁶ “Of these, 7 reported that they are likely to introduce mileage fees for electric vehicles in the next decade and fewer reported that they are likely to introduce programs for passenger vehicles (4) or commercial trucks (3).”⁴⁴⁷ Despite some consideration by states, no state has a broad VMT fee;⁴⁴⁸ in fact, only Oregon is committed to developing a framework to initiate the VMT fee.⁴⁴⁹

The reasons for the lack of political will are not necessarily unwarranted. The general view of public opinion is that most people do not accept VMT fees because “of the assumption that Americans wouldn’t want the government knowing their driving tendencies.”⁴⁵⁰ Although Professor Agrawal’s study suggests that constituents may be more open to VMT fees than most presume, a negative public opinion of VMT fees is still a very real factor for states to consider. On the whole, there is a general lack of voter understanding of VMT fees, which means there is likely a lack of overall support.⁴⁵¹

Some policymakers also suggest that the benefits of VMT fees are overstated. First, revenue may not increase under VMT fees. A 2009 survey found that there has been a decline in miles driven per person for all age groups since 2001.⁴⁵² The survey even noted its first decrease in vehicles per household since 1969, though it remained above 1995 ownership levels.⁴⁵³ Even if these surveys are not indicative of future vehicle usage, the high implementation costs and incentives to use low-gas-mileage cars may also hurt revenue. VMT fees has a high initial cost due to the starting implementation costs,⁴⁵⁴ which means that in the short-term VMT fees may

⁴⁴² Slone, *Transportation & Infrastructure Finance*, 35.

⁴⁴³ GAO, *Physical Infrastructure*, 16.

⁴⁴⁴ NCSL, *Major State Transportation Legislation, 2012*, 3.

⁴⁴⁵ Ibid.

⁴⁴⁶ GAO, *Highway Trust Fund*, 45.

⁴⁴⁷ Ibid.

⁴⁴⁸ NCSL, *Major State Transportation Legislation, 2012*, 3.

⁴⁴⁹ Ibid.

⁴⁵⁰ Holeywell, “Is Raising the Gas Tax Truly Politically Unpalatable?”

⁴⁵¹ Sjoquist et al., *Implications of Alternate Revenue Sources for Transportation Planning*, vi.

⁴⁵² NCSL, *On the Move*, 1.

⁴⁵³ Ibid. 3.

⁴⁵⁴ Sjoquist et al., *Implications of Alternate Revenue Sources for Transportation Planning*, vi.

not be highly revenue generating. As shown in Figure 8, cars with very low gas mileage may actually pay less with VMT fees than the gas tax, which would not be cost-effective and may actually reduce overall revenue if people do not continue to buy fuel-efficient cars.⁴⁵⁵ Additionally, for states that use an opt-in option for VMT fee program like Oregon, people with fuel-inefficient cars have a large incentive to opt-in to the program to pay less and fuel-efficient cars have less of an incentive.⁴⁵⁶

Figure 8: Comparison of Oregon State Gasoline Tax and VMT Fee Payments with the Road Usage Charge Program

Vehicle	EPA Estimated Gas Mileage	Gallons Consumed per 250 miles	Total Payment Under Gas Tax with Gas @ \$3.30/gal	Total Payment Under VMT Fee with Gas @ \$3.30/gal	Gas Tax Paid @ 30¢/gal	Tax Paid with VMT Fee @ 1.5¢/mi	Tax Change Under VMT Fee
Toyota Prius (HEV)	48	5.2	\$17.16	\$22.11	\$1.56	\$3.75	\$2.19
Toyota Corolla	34	7.4	\$24.42	\$29.37	\$2.22	\$3.75	\$1.53
Ford Taurus	23	10.9	\$35.97	\$40.92	\$3.27	\$3.75	\$0.48
Dodge Caravan 3.8 V6	19	13.2	\$43.56	\$48.51	\$3.96	\$3.75	(\$0.21)
Chevrolet Silverado 4x4	16	15.6	\$51.48	\$56.43	\$4.68	\$3.75	(\$0.93)
Lincoln Navigator	13	19.2	\$63.36	\$68.31	\$5.76	\$3.75	(\$2.01)
Lamborghini Diablo	11	22.7	\$74.91	\$79.86	\$6.81	\$3.75	(\$3.06)

Sources: Road User Fee Task Force, Report to the 72nd Oregon Legislative Assembly, (March 2003), Appendix CC. AAA, "Current State Averages," (November 26, 2013), <http://fuelgaugereport.opisnet.com/sbsavg.html>. ODOT, "Road Usage Charge Fact Sheet," (August 2013).

Second, states may even reduce revenue if VMT fees are not set higher for commercial trucks. According to a 2000 FHWA study, an 80,000 pound commercial truck with 5 axles imposes roadway damage equivalent to the damage from 24,000 passenger cars.⁴⁵⁷ Unless weight or another factor is added to the base VMT fee, commercial trucks would underpay for their use due to the disproportionate wear on roadways.⁴⁵⁸ To retain equitable infrastructure funding among passenger cars and cargo trucks, the CBO recommends VMT fees be assessed as weight-distance fees based on weight per axle.⁴⁵⁹ Weight-distance fees can generate significant revenue to offset this concern. For example, the Oregon Department of Transportation budget

⁴⁵⁵ Oregon Department of Transportation, Oregon Road Usage Charge Program, presentation, (October 11, 2013) http://www.oregon.gov/ODOT/HWY/RUFPP/docs/Oregon_RdUsageChrg_Prog_Oct112013.pdf.

⁴⁵⁶ Tanya Snyder, "Ten Questions (and Answers) About Oregon's New VMT Charge," DC Streets Blog, Sept. 24, 2013, <http://dc.streetsblog.org/2013/09/24/ten-questions-and-answers-about-oregons-new-vmt-charge/>.

⁴⁵⁷ GAO, *Highway Trust Fund*, 11.

⁴⁵⁸ *Ibid.* 31.

⁴⁵⁹ U.S. Congressional Budget Office, *Alternative Approaches to Funding Highways* (Mar. 2011), <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/121xx/doc12101/03-23-highwayfunding.pdf>, ix.

estimated that weight-distance fees would generate a total of \$630 million for 2009 through 2011.⁴⁶⁰

Third, any revenue the state can generate from VMT fees may not be sustainable if the fee is not properly indexed. Although VMT fees can be set at any rate the state chooses, a fee that is not indexed to inflation would lose its purchasing power over time.⁴⁶¹ Third, VMT fees may not be as environmentally friendly as it appears. If VMT fees do not offer incentives to fuel-efficient car drivers or allows drivers to opt in, then drivers may not be incentivized to buy more fuel-efficient cars that often are slightly more expensive.⁴⁶² AASHTO recommends that the more environmental choice is not VMT fees, but a transportation work user fee that taxed all transportation energy.⁴⁶³ This tax would instead require the state to tax the average energy efficiency of vehicles on the road, with possible congestion and carbon charges.⁴⁶⁴ Although AASHTO's recommendation is not one of the more mainstream recommendations, it does show that VMT fees may not be the environmental choice.

The fourth concern results from VMT fees not being quite as equitable as many proponents suggest. Some critics of VMT fees are concerned about the inequity of the fee for rural drivers. Because rural constituents are forced to drive farther to go to work, stores, or anywhere else as part of their daily lives, they are forced to take on a larger proportion of the VMT fee than their counterparts in the cities and suburbs. The NITSF even stated that VMT fees are regressive for this reason.⁴⁶⁵

In the end, as the National Surface Transportation Policy and Revenue Study Commission found, the general consensus appears to be that "a VMT fee has many promising features; but, until more is known about collection and administrative costs, ways to minimize evasion, and the acceptability of such a mechanism to the taxpayers, it is premature to rule out other types of taxes and fees to supplement traditional fuel tax revenues."⁴⁶⁶ The case study of Oregon's VMT fee trial offers one of the best examples of how VMT fees are a promising revenue source, but needs more time for implementation.

i. Vehicle Miles Traveled Fees: Oregon's VMT Fee Trials

Oregon introduced the first gas tax in 1919, after the state's highway commission started a "Get Oregon Out of the Mud" campaign in 1913.⁴⁶⁷ Oregon also enacted the first weight mile tax for heavy vehicles in 1933, and completed the nation's first cost allocation study in 1937.⁴⁶⁸

⁴⁶⁰ State Smart Transportation Initiative, *Summary of State Use of Weight-Distance Tax*, June 24, 2011, <http://ssti.us/wp/wp-content/uploads/2011/11/Summary%20of%20Weight%20Distance%20Taxes.pdf>.

⁴⁶¹ "A Guide to Transportation Funding Options."

⁴⁶² GAO, *Physical Infrastructure*, 16.

⁴⁶³ David L. Greene, "Transportation and Climate Change: Real Solutions for Greenhouse Gas Mitigation" (presented at the AASHTO Annual Meeting in Palm Desert, California, on Oct. 25, 2009), <http://www.transportation.org/Documents/AASHTO2009.ppt>, 15.

⁴⁶⁴ *Ibid.*

⁴⁶⁵ NSTIF, *Paying Our Way*, 72.

⁴⁶⁶ Slone, *Transportation & Infrastructure Finance*, 35.

⁴⁶⁷ Oregon Blue Book, "Oregon History: Mixed Messages," <http://bluebook.state.or.us/cultural/history/history24.htm>.

⁴⁶⁸ "Oregon Road Usage Charge Program."

With Senate Bill 810, Oregon created the Road Usage Charge Program (RUCP), and became the first state to pass VMT fee legislation.⁴⁶⁹

The RUCP has been in the pipeline for over a decade. In 2001, the Oregon Legislature established 12-member “Road User Fee Task Force,” which spent a year and a half studying 28 different funding ideas that could replace or reform its mix of transportation funding mechanisms. The task force recommended that the Oregon Department of Transportation (ODOT) conduct a two-part study to analyze what they called the “Oregon Mileage Fee Concept.” This involved 1) studying the feasibility of replacing the state gas tax with a mileage-based fee to be collected at fueling stations, and 2) studying the feasibility of using this system to charge variable rates to reduce congestion. The study, which recruited 285 participants, commenced in April 2006; in November 2007, the Task Force reported its findings to the Oregon Department of Transportation.⁴⁷⁰ The study found that while a VMT fee was feasible and privacy can remain protected, “technology must be open and flexible,” and retrofitting vehicles was cost-prohibitive.⁴⁷¹

Building upon lessons learned in the 2006 study, the Task Force conducted a refined pilot in 2012, which addressed each of the issues previously raised. The pilot consisted of 44 Oregon vehicles—8 of which were owned by legislators, 21 Washington vehicles, and 23 Nevada vehicles, ran for just 4 months so that results would be available before the next legislative session.⁴⁷² The first pilot study, which provided users solely with government-issued GPS devices, resulted in user apprehension. The findings from the pilot led to a bill that mandated that the VMT system: be convenient; offer participants the choice of data collection device, including the use of odometer readings; use open,⁴⁷³ accurate, adaptable, and tamper-resistant technology; and “demonstrate a fair, supportable and efficient replacement for the state gas tax for drivers of highly fuel efficient vehicles.”⁴⁷⁴ The bill placed an emphasis on fuel-efficient vehicles because highly efficient vehicles pay fewer gas taxes per mile than less efficient cars. However, increasing tax rates on drivers of highly efficient vehicles removes one of the main incentives for using such vehicles. The RUCP actually reduces the effective taxes paid by drivers of cars with fuel economies of less than 17 miles per gallon, while it increases the tax for more efficient cars.⁴⁷⁵

The bill authorizes ODOT to orchestrate a charge of 1.5 cents per mile, and a collection system for 5,000 voluntary participants by July 1, 2015. It is essentially a large pilot program that will build capacity and public buy-in with hopes of creating a mandatory program in the future. The program will accept only 1,500 vehicles with a fuel economy of 17 miles per gallon

⁴⁶⁹ Oregon Department of Transportation, *Road Usage Charge Program Fact Sheet*, (Aug. 2013) available at http://www.oregon.gov/ODOT/HWY/RUFPP/docs/RUCP_Facts_Aug2013.pdf

⁴⁷⁰ Ibid.

⁴⁷¹ Ibid.

⁴⁷² Ibid.

⁴⁷³ Oregon Department of Transportation, “Oregon Road Usage Charge Program” (presented on October 11, 2013), http://www.oregon.gov/ODOT/HWY/RUFPP/docs/Oregon_RdUsageChrg_Prog_Oct112013.pdf.

⁴⁷⁴ Ibid.

⁴⁷⁵ However, the cost of operating highly efficient vehicles will still be lower than that of other cars because they will still purchase less gas. Oregon Department of Transportation, “Road Usage Charge Program Fact Sheet,” (Aug. 2013), http://www.oregon.gov/ODOT/HWY/RUFPP/docs/RUCP_Facts_Aug2013.pdf.

or less, 1,500 vehicles with a fuel economy rating between 17 miles per gallon but less than 22 miles per gallon, and the remaining vehicles with a fuel economy greater than 22 miles per gallon. Vehicles in the first group will likely receive refunds because they pay more in fuel tax than they would with a mileage user fee, but more efficient vehicles will have a higher tax responsibility than they did previously. At an August 2013 Motor Carrier Transportation Advisory Committee meeting, ODOT's Jim Whitty, the architect of the pilot program, stated that the program is "looking at possibly coaxing high MPG vehicles into the system by providing inducements like waiving emissions testing."⁴⁷⁶ This is because the goal of the program is to gain public acceptance and institutional knowledge, which requires a variety of users.⁴⁷⁷

By law, Oregon's system will be set up as a public-private partnership, with private, ODOT-certified firms reporting mileage and conducting tax processing and account management activities.⁴⁷⁸ The legislation gives participants the choice of reporting method and provider. The available reporting methods are 1) basic reporting from the odometer; 2) advanced reporting using vehicle location technology; and 3) simplified reporting of assumed maximum miles driven.⁴⁷⁹ While providing different options for participants will be administratively difficult, acceptance seems to be dependent on choice. The first pilot was viewed unfavorably because participants were required to use government-issued tracking devices. Participants were somewhat more comfortable with having a choice of location tracking devices in the second pilot, but the third pilot also provides for odometer reporting, which requires no location tracking at all.⁴⁸⁰ To further assuage fears of privacy violations, legislators actually allowed the ACLU to write Section 9 of the bill, which limits who has access to the collected location and mileage data, and mandates that it be destroyed 30 days after it is required for payment or dispute resolution.⁴⁸¹

The RUCP demonstrates the possibility of implementing what otherwise could be a very contentious law. The pilot program's avoidance and/or correction of major political and privacy concerns has been achieved in part due to the slow and deliberate pace with which ODOT has proceeded, and provides a model for other states to follow.

f. Freight-related Fees and Taxes

Freight-related fees are generally justified as a traditional funding mechanism that is loosely based on the user fee principle. Although heavy commercial trucks and tractor trailers account for less than 5% of miles traveled on state roads, they cause nearly 80% of potholes and pavement damage.⁴⁸² One AASHTO study focused on how truck weight related to the amount of damage to the highway, finding that an vehicle with an "axle weight of 30,000 pounds causes 8

⁴⁷⁶ "Motor Carrier Transportation Advisory Committee Agenda," (Aug. 8, 2013), http://www.oregon.gov/ODOT/MCT/docs/MCTACMaterials_August2013.pdf

⁴⁷⁷ Ibid.

⁴⁷⁸ "Oregon Road Usage Charge Program."

⁴⁷⁹ Ibid.

⁴⁸⁰ Ibid.

⁴⁸¹ Snyder, "Ten Questions."

⁴⁸² Larry O'Dell, "VA. Gov. McDonnell: Use Sales Tax Hike for Transportation," *Washington Times*, January 8, 2013, <http://www.washingtontimes.com/news/2013/jan/8/va-gov-mcdonnell-use-sales-tax-hike-for-transporta/?page=all>

times more pavement damage than an axle weight of 18,000 pounds.”⁴⁸³ Moreover, an FHWA study found that trucks weighing more than the federal GVW limit of 80,000 pounds only contributed enough to the highway system to cover half of their damage; that is, for every dollar of damage trucks caused to the highway, they only paid 50 cents.⁴⁸⁴ Another AASHTO study found that five axle trucks weighing 80,000 pounds caused the same amount of damage as 24,000 passenger vehicles.⁴⁸⁵

States impose a vast array of fees and taxes that specifically target the freight industry. Fees imposed at the national level, such as harbor maintenance fees and container fees, may not be appropriate for most states.⁴⁸⁶ For example, container fees are typically collected at the ports on loaded inbound containers so it would be difficult for individual states to administer such a fee without coordination with other states.⁴⁸⁷ Nevertheless, states have a vast array of potential funding mechanisms they may impose on the freight industry to support transportation spending. States have collected over \$14 billion each year on average nationwide from motor carrier taxes, which is over 18% of total highway revenues.⁴⁸⁸

As discussed earlier, many states incorporate freight-related considerations into other funding mechanisms, such as registration fees based on truck weight and/or the number of axles.⁴⁸⁹ Although the registration system does not directly reflect the user fee principle, it can serve as a proxy by distinguishing freight vehicles.⁴⁹⁰ Moreover, imposing additional or higher registration fees is simple and efficient because it works within the existing administration system.⁴⁹¹ The registration fee system allows the states to incentivize certain behavior, such as lighter vehicles through the rate schedules that can be tailored by vehicle category.⁴⁹²

Surcharges on fuel taxes for freight vehicles could readily be implemented through the existing fuel tax collection system. Imposing surcharges supports the user fee principle because the tax burden is proportional to both weight and miles traveled.⁴⁹³ However, implementation may be costly based on the need to distinguish freight from nonfreight vehicles.⁴⁹⁴ States could distinguish vehicles by providing nonfreight refunds or credit requests on income tax filings, or by installing electronic identification systems such as an on-board unit or a radio frequency identification system.⁴⁹⁵ Using an electronic identification system would be similar to certain VMT gas station collection schemes.⁴⁹⁶ Moreover, surcharges may impact transportation

⁴⁸³ GAO, *Highway Trust Fund*, 11.

⁴⁸⁴ *Ibid.*

⁴⁸⁵ *Ibid.*

⁴⁸⁶ *Ibid.*, 44-45.

⁴⁸⁷ *Ibid.*, 44-45.

⁴⁸⁸ *See* Appendix A.

⁴⁸⁹ NGA, *An Infrastructure Vision for the 21st Century*, 6.

⁴⁹⁰ NCFRP, *Dedicated Revenue Mechanisms for Freight Transportation Investment*, 4.

⁴⁹¹ *Ibid.* 4.

⁴⁹² *Ibid.* 69.

⁴⁹³ *Ibid.* 31.

⁴⁹⁴ *Ibid.* 2.

⁴⁹⁵ *Ibid.*

⁴⁹⁶ *Ibid.* 3.

behavior such that the freight industry may be incentivized to improve fuel economy or minimize fuel use.⁴⁹⁷

States can also levy sales taxes on freight, which are sometimes referred to as waybill or bill of lading taxes. These taxes, although small, have significant potential for high yield returns.⁴⁹⁸ Canada and several European countries have implemented similar taxes as part of their sales tax system, which seems to be a practical and cost efficient method for implementation.⁴⁹⁹ Administering such a tax on freight service, however, may be difficult because not every freight activity produces a bill or invoice, such as private fleet transportation that makes up a significant portion of highway freight transportation and would be difficult to value for the purposes of levying a sales tax.⁵⁰⁰ Furthermore, using the retail cost of freight services as a proxy for the freight industry's impact on the highway infrastructure bears no relation to the actual cost that freight imposes on the system.⁵⁰¹ Another form of tax typically aimed at the freight industry is the excise taxes on tires.⁵⁰² However, these taxes are generally set too low to incentivize the freight industry to reduce the externalities associated with its use of the highway system.⁵⁰³

Taxes based on weight and distance, or a combination of the two, can also be collected to fund transportation spending. Ton-based taxes are levied based on the truck's weight such as "trucks with five or more axles and weighing between 50,000 and 100,000 pounds."⁵⁰⁴ Some states, including Oregon and New York, impose a fee based on both weight and distance traveled to effectuate a true user fee principle.⁵⁰⁵ Although these types of fees theoretically force the user to pay, there are several difficulties with implementation that undermine this concept. First, many freight shipments are not weighed; requiring each shipment to be weighed is costly in terms of both money and time.⁵⁰⁶ Second, freight vehicles' weights do not remain constant throughout trips if their routes include multiple stops.⁵⁰⁷ Attempting to implement a weight based fee that accounts for all of these changes would be difficult and expensive.⁵⁰⁸ Based on these difficulties, even Oregon's ton-mile tax is not based on the freight vehicle's actual weight, but instead its maximum GVW, which undermines the user fee principle that justifies the mechanism.⁵⁰⁹

Accordingly, applying a weight-based VMT fee to the freight industry may be a beneficial platform for state implementation efforts prior to attempts to impose VMT fees to noncommercial drivers.⁵¹⁰ Moreover, the VMT fees applied to freight vehicles best support the

⁴⁹⁷ Ibid. 28, 30.

⁴⁹⁸ NSTIF, *Paying Our Way*, 86.

⁴⁹⁹ NCFRP, *Dedicated Revenue Mechanisms for Freight Transportation Investment*, 17.

⁵⁰⁰ Ibid. 17.

⁵⁰¹ Ibid.

⁵⁰² GAO, *Highway Trust Fund*, 11.

⁵⁰³ Ibid.

⁵⁰⁴ Slone, *Transportation & Infrastructure Finance*, 12.

⁵⁰⁵ Ibid.

⁵⁰⁶ NCFRP, *Dedicated Revenue Mechanisms for Freight Transportation Investment*, 17.

⁵⁰⁷ Ibid.

⁵⁰⁸ Ibid.

⁵⁰⁹ Ibid.

⁵¹⁰ NGA, *An Infrastructure Vision for the 21st Century*, 18.

user fee principle—freight vehicles traveled an average of 70,000 miles in 2010 compared to passenger vehicles that covered only 11,000 miles on average.⁵¹¹ In addition to more closely aligning charges to freight vehicles with the costs that their use causes to the transportation system, states could raise significant amounts of revenue with fewer implementation costs than a VMT fee system for passenger vehicles because most freight vehicles have existing reporting systems and electronic identification systems.⁵¹² A New York pilot study on a “revenue-neutral, mileage-based tax” focused on trucks and confirmed that most heavy trucks have existing equipment that can be used to track VMT.⁵¹³ This also allows for the possibility of supplementing VMT fees with road pricing, but this may have the unintended consequence of incentivizing freight operators to take alternate routes that are less capable of accommodating freight traffic.⁵¹⁴ Although privacy concerns are still present in the freight industry, they can be mitigated by using electronic identification systems that “calculate and pay VMT fees rather than transmitting location data” or “that aggregate and pay VMT fees for entire fleets.”⁵¹⁵

Although administration of freight-related VMT fees may be easier than a passenger vehicle system due to existing identification and tracking equipment, implementation will still be monetarily and politically costly. States would still need to determine the rate schedule, whether and how the fees should be indexed, the method for collection and enforcement, fines and penalties, standards for the electronic identification systems if required, privacy safeguards, as well as the deadlines and budget for implementation.⁵¹⁶ Because VMT fees have the potential to raise significant amounts of revenue, freight operators may attempt to evade VMT fees by interfering or disconnecting with the electrical identification system, underreporting, or not registering the vehicle.⁵¹⁷

Nevertheless, VMT fees still have enormous revenue potential in the freight industry. This mechanism has the potential to capture all fuel source vehicles without being undermined by improved fuel efficiency, to account for vehicles actual use of the highway system, and incorporate road pricing.⁵¹⁸ Furthermore, VMT-collected data or even just the VMT fees could provide important information about highway use that would help state’s develop projections for future planning purposes.⁵¹⁹ States can implement enforcement measures to monitor and minimize noncompliance by linking VMT fees to registration, auditing fuel cards, or collecting VMT fees directly instead of through fuel dealers.⁵²⁰ Alternatively, VMT fees may also reduce the costs to the highway system by incentivizing the freight industry to use rail transportation; this in turn would directly reduce the costs to the highway system as well as indirectly through reduced congestion.⁵²¹

⁵¹¹ GAO, *Highway Trust Fund*, 29.

⁵¹² NCFRP, *Dedicated Revenue Mechanisms for Freight Transportation Investment*, 3.

⁵¹³ *Ibid.* 37.

⁵¹⁴ *Ibid.* 35.

⁵¹⁵ *Ibid.* 4.

⁵¹⁶ *Ibid.* 58.

⁵¹⁷ *Ibid.* 47.

⁵¹⁸ *Ibid.* 60.

⁵¹⁹ *Ibid.*

⁵²⁰ *Ibid.* 47.

⁵²¹ NGA, *An Infrastructure Vision for the 21st Century*, 18.

Many of these fee mechanisms do not encourage efficient use of the system because they are not directly based on the cost that each freight vehicle imposes on the transportation infrastructure. Moreover, although these vehicles disproportionately affect the highway infrastructure, any costs imposed on the industry will simply be passed along to the customer.⁵²² States looking for guidance on how to effectively institute carrier taxes, however, can look to Texas.

i. Motor Carrier Taxes: Texas's Model

According to the Texas Transportation Code, a “motor carrier” means an individual, association, corporation, or other legal entity that controls, operates, or directs the operation of one or more vehicles that transport persons or cargo over a road or highway.”⁵²³ The Texas Department of Motor Vehicles (TxDMV) charges carrier fees on new or renewed registration applications, per vehicle, and collects fines for any violations. Many of these fees and penalties are then deposited into the Texas Mobility Fund, which issues bonds based on future expected revenue to finance transportation projects. The Texas Mobility Fund was created in 2001, and in 2003 it was granted the authority to collect fuel taxes and carrier taxes.⁵²⁴

Thirty-one percent of the total revenue used for state highways in Texas in 2011 came from motor carrier taxes—over \$3.6 billion.⁵²⁵ Moreover, between 2006 and 2011 there was a more than 400% increase in the overall levels of tax receipts in Texas, from \$1.039 billion to \$3.655 billion.⁵²⁶ Texas’s large revenue source in carrier taxes can substantially contribute to its statewide strategy on to fund transportation infrastructure. Although Texas’s current main contributor to revenues used are motor fuel taxes, the state has attempted and failed to both increase fuel taxes and index them to inflation in recent years.⁵²⁷ Texas’s greater incorporation of motor carrier taxes will make it less vulnerable to declining fuel tax receipts.

Funds generated from motor carrier fees and taxes are not used to directly fund new projects or the repair of existing infrastructure. Instead, the money is placed into the Texas Mobility Fund, an institution that uses the cash to leverage bonds. These bonds are then used to fund new and existing investments in state highways. According to the National Conference of State Legislatures (NCSL), Texas receives only 1.4% of its revenue for state highways from bond proceeds, compared to 23% from motor carrier taxes.⁵²⁸ This indicates that regardless of how much money is generated from bonds issued by the TMF, only a fraction of that cash actually benefits the Texas roadway system.

Overall, Texas’s motor carrier taxes can be considered a success. It taps a reliable source, provides enough revenue to provide over a quarter of the entire amount allocated for state

⁵²² GAO, *Highway Trust Fund*, 11.

⁵²³ Texas Transp. Code Ann. § 643.001(6) (2009), <http://www.statutes.legis.state.tx.us/Docs/TN/htm/TN.643.htm>.

⁵²⁴ National Conference of State Legislatures, *Transportation Governance and Finance: A 50-State Review of Legislatures and Departments of Transportation* (May 2011), <http://www.ncsl.org/documents/transportation/FULL-REPORT.pdf>.

⁵²⁵ See Appendix B.

⁵²⁶ Ibid.

⁵²⁷ “Transportation Funding and Financing Legislative Database.”

⁵²⁸ Reed & Sundeen, *Surface Transportation Funding Options for States*, 59.

highways, and could conceivably replace fuel taxes as the plurality of funds for Texas's highways. Until states can find a politically palatable replacement for fuel taxes, they will continue to lose revenue that must be made up with other mechanisms. The increased greater availability of carrier tax funds that are used for highway programs is demonstrably beneficial to the state and, even if returns should diminish over the next few years, will still likely provide a significant source of income.

g. Conclusion of the General Assessment

All of the benefits offered by these major funding mechanisms are accompanied by some costs and risks. Because of the different costs and risks associated with each mechanism, states regularly use a combination of these funding mechanisms. The fuel tax may be a dominant mechanism, but most states offset its unsustainability through use of other, more stable mechanisms. Legislators must review all of these mechanisms together in order to properly understand how the mechanisms can work together to make the best combination for each state.

IV. Recommendations to Increase Revenues from Funding Mechanisms

Each mechanism poses unique challenges that states must address. States should implement a combined strategy that uses multiple funding mechanisms, such that mechanisms supplement each other. By diversifying funding mechanisms used to raise revenue for transportation infrastructure, states can ensure more stable, reliable funding for transportation spending. Furthermore, states adopting a diversified strategy are “more likely to win favor from the public than one that hits one source or one particular group harder than others”⁵²⁹

a. General Advice for All Funding Mechanisms

The key to success for all funding mechanisms may lie in legislatures' approaches in explaining them to the public. Implementing taxes generally requires significant outreach to gain public acceptance. There is little public understanding of transportation issues, and thus little understanding of why taxes should be changed. Many transportation outreach programs have been shown to be effective in changing public perception of tax raises. The benefits of educating the public can best be seen in Washington's publicity campaign to raise the gas tax.

Washington exemplifies voters' willingness to approve tax increases in response to funding emergencies. In 1997, voters passed Initiative 695, which eliminated the State's Motor Vehicle Excise Tax effective January 2000. This cost the Washington State Department of Transportation (WSDOT) \$897 million—30% of its revenue-- by 2001.⁵³⁰ In response to the lost revenues, the state commissioned a study that identified the need of \$150 billion in statewide transportation investments over 20 years.⁵³¹ The state legislature put Referendum 51 before

⁵²⁹ Slone, *Transportation & Infrastructure Finance*, 12.

⁵³⁰ Paula Hammond, *Washington State's Gas Tax Saga: The Quest of Transportation Revenue* (Jun, 25, 2008), <http://www.wsdot.wa.gov/NR/rdonlyres/5D8C4C3C-86B2-4BE4-B1C2-9CB1AFE36740/46936/BestPracticesStateSummit.pdf>, 5-6.

⁵³¹ Mayor Paul Schell, “2000 Transportation Strategic Plan” (2000), <http://www.seattle.gov/transportation/pdf/TSP%20REPORT.pdf>.

voters and asked for a 9 cent gas tax increase over 2 years, a 1% surcharge on vehicle sales, and increases on vehicle weight fees to raise \$7.7 billion.⁵³² Despite WSDOT's dire situation, the measure failed by an astounding 37% to 63% vote.⁵³³

In response to the failure of Referendum 51, WSDOT implemented a strategic approach to communicate the themes of the department's accountability and project delivery. It began to submit the "Gray Notebook," a quarterly performance report.⁵³⁴ WSDOT also began a campaign called "Straight Talk," which educated the public and media about the state of transportation funding and investment in the state.⁵³⁵ Representatives of the department made educational presentations to a wide swath of stakeholders, including business groups, town hall meetings, and fraternal organizations.⁵³⁶ WSDOT's presentations highlighted both the department's successes and its needs. To gain support for gas tax increases, WSDOT's presentations and website included a detailed breakdown of how gas taxes were spent.⁵³⁷ Cost estimating, project delivery reporting, and maintenance accountability reports, as well as real time traffic updates were added to the WDOT website.⁵³⁸ This campaign was considered crucial to the relative lack of public opposition at a series of gas tax increases—5 cents in 2003 and 9.5 cents phased in from 2005 to 2008, which raised \$4.1 and \$7.1 billion, respectively. Most tellingly, 53% of voters rejected Initiative 912 in 2005, which would have eliminated the additional 9.5 cents in gas taxes.⁵³⁹

Washington and countless other states and localities have faced public opposition to sound policies. Public education is not a panacea to resistance or bad policy, but it is certain that public education and input improves public acceptance of these policies. The lessons of educating the public can be applied to states' implementation of all of the funding mechanisms. Although this report offers specific recommendations for each mechanism, education is the key to broad public acceptance and eventual overall success.

b. Fuel Taxes

Motor fuel taxes are projected to remain a viable source for the foreseeable future as long as states take steps to hedge against improving fuel efficiency and increasing transportation-related costs. Moreover, fuel prices, especially if the taxes are indexed to wholesale or retail prices, may impact a state's ability to levy these taxes. Should gas prices return to the record heights of 2008, legislators will likely face substantial scrutiny if they attempt to implement new or increased taxes.⁵⁴⁰

⁵³² Hammond, *Washington State's Gas Tax Saga*, 5.

⁵³³ Erica C. Barnett & George Howland Jr., "Voters: Our Way, Not the Highway," *Seattle Weekly*, Oct. 9, 2006, <http://www.seattleweekly.com/2002-11-06/news/voters-our-way-not-the-highway/>

⁵³⁴ Hammond, *Washington State's Gas Tax Saga*, 8.

⁵³⁵ *Ibid.* 9.

⁵³⁶ *Ibid.*

⁵³⁷ *Ibid.* 10.

⁵³⁸ *Ibid.* 11-12.

⁵³⁹ *Ibid.*

⁵⁴⁰ Slone, *Transportation & Infrastructure Finance*, 8.

States can continue to rely on these mechanisms to fund transportation infrastructure, but they should implement several changes to improve the sustainability as well as the purchasing power of the fuel tax. At the very least, states should increase their fixed-rate taxes to restore their real value. Numerous state proposals have recognized the fact that fuel tax rates that have remained unchanged for decades are unsustainable. As such, states such as Iowa in its Governor's 2020 Citizen Advisory Commission Report and Recommendations recognized that an increase of 8 to 10 cents would bring in an additional \$184 to \$230 million each year.⁵⁴¹ Massachusetts, New Jersey, and Rhode Island similarly suggested increased fuel taxes in recent reports; Rhode Island recommended a 10 cent per gallon increase in two installments over four years, Massachusetts recommended an increase of 11.5 cents per gallon, and New Jersey suggested increasing the tax 12.5 to 15 cents per gallon.⁵⁴²

Even relatively small increases in fuel taxes can raise significant amounts of revenue and cost the average driver very little. The Institute on Taxation and Economic Policy estimated that for every 1 cent increase in gas tax, the average driver pays only an additional \$0.43 per month or \$5.16 per year; for every 5 cent increase, \$2.15 per month or \$25.80 per year; for every 10 cent increase, \$4.31 per month or \$51.72; and for every 20 cent increase, \$8.62 per month or \$103.44 per year.⁵⁴³ Accordingly, tax increases probably will not significantly affect people's driving habits,⁵⁴⁴ and people are generally more sensitive to increases in gas prices than increased tax burden.⁵⁴⁵ Furthermore, if states educate voters about the dire needs of the transportation infrastructure and the expected benefits from the additional revenue from increased taxes, voters will likely be more willing to approve such increases. After increasing its gas tax by 5 cents in 2003, Washington voters affirmed another increase of 9.5 cents just two years later after the state explained how the increase would better their highway system.⁵⁴⁶ Educational efforts were also successful in the District of Columbia, where 57% of 300 participants favored increasing the gas tax after participating in deliberative forums compared to only 21% prior to the discussions.⁵⁴⁷

Preferably, states should index their fuel taxes to improve flexibility and maintain their value. Indexing the fuel tax hedges it against increases in costs. Furthermore, indexing allows for fuel taxes to automatically increase without requiring legislative enactments or voter approval, which can be difficult to attain when needed.⁵⁴⁸ Several states' studies have suggested indexing fuel taxes as a way to bolster state transportation revenue—Arkansas (2010), Delaware (2011), Illinois (2007), Kentucky (2005), Maine (2006), and New Jersey (2003).⁵⁴⁹ Currently, the most

⁵⁴¹ "Non-road Pricing Revenue: Resources," FHWA,

http://www.fhwa.dot.gov/ipd/revenue/non_pricing/resources/state_transportation_revenue.htm.

⁵⁴² "Non-road Pricing Revenue: Resources."

⁵⁴³ ITEP, *Building a Better Gas Tax*, 7.

⁵⁴⁴ "A Guide to Transportation Funding Options."

⁵⁴⁵ Zhu, "Eight States Raise Their Gas Tax."

⁵⁴⁶ NGA, *Innovative State Transportation Funding and Financing*, 10.

⁵⁴⁷ Metropolitan Washington Council of Governments National Capital Region Transportation Planning Board, "What Do People Think About Congestion Pricing? A Deliberative Dialogue with Residents of Metropolitan Washington," Jan. 18, 2013.

http://www.mwcog.org/transportation/activities/congestionpricing/materials/Key%20Documents/CongestionPricingReport-Draft_1-18-13_ForWeb.pdf.

⁵⁴⁸ NGA, *Innovative State Transportation Funding and Financing*, 9.

⁵⁴⁹ "Non-road Pricing Revenue: Resources."

common indexing of fuel taxes is to wholesale or retail price of fuel or inflation. Of these two, states would be better served by indexing their fuel taxes to inflation. Automatically adjusting fuel taxes based on the CPI allows the fuel tax to increase at a moderate and predictable pace, unlike gas price volatility that may result in the gas tax increasing or decreasing drastically and unpredictably.⁵⁵⁰ If a state decides to index its fuel taxes to prices, it should also define limits such as the maximum amount of change permitted to automatically go into effect based on the indexing to promote reliability.⁵⁵¹ Arkansas's Blue Ribbon Committee on Highway Finance suggested that fuel tax increases should be limited to 2 cents and that legislative approval should be required for any decrease.⁵⁵²

Nevertheless, states would better preserve the purchasing power of their fuel tax revenue as well as stabilize that source of revenue by indexing their fuel taxes to construction costs. Although adjusting for CPI is better than a fixed-rate tax, transportation construction costs generally increase more quickly than inflation.⁵⁵³ A typical example is that CPI rose 4% from March 2007 to March 2008, but construction rose 6.5% and the binder price of asphalt rose 350% from 2002 to 2012.⁵⁵⁴ Not surprisingly, Arkansas has recommended that its fuel tax should be indexed to its Highway Construction Cost Index.⁵⁵⁵ The Institute on Taxation and Economic Policy has also asserted that this method is “the most direct route for ensuring that increases in the price of asphalt, machinery, and other transportation inputs do not prevent states from adequately maintaining their transportation networks.”⁵⁵⁶

States like Virginia have also begun to rely on sales taxes for transportation funding. Either applying the state's general sales tax to motor fuels, implementing a special sales tax for motor fuels, or increasing the fuel tax and dedicating the growth to transportation infrastructure are all available mechanisms to states.⁵⁵⁷ In addition, states can impose excise taxes on motor vehicles. Maine and Maryland both recommended sales tax reforms to support state infrastructure funding. The Sustainable Transportation Funding for Maine's Future recommended the state impose a special tax on motor fuels and dedicate that portion in 2006; five years later, however, the Blue Ribbon Commission on Maryland's Transportation Funding called for the sales tax to increase by 1 cent per gallon with that revenue growth dedicated to funding.⁵⁵⁸ Although these are not the preferred method of collecting because they are but loose proxies for a user fee principle and divert money away from other public needs like education and health to fund transportation.

⁵⁵⁰ ITEP, *Building a Better Gas Tax*, 9.

⁵⁵¹ *Ibid.*

⁵⁵² NCSL, *On the Move*, 7.

⁵⁵³ ITEP, *Building a Better Gas Tax*, 9.

⁵⁵⁴ Josh Goodman, The Daily News Service of the Pew Charitable Trusts, “Maryland Governor O’Malley Takes a Risk on Gas Tax,” available at <http://www.pewstates.org/projects/stateline/headlines/maryland-governor-omalley-takes-a-risk-on-gas-tax-85899375418>

⁵⁵⁵ “Non-road Pricing Revenue: Resources” (citing Arkansas, Blue Ribbon Committee on Highway Finance (Dec. 2010)).

⁵⁵⁶ ITEP, *Building a Better Gas Tax*, 8.

⁵⁵⁷ “Non-road Pricing Revenue: Resources.”

⁵⁵⁸ *Ibid.*

Moreover, states should implement taxes that capture alternative fuel vehicles as well as hybrid and electric vehicles. In 2006 and 2011, Maine and Iowa respectively recognized the need to enact mechanisms that applied to these types of vehicles that paid little to no fuel tax.⁵⁵⁹ States can also enact measures to counteract fuel taxes, both excise and sales, regressive nature. Specifically, states can provide refundable tax credits to low-income residents.⁵⁶⁰ Prior to the recent financial crisis, Minnesota briefly provided a \$25 “Low Income Motor Fuel Credit” to alleviate increased fuel tax burdens.⁵⁶¹ States have options for improving its fuel tax; legislatures just need to look in earnest at their states’ tax and determine the best opportunity on how to reform it.

c. Tolls

Tolls offer one of the most politically tolerable and consistent revenue sources available for funding transportation infrastructure. When building new roads that may be frequently used, states should try to implement an electronic toll. Frequently used roads tend to be in cities and suburban areas. For states with more rural roads, tolling may not be a realistic option throughout the state. However, tolls still can be used effectively in more highly populated areas, even if there are only a few roads that are eligible for tolling. States should focus on building tolls on new roads because the public tends to be more amenable to tolling facilities on new roads.

When states institute new tolls, they should use electronic tolling. Electronic tolling provides more flexibility in pricing road use, which gives states more options in adjusting prices based on congestion or lane usage. Electronic tolling also increases revenues generated and reduces administrative costs in the long run. States starting to implement electronic tolling should follow Pennsylvania’s example by instituting electronic tolling alongside at least some traditional tolling collection booths. Maintaining at least a minimal level of the older tolling infrastructure helps assuage drivers who prefer the older infrastructure or have privacy concerns.⁵⁶² States can also help battle privacy concerns by using “systems that erase information about place and time from the record as soon as appropriate charges are deducted.”⁵⁶³

When setting the price of any toll, legislatures should statutorily provide for the toll to be indexed to inflation. Indexing the toll to at least maintain its purchasing power over the years can circumvent legislatures’ difficulties in raising the price of tolls over the years. Congestion pricing administered through tolls should similarly be indexed to inflation.⁵⁶⁴ In order to generate revenue, states primarily should maintain ownership of tolls when possible so that the state can reap the benefits of toll revenue. Although implementing tolls within a PPP is necessary sometimes to build needed infrastructure, states should try to maintain its revenue generating opportunities as much as possible.

⁵⁵⁹ Ibid.

⁵⁶⁰ ITEP, *Building a Better Gas Tax*, 10.

⁵⁶¹ Ibid.; NCSL, *On the Move*, 7.

⁵⁶² Slone, *Transportation & Infrastructure Finance*, 33-34.

⁵⁶³ Ibid.

⁵⁶⁴ “A Guide to Transportation Funding Options.”

States should consider using congestion pricing, particularly HOT lanes, and other variable pricing on new roadways when possible. Variable pricing generally provides more revenues than standard tolling methods.⁵⁶⁵ Although there are some equity concerns about variable pricing for poorer commuters, states have options to combat any unfairness. For example, NGA recommends states “provide discounted pricing based on income levels,” “provide travel credits to lower-income commuters,” or “enhance transit services along the tolled corridors so the lower income commuters have an alternative to driving on them.”⁵⁶⁶ Rebate programs are a popular option to solve equity problems.⁵⁶⁷ Additionally, states can avoid some administrative costs by adding variable pricing administration into tolling facilities that would be built regardless. Congestion pricing may not cover all of the administrative and toll construction costs,⁵⁶⁸ but they certainly would augment general tolling revenues.

Tolls should be used to fund particular roadways. For new roads, tolls should be implemented to fund construction and ongoing maintenance. For existing roads, states should use toll revenues to fund the specific road. New tolls on existing lanes are not out of the question for states. Although more difficult to implement due to political feasibility issues, states may be able to launch education campaigns that could sway drivers’ opinions. As mentioned in the above discussion, drivers do not like tolling existing lanes because it is viewed as paying twice. Tolling existing roads clearly is not paying twice however, because “funds are needed for the continued maintenance and operation of the facilities.”⁵⁶⁹ If the state launches education campaigns to explain that tolls would pay for roads’ continued maintenance, then drivers may be more willing to pay a new toll on existing lanes. Education campaigns, as discussed in the general recommendation for this report can include talking to drivers at town halls, sending out flyers, or sponsoring commercials to explain how the tolls’ revenues would be used to maintain current roadways.

Legislatures also can gain political support by promoting the benefits of congestion pricing.⁵⁷⁰ Because the public understands less about congestion pricing compares to tolls, and because there are fewer advocates of congestion pricing,⁵⁷¹ congestion pricing and HOT lanes are not as well-liked. Building in congestion pricing into an education campaign can help promote its broad acceptance. Additionally, a UCLA study suggested “distributing toll revenue [from congestion pricing] to cities with the tolled freeways” to help build up support in population centers among both politicians, and in turn, the city’s drivers.⁵⁷²

Tolls can be a valuable asset to fund particular roadway projects’ construction and maintenance. States can successfully use this mechanism to fund roadways if they continue to push towards universal electronic tolling, educate drivers about how revenues from tolls are spent on the roadways, and price tolls at an indexed rate and at a variable price to capture the most revenue possible.

⁵⁶⁵ Ibid.

⁵⁶⁶ Slone, *Transportation & Infrastructure Finance*, 33-34.

⁵⁶⁷ “A Guide to Transportation Funding Options.”

⁵⁶⁸ Ibid.

⁵⁶⁹ Ibid.

⁵⁷⁰ Slone, *Transportation & Infrastructure Finance*, 33-34.

⁵⁷¹ Ibid.

⁵⁷² Ibid.

d. General Fund Revenues

States generally should not rely heavily on general funds. In order for general funds to be effective, they need to be funded by another funding mechanism – usually one of the mechanisms discussed in this report. General funds are best used to fill in gaps of state funding for roadway infrastructure. When states do need to use general funds as a funding mechanism, they should follow Wyoming’s well-recognized model. Wyoming tends to use general funds to make up for infrastructure funding shortfalls, as it has since 2005, while working to increase revenues from other funding mechanisms, as it has through increasing the gas tax. General funds are an important piece of a state’s funding strategy, but they should not be used as a first choice mechanism. Furthermore, using general funds diverts money away from other areas of public funding such as education.⁵⁷³

e. Vehicle Registration, Licensing, Titling and Permitting Fees

States should continue to use registration and other licensing, titling, and permitting fees to collect substantial revenues for transportation funding. These fees have both long-term and short-term potential based on their relative ease, cheap administration, and high yields. States should tie these fees to the value of the vehicle when possible to account for inflation and preserve the fee’s real value. Moreover, states can, and have, used these fees to charge alternative fuel, electric, and hybrid vehicles that may have paid very little into the system for their use. To fully realize the revenue potential for these fees, states should not impose, or at least minimize, any cap, exemption, or limit. Michigan’s study recommended that the state’s registration discounts should be eliminated; moreover, Michigan, New Hampshire, and Pennsylvania generally recommended increases in registration fees; Rhode Island recommended increasing registration fees from \$40 to \$120 over a couple years, while Washington suggested a \$10 increase in title fees, \$20 increase in new driver’s license, and a \$2 increase in driver record fees.⁵⁷⁴

f. Vehicle Miles Traveled Fee

The VMT fee is the way of the future for funding surface transportation infrastructure. However, it is still unclear how far into the future it will be for the VMT fee to be effective at the state level. This report recommends that states administer trial to determine the level of public acceptance, capability of administrative efficiency, and potential for revenue accumulation in its particular state. These VMT studies should be in the process of being administered or completed in each state by 2025. This deadline will allow over ten years for legislation implementing the trials to work through the legislature and provide enough time for state agencies to determine the best way to implement a study for their state. Additionally, this will give states sufficient time to make an educated decision about implementing the VMT before the gas tax loses its viability in approximately fifteen years.⁵⁷⁵

⁵⁷³ ITEP, *Building a Better Gas Tax*, 5.

⁵⁷⁴ Washington State, *Strategic Transportation Investments to Strengthen Washington's Economy and Create Jobs* (January 2012).

⁵⁷⁵ AASHTO, “Perspective on the Future,” 11.

States do not need to reinvent the wheel when designing VMT trials. The case study provided above, Oregon, offers an example of a successful VMT trial. Many other states are beginning to implement trials as well. Additionally, the Transportation Research Board's National Cooperative Highway Research Program (NCHRP) published an extremely thorough guide on how to set up VMT trials, called *System Trials to Demonstrate Mileage-Based Road Use Charges*.⁵⁷⁶ This guide explains the different options on how to set up a trial through every step of the process. The report explains various implementation strategies, system design and deployment approaches, and criteria for identifying favorable implementation options.⁵⁷⁷ Given this excellent guide for states, this report provides recommendations on specific areas of the trial: how to involve constituents, selecting the tracking method, and selecting the fee collection method. This recommendation concludes with how to ultimately implement a VMT permanently statewide.

The state's choice on how to select constituents to become involved in the program could set the tone for the rest of the trial. If constituents are unhappy about their initial involvement, they may not be open to the new fee system as they continue through the trial. This report recommends adopting an "opt-in" approach, as was implemented in Oregon. This opt-in program can still have incentives to join; for example, Oregon implemented higher gas taxes for those who chose not to opt into the VMT trial.⁵⁷⁸ Although people who opt-in may not be as thrilled to enter the program as if those who would enter regardless of incentives, it does provide a slightly more unbiased group of people to evaluate the overall administration and implementation of the VMT trial. Opting-in allows for more open-mindedness to VMT fees among trial participants than a blanket requirement for all constituents to become involved.

States could postpone assessing fees on the average driver and begin the trials with a potentially more willing demographic, such as commercial trucks for companies willing to opt in to the VMT program. According to a 2012 GAO study, 30 state departments of transportation were in favor of federally-led pilots of VMT fees for these vehicles.⁵⁷⁹ However, only three states currently assess mileage weight fees for cargo trucks, and few have conducted pilot projects or considered implementing them at the state level.⁵⁸⁰ While significant federal coordination would be required to determine the appropriate fees for these trucks that so frequently travel between states, doing so would create less of a reporting and privacy burden for truck drivers.⁵⁸¹ Companies registered in states that have established or enforced the International Fuel Tax Agreement or the International Registration Plan are already required to track and report miles traveled in each state to the state of registry.⁵⁸² Additionally, the commercial truck constituency likely would have fewer privacy concerns because most truck operators already use GPS equipment to dispatch and any potential for GPS tracking would only occur for job-related activities.⁵⁸³

⁵⁷⁶ National Cooperative Highway Research Program, *System Trials to Demonstrate Mileage-Based Road Use Charges* (Oct. 2010), http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w161.pdf.

⁵⁷⁷ *Ibid.* xvii-xxiii.

⁵⁷⁸ Snyder, "Ten Questions."

⁵⁷⁹ GAO, *Highway Trust Fund*, 46.

⁵⁸⁰ *Ibid.*

⁵⁸¹ *Ibid.* 31.

⁵⁸² *Ibid.*

⁵⁸³ *Ibid.* 18.

The decision on how to monitor vehicle miles may be the most important for the state's success in its VMT fee trial. For the purposes of creating a trial that provides the most information about user preferences, it may make sense for the state to offer multiple options to people and to allow them to choose the device they are most comfortable using for the VMT.⁵⁸⁴ This report discusses two generic options: (1) odometer based readings for constituents concerned about their privacy and (2) on-board diagnostics (OBD-II) with cellular-based metering for constituents who are less concerned about privacy.

States with constituents that have stronger privacy concerns should turn to odometer readings as the primary source for determining vehicle miles traveled. The American Planning Association (APA) recommends self-reporting where the taxpayer simply transcribes the odometer reading onto his or her tax form each year.⁵⁸⁵ Recognizing the possible free rider problem where tax payers do not accurately self-report, the APA recommended requiring a mandatory odometer inspection every other year.⁵⁸⁶ This seems like a reasonable possibility, particularly in states that already have an annual vehicle safety inspection. However, for states that are not willing to impose a mandatory inspection, the previously discussed alternative of applying a baseline amount of vehicle miles traveled to all constituents, and then allowing constituents to schedule an inspection to portray a more accurate number, also is a viable option. A state trial may be best served by trying both of these options and determining which leads to higher user satisfaction. These odometer based plans tend to be less costly to administer and simple enough to be user friendly.⁵⁸⁷ For cost efficiency, odometers may be the best choice for monitoring. However, the preference for odometers due to privacy concerns may be a nonissue in the future; the APA predicts that privacy concerns may become less important as "people continue to embrace technologies such as cell phones, GPS, and social networking."⁵⁸⁸

For states that are less concerned about privacy and are able to use technology for their benefit, there are a number of options available. Some of the options discussed above including GPS, RFID, and OBD-II with cellular metering. Although all of these are viable options and have shown some levels of success, OBD-II with cellular metering may be the simplest to implement in the long-run for states. Both GPS and RFID based VMT monitoring systems require installation of on-board units (OBU) with comprehensive infrastructure upgrades for the state.⁵⁸⁹ RFID could only be extended to roads with tolling capabilities and GPS would cost significantly more to implement than the OBD II system.⁵⁹⁰ However, cellular-based mileage metering through OBD II would cost less and provide significant flexibility in price setting.⁵⁹¹ Although this OBD II option would still require an OBU, it could easily be connected to a vehicle's on-board diagnostics, which is available for all cars manufactured after 1996.⁵⁹²

⁵⁸⁴ Snyder, "Ten Questions."

⁵⁸⁵ APA, *Rebuilding America*, 22-23.

⁵⁸⁶ Ibid.

⁵⁸⁷ GAO, *Physical Infrastructure*, 16.

⁵⁸⁸ APA, *Rebuilding America*, 22-23.

⁵⁸⁹ AASHTO, "Perspective on the Future," 17.

⁵⁹⁰ Wisconsin Transportation Finance & Policy Commission, *Vehicle-Miles-Traveled Revenue Approaches Policy Issue Paper* (Aug. 15, 2012), <http://www.dot.wisconsin.gov/about/tfp/docs/vmt-revenue.pdf>, Appendix A, 2, 5.

⁵⁹¹ Ibid. Appendix A, 2.

⁵⁹² Ibid.

Considering that the goal is only to begin trials by 2025, it is very likely that most cars on the road will be a 1996 model or later and thus eligible for this OBU. According to the Wisconsin Department of Transportation, OBD II allows rate variation by vehicle characteristics, jurisdiction, and any other number of factors that could be transmitted from the diagnostics through cellular communications.⁵⁹³

Although OBD II appears to offer the least expensive option, any of these technological options can have reduced administration costs. For example, Oregon is driving down its GPS implementation costs by permitting wireless companies to act as the tax processors.⁵⁹⁴ The Oregon Department of Transportation eventually hopes to bundle these mileage costs with other utilities to further decrease administration costs.⁵⁹⁵ Additionally, privacy concerns can be tempered across all of the types of technological VMT systems. Legislators can draft privacy protections into the bill permitting the VMT fee trials, such as who has access to the data and how long it can exist before being destroyed. Oregon even allowed the American Civil Liberties Union to be a part of the drafting process to make sure it met its privacy standards, which helped lead to legislation requiring the data to be destroyed 30 days after payment processing or dispute resolution.⁵⁹⁶ For either the odometer-based or technology-based VMT systems, states are able to choose a model that balances the needs of their constituents' for lower implementation costs and privacy protection.

The method of fee collection is somewhat determined by the choice of monitoring system. As mentioned above for odometer readings, the least expensive method appears to be charging the fee at the time state taxes are paid. Regardless of the specific odometer method, states can accept self-reporting or proof of the odometer reading during the acceptance of tax forms. The VMT fee could be paid at the same time as the state income tax as well. Although states individually may need to decide whether it wants VMT fees to be managed through its revenue departments or its transportation departments, this is a state-by-state decision in determining how to reduce administration costs. Revenue departments may be the best choice for both constituents in sending all of their fees to one place, and the state to lower costs by only having one agency handle all taxes and fees. For the technological monitoring systems, pay-at-the-pump integration is the most favored payment form. For example, under the cellular OBD II model, a state could “develop a central billing agency, or develop a debit card system under which fees would be deducted from pre-paid debit cards inserted into the OBU” to further mitigate privacy concerns.⁵⁹⁷ This automatic payment system certainly would be the easiest for constituents and would allow states to have a constant stream of revenue throughout the year, rather than one lump sum during tax seasons.

Finally, after the trials are completed, states will need to choose whether the VMT fee is a viable revenue source. This report clearly favors the VMT fee as a long-term solution. The gas tax is not a permanent viable option. To be realistic, the choice to permanently pursue a VMT fee will be politically difficult. Administrative costs will be large at the beginning and states may

⁵⁹³ Ibid.

⁵⁹⁴ Snyder, “Ten Questions.”

⁵⁹⁵ Ibid.

⁵⁹⁶ Ibid.

⁵⁹⁷ Wisconsin TFPC, Vehicle-Miles-Traveled Revenue Approaches, Appendix A, 2, 5.

only be able to promote the most conservative, privacy-protected versions of the VMT fee in early stages. This is apparent from the many failures to pass VMT-legislation in states to date. However, because of the need for revenue sources to support infrastructure and the lack of other large revenue generating options, the VMT probably will be the funding mechanism of the future. For states that choose to implement a VMT, it is recommended to incorporate the VMT during a transition period. VMT fees can be phased in slowly during a period of using both the gas tax and VMT fees.⁵⁹⁸ This will allow the state to maintain a consistent revenue source through the gas tax while any possible glitches are corrected for the VMT. Additionally, users will become more accustomed to VMT fees while it is slowly phased in across different groups of drivers or at different pricing levels. Oregon can be used as an example, where its Department of Transportation plans to phase in the VMT fee program over thirty years.⁵⁹⁹ This is to allow further development, broader acceptance, and an opportunity to work with impacted industries. Even if states are unable to pass legislation for a permanent VMT fee within the next few decades, trials should at least begin within the next decade to prepare for the upcoming VMT fee trend.

g. Freight-Related Fees and Taxes

The user fee principle justifies states imposing fees and taxes on the freight industry. Arguably, the most efficient and immediate mechanism states can implement, if they have not done so already, is special registration fees. States can effectuate policy goals and incentivize more efficient behaviors based on narrowly tailored fee schedules.

States should supplement registration fees with more direct user fees. Until states can implement a VMT fee, states should focus on levying surcharges on fuel taxes. Initially, states could distinguish nonfreight vehicles by issuing tax refunds or credits, but work towards using existing electronic identification equipment to distinguish freight vehicles at the pump.

Ultimately, states should work towards implementing a weight-based VMT system. States should first implement a VMT fee scheme in the freight industry context based on existing electronic identification systems that can be used to track VMT. Moreover, states can then use data and experience from implementing a freight-focused VMT scheme to better plan for a passenger vehicle VMT fee. To determine what rates should be charged, states must also consider whether part of their transportation policy preferences include incentivizing the freight industry to use other modes of transportation such as rail. If so, states may want to enact more aggressive freight-related fees and taxes.

h. Concluding Recommendations Regarding Value Judgments

In addition to all of the specific advice provided above, state governments should keep in mind general values in any decision about funding for a surface transportation infrastructure project. The National Conference of State Legislators considers numerous factors when evaluating a funding mechanism: (1) sensitive and flexible pricing to ensure sustainable revenue collection; (2) user fee principle to encourage efficient use; (3) use of proven technology to

⁵⁹⁸ AASHTO, “Perspective on the Future,” 18.

⁵⁹⁹ NSTIF, *Paying Our Way*, 45.

promote efficient administration and collection systems; (4) need for public policy frameworks to account for political, social, and economic goals; (5) life cycle costs that best reflect the real cost to administer, implement, and monitor the mechanism; (6) public acceptance and political viability; and (7) equity concerns.⁶⁰⁰ Policymakers should consider and weigh each of these factors to determine what arrangement of mechanisms will best satisfy all of these value considerations because no single mechanism can.

Ultimately, funding mechanisms that directly reflect the user fee principle such as vehicle miles traveled fees are states most reliable and sustainable options for funding transportation infrastructure projects. Public acceptance of these initiatives is crucial, and public support for funding mechanisms is much more likely if the cost to them is not visible; however, most of these fees and taxes are relatively visible. Nevertheless, states can influence public opinion through educational efforts to inform the public about the mechanism's value and expected benefits to the public compared to the relatively small costs that would be levied against each resident.⁶⁰¹ The case studies demonstrate that these general value considerations and public perception ultimately determine the successfulness of a mechanism. Therefore, states will be able to implement reliable and sustainable funding mechanisms for surface transportation infrastructure as long as they generally subscribe to these basic values and implement the specific recommendations discussed above.

⁶⁰⁰ NCSL, *On the Move*, 12-16.

⁶⁰¹ Sjoquist et al., *Implications of Alternative Revenue Sources for Transportation Planning*.

PART II. FINANCING MECHANISMS

I. Background on Infrastructure Financing

Although funding mechanisms are the preferred methods for transportation infrastructure investments, direct revenue streams are inadequate and cannot alone satisfy investment needs. As such, states must consider financing mechanisms that allow them to incentivize and facilitate different investments. Ideally, financing mechanisms will increase the availability of capital,⁶⁰² improve access to capital,⁶⁰³ enable projects to obtain substantial up-front costs,⁶⁰⁴ “reduce the cost of capital,”⁶⁰⁵ and provide flexible financing options.⁶⁰⁶ Financing mechanisms’ benefits of improved efficiency, expedited process,⁶⁰⁷ and transferred risk are much needed in the transportation infrastructure market. More importantly, investors typically consider transportation infrastructure to be an attractive, low risk option for stable returns in the long run.⁶⁰⁸

Nevertheless, financing mechanisms alone cannot solve the current challenge of securing infrastructure investment.⁶⁰⁹ Unlike funding mechanisms, generally, financing mechanisms do not directly raise revenue except that collected from interest payments on loans. Instead, funds are stretched to finance infrastructure projects with the state acting as a lender or guarantor for the project. Therefore, financing mechanisms should not be the primary source for transportation infrastructure investments. Ideally, states should develop a strategy that embraces both funding and financing mechanisms to fulfill infrastructure investment demands. Part of this approach includes ensuring sufficient revenue sources to support financing mechanisms and determining which mechanisms are best suited for the state’s transportation infrastructure needs.⁶¹⁰

a. Federal Financing Mechanisms

The federal government plays a significant role in funding as well as financing transportation infrastructure investments. The FHWA provides innovative financing programs for transportation infrastructure projects throughout the nation. These programs aim to achieve numerous goals: (1) expedite project delivery by minimizing constraints on states’ management of federal funds; (2) expand investment by encouraging private investment; (3) create innovative revenue streams; and (4) reduce costs of debt and other associated costs so funds can be spent on the transportation system itself.⁶¹¹

⁶⁰² NSTIF, *Paying Our Way*, 166.

⁶⁰³ Ibid.

⁶⁰⁴ Juong H. Lee, Associate Director for Finance and Business Development, American Association for State Highway and Transportation Officials (AASHTO), *Leveraging the Money: Transportation Finance and Debt* (Aug. 2013), 2.

⁶⁰⁵ NSTIF, *Paying Our Way*, 166.

⁶⁰⁶ Ibid.

⁶⁰⁷ AASHTO, *Leveraging the Money*, 2.

⁶⁰⁸ NSTIF, *Paying Our Way*, 163.

⁶⁰⁹ Ibid. 164.

⁶¹⁰ Ibid.

⁶¹¹ GAO, *Transportation Infrastructure Alternative Financing Mechanisms for Surface Transportation*, 4.

The Transportation Infrastructure Finance and Innovation Act (TIFIA) is one of the leading federal financing programs. TIFIA offers financial assistance for major transportation projects in hopes of filling the existing market gap for these types of investments. Since its enactment in 1998, TIFIA has provided \$11.8 billion in financial assistance to 35 projects, 7 of which have completed repayment and none of the projects have defaulted.⁶¹² TIFIA assistance is available in the form of direct loans up to 49% of the eligible project costs, loan guarantees, and lines of credit up to 33% of project costs.⁶¹³ Other characteristics of TIFIA include that it may be subordinate to other debt obligations and payments may be deferred. The Highway Trust Fund subsidizes TIFIA, but recently borrowers have paid their own credit subsidy, in whole or part, “to secure TIFIA financing beyond the program resources then available” as a result of the financial downturn.⁶¹⁴

Another federal financing program is the Grant Anticipation Revenue Vehicle (GARVEE) Bonds for highway investments. Generally, GARVEE bonds allow states and localities to borrow against future government funding.⁶¹⁵ GARVEE debt obligations can be in the form of state-issued bonds, notes, certificates, leases, mortgages, or any other debt financing instruments.⁶¹⁶ GARVEEs have been very popular; at least 22 states and U.S. territories have issued over \$9 billion in GARVEE bonds and additional states have authorized the issuance of GARVEE bonds.⁶¹⁷

Congress has also authorized the issuance of private activity bonds (PABs) for highway and intermodal projects. The 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) authorizes the U.S. Department of Transportation (USDOT) to allocate up to \$15 billion for these projects. PABs facilitate private sector investment in transportation by retaining “tax-exempt status despite a greater level of private involvement than is ordinarily allowed for these types of bonds.”⁶¹⁸ In fact, private entities are treated the same as state and local governments for tax exempt purposes under PABs.⁶¹⁹

Recent proposals for a National Infrastructure Bank draw from the success of state-operated State Infrastructure Banks (SIBs), which were first established under the 1995 National Highway System Designation Act to capitalize transportation projects in pilot states.⁶²⁰ The SAFETEA-LU extended the program, making all states eligible to create SIBs through cooperative agreements with the Secretary of Transportation.⁶²¹ Federal funds provide the initial capitalization grants, and states may allocate up to 10% of their federal transportation funds to

⁶¹² TIFIA, “Projects & Project Profiles”, available at: http://www.fhwa.dot.gov/ipd/tifia/projects_project_profiles/; NSTIF, *Paying Our Way*, 168, box 7-3.

⁶¹³ NSTIF, *Paying Our Way*, 168; TIFIA, “Fact Sheet,” <http://www.fhwa.dot.gov/map21/tifia.cfm>.

⁶¹⁴ NSTIF, *Paying Our Way*, 168.

⁶¹⁵ Ibid.

⁶¹⁶ Ibid. 170, box 7-5.

⁶¹⁷ Ibid; U.S. Department of Transportation Federal Highway Administration, *Tools and Programs: Federal Debt Financing Tools, General Anticipation Revenue Vehicles (GARVEEs)* (2013), available at: http://www.fhwa.dot.gov/ipd/finance/tools_programs/federal_debt_financing/garvees/garvee_state_by_state.htm#main_content.

⁶¹⁸ NSTIF, *Paying Our Way*, 169.

⁶¹⁹ Ibid.

⁶²⁰ For a thorough discussion of such proposals, see *ibid.* 184-85.

⁶²¹ Ibid. 169, box 7-4.

their SIB. A substantial number of states have established SIB programs—at least 35 states and Puerto Rico.⁶²² SRF loan agreements are concentrated in eight states—Pennsylvania, Ohio, California, Texas, Florida, Kansas, Missouri, and Arizona—that account for three-quarters of all transportation SRF loan agreements.”⁶²³

II. Introduction to Surface Transportation Financing Mechanisms

States provide financing mechanisms to incentivize transportation infrastructure investment within their borders. For example, many states have used transportation state revolving funds (SRFs) since the 1980s. States use financing mechanisms to leverage available transportation funds and revenues. Common financing mechanisms include state revolving funds; state infrastructure banks; public-private partnerships; general obligation, revenue, and private activity bonds; infrastructure investment funds; and certificates of participation and lease revenue bonds.

a. State Revolving Funds (SRFs) and State Infrastructure Banks (SIBs)

State revolving funds (SRFs) are collections of funds dedicated to specific kinds of investments.⁶²⁴ SRFs are initially funded with “grant[s], other public funds, or the one-time proceeds from sale of an asset, and/or an ongoing revenue stream such as a dedicated portion of a new or existing tax.”⁶²⁵ Loan repayments, interest, and fees are used to replenish the Fund and make new loans, revolving indefinitely.⁶²⁶ SRFs may also rely on bond issuances as a perpetual source of funding.⁶²⁷ SRFs thus enable borrowers to gain access to capital markets at low interest rates for projects that otherwise would be difficult to finance. Table 1 below reflects the popularity of SRFs, especially for water, wastewater, and energy investments. Transportation SRFs, however, are less popular. As such, SRFs accounted for 0.5% of total state transportation investments from 1996 to 2010.⁶²⁸

SIBs are a type of SRF. In general, SIBs implement government resources to attract public and private investment by offering low interest rates, reduced application times, and reduced uncertainty with acquiring capital.⁶²⁹ SIBs can offer direct loans at low interest rates because government agencies can borrow in capital markets at competitive rates.⁶³⁰ Most SIBs are at least partially funded by the federal government, but some states solely rely on state funds to capitalize their SIB or at least certain accounts.⁶³¹ Florida and Missouri, for example, have a state-capitalized account in addition to their federally funded account in their SIB. This approach allows the state to prioritize infrastructure projects that might not be eligible for the federal

⁶²² Slone, *Transportation & Infrastructure Finance*.

⁶²³ Robert Puentes & Jennifer Thompson, Brookings-Rockefeller Project on State and Metropolitan Innovation, *Banking on Infrastructure: Enhancing State Revolving Funds for Transportation* (Sept. 2012), 11.

⁶²⁴ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, 9.

⁶²⁵ *Ibid.*

⁶²⁶ *Ibid.*

⁶²⁷ Puentes & Thompson, *Banking on Infrastructure*, 2.

⁶²⁸ *Ibid.* 11.

⁶²⁹ Dr. Jonathan Gifford, George Mason University School of Public Policy Research Paper, “State Infrastructure Banks: A Virginia Perspective,” (2010); Brookings-Rockefeller Project, 7.

⁶³⁰ Puentes & Thompson, *Banking on Infrastructure*, 7.

⁶³¹ Joung H. Lee, Associate Director for Finance and Business Development, AASHTO, *Transportation—Invest in Our Future—Revenue Sources to Fund Transportation Needs*, (Feb. 2011), 3.

funds. A few states, including Kansas and Georgia, have only state-capitalized SIBs because they opted out of the federal program.⁶³² States have opted out in order “to avoid potentially delay-causing federal regulations and restrictions (such things as labor, environmental and “Buy America” requirements) they would otherwise be subjected to if they were financed using federal funds.”⁶³³ Either way, initial capital streams, ongoing revenue sources, or combinations thereof are generally used to fund SIBs. Specifically, states typically rely on traditional funding sources such as general appropriations, state highway or transportation funds, bond proceeds, fuel taxes, and licensing fees to capitalize their SIBs.⁶³⁴

b. Public-Private Partnerships (PPPs)

PPPs are gaining in popularity. Although they have been very popular in Australia, Canada, and Europe, private investment in PPPs has been slower in the United States primarily because “low-cost tax-exempt debt” was available.⁶³⁵ Now, 33 states and Puerto Rico⁶³⁶ engage in PPPs, and additional states have authorized PPPs. Whereas 24 states and Puerto Rico have broad enabling legislation for ongoing PPP programs, 11 states only have limited or project-specific legislation and Maryland has PPP authorization by regulation only.⁶³⁷ Since 2008, PPPs have accounted for almost 2% for the market share of all highways’ capital investment,⁶³⁸ roughly 11% of total annual spending on new highway capacity⁶³⁹ and between 2 and 4 new projects per year for each developer.⁶⁴⁰

⁶³² Puentes & Thompson, *Banking on Infrastructure*, 7.

⁶³³ Sean Sloane, CSG, “State Infrastructure Banks” (July 5, 2011), <http://knowledgecenter.csg.org/kc/content/state-infrastructure-banks>.

⁶³⁴ *Ibid.* 8.

⁶³⁵ NSTIF, *Paying Our Way*, 162-63.

⁶³⁶ AASHTO, *Leveraging the Money*, 6.

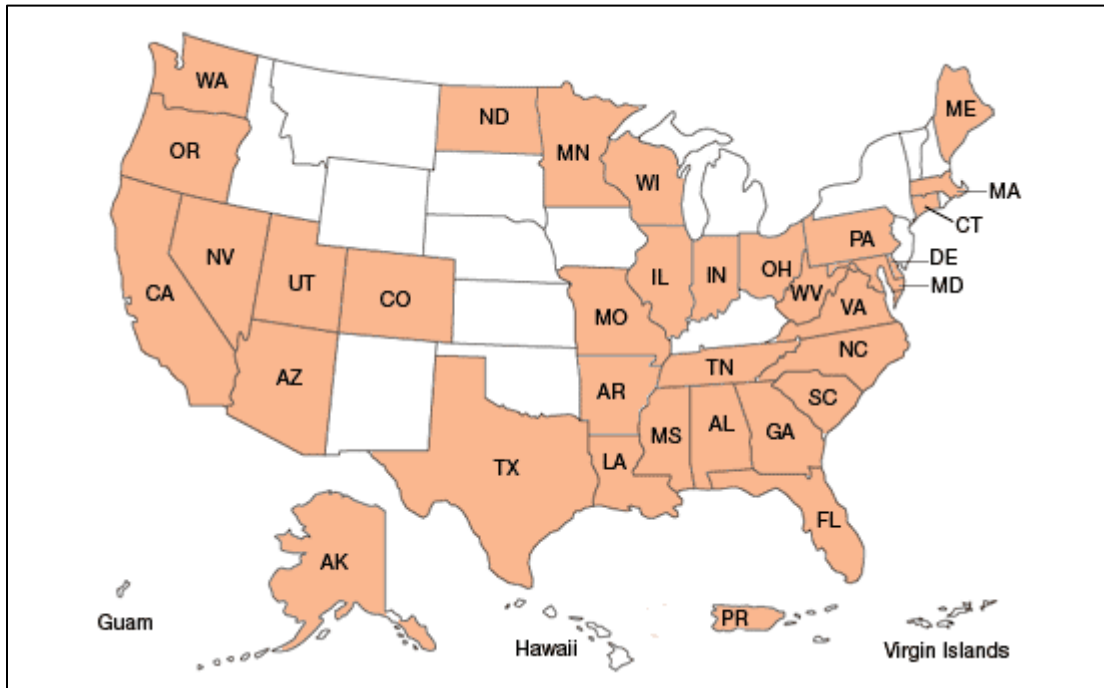
⁶³⁷ Jaime Rall et. al, National Council for State Legislatures (NCSL), *Public-Private Partnerships for Transportation: A Toolkit for Legislators*, (2010), 16.

⁶³⁸ AASHTO, *Leveraging the Money*, 10.

⁶³⁹ *Ibid.*

⁶⁴⁰ *Ibid.*

Figure 9: PPP-Enabling Legislation by State



Source: Federal Highway Administration, State P3 Legislation, http://www.fhwa.dot.gov/ipd/p3/state_legislation/.

The U.S. DOT defines a PPP as

a contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional. The agreements usually involve a government agency contracting with a private company to renovate, construct, operate, maintain, and/or manage a facility or system. While the public sector usually retains ownership in the facility or system, the private party will be given additional decision rights in determining how the project or task will be completed.

Some commentators have been critical of PPPs, alleging that they “ha[ve] come to refer to everything from ‘plain vanilla’ outsourcing ... to turning over nearly 100 percent of the infrastructure financing and delivery to the private sector—and everything in between.”⁶⁴¹ These broad definitions reflect the fact that the PPPs exist on a continuum, differing on project delivery; project ownership, management or operation of the facility; and responsibility for financing the facility.⁶⁴² Simply put, PPPs can be shaped to serve the state’s preferred risk allocation and desired level of private sector involvement. As a result, there are a number of PPP iterations.

⁶⁴¹ NSTIF, *Paying Our Way*, 163.

⁶⁴² *Ibid.* 173.

In a typical PPP, the full-service, long-term concessions,⁶⁴³ private entities provide the capital necessary to finance the project and collect some portion of the revenue generated by the project. Moreover, most PPPs require the government pay its private partner the contracted price even if the project does not produce “the expected level of revenue or if the expected revenue does not cover the entire cost of debt repayment.”⁶⁴⁴ In addition, the private entity is responsible for operating, maintaining, and improving the facilities during the concession, which normally last 25 to 99 years, but the state continues to own the asset.⁶⁴⁵ However, PPPs in which the private entity is responsible for finance will attract private investment only if the private entities can cover their costs and make a return on the investment, especially because the up-front lump sums can be rather expensive.⁶⁴⁶ For example, the 99-year lease on the Chicago Skyway cost \$1.83 billion and the 75-year lease on the Indiana Toll Road cost \$3.85 billion.⁶⁴⁷

In other PPP arrangements, the private agency leases the project⁶⁴⁸ after the public sector pays for “construction, improvement, operation and maintenance of an asset using public funds from taxes, direct user fees or tolls, borrowed funds (typically bonds or related instruments) or grants from other levels of government.”⁶⁴⁹ This approach allows the government to “reduce financing requirements to a level that can be supported by the toll or other available revenue stream.”⁶⁵⁰ Generally, the concessionaire collects the revenue generated from tolls, user fees, or in accordance with a public sector agency-mandated rate mechanism, which can include limitations on fee increases or uses.⁶⁵¹ The concessionaire uses these funds to cover “operating expenses, pay debt service, and make any needed capital improvements.”⁶⁵² Any remaining funds are the concessionaire’s profit.⁶⁵³ One form of this PPP is a Predevelopment Agreement in which “the private-sector party agrees to share costs and perform the preliminary environmental, technical, and financial analysis for one or more projects to determine project feasibility. In exchange, the public sector grants the private partner the exclusive right to negotiate for the right to implement the project.”⁶⁵⁴

Other types of PPPs include multimodal agreements that deal with more than one mode of transportation, joint development or transit-oriented development projects, build-own-operate agreements, construction manager at risk arrangements, fee-based contract services and maintenance, and design-build agreements.⁶⁵⁵

⁶⁴³ Slone, *Transportation & Infrastructure Finance*, 22.

⁶⁴⁴ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, 11; NSTIF, *Paying Our Way*, 174.

⁶⁴⁵ Rall et. al, *Public-Private Partnerships for Transportation*, 7.

⁶⁴⁶ Ibid. 5.

⁶⁴⁷ Ibid. 7.

⁶⁴⁸ Slone, *Transportation & Infrastructure Finance*, 22. These projects also are known as “asset monetizations,” “asset securitizations,” or “brownfield” projects. See NSTIF, *Paying Our Way*, 173-74.

⁶⁴⁹ Rall et. al, *Public-Private Partnerships for Transportation*, 5.

⁶⁵⁰ NSTIF, *Paying Our Way*, 174.

⁶⁵¹ Ibid.

⁶⁵² Ibid.

⁶⁵³ Ibid.

⁶⁵⁴ Ibid.

⁶⁵⁵ Design-build PPPs also include several variations: Build-operate-transfer or design-build-operate-maintain; design-build-finance-operate; design-build with warranty; and design-bid-build. AASHTO, *Leveraging the Money*, 6.

Infrastructure investment funds (IIFs)⁶⁵⁶ frequently take the form of a PPP for revenue-generating infrastructure such as toll roads and bridges,⁶⁵⁷ which is why repayments are usually funded by user fees.⁶⁵⁸ IIFs are collections of investors' funds, often pension funds, pooled for the specific purpose of infrastructure investment.⁶⁵⁹ The low-risk, long-term nature of pension funds aligns well with the risk-averse needs of infrastructure investment; in response, "infrastructure investments offer pension funds long-term yields, higher and stable returns that are linked to inflation, and risk diversification."⁶⁶⁰ For this reason, a recent OECD report specifically highlighted the role of pension-backed IIFs in responding to infrastructure needs.⁶⁶¹ Generally, these types of funds are not as common in the United States as they are in Australia, Canada, and Europe.⁶⁶² However, they may become more prevalent soon in the United States: a bill attempting to establish the American Infrastructure Investment fund was introduced in February 2013, though it remains in committee as of November 2013.⁶⁶³

c. Bonds

Bonds, which are loans that are repaid with interest at regular intervals,⁶⁶⁴ are the primary debt and financing mechanism used for state and local infrastructure projects in the U.S.⁶⁶⁵ Three quarters of all public infrastructure projects nationally are financed with tax-exempt bonds.⁶⁶⁶ From 2003 to 2012, state and local governments issued \$178 billion in bonds for roadways.⁶⁶⁷ Tax-exempt bonds offer attractive terms, namely low interest rates, and the U.S. municipal bond market is strong with an annual issuance of between \$350 and \$400 billion."⁶⁶⁸ Local governments save an average of 25 to 30% on the interest costs of tax-exempt bonds compared to taxable bonds.⁶⁶⁹

Several types of bonds have been relied on for transportation infrastructure financing: general obligation, revenue, private activity, certificates of participation (COPs) and lease revenue bonds (LRBs). General obligation bonds are backed by 'full faith and credit' of the state, not the specific project or issuer. These bonds enjoy almost universal usage in the U.S., with 44

⁶⁵⁶ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-46.

⁶⁵⁷ *Ibid.*

⁶⁵⁸ *Ibid.* 11.

⁶⁵⁹ *Ibid.*

⁶⁶⁰ R. Richard Geddes, Government Institutes, *The Road to Renewal: Private Investment in U.S. Transportation Infrastructure*, (2011), 14.

⁶⁶¹ *Ibid.*, 16.

⁶⁶² *Ibid.*, B-46.

⁶⁶³ Govtrack, S. 387: American Infrastructure Investment Fund Act, 2013, at <https://www.govtrack.us/congress/bills/113/s387>.

⁶⁶⁴ NGA Center for Best Practices, *Innovative State Transportation Funding and Financing: Policy Options for States*.

⁶⁶⁵ National League of Cities, *Legislative Issue Brief: Protect Municipal Bonds* (August 13, 2013), <http://www.nlc.org/Documents/Influence%20Federal%20Policy/Advocacy/Legislative/NLC%20Issue%20Brief%20on%20Municipal%20Bonds.pdf>.

⁶⁶⁶ *Ibid.*

⁶⁶⁷ United States Conference of Mayors, *Protecting Bonds to Save Infrastructure and Jobs*, 2013, available at: <http://usmayors.org/protectingbonds/media/0227-report-protectingbonds.pdf>.

⁶⁶⁸ *Ibid.*

⁶⁶⁹ National League of Cities, *Legislative Issue Brief: Protect Municipal Bonds*.

states, the District of Colombia, and Puerto Rico using them for transportation infrastructure.⁶⁷⁰ States issue revenue bonds for projects that will generate revenue; the revenue these projects generate is used to repay the bonds. Generally, revenue bonds are sold in \$5,000 units with no explicit bounds on a project's capacity or scope.⁶⁷¹ Like general obligation bonds, revenue bonds are tax-exempt and can be issued by governmental entities at the state or local level.⁶⁷² PABs are also state or local government issued tax exempt bonds that combine tax-exempt debt or its proceeds with long-term private management contracts or private equity investment.⁶⁷³ PABs are akin to revenue bonds in that they rely on the revenue that the project will raise to fund and repay the bonds.⁶⁷⁴ Only 6 states,⁶⁷⁵ however, use PABs for transportation infrastructure financing. Although PABs are issued by state and local governments, they are largely financed by federal funds. COPs and LRBs are issued by states or localities, whereas tax-exempt bonds are "usually secured with revenue from an equipment or facility lease."⁶⁷⁶ Although COPs and LRBs are primarily used for "parking structures, rail transit, water and wastewater treatment plants, and other public facilities,"⁶⁷⁷ they have also been used to fund toll bridges.

III. Assessment of the Effectiveness of Current Financing Mechanisms

Financing mechanisms help states to accumulate funds for a project's up-front costs and allow projects that may linger for years to start and finish at a much faster pace.⁶⁷⁸ This section analyzes the strengths and weaknesses of three groups of financing mechanisms that states regularly employ to increase surface transportation within their boundaries: (1) state revolving funds and state infrastructure banks, (2) public-private partnerships, and (3) state-issued bonds.

Although there are other financing mechanisms, such as private activity bonds, these three financing mechanisms are the most dominant. The problem for states with private activity bonds is that they generally are funded exclusively by funds from the federal government. If the federal government slows its support to states through these bonds, then this type of bond is no longer a viable option. SRFs, PPPs, and bonds have the ability to fill in many of the funding and financing gaps for surface transportation infrastructure needs.

One of the best ways to determine how successful financing mechanisms are in creating funds for new surface transportation projects is to analyze recent projects implementing these mechanisms. The following case studies offer a sample of recent state-based attempts at using these financing mechanisms. For SRFs and SIBs, two states' efforts are reviewed: (1) Florida's SIB, which funds surface transportation through loans coming from federally funded and state-funded accounts, and (2) Kansas's SRF, which funds transportation through only one state-funded account. Multiple case studies are offered to show the different variations of public-private partnerships: (1) the Indiana Toll Road, which exemplifies a typical concession-based

⁶⁷⁰ AASHTO, *Leveraging the Money*, 6.

⁶⁷¹ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, 15.

⁶⁷² *Ibid.*, 9.

⁶⁷³ NSTIF, *Paying Our Way*, 169.

⁶⁷⁴ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, 9.

⁶⁷⁵ AASHTO, *Leveraging the Money*, 6.

⁶⁷⁶ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-21.

⁶⁷⁷ *Ibid.*, 9.

⁶⁷⁸ AASHTO, *Leveraging the Money*, 2.

PPP; (2) the Chicago Skyway Project, which was funded through an Infrastructure Investment Bank; and (3) Virginia's PPP-promoting legislation, which offers a new approach to promote PPP projects within the commonwealth through the new Office of Transportation Public Private Partnerships. This case study section ends with an examination of Texas's use of general obligation bonds.

These case studies offer a glimpse into how the theoretical assessment of financing mechanisms actually applies in the real world. No financing mechanism is without risk, but the above case studies do point to factors that should be considered when selecting financing mechanisms. This financing mechanism section concludes with final recommendations on how states should formulate their financing mechanism policies.

a. State Revolving Funds and State Infrastructure Banks

The SIB is the most prominent type of state revolving fund and one of the most popular financing mechanisms among states.⁶⁷⁹ There is room for growth in the use of the SIB though, because eight states currently dominate the disbursement of three-quarters of all funds from state revolving funds (SRF).⁶⁸⁰ The focus of this analysis is to evaluate the performance of primarily state-funded SIBs. Although federal funds certainly should be accepted by states in order to provide more loans to surface transportation developers, the goal should be to create a self-sustaining state-funded SIB that will not falter due to the reduction of federal fund disbursement to SRFs. A successful state SIB provides many opportunities to both the state through new infrastructure and developers through new business opportunities. SIBs allow the private sector and the public sector to perform at their peak:⁶⁸¹ the state can loan funds to build necessary infrastructure for its constituency while the private sector can employ potentially more efficient and competitive strategies to build roads.

The primary benefit states receive from their SIBs is the acquisition of new roads without assuming the costs and risks that taxpayers normally bear for new infrastructure.⁶⁸² Through loaning funds, states shift the burden of ultimately paying for the infrastructure and the risk of operating the infrastructure to the private developer.⁶⁸³ States are able to shift this risk while benefiting from private developers' ability to work within a competitive atmosphere: namely, adoption of cost-saving methods, customer-service oriented technology, and cutting-edge design, operations, and maintenance.⁶⁸⁴ The privatization of infrastructure development and operation allows for a more efficient and businesslike approach.⁶⁸⁵

One of the most important, but less utilized, aspects of SIBs is the state's new ability to leverage funds. Although some transportation SIBs only use its available funds to provide loans and guarantees, others SIBs, such as Puerto Rico's SIB, have leveraged their state-based funds

⁶⁷⁹ Puentes & Thompson, *Banking on Infrastructure*, 7.

⁶⁸⁰ *Ibid.* 11.

⁶⁸¹ Slone, *Transportation & Infrastructure Finance*, 20.

⁶⁸² *Ibid.*

⁶⁸³ *Ibid.*

⁶⁸⁴ *Ibid.*

⁶⁸⁵ *Ibid.*

through bond issuances that are collateralized by its funds, and without federal support.⁶⁸⁶ Puerto Rico used \$15 million from its SIB to establish a trust fund that was used as partial security for a \$75 million bond issue that was used to finance highway and bridge projects.⁶⁸⁷

According to the Brookings Institution, leveraging allows the funds available in the SIB to grow, which in turn allows for more financing availability to developers.⁶⁸⁸ This continued growth can be sustained if the SIB is properly managed and the interest rate remains above zero.⁶⁸⁹ The state even has an opportunity to increase its funding of surface transportation infrastructure if it maintains an interest rate above 1%.⁶⁹⁰ In one study, Professor Jay Ryu ran a simulation and found that SIBs could maintain loan capacity at 1% and could increase loan capacity in proportion to higher interest rates.⁶⁹¹ An interest rate above 1% is still likely the best private interest rate available to infrastructure developers.

In addition to the direct impact on infrastructure, there are a number of collateral benefits that can improve the state as a whole. Loaning funds at low rates allows states to attract more private investments⁶⁹² and to foster relationships with local developers who take advantage of the low interest rates and may continue to invest in infrastructure.⁶⁹³ This influx of available financing into the business community promotes a stronger business environment for local developers and could improve the local economy. Because of this, a “state may be willing to take more risk than a commercial bank would for a project with significant public benefits.”⁶⁹⁴

SIBs offer clear benefits to developers that can boost the state’s business climate. Most importantly, private investors and developers have access to more capital than they would without state involvement.⁶⁹⁵ Borrowers can invest in and develop large projects because of an SIB’s affordable low state-set interest rates and its long state-set loan terms – some up to 35 years.⁶⁹⁶ This allows borrowers to make smaller payments even for large-scale projects.⁶⁹⁷ Additionally, more borrowers may gain access to this capital than in the private market. CSG proffers that a “state may be willing to take more risk than a commercial bank would for a project with significant public benefits.”⁶⁹⁸ Accordingly, growth in SIBs, both across states and in terms of total funds available for loans, allows private developers to increase their overall business.

In conjunction with the SIB’s numerous benefits come some significant potential costs. The greatest risk stems from the management of the SIB. Operating SIBs can be challenging for state agencies. Multiple state agencies will need to be able to work with the private sector.

⁶⁸⁶ Puentes & Thompson, *Banking on Infrastructure*, 7; Ibid. 20.

⁶⁸⁷ Slone, *Transportation & Infrastructure Finance*, 20.

⁶⁸⁸ Puentes & Thompson, *Banking on Infrastructure*, 7.

⁶⁸⁹ Ibid.

⁶⁹⁰ Ibid.

⁶⁹¹ Ibid.

⁶⁹² Slone, *Transportation & Infrastructure Finance*, 22.

⁶⁹³ Puentes & Thompson, *Banking on Infrastructure*, 7.

⁶⁹⁴ Ibid.

⁶⁹⁵ Slone, *Transportation & Infrastructure Finance*, 22.

⁶⁹⁶ Ibid.

⁶⁹⁷ Ibid.

⁶⁹⁸ Ibid.

According to an EPA report on infrastructure funding and financing, creating and operating successful SIBs “requires consensus on numerous institutional, financial, and managerial decisions that can involve several stakeholders such state agencies, private donors, and potential users.”⁶⁹⁹ Consensus can be difficult to achieve, particularly when millions of dollars may at stake.

Creation and growth of an SIB require that state agencies are willing and able to take on significant managerial and legal challenges. States generally must enact legislation in order to establish these institutions.⁷⁰⁰ Complex federal requirements can be difficult to meet in drafting legislation or implementing regulations to set up and operate the SIB.⁷⁰¹ Coupling this with state legislative approval requirements can reduce the amount states may loan and what types of projects it may be able to approve to receive loans.⁷⁰² All of these hurdles can diminish state agencies’ ability to reach any sort of consensus required for success.

The sustainability of SIBs can be a test for the state’s managerial abilities. The decision on what interest rate to set is critical to the long-term survival of an SIB. If the interest rate is set too low, then the SIB may not be sustainable in the long run.⁷⁰³ A 1992 study found that SIBs with interest rates set at 3% would have half the real value of its capital in forty years when a 5% inflation rate is assumed.⁷⁰⁴ This diminution of available capital was even more severe when the interest rate is zero, losing half of its real value in only 10 years.⁷⁰⁵ According to the Brookings Institution, 28% of loans from SRFs, which is dominated by SIBs, were lent at a 0% interest rate from 1995 through mid-2012.⁷⁰⁶ However, the rate of inflation has remained between -0.4% and 3.4% for the past 20 years, so revolving loan funds may not be in as poor of a situation as was predicted.⁷⁰⁷ SIBs can remain sustainable by selecting interest rates that account for inflation and still be low enough to entice investors. States should be willing to require an interest rate above 0% and should be vigilant about adjusting them to account for inflation.

Although leveraging is a powerful tool to help a state builds its SIB, higher levels of leveraging increases risk and thus reduces the institution’s sustainability.⁷⁰⁸ Leveraging is particularly risky if the SIB’s loan interest rate is lower than the leveraging rate.⁷⁰⁹ Again, management is required to excel in order to “appropriately time the leverages to match repayment schedules.”⁷¹⁰

Beyond sustainability and legal complexity, states also face common problems that often impact lenders: (1) lack of demand for loans, (2) poor choices in borrowers, and (3) difficulty in

⁶⁹⁹ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-25.

⁷⁰⁰ Ibid. B-24 .

⁷⁰¹ Slone, *Transportation & Infrastructure Finance*, 20-21.

⁷⁰² Ibid.

⁷⁰³ Puentes & Thompson, *Banking on Infrastructure*, 7.

⁷⁰⁴ Ibid.

⁷⁰⁵ Ibid.

⁷⁰⁶ Ibid, 11.

⁷⁰⁷ Federal Reserve Bank of Minneapolis, CPI Index, available at: http://www.minneapolisfed.org/community_education/teacher/calc/hist1913.cfm.

⁷⁰⁸ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-25.

⁷⁰⁹ Puentes & Thompson, *Banking on Infrastructure*, 7.

⁷¹⁰ Ibid.

enforcing loan repayments. Surprisingly, a few states have complained of not having enough private developers seeking loans.⁷¹¹ Critics who question this lack of demand generally cite a lack of marketing efforts by the states in question.⁷¹² Second, some states have poor mechanisms for selecting borrowers as well. Although most SIBs impose criteria on loan applicants, some states use a first-come/first-serve selection process.⁷¹³ This has allowed for funding of projects with little economic value to be funded and for “bridg[ing] financing for local agencies waiting for federal grants.”⁷¹⁴ Lack of a formal selection process with tested criteria leads to fewer projects with a broad-social impact and ultimately less benefit to constituents. Finally, SIBs struggle with enforcing loan repayments.⁷¹⁵ By the nature of the SIB’s purpose, many applicants’ projects “could create social benefits but have a poor risk profile due to a lower likelihood of loan repayment.”⁷¹⁶ Without loan repayments and interest payments, SIBs may be unable to maintain the capital necessary to continue providing loans and ultimately may collapse.⁷¹⁷

States are not alone in taking risks. Private developers receiving state financing do not escape the frustrations that come with SIBs either. Federal requirements have the potential to cause delays in project implementation.⁷¹⁸ Project delays have the potential to increase the cost of the overall project, and if severe enough, may lead to a net loss on a supposedly safer loan.⁷¹⁹ On the whole, however, there are far fewer risks to the private sector compared to the public sector.

There are a number of ways to create a state revolving fund, and in particular, a state infrastructure bank. Two SRFs are offered here as examples of successful case studies: Florida’s SIB, which proffers two accounts – one federally funded and one state funded, and Kansas’s SRF, which maintains one state funded account.

i. State Infrastructure Bank: Florida’s State Infrastructure Bank: A State Account

Florida’s SIB is the second most active SIB in the nation, consisting of 75 agreements valued at almost \$1.2 billion.⁷²⁰ The SIB is “a revolving loan and credit enhancement program” that provides loans and other financial assistance to public and private entities. Although the SIB does not provide grants, it does offer subordinated loans, interest subsidies, letters of credit, capital reserves for bond financing, capital improvements and all phases of construction. Florida’s SIB consists of two accounts, which are established as escrow accounts in the Florida State Treasury. One of the accounts is for federally- and state-funded projects under the Transportation Equity Act for the 21st Century. Since 1995, Florida has maintained a federally-

⁷¹¹ Slone, *Transportation & Infrastructure Finance*, 20-21.

⁷¹² *Ibid.*

⁷¹³ Puentes & Thompson, *Banking on Infrastructure*, 14.

⁷¹⁴ *Ibid.*

⁷¹⁵ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-25.

⁷¹⁶ *Ibid.*

⁷¹⁷ *Ibid.*

⁷¹⁸ Slone, *Transportation & Infrastructure Finance*, 20-21.

⁷¹⁹ *Ibid.*

⁷²⁰ Puentes & Thompson, *Banking on Infrastructure* 13.

funded SIB when it was among the first ten states to establish a SIB pursuant to the National Highway System Act of 1995. However, this account has not been capitalized since 2004.⁷²¹

Florida's second account is for state-funded projects related to the state highway system of intermodal connectivity, using state money and bond proceeds. Created in June 2000, Florida initially capitalized its state account with \$50 million for the first three years. Although the SIB received \$50 million the first year, the next year the state capitalized only \$43.5 million to the bank and allocated no funds the third year. In 2003, the State Transportation Trust Fund shifted \$33.5 million to the SIB. Florida also provided a recurring source of funds for the SIB by issuing revenue bonds to leverage existing state-funded SIB loans. In June 2005, \$62.3 million SIB bonds were sold. That same year, Florida expanded SIB-eligible projects to include \$100 million TRIP projects that received at least 25% of their funds come from a source other than the SIB. And, in 2007, the state permitted the SIB to lend capital costs or provide credit enhancements for emergency loans to public-use transit and intermodal facilities, and sold \$61.3 million of State Infrastructure Bank Revenue Bond Series 2007. In addition to funds from loan repayments, state fuel and excise taxes annually provide almost \$10 million to this account. In FY 2013/2014, the SIB beginning balance was \$151.9. Florida's DOT projects that this will drop to a low of \$2.2 million in FY 2016/2017, but return to \$128.9 million FY 2023/2024.

Florida selects projects for SIB funding based whether the project has secure sources of funding and safeguards for repaying loans, involves PPPs, promotes new technology, protects the environment, and benefits intermodal transportation. If the project is selected and receives loan funds, it makes loan repayments to the State Board of Administration that are then used to pay the debt service on any outstanding bonds. Any remaining funds are returned to the state-funded account for future loans. In addition, the SIB may lend capital costs or provide credit enhancements for emergency loans for public-use transit and intermodal facilities damaged within an area that is part of an official state declaration of emergency.

Ultimately, Florida's SIB has been very popular, in part because officials' make efforts to inform project sponsors of their financing options through the SIB.⁷²² As a result, more than half of Florida's SIB activity (68%) is attributed to its state-only SIB account.

a. State Revolving Fund: Kansas's State-Funded Transportation Revolving Fund

Although Kansas opted out of the federal SIB program, it established a state-capitalized Transportation Revolving Fund (TRF) in 1999.⁷²³ Like most SIBs, the TRF is a revolving loan program that provides loans at an average interest rate of 3.7%.⁷²⁴

The TRF provides loans, bonds, and credit enhancement opportunities for projects involving local bridges, culverts, roads, streets, or highways. To be eligible for these loans, applicants must be a Kansas government entity or a private entity that partners with the government. Technically, the amount that the Fund can loan to projects is not limited. However,

⁷²¹ Ibid.

⁷²² Ibid.

⁷²³ Ibid. 7.

⁷²⁴ Ibid.

the Fund has imposed a practical limitation permitting borrowers to receive up to \$6 million for a particular fiscal year as long as that particular borrower does not account for more than 15% of the Fund's total capacity.

The Fund relies on the State Highway Fund for capitalization. Loan repayments also replenish the Fund so that it can make future loans. This is why a \$1 investment in the TRF can fund up to \$5 in SIB projects. Local governments repay the Fund using Special City & County Highway Fund allocations or local revenues including sales taxes. When necessary, Kansas has used alternate funding sources for the TRF. For example, after a moratorium on Fund activities in 2009 because of financial difficulties, Kansas resorted to its general fund to appropriate \$25 million to the Fund in 2010.⁷²⁵

Other than Georgia, Kansas is the only state that operates a state-funded SRF focused on providing innovative financing for transportation improvements.⁷²⁶ Over 50 Kansas communities have participated in the TRF. Since its inception, the TRF has been rather successful, executing over \$135 million in loans for over 100 road and bridge projects.⁷²⁷

b. Public-Private Partnerships

Public-private partnerships (PPP) offer a popular coexisting financing mechanism, or even an alternative, to SRFs and SIBs. PPPs are known to similarly take the best of both the public and private development worlds.⁷²⁸ As mentioned in the introductory section explaining PPPs, states use at least a dozen different iterations to achieve their public financing goals. The most widely used type of PPP is the full-service long-term concession or lease.⁷²⁹ However, for the purpose of this performance evaluation, the pros and cons are offered for a generic PPP project. Although certain iterations offer stronger benefits than others, the more important goal for a legislature is to find a type of PPP that meets more of the pros to be discussed than cons within its state's financing setting rather than to select a specific type in general when working with the private sector.

Many of the benefits derived from PPPs for the state and private developers are very similar to the benefits from SIBs. States again have the ability to transfer construction and financing risks to the private developer,⁷³⁰ which is the party most able to manage the risk according to the EPA.⁷³¹ Under normal risk allocation agreements for PPPs, private developers are responsible for the design, construction, and operation risks and the state maintains its natural responsibilities of "right-of-way acquisition and force majeure events."⁷³² This allows PPPs, and long-term concessions in particular, to give states the "ability to finance the asset without

⁷²⁵ Ibid. 10.

⁷²⁶ Ibid.

⁷²⁷ Kansas Department of Transportation Bureau of Fiscal Services, "Innovative Financing for Kansas Communities," <http://www.ksdot.org/burFiscal/trf/default.asp>.

⁷²⁸ Slone, *Transportation & Infrastructure Finance*, 24-25

⁷²⁸ Ibid.

⁷²⁹ Ibid. 22.

⁷³⁰ Ibid; AASHTO, *Leveraging the Money*, 8.

⁷³¹ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-42 to -43.

⁷³² Ibid.

impacting bonding capacity or threatening bond ratings.”⁷³³ States still can implement more efficient production and operation strategies endorsed in the private sector as well.⁷³⁴ Some of the strategic benefits from the private sector include “professional business management, greater operating efficiency, lower operating and maintenance costs, better customer service, less political patronage, shareholders who will hold management accountable and opportunities for network economies by operating across state lines.”⁷³⁵ Many of the cost-saving benefits result from the private sector’s more fiscally averse mindset.⁷³⁶ In some cases, project costs are reduced⁷³⁷ because of “direct incentives to the private contractor for on-time delivery; use of warranties ... or performance-based contracting; competition among bidders; transfer of risk to the private sector for cost and schedule overruns or revenue shortfalls; and lifecycle efficiencies.”⁷³⁸ Additionally, PPP projects can be more successful because the private sector and public sector work in tandem through the procurement and development process.⁷³⁹

Beyond risk realignment and private sectors experience, PPPs encourage projects that might otherwise be too expensive. States are able to facilitate projects that may not have occurred within a short time period, or perhaps ever, without private involvement.⁷⁴⁰ Through spreading the costs over the entire concession period, or sometimes over the whole life of the asset, states and developers are able to implement projects that are otherwise too costly to accept.⁷⁴¹ Local governments benefit financially from PPP arrangements as well: through partnership with private developers creating more upfront capital available for the project, local governments can actually experience savings.⁷⁴²

The flexibility of the PPP structure allows for states to choose different iterations of PPPs for different infrastructure problems. For example, design-build PPPs benefit both the state and developers because “the private contractor [has] an incentive to reduce costs across a facility’s entire lifecycle, for example through innovative design that reduces construction costs, high-quality project delivery that lowers the cost of maintenance and improvements, or up-front maintenance that avoids costly rebuilds down the road. Some analysts assert that integrated delivery approaches also can reduce delays due to collaboration between those responsible for different project phases.”⁷⁴³ These incentives can lead to an overall higher quality project.⁷⁴⁴ The Congressional Budget Office confirmed that the design-build type tends to be less costly: in one of only a few studies available, the “research found that the use of the design-build type of public-private partnership slightly reduced the cost of building highways relative to the cost

⁷³³ APA, *Rebuilding America*, 21.

⁷³⁴ AASHTO, *Leveraging the Money*, 8.

⁷³⁵ Slone, *Transportation & Infrastructure Finance*, 22.

⁷³⁶ *Ibid.*

⁷³⁷ NSTIF, *Paying Our Way*, 47.

⁷³⁸ *Ibid.*

⁷³⁹ Rall et al., *Public-Private Partnerships for Transportation*, 9.

⁷⁴⁰ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-42 to -43.

⁷⁴¹ Rall et al., *Public-Private Partnerships for Transportation*, 9.

⁷⁴² EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-42 to 43.

⁷⁴³ Slone, *Transportation & Infrastructure Finance*, 24.

⁷⁴⁴ *Ibid.*

⁷⁴⁵ Rall et al., *Public-Private Partnerships for Transportation*, 10.

⁷⁴⁶ *Ibid.*

under the traditional approach and slightly reduced the amount of time required to complete the projects. The studies typically estimated that the cost of building roads through design-build partnerships was a few percentage points lower than it would have been for comparable roads provided in the traditional way.”⁷⁴⁵ This trend of cost reduction tended to be associated with quickly built projects. Developers are well-aware of all of these benefits, which are quite similar to the benefits from SIBs: primarily, the ability to “advance large complex transportation projects with [assured] revenue streams.”⁷⁴⁶ According to Everett Ehrlich of the Commission on Public Infrastructure, “private money is itching to enter this area, and lots of it.”⁷⁴⁷

Although similar in benefits with SIBs, PPPs create some very unique concerns. Most of the criticisms associated with PPPs result from the negotiated, specific terms of the contract between the private developer and the state government.⁷⁴⁸ In particular, one of the greatest risks of PPPs is too long of a concession. The private developer repays for the project through either general fund revenues or project-specific revenues.⁷⁴⁹ If the concession is for several decades, the state forgoes a revenue source from the infrastructure and may only receive an upfront payment to allow the developer to build and charge for use of public infrastructure. Even when states receive generous up-front payments, promoting the sustainability of the funds throughout the duration of the concession and the life of the asset can be formidable. CSG reiterated this concern about concession length, arguing that “state governments are committing future generations when the transportation needs of tomorrow can’t be predicted.”⁷⁵⁰ For some critics, this long concession is particularly unsettling because many of the companies managing the concession are foreign.⁷⁵¹

The concession agreement poses other problems that are not at issue with SIBs. One of the most highly criticized provisions of many agreements are noncompete clauses, which allows the private party to limit or fully prevent construction of other roads funded by PPPs or wholly by the public that could serve a similar transportation need.⁷⁵² Additionally, private companies are more willing to increase tolls to pay for the road at a higher rate than states.⁷⁵³ This is particularly alarming because many PPPs use state funds as well, which creates a risk of taxpayers paying for the roads twice: first through taxes and second through repeated toll payments.⁷⁵⁴ Because of the technical issues of PPP contracts, and the risk that the contractual provisions can create large profits at the cost of a state’s potential revenue stream, EPA says that states need “a certain level of project readiness such as environmental clearance and secure cash flows (e.g., tolls, lease payments, or public guarantees), often with inflation-protected returns” in

⁷⁴⁵ Congressional Budget Office, *Using Public-Private Partnerships to Carry Out Highway Projects*, (Jan. 2012), ix-x.

⁷⁴⁶ AASHTO, *Leveraging the Money*, 8.

⁷⁴⁷ Slone, *Transportation & Infrastructure Finance*, 24.

⁷⁴⁸ Ibid.

⁷⁴⁹ Rall et al., *Public-Private Partnerships for Transportation*, 10.

⁷⁵⁰ AASHTO, *Leveraging the Money*, 8.

⁷⁵¹ Slone, *Transportation & Infrastructure Finance*, 27-28.

⁷⁵² Ibid.

⁷⁵³ Ibid.

⁷⁵⁴ Ibid.

order to have a successful project for the state.⁷⁵⁵ These procedural complications can create large costs on state agencies and require hiring outside group of legal, financial, insurance, and technical advisors” in order to assess the potential benefit to the state.⁷⁵⁶ Even with these additional costs, the overall project cost may not be any lower: the Congressional Budget Office found that the “total cost of the capital for a highway project, whether that capital is obtained through a government or through a public-private partnership, tends to be similar once all relevant costs are taken into account. In general, the overall rate of return demanded by investors depends on their perception of the risk of losses associated with the project.”⁷⁵⁷

And of course, at the heart of criticisms against even the most successful PPPs, “some are concerned about states ceding control of the highways to private interests.”⁷⁵⁸ Critics do not like that the private sector profits at the public’s expense, the loss of potential public revenues for decades, and the loss of public control over the project.⁷⁵⁹ They are concerned that the state may lose the ability to account for the changes in the public need during the term of the contract, which could be quite extensive.⁷⁶⁰ They also question the accountability and transparency of PPP projects.⁷⁶¹ In particular, accountability can fail if the private partner is at risk of bankruptcy or default.⁷⁶² Other generalized concerns are often lumped in with the suspicion of PPPs, such as labor concerns of reduced staff and antiunion activities⁷⁶³ and potential environmental issues.⁷⁶⁴

Private developers are not always protected either. Because the developers take on more responsibility in PPPs, they are financially responsible for completing the project on time⁷⁶⁵ and thus can suffer financial losses that may result from delays caused by complying with complex federal regulations. Even if delays do not occur, PPPs are difficult to implement due to the complexity of the federal and state laws permitting them. According to EPA, successful PPP proposals generally need “multiple advisors to coordinate legal, technical, and financial issues, which can result in a longer, more expensive procurement process.”⁷⁶⁶ This complexity can add up to 5% to the total cost of the project for large projects and even more for smaller projects.⁷⁶⁷ These costs essentially require applicants to only have medium to large sized projects if they hope to earn a profit.⁷⁶⁸ The costs of projects with a long procurement time also increase a private developer’s transaction costs for the deal.⁷⁶⁹ A summary in Figure 10 below shows a sample of some of the many complex steps required to complete a PPP transaction.⁷⁷⁰

⁷⁵⁵ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-47.

⁷⁵⁶ Ibid.

⁷⁵⁷ CBO, *Using Public-Private Partnerships to Carry Out Highway Projects*, xiii.

⁷⁵⁸ Slone, *Transportation & Infrastructure Finance*, 27-28.

⁷⁵⁹ Ibid.

⁷⁶⁰ Rall et al., *Public-Private Partnerships for Transportation*, 11.

⁷⁶¹ Ibid.

⁷⁶² Ibid.

⁷⁶³ Ibid.

⁷⁶⁴ Ibid. 9.

⁷⁶⁵ Ibid.

⁷⁶⁶ Slone, *Transportation & Infrastructure Finance*, 24-25.

⁷⁶⁷ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-44.

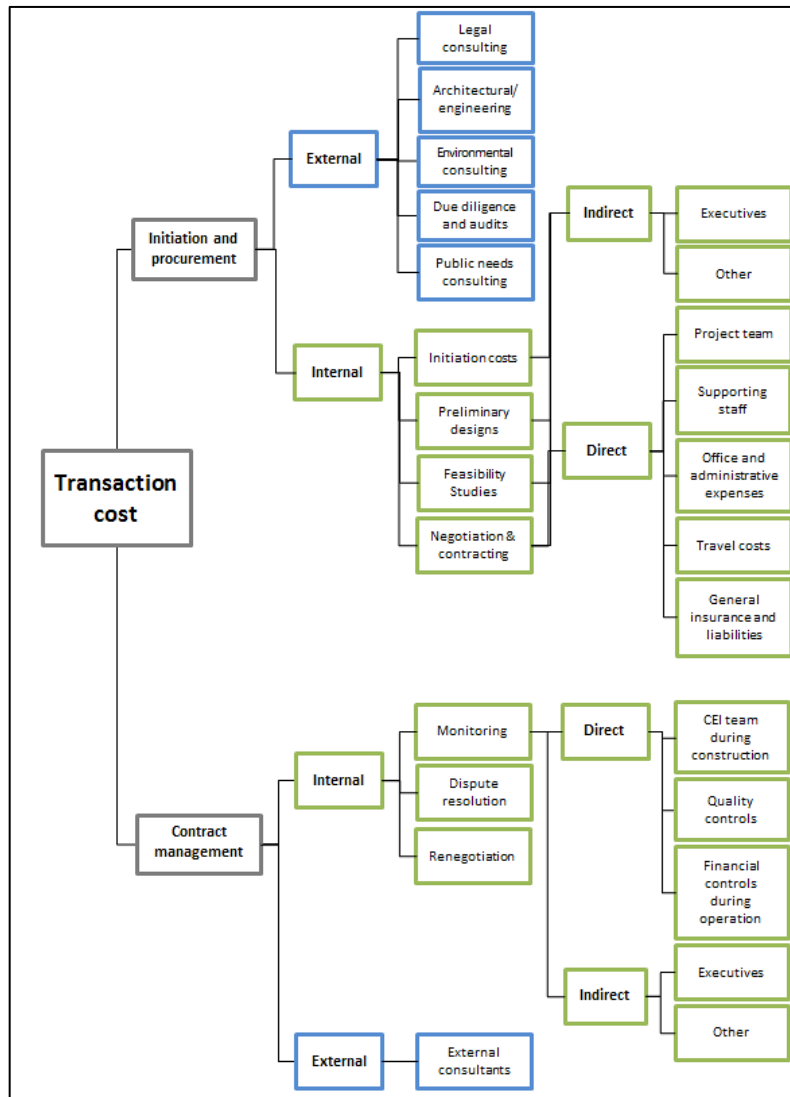
⁷⁶⁸ Ibid.

⁷⁶⁹ Ibid. B-47.

⁷⁷⁰ M. Farajian, *Transaction Cost Estimation Model for US Infrastructure Public Private Partnerships* (2010), 41.

⁷⁷¹ Ibid. 41.

Figure 10: A PPP's Standard Transaction Costs Imposed on Businesses



Source: Morteza Farajian, Transaction Cost Estimation Model for US Infrastructure Public Private Partnerships (2010), 41. This graphic only represents Mr. Farajian's personal research and cannot be attributed to the Virginia Department of Transportation. Use of this graphic does not constitute Mr. Farajian's endorsement or acknowledgement of this report.

Clearly under the current PPP structure, transaction costs for applying and accepting projects with the state are high. This figure only shows one developer's process for applying for a PPP project. This method might be more involved, and thus more costly, if multiple developers form a team or several bidders contend for a project. The financial impact of additional bidders and the formation of partnerships' effect on transaction costs is somewhat mixed: although one recent study found that neither of these two factors impacted the transaction costs, at least two other studies found an increase in overall costs.⁷⁷¹ In addition to this procedural complexity,

⁷⁷¹ Ibid. 26-28.

external factors also add to the private developers' accepted risk. For PPPs that are even partially funded through property leases or property taxes, weak real estate market conditions can add a level of uncertainty to future revenues.⁷⁷² All of these costs are assuming that the private developer calculated expected revenues correctly; if not, the overall cost could be even greater.⁷⁷³ For both the state and developers, both the risk and the reward of PPP projects can be very great.

Ultimately, the optional forms of PPPs can be as varied as the state wishes when pursuing contracts with private partners. Three case studies of common PPP forms are shown below. The first discusses Indiana's concession-based PPP, which is one of the most common forms of PPP projects. The second case study is a PPP based in Chicago that was built from an Infrastructure Investment Fund. The final case study evaluates Virginia's new legislation that is intended to promote PPPs in the commonwealth.

i. Concession-based PPPs: Indiana Toll Road

The Indiana Toll Road runs for 157 miles in between the Chicago Skyway and the Ohio Turnpike.⁷⁷⁴ The winning bidder, the ITR Concession Co. – which was the same Australian and Spanish toll road developers from the Chicago Skyway project, won with a payment of \$3.8 billion and an agreement to receive toll revenue during its 75 year term to maintain and operate the road.⁷⁷⁵ Indiana still maintains ownership over the road without having to pay for its maintenance over the 75 year period.⁷⁷⁶ This agreement also set toll limits during the term.⁷⁷⁷ Indiana chose to use a GDP-indexed option to cap tolls, in comparison to the other mainstream option of having a higher floor increase cap.⁷⁷⁸ It is unclear at this point in the early life of the PPP which option will prove more effective.⁷⁷⁹

The benefit to Indiana for granting a concession was clear in the short-term: with the state's funding gap of \$1.8 billion in transportation funding and a need for the new roadway, offering the concession solved its problems and helped fill in the gap.⁷⁸⁰ Because of this new influx of funding, the Indiana Department of Transportation was able to begin the "Major Moves" program.⁷⁸¹ Major Moves' goal is to improve the state over a ten year period through over 200 new construction and 200 preservation projects throughout Indiana.⁷⁸² Tory Woodruff, the Chief of Staff for the Indiana Department of Transportation, credits the upgraded toll road with bringing in new business, such as Honda and Amazon.com.⁷⁸³ The private investor also

⁷⁷² EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-43.

⁷⁷³ Rall et al., *Public-Private Partnerships for Transportation*, 11.

⁷⁷⁴ Slone, *Transportation & Infrastructure Finance*, 25.

⁷⁷⁵ Ibid.

⁷⁷⁶ Associated Press, "Studies Call Indiana Toll Road Lease a Bad Deal," *Indianapolis Business Journal* (Dec. 10, 2012), <http://www.ibj.com/study-calls-indiana-toll-road-lease-a-bad-deal/PARAMS/article/38411>.

⁷⁷⁷ Slone, *Transportation & Infrastructure Finance*, 25.

⁷⁷⁸ Celeste Pagano, "Proceed with Caution: Avoiding Hazards in Toll Road Privatizations," 8 St. John's Law Review 351 (2009): 382.

⁷⁷⁹ Ibid.

⁷⁸⁰ Slone, *Transportation & Infrastructure Finance*, 25.

⁷⁸¹ Ibid.

⁷⁸² Ibid.

⁷⁸³ "Study Calls Indiana Toll Road Lease a Bad Deal."

benefits: ITR Concession Co. is expected to recoup its investment in less than 20 years of operation.⁷⁸⁴ The private management company also has been able to maintain and operate the highway at lower costs than when it was under both public and private management.⁷⁸⁵

Based on a state-commissioned study, Indiana turned more of a profit than it would have operating the road on its own: tolls would have provided only \$1.92 billion.⁷⁸⁶ This amount was quite significant considering that the toll had only generated \$254 million before the road became part of a concession.⁷⁸⁷ Prior to the Indiana Toll Road, “tolls had not been increased in 20 years and the impact of inflation meant the cost of collecting the toll was greater than the amount of the toll payment.”⁷⁸⁸ Constituents may not appreciate the rising tolls, but explaining the inability to pay for the roads due to the low tolls may make constituents more understanding about the increase. The concession also will save Indiana \$4 billion in infrastructure costs, which will now be paid by ITR Concession Co.⁷⁸⁹

Although viewing the project as a success, CSG’s Sean Slone cautioned about the project’s broad applicability. In the CSG’s case study, Slone explained that these benefits have worked because the roads were established, well-used roads that provided confidence to the bidding companies that they could rely on to generate money at the tolls.⁷⁹⁰ Slone cautioned, however that this model would not work for all PPPs: “Other roads around the country have been in operation for only a few years and don’t necessarily have the same proven customer base.”⁷⁹¹

Not everyone is as enamored with the toll road concession. The U.S. PIRG Education Fund published in its report that the private investor’s recoupment within twenty years signals that Indiana “received far less for their assets than they are worth.”⁷⁹² Additionally, it argued that despite the budget windfall, “[w]hatever structural budget shortfalls Indiana faced before the deal will return in the 11th year, but the state will need to face these shortfalls without revenue from its toll road.”⁷⁹³ It also noted the limitations of the concession agreement, explaining that the state cannot build a four-lane divided highway longer than twenty miles within ten miles of the toll road for at least 55 years unless the state wants to pay ITR Concession Co. for the lost revenue.⁷⁹⁴ Another limitation included the requirement to pay ITR Concession Co. for any reduction in tolls when they perform construction – this might prohibit Indiana from taking on construction projects.⁷⁹⁵ This already happened in 2008, when Indiana had to pay ITR Concession Co. nearly \$500,000 when it waived toll collections to assist in evacuations.⁷⁹⁶ If

⁷⁸⁴ Phineas Baxandall, U.S. PIRG Education Fund, *Private Roads, Public Costs: The Facts About Toll Road Privatization and How to Protect the Public*, (2009), 2, available at:

<http://cdn.publicinterestnetwork.org/assets/H5Ql0NcoPVeVJwymwlURRw/Private-Roads-Public-Costs.pdf>.

⁷⁸⁵ CBO, *Using Public-Private Partnerships to Carry Out Highway Projects*, x.

⁷⁸⁶ “Study Calls Indiana Toll Road Lease a Bad Deal.”

⁷⁸⁷ Ibid.

⁷⁸⁸ Slone, *Transportation & Infrastructure Finance*, 27.

⁷⁸⁹ “Study Calls Indiana Toll Road Lease a Bad Deal.”

⁷⁹⁰ Slone, *Transportation & Infrastructure Finance*, 25.

⁷⁹¹ Ibid.

⁷⁹² Baxandall, *Private Roads, Public Costs*, 22.

⁷⁹³ Ibid. 12.

⁷⁹⁴ Ibid. 18.

⁷⁹⁵ Ibid.

⁷⁹⁶ Ibid. 19.

Indiana wants the roads to meet a safety standard higher than the baseline, it has to pay any additional costs as well.⁷⁹⁷

Others have shared doubts as well: Dr. John Gilmour of the College of William & Mary challenged the state's commissioned findings, arguing that the state made a flaw of assuming that toll rates would maintain a constant rate of increase.⁷⁹⁸ Dr. Gilmour found it unrealistic that Indiana would not have required more from its tolls at some point during the 75 year concession.⁷⁹⁹ Of course, the Indiana Department of Transportation said his study has unaccounted for savings, such as the savings in infrastructure costs.⁸⁰⁰ Regardless, Dr. Gilmour argues there are better options, including keeping the road public and raising tolls or having the private company pay throughout the term.⁸⁰¹ He views this as having short-term appeal for politicians without providing long-term success for later generations.⁸⁰² Another academic, valuation expert Roger Skurski at the University of Notre Dame, contended that the Indiana Toll Road reasonably should have been valued at \$11.38 billion.⁸⁰³

The Indiana Toll Road did not come to fruition without some controversy as well: the state legislature approved the concession only after a very close vote.⁸⁰⁴ Slone even said that some state legislators may have lost their seats because of their support for the concession.⁸⁰⁵ Since the Indiana Toll Road, the legislature has empowered two review committees to oversee any contracts over public-private partnerships.⁸⁰⁶ Additionally, some have criticized that the public was not involved enough in the decision-making process.⁸⁰⁷ The state may not have had its expectations met either: Indiana earned \$138.6 million less than it expected on interest during its first two years.⁸⁰⁸ The state isn't the only possible loser in this equation. Valuing the long-term investment in these projects is difficult. The ITR Concession Co. "may even be at risk of defaulting on debt payments for the Indiana Toll Road... due to lower-than-expected revenues from the highways."⁸⁰⁹

Indiana certainly gained in the short term, but the signs suggest that the state may not have pushed for a strong enough of a deal for the long term in its concession. It remains to be seen whether this proves to be a worthwhile investment in the long term for both the state and the concession company.

⁷⁹⁷ Ibid.

⁷⁹⁸ "Study Calls Indiana Toll Road Lease a Bad Deal."

⁷⁹⁹ Ibid.

⁸⁰⁰ Ibid.

⁸⁰¹ Ibid.

⁸⁰² "Study Calls Indiana Toll Road Lease a Bad Deal."

⁸⁰³ Baxandall, *Private Roads, Public Costs*, 22.

⁸⁰⁴ Slone, *Transportation & Infrastructure Finance*, 27.

⁸⁰⁵ Ibid.

⁸⁰⁶ Ibid.

⁸⁰⁷ Baxandall, *Private Roads, Public Costs*, 30, 32.

⁸⁰⁸ Ibid. 23.

⁸⁰⁹ Ibid.

ii. *Infrastructure Investment Funds: Chicago Skyway*

Infrastructure investment funds are used to finance a wide array of project types, including the PPP that financed and developed the Chicago Skyway. The Chicago Skyway is a 7.8-mile elevated toll road that connects the Indiana Toll Road to the Dan Ryan Expressway in Chicago at the border. The facility includes a 3.5-mile elevated mainline structure crossing the Calumet River. Built in 1958, the Skyway was operated and maintained by the City of Chicago Department of Streets and Sanitation. In 2004, Chicago granted a 99-year lease to two private infrastructure investment groups, Cintra and Macquarie, to operate, maintain, manage, rehabilitate, and toll the Chicago Skyway. This transaction raised an up-front payment of \$1.8 billion for the city—of which \$465 million was used to pay off outstanding debt on the Skyway.⁸¹⁰ Under the deal, Cintra and Macquarie are responsible for all operations and maintenance costs of the skyway and have the right to all toll and concession revenue. However, the agreement limits annual toll rate increases through 2017, after which they will be capped at the greater of the rate of increase in the consumer price index, the per capita gross domestic product, or 2%.⁸¹¹ While PPPs had previously been used to finance the building of new infrastructure, this was the first major agreement where an existing revenue-generating asset was leased to a private company for a large upfront payment.⁸¹²

At the behest of Mayor Rahm Emanuel, in April 2012, the Chicago City Council passed an ordinance creating the Chicago Infrastructure Trust, a nonprofit entity that the city hopes will help it finance \$1.7 billion in projects including \$37.1 million to improve energy efficiency at police and fire stations, libraries and other city buildings; \$64 million to convert a water-pumping station from steam power to electricity and \$14 million for lighting projects in Chicago Public Schools. When completed, the projects are projected to save Chicago Public Schools alone \$10.7 million annually on energy bills.⁸¹³ A recent idea is to heat the city's sidewalks with geothermal steam, just as Klamath Falls, Oregon does, although Chicago would be the largest city to attempt this. If the Chicago Infrastructure Trust undertakes such a project, it would raise its funds from investors, who would then be paid by getting a share of the money that the city would save by not having to use its snow plows as much when it snows.⁸¹⁴

While the Trust was praised by the U.S. Conference of Mayors as well as former President Bill Clinton, it has taken far longer than expected for it to begin financing projects given that it is not possible to leverage money that one does not have.⁸¹⁵ According to the Trust's lone employee, CEO Stephen Beitler, "if I were sitting in front of you, I would hold my hands two feet apart, and say that the city of Chicago has that much money. Then I'd hold my

⁸¹⁰ Federal Highway Administration, "Project Profiles: Chicago Skyway," http://www.fhwa.dot.gov/ipd/project_profiles/il_chicago_skyway.htm.

⁸¹¹ Slone, *Transportation & Infrastructure Finance*, 25.

⁸¹² Office of the Inspector General of the City of Chicago, *Report of Inspector General's Findings and Recommendations: An Analysis of the Lease of the City's Parking Meters*, (2009), <http://chicagoinspectorgeneral.org/wp-content/uploads/2011/03/Parking-Meter-Report.pdf>, 9.

⁸¹³ Bill Ruthhart, *Emanuel's Infrastructure Trust Off to Slow Start*, *Chicago Tribune* (July 9, 2013).

⁸¹⁴ Patrick Kiger, Urban Land Institute, "Chicago's Novel Infrastructure Trust," (Oct 21, 2013), <http://urbanland.uli.org/infrastructure-transit/chicagos-novel-infrastructure-trust/>.

⁸¹⁵ "The U.S. Conference of Mayors Applauds Chicago Mayor Rahm Emanuel's Focus on Innovative Infrastructure Investment", *Journal of Commerce* (July 20, 2013), <http://www.joc.com/us-conference-mayors-applauds-chicago-mayor-rahm-emanuels-focus-innovative-infrastructure-investment>.

hands six feet apart and say: That is the number of projects that the city needs. The challenge is to find the money to pay for the remaining four feet.”⁸¹⁶ Under the Chicago Infrastructure Trust, the city is trying to make agreements with private investment and financing firms for projects that have a defined revenue stream or the potential for a fee or surcharge that could pay back the investment. Traditionally, Chicago would have raised capital for infrastructure projects from bonds because the interest rates and rate of return would be more favorable than that received on the private market. However, Moody’s recently downgraded the city’s \$11.5 billion in debt by three notches, to A3 with a negative outlook, so it is unlikely that the city would be able to secure debt at rates much more favorable than private investors could.⁸¹⁷ However, it appears that city officials and the Trust underestimated the complexity of beginning the trust and securing financing would be. Possibly because of these uncertainties, the administration has changed course on what the terms of an investment deal should be, contributing to delays in releasing a bid proposal.⁸¹⁸ Chicago Public Schools has already completed \$40 million in projects for which it expected to receive money from the trust, so the trust is now seeking financing for projects that have already been completed. Despite significant uncertainties, however, as of September 2013, the trust had attracted the interest of at least a dozen potential investors.⁸¹⁹ While the trust has not yet completed any projects, it remains on the radar for many state and local officials. Whereas financing and investment firms would still profit off of this public infrastructure, the trust is poised to create arrangements that are more favorable to local officials.⁸²⁰

iii. Active Government Involvement: Virginia’s Infrastructure Growth

Since its passage of the nation’s first modern PPP law, the Highway Corporation Act of 1988, Virginia has become a leader in rapidly completing massive PPPs.⁸²¹ Over the last 5 years, it leveraged multiple sources of funding to assist the state in completing seven PPP projects valued at \$8.1 billion.. This is more than has been completed in other states with robust PPP programs. Florida has completed 5 PPPs valued at \$2.2 billion, Texas completed 3 valued at \$6 billion, and California completed 2 valued at \$1 billion. It closed a greater value of PPPs in 2012 than all other states and countries, except for the United Kingdom.⁸²² As of January 2013, the state had four PPP projects in progress, delivering more than \$6.3 billion in transportation improvements, generating roughly \$11.4 billion in economic activity, and supporting 58,700 jobs. For these projects, the state contributed \$1.8 billion.⁸²³ In 2012 alone, Virginia’s total value of closed PPPs was greater than all other states and countries except for the United Kingdom.⁸²⁴

⁸¹⁶ Greg Hinz, Crain’s Chicago Business, “Chicago’s infrastructure trust finally dreams big,” (Jul. 19, 2013), <http://www.chicagobusiness.com/article/20130719/BLOGS02/130719754/emanuels-infrastructure-trust-finally-dreams-big>.

⁸¹⁷ Ibid.

⁸¹⁸ Ruthhart, *Emanuel’s Infrastructure Trust*.

⁸¹⁹ Hinz, “Chicago’s infrastructure trust finally dreams big.”

⁸²⁰ Ibid.

⁸²¹ R. Richard Geddes & Benjamin L. Wagner, “Why do U.S. states adopt public-private partnership enabling legislation?” *Journal of Urban Economics*, (Nov 2012), 30-31.

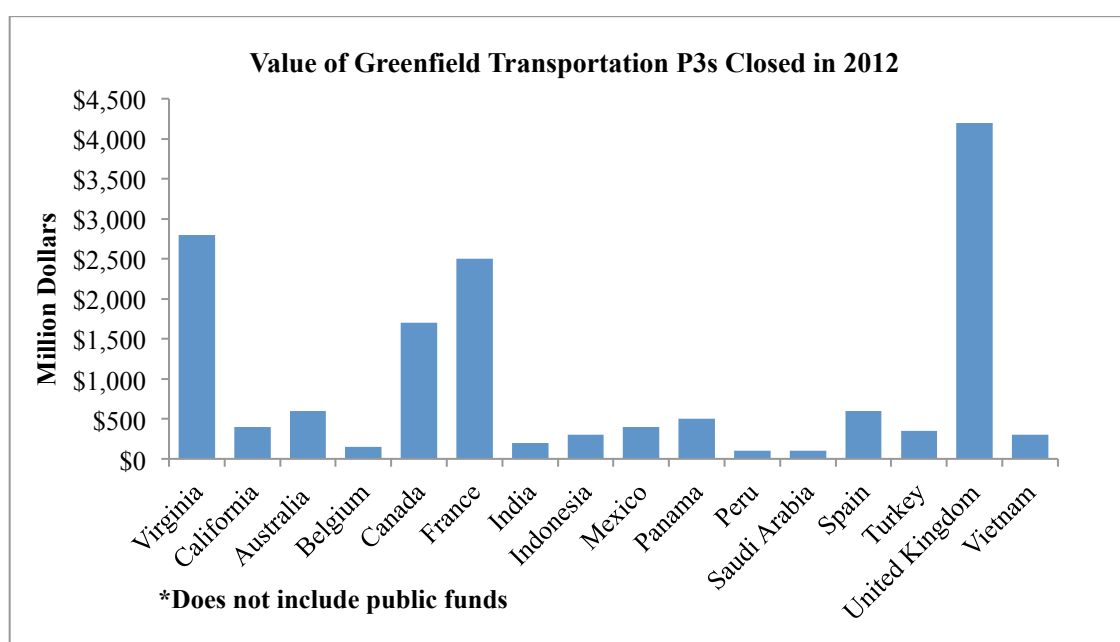
⁸²² Ibid.

⁸²³ VA Office of Transportation Public-Private Partnerships, Legislative Fact Sheets: Public-Private Partnerships, (Jan. 2013), 3.

⁸²⁴ KMPG Update Report..

The state's speed and volume of PPP projects—it currently has 22 in the pipeline, more than every other state combined and, as shown in Figure 11 below, more than every country except for the United Kingdom—has garnered Governor Bob McDonnell praise as *Infrastructure Investor* magazine's fifth "Public Infrastructure Official of the Year."⁸²⁵ Furthermore, the state's Office of Transportation Public Private Partnerships (OTP3) was recognized as the "Best Central Government PPP Organization" and its Deputy Director Dusty Holcombe received the "Best Individual Contribution Award" at the 2013 Partnership Awards in London. OTP3 is one of the more innovative PPP agencies. While trial and error has resulted in a number of project withdrawals, it will arguably increase knowledge and effectiveness of future models. OTP3 is attempting to advance the new availability payments concept on projects beginning in 2014, as well as air rights development in Arlington County in 2014.

Figure 11: Comparison of Virginia and International P3 Investments



Source: Infrastructure Journal, cited in KPMG Presentation to: PPTA Working Group, (Dec. 10, 2012), 18

Over the last decade, the state's formula-driven state construction funds have disappeared. There has been no state funding by formula since FY 2009 for urban, secondary, or primary system construction. What state construction funding remains is provided from borrowed funds and federal funding sources. This has shifted decision-making authority away from Metropolitan Planning Organizations and the Commonwealth Transportation Board, and to the Governor, PPP proposers and OTP3. The Commonwealth Transportation Board and other transportation-related governing boards have no statutory role in the Public Private Transportation Act process, and are only referred to as "oversight boards" in the implementation

⁸²⁵ Kalliope Gourtis, *Public Infrastructure Official of the Year: Recognizing McDonnell's Vision*, *Infrastructure Investor*, (October 2013), 12.

guidelines.⁸²⁶ Although OTP3 was created to encourage capital construction despite diminishing funds, it drastically increased the Governor's power to control transportation agencies and oversight boards. This suggests that OTP3's priorities may change drastically from one term to the next.

The program is enabled by the Public-Private Transportation Act of 1995 and the Public-Private Education Facilities and Infrastructure Act of 2002 under the idea that these projects are more timely, less costly, more transparent than state PPPs, that they allow state resources to focus on program management as opposed to project delivery, and that private resources and risk sharing helps to address the public need for transportation.⁸²⁷

Virginia's PPP program's rapid expansion occurred because, from 1995-2002, unsolicited proposals actually set the state's transportation funding priorities. The program also prevented any financial risk or investment by the private sector for both solicited and unsolicited proposals by funding projects entirely with public funds. Since 2005, the Public-Private Transportation Act has been strengthened to require cost and risk-sharing and also requires the ability to use federal funding. Contracts now identify timelines and activities within each phase of procurement and allow for interim agreements to accelerate required activities.⁸²⁸

The PPP program's success relies in part on legislative involvement. Since 2003, the legislature has amended the Public-Private Transportation Act multiple times, allowing projects to use tolls to address transportation needs that are closely linked to an alternative "free" solution such as HOT toll lanes on PPP projects existing next to untolled, but more congested lanes.⁸²⁹ The state also has fostered joining its EZ Pass Network to reduce costs among its seven toll operators. The legislature also had the foresight to address concessions before PPPs began to see them as a major revenue source. In 2006, the legislature decided that payments from concessions must be used only in the transportation corridor for programs and projects that benefit "payers." This could include the provision of required matches for federal funding of other projects along adjoining corridors, or for transit, bike, or pedestrian improvements within the corridor. In 2008, the Public-Private Transportation Act was once again amended to require that project proposers pay for audit compliance with state and local transportation plans.⁸³⁰ However, the General Assembly has no formal role in the PPP process, so it is unable to ensure that subsidies for PPP projects are properly prioritized and compliment long-term transportation plans.⁸³¹

OTP3's success is due in part to the relative lack of public obstruction to projects as a result of its recent robust public engagement efforts, which were seen as a major weakness in a 2010 KPMG audit. Virginia is the first state to implement public education and outreach programs specific to PPPs. As part of OTP3's Public Outreach Plan, in 2013, it released a Public

⁸²⁶James J. Regimbal, Jr., Fiscal Analytics, Ltd., *An Examination of the Public-Private Transportation Act of 1995*, (Nov. 2012), available at:

http://www.southernenvironment.org/uploads/publications/va_public_private_transpo_act.pdf.

⁸²⁷Barbara W. Reese, Deputy Secretary of Transportation, Virginia's Public-Private Partnership Program, (2008), available at: <http://nga.org/files/live/sites/NGA/files/pdf/0806TRANSPORTATIONREESE.PDF>.

⁸²⁸ Ibid.

⁸²⁹ Ibid.

⁸³⁰ VA Office of Transportation Public-Private Partnerships, *Legislative Fact Sheets*, 11.

⁸³¹ Regimbal Jr., *An Examination of the Public-Private Transportation Act of 1995*.

Involvement Guide to assist public, state and local officials, and transportation agencies in implementing comprehensive outreach programs for individual projects.⁸³² For the \$1.9 billion Interstate 495 express lanes project, OTP3 held over 1,000 community events, public meetings and employer briefings, made over 225,000 phone calls for its support campaign, distributed over 30,000 faxes, sent over 300,000 email updates, and hand delivered over 30,000 construction notices.⁸³³

It is possible that the speed with which the state completes PPPs comes at the expense of sound review. For example, the U.S. 460 upgrade between Petersburg and Suffolk is based upon a speculative forecast of port traffic, and the Midtown-Downtown Tunnels deal creates decades-long disincentives for the state to undertake other improvements that might divert traffic from the two tunnels. Furthermore, OTPPP does not consider whether projects will impose other public costs, such as opening up new areas to sprawl-style development that will impose costs—such as those for new utilities, schools, and local roads—that are not included in the PPP agreement. PPPs tend to be favored over other capital construction. They are highly visible, attract private capital, and allow the state to focus more of its attention on other programmatic areas. However, these projects may come at the expense of smaller projects that offer a better return on public investment.⁸³⁴

c. State-issued Bonds

States primarily use three types of state-funded bonds: general obligation bonds, revenue bonds, and certificates of participation and lease revenue bonds. Although bonds do not necessarily provide the same large amount of financing on a quick timetable, bonds offer an opportunity for smaller projects to receive financing that may not otherwise be able to under PPPs.

General obligation bonds, certificates of participation, and lease revenue bonds all offer similar benefits and risks.⁸³⁵ These bonds benefit smaller projects because most states do not limit the project size for application eligibility.⁸³⁶ Although transaction and issuance costs for both the state and the private developer can be high, states appear to be more flexible in the application process because they often encourage small projects to group to make larger projects for application purposes.⁸³⁷ Similar to PPPs though, private developers have a need for advisors with specialized knowledge of “leasing, real estate law, corporate entity formation, and securitization in addition to public finance and tax law.”⁸³⁸ This contributes to an overall lack of ease of use and higher transaction costs on the whole. Additionally, by creating a risk for the state and private developers, bonds can also be susceptible to a weak real estate market if the bonds’ revenues from real estate taxes decline.⁸³⁹

⁸³² VA Office of Transportation Public-Private Partnerships, *Legislative Fact Sheets*, 9.

⁸³³ *Ibid.* 6.

⁸³⁴ James A. Bacon, Testing the Limits, Bacon’s Rebellion, available at: <http://www.baconsrebellion.com/articles/2013/10/p3s.html>.

⁸³⁵ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-13; B-21.

⁸³⁶ *Ibid.* B-13.

⁸³⁷ *Ibid.*

⁸³⁸ *Ibid.*

⁸³⁹ *Ibid.*

Fortunately, revenue bonds are not hindered by the real estate market. These bonds are not funded by real estate taxes and thus do not rely on new real estate development.⁸⁴⁰ Revenue bonds similarly can be used for small projects because of their flexibility on the size of projects.⁸⁴¹ States similarly encourage grouping of smaller projects for these bonds as well.⁸⁴² Revenue bonds share many of the similar problems of general obligation bonds though: they have high transaction costs and are complex enough to require specialized experts in advisement of how to apply for and structure the bonds. There are at least two significant differences between general obligation bonds and revenue bonds that should concern developers: revenue bonds are not backed by the full faith and credit of a public entity and have higher interest rates.⁸⁴³ For developers who are not concerned about the real estate market, general obligation bonds, COPs, and LRBs offer a safer choice.

As a generally safer option in terms of financing mechanisms, one would expect states to use bonds with some frequency. However, nationwide bonds only accounted for between 6.29% and 16.84% of total funding for surface transportation infrastructure from 1994 through 2011.⁸⁴⁴ The average percentage of total receipts hovers at 10.04% for bonds.⁸⁴⁵ Although bonds' annual average contribution is large at over \$13 billion on average in bond sales, this is not a game changer when compared to the overall average funds received for surface transportation infrastructure: over \$130 billion on average annually.⁸⁴⁶ However, the trend for bond usage may generally be on the rise, however. Since 2009, bonds have always accounted for at least 12% of total receipts for surface transportation infrastructure funding. The total amount of receipts from bonds has risen drastically from over \$8.2 billion in 1994 up to over \$18.6 billion in 2011 in 2012 dollars.⁸⁴⁷ This large increase may be due to the growing use of SRFs and their reliance on bonds when leveraging capital.

⁸⁴⁰ Ibid. B-15.

⁸⁴¹ Ibid.

⁸⁴² Ibid.

⁸⁴³ Ibid.

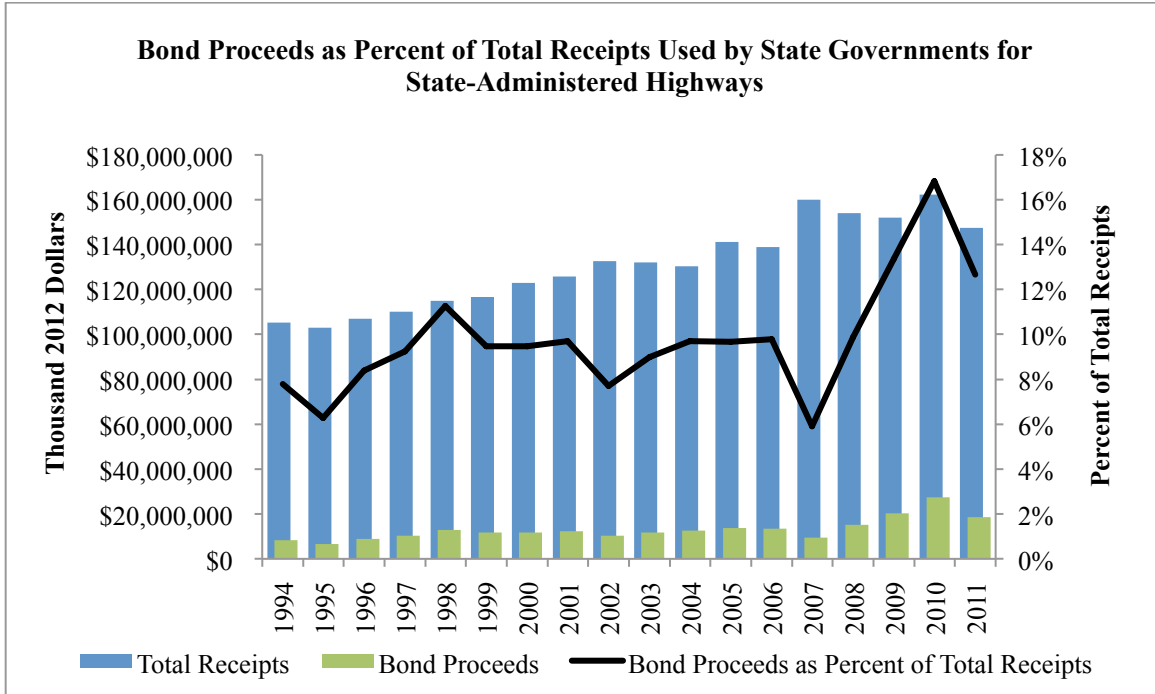
⁸⁴⁴ See Appendix A.

⁸⁴⁵ Ibid.

⁸⁴⁶ Ibid.

⁸⁴⁷ Ibid.

Figure 12: National Bond Proceeds



Source: Federal Highway Administration Data.

Although states do generate revenues for financing at a significant level of at least 10% on average, states still are not fully taking advantage of this low risk financing option. Bonds can both directly finance roads and support SRFs. However, the amount that a state can raise through traditional bond financing is “mechanically limited” by the debt coverage ratio required by bondholders.⁸⁴⁸ Thus, states that are overextended—those with low bond credit ratings, will be able to raise smaller amounts, and must pay higher interest rates, which makes bond issuance less attractive or advisable for these states.

i. Bonds: Texas’s Issuance of General Obligation Bonds

Historically, Texas has relied on a pay-as-you-go financing system, with funding generated from user fees and federal funds. This began to change in 1997 when the state legislature authorized the Texas Department of Transportation to administer a State Infrastructure Bank program.⁸⁴⁹ Still, most revenue sources for highway construction and maintenance are placed in either the State Highway Fund or the Texas Mobility Fund.⁸⁵⁰

Most of the revenue for the State Highway Fund is used for highway construction, yet it is also used for salaries and wages, repairs and maintenance, and professional services/fees.⁸⁵¹

⁸⁴⁸ Geddes & Wagner, “Why do states adopt public-private partnership enabling legislation?” 30-41.

⁸⁴⁹ Texas Department of Transportation, *State Infrastructure Bank*, 1.

⁸⁵⁰ Texas Legislative Board Staff, *Texas Highway Funding Legislative Primer*, 2011, 1.

⁸⁵¹ *Ibid.* 4.

Currently, the two largest sources of revenue for the State Highway Fund are state motor fuels taxes and federal funds. However, at the end of fiscal year 2010 \$4.6 billion in State Highway Fund bonds had been issued.⁸⁵² This was made possible by amending of the Texas Constitution and Transportation Code in 2003 to authorize the Texas Department of Transportation to borrow money from any source to carry out its functions.⁸⁵³ The reliance on these bonds vary: in fiscal year 2008, \$1,473 million was raised from the issuance of bonds was deposited to the State Highway Fund, yet there were no such revenues deposited in fiscal year 2009.⁸⁵⁴ Cumulative bond proceeds can be seen below in Figure 13.

Figure 13: Sources of Revenue Deposited to the Texas Highway Fund, Fiscal Years 2001 to 2010

Revenue Source	Revenue Generated (In Millions)
Motor Fuels Tax Allocations	\$21,627.20
Federal Receipts Matched - Transportation Programs	\$19,638.60
Federal Receipts - Not Matched - Other	\$249.10
Bond Proceeds	\$4,593.70
Special Vehicle Registration Fees	\$300.90
Toll Revenues	\$19.00
Motor Lubricants Sales Tax	\$315.10
Motor Vehicle Title Certificates	\$232.60
Motor Vehicle Registration Fees	\$9,110.50
Interest on State Deposits	\$399.30
Comprehensive Toll Development Agreement Receipts (Concessions - Private)	\$25.80
Surplus Toll Agreement Receipts (Concessions - Public)	\$3,197.10

Source: Texas Legislative Budget Board

The newer Texas Mobility Fund was approved by voters in 2001, and may be used to finance acquisition, construction, maintenance, reconstruction, and expansion of state highways.⁸⁵⁵ The bonds are self-supporting general obligation bonds that are not considered for the state's constitutional debt limit, and at the end of fiscal year 2010, the Bond Review Board had already authorized \$6.4 billion in bonds.⁸⁵⁶ The most recent issuances of obligations for the Texas Mobility Fund can be seen below in Figure 14.

⁸⁵² Ibid. 10.

⁸⁵³ Ibid.

⁸⁵⁴ Ibid.

⁸⁵⁵ Ibid. 16.

⁸⁵⁶ Ibid. 17.

Figure 14: Revenue Deposited to the Texas Mobility Fund from Bond Proceeds, Fiscal Years 2005 to 2010

Fiscal Year	Bond Proceeds (In Millions)
2005	1,041.3
2006	771.1
2007	2,245.2
2008	1,157.0
2009	1,200.7
2010	0.0

Source: Texas Comptroller of Public Accounts.

These two Funds have met their share of criticism. One of the plans financed by these two funds, the Trans Texas Corridor, was perhaps the most controversial use of bonds in the state's history. The original plan for the Trans Texas Corridor, released in 2002, would have included multimodal corridors up to 1,200 feet wide and encompassing 4,000 miles.⁸⁵⁷ The corridor was to be financed through multiple mechanisms, some of which would become enacted, including toll equity, Regional Mobility Authorities (RMAs), the Texas Mobility Fund (which relied primarily on bonds), and the use of private concessions.⁸⁵⁸ In June 2003, Governor Rick Perry signed HB 3588 which statutorily created the Corridor and authorized financing using the State Highway Fund, tolls, fees, bond proceeds, the SIB, and federal sources.⁸⁵⁹

Criticism of the project began to mount early on, however most of the criticism was directed at guidelines converting freeways to toll roads and the large amount of arable but undeveloped land that would be taken.⁸⁶⁰ In 2006, Independent gubernatorial candidate Carole Keeton Strayhorn suggested scrapping the proposed tolls and for the state to instead rely on the TMF and GARVEE bonding.⁸⁶¹ In November 2007, the project had a budget shortfall of \$1.1 billion for 2008 due to reduced federal aid, increased maintenance needs, and loss of toll revenue through private toll road leases.⁸⁶² The original project was declared dead in early 2009, when the TxDOT stated that only standalone projects would be considered in the future.⁸⁶³

At the time, environmental analyses of the TTC-35 and I-69/TTC were ongoing and led to further controversy.⁸⁶⁴ The TTC-35 would have run north-south from Denison (north of

⁸⁵⁷ AASHTO, *Trans Texas Corridor Case Study*, 4.

⁸⁵⁸ *Ibid.*

⁸⁵⁹ *Ibid.* 5.

⁸⁶⁰ *Ibid.* 6-7.

⁸⁶¹ *Ibid.* 8.

⁸⁶² *Ibid.* 10.

⁸⁶³ *Ibid.* 11.

⁸⁶⁴ *Ibid.*

Dallas) to San Antonio, as was estimated to cost \$6 billion with a 50 year concession providing the state with \$1.2 billion.⁸⁶⁵ One of the most controversial components of the plan, due to its consumption of undeveloped land and its questionable utility, an official decision of no action was issued by FHWA on July 20, 2010.⁸⁶⁶ Meanwhile, the future of I-69/TTC is uncertain. Although the plan for the Trans Texas Corridor may have been overambitious and provided capacity that was not entirely needed, the momentum of the project expanded the potential for bonds to be used in the state. The Trans Texas Corridor may show that although bonds can be extensively used, they should still be used only after a thorough selection process and review.

d. Conclusion of the General Assessment

Based on the general assessment of all of these mechanisms, policymakers could possibly see that there are more risks than benefits. However, it should be noted that most white papers on the subject of financing mechanisms discuss how to improve these mechanisms. By the nature of these papers, more information is available about the risks, and how to account for the risks, than the many benefits that these financing mechanisms provide. State financing mechanisms allow for many public surface transportation infrastructure projects to occur that may ordinarily not take place. Policymakers must take a balanced approach in reviewing the costs and benefits without falling to the extreme pros or cons for any individual mechanism.

IV. Recommendations to Increase Financing for Infrastructure

Based on this analysis, a series of recommendations can be advanced that allow states to best implement their financing options. This section offers general advice on how to boost the success of all financing mechanisms and offers individualized advice on how to promote use of SRFs, PPPs, and bonds.

a. General Advice for All Financing Mechanisms

Regardless of the financing mechanism employed, all states should follow three recommendations: (1) select projects wisely and with a thorough vetting process when financing with the state's capital; (2) understand the terms of the contract with the private parties and be savvy when selecting contractual provisions; and (3) diversify use of financing mechanisms.

The first recommendation about wise project selection is a multi-faceted issue. Our priority recommendation for project selection is that states should create a process about how to select projects. As discussed above, states vary in their process for selecting projects: some choose projects on a first-come/first-serve basis while others have processes in place that allow for selection over time. There are clear disadvantages to the first-come/first-serve basis, such as not having a fully informed decision about other potential projects that could be more beneficial. States are advised to have a process for selecting projects on a regular basis, but not on a first-come/first-serve basis. Providing a process for frequent selection, based on widely known factors, will allow private partner applicants to know the expectations of the state and to be able to plan accordingly based on the selection schedule. The selection process should occur within

⁸⁶⁵ Ibid. 7.

⁸⁶⁶ TxDOT, "Trans Texas Corridor-35," http://www.dot.state.tx.us/business/partnerships/ttc_35.htm.

the state government at least a few times each year in order to not miss project opportunities within the state.

Through this standardized selection process, states should evaluate projects on at least four factors. First, the state should primarily choose projects that are large in scope with a long asset life. The NSTIF Commission explained that the “golden rule of public finance” is to only finance projects involving assets that can last several generations.⁸⁶⁷ These types of projects are often too large to be funded by one company or locality and sufficient revenue does not exist to support the project otherwise.⁸⁶⁸ Financing assets that can last for generations can be a double-edged sword: while these large projects can allow the state to maximize upfront funding from a private party (which is critical to success)⁸⁶⁹, the state also can lose access to payments throughout the life of the asset and thus lose potential revenue opportunities. This is clear from the criticisms of the Indiana Toll Road. Balancing these two goals can be difficult, but also can be addressed by savvy contracting.

Second, states should choose projects with the goal of accelerating benefits or reducing costs.⁸⁷⁰ States can invest in projects that benefit the public by helping to finance major projects that may require too much capital to begin immediately, if ever. Financing can thus help reduce construction costs, and the public can receive economic as well as safety and environmental benefits earlier.⁸⁷¹ Even for projects that do not necessarily accelerate or reduce costs, the project may be a worthwhile investment if the public generally receives sufficient benefit for the amount loaned to the private party.⁸⁷²

Third, states also should finance projects that are primarily state funded. For particularly large projects that require a lot of state capital, the NSTIF Commission found that “[d]ebt can be used to smooth the impact of a particularly large one-time spike or general ‘lumpiness’ of a capital investment program and help limit the extent to which other important projects or program elements are crowded out by the major project or set of projects.”⁸⁷³

Fourth, states should make an informed decision by knowing the general financial plan of the project over the lifetime of the asset. This includes trying to know about the economic cost or the budgetary cost of the project.⁸⁷⁴ For some larger projects, such as projects financed by PPPs, it may be in the state’s best interest to perform a cost-benefit analysis to determine whether the public receives enough benefit from the project to justify the initial financial cost of the loan.⁸⁷⁵ One clear signal of success for many projects is a defined revenue source, such as user fees or taxes, which support the likelihood that the private party will be able to pay back its loans.⁸⁷⁶ Another factor to consider in this overall financial plan is whether the private party or the state

⁸⁶⁷ NSTIF, *Paying Our Way*, 164.

⁸⁶⁸ Ibid. 186.

⁸⁶⁹ Ibid. 164.

⁸⁷⁰ Ibid. 165-66.

⁸⁷¹ Ibid.

⁸⁷² Ibid. 186.

⁸⁷³ Ibid. 164.

⁸⁷⁴ Ibid. 186.

⁸⁷⁵ CBO, *Using Public-Private Partnerships to Carry Out Highway Projects*, 6.

⁸⁷⁶ NSTIF, *Paying Our Way*, 186.

will ultimately control the allocation of resources for the project, and whether this allocation best promotes overall cost reduction.⁸⁷⁷

The second major recommendation for states to apply to all of their financing decisions is to be savvy with its legal decisions in any contract with private partners. Most contracting concerns apply to PPPs, so the majority of the discussion about how to protect the state's interests in contracts will be in the section below on how to succeed in PPP projects. However, it will be noted that the state needs to find the proper balance of generational equity in contracts. Generational equity stems from the issue of committing future generations to debts paying for assets today.⁸⁷⁸ The NSTIF Commission explained that all "debt financing requires careful balancing. On the one hand, future generations benefit from prior investments. On the other, future annual revenues will be committed to servicing debt. Consideration must be paid to the distribution of the financial burden between current and future payers relative to the distribution of benefit."⁸⁷⁹ The public's view of a publicly financed project often is based on issues of generational equity. Often times for public finance contracts that allow private parties to benefit for decades, people will be uncomfortable that their children or their children's children are not reaping the overall public benefits from that asset even after many years. Again, this is an issue from the Indiana Toll Road that could have been contracted around by the government.

The final major recommendation is for states to use all available financing mechanisms. As discussed in the analysis section above, every financing mechanism has its strengths and weaknesses. Although SRFs can sustainably offer loans indefinitely, poor management can lead to an early collapse of the funds altogether. PPS may allow states to ascertain projects for the public early, but predatory contract provisions can lead to generational inequity. Bonds are the least risky mechanism and can lead to less costly public projects,⁸⁸⁰ but they can lead to an insurmountable amount of debt. Therefore, the best approach is to diversify implementation of each of these mechanisms.

The above recommendations apply across all financing projects, regardless of the financing mechanism implemented. However, there are more specific recommendations that can promote success for SRFs, PPPs, and bonds.

b. State Revolving Funds

State revolving funds are widely used, but they are not necessarily all well-managed. These funds, and in particular state infrastructure banks, produce the most benefits to the public under strong management. Based on the analysis above, managers tend to most effectively lead SRFs when they take charge of five key factors: (1) selection of effective projects, (2) setting sustainable interest rates, (3) responsible leveraging, (4) uniform enforcement of loan repayments, and (5) state-based capitalization.

⁸⁷⁷ Ibid. 186.

⁸⁷⁸ Ibid. 166.

⁸⁷⁹ Ibid.

⁸⁸⁰ U.S. Department of Transportation Federal Highway Administration, *Financial Structuring and Assessment for Public-Private Partnerships: A Primer*, (Dec. 2012), 10-1.

For the first factor, project selection may be most important for SRFs among all of the major financing mechanisms. Fund managers must set project selection criteria that not only benefits the public but also has a sustainable source of revenue that ensures payment of the loan. This clearly rules out the first-come/first-serve selection model.⁸⁸¹ For example, EPA recommends improving selection processes by screening projects for “economic and social benefits, the project’s impact on public mobility and safety, the project’s readiness (completion of environmental clearance and construction approvals), and the project’s ability to leverage other funding sources.”⁸⁸² This more detailed and rigorous analysis in project selection⁸⁸³ certainly requires more effort of the manager. In fact, Brookings suggests a total overhaul of the selection system that requires a global view of the process.⁸⁸⁴ They suggest auditing past financial investments to determine whether the selection criteria allow for the best choices in projects.⁸⁸⁵ Brookings also recommends reevaluating project selection as a whole every few years in order to stay current with market demand.⁸⁸⁶ Also, for those states that currently experience a lack of demand of loans from their SRFs, or a lack of demand of loans from eligible partners, they should consider advertising their services.⁸⁸⁷ Because states offer favorable interest rates, it seems unlikely that private parties would choose to forego low interest rates if they have they knew about them and how the loan process worked.

Second, a SRF manager must set a sustainable interest rate that both encourages private parties to take out loans while allowing the SRF to continue to sustainably grow into the foreseeable future. As discussed in the analysis above, there is some dispute about what qualifies as a sustainable interest rate. However, at a minimum, states must maintain their SRFs and SIBs above an interest rate of zero.⁸⁸⁸ There is no dispute that a zero interest rate is unsustainable for a long period of time. The best interest rate appears to be one that accounts for inflation and adds a small cushion to allow for growth: for example, an additional 1% interest rate as discussed above.⁸⁸⁹ Although managers face constant pressure to keep loan interest rates low, SRFs must continuously be recapitalized through interest rate payments so they can be sustainable.⁸⁹⁰ States considering increasing their loan capacity through SIBs should seriously consider staking the interest rate significantly above 1% plus the inflation rate in order to continue its growth to serve the transportation needs of the state.

The third common factor among effective managers is their ability to responsibly leverage capital, which allows them to promote growth of the SRF. As noted by Brookings, leveraging capital through bond issuances allows SRFs “to increase their loan capacity and reach a broader range of sponsors and projects.”⁸⁹¹ Leveraging is considered one of the “integral” tools

⁸⁸¹ Puentes & Thompson, *Banking on Infrastructure*, 14.

⁸⁸² EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-26.

⁸⁸³ *Ibid.*

⁸⁸⁴ Puentes & Thompson, *Banking on Infrastructure*, 14.

⁸⁸⁵ *Ibid.*

⁸⁸⁶ *Ibid.*

⁸⁸⁷ Slone, *Transportation & Infrastructure Finance*, 20-21.

⁸⁸⁸ *Ibid.*

⁸⁸⁹ *Ibid.*

⁸⁹⁰ Puentes & Thompson, *Banking on Infrastructure*, 13.

⁸⁹¹ *Ibid.*

implemented by Florida's successful SIBs.⁸⁹² Two concerns have to be guarded against for SRFs that leverage. First, managers must protect the SRF's rights to maintain any growth stemming from leveraging.⁸⁹³ When the economy is struggling, as has happened with some frequency over the past several years, there is a risk that capital will be taken away from the SRFs towards the general funds – particularly if it is new capital from leveraging.⁸⁹⁴ For example, the Arizona legislature removed enough funds from the Arizona Highway Expansion and Extension Loan Program to the point that it is no longer a functioning program.⁸⁹⁵ Leveraging is only effective in promoting growth if the funds are allowed to remain in the SRF. Second, managers must balance their amount of leveraging against the interest rate they set. Again, despite having pressure to keep interest rates low, managers choosing to leverage must keep interest rates higher than the rate it is issuing bonds at for leveraging purposes.⁸⁹⁶ This requires the manager to regularly keep track of interest rates and repayment schedules; however, an effective manager is certainly capable of meeting these expectations to promote the SRF's growth and its ability to issue loans.

Fourth, SRF managers must consistently enforce loan repayments. Defaults ultimately reduce the number of available loans and can eventually affect the SRF's sustainability. EPA recommends that managers “mitigate the risk of poor risk profile projects” through “investing in diverse sectors or projects and requiring additional credit assistance.”⁸⁹⁷ Fifth, states should try to capitalize its SRFs through use of state funds as much as possible. With decreasing availability of federal funds, states must become self-reliant on its own revenue sources to promote SRFs. However, we recommend continuing to accept federal capital when it is available. Florida is a prime example of how a state can effectively use both federal and state resources to increase its total number of loans and overall loan disbursements. Although this may cause a state SRF to “begin to look like a hybrid between a SRF and the federal grant program,” this is not necessarily a bad thing if the overall purpose of providing loans and leveraging capital continues.⁸⁹⁸ If this is a concern, then states can follow Florida's lead by separating federal and state funds into two separate infrastructure accounts. SRFs are as flexible as states need them to be and should be used as a tool to effectively provide loans; there is no need to slow progress due to a strict definition of a state-funded SRF if more capital is available.

c. Public-Private Partnerships

Similar to SRFs, there are a few common characteristics among states with successful PPP programs. Successful PPPs in general result from (1) PPP-enabling legislation, (2) informed selection processes, (3) design-build projects, (4) contracts written by lawyers specializing in PPPs, and (5) managed transaction costs.

The primary recommendation is for states to enact reasonable enabling legislation if they have not yet done so. Critics argue that PPPs do not increase or protect public welfare, but mask risk by removing debt from the governments to enact reasonable enabling legislation of investors

⁸⁹² Ibid.

⁸⁹³ Ibid.

⁸⁹⁴ Ibid.

⁸⁹⁵ Ibid.

⁸⁹⁶ Ibid. 7.

⁸⁹⁷ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-25.

⁸⁹⁸ Puentes & Thompson, *Banking on Infrastructure*, 13.

at the public's expense.⁸⁹⁹ This leads to the suggestion that specific PPP enabling legislation be enacted not just due to the interests of state governments, but also to protect public welfare.⁹⁰⁰ 65% of all PPPs from 1989 to 2012 were completed in just 8 states, all of which have enabling legislation.⁹⁰¹ Reasonable, well-designed PPP enabling legislation can assist states in achieving the aforementioned recommendations, as they may “establish pre-set guidelines, reduce uncertainty, and lower the transaction costs associated” with PPPs.⁹⁰² Legislation not only indicates a state's willingness to participate in PPPs, but also can provide standard contractual terms so that participants have a starting point from which to negotiate and modify contracts. Empirical evidence has shown that many factors, when included in PPP legislation, may discourage or encourage private investment and participation. First, while, it may be advisable for states to contractually prohibit noncompete clauses for PPPs; research has shown that the outright prohibition of noncompete agreements is likely to discourage private interest in them.⁹⁰³

Requiring ex post legislative approval of individual PPP contracts is also negatively correlated with successful PPPs. According to an executive of the construction company Skanska who was quoted by researchers Richard Geddes and Benjamin Wagner, “firms are willing to assume all kinds of technical and other risks, but they deeply fear political risk—the possibility that their clients could do what Pennsylvania did 2 years ago”⁹⁰⁴ Pennsylvania chose a partnership of 2 investors to become concessionaires of a 75-year lease of the Pennsylvania Turnpike with a winning bid of \$12.8 billion. However, the legislature allowed the bid expire by failing to pass the requisite ex post legislation.⁹⁰⁵ If broad enabling legislation is not possible, states should at least provide investors with assurance in ex ante legislation.

There are a number of provisions in enabling legislation that are correlated with successful PPPs, although due to high variance in the responses used by Geddes and Wagner to create a “survey-weighted enabling score,” the following provisions are mere suggestions for successful PPP laws: (1) protecting the confidentiality of bids and trade secrets in proposals, Finally, for states to deftly apply the above recommendations, coordinate legal, technical, and financial aspects, they may want to consider creating offices that are dedicated specifically to PPPs. While “only a handful of states,” such as Virginia and Georgia have set up dedicated PPP offices, there are at least 85 such offices in 31 countries, and may provide examples for states to follow.⁹⁰⁶ For states to deftly apply the above recommendations, coordinate legal, technical, and financial aspects, they may want to consider creating offices that are dedicated specifically to PPPs. While “only a handful of states,” such as Virginia and Georgia have set up dedicated PPP

⁸⁹⁹ J.A. Roin, “Privatization and the sale of tax revenues,” *Minnesota Law Review*, 95 (2011), 1965-2034.

⁹⁰⁰ Geddes & Wagner, “Why do states adopt public-private partnership enabling legislation?” 30-41.

⁹⁰¹ Ibid. These states are Florida, California, Texas, Colorado, Virginia, Minnesota, North Carolina, and South Carolina.

⁹⁰² Ibid.

⁹⁰³ R.W. Poole, “How to Enable Private Toll Road Development,” *How-to Guide No. 7*, (Los Angeles: Reason Foundation, 1993), <http://reason.org/files/35ea7f9f3eef937371c6ce7c4db95270.pdf>.

⁹⁰⁴ Geddes & Wagner, “Why do states adopt public-private partnership enabling legislation?” 30-41.

⁹⁰⁵ Ibid.

⁹⁰⁶ Ryan Holeywell, “Why Isn’t the U.S. Better at Public-Private Partnerships?” *Governing* (February 2013), <http://www.governing.com/topics/finance/gov-public-private-partnerships-in-america.html>.

offices, there are at least 85 such offices in 31 countries, and may provide examples for states to follow.⁹⁰⁷

Second, states again can manage risks and benefit from this financing mechanism through an informed selection process. The same recommendations and reasoning we offered for SRFs applies here as well. States should have a process for selection, there should be criteria, and there should be a regular audit of how projects are selected. For example, the Georgia Department of Transportation's Public Private Partnership Program requires that agency officials biennially submit all projects under consideration for PPPs for scrutiny by its board of directors.⁹⁰⁸ Costs are a major—but not the only—object of scrutiny. Projects are also evaluated on criteria such as political support, public support, and the private sector's "ability to innovate."⁹⁰⁹

Additionally, many states use a public-sector comparator (PSC) to determine the value of a project. According to the Congressional Budget Office, "[a] PSC is a process for estimating the full cost of providing a highway in the traditional manner, which a state can then use as a basis of comparison with the cost of providing it through alternative methods. The PSC involves calculating the net present value of the costs for the road during its entire life cycle—an approach that includes assigning explicit costs to the risks associated with the project (for example, the risk of unforeseen conditions at the highway site), which the traditional method of estimating a project's costs often ignores."⁹¹⁰ Obviously projection of costs can be difficult to do due to limited information, and they certainly can be costly because of the expert knowledge required.⁹¹¹ PSCs are not always the best decision if the project is not sufficiently large. However, for projects with large costs and impact on the public, they provide the state with assurance that this is a worthwhile project and a much stronger argument to the public for why it is in their best interest to proceed.

In addition to using a PSC where applicable, states can manage costs by assessing bidders' proposed costs during the bidding process for PPP projects.⁹¹² The state can review whether the bidder will offer sufficient revenue for the opportunity to build public transportation, whether it is through tolls, availability payments, or any other revenue source.⁹¹³ The key to bidding, however, as mentioned in SRFs, is to have a procedural system to review all of the bids. Unsolicited bids viewed without the context of other private developers may lead to projects that are more favored to private developers than those that would provide greater benefit to the public.⁹¹⁴

As part of the selection process, the state should choose which form of PPP most benefits the public for that particular project. Although this is a case-by-case determination, our second

⁹⁰⁷ Ibid.

⁹⁰⁸ John O'Connell & Lydia Steinberg, "Developing P3s in the United States, part I" (HNTB 2012), <http://news.hntb.com/white-papers/developing-p3s-in-the-united-states-part-i.htm>.

⁹⁰⁹ Ibid.

⁹¹⁰ CBO, *Using Public-Private Partnerships to Carry Out Highway Projects*, 6.

⁹¹¹ Ibid. 7.

⁹¹² FHWA, *Financial Structuring and Assessment for Public-Private Partnerships*, 10-1.

⁹¹³ Ibid.

⁹¹⁴ Rall et al., *Public-Private Partnerships for Transportation*, 11.

recommendation is for states to seriously consider the design-build form of PPPs. The Congressional Budget Office found that “[a]ccording to the limited data that are available, use of the design-build approach appears to slightly lower the cost of highway projects, relative to use of the traditional approach, and allow their quicker completion.”⁹¹⁵ This is particularly true of large complex projects, which as discussed in the analysis section, are the natural projects to select for PPPs. States should also consider giving private parties a stake in the venture in order to create the most efficient result. Under the design-build PPP where a developer has an equity claim, developers “usually have more of an incentive to control a project’s costs because they are the last to be paid on a project and will receive a payment only if the cash flows.”⁹¹⁶

The third recommendation for PPPs is the most important: carefully draft the contract to best serve the public’s interests. In general, contracts should allocate responsibilities, benefits, and risks in a manner that allows the private developer to sufficiently earn a return on its investment and that allows the state to receive its transportation asset faster and less costly than it would in a traditionally funded project.⁹¹⁷ Before any substantive suggestions, the most important suggestion is this: the state should retain a legal staff that is savvy in drafting contracts for PPP projects. These contracts can quickly become complicated in determining the allocations of control, revenue, and risks. Lawyers who specialize in PPPs are necessary to develop a contract that ultimately serves generations of the public. That being said, there are at least six major considerations.

First, the state needs to have all available information about the project and the expected relationship with the partnership before finalizing the contract.⁹¹⁸ Second, the contract should align the incentives of the developer and the state. This often leads to a recommendation of including maintenance and operations in the PPP so that the developer’s incentives remain the same throughout the entirety of the project and the life of the asset.⁹¹⁹

Third, the state should consider the ramifications of transferring control between the state and the private developer, and ultimately who should bear the costs of the transfer. According to the Congressional Budget Office, although transfers can reduce costs and lead to a finished project more quickly, they also can lead to “conflicts over control[,]... [and] renegotiation of provisions of the public-private partnership contract, [in which] the government generally ends up bearing greater costs than those it had assumed under the original contract.”⁹²⁰ However, these transfers do not necessarily have to be as costly if the state tries to contract around these transfer problems. States can look to other successful PPP projects to see how other states avoided this transfer issue.

Fourth, states can contract to protect for non-economic problems as well. For example, many PPP contracts protect environmental performance standards and workforce protections.⁹²¹

⁹¹⁵ CBO, *Using Public-Private Partnerships to Carry Out Highway Projects*, 22.

⁹¹⁶ *Ibid.* 12.

⁹¹⁷ *Ibid.* 6.

⁹¹⁸ *Ibid.*

⁹¹⁹ *Ibid.* 20.

⁹²⁰ *Ibid.* 21.

⁹²¹ Rall et al., *Public-Private Partnerships for Transportation*, 12.

Some states even forego contractual provisions and write these requirements into law.⁹²² Whichever path is most efficient for the state, some sort of protection is recommended to minimize lawsuits and to achieve the broader goal of the state. Fifth, states should be wary of engaging in noncompete clauses.⁹²³ Although some private developers will try to negotiate the possibility of nearby competing roads, states at the very least should not give up the opportunity to build public roads for too long of a time period. States do not want to inadvertently endorse a monopoly for years to come.

Sixth, states that are concerned about generational inequity may contract for a payment plan that better serves its constituents for years to come. For example, “[s]ome compensation arrangements—such as availability payments and shadow tolls—allow the public sector to make regular payments to a private partner based on a facility’s available capacity, traffic levels or other performance measures as defined by contract.”⁹²⁴ These types of payments allow the state to ultimately control revenue flow and helps constituents feel more in control of public infrastructure. Other popular contractual clauses include requiring the private partner to adequately maintain the infrastructure, requiring the facility to ultimately revert back to the state, instituting rate caps on any toll increases, and devising a revenue sharing system.⁹²⁵ Ultimately, states with savvy drafting attorneys can protect against any concern that might derail the PPP.⁹²⁶ For those who are concerned about lack of control, some experts even say that a proper contract can “potentially enhance its control over the project’s outcomes.”⁹²⁷ The rule of thumb for contracting is if the concern is grave enough to lead to questions about the project, the state should contract for the problem in advance.

The final recommendation is for states to acknowledge and to compensate for the partner developer’s large transaction costs. Although many states require developers to bear the transaction costs of the application process, states on the cutting edge of PPP legislation are now allowing these costs to be part of the bid. In order to attract the best developers to engage in PPPs, states should consider setting the grounds for a productive relationship at the earliest stage of the bidding process by offsetting transaction costs.

d. Bond Distribution

There are fewer specific recommendations for the administration of bonds. This is partly because bonds can successfully be managed based on the general recommendations. Another part is that they are less risky and have been used and refined for a much longer period of time. Regardless, we offer only a few recommendations for the more efficient distribution of bonds to private parties to finance infrastructure investment.

Most of the advice is common sense: for example, bonds should not be oversold to the point where the state is overstretched to pay back its debts. The general recommendation is to

⁹²² Ibid.

⁹²³ Slone, *Transportation & Infrastructure Finance*, 28.

⁹²⁴ Rall et al., *Public-Private Partnerships for Transportation*, 12.

⁹²⁵ Slone, *Transportation & Infrastructure Finance*, 28.

⁹²⁶ Ibid.

⁹²⁷ Rall et al., *Public-Private Partnerships for Transportation*, 12.

distribute bonds responsibly. Part of this responsible decision making is the state's responsibility to assess the costs of bonds. Many state analysts only evaluate the lost paid interest when evaluating the overall cost.⁹²⁸ However, other costs should be factored in to the cost equation as well.⁹²⁹ For example, states should evaluate the risk of the bond-financed project⁹³⁰ and evaluate how much transaction costs will detract from the accrued interest.⁹³¹ When possible, states should try to reduce transaction costs by "issu[ing] large volumes of bonds on a continuing basis" in order to "enjoy administrative economies of scale."⁹³²

States also should plan for how to compensate for lost revenue if the financed project fails to raise enough revenue to pay for the project's debt.⁹³³ The Congressional Budget Office recommends that "some form of explicit or implicit equity investment is necessary to absorb the difference between the cash flows that are expected and those that will be realized."⁹³⁴ Finally, states should consider promotion of bonds that are most suitable for the current economic climate. In a weak real estate market, the state may consider promoting revenue bonds more heavily because they are not funded by real estate taxes.⁹³⁵ Without the risk of decreased real estate taxes, the interest rate should remain lower and thus create a less expensive financing option for the state government. Otherwise, "investors might require credit assistance (e.g., debt reserves) to prevent default or impose more stringent debt terms (e.g., shorter maturity or higher debt service coverage ratios)."⁹³⁶

e. Concluding Recommendations Regarding Value Judgments

In addition to all of the specific advice provided above, state governments should keep in mind general values of public financing in any decision regarding a public financing project for surface transportation infrastructure. CSG offers fifteen factors to consider in any financing project.⁹³⁷ These factors include: (1) revenue potential, (2) sustainability, (3) political viability, (4) ease/cost of implementation, (5) ease of compliance, (6) ease/cost of administration, (7) appropriateness of the implementing level of government, (8) promotion of efficient use, (9) promotion of efficient investment, (10) promotion of safe and effective system operations and management, (11) handling of externalities, (12) minimization of market distortions, (13) promotion of spatial equity, (14) promotion of social equity, and (15) promotion of generational equity.⁹³⁸ These are a lot of factors to account for, and to be frank, it is unlikely that all of these factors will ever align in support of one publicly financed project.

However, after stepping back and viewing the forest through the trees, it is clear that the key to maintaining public values is to finance a project that is generally equitable across

⁹²⁸ CBO, *Using Public-Private Partnerships to Carry Out Highway Projects*, 10.

⁹²⁹ *Ibid.*

⁹³⁰ *Ibid.*

⁹³¹ *Ibid.*

⁹³² *Ibid.* 12.

⁹³³ *Ibid.* 10.

⁹³⁴ *Ibid.*

⁹³⁵ EPA, *Infrastructure Financing Options for Transit-Oriented Development*, B-15.

⁹³⁶ *Ibid.* B-13.

⁹³⁷ Slone, *Transportation & Infrastructure Finance*, 36.

⁹³⁸ *Ibid.*

generations and social groups, that overall benefits the public without taking on too much risk, and is generally fair in its administration and its selection process. Much of the success of a publicly financed transportation project is based on public acceptance.⁹³⁹ If the public gets on board with the project, they are much more likely to use the transportation asset and promote its success. Public support is much more easily gained if there are fewer concerns about later generations taking the brunt of the loss and a general feeling that the public is benefiting. The case studies clearly show that the above general values and the public's view can make or break the overall perception of the project. We are confident, however, that states that generally subscribe to these basic values and implement the specific recommendations above will have more success with financing surface transportation infrastructure.

CONCLUSION

Many previous studies and reports have attempted to establish the need for transportation infrastructure investment, this report builds on those findings by presenting the ways legislators and their state governments may intervene to halt the further deterioration of one of America's greatest—and most expensive—assets. AED has previously worked with William & Mary Public Policy students to determine the benefits and threats to infrastructure investments. In 2011, they determined that each dollar of “public investment” generates \$3.21 in economic activity over a 20 year period, and investing specifically in roads and highways generates significant returns in tax revenues to all levels of government.⁹⁴⁰ The following year, William & Mary students confirmed that increasing automotive fuel efficiency, coupled with flat excise tax rates, places the Highway Trust Fund at a serious risk of not being able to support current investment levels.⁹⁴¹

Legislators are well aware of the nation's deficient infrastructure and infrastructure investment. In a survey by the GAO, 50 out of 51 state-level departments of transportation (including the District of Columbia) agreed that, in order to meet their revenue needs, alternative federal mechanisms are necessary to support surface transportation funding in the next decade.⁹⁴² States must not depend on federal action, and with this report, they are equipped to become champions of reinvestment in transportation infrastructure with or without federal support. This is not unprecedented. In fact, when the Revenue Act of 1932 established the first national gas tax, every single state had already implemented state gas taxes.⁹⁴³

Funding mechanisms are the preferred methods of securing funds for transportation infrastructure, as financing mechanisms do not directly raise revenues except from interest on loans. By leveraging a diverse selection of funding mechanisms, states may be able to hedge

⁹³⁹ Sjoquist et al., *Implications of Alternative Revenue Sources for Transportation Planning*.

⁹⁴⁰ Isabelle Cohen, Thomas Freiling, Eric Robinson, College of William and Mary, Thomas Jefferson Program in Public Policy, *The Economic Impact and Financing of Infrastructure Spending*, report prepared for Associated Equipment Distributors, (2011), 1.

⁹⁴¹ Devin Braun, Ryan Endorf, and Steven Parker, College of William and Mary, Thomas Jefferson Program in Public Policy, *The Impact of Fuel Use Trends on the Highway Trust Fund's Past, Present and Future*, report prepared for Associated Equipment Distributors, (2012), p1.

⁹⁴² GAO, *Highway Trust Fund*, 78.

⁹⁴³ Kelly Phillips Erb, “Federal Gas Tax Passes Another Milestone: What is the Future?” *Forbes Magazine*, June 6, 2013.

against the combined effects of increasing vehicle miles traveled, fuel efficiency, population growth, and the unreliability of the Highway Trust Fund. This report recommended that states immediately increase and index fuel taxes as inflationary and other pressures exacerbate the need for more secure funding. However, as was demonstrated in Washington's Referendum 51, legislatures may not immediately find success in raising such a salient tax. This report recommends that states increase revenues from other sources of user fees in addition to the gas tax, as these sources may prove to be more resistant to erosion by inflation or voter resistance. Whatever route legislators take to increase investments in transportation infrastructure, public buy-in is necessary. Studies on the effects of public outreach repeatedly find that education on transportation issues increases public receptiveness to paying new fees or using different funding mechanisms.⁹⁴⁴ Furthermore, interaction with stakeholders presents opportunities to refine policies, as well as marketing strategies. States should begin a dialogue with their constituents to increase buy-in.

Although generating revenue through user fees is preferred, states may be able to achieve faster progress by utilizing financing mechanisms. Unlike funding mechanisms, financing mechanisms may attract private investment and attention to public infrastructure. Financing mechanisms, when crafted and administered by career professionals, may enable states to better withstand fluctuations in user fee revenues without immediately dipping into their general funds or issuing bonds, which decrease funds available to other worthy programs. States have viable financing options in SRFs, PPPs, and bond distribution.

There is a real desire among states and residents to improve the quality of American transportation infrastructure. While resistance will of course be met, legislators across all states will have the most success if they jointly agree to champion infrastructure investment in their states. Under this "yardstick competition," voters and officials look to neighboring states to compare their states and elected officials against.⁹⁴⁵ If state governments move in lockstep to reform and introduce funding and financing mechanisms for desperately needed investments in transportation, states might finally be able to reverse the costly effects of deficient infrastructure on the American economy and way of life.

⁹⁴⁴ Asha Weinstein Agrawal *et al.*, Mineta Transportation Institute, *What Do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year 3 of a National Survey*, (July 2012), 1, <http://transweb.sjsu.edu/PDFs/research/1128-american-survey-federal-taxes-public-transit-highways-streets-roads.pdf>.

⁹⁴⁵ Timothy Besley & Anne Case, *Incumbent Behavior: Vote-Seeking, Tax-Setting, and Yardstick Competition*, National Bureau of Economic Research Working Paper No. w4041, (March 1992).

BIBLIOGRAPHY

- Agrawal, Asha Weinstein, Hilary Nixon, and Vinay Murthy. Mineta Transportation Institute. *What Do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year 3 of a National Survey*. July 2012. <http://transweb.sjsu.edu/PDFs/research/1128-american-survey-federal-taxes-public-transit-highways-streets-roads.pdf>.
- American Association of State Highway and Transportation Officials. "Perspective on the future of transportation infrastructure." Presented at the DHS Aging Infrastructures Workshop in New York, New York. July 23, 2009. <http://www.transportation.org/Documents/Lee-2009-07-23.pdf>.
- . "Opportunities in Freight Infrastructure Financing." November 18, 2009. <http://www.transportation.org/Documents/Lee-2009-11-18.pdf>.
- and the National Center for State Legislatures. *Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation*. 2011. <http://www.ncsl.org/documents/transportation/FULL-REPORT.pdf>.
- American Society of Civil Engineers. *Report Card for America's Infrastructure*. 2013.
- . *Failure to Act: The Economic Impact of Current Investment Trends in Surface Transportation Infrastructure*. 2011.
- American Planning Association. *Rebuilding America: APA National Infrastructure Investment Task Force Report*. October 2010. <http://www.planning.org/policy/infrastructure/pdf/finalreport.pdf>.
- Associated Press. "Gov. Mead Signs Fuel Tax Increase Into Law." *Sheridan Media*. February 15, 2013. <http://www.sheridanmedia.com/news/gov-mead-signs-fuel-tax-increase-law62526>.
- . "Study Calls Indiana Toll Road Lease a Bad Deal." *Indianapolis Business Journal*. December 10, 2012. <http://www.ibj.com/study-calls-indiana-toll-road-lease-a-baddeal/PARAMS/article/38411>. <http://www.ibj.com/study-calls-indiana-toll-road-lease-a-bad-deal/PARAMS/article/38411>.
- Bacon, James A. "Testing the Limits." *Bacon's Rebellion* (blog). October 2013. <http://www.baconsrebellion.com/articles/2013/10/p3s.html>.
- Bacque, Peter. "Virginia's gasoline tax drops today." *Richmond Times Dispatch*. July 1, 2013. http://www.timesdispatch.com/business/auto/virginia-s-gasoline-tax-drops-today/article_2be28baa-ccc5-51c9-b64a-76ba39a967af.html.
- Baker, Richard, Ginger Goodin, Eric Lindquist, and David Shoemaker. University Transportation Center for Mobility, Texas Transportation Institute, Texas A&M University.

Feasibility of Mileage-Based User Fees: Application in Rural/Small Urban Areas of Northeast Texas. October 31, 2008.

http://utcm.tamu.edu/publications/final_reports/Goodin_08-11-06.pdf.

Basso, Jack and Tyler Duvall. *Proposal 9: Funding Transportation Infrastructure with User Fees*. The Hamilton Project. February 2013.

http://www.brookings.edu/~media/research/files/papers/2013/02/thp%20budget%20papers/thp_15waysfedbudget_prop9.pdf.

Baxandall, Phineas. U.S. PIRG Education Fund. *Private Roads, Public Costs: The Facts About Toll Road Privatization and How to Protect the Public*. 2009.

<http://cdn.publicinterestnetwork.org/assets/H5Ql0NcoPVeVJwymwlURRw/Private-Roads-Public-Costs.pdf>.

Bay Area Toll Authority. "About BATA." <http://bata.mtc.ca.gov/about.htm>.

—. "Historic Toll-Paid Vehicle Counts and Total Toll Revenues."

<http://bata.mtc.ca.gov/tolls/historic.htm>.

—. "Tolls & Traffic." <http://bata.mtc.ca.gov/tolls/schedule.htm>.

Belt, Bradley D. and Joshua Nimmo. Milken Institute. *Catalyzing Pension Fund Investment in the Nation's Infrastructure*. April 2013.

Besley, Timothy and Anne Case. *Incumbent Behavior: Vote-Seeking, Tax-Setting, and Yardstick Competition*. National Bureau of Economic Research Working Paper No. w4041. March 1992. http://www.princeton.edu/~accase/downloads/Incumbent_Behavior.pdf.

Braun, Devin, Ryan Endorf, and Steven Parker. "The Impact of Fuel Use Trends on the Highway Trust Fund's Past, Present and Future." College of William and Mary, Thomas Jefferson Program in Public Policy, Policy Research Seminar report prepared for Associated Equipment Distributors. 2012.

Citizens for Tax Justice, "Good News for America's Infrastructure: Gas Taxes are Going Up on Monday." June 27, 2013.

http://www.ctj.org/taxjusticedigest/archive/2013/06/good_news_for_americas_infrast.php#.UoGhgPmkry4.

Cohen, Isabelle, Thomas Freiling, Eric Robinson. "The Economic Impact and Financing of Infrastructure Spending." College of William and Mary, Thomas Jefferson Program in Public Policy, Policy Research Seminar report prepared for Associated Equipment Distributors. 2011.

Cohn, Scott. "Best States for Business." *CNBC*. July 10, 2012,

<http://www.cnn.com/id/47818860>.

The Commonwealth Institute for Fiscal Analysis. “Destination Unknown: Navigating Virginia’s New Transportation Funding Package and Issues Ahead.” August 2013.
<http://www.thecommonwealthinstitute.org/2013/04/11/virginias-transportation-funding-package-heading-toward-destination-unknown/>.

Connecticut Senate Bill 2000, Public Act No. 05-4
<http://www.cga.ct.gov/2005/ACT/Pa/pdf/2005PA-00004-R00SB-02000SS1-PA.pdf>.

Deakin et al., Elizabeth. *Bay Bridge Toll Evaluation: Final Report*. November 2011.
http://apps.mtc.ca.gov/meeting_packet_documents/agenda_1764/Bay_Bridge_Toll_Evaluation_Final_Report_final.pdf.

Dierkers, Greg and Justin Mattingly. NGA Center for Best Practices. *How States and Territories Fund Transportation: An Overview of Traditional and Nontraditional Strategies*. 2009.
<http://www.transportation.wv.gov/highways/highwayscommission/Documents/Transportation%20Funding.pdf>.

Erb, Kelly Phillips. “Federal Gas Tax Passes Another Milestone: What is the Future?” *Forbes Magazine*. June 6, 2013. <http://www.forbes.com/sites/kellyphillipserb/2013/06/06/federal-gas-tax-passes-another-milestone-what-is-the-future/>.

E-ZPass Delaware. “Stop Stopping! E-ZPass is taking more people more places than ever before - nonstop!” http://www.ezpassde.com/where_use_ezpass.shtml.

Farajian, Mortexa. *Transaction Cost Estimation Model for US Infrastructure Public Private Partnerships in the US*. 2010.
http://drum.lib.umd.edu/bitstream/1903/10494/1/Farajian_umd_0117N_11371.pdf.

Federal Reserve Bank of Minneapolis. “CPI Index.”
http://www.minneapolisfed.org/community_education/teacher/calc/hist1913.cfm.

Finklestein, Amy. “E-Z Tax: Tax Salience and Tax Rates.” NBER Working Paper No. 12924. 2007. <http://www.nber.org/papers/w12924>, abstract.

Fleming, Daryl S. Reason Foundation. *Dispelling the Myths: Toll and Fuel Tax Collection Costs in the 21st Century*. November 2012.
http://reason.org/files/dispelling_toll_and_gas_tax_collection_myths.pdf.

GA COMP. R. & REGS. § 560-9-2-0.18-.14.

Geddes, R. Richard. Government Institutes. *The Road to Renewal: Private Investment in U.S. Transportation Infrastructure*. 2011.

— and Benjamin L. Wagner. “Why do U.S. states adopt public-private partnership enabling legislation?” *Journal of Urban Economics*. November 2012.

- Gifford, Jonathan. "State Infrastructure Banks: A Virginia Perspective." George Mason University School of Public Policy Research Paper. 2010.
- Goodin, Ginger, Richard Baker, and Lindsay Taylor. University Transportation Center for Mobility, Texas Transportation Institute, Texas A&M University. *Mileage-Based User Fees: Defining a Path Toward Implementation Phase 2: An Assessment of Institutional Issues*. UTCM Project 09-39-07. November 2009.
- Goodman, Josh. "Maryland Governor O'Malley Takes a Risk on Gas Tax." *Stateline*. February 10, 2012. <http://www.pewstates.org/projects/stateline/headlines/maryland-governor-omalley-takes-a-risk-on-gas-tax-85899375418>.
- Gourntis, Kalliope. *Public Infrastructure Official of the Year: Recognizing McDonnell's Vision, Infrastructure Investor*. October 2013.
- Govtrack. "S. 387: American Infrastructure Investment Fund Act, 2013." <https://www.govtrack.us/congress/bills/113/s387>.
- Greene, David L. "Transportation and Climate Change: Real Solutions for Greenhouse Gas Mitigation." Paper presented at the AASHTO Annual Meeting in Palm Desert, California, October 25, 2009. <http://www.transportation.org/Documents/AASHTO2009.ppt>.
- Henchman, Joseph. "State/Local Road Spending Covered by User Fees and User Taxes." *Tax Foundation Tax Policy Blog*. January 22, 2013. <http://taxfoundation.org/blog/statelocal-road-spending-covered-user-fees-user-taxes-categories-separated-out>.
- Hinz, Greg. "Chicago's infrastructure trust finally dreams big," *Crain's Chicago Business*. July 19, 2013. <http://www.chicagobusiness.com/article/20130719/BLOGS02/130719754/emanuels-infrastructure-trust-finally-dreams-big>.
- Holeywell, Ryan. "Is Raising the Gas Tax Truly Politically Unpalatable?" *Governing*. April 22, 2013. <http://www.governing.com/blogs/view/gov-gas-tax-increase-hike-politically-unpalatable.html>.
- . "Just in Time for the Holidays, 8 States Raise Gas Taxes." *Governing*. July 1, 2013. <http://www.governing.com/blogs/view/Just-in-Time-For-Holiday-Eight-State-Gas-Taxes-Rise.html>.
- , "Why Isn't the U.S. Better at Public-Private Partnerships?" *Governing*. February 2013. <http://www.governing.com/topics/finance/gov-public-private-partnerships-in-america.html>.
- Howell, Delegate William J. "HB2313 Revenues and appropriations of State; changes to revenues collected and distribution, report." *Virginia General Assembly*. April 13, 2013. <https://leg1.state.va.us/cgi-bin/legp504.exe?131+sum+HB2313>.

- Hurst, Nathan. "Congress Eyes Virginia's Model for Funding Transportation Projects." *Roll Call*. October 21, 2013.
http://www.rollcall.com/news/congress_eyes_virginias_model_for_funding_transportation_projects-228557-1.html.
- Institute for Taxation and Economic Policy. *State Gasoline Taxes: Built to Fail, but Fixable*. July 2013.
- . *Building a Better Gas Tax: One of State Government's Least Sustainable Revenue Sources*. 2011.
- Kansas Department of Transportation, Bureau of Fiscal Services. *Innovative Financing for Kansas Communities*. <http://www.ksdot.org/burFiscal/trf/default.asp>.
- Kasprak, Nick. "Weekly Map: State Gasoline Tax Rates." *Tax Foundation*. January 22, 2013.
<http://taxfoundation.org/blog/weekly-map-state-gasoline-tax-rates>.
- Kiger, Patrick. "Chicago's Novel Infrastructure Trust." *Urban Land Institute*. October 21, 2013.
<http://urbanland.uli.org/infrastructure-transit/chicagos-novel-infrastructure-trust/>.
- Kunkle, Frederk and Laura Vozzella. "Virginia lawmakers approve sweeping transportation plan." *Washington Post*. February 23, 2013. http://www.washingtonpost.com/local/va-politics/va-lawmakers-approve-landmark-transportation-plan/2013/02/23/712969d8-7de4-11e2-82e8-61a46c2cde3d_story.html.
- Leduc, Sylvain and Daniel Wilson. Federal Reserve Bank of San Francisco. "Highway Grants: Roads to Prosperity?" *FRBSF Economic Letter*. November 26, 2012.
<http://www.frbsf.org/economic-research/publications/economic-letter/2012/november/highway-grants/>.
- Lee, Joung H. American Association of State Highway Transportation Officials. *Revenue Sources to Fund Transportation Needs*. February 16, 2011.
- . *Leveraging the Money: Transportation Finance and Debt*. August 2013.
- . "Opportunities in Freight Infrastructure Financing." Presented at the 2nd Annual Bi-State Regional Freight Summit, Fort Smith, Arkansas. November 18, 2009.
<http://www.transportation.org/Documents/Lee-2009-11-18.pdf>.
- McIntyre et al., Douglas A. "Wyoming named best run state for second year in a row." *Wyoming Business*. December 1, 2011.. <http://www.wyomingbusiness.org/news/article/wyoming-named-best-run-state-for-second-/5985>.
- Madowitz, Michael and Kevin Novan. "Gasoline Taxes and Revenue Volatility: An Application to California." *Journal of Energy Policy* 59 (2013): 663-673.

Maryland Department of Legislative Services, *Transportation Revenue Options: Presentation to the House Ways and Means Committee*. December 11, 2012.

http://dls.state.md.us/data/polanasubare/polanasubare_natresenvntra/Transportation-Revenue-Options.pdf.

—. Maryland Transportation Revenues ch.10.

http://dls.state.md.us/data/polanasubare/polanasubare_natresenvntra/Volume-III-Chapter-10.pdf.

Martin, Glen. “Bridge Over Troubled Bolts: UC Berkeley experts raise safety concerns about new Bay Bridge.” *California Magazine*. August 28, 2013,

<http://alumni.berkeley.edu/california-magazine/just-in/2013-10-27/bridge-over-troubled-bolts-uc-berkeley-experts-raise-safety>.

Meola, Olympia. “Repeal of Va. Hybrid Vehicle Tax in the Works.” *Richmond Times Dispatch*.

October 17, 2013. http://www.timesdispatch.com/news/state-regional/virginia-politics/general-assembly/repeal-of-va-hybrid-vehicle-tax-in-the-works/article_3fd0161e-3664-11e3-baa9-001a4bcf6878.html.

Metropolitan Washington Council of Governments National Capital Region Transportation Planning Board. *What Do People Think About Congestion Pricing? A Deliberative Dialogue with Residents of Metropolitan Washington*. January 18, 2013.

http://www.mwcog.org/transportation/activities/congestionpricing/materials/Key%20Documents/CongestionPricingReport_FINAL091213_ForWeb.pdf.

Michigan Ohio University Transportation Center. *The Impact of Energy Efficient Vehicles on Gas Tax (Highway Trust Fund) and Alternative Funding for Infrastructure Construction, Upgrade, and Maintenance*. 2012.

http://ntl.bts.gov/lib/46000/46200/46268/MIOH.UTC.TS51.2012-Final_Rpt_Impact_of_Energy_Efficient_Vehicles_on_Gas_Tax_etc.pdf.

Mistler, Steve. “Maine Lawmakers Grapple with Falling Gas Tax Revenues.” *Portland Press Herald*. May 25, 2013. http://www.pressherald.com/politics/lawmakers-grapple-with-falling-gas-tax-revenues_2013-05-25.html.

National Center for State Legislatures. *On the Move: State Strategies for 21st Century Transportation Solutions*. 2012.

—. Motor Fuel Sales Taxes and Other Taxes on Fuel Distributors and Suppliers (June 2012),

<http://www.ncsl.org/research/transportation/fuel-sales-taxes-and-other-related-taxes.aspx#chart1>.

—. “Registration and Title Fees by State (2012 Chart),”

<http://www.ncsl.org/research/transportation/registration-and-title-fees-by-state.aspx>.

—. “Transportation Funding and Financing Legislative Database.” Last accessed November 5, 2013. <http://www.ncsl.org/research/transportation/ncsl-transportation-funding-finance-legis-database.aspx>.

National Cooperative Freight Research Program. *Dedicated Revenue Mechanisms for Freight Transportation Investment*. 2012.

National Cooperative Highway Research Program. *System Trials to Demonstrate Mileage-Based Road Use Charges*. October 2010.
http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w161.pdf.

NGA Center for Best Practices. *State Policy Options for Funding Transportation*.
<http://www.nga.org/files/live/sites/NGA/files/pdf/0702TRANSPORTATION.PDF>.

—. *Innovative State Transportation Funding and Financing: Policy Options for States*. 2009.

—. *How States and Territories Fund Transportation: An Overview of Traditional and Nontraditional Mechanisms*. 2009.

National League of Cities. *Legislative Issue Brief: Protect Municipal Bonds*. August 13, 2013.
<http://www.nlc.org/Documents/Influence%20Federal%20Policy/Advocacy/Legislative/NLC%20Issue%20Brief%20on%20Municipal%20Bonds.pdf>.

National Surface Transportation Infrastructure Financing Commission. *Paying Our Way: A New Framework for Transportation Finance*. February 2009.
http://financecommission.dot.gov/Documents/NSTIF_Commission_Final_Report_Advance%20Copy_Feb09.pdf.

—. “Paying Our Way: A New Framework for Transportation Finance.” Paper presented at the AASHTO Annual Meeting in Palm Desert, California, Oct. 25, 2009.
<http://www.transportation.org/Documents/AASHTO2009.ppt>.

O’Connell, John and Lydia Steinberg. “Developing P3s in the United States, part I” *HNTB*. 2012. <http://news.hntb.com/white-papers/developing-p3s-in-the-united-states-part-i.htm>.

Office of the Chief Financial Officer, D.C., “Tax Rates and Revenues, Other Taxes,” <http://cfo.dc.gov/page/tax-rates-and-revenues-other-taxes>.

Office of the Governor Robert F. McDonnell. “Governor McDonnell’s 2013 Transportation and Reform Package Fact Sheet.” 2013.
<http://www.governor.virginia.gov/utility/docs/Transportation%20funding%20fact%20sheet.pdf>.

—. “Governor McDonnell Makes Amendments to Strengthen Major Transportation Package.” March 26, 2013. <http://www.governor.virginia.gov/news/viewRelease.cfm?id=1736>.

Office of the Inspector General of the City of Chicago, *Report of Inspector General's Findings and Recommendations: An Analysis of the Lease of the City's Parking Meters*. 2009.
<http://chicagoinspectorgeneral.org/wp-content/uploads/2011/03/Parking-Meter-Report.pdf>.

Office of Sustainable Communities Smart Growth Program, EPA, Infrastructure Financing Options for Transit-Oriented Development. January 2013,.

Oregon Department of Transportation. *Fund Apportionments: Receipt Distribution for Fiscal Year 2013-2014*.
http://www.oregon.gov/ODOT/CS/FS/docs/hwyrev_apport/apport_fy14.pdf.

—. “Motor Carrier Transportation Advisory Committee Agenda.” August 8, 2013.
http://www.oregon.gov/ODOT/MCT/docs/MCTACMaterials_August2013.pdf.

—. “Oregon Road Usage Charge Program.” Presentation October 11, 2013.
http://www.oregon.gov/ODOT/HWY/RUFPP/docs/Oregon_RdUsageChrg_Prog_Oct112013.pdf.

—. “Road Usage Charge Program Fact Sheet.” August 2013.
http://www.oregon.gov/ODOT/HWY/RUFPP/docs/RUCP_Facts_Aug2013.pdf.

Oregon Blue Book. “Oregon History: Mixed Messages.”
<http://bluebook.state.or.us/cultural/history/history24.htm>.

Pagano, Celeste. “Proceed with Caution: Avoiding Hazards in Toll Road Privatizations.” 83 *St. John's Law Review* 351 (2009).

Pennsylvania Turnpike Commission. “All-Electronic Tolling Implementation.”
http://www.paturndpike.com/aet_public/aet.asp.

Poole, Jr., Robert W. “How to Enable Private Toll Road Development,” *How-to Guide No. 7*. 1993. <http://reason.org/files/35ea7f9f3eef937371c6ce7c4db95270.pdf>.

—. *Interstate 2.0: Modernizing the Interstate Highway System via Toll Finance*. September 2013. http://reason.org/files/modernizing_interstates_toll_finance.pdf.

Puentes, Robert and Jennifer Thompson. Brookings-Rockefeller Project on State and Metropolitan Innovation. *Banking on Infrastructure: Enhancing State Revolving Funds for Transportation*. September 2012.

Reese, Barbara W. Deputy Secretary of Transportation. Virginia's Public-Private Partnership Program. 2008.
<http://nga.org/files/live/sites/NGA/files/pdf/0806TRANSPORTATIONREESE.PDF>.

Regimbal, Jr., James J. Fiscal Analytics, Ltd. *An Examination of the Public-Private Transportation Act of 1995*. November 2012.

http://www.southernenvironment.org/uploads/publications/va_public_private_transpo_act.pdf

- Ring, Dan. "Automatic gas tax increase law sought to be repealed by Massachusetts Republicans." *Mass Live*. October 1, 2013, http://www.masslive.com/politics/index.ssf/2013/10/republicans_in_massachusetts_a.html.
- Roin, J.A. "Privatization and the sale of tax revenues." *Minnesota Law Review* 95 (2011): 1965-2034.
- Rall et. al., Jaime. National Council for State Legislatures. *Public-Private Partnerships for Transportation: A Toolkit for Legislators*. 2010.
- Ruthhart, Bill. *Emanuel's Infrastructure Trust Off to Slow Start*, *Chicago Tribune*. July 9, 2013.
- The San Francisco-Oakland Seismic Safety Projects. "FAQS." <http://baybridgeinfo.org/faq>.
- Schrank, David, Bill Eisele, and Tim Lomax. Texas A&M Transportation Institute. *TTI's 2012 Urban Mobility Report*. December 2012.
- Shiftan, Yoram. "A Pricing Experiment to Evaluate Price Sensitivity to Toll Roads." *International Journal of Transport Economics*, 28 (2001): 81-94. <http://trid.trb.org/view.aspx?id=688612>.
- Shuttleworth, Jeff. "Bay Bridge closure cost \$1.9-million in toll revenue." *Pleasanton Weekly*. November 3, 2009. <http://www.pleasantonweekly.com/news/2009/11/03/bay-bridge-closure-cost-19-million-in-toll-revenue>.
- Sjoquist et al., Dr. David L. *Implications of Alternative Revenue Sources for Transportation Planning*. GDOT Research Project No. 10-15. December 2011. <http://www.dot.ga.gov/doingbusiness/research/projects/documents/10-15.pdf>.
- Slone, Sean. The Council of State Governments. *Transportation & Infrastructure Finance*. 2009.
- . "State Infrastructure Banks." July 5, 2011. <http://knowledgecenter.csg.org/kc/content/state-infrastructure-banks>.
- . "Virginia's Transportation Funding Plan Could Have Influence on Other States, In Washington," *The Council of State Governments*. October 23, 2013, <http://knowledgecenter.csg.org/kc/content/virginia%E2%80%99s-transportation-funding-plan-could-have-influence-other-states-washington>.
- Smart Growth American and Taxpayers for Common Sense. *Repair Priorities: Transportation Spending Strategies to Save Taxpayer Dollars and Improve Roads*. June 2011.

Snyder, Tanya. "Ten Questions (and Answers) About Oregon's New VMT Charge." *DC Streets Blog*. September 24, 2013, <http://dc.streetsblog.org/2013/09/24/ten-questions-and-answers-about-oregons-new-vmt-charge/>.

Somers, Meredith and Andrea Noble. "O'Malley approval rating sinks after Maryland gas-tax increase." *Washington Times*. October 17, 2013.
<http://www.washingtontimes.com/news/2013/oct/17/omalley-approval-rating-sinks-after-maryland-gas-t/>.

State Smart Transportation Initiative. Summary of State Use of Weight-Distance Tax. June 24, 2011. <http://ssti.us/wp/wp-content/uploads/2011/11/Summary%20of%20Weight%20Distance%20Taxes.pdf>.

Texas Transp. Code Ann. § 643.001(6) (2009).

Texas Department of Transportation. "Trans Texas Corridor-35."
http://www.dot.state.tx.us/business/partnerships/ttc_35.htm.

Transportation Planning Board. *What Do People Think About Congestion Pricing? A Deliberative Dialogue with Residents of Metropolitan Washington*. January 18, 2013.
http://www.mwcog.org/transportation/activities/congestionpricing/materials/Key%20Document/CongestionPricingReport-Draft_1-18-13_ForWeb.pdf.

United States Conference of Mayors. *U.S. Metro Economies Outlook—Gross Metropolitan Product, and Critical Role of Transportation Infrastructure*. July 2012.

—. *Protecting Bonds to Save Infrastructure and Jobs*. 2013.
<http://usmayors.org/protectingbonds/media/0227-report-protectingbonds.pdf>.

"The U.S. Conference of Mayors Applauds Chicago Mayor Rahm Emanuel's Focus on Innovative Infrastructure Investment." *Journal of Commerce*. July 20, 2013.
<http://www.joc.com/us-conference-mayors-applauds-chicago-mayor-rahm-emanuels-focus-innovative-infrastructure-investment>.

United States Congressional Budget Office. *Alternative Approaches to Funding Highways*. March 2011. <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/121xx/doc12101/03-23-highwayfunding.pdf>.

—. *Using Public-Private Partnerships to Carry Out Highway Projects*. January 2012.

United States Department of Transportation, Federal Highway Administration. Federal-aid Program Overview: Funding Basics and Eligibility. August 2012.
<http://www.fhwa.dot.gov/federal-aidessentials/companionresources/44funding.pdf>.

- . *Financial Structuring and Assessment for Public-Private Partnerships: A Primer*. December 2012.
- . “The Highway Trust Fund.”
<http://www.fhwa.dot.gov/policy/olsp/financingfederalaid/fund.cfm>.
- . “Non-road Pricing Revenue: Resources.”
http://www.fhwa.dot.gov/ipd/revenue/non_pricing/resources/state_transportation_revenue.htm.
- . “Project Profiles: Chicago Skyway,”
http://www.fhwa.dot.gov/ipd/project_profiles/il_chicago_skyway.htm.
- . “Report Identifying State Taxation of Motor Carriers.”
<http://www.fhwa.dot.gov/policyinformation/hss/guide/ch5.cfm>.
- . “TIFIA: Fact Sheet.” <http://www.fhwa.dot.gov/map21/tifia.cfm>.
- . “TIFIA: Projects & Project Profiles.”
http://www.fhwa.dot.gov/ipd/tifia/projects_project_profiles/.
- . *Tools and Programs: Federal Debt Financing Tools, General Anticipation Revenue Vehicles (GARVEEs)*. 2013.
http://www.fhwa.dot.gov/ipd/finance/tools_programs/federal_debt_financing/garvees/garvee_state_by_state.htm#main_content.
- . “Traffic Volume Trends.”
http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm.
- United States Department of the Treasury and the Council of Economic Advisors. *A New Economic Analysis of Infrastructure Investment*. March 23, 2012.
<http://www.treasury.gov/resource-center/economic-policy/Documents/20120323InfrastructureReport.pdf>.
- United States Energy Information Association. “Explanatory Notes.” *Petroleum Marketing Monthly*. November 2013. <http://www.eia.gov/petroleum/marketing/monthly/pdf/mgt.pdf>.
- . *Infrastructure Financing Options for Transit-Oriented Development*. 2013.
- United States Government Accountability Office. *Highway Trust Fund: Pilot Program Could Help Determine the Viability of Mileage Fees for Certain Vehicles*. Report to the Subcommittee on Transportation, Housing, and Urban Development, and Related Agencies, Committee on Appropriations, House of Representatives. December 2012.
<http://www.gao.gov/assets/660/650863.pdf>.

- . *Physical Infrastructure: Challenges and Investment Options for the Nation's Infrastructure*. 2008. <http://www.gao.gov/assets/130/120031.pdf>.
- University Transportation Center for Mobility. "A Guide to Transportation Funding Options." 2007. <http://utcm.tamu.edu/tfo/highway/summary.stm>.
- Urban Land Institute. *When the Road Price is Right: Land Use, Tolls, and Congestion Pricing*. <http://www.uli.org/infrastructure-initiative/when-the-road-price-is-right/>.
- Virginia Office of Transportation. *Public-Private Partnerships, Legislative Fact Sheets: Public-Private Partnerships*. January 2013.
- Washington State Department of Transportation. *Strategic Transportation Investments to Strengthen Washington's Economy and Create Jobs*. January 2012.
- Wisconsin Transportation Finance and Policy Commission. "Vehicle-Miles-Traveled Revenue Approaches Policy Issue Paper." August 15, 2012. <http://www.dot.wisconsin.gov/about/tfp/docs/vmt-revenue.pdf>.
- Wyoming Management Audit Committee. "WYDOT and General Fund Appropriations for Highways." May 2008. <http://legisweb.state.wy.us/progeval/reports/2008/wydot/WYDOTfullreport.pdf>.
- Zhu, Wenqian. "Eight States Raise Their Gas Tax." *CNNMoney*. July 2, 2013. <http://money.cnn.com/2013/07/02/news/economy/state-gas-tax-increase/>.

APPENDIX

Appendix A: National Trends in Revenues from Funding Mechanisms

**Total Inflation Adjusted Motor Fuel Taxes Used by States
for State-Administered Highways**

	Total Receipts, All Sources	Total User Fees	Ratio (User Fees / Receipts)	Motor Fuel Taxes	Ratio (Motor Fuel Taxes / Total Receipts)	Ratio (Motor Fuel Taxes / User Fees)
1994	105,179,660,497	58,357,160,763	55.48%	24,912,239,499	23.69%	42.69%
1995	103,063,110,623	59,180,421,971	57.42%	25,255,730,194	24.51%	42.68%
1996	106,851,207,155	59,221,084,230	55.42%	24,489,909,604	22.92%	41.35%
1997	110,026,881,250	61,031,115,860	55.47%	25,608,511,364	23.27%	41.96%
1998	115,041,027,383	62,735,267,075	54.53%	26,264,298,576	22.83%	41.87%
1999	116,750,453,326	64,094,063,774	54.90%	26,326,499,367	22.55%	41.07%
2000	122,851,751,382	65,181,180,630	53.06%	26,117,958,788	21.26%	40.07%
2001	125,860,734,144	62,596,369,728	49.73%	24,929,172,627	19.81%	39.83%
2002	132,679,074,616	63,282,375,288	47.70%	23,822,434,793	17.95%	37.64%
2003	132,076,714,848	60,670,184,640	45.94%	23,035,198,458	17.44%	37.97%
2004	130,406,103,090	62,538,911,325	47.96%	23,914,253,362	18.34%	38.24%
2005	141,192,168,768	65,197,515,264	46.18%	24,061,431,211	17.04%	36.91%
2006	138,815,625,290	65,627,106,171	47.28%	25,738,601,205	18.54%	39.22%
2007	146,380,656,398	64,195,769,068	43.86%	23,215,878,822	15.86%	36.16%
2008	153,945,687,506	62,764,431,964	40.77%	20,693,156,440	13.44%	32.97%
2009	152,052,434,530	64,681,359,830	42.54%	18,837,977,901	12.39%	29.12%
2010	162,328,107,591	64,171,889,145	39.53%	19,694,389,572	12.13%	30.69%
2011	147,545,568,639	63,873,821,260	43.29%	18,910,191,145	12.82%	29.61%
ALL YEARS	130,169,275,946	62,744,445,999	48.95%	23,657,101,829	18.71%	37.78%

**Total Inflation Adjusted Bond Proceeds Used by States
for State-Administered Highways**

	Total Receipts, All Sources	Total User Fees	Ratio (User Fees / Receipts)	Bond Proceeds	Ratio (Bond Proceeds / Total Receipts)	Ratio (Bond Proceeds / User Fees)
1994	105,179,660,497	58,357,160,763	55.48%	8,203,770,080	7.80%	14.06%
1995	103,063,110,623	59,180,421,971	57.42%	6,480,760,686	6.29%	10.95%
1996	106,851,207,155	59,221,084,230	55.42%	8,967,966,517	8.39%	15.14%
1997	110,026,881,250	61,031,115,860	55.47%	10,184,536,644	9.26%	16.69%
1998	115,041,027,383	62,735,267,075	54.53%	12,968,397,354	11.27%	20.67%
1999	116,750,453,326	64,094,063,774	54.90%	11,753,838,818	10.07%	18.34%
2000	122,851,751,382	65,181,180,630	53.06%	11,649,312,900	9.48%	17.87%
2001	125,860,734,144	62,596,369,728	49.73%	12,217,102,520	9.71%	19.52%
2002	132,679,074,616	63,282,375,288	47.70%	10,225,015,376	7.71%	16.16%
2003	132,076,714,848	60,670,184,640	45.94%	11,869,044,005	8.99%	19.56%
2004	130,406,103,090	62,538,911,325	47.96%	12,634,533,507	9.69%	20.20%
2005	141,192,168,768	65,197,515,264	46.18%	13,662,676,929	9.68%	20.96%
2006	138,815,625,290	65,627,106,171	47.28%	13,591,055,991	9.79%	20.71%
2007	146,380,656,398	64,195,769,068	43.86%	14,400,667,287	9.84%	22.43%
2008	153,945,687,506	62,764,431,964	40.77%	15,210,278,584	9.88%	24.23%
2009	152,052,434,530	64,681,359,830	42.54%	20,326,117,368	13.37%	31.43%
2010	162,328,107,591	64,171,889,145	39.53%	27,330,216,966	16.84%	42.59%
2011	147,545,568,639	63,873,821,260	43.29%	18,698,968,707	12.67%	29.27%
ALL YEARS	130,169,275,946	62,744,445,999	48.95%	13,354,125,569	10.04%	21.15%

**Total Inflation Adjusted Local Government Funds Used by States
for State-Administered Highways**

	Total Receipts, All Sources	Total User Fees	Ratio (User Fees / Receipts)	Local Gov't Funds	Ratio (Local Gov't / Total Receipts)	Ratio (Local Gov't / User Fees)
1994	105,179,660,497	58,357,160,763	55.48%	1,901,850,110	1.81%	3.26%
1995	103,063,110,623	59,180,421,971	57.42%	1,593,796,654	1.55%	2.69%
1996	106,851,207,155	59,221,084,230	55.42%	1,644,857,364	1.54%	2.78%
1997	110,026,881,250	61,031,115,860	55.47%	1,548,822,528	1.41%	2.54%
1998	115,041,027,383	62,735,267,075	54.53%	1,464,754,786	1.27%	2.33%
1999	116,750,453,326	64,094,063,774	54.90%	1,595,909,823	1.37%	2.49%
2000	122,851,751,382	65,181,180,630	53.06%	1,866,101,899	1.52%	2.86%
2001	125,860,734,144	62,596,369,728	49.73%	1,678,465,671	1.33%	2.68%
2002	132,679,074,616	63,282,375,288	47.70%	2,069,551,894	1.56%	3.27%
2003	132,076,714,848	60,670,184,640	45.94%	1,882,123,018	1.43%	3.10%
2004	130,406,103,090	62,538,911,325	47.96%	2,560,715,725	1.96%	4.09%
2005	141,192,168,768	65,197,515,264	46.18%	2,457,866,664	1.74%	3.77%
2006	138,815,625,290	65,627,106,171	47.28%	2,334,510,881	1.68%	3.56%
2007	146,380,656,398	64,195,769,068	43.86%	3,046,606,504	2.08%	4.75%
2008	153,945,687,506	62,764,431,964	40.77%	3,758,702,127	2.44%	5.99%
2009	152,052,434,530	64,681,359,830	42.54%	3,915,821,467	2.58%	6.05%
2010	162,328,107,591	64,171,889,145	39.53%	3,579,102,774	2.20%	5.58%
2011	147,545,568,639	63,873,821,260	43.29%	2,294,190,063	1.55%	3.59%
ALL YEARS	130,169,275,946	62,744,445,999	48.95%	2,288,541,664	1.72%	3.63%

**Total Inflation Adjusted General Funds Used by States
for State-Administered Highways**

	Total Receipts, All Sources	Total User Fees	Ratio (User Fees / Receipts)	General Funds	Ratio (General Funds / Total Receipts)	Ratio (General Funds / User Fees)
1994	105,179,660,497	58,357,160,763	55.48%	2,019,703,716	1.92%	3.46%
1995	103,063,110,623	59,180,421,971	57.42%	2,408,344,643	2.34%	4.07%
1996	106,851,207,155	59,221,084,230	55.42%	1,340,766,711	1.25%	2.26%
1997	110,026,881,250	61,031,115,860	55.47%	3,090,496,886	2.81%	5.06%
1998	115,041,027,383	62,735,267,075	54.53%	2,856,835,324	2.48%	4.55%
1999	116,750,453,326	64,094,063,774	54.90%	2,843,755,969	2.44%	4.44%
2000	122,851,751,382	65,181,180,630	53.06%	5,476,632,878	4.46%	8.40%
2001	125,860,734,144	62,596,369,728	49.73%	3,668,645,061	2.91%	5.86%
2002	132,679,074,616	63,282,375,288	47.70%	5,782,271,928	4.36%	9.14%
2003	132,076,714,848	60,670,184,640	45.94%	4,071,382,914	3.08%	6.71%
2004	130,406,103,090	62,538,911,325	47.96%	4,877,632,764	3.74%	7.80%
2005	141,192,168,768	65,197,515,264	46.18%	3,558,527,133	2.52%	5.46%
2006	138,815,625,290	65,627,106,171	47.28%	3,646,138,354	2.63%	5.56%
2007	146,380,656,398	64,195,769,068	43.86%	5,492,966,692	3.75%	8.56%
2008	153,945,687,506	62,764,431,964	40.77%	7,339,795,029	4.77%	11.69%
2009	152,052,434,530	64,681,359,830	42.54%	7,063,823,868	4.65%	10.92%
2010	162,328,107,591	64,171,889,145	39.53%	7,201,814,490	4.44%	11.22%
2011	147,545,568,639	63,873,821,260	43.29%	6,258,185,807	4.24%	9.80%
ALL YEARS	130,169,275,946	62,744,445,999	48.95%	4,388,762,232	3.27%	6.94%

**Total Inflation Adjusted Tolls and Crossing Fees Used by States
for State-Administered Highways**

	Total Receipts, All Sources	Total User Fees	Ratio (User Fees / Receipts)	Road Crossing & Tolls	Ratio (Road Crossing & Tolls / Total Receipts)	Ratio (Road Crossing & Tolls / User Fees)
1994	105,179,660,497	58,357,160,763	55.48%	5,005,248,350	4.76%	8.58%
1995	103,063,110,623	59,180,421,971	57.42%	5,191,200,187	5.04%	8.77%
1996	106,851,207,155	59,221,084,230	55.42%	5,250,985,988	4.91%	8.87%
1997	110,026,881,250	61,031,115,860	55.47%	5,518,150,887	5.02%	9.04%
1998	115,041,027,383	62,735,267,075	54.53%	5,734,001,691	4.98%	9.14%
1999	116,750,453,326	64,094,063,774	54.90%	5,958,117,270	5.10%	9.30%
2000	122,851,751,382	65,181,180,630	53.06%	6,321,170,808	5.15%	9.70%
2001	125,860,734,144	62,596,369,728	49.73%	6,146,276,756	4.88%	9.82%
2002	132,679,074,616	63,282,375,288	47.70%	6,648,878,885	5.01%	10.51%
2003	132,076,714,848	60,670,184,640	45.94%	6,251,707,361	4.73%	10.30%
2004	130,406,103,090	62,538,911,325	47.96%	6,849,067,350	5.25%	10.95%
2005	141,192,168,768	65,197,515,264	46.18%	7,468,375,408	5.29%	11.46%
2006	138,815,625,290	65,627,106,171	47.28%	7,644,324,258	5.51%	11.65%
2007	146,380,656,398	64,195,769,068	43.86%	7,788,005,172	5.32%	12.13%
2008	153,945,687,506	62,764,431,964	40.77%	7,931,686,086	5.15%	12.64%
2009	152,052,434,530	64,681,359,830	42.54%	9,016,240,936	5.93%	13.94%
2010	162,328,107,591	64,171,889,145	39.53%	8,232,068,637	5.07%	12.83%
2011	147,545,568,639	63,873,821,260	43.29%	8,269,132,092	5.60%	12.95%
ALL YEARS	130,169,275,946	62,744,445,999	48.95%	6,734,702,118	5.15%	10.70%

**Total Inflation Adjusted Motor Vehicle and Carrier Tax Revenues Used by States
for State-Administered Highways**

	Total Receipts, All Sources	Total User Fees	Ratio (User Fees / Receipts)	Motor Vehicle & Carrier Taxes	Ratio (Motor Vehicle & Carrier Taxes/ Total Receipts)	Ratio (Motor Vehicle & Carrier Taxes/ User Fees)
1994	105,179,660,497	58,357,160,763	55.48%	13,068,259,647	12.42%	22.39%
1995	103,063,110,623	59,180,421,971	57.42%	13,201,519,416	12.81%	22.31%
1996	106,851,207,155	59,221,084,230	55.42%	13,303,507,859	12.45%	22.46%
1997	110,026,881,250	61,031,115,860	55.47%	13,773,550,052	12.52%	22.57%
1998	115,041,027,383	62,735,267,075	54.53%	14,740,293,978	12.81%	23.50%
1999	116,750,453,326	64,094,063,774	54.90%	15,553,104,103	13.32%	24.27%
2000	122,851,751,382	65,181,180,630	53.06%	15,291,309,723	12.45%	23.46%
2001	125,860,734,144	62,596,369,728	49.73%	14,270,712,600	11.34%	22.80%
2002	132,679,074,616	63,282,375,288	47.70%	15,156,522,206	11.42%	23.95%
2003	132,076,714,848	60,670,184,640	45.94%	13,382,915,717	10.13%	22.06%
2004	130,406,103,090	62,538,911,325	47.96%	14,110,875,190	10.82%	22.56%
2005	141,192,168,768	65,197,515,264	46.18%	15,840,554,121	11.22%	24.30%
2006	138,815,625,290	65,627,106,171	47.28%	16,719,240,365	12.04%	25.48%
2007	146,380,656,398	64,195,769,068	43.86%	15,430,691,603	10.54%	24.04%
2008	153,945,687,506	62,764,431,964	40.77%	14,142,142,841	9.19%	22.53%
2009	152,052,434,530	64,681,359,830	42.54%	12,242,250,709	8.05%	18.93%
2010	162,328,107,591	64,171,889,145	39.53%	13,602,880,395	8.38%	21.20%
2011	147,545,568,639	63,873,821,260	43.29%	12,803,150,094	8.68%	20.04%
ALL YEARS	130,169,275,946	62,744,445,999	48.95%	14,257,415,590	11.14%	22.71%

Appendix B: State Trends in Revenues from Funding Mechanisms

Note: Data for 1994 through 2011 is based on the FHWA's Table SF-3, "Revenues used by States for State-administered Highways." However, this data was not available for 2007. Therefore, 2007 was represented as the average of 2006 and 2008 for our graphs.

**Inflation Adjusted Motor Fuel Taxes Used by States for
State-Administered Highways (Million 2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	438.88	506.18	494.92	489.27	515.87	523.71	503.47	340.48	449.02
AK	33.56	29.85	27.17	24.34	32.63	34.56	34.80	33.48	19.12
AZ	300.96	286.72	310.15	348.23	269.42	255.81	380.82	493.89	510.43
AR	323.54	334.71	334.54	330.73	340.02	324.32	333.94	353.54	323.20
CA	1,755.96	2,096.23	1,740.53	1,940.17	2,263.53	1,468.15	2,163.14	1,514.01	2,166.28
CO	367.81	407.09	388.88	433.34	403.73	494.52	416.18	379.98	534.69
CT	447.61	439.66	508.70	539.19	487.98	413.41	424.32	402.15	341.07
DE	105.79	114.66	117.01	111.38	105.34	128.82	143.37	133.90	141.28
FL	1,218.24	1,040.51	1,236.65	1,231.36	1,380.51	1,312.02	1,418.55	1,391.01	1,502.30
GA	567.08	562.30	587.44	527.22	522.38	538.58	414.23	267.79	358.95
HI	99.61	89.14	45.48	91.80	65.05	67.77	78.20	84.57	77.92
ID	128.44	120.64	145.64	152.17	128.00	148.12	144.77	87.36	132.24
IL	820.93	748.72	716.77	776.83	837.48	818.91	760.58	526.40	532.14
IN	412.92	418.54	380.44	452.67	598.22	626.12	579.71	434.76	343.87
IA	228.44	237.99	224.13	274.90	219.13	232.90	182.53	179.39	171.92
KS	195.04	180.11	169.43	192.23	203.58	194.75	185.97	200.66	292.20
KY	380.13	280.60	295.96	274.54	283.22	333.51	387.98	387.18	373.82
LA	697.58	709.15	739.19	689.98	713.93	706.69	695.58	678.73	448.01
ME	189.17	167.78	186.56	187.08	190.69	188.62	202.21	178.60	159.82
MD	328.74	305.05	284.64	286.30	294.26	352.45	364.65	395.90	218.60
MA	491.99	554.31	315.34	335.00	390.57	705.12	528.83	395.25	646.48
MI	432.47	382.37	475.68	496.65	496.65	521.55	442.66	582.33	783.08
MN	426.08	422.37	435.01	441.92	411.69	500.81	413.22	377.14	341.95
MS	333.87	332.95	334.69	335.98	356.91	357.28	350.50	281.64	277.75
MO	599.77	586.79	630.80	636.60	599.50	616.56	593.16	545.32	500.56
MT	205.32	195.75	214.00	212.05	207.40	193.44	227.96	201.05	202.56
NE	260.31	221.70	251.60	273.94	248.39	235.49	108.77	236.62	148.04
NV	250.36	255.64	268.81	290.72	313.33	282.13	302.58	301.28	304.90
NH	112.21	137.57	117.11	126.03	127.90	127.37	100.14	127.28	131.76
NJ	398.90	291.86	166.56	306.07	354.09	529.72	525.51	538.72	343.56
NM	209.97	250.13	213.59	195.78	233.81	247.88	228.06	218.30	230.81
NY	1,144.33	1,384.11	1,212.94	1,126.13	1,285.02	1,764.50	896.55	1,332.13	674.01
NC	1,219.49	1,188.20	1,167.79	1,201.46	1,250.19	1,180.12	1,229.16	1,336.48	1,338.22
ND	49.05	45.20	49.51	51.58	43.53	58.21	54.15	71.60	39.80
OH	1,288.87	1,300.78	1,207.31	1,149.33	756.68	1,195.15	848.26	1,090.36	1,043.04
OK	250.84	278.48	271.87	300.43	287.45	233.31	305.91	252.95	315.97
OR	318.45	326.46	317.52	315.99	318.87	323.05	323.13	315.00	302.47
PA	1,888.18	1,890.17	1,652.63	1,969.30	2,077.49	2,007.89	2,053.41	2,038.51	2,011.44
RI	154.22	88.63	107.09	107.73	147.57	138.32	53.59	74.35	114.63
SC	361.74	423.39	427.54	472.75	497.61	528.07	392.32	428.31	370.98
SD	126.01	128.03	131.07	142.34	136.66	146.64	113.85	129.18	112.06
TN	524.67	596.45	588.62	600.71	615.21	620.57	702.06	470.86	549.16
TX	2,456.93	2,450.42	2,446.27	2,430.16	2,548.35	2,100.13	2,995.43	2,587.65	1,386.65
UT	202.80	208.11	215.46	278.89	261.96	292.33	261.51	286.66	306.37
VT	53.65	56.33	49.38	62.47	49.80	53.50	65.71	51.25	86.17
VA	731.11	729.10	754.86	814.78	827.45	858.53	818.09	899.69	796.49
WA	464.83	599.98	666.64	671.14	516.66	344.45	443.67	446.21	512.95
WV	427.85	407.18	383.06	384.29	415.23	404.64	388.68	380.19	384.00
WI	444.69	397.63	428.59	473.34	584.24	514.17	441.75	387.94	378.23
WY	42.81	50.03	54.33	51.20	49.12	81.79	94.36	81.16	91.46
Total	24,912.24	25,255.73	24,489.91	25,608.51	26,264.30	26,326.50	26,117.96	24,929.17	23,822.43
Avg	498.24	505.11	489.80	512.17	525.29	526.53	522.36	498.58	476.45

**Inflation Adjusted Motor Fuel Taxes Used by States for
State-Administered Highways (Million 2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	607.10	398.63	335.60	400.89	-	214.92	303.94	329.81	251.42
AK	32.72	33.94	37.00	33.31	-	31.66	7.53	28.25	28.20
AZ	457.26	472.58	529.21	380.80	-	633.43	49.24	7.47	64.47
AR	379.28	360.69	361.44	329.74	-	321.26	293.07	325.60	307.43
CA	845.41	2,599.64	1,600.04	2,187.46	-	1,373.34	933.74	1,634.07	1,629.17
CO	521.36	476.34	463.85	607.70	-	448.15	371.18	180.66	163.63
CT	346.33	396.90	332.40	420.85	-	338.98	248.81	311.63	196.74
DE	135.63	140.92	137.29	134.92	-	108.22	70.57	106.21	70.93
FL	1,758.11	1,748.41	1,650.82	2,196.92	-	1,288.64	1,264.68	1,061.92	885.25
GA	393.39	63.12	434.35	319.99	-	751.93	796.67	301.36	445.11
HI	87.92	56.10	65.27	73.64	-	73.31	64.93	69.81	70.95
ID	129.10	107.68	148.54	126.02	-	107.52	79.92	84.16	97.01
IL	547.10	712.07	526.52	643.33	-	1,036.78	514.84	506.34	491.03
IN	552.80	409.70	326.97	316.76	-	640.96	643.36	557.91	495.82
IA	104.99	182.74	253.67	137.46	-	117.25	99.75	55.37	77.75
KS	231.03	185.09	235.07	226.97	-	170.61	123.74	315.32	140.36
KY	374.71	414.79	383.35	476.80	-	447.81	404.07	437.22	505.69
LA	686.87	651.34	678.44	683.32	-	636.32	635.76	610.87	579.61
ME	211.68	234.95	223.25	234.99	-	235.83	226.26	240.88	227.79
MD	138.56	180.23	235.88	225.99	-	168.57	366.91	280.99	89.65
MA	633.91	527.37	671.64	195.93	-	30.35	582.16	64.56	62.61
MI	623.87	305.12	470.55	455.99	-	294.78	285.97	340.45	285.62
MN	312.75	324.51	324.75	402.98	-	183.16	118.60	51.89	12.60
MS	238.73	241.38	280.11	268.66	-	244.90	192.06	186.21	218.95
MO	559.33	550.13	514.25	590.18	-	448.25	446.82	440.53	352.53
MT	200.08	181.63	40.84	107.39	-	99.68	77.99	82.99	72.75
NE	158.57	170.79	168.19	124.40	-	22.10	98.53	73.46	28.82
NV	362.98	377.06	327.57	335.22	-	310.85	462.89	270.24	264.65
NH	149.51	151.22	146.27	145.36	-	125.95	119.88	115.36	111.87
NJ	307.09	170.76	186.88	359.04	-	288.23	239.88	292.54	177.48
NM	198.74	173.98	222.76	112.99	-	131.97	110.18	162.36	142.52
NY	882.88	876.26	1,191.68	946.31	-	455.43	749.93	923.46	246.19
NC	1,107.93	1,300.08	1,338.26	1,313.49	-	1,348.54	1,373.58	1,371.42	1,476.26
ND	52.37	34.38	62.87	66.07	-	65.95	77.75	57.78	78.20
OH	890.78	1,105.26	930.38	1,296.68	-	1,057.46	692.86	710.16	737.84
OK	123.74	46.81	205.94	348.92	-	373.87	19.14	92.08	35.99
OR	403.35	398.56	128.20	383.42	-	282.01	189.59	216.44	205.60
PA	1,340.01	1,389.43	2,025.37	2,143.73	-	1,246.01	999.79	2,093.43	1,987.66
RI	95.19	85.39	70.59	86.53	-	60.33	48.53	30.97	1.46
SC	323.00	349.06	501.19	484.54	-	525.40	498.98	505.63	485.34
SD	110.08	85.33	117.35	139.72	-	71.42	71.88	59.88	42.10
TN	524.60	426.62	540.96	620.67	-	438.63	533.02	507.52	441.87
TX	2,533.32	2,213.19	1,843.25	2,183.36	-	1,368.95	1,006.05	1,408.10	2,355.67
UT	261.70	240.23	285.33	307.88	-	216.66	303.15	222.70	222.77
VT	73.40	52.85	33.02	36.08	-	41.84	34.13	50.11	51.44
VA	609.58	763.63	849.60	739.41	-	520.98	476.23	548.40	549.97
WA	513.95	657.09	676.27	537.92	-	498.00	662.51	626.67	658.24
WV	356.44	368.23	339.86	333.86	-	380.31	400.92	388.61	392.40
WI	461.53	434.51	561.04	437.19	-	375.09	433.60	315.92	353.91
WY	84.44	87.53	47.49	76.82	-	40.57	32.44	33.06	36.49
Total	23,035.20	23,914.25	24,061.43	25,738.60	-	20,693.16	18,837.98	19,688.79	18,907.81
Avg	460.70	478.29	481.23	514.77	-	413.86	376.76	393.78	378.16

**Inflation Adjusted Motor Fuel Taxes Used by States for
State-Administered Highways, Per Capita (2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	104.03	119.02	115.82	113.28	118.54	119.85	113.21	76.27	100.40
AK	55.36	49.46	44.76	39.95	53.15	55.78	55.50	52.86	29.75
AZ	73.86	67.98	70.04	76.45	57.71	53.54	74.22	93.11	93.62
AR	131.91	134.76	133.29	131.09	133.96	127.12	124.91	131.37	119.49
CA	55.87	66.36	54.60	60.13	69.29	44.29	63.86	43.90	62.11
CO	100.61	108.66	101.73	111.32	101.67	121.92	96.76	85.71	118.71
CT	136.67	134.26	155.36	164.90	149.04	125.96	124.60	117.30	98.91
DE	149.78	159.87	161.43	152.25	141.66	170.96	182.96	168.51	175.69
FL	87.31	73.45	85.88	84.03	92.55	86.82	88.76	85.06	90.06
GA	80.38	78.09	79.89	70.42	68.35	69.15	50.60	31.81	41.81
HI	84.52	75.11	38.42	77.36	54.53	57.16	64.55	69.42	63.45
ID	113.36	103.71	122.46	125.74	104.18	118.34	111.88	66.12	98.53
IL	69.86	63.29	60.50	65.30	69.53	67.52	61.24	42.09	42.37
IN	71.79	72.12	65.14	77.19	101.41	105.36	95.34	70.98	55.92
IA	80.74	83.75	78.59	96.38	76.55	81.17	62.37	61.24	58.69
KS	76.37	70.21	65.87	74.08	77.44	73.38	69.17	74.28	107.72
KY	99.33	72.69	76.20	70.25	71.95	84.20	95.99	95.15	91.37
LA	161.66	163.31	169.91	158.55	163.41	161.64	155.65	152.15	100.31
ME	152.53	135.15	150.05	150.62	153.25	150.53	158.61	139.01	123.51
MD	65.67	60.50	56.12	56.20	57.31	68.15	68.85	73.66	40.19
MA	81.44	91.27	51.76	54.76	63.54	114.19	83.29	61.64	100.37
MI	45.54	40.04	49.58	50.81	50.59	52.88	44.54	58.20	78.01
MN	93.29	91.63	93.40	94.32	87.12	104.87	84.00	75.69	68.15
MS	125.09	123.44	123.22	123.05	129.69	129.05	123.21	98.70	97.16
MO	113.64	110.23	117.72	117.84	110.23	112.75	106.01	96.62	88.11
MT	239.85	224.93	243.35	241.29	235.56	219.13	252.68	221.94	222.63
NE	160.40	135.42	152.29	165.33	149.39	141.35	63.56	137.73	85.82
NV	171.83	167.07	167.68	173.38	179.36	155.94	151.42	143.84	140.75
NH	98.71	119.81	100.74	107.47	107.93	106.04	81.03	101.27	103.66
NJ	50.47	36.73	20.85	38.01	43.63	65.05	62.45	63.46	40.21
NM	126.98	148.41	124.66	113.18	134.61	142.47	125.37	119.37	124.76
NY	62.98	76.32	66.70	62.09	70.70	96.97	47.25	69.79	35.17
NC	172.49	165.14	159.47	161.81	165.66	154.25	152.70	162.92	160.91
ND	76.87	70.47	76.93	80.49	68.20	91.86	84.32	112.53	62.81
OH	116.09	116.66	108.06	102.74	67.50	106.17	74.72	95.67	91.33
OK	76.99	84.96	82.36	90.57	85.89	69.48	88.65	73.01	90.67
OR	103.19	103.95	99.11	97.42	97.16	97.42	94.44	90.77	86.00
PA	156.66	156.58	137.08	163.84	173.10	167.41	167.20	165.74	163.18
RI	154.73	89.54	108.15	109.10	149.29	139.60	51.12	70.27	107.53
SC	98.73	115.26	115.59	125.72	129.72	135.90	97.79	105.42	90.40
SD	174.73	175.61	178.96	192.88	185.14	200.01	150.82	170.20	147.04
TN	101.38	113.48	110.65	111.90	113.28	113.17	123.40	81.81	94.63
TX	133.69	130.87	127.89	125.01	128.97	104.78	143.65	121.30	63.87
UT	106.30	106.65	107.70	135.44	124.76	137.25	117.10	125.11	131.24
VT	92.46	96.32	83.89	106.07	84.28	90.11	107.92	83.72	140.12
VA	111.59	110.16	113.08	120.99	121.84	124.92	115.57	125.11	109.36
WA	87.00	110.47	120.49	119.63	90.81	59.84	75.27	74.52	84.70
WV	234.82	222.73	209.81	211.64	229.26	223.94	214.94	211.38	213.40
WI	87.51	77.62	83.06	91.56	111.85	97.93	82.36	71.72	69.44
WY	89.95	104.19	112.86	106.72	102.14	170.54	191.10	164.63	184.00
Total	5,496.99	5,407.69	5,333.18	5,550.59	5,506.68	5,668.09	5,276.96	5,084.09	4,988.04
Avg	109.94	108.15	106.66	111.01	110.13	113.36	105.54	101.68	99.76

**Inflation Adjusted Motor Fuel Taxes Used by States for
State-Administered Highways, Per Capita (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	135.19	88.35	73.84	87.19	-	45.95	64.55	68.92	52.35
AK	50.27	51.31	55.27	49.17	-	46.01	10.78	39.55	39.02
AZ	81.78	82.05	88.57	61.50	-	97.46	7.46	1.16	9.95
AR	139.32	131.34	130.19	117.13	-	112.03	101.43	111.44	104.64
CA	23.98	73.11	44.70	60.80	-	37.54	25.26	43.76	43.22
CO	114.62	103.56	99.52	127.85	-	90.81	73.87	35.79	31.98
CT	99.87	114.23	95.59	120.75	-	96.77	70.72	87.16	54.94
DE	166.44	170.48	163.46	158.17	-	123.51	79.72	118.04	78.19
FL	103.53	100.63	92.83	121.45	-	69.94	68.22	56.37	46.45
GA	45.03	7.08	47.74	34.30	-	77.54	81.05	31.03	45.35
HI	70.94	44.78	51.55	57.73	-	56.94	50.13	51.21	51.61
ID	94.64	77.37	104.18	86.06	-	70.39	51.70	53.57	61.21
IL	43.43	56.31	41.54	50.58	-	80.73	39.88	39.43	38.16
IN	89.42	65.93	52.29	50.27	-	100.33	100.16	85.96	76.08
IA	35.80	62.13	86.01	46.37	-	39.16	33.16	18.15	25.39
KS	84.88	67.78	85.74	82.37	-	60.99	43.90	110.28	48.89
KY	90.98	100.00	91.66	113.00	-	104.44	93.66	100.57	115.73
LA	153.50	145.09	150.84	161.15	-	142.94	141.53	134.40	126.69
ME	162.44	179.59	170.21	178.70	-	178.70	171.63	181.47	171.50
MD	25.21	32.52	42.25	40.27	-	29.79	64.38	48.57	15.38
MA	98.26	81.75	104.08	30.30	-	4.64	88.29	9.85	9.50
MI	61.98	30.24	46.63	45.23	-	29.47	28.68	34.47	28.92
MN	61.96	63.89	63.59	78.27	-	35.02	22.52	9.77	2.36
MS	83.25	83.64	96.59	92.73	-	83.29	65.06	62.69	73.51
MO	97.87	95.53	88.56	100.69	-	75.26	74.62	73.47	58.65
MT	218.25	196.17	43.69	113.50	-	102.97	79.99	83.75	72.88
NE	91.47	98.03	96.01	70.66	-	12.40	54.84	40.14	15.64
NV	162.27	161.92	135.99	134.44	-	118.84	175.13	99.93	97.18
NH	116.64	116.98	112.39	110.80	-	95.28	90.51	87.61	84.87
NJ	35.78	19.83	21.67	41.63	-	33.27	27.55	33.25	20.12
NM	106.30	91.96	116.23	58.17	-	66.42	54.82	78.59	68.44
NY	45.91	45.41	61.65	48.89	-	23.39	38.38	47.61	12.65
NC	131.64	152.39	154.37	148.13	-	145.83	146.42	143.45	152.88
ND	82.76	54.03	98.95	103.75	-	102.82	120.20	85.65	114.33
OH	77.83	96.41	81.08	112.83	-	91.73	60.03	61.55	63.91
OK	35.37	13.32	58.29	97.62	-	102.60	5.19	24.49	9.49
OR	113.61	111.53	35.43	104.26	-	74.55	49.56	56.39	53.10
PA	108.44	112.16	163.10	171.90	-	99.15	79.32	164.61	155.98
RI	88.84	79.70	66.29	81.61	-	57.27	46.07	29.43	1.39
SC	77.90	83.08	117.76	111.66	-	116.67	109.40	109.04	103.72
SD	143.53	110.21	150.44	177.19	-	88.77	88.48	73.33	51.08
TN	89.57	72.10	90.22	101.93	-	70.29	84.66	79.83	69.01
TX	114.85	98.72	80.84	93.43	-	56.33	40.60	55.76	91.75
UT	109.96	98.50	114.15	119.16	-	79.44	108.87	80.24	79.07
VT	119.04	85.49	53.36	58.20	-	67.36	54.89	80.05	82.12
VA	82.67	102.24	112.32	96.69	-	66.83	60.42	68.35	67.93
WA	84.07	106.25	108.01	84.42	-	75.84	99.41	92.94	96.37
WV	197.78	204.20	188.40	184.74	-	209.55	220.31	209.57	211.49
WI	84.27	78.84	101.24	78.47	-	66.65	76.68	55.51	61.96
WY	169.15	174.02	93.82	149.79	-	76.12	59.59	58.57	64.22
Total	4,902.47	4,672.15	4,623.13	4,805.89	-	3,990.02	3,683.70	3,606.69	3,311.27
Avg	98.05	93.44	92.46	96.12	-	79.80	73.67	72.13	66.23

**Inflation Adjusted Motor Fuel Taxes Used by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	16,045	18,527	18,019	20,145	18,728	18,997	18,222	12,288	16,175
AK	2,987	2,678	2,383	2,037	2,831	3,020	3,069	2,860	1,668
AZ	18,954	17,869	19,072	19,141	14,109	14,704	21,877	28,102	28,252
AR	9,250	9,546	9,476	8,761	9,561	9,049	9,302	9,819	8,954
CA	35,629	42,485	35,287	37,732	43,986	29,684	43,733	30,460	42,938
CO	16,354	18,098	17,317	17,102	17,807	21,865	18,339	16,721	23,490
CT	45,777	44,992	51,924	51,582	46,474	42,332	43,418	41,157	34,885
DE	9,913	10,662	10,713	10,090	9,517	11,587	12,834	11,917	12,508
FL	31,771	26,933	31,936	30,361	35,157	33,161	35,635	34,577	36,999
GA	12,729	12,460	13,042	12,041	11,436	11,782	9,036	5,765	7,702
HI	37,059	33,089	17,607	37,638	26,736	27,570	32,735	35,298	32,602
ID	10,895	10,216	12,337	11,933	10,759	12,447	12,179	7,337	11,064
IL	18,853	17,180	16,446	17,499	18,966	19,562	18,211	12,592	12,730
IN	14,610	14,852	13,519	12,775	21,195	22,178	20,529	15,391	12,160
IA	9,836	10,255	9,569	11,189	9,137	9,822	7,282	7,448	6,794
KS	7,918	7,304	6,868	7,611	8,126	8,183	7,815	8,426	12,255
KY	6,370	4,692	4,932	4,536	4,669	5,514	6,406	6,385	6,158
LA	18,346	18,632	19,395	16,322	18,680	18,469	18,182	17,716	11,691
ME	10,625	9,437	10,500	10,579	10,772	10,651	11,395	10,059	8,997
MD	22,226	20,580	19,203	18,974	20,312	24,294	25,057	27,176	14,977
MA	51,658	58,067	33,222	39,108	44,632	80,955	60,939	45,640	74,608
MI	16,153	14,197	17,658	11,157	18,142	19,080	16,187	21,231	28,521
MN	14,576	14,457	14,911	10,464	14,141	17,222	14,268	12,978	11,767
MS	12,945	13,174	13,049	12,650	13,796	14,020	13,730	11,026	10,765
MO	8,720	8,425	9,041	9,072	8,547	8,834	8,499	7,797	7,147
MT	11,167	10,644	13,163	11,528	11,318	11,967	14,054	10,857	10,907
NE	12,080	10,226	11,557	11,736	11,261	10,653	4,912	10,637	6,647
NV	20,218	20,541	21,600	21,306	23,690	21,375	22,888	22,819	23,106
NH	12,807	15,706	13,369	14,423	14,680	14,418	11,355	14,380	14,894
NJ	45,022	33,348	19,174	35,351	43,618	64,781	62,815	63,379	40,433
NM	7,691	9,162	7,854	7,222	8,576	9,123	8,405	7,983	8,261
NY	28,220	34,117	29,864	26,397	33,817	46,383	23,558	34,968	17,697
NC	7,456	7,245	7,108	7,264	7,544	7,125	7,398	8,023	8,014
ND	2,916	2,688	2,944	2,601	2,588	3,462	3,221	4,256	2,366
OH	26,344	26,600	24,620	23,945	15,862	24,773	17,536	22,474	21,484
OK	8,417	9,319	9,064	8,869	9,879	8,016	10,473	8,657	10,713
OR	17,141	17,874	17,439	17,127	17,467	17,663	18,335	17,267	16,617
PA	20,716	20,791	18,128	21,838	23,410	22,654	23,207	23,104	22,796
RI	50,302	29,922	36,107	38,628	51,149	43,856	17,670	25,366	39,215
SC	4,066	4,754	4,798	5,327	5,579	5,919	4,392	4,791	4,143
SD	7,115	7,224	7,420	7,164	6,867	8,319	6,456	7,280	6,308
TN	15,494	17,568	17,239	17,477	17,833	17,730	20,068	13,407	15,563
TX	13,588	13,326	13,235	13,008	13,621	11,209	15,922	13,743	7,330
UT	13,651	13,984	14,440	17,952	17,354	19,380	17,343	18,982	20,185
VT	8,875	9,324	8,173	9,897	8,234	8,845	10,863	8,483	14,254
VA	5,908	5,865	6,048	6,501	6,597	6,805	6,475	7,319	6,459
WA	25,945	33,393	37,096	27,492	28,234	18,653	24,356	24,458	28,050
WV	6,548	6,167	5,778	5,801	6,177	5,928	5,569	5,440	5,488
WI	15,602	13,930	14,963	15,730	19,382	17,796	15,319	13,433	13,049
WY	2,734	3,202	3,477	3,190	14,463	14,585	14,436	5,205	5,866
Total	850,222	835,731	792,081	818,274	877,417	936,403	875,903	836,875	845,655
Avg	17,004	16,715	15,842	16,365	17,548	18,728	17,518	16,738	16,913

**Inflation Adjusted Motor Fuel Taxes Used by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	21,868	13,633	11,957	14,238	-	7,643	10,656	11,403	8,574
AK	2,823	2,925	3,174	2,849	-	2,706	644	2,421	2,420
AZ	25,146	25,616	28,601	20,323	-	33,659	2,592	390	3,333
AR	10,490	9,902	9,858	8,927	-	8,655	7,879	8,734	8,230
CA	16,794	51,456	31,647	43,236	-	27,173	18,591	32,739	32,848
CO	22,694	20,664	20,218	26,430	-	19,529	16,178	7,876	7,135
CT	35,445	40,595	33,998	43,023	-	34,590	25,356	31,717	19,998
DE	11,925	12,339	11,936	11,660	-	9,255	6,017	9,029	6,012
FL	43,055	42,369	39,801	52,415	-	30,365	29,679	24,821	20,608
GA	8,419	1,349	9,241	6,781	-	15,831	16,668	6,266	9,197
HI	36,710	23,068	27,028	30,567	-	29,597	26,160	28,069	28,471
ID	10,814	8,981	12,336	10,430	-	8,859	6,569	6,901	7,935
IL	13,079	17,026	12,586	15,321	-	24,597	12,220	12,023	11,664
IN	19,523	14,469	11,547	11,177	-	22,523	22,762	19,874	17,785
IA	4,645	8,060	11,108	5,984	-	5,090	4,349	2,425	3,419
KS	9,674	7,743	9,829	9,469	-	7,112	5,158	13,145	5,851
KY	6,158	6,806	6,287	7,790	-	7,282	6,560	7,086	8,183
LA	17,905	16,964	17,646	17,777	-	16,527	16,389	15,630	14,720
ME	11,917	12,626	12,310	12,935	-	13,018	12,606	13,545	12,930
MD	9,475	12,324	16,133	15,419	-	11,490	24,958	19,074	6,073
MA	73,327	60,527	76,707	22,682	-	3,505	64,953	6,967	6,542
MI	22,617	11,064	17,069	16,555	-	10,735	10,417	12,403	10,408
MN	10,733	11,195	11,165	13,782	-	6,258	4,051	1,772	430
MS	9,010	9,144	10,469	9,837	-	8,828	6,960	6,785	8,022
MO	7,987	7,576	7,079	7,845	-	5,925	5,897	5,805	4,639
MT	10,767	9,770	1,668	4,390	-	4,070	3,161	3,338	2,904
NE	7,098	7,623	7,495	5,538	-	983	4,383	3,268	1,282
NV	27,501	28,567	25,059	25,686	-	23,811	35,183	20,382	19,809
NH	16,412	16,600	16,585	16,465	-	14,272	13,801	13,495	13,302
NJ	36,171	20,230	22,022	42,210	-	33,990	28,287	34,497	20,928
NM	7,101	5,943	7,605	3,855	-	4,514	3,772	5,563	4,888
NY	23,184	23,008	31,291	24,099	-	11,940	19,649	24,180	6,442
NC	6,621	7,737	7,935	7,775	-	7,929	8,074	8,059	8,673
ND	3,111	2,043	3,735	3,924	-	3,883	4,577	3,401	4,601
OH	18,319	22,664	19,043	26,524	-	21,566	14,100	14,421	14,951
OK	4,184	1,567	6,879	11,607	-	12,415	635	3,048	1,190
OR	22,093	21,819	7,029	20,976	-	15,441	10,316	11,705	11,050
PA	15,188	15,744	22,932	24,280	-	14,083	11,301	23,666	22,472
RI	32,824	29,434	24,359	29,754	-	20,640	16,615	10,614	501
SC	3,606	3,891	5,597	5,400	-	5,839	5,540	5,609	5,379
SD	6,169	4,749	6,471	7,741	-	3,952	3,968	3,297	2,312
TN	14,752	11,944	15,051	17,188	-	12,010	14,550	13,812	11,989
TX	13,363	11,635	9,672	11,400	-	7,086	5,194	7,249	12,095
UT	17,242	15,742	18,698	20,206	-	13,801	19,264	14,118	14,089
VT	12,142	8,739	5,462	5,970	-	6,929	5,653	8,299	8,521
VA	4,923	6,143	6,788	5,945	-	4,158	3,793	4,358	4,361
WA	28,088	35,891	36,820	29,241	-	27,002	35,952	34,036	35,780
WV	5,110	5,266	4,858	4,757	-	5,372	5,642	5,449	5,481
WI	15,840	14,857	19,132	14,883	-	12,723	14,689	10,689	11,959
WY	5,415	5,617	3,046	4,926	-	2,602	2,071	2,102	2,310
Total	819,455	785,644	794,966	812,193	-	661,762	654,434	595,554	512,697
Avg.	16,389	15,713	15,899	16,244	-	13,235	13,089	11,911	10,254

**Inflation Adjusted Bonds Issued by States
for State-Administered Highways (Million 2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	14.56	16.01	-	-	-	-	-	-	-
AK	-	-	-	-	-	-	-	-	-
AZ	719.01	-	407.00	-	-	247.55	374.67	590.84	199.20
AR	-	-	-	-	-	-	238.54	-	242.78
CA	107.00	-	-	-	-	-	-	-	-
CO	-	-	-	-	-	-	739.00	699.07	334.83
CT	890.39	487.08	712.30	335.56	616.61	326.21	200.90	293.09	419.41
DE	345.34	105.55	95.56	-	284.19	-	283.95	166.62	124.80
FL	544.69	355.44	508.37	882.10	1,712.54	721.42	365.25	355.15	298.89
GA	306.08	346.89	192.86	210.96	253.06	214.11	4.00	171.02	264.82
HI	-	238.02	164.38	45.50	28.24	135.93	-	64.82	89.34
ID	-	-	-	-	-	-	-	-	-
IL	284.81	338.23	501.73	36.50	550.54	90.75	236.43	268.57	391.56
IN	-	113.91	-	231.60	256.18	-	352.86	1,807.93	-
IA	-	-	-	-	-	-	-	-	-
KS	414.62	-	61.87	-	343.50	471.43	474.96	-	137.80
KY	-	367.18	-	-	-	-	-	-	-
LA	48.84	53.44	-	-	-	150.35	-	-	-
ME	144.29	15.07	89.53	78.68	153.81	23.29	-	24.92	-
MD	62.06	111.43	-	71.73	160.16	-	100.66	-	209.54
MA	549.31	548.14	1,289.97	3,063.72	1,416.31	1,865.82	1,236.14	1,700.14	312.12
MI	304.30	-	-	77.28	537.48	-	-	404.61	133.37
MN	19.58	8.63	31.63	0.86	39.17	-	47.61	48.85	109.53
MS	-	-	-	-	3.52	455.78	-	-	273.78
MO	-	-	-	-	-	-	340.32	269.41	530.33
MT	-	-	-	-	-	-	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	139.51	-	-	-	-	-	-	131.49	-
NH	161.98	1.65	1.04	5.15	-	145.16	-	7.88	10.56
NJ	280.15	-	2,396.12	799.39	1,008.88	1,469.73	3,989.86	1,262.93	1,490.28
NM	76.79	-	-	141.39	-	433.82	409.57	297.83	219.30
NY	1,521.62	1,997.60	495.53	1,645.55	2,185.18	1,371.04	1,378.48	1,522.57	1,978.11
NC	47.19	-	-	-	352.14	-	-	-	-
ND	-	-	-	-	-	-	-	-	-
OH	349.15	-	666.24	393.39	888.27	556.49	332.57	273.09	118.46
OK	-	-	-	-	965.46	98.82	-	202.89	22.89
OR	-	-	-	-	-	-	-	75.65	289.24
PA	427.02	529.87	20.95	95.45	273.58	1,391.64	2.57	2.50	599.53
RI	47.13	45.43	79.50	45.19	127.53	-	41.13	38.63	38.42
SC	-	30.17	44.11	63.98	66.51	275.31	-	461.70	-
SD	-	-	-	-	-	-	-	-	-
TN	-	-	-	-	-	-	-	-	-
TX	-	40.10	621.42	361.70	141.78	-	-	-	-
UT	-	-	-	882.95	353.88	95.23	-	-	369.31
VT	3.00	-	-	2.69	4.72	-	-	-	-
VA	104.40	214.63	234.64	234.94	245.14	511.36	292.71	504.98	215.35
WA	130.80	357.54	183.73	256.93	-	52.89	61.05	266.83	436.80
WV	-	-	-	-	-	303.19	146.66	141.69	157.78
WI	160.13	158.77	169.48	221.37	-	346.52	-	161.38	206.93
WY	-	-	-	-	-	-	(0.59)	-	-
Total	8,203.77	6,480.76	8,967.97	10,184.54	12,968.40	11,753.84	11,649.31	12,217.10	10,225.02
Avg	340.83	340.83	340.83	340.83	340.83	340.83	340.83	340.83	340.83

**Inflation Adjusted Bonds Issued by States
for State-Administered Highways (Million 2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	249.56	-	69.88	-	-	-	-	-	-
AK	142.08	-	-	-	-	-	173.57	-	-
AZ	435.69	427.84	374.09	161.26	-	709.32	786.29	-	385.34
AR	281.66	-	-	-	-	-	-	266.57	-
CA	-	821.71	352.68	1,172.62	-	524.39	3,094.25	2,619.45	3,741.38
CO	132.09	220.56	-	-	-	-	-	315.81	17.65
CT	329.96	275.70	258.76	289.24	-	276.05	374.15	541.59	641.59
DE	425.35	6.04	143.64	171.78	-	51.13	253.96	132.58	206.46
FL	812.48	1,028.77	1,521.14	393.12	-	1,062.86	13.45	1,173.15	926.91
GA	-	499.90	6.66	394.12	-	845.98	1,044.79	90.47	115.00
HI	-	4.74	64.76	-	-	-	134.90	-	-
ID	-	-	-	227.77	-	220.31	191.69	89.48	77.10
IL	535.50	485.47	1,348.42	1,404.33	-	436.21	834.89	821.11	28.71
IN	555.27	430.81	-	5.85	-	443.45	445.11	65.93	55.86
IA	-	-	-	-	-	-	-	-	-
KS	42.36	799.49	-	14.45	-	0.63	82.87	75.45	-
KY	-	-	424.99	276.42	-	-	386.57	386.04	63.05
LA	347.80	-	-	-	-	-	462.54	172.89	447.34
ME	63.64	64.99	4.51	-	-	63.81	94.94	26.32	22.59
MD	286.17	322.95	-	118.23	-	1,182.10	907.24	738.65	697.76
MA	1,143.57	210.35	419.92	491.16	-	403.16	471.18	720.76	698.97
MI	-	256.43	40.90	360.50	-	-	303.55	4.21	-
MN	35.53	217.85	144.80	184.39	-	44.91	173.03	146.31	322.65
MS	-	-	210.43	22.78	-	4.27	-	-	-
MO	-	320.32	-	423.65	-	591.24	155.81	1,174.43	10.27
MT	-	-	153.71	-	-	48.42	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	248.91	-	223.43	227.77	-	144.87	-	-	-
NH	4.94	6.42	6.21	11.46	-	37.31	32.11	238.11	230.91
NJ	1,377.66	1,727.46	1,845.61	2,724.12	-	1,284.71	2,934.44	3,157.66	1,969.92
NM	20.84	991.81	-	-	-	213.28	-	8.85	156.15
NY	1,862.11	1,409.99	2,092.76	18.36	-	219.89	1,984.06	1,255.73	964.19
NC	-	505.93	381.60	-	-	306.65	-	910.88	238.80
ND	-	-	-	-	-	-	-	-	-
OH	363.32	356.81	175.49	323.34	-	378.05	407.81	409.64	469.21
OK	9.27	60.99	-	59.43	-	-	37.46	158.70	446.00
OR	-	-	380.01	457.88	-	-	376.99	614.78	66.57
PA	26.23	173.94	314.27	555.52	-	1,259.15	1,287.71	3,921.98	1,989.75
RI	37.43	39.98	39.21	306.35	-	47.62	43.35	136.88	-
SC	8.52	2.69	164.81	-	-	-	-	17.34	-
SD	-	-	-	-	-	-	-	-	-
TN	-	-	-	-	-	-	-	-	-
TX	298.67	-	1,793.66	1,617.26	-	3,456.86	1,464.03	2,654.66	1,500.71
UT	201.64	44.99	58.95	-	-	74.73	426.01	952.59	867.02
VT	0.15	3.80	1.21	-	-	0.53	16.27	-	20.21
VA	856.72	-	41.52	308.41	-	-	-	605.08	663.97
WA	466.15	591.69	464.22	680.12	-	878.38	542.97	2,325.06	110.87
WV	1.77	-	37.08	-	-	-	87.24	-	-
WI	266.01	324.12	103.37	189.37	-	-	300.90	393.27	543.71
WY	-	-	-	-	-	-	-	-	-
Total	11,869.04	12,634.53	13,662.68	13,591.06	-	15,210.28	20,326.12	27,322.45	18,696.62
Avg	359.67	407.57	414.02	453.04	-	507.01	597.83	780.64	584.27

**Inflation Adjusted Bonds Issued by States for
State-Administered Highways, Per Capita (2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	3.45	3.77	-	-	-	-	-	-	-
AK	-	-	-	-	-	-	-	-	-
AZ	176.44	-	91.91	-	-	51.81	73.03	111.39	36.54
AR	-	-	-	-	-	-	89.23	-	89.76
CA	3.40	-	-	-	-	-	-	-	-
CO	-	-	-	-	-	-	171.81	157.69	74.34
CT	271.86	148.74	217.55	102.62	188.33	99.39	58.99	85.49	121.62
DE	488.90	147.17	131.84	-	382.18	-	362.37	209.68	155.20
FL	39.04	25.09	35.30	60.20	114.81	47.74	22.85	21.72	17.92
GA	43.38	48.17	26.23	28.18	33.11	27.49	0.49	20.31	30.84
HI	-	200.56	138.86	38.34	23.67	114.66	-	53.21	72.75
ID	-	-	-	-	-	-	-	-	-
IL	24.24	28.59	42.35	3.07	45.71	7.48	19.04	21.47	31.18
IN	-	19.63	-	39.50	43.43	-	58.03	295.17	-
IA	-	-	-	-	-	-	-	-	-
KS	162.34	-	24.05	-	130.65	177.63	176.67	-	50.80
KY	-	95.12	-	-	-	-	-	-	-
LA	11.32	12.31	-	-	-	34.39	-	-	-
ME	116.34	12.14	72.01	63.34	123.62	18.59	-	19.40	-
MD	12.40	22.10	-	14.08	31.19	-	19.00	-	38.52
MA	90.93	90.25	211.74	500.81	230.40	302.15	194.70	265.16	48.46
MI	32.04	-	-	7.91	54.75	-	-	40.44	13.29
MN	4.29	1.87	6.79	0.18	8.29	-	9.68	9.80	21.83
MS	-	-	-	-	1.28	164.63	-	-	95.77
MO	-	-	-	-	-	-	60.82	47.73	93.35
MT	-	-	-	-	-	-	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	95.75	-	-	-	-	-	-	62.78	-
NH	142.48	1.44	0.89	4.39	-	120.85	-	6.27	8.30
NJ	35.44	-	299.97	99.27	124.32	180.48	474.17	148.76	174.42
NM	46.44	-	-	81.74	-	249.34	225.16	162.86	118.54
NY	83.75	110.14	27.25	90.73	120.23	75.35	72.64	79.76	103.23
NC	6.67	-	-	-	46.66	-	-	-	-
ND	-	-	-	-	-	-	-	-	-
OH	31.45	-	59.63	35.17	79.24	49.44	29.29	23.96	10.37
OK	-	-	-	-	288.48	29.43	-	58.56	6.57
OR	-	-	-	-	-	-	-	21.80	82.24
PA	35.43	43.89	1.74	7.94	22.80	116.03	0.21	0.20	48.64
RI	47.29	45.90	80.28	45.77	129.02	-	39.24	36.51	36.04
SC	-	8.21	11.93	17.02	17.34	70.85	-	113.64	-
SD	-	-	-	-	-	-	-	-	-
TN	-	-	-	-	-	-	-	-	-
TX	-	2.14	32.49	18.61	7.18	-	-	-	-
UT	-	-	-	428.79	168.53	44.71	-	-	158.20
VT	5.17	-	-	4.56	8.00	-	-	-	-
VA	15.93	32.43	35.15	34.89	36.10	74.40	41.35	70.22	29.57
WA	24.48	65.83	33.21	45.80	-	9.19	10.36	44.56	72.12
WV	-	-	-	-	-	167.79	81.10	78.78	87.68
WI	31.51	30.99	32.85	42.82	-	66.00	-	29.84	37.99
WY	-	-	33.87	38.13	48.07	43.19	41.48	-	-
Total	2,082.18	1,196.48	1,647.89	1,853.83	2,507.39	2,342.99	2,331.71	2,297.18	1,966.08
Avg	74.36	52.02	71.65	71.30	92.87	93.72	97.15	79.21	65.54

**Inflation Adjusted Bonds Issued by States for
State-Administered Highways, Per Capita (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	55.57	-	15.38	-	-	-	-	-	-
AK	218.29	-	-	-	-	-	248.50	-	-
AZ	77.92	74.29	62.61	26.04	-	109.14	119.21	-	59.44
AR	103.47	-	-	-	-	-	-	91.24	-
CA	-	23.11	9.85	32.59	-	14.34	83.72	70.15	99.26
CO	29.04	47.95	-	-	-	-	-	62.57	3.45
CT	95.15	79.35	74.41	82.99	-	78.81	106.34	151.47	179.18
DE	521.96	7.30	171.02	201.38	-	58.35	286.92	147.35	227.59
FL	47.85	59.21	85.53	21.73	-	57.69	0.73	62.27	48.64
GA	-	56.08	0.73	42.24	-	87.23	106.29	9.32	11.72
HI	-	3.78	51.15	-	-	-	104.16	-	-
ID	-	-	-	155.53	-	144.23	124.01	56.95	48.64
IL	42.51	38.39	106.39	110.42	-	33.96	64.67	63.94	2.23
IN	89.82	69.32	-	0.93	-	69.42	69.30	10.16	8.57
IA	-	-	-	-	-	-	-	-	-
KS	15.56	292.77	-	5.24	-	0.23	29.40	26.39	-
KY	-	-	101.62	65.51	-	-	89.60	88.80	14.43
LA	77.73	-	-	-	-	-	102.97	38.04	97.78
ME	48.84	49.68	3.44	-	-	48.35	72.01	19.83	17.01
MD	52.06	58.27	-	21.07	-	208.90	159.18	127.67	119.72
MA	177.25	32.61	65.07	75.96	-	61.61	71.46	109.95	106.11
MI	-	25.42	4.05	35.75	-	-	30.45	0.43	-
MN	7.04	42.89	28.36	35.82	-	8.59	32.86	27.55	60.37
MS	-	-	72.56	7.86	-	1.45	-	-	-
MO	-	55.63	-	72.28	-	99.26	26.02	195.88	1.71
MT	-	-	164.43	-	-	50.02	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	111.27	-	92.75	91.35	-	55.38	-	-	-
NH	3.85	4.97	4.77	8.74	-	28.23	24.24	180.83	175.17
NJ	160.50	200.60	214.06	315.89	-	148.29	336.99	358.84	223.32
NM	11.14	524.26	-	-	-	107.35	-	4.29	74.99
NY	96.83	73.06	108.26	0.95	-	11.30	101.53	64.74	49.53
NC	-	59.30	44.02	-	-	33.16	-	95.28	24.73
ND	-	-	-	-	-	-	-	-	-
OH	31.74	31.12	15.29	28.14	-	32.79	35.33	35.50	40.64
OK	2.65	17.36	-	16.63	-	-	10.16	42.20	117.63
OR	-	-	105.04	124.51	-	-	98.54	160.17	17.19
PA	2.12	14.04	25.31	44.54	-	100.20	102.16	308.39	156.15
RI	34.94	37.32	36.81	288.96	-	45.20	41.16	130.05	-
SC	2.06	0.64	38.72	-	-	-	-	3.74	-
SD	-	-	-	-	-	-	-	-	-
TN	-	-	-	-	-	-	-	-	-
TX	13.54	-	78.66	69.21	-	142.23	59.08	105.12	58.45
UT	84.72	18.45	23.58	-	-	27.40	152.99	343.22	307.76
VT	0.24	6.15	1.95	-	-	0.85	26.17	-	32.26
VA	116.19	-	5.49	40.33	-	-	-	75.41	82.01
WA	76.25	95.68	74.14	106.73	-	133.78	81.48	344.81	16.23
WV	0.98	-	20.56	-	-	-	47.94	-	-
WI	48.57	58.81	18.65	33.99	-	-	53.21	69.10	95.19
WY	-	-	-	-	-	-	-	-	-
Total	2,457.66	2,157.78	1,924.67	2,163.30	-	1,997.73	3,098.77	3,681.64	2,577.10
Avg.	74.47	69.61	58.32	72.11	-	66.59	91.14	105.19	80.53

**Inflation Adjusted Bonds Issued by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	532	586	-	-	-	-	-	-	-
AK	-	-	-	-	-	-	-	-	-
AZ	45,281	-	25,028	-	-	14,228	21,524	33,618	11,025
AR	-	-	-	-	-	-	6,645	-	6,726
CA	2,171	-	-	-	-	-	-	-	-
CO	-	-	-	-	-	-	32,564	30,762	14,710
CT	91,061	49,844	72,706	32,102	58,725	33,403	20,557	29,996	42,897
DE	32,359	9,815	8,749	-	25,675	-	25,418	14,829	11,049
FL	14,205	9,200	13,128	21,750	43,613	18,234	9,175	8,828	7,361
GA	6,870	7,687	4,282	4,818	5,540	4,684	87	3,682	5,682
HI	-	88,354	63,637	18,654	11,608	55,300	-	27,054	37,379
ID	-	-	-	-	-	-	-	-	-
IL	6,541	7,761	11,512	822	12,468	2,168	5,661	6,424	9,367
IN	-	4,042	-	6,536	9,076	-	12,496	64,002	-
IA	-	-	-	-	-	-	-	-	-
KS	16,831	-	2,508	-	13,710	19,809	19,960	-	5,779
KY	-	6,140	-	-	-	-	-	-	-
LA	1,284	1,404	-	-	-	3,929	-	-	-
ME	8,104	847	5,039	4,449	8,689	1,315	-	1,404	-
MD	4,196	7,517	-	4,754	11,055	-	6,917	-	14,356
MA	57,676	57,420	135,901	357,661	161,845	214,216	142,446	196,321	36,021
MI	11,365	-	-	1,736	19,633	-	-	14,752	4,857
MN	670	295	1,084	20	1,345	-	1,644	1,681	3,769
MS	-	-	-	-	136	17,885	-	-	10,611
MO	-	-	-	-	-	-	4,876	3,852	7,573
MT	-	-	-	-	-	-	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	11,266	-	-	-	-	-	-	9,959	-
NH	18,486	188	119	589	-	16,432	-	891	1,193
NJ	31,619	-	275,829	92,330	124,277	179,739	476,914	148,580	175,388
NM	2,813	-	-	5,215	-	15,966	15,095	10,891	7,849
NY	37,525	49,238	12,200	38,573	57,506	36,040	36,221	39,967	51,938
NC	289	-	-	-	2,125	-	-	-	-
ND	-	-	-	-	-	-	-	-	-
OH	7,137	-	13,586	8,196	18,621	11,535	6,875	5,629	2,440
OK	-	-	-	-	33,179	3,395	-	6,943	776
OR	-	-	-	-	-	-	-	4,147	15,890
PA	4,685	5,828	230	1,058	3,083	15,701	29	28	6,794
RI	15,373	15,337	26,802	16,203	44,206	-	13,562	13,181	13,144
SC	-	339	495	721	746	3,086	-	5,165	-
SD	-	-	-	-	-	-	-	-	-
TN	-	-	-	-	-	-	-	-	-
TX	-	218	3,362	1,936	758	-	-	-	-
UT	-	-	-	56,836	23,443	6,313	-	-	24,332
VT	496	-	-	425	781	-	-	-	-
VA	844	1,727	1,880	1,875	1,955	4,053	2,317	4,108	1,746
WA	7,301	19,900	10,224	10,525	-	2,864	3,352	14,626	23,886
WV	-	-	-	-	-	4,441	2,101	2,027	2,255
WI	5,618	5,562	5,917	7,356	-	11,993	-	5,588	7,139
WY	-	-	-	-	-	-	(38)	-	-
Total	442,600.2	349,251.1	694,218.4	695,140.0	693,798.6	696,731.2	866,398.2	708,935.7	563,935.4
Avg	15,807.2	15,184.8	31,555.4	27,805.6	26,684.6	29,030.5	36,099.9	24,446.1	18,797.8

**Inflation Adjusted Bonds Issued by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	8,989	-	2,490	-	-	-	-	-	-
AK	12,260	-	-	-	-	-	14,856	-	-
AZ	23,960	23,191	20,218	8,607	-	37,692	41,399	-	19,924
AR	7,790	-	-	-	-	-	-	7,151	-
CA	-	16,264	6,976	23,177	-	10,376	61,606	52,481	75,435
CO	5,750	9,568	-	-	-	-	-	13,768	770
CT	33,769	28,199	26,466	29,569	-	28,168	38,129	55,122	65,215
DE	37,397	528	12,488	14,846	-	4,372	21,654	11,272	17,500
FL	19,897	24,930	36,674	9,379	-	25,045	316	27,421	21,578
GA	-	10,685	142	8,351	-	17,811	21,859	1,881	2,376
HI	-	1,949	26,816	-	-	-	54,350	-	-
ID	-	-	-	18,850	-	18,152	15,756	7,337	6,307
IL	12,802	11,608	32,233	33,444	-	10,349	19,816	19,497	682
IN	19,610	15,215	-	206	-	15,583	15,748	2,349	2,004
IA	-	-	-	-	-	-	-	-	-
KS	1,774	33,444	-	603	-	26	3,455	3,145	-
KY	-	-	6,970	4,516	-	-	6,276	6,257	1,020
LA	9,067	-	-	-	-	-	11,923	4,424	11,361
ME	3,583	3,492	249	-	-	3,522	5,289	1,480	1,282
MD	19,569	22,084	-	8,066	-	80,574	61,712	50,141	47,268
MA	132,281	24,142	47,958	56,860	-	46,560	52,570	77,781	73,035
MI	-	9,298	1,484	13,088	-	-	11,057	153	-
MN	1,219	7,515	4,978	6,306	-	1,535	5,910	4,995	11,010
MS	-	-	7,865	834	-	154	-	-	-
MO	-	4,411	-	5,631	-	7,815	2,056	15,476	135
MT	-	-	6,279	-	-	1,977	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	18,859	-	17,092	17,452	-	11,097	-	-	-
NH	542	705	704	1,298	-	4,228	3,697	27,855	27,458
NJ	162,268	204,651	217,488	320,259	-	151,499	346,035	372,352	232,289
NM	744	33,881	-	-	-	7,295	-	303	5,355
NY	48,899	37,023	54,951	467	-	5,765	51,984	32,880	25,230
NC	-	3,011	2,263	-	-	1,803	-	5,353	1,403
ND	-	-	-	-	-	-	-	-	-
OH	7,472	7,317	3,592	6,614	-	7,710	8,299	8,319	9,508
OK	313	2,042	-	1,977	-	-	1,242	5,254	14,743
OR	-	-	20,835	25,049	-	-	20,513	33,246	3,578
PA	297	1,971	3,558	6,292	-	14,232	14,556	44,337	22,496
RI	12,908	13,782	13,529	105,348	-	16,292	14,843	46,908	-
SC	95	30	1,841	-	-	-	-	192	-
SD	-	-	-	-	-	-	-	-	-
TN	-	-	-	-	-	-	-	-	-
TX	1,575	-	9,412	8,444	-	17,894	7,558	13,667	7,705
UT	13,285	2,948	3,863	-	-	4,760	27,071	60,388	54,833
VT	24	629	200	-	-	87	2,695	-	3,347
VA	6,918	-	332	2,479	-	-	-	4,808	5,264
WA	25,475	32,319	25,275	36,971	-	47,627	29,465	126,277	6,027
WV	25	-	530	-	-	-	1,228	-	-
WI	9,130	11,082	3,525	6,447	-	-	10,194	13,306	18,373
WY	-	-	-	-	-	-	-	-	-
Total	658,547.9	597,916.1	619,273.9	781,432.7	-	599,998.7	1,005,116.1	1,157,577.6	794,510.8
Avg.	19,956.0	19,287.6	18,765.9	26,047.8	-	20,000.0	29,562.2	33,073.6	24,828.5

**Inflation Adjusted Local Government Revenues Used by States for
State-Administered Highways (Thousand 2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	-	1,040	912	26,574	21,679	16,050	19,221	28,747	-
AK	-	-	-	-	-	-	-	-	-
AZ	238,868	241,390	262,519	273,185	297,226	323,084	336,542	29,806	9,348
AR	4,666	-	14,901	10,875	6,613	7,715	21,825	4,231	4,302
CA	605,656	598,870	544,231	618,393	421,146	606,182	629,520	603,062	636,072
CO	90,739	6,599	24,093	66,524	29,730	25,124	50,276	-	-
CT	294	4,545	1,159	36	2,968	16,790	-	-	4,608
DE	-	-	-	-	-	-	-	-	-
FL	125,473	134,871	112,043	92,237	104,531	104,877	60,222	182,309	171,376
GA	19,181	24,097	26,332	27,445	9,605	-	-	-	-
HI	-	-	-	-	-	-	-	-	-
ID	6,700	7,902	2,883	-	3,427	4,578	4,883	4,071	9,835
IL	43,604	-	-	-	-	-	-	-	53,990
IN	-	43,564	45,192	-	33,136	61,902	30,087	26,583	-
IA	4,741	5,085	-	-	-	-	-	-	-
KS	35,593	38,291	52,072	36,920	26,405	34,533	21,331	27,766	-
KY	93	178	1,210	1,187	168	-	-	-	-
LA	-	-	-	-	-	-	68	66	65
ME	-	-	-	-	-	-	-	-	-
MD	23,790	18,343	17,820	13,614	-	4,695	2,649	2,576	394
MA	-	-	73	57	99	43	5	-	-
MI	43,454	38,502	52,016	730	1,952	673	43,480	57,317	48,174
MN	-	-	-	-	55,727	-	25,834	-	40,316
MS	-	-	-	4,692	4,900	3,645	12,005	10,069	8,598
MO	7,537	13,498	11,543	-	33,429	-	-	42,198	52,938
MT	1,219	1,058	1,014	2,450	1,431	4,528	3,701	4,847	2,261
NE	13,864	14,910	19,506	21,013	26,929	24,317	37,391	45,394	157,361
NV	8,067	5,187	5,843	5,228	16,751	7,868	-	-	-
NH	40	-	-	-	-	5,802	11,300	12,652	12,691
NJ	4,753	1,398	732	1,455	-	-	-	-	-
NM	1,177	1,160	4,593	1,319	1,842	3,598	-	11,080	-
NY	-	-	-	19,099	34,394	28,312	-	-	-
NC	27,307	22,434	17,380	12,281	-	-	-	10,452	9,119
ND	-	-	-	-	21,449	-	23,142	14,206	13,363
OH	25,810	26,555	37,647	54,379	67,325	-	41,103	68,195	58,187
OK	9,531	20,672	24,685	13,030	12,292	14,714	10,920	12,238	11,427
OR	18,552	31,768	24,556	-	-	-	-	-	-
PA	20,939	23,588	22,155	19,914	20,611	27,615	23,807	20,934	27,976
RI	-	-	-	-	-	-	-	-	-
SC	1,565	3,717	1,207	22,476	3,185	1,273	2,052	2,230	9,844
SD	-	-	-	-	15,403	6,528	8,336	10,616	14,663
TN	17,993	18,770	35,398	-	-	6,844	36,356	28,596	43,277
TX	338,134	63,447	136,849	143,277	121,803	177,445	210,080	256,251	473,085
UT	3,335	3,692	5,268	1,430	6,198	5,926	11,421	-	-
VT	-	-	-	835	2,389	2,923	1,635	1,438	3,650
VA	50,621	46,791	40,484	37,353	44,676	45,559	59,562	39,429	60,900
WA	52,032	64,458	35,070	20,479	15,132	19,014	35,623	15,869	-
WV	369	151	274	336	204	1,809	79	-	1,625
WI	54,258	65,335	63,199	-	-	-	90,627	103,711	125,950
WY	1,896	1,931	-	-	-	1,945	1,019	1,526	4,155
Total	1,901,850	1,593,797	1,644,857	1,548,823	1,464,755	1,595,910	1,866,102	1,678,466	2,069,552
Avg	54,339	46,876	48,378	49,962	43,081	49,872	56,549	54,144	68,985

**Inflation Adjusted Local Government Revenues Used by States for
State-Administered Highways (Thousand 2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	62,390	-	40,497	-	-	22,702	3,703	5,724	2,121
AK	-	-	-	-	-	-	-	-	-
AZ	52,366	57,089	26,027	-	-	9,650	11,332	1,003	4,853
AR	2,458	8,903	5,777	20,678	-	12,074	15,064	11,787	23,728
CA	640,440	747,400	717,355	964,498	-	1,364,342	1,654,273	1,324,362	275,267
CO	2,708	79,187	28,990	-	-	51,172	37,108	43,367	-
CT	6,179	38,113	3,520	2,068	-	4,910	26,091	8,532	1,606
DE	-	-	-	-	-	-	-	9,669	5,528
FL	40,980	204,706	344,802	117,730	-	418,030	275,794	333,855	249,792
GA	-	21	15,292	22,523	-	26,342	37,509	22,252	17,386
HI	-	-	-	-	-	-	-	-	-
ID	3,011	5,799	660	3,679	-	7,565	6,688	8,236	4,074
IL	56,421	56,550	69,435	-	-	1,512	887	873	846
IN	-	423,659	214,131	207,440	-	34,660	34,790	-	-
IA	-	-	-	-	-	-	-	-	-
KS	-	25,673	-	-	-	58,221	52,213	60,461	22,596
KY	-	-	-	-	-	-	-	-	-
LA	-	-	-	-	-	-	-	-	-
ME	-	-	-	-	-	-	-	-	-
MD	-	-	-	-	-	-	-	1,400	182,321
MA	-	-	-	-	-	-	-	-	-
MI	38,977	50,210	59,890	-	-	93,952	18,299	17,123	17,404
MN	27,723	6,278	37,690	106,252	-	169,480	219,029	221,212	308,451
MS	17,104	10,589	10,452	54,750	-	42,952	111,752	120,501	77,503
MO	16,423	15,288	8,237	4,115	-	44,660	57,762	41,447	24,391
MT	780	5,420	-	-	-	6,296	2,739	2,860	1,846
NE	60,809	45,551	44,422	10,882	-	495,935	507,813	564,366	311,935
NV	-	-	-	-	-	-	-	-	176,239
NH	11,079	4,053	3,921	-	-	-	6,303	1,078	1,045
NJ	-	-	-	-	-	-	-	-	-
NM	-	-	-	-	-	-	-	-	-
NY	21,850	21,475	32,880	-	-	38,557	40,729	40,927	23,493
NC	13,007	22,632	13,470	18,370	-	26,732	35,976	32,452	17,411
ND	15,599	11,506	-	15,797	-	24,134	30,696	33,659	19,763
OH	71,757	75,113	76,159	-	-	93,885	107,021	98,262	82,224
OK	10,368	9,185	10,149	-	-	24,752	31,408	33,722	27,942
OR	-	-	-	20,583	-	37,928	5,368	5,050	2,989
PA	41,011	23,227	18,536	18,292	-	21,703	32,501	-	14,516
RI	-	-	-	-	-	-	-	-	-
SC	13,157	12,227	31,721	16,355	-	24,908	37,163	30,605	14,758
SD	17,499	18,005	17,610	-	-	10,054	12,217	7,737	3,965
TN	39,524	50,845	48,298	32,926	-	54,962	-	-	43,184
TX	402,130	248,831	215,747	369,168	-	161,974	165,900	198,748	69,947
UT	-	146	13,156	8,381	-	35,330	103,506	86,755	50,046
VT	691	1,993	-	1,732	-	2,634	1,182	2,860	10,115
VA	49,519	68,380	99,928	96,097	-	97,014	86,456	80,674	75,807
WA	31,286	95,445	90,509	90,550	-	121,638	42,381	22,274	43,478
WV	-	401	-	-	-	385	470	545	384
WI	108,728	111,682	158,606	118,444	-	117,659	103,698	103,707	84,947
WY	6,149	5,134	-	13,204	-	-	-	-	-
Total	1,882,123	2,560,716	2,457,867	2,334,511	-	3,758,702	3,915,821	3,578,085	2,293,901
Avg	60,714	73,163	81,929	97,271	-	107,391	111,881	102,231	61,997

**Inflation Adjusted Local Government Revenues Used by States for
State-Administered Highways, Per Capita (2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	-	0.24	0.21	6.15	4.98	3.67	4.32	6.44	-
AK	-	-	-	-	-	-	-	-	-
AZ	58.62	57.23	59.29	59.98	63.66	67.61	65.59	5.62	1.71
AR	1.90	-	5.94	4.31	2.61	3.02	8.16	1.57	1.59
CA	19.27	18.96	17.07	19.16	12.89	18.29	18.59	17.49	18.24
CO	24.82	1.76	6.30	17.09	7.49	6.19	11.69	-	-
CT	0.09	1.39	0.35	0.01	0.91	5.12	-	-	1.34
DE	-	-	-	-	-	-	-	-	-
FL	8.99	9.52	7.78	6.29	7.01	6.94	3.77	11.15	10.27
GA	2.72	3.35	3.58	3.67	1.26	-	-	-	-
HI	-	-	-	-	-	-	-	-	-
ID	5.91	6.79	2.42	-	2.79	3.66	3.77	3.08	7.33
IL	3.71	-	-	-	-	-	-	-	4.30
IN	-	7.51	7.74	-	5.62	10.42	4.95	4.34	-
IA	1.68	1.79	-	-	-	-	-	-	-
KS	13.94	14.93	20.24	14.23	10.04	13.01	7.93	10.28	-
KY	0.02	0.05	0.31	0.30	0.04	-	-	-	-
LA	-	-	-	-	-	-	0.02	0.01	0.01
ME	-	-	-	-	-	-	-	-	-
MD	4.75	3.64	3.51	2.67	-	0.91	0.50	0.48	0.07
MA	-	-	0.01	0.01	0.02	0.01	0.00	-	-
MI	4.58	4.03	5.42	0.07	0.20	0.07	4.37	5.73	4.80
MN	-	-	-	-	11.79	-	5.25	-	8.04
MS	-	-	-	1.72	1.78	1.32	4.22	3.53	3.01
MO	1.43	2.54	2.15	-	6.15	-	-	7.48	9.32
MT	1.42	1.22	1.15	2.79	1.63	5.13	4.10	5.35	2.49
NE	8.54	9.11	11.81	12.68	16.20	14.60	21.85	26.42	91.22
NV	5.54	3.39	3.64	3.12	9.59	4.35	-	-	-
NH	0.04	-	-	-	-	4.83	9.14	10.07	9.98
NJ	0.60	0.18	0.09	0.18	-	-	-	-	-
NM	0.71	0.69	2.68	0.76	1.06	2.07	-	6.06	-
NY	-	-	-	1.05	1.89	1.56	-	-	-
NC	3.86	3.12	2.37	1.65	-	-	-	1.27	1.10
ND	-	-	-	-	33.61	-	36.04	22.33	21.09
OH	2.32	2.38	3.37	4.86	6.01	-	3.62	5.98	5.09
OK	2.93	6.31	7.48	3.93	3.67	4.38	3.16	3.53	3.28
OR	6.01	10.12	7.66	-	-	-	-	-	-
PA	1.74	1.95	1.84	1.66	1.72	2.30	1.94	1.70	2.27
RI	-	-	-	-	-	-	-	-	-
SC	0.43	1.01	0.33	5.98	0.83	0.33	0.51	0.55	2.40
SD	-	-	-	-	20.87	8.90	11.04	13.99	19.24
TN	3.48	3.57	6.65	-	-	1.25	6.39	4.97	7.46
TX	18.40	3.39	7.15	7.37	6.16	8.85	10.07	12.01	21.79
UT	1.75	1.89	2.63	0.69	2.95	2.78	5.11	-	-
VT	-	-	-	1.42	4.04	4.92	2.68	2.35	5.94
VA	7.73	7.07	6.06	5.55	6.58	6.63	8.41	5.48	8.36
WA	9.74	11.87	6.34	3.65	2.66	3.30	6.04	2.65	-
WV	0.20	0.08	0.15	0.19	0.11	1.00	0.04	-	0.90
WI	10.68	12.75	12.25	-	-	-	16.90	19.17	23.12
WY	3.98	4.02	-	-	5.43	5.86	6.64	3.10	8.36
Total	242.52	217.83	226.02	193.20	264.23	223.28	296.86	224.18	304.12
Avg	6.93	6.41	6.65	6.23	7.55	6.98	9.00	7.23	10.14

**Inflation Adjusted Local Government Revenues Used by States for
State-Administered Highways, Per Capita (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	13.89	-	8.91	-	-	4.85	0.79	1.20	0.44
AK	-	-	-	-	-	-	-	-	-
AZ	9.37	9.91	4.36	-	-	1.48	1.72	0.16	0.75
AR	0.90	3.24	2.08	7.35	-	4.21	5.21	4.03	8.08
CA	18.17	21.02	20.04	26.81	-	37.30	44.76	35.47	7.30
CO	0.60	17.22	6.22	-	-	10.37	7.38	8.59	-
CT	1.78	10.97	1.01	0.59	-	1.40	7.42	2.39	0.45
DE	-	-	-	-	-	-	-	10.75	6.09
FL	2.41	11.78	19.39	6.51	-	22.69	14.88	17.72	13.11
GA	-	0.00	1.68	2.41	-	2.72	3.82	2.29	1.77
HI	-	-	-	-	-	-	-	-	-
ID	2.21	4.17	0.46	2.51	-	4.95	4.33	5.24	2.57
IL	4.48	4.47	5.48	-	-	0.12	0.07	0.07	0.07
IN	-	68.17	34.24	32.92	-	5.43	5.42	-	-
IA	-	-	-	-	-	-	-	-	-
KS	-	9.40	-	-	-	20.81	18.52	21.15	7.87
KY	-	-	-	-	-	-	-	-	-
LA	-	-	-	-	-	-	-	-	-
ME	-	-	-	-	-	-	-	-	-
MD	-	-	-	-	-	-	-	0.24	31.28
MA	-	-	-	-	-	-	-	-	-
MI	3.87	4.98	5.94	-	-	9.39	1.84	1.73	1.76
MN	5.49	1.24	7.38	20.64	-	32.40	41.59	41.65	57.71
MS	5.96	3.67	3.60	18.90	-	14.61	37.86	40.57	26.02
MO	2.87	2.65	1.42	0.70	-	7.50	9.65	6.91	4.06
MT	0.85	5.85	-	-	-	6.50	2.81	2.89	1.85
NE	35.07	26.15	25.36	6.18	-	278.31	282.65	308.37	169.29
NV	-	-	-	-	-	-	-	-	64.71
NH	8.64	3.14	3.01	-	-	-	4.76	0.82	0.79
NJ	-	-	-	-	-	-	-	-	-
NM	-	-	-	-	-	-	-	-	-
NY	1.14	1.11	1.70	-	-	1.98	2.08	2.11	1.21
NC	1.55	2.65	1.55	2.07	-	2.89	3.84	3.39	1.80
ND	24.65	18.08	-	24.81	-	37.63	47.46	49.89	28.90
OH	6.27	6.55	6.64	-	-	8.14	9.27	8.52	7.12
OK	2.96	2.61	2.87	-	-	6.79	8.52	8.97	7.37
OR	-	-	-	5.60	-	10.03	1.40	1.32	0.77
PA	3.32	1.87	1.49	1.47	-	1.73	2.58	-	1.14
RI	-	-	-	-	-	-	-	-	-
SC	3.17	2.91	7.45	3.77	-	5.53	8.15	6.60	3.15
SD	22.82	23.25	22.58	-	-	12.50	15.04	9.48	4.81
TN	6.75	8.59	8.06	5.41	-	8.81	-	-	6.74
TX	18.23	11.10	9.46	15.80	-	6.66	6.69	7.87	2.72
UT	-	0.06	5.26	3.24	-	12.95	37.17	31.26	17.76
VT	1.12	3.22	-	2.79	-	4.24	1.90	4.57	16.15
VA	6.72	9.16	13.21	12.57	-	12.44	10.97	10.05	9.36
WA	5.12	15.43	14.46	14.21	-	18.53	6.36	3.30	6.37
WV	-	0.22	-	-	-	0.21	0.26	0.29	0.21
WI	19.85	20.26	28.62	21.26	-	20.91	18.34	18.22	14.87
WY	12.32	10.21	-	25.75	-	-	-	-	-
Total	252.55	345.34	273.94	264.25	-	637.02	675.47	678.08	536.43
Avg.	8.15	9.87	9.13	11.01	-	18.20	19.30	19.37	14.50

**Inflation Adjusted Local Government Revenues Used by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	2,247	-	1,443	-	-	807	130	198	72
AK	-	-	-	-	-	-	-	-	-
AZ	2,880	3,094	1,407	-	-	513	597	52	251
AR	68	244	158	560	-	325	405	316	635
CA	12,722	14,794	14,188	19,063	-	26,995	32,936	26,534	5,550
CO	118	3,435	1,264	-	-	2,230	1,617	1,891	-
CT	632	3,898	360	211	-	501	2,659	868	163
DE	-	-	-	-	-	-	-	822	469
FL	1,004	4,961	8,313	2,809	-	9,850	6,472	7,803	5,815
GA	-	0	325	477	-	555	785	463	359
HI	-	-	-	-	-	-	-	-	-
ID	252	484	55	304	-	623	550	675	333
IL	1,349	1,352	1,660	-	-	36	21	21	20
IN	-	14,962	7,562	7,320	-	1,218	1,231	-	-
IA	-	-	-	-	-	-	-	-	-
KS	-	1,074	-	-	-	2,427	2,177	2,520	942
KY	-	-	-	-	-	-	-	-	-
LA	-	-	-	-	-	-	-	-	-
ME	-	-	-	-	-	-	-	-	-
MD	-	-	-	-	-	-	-	95	12,351
MA	-	-	-	-	-	-	-	-	-
MI	1,413	1,821	2,173	-	-	3,422	667	624	634
MN	951	217	1,296	3,634	-	5,791	7,481	7,552	10,525
MS	645	401	391	2,005	-	1,548	4,050	4,391	2,840
MO	235	211	113	55	-	590	762	546	321
MT	42	292	-	-	-	257	111	115	74
NE	2,722	2,033	1,980	484	-	22,054	22,587	25,107	13,880
NV	-	-	-	-	-	-	-	-	13,191
NH	1,216	445	445	-	-	-	726	126	124
NJ	-	-	-	-	-	-	-	-	-
NM	-	-	-	-	-	-	-	-	-
NY	574	564	863	-	-	1,011	1,067	1,072	615
NC	78	135	80	109	-	157	211	191	102
ND	927	684	-	938	-	1,421	1,807	1,981	1,163
OH	1,476	1,540	1,559	-	-	1,915	2,178	1,995	1,666
OK	351	308	339	-	-	822	1,041	1,116	924
OR	-	-	-	1,126	-	2,077	292	273	161
PA	465	263	210	207	-	245	367	-	164
RI	-	-	-	-	-	-	-	-	-
SC	147	136	354	182	-	277	413	340	164
SD	981	1,002	971	-	-	556	674	426	218
TN	1,111	1,423	1,344	912	-	1,505	-	-	1,172
TX	2,121	1,308	1,132	1,927	-	838	856	1,023	359
UT	-	10	862	550	-	2,250	6,577	5,500	3,165
VT	114	330	-	287	-	436	196	474	1,675
VA	400	550	798	773	-	774	689	641	601
WA	1,710	5,213	4,928	4,922	-	6,595	2,300	1,210	2,363
WV	0.00	5.74	0.00	0.00	-	5.44	6.61	7.65	5.36
WI	3,732	3,819	5,409	4,032	-	3,991	3,513	3,509	2,871
WY	394	329	-	847	-	-	-	-	-
Total	43,076	71,337	61,980	53,735	-	104,619	108,151	100,478	85,937
Avg.	1,390	2,038	2,066	2,239	-	2,989	3,090	2,871	2,323

**Inflation Adjusted General Fund Transfers by States for
State-Administered Highways (Thousand 2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	-	20,544	-	-	7,131	30,543	19,627	-	59,550
AK	185,130	179,489	50,568	182,093	163,629	182,956	136,076	102,751	175,250
AZ	847	6,196	-	834	-	50,755	153,791	62,209	260,198
AR	53,521	28,532	-	71,012	17,090	10,357	15,288	40,948	69,368
CA	-	-	8,015	108,669	609,157	-	195,266	189,863	263
CO	-	108,938	-	74,121	225,708	138,124	54,893	185,608	86,068
CT	-	21,447	125	-	-	-	66,437	18,654	854
DE	33,959	38,517	282,168	54,791	100,799	48,260	5,473	58,760	20,099
FL	-	-	48,006	-	-	-	-	10,433	19,143
GA	-	-	5,354	243,521	144,350	213,383	317,705	-	-
HI	19,469	-	-	-	-	30,487	3,788	-	-
ID	-	-	-	-	-	-	-	-	-
IL	31,248	-	59,247	3,299	34,855	-	234,923	-	-
IN	2,014	9,459	27,579	-	76,469	-	-	4,208	403,768
IA	5,667	-	-	13,188	44,965	65,295	75,443	112,858	49,642
KS	34,761	29,775	44,979	25,240	27,929	29,980	21,510	24,430	19,704
KY	274,388	155,833	6,791	-	29,598	546	3,160	35,564	122,680
LA	234,981	379,897	20,271	572,730	534,657	59,145	163,626	123,003	117,043
ME	1,475	2,169	71,570	2,161	3,037	1,515	416,496	2,791	291,397
MD	34,980	30,659	55,864	-	-	7,534	-	-	89,459
MA	-	277,054	55,052	417,478	1,218	1,203,924	906,535	3,241	2,156,687
MI	167,221	184,249	4,740	241,828	209,602	221,375	355,821	33,328	140,291
MN	21,091	5,898	-	-	-	1,499	3,939	225,258	115,111
MS	27,480	45,795	-	27,952	46,340	-	37,174	27,459	-
MO	1,298	-	-	-	-	13,654	21,295	28,109	13,504
MT	-	-	-	-	-	-	-	-	-
NE	35,568	33,680	-	20,131	16,873	21,630	22,935	-	43,177
NV	482	2,067	-	15,840	1,878	-	-	17,982	4,010
NH	-	-	79,768	-	-	-	11,245	-	-
NJ	-	-	149,317	-	-	-	583,973	730,686	-
NM	82,790	-	-	11,078	-	-	26,753	-	-
NY	456,045	453,884	94,211	449,466	-	-	105,445	284,426	243,306
NC	-	-	414	21,004	1,910	-	667,336	176,304	22,252
ND	90	-	-	104	262	102,937	70,413	26,702	12,623
OH	-	55,303	22,058	46,269	80,609	-	9,021	23,173	10,163
OK	-	-	68,158	-	-	-	153,899	-	69,923
OR	45,635	39,747	-	34,562	35,912	55,931	44,254	26,321	54,754
PA	-	-	65,256	3,256	95,382	98,017	39,194	191,482	179,556
RI	39,060	-	22,391	-	-	32,142	5,437	-	7,848
SC	-	-	-	-	11,788	4,517	105,005	98,115	165,461
SD	-	-	-	-	-	-	-	-	448
TN	-	22,419	30	85,116	85,326	8,004	23,410	176,458	207,677
TX	-	-	6,155	-	-	-	-	-	71,727
UT	55,101	106,079	388	183,466	183,602	182,950	307,905	246,406	160,500
VT	-	-	-	-	1,547	-	-	-	5,444
VA	161,882	150,351	21,442	83,764	36,756	-	-	176,673	156,421
WA	-	-	29,334	-	-	-	-	116,246	63,336
WV	13,303	19,511	41,516	96,956	28,458	28,297	90,554	88,195	80,964
WI	217	853	-	568	-	-	1,588	-	-
WY	-	-	-	-	-	-	-	-	12,604
Total	2,019,704	2,408,345	1,340,767	3,090,497	2,856,835	2,843,756	5,476,633	3,668,645	5,782,272
Avg	72,132	89,198	46,233	106,569	95,228	105,324	144,122	111,171	144,557

**Inflation Adjusted General Fund Transfers by States for
State-Administered Highways (Thousand 2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	78,183	89,441	73,628	90,166	-	93,618	105,779	99,117	164,688
AK	103,871	111,923	102,933	197,133	-	116,731	361,035	184,644	237,626
AZ	54,320	-	-	1,853	-	81,045	-	60	81
AR	35,852	34,290	104,525	34,613	-	-	58,508	35,543	47,206
CA	5,422	-	23,457	158,698	-	2,595,220	2,492,552	3,430,348	1,683,456
CO	35,862	26,190	95,473	76,588	-	297,555	-	-	1,021
CT	134,431	50,068	132,574	-	-	25	-	(7,002)	103,656
DE	129,877	116,745	207,473	98,879	-	21,803	61,468	64,436	59,220
FL	241,247	33,507	276,071	703,833	-	793,963	269,276	-	-
GA	254,230	632,315	-	-	-	-	248,532	160,173	99,727
HI	17,987	26,895	12,491	-	-	-	-	-	-
ID	-	-	-	-	-	-	-	-	-
IL	67,441	13,956	-	2,164	-	55,062	578,857	569,303	552,089
IN	3,330	6,263	83,907	81,285	-	529	531	22,353	20,566
IA	74,964	92,872	47,421	49,916	-	53,661	54,668	47,539	49,361
KS	13,983	33,269	-	235,866	-	26,000	-	27,273	-
KY	240,234	9,568	351,261	152,632	-	10,024	5,218	5,244	4,600
LA	126,247	158,307	181,807	255,301	-	1,178,291	327,898	609,072	114,647
ME	3,171	99,355	-	-	-	-	-	-	-
MD	-	-	-	70,698	-	64,773	84,107	-	-
MA	794,791	1,267,776	502,643	-	-	-	-	429,118	416,143
MI	207,132	137,214	227,966	153,854	-	168,742	98,172	161,743	151,014
MN	20,124	-	19,746	-	-	-	-	(55)	283,874
MS	-	-	-	-	-	-	-	-	-
MO	24,588	-	8,529	-	-	1	7,359	6,576	3,056
MT	-	-	-	-	-	3,597	3,712	652	305
NE	41,943	46,303	33,597	54,409	-	56,841	-	47,660	48,812
NV	5,257	14,567	43,843	107,213	-	50	49	-	-
NH	12,794	-	-	13,231	-	-	-	-	-
NJ	-	195,009	-	-	-	40,776	-	-	-
NM	-	-	-	-	-	-	57,565	47,658	105,729
NY	242,985	289,924	326,505	310,538	-	569,828	629,874	674,360	686,568
NC	-	-	-	-	-	-	-	-	-
ND	14,818	20,687	-	67,631	-	7,689	6,491	8,266	5,816
OH	48,705	704	-	19,267	-	24,129	22,941	18,394	13,646
OK	13,124	268,880	152	2,667	-	138,851	132,012	105,108	-
OR	46,437	36,115	40,871	37,192	-	47,301	57,119	55,565	53,885
PA	657,713	642,045	59,928	-	-	88,266	904,422	389	823,125
RI	-	4,490	-	337	-	4,417	-	16,605	33,747
SC	-	-	-	721	-	3,011	151	117	58
SD	438	-	-	-	-	-	-	-	-
TN	29,514	36,397	99,073	-	-	-	-	-	-
TX	41,814	-	-	-	-	-	27,013	-	120,965
UT	86,981	105,995	133,496	195,555	-	143,498	-	107,340	109,546
VT	2,547	18,792	-	46,013	-	10,875	14,385	8,146	23,234
VA	127,247	233,706	336,322	319,632	-	451,751	251,664	170,047	182,784
WA	13,069	-	-	-	-	-	-	-	42
WV	18,711	24,068	16,009	41,466	-	11,300	19,148	20,728	21,178
WI	-	-	-	-	-	-	62,624	-	-
WY	-	-	16,826	66,785	-	180,572	120,694	73,249	35,928
Total	4,071,383	4,877,633	3,558,527	3,646,138	-	7,339,795	7,063,824	7,199,767	6,257,398
Avg	104,394	147,807	127,090	117,617	-	215,876	227,865	211,758	178,783

**Inflation Adjusted General Fund Transfers by States for
State-Administered Highways, Per Capita (Thousand 2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	-	4.83	-	-	1.64	6.99	4.41	-	13.31
AK	305.36	297.36	83.31	298.85	266.49	295.33	217.05	162.24	272.68
AZ	0.21	1.47	-	0.18	-	10.62	29.97	11.73	47.72
AR	21.82	11.49	-	28.15	6.73	4.06	5.72	15.22	25.65
CA	-	-	0.25	3.37	18.65	-	5.76	5.51	0.01
CO	-	29.08	-	19.04	56.84	34.05	12.76	41.87	19.11
CT	-	6.55	0.04	-	-	-	19.51	5.44	0.25
DE	48.08	53.71	389.28	74.89	135.55	64.04	6.98	73.95	25.00
FL	-	-	3.33	32.53	18.89	27.40	38.81	0.64	1.15
GA	-	-	0.73	-	-	25.72	3.13	-	-
HI	16.52	-	-	-	-	-	-	-	-
ID	-	-	-	0.28	2.89	-	18.92	-	-
IL	2.66	-	5.00	-	12.96	-	-	-	-
IN	0.35	1.63	4.72	4.62	15.71	22.76	25.78	0.69	65.66
IA	2.00	-	-	9.73	10.62	11.30	8.00	38.53	16.95
KS	13.61	11.61	17.49	-	7.52	0.14	0.78	9.04	7.26
KY	71.70	40.37	1.75	131.61	122.38	13.53	36.61	8.74	29.99
LA	54.46	87.49	4.66	1.74	2.44	1.21	326.68	27.57	26.21
ME	1.19	1.75	57.56	-	-	1.46	-	2.17	225.20
MD	6.99	6.08	11.02	68.24	0.20	194.96	142.78	-	16.44
MA	-	45.62	9.04	24.74	21.35	22.44	35.80	0.51	334.84
MI	17.61	19.29	0.49	-	-	0.31	0.80	3.33	13.97
MN	4.62	1.28	-	10.24	16.84	-	13.07	45.21	22.94
MS	10.30	16.98	-	-	-	2.50	3.81	9.62	-
MO	0.25	-	-	-	-	-	-	4.98	2.38
MT	-	-	-	12.15	10.15	12.98	13.40	-	-
NE	21.92	20.57	-	9.45	1.07	-	-	-	25.03
NV	0.33	1.35	-	-	-	-	9.10	8.59	1.85
NH	-	-	68.62	-	-	-	69.40	-	-
NJ	-	-	18.69	6.40	-	-	14.71	86.07	-
NM	50.07	-	-	24.78	-	-	5.56	-	-
NY	25.10	25.03	5.18	2.83	0.25	-	82.91	14.90	12.70
NC	-	-	0.06	0.16	0.41	162.45	109.64	21.49	2.68
ND	0.14	-	-	4.14	7.19	-	0.79	41.97	19.92
OH	-	4.96	1.97	-	-	-	44.60	2.03	0.89
OK	-	-	20.65	10.66	10.94	16.87	12.93	-	20.07
OR	14.79	12.66	-	0.27	7.95	8.17	3.19	7.58	15.57
PA	-	-	5.41	-	-	32.44	5.19	15.57	14.57
RI	39.19	-	22.61	-	3.07	1.16	26.17	-	7.36
SC	-	-	-	-	-	-	-	24.15	40.32
SD	-	-	-	15.86	15.71	1.46	4.11	-	0.59
TN	-	4.27	0.01	-	-	-	-	30.66	35.79
TX	-	-	0.32	89.10	87.44	85.90	137.88	-	3.30
UT	28.88	54.36	0.19	-	2.62	-	-	107.54	68.75
VT	-	-	-	12.44	5.41	-	-	-	8.85
VA	24.71	22.72	3.21	-	-	-	-	24.57	21.48
WA	-	-	5.30	53.40	15.71	15.66	50.08	19.41	10.46
WV	7.30	10.67	22.74	0.11	-	-	0.30	49.04	44.99
WI	0.04	0.17	-	-	-	-	-	-	-
WY	-	-	-	-	10.59	10.45	19.50	-	25.36
Total	790.17	793.31	763.64	949.95	896.23	1,086.35	1,566.61	920.54	1,547.23
Avg	28.22	29.38	26.33	32.76	28.91	38.80	40.17	27.90	38.68

**Inflation Adjusted General Fund Transfers by States for
State-Administered Highways, Per Capita (Thousand 2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	17.41	19.82	16.20	19.61	-	20.01	22.46	20.71	34.29
AK	159.58	169.18	153.75	291.05	-	169.64	516.89	258.55	328.80
AZ	9.72	-	-	0.30	-	12.47	-	0.01	0.01
AR	13.17	12.49	37.65	12.30	-	-	20.25	12.17	16.07
CA	0.15	-	0.66	4.41	-	70.95	67.44	91.87	44.66
CO	7.88	5.69	20.48	16.11	-	60.29	-	-	0.20
CT	38.77	14.41	38.12	-	-	0.01	-	(1.96)	28.95
DE	159.38	141.23	247.02	115.92	-	24.88	69.45	71.61	65.28
FL	14.21	1.93	15.52	38.91	-	43.09	14.53	-	-
GA	29.10	70.94	-	-	-	-	25.29	16.49	10.16
HI	14.51	21.47	9.87	-	-	-	-	-	-
ID	-	-	-	-	-	-	-	-	-
IL	5.35	1.10	-	0.17	-	4.29	44.84	44.33	42.90
IN	0.54	1.01	13.42	12.90	-	0.08	0.08	3.44	3.16
IA	25.56	31.57	16.08	16.84	-	17.92	18.18	15.59	16.12
KS	5.14	12.18	-	85.59	-	9.29	-	9.54	-
KY	58.33	2.31	83.99	36.17	-	2.34	1.21	1.21	1.05
LA	28.21	35.26	40.42	60.21	-	264.69	72.99	134.00	25.06
ME	2.43	75.94	-	-	-	-	-	-	-
MD	-	-	-	12.60	-	11.45	14.76	-	-
MA	123.19	196.52	77.89	-	-	-	-	65.46	63.17
MI	20.58	13.60	22.59	15.26	-	16.87	9.85	16.38	15.29
MN	3.99	-	3.87	-	-	-	-	(0.01)	53.11
MS	-	-	-	-	-	-	-	-	-
MO	4.30	-	1.47	-	-	0.00	1.23	1.10	0.51
MT	-	-	-	-	-	3.72	3.81	0.66	0.31
NE	24.19	26.58	19.18	30.91	-	31.90	-	26.04	26.49
NV	2.35	6.26	18.20	43.00	-	0.02	0.02	-	-
NH	9.98	-	-	10.09	-	-	-	-	-
NJ	-	22.65	-	-	-	4.71	-	-	-
NM	-	-	-	-	-	-	28.64	23.07	50.78
NY	12.64	15.02	16.89	16.04	-	29.27	32.23	34.77	35.27
NC	-	-	-	-	-	-	-	-	-
ND	23.42	32.51	-	106.21	-	11.99	10.03	12.25	8.50
OH	4.26	0.06	-	1.68	-	2.09	1.99	1.59	1.18
OK	3.75	76.51	0.04	0.75	-	38.10	35.80	27.95	-
OR	13.08	10.11	11.30	10.11	-	12.50	14.93	14.48	13.92
PA	53.22	51.83	4.83	-	-	7.02	71.75	0.03	64.59
RI	-	4.19	-	0.32	-	4.19	-	15.78	32.10
SC	-	-	-	0.17	-	0.67	0.03	0.03	0.01
SD	0.57	-	-	-	-	-	-	-	-
TN	5.04	6.15	16.52	-	-	-	-	-	-
TX	1.90	-	-	-	-	-	1.09	-	4.71
UT	36.55	43.46	53.41	75.69	-	52.61	-	38.67	38.88
VT	4.13	30.40	-	74.22	-	17.51	23.14	13.01	37.09
VA	17.26	31.29	44.46	41.80	-	57.95	31.93	21.19	22.58
WA	2.14	-	-	-	-	-	-	-	0.01
WV	10.38	13.35	8.87	22.94	-	6.23	10.52	11.18	11.41
WI	-	-	-	-	-	-	11.07	-	-
WY	-	-	33.24	130.23	-	338.80	221.75	129.75	63.24
Total	966.35	1,197.00	1,025.94	1,302.48	-	1,347.56	1,398.18	1,130.93	1,159.86
Avg	24.78	36.27	36.64	42.02	-	39.63	45.10	33.26	33.14

Inflation Adjusted General Fund Transfers by States for State-Administered Highways, Per Lane Mile (2012 Dollars)

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	-	38	33	1,094	787	582	696	1,037	-
AK	-	-	-	-	-	-	-	-	-
AZ	15,043	15,045	16,143	15,016	15,565	18,570	19,334	1,696	517
AR	133	-	422	288	186	215	608	118	119
CA	12,289	12,137	11,034	12,026	8,184	12,256	12,727	12,133	12,608
CO	4,034	293	1,073	2,625	1,311	1,111	2,215	-	-
CT	30	465	118	3.42	283	1,719	-	-	471
DE	-	-	-	-	-	-	-	-	-
FL	3,272	3,491	2,893	2,274	2,662	2,651	1,513	4,532	4,221
GA	431	534	585	627	210	-	-	-	-
HI	-	-	-	-	-	-	-	-	-
ID	568	669	244	-	288	385	411	342	823
IL	1,001	-	-	-	-	-	-	-	1,292
IN	-	1,546	1,606	-	1,174	2,193	1,065	941	-
IA	204	219	-	-	-	-	-	-	-
KS	1,445	1,553	2,111	1,462	1,054	1,451	896	1,166	-
KY	1.56	2.97	20	20	2.76	-	-	-	-
LA	-	-	-	-	-	-	1.78	1.73	1.70
ME	-	-	-	-	-	-	-	-	-
MD	1,608	1,237	1,202	902	-	324	182	177	27
MA	-	-	8	7	11	5	1	-	-
MI	1,623	1,430	1,931	16	71	25	1,590	2,090	1,755
MN	-	-	-	-	1,914	-	892	-	1,387
MS	-	-	-	177	189	143	470	394	333
MO	110	194	165	-	477	-	-	603	756
MT	66	58	62	133	78	280	228	262	122
NE	643	688	896	900	1,221	1,100	1,689	2,041	7,066
NV	651	417	470	383	1,266	596	-	-	-
NH	5	-	-	-	-	657	1,281	1,429	1,434
NJ	536	160	84	168	-	-	-	-	-
NM	43	42	169	49	68	132	-	405	-
NY	-	-	-	448	905	744	-	-	-
NC	167	137	106	74	-	-	-	63	55
ND	-	-	-	-	1,275	-	1,376	844	794
OH	528	543	768	1,133	1,411	-	850	1,406	1,199
OK	320	692	823	385	422	506	374	419	387
OR	999	1,739	1,349	-	-	-	-	-	-
PA	230	259	243	221	232	312	269	237	317
RI	-	-	-	-	-	-	-	-	-
SC	18	42	14	253	36	14	23	25	110
SD	-	-	-	-	774	370	473	598	825
TN	531	553	1,037	-	-	196	1,039	814	1,226
TX	1,870	345	740	767	651	947	1,117	1,361	2,501
UT	225	248	353	92	411	393	757	-	-
VT	-	-	-	132	395	483	270	238	604
VA	409	376	324	298	356	361	471	321	494
WA	2,904	3,588	1,951	839	827	1,030	1,956	870	-
WV	5.64	2.28	4.13	5.07	3.04	27	1.13	-	23
WI	1,904	2,289	2,206	-	-	-	3,143	3,591	4,345
WY	121	124	-	-	807	884	1,031	98	267
Total	53,969	51,155	51,187	42,818	45,508	50,661	58,951	40,252	46,080
Avg	1,542	1,505	1,506	1,381	1,300	1,583	1,786	1,298	1,536

Inflation Adjusted General Fund Transfers by States for State-Administered Highways, Per Lane Mile (2012 Dollars)

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	2,247	-	1,443	-	-	807	130	198	72
AK	-	-	-	-	-	-	-	-	-
AZ	2,880	3,094	1,407	-	-	513	597	52	251
AR	68	244	158	560	-	325	405	316	635
CA	12,722	14,794	14,188	19,063	-	26,995	32,936	26,534	5,550
CO	118	3,435	1,264	-	-	2,230	1,617	1,891	-
CT	632	3,898	360	211	-	501	2,659	868	163
DE	-	-	-	-	-	-	-	822	469
FL	1,004	4,961	8,313	2,809	-	9,850	6,472	7,803	5,815
GA	-	0.44	325	477	-	555	785	463	359
HI	-	-	-	-	-	-	-	-	-
ID	252	484	55	304	-	623	550	675	333
IL	1,349	1,352	1,660	-	-	36	21	21	20
IN	-	14,962	7,562	7,320	-	1,218	1,231	-	-
IA	-	-	-	-	-	-	-	-	-
KS	-	1,074	-	-	-	2,427	2,177	2,520	942
KY	-	-	-	-	-	-	-	-	-
LA	-	-	-	-	-	-	-	-	-
ME	-	-	-	-	-	-	-	-	-
MD	-	-	-	-	-	-	-	95	12,351
MA	-	-	-	-	-	-	-	-	-
MI	1,413	1,821	2,173	-	-	3,422	667	624	634
MN	951	217	1,296	3,634	-	5,791	7,481	7,552	10,525
MS	645	401	391	2,005	-	1,548	4,050	4,391	2,840
MO	235	211	113	55	-	590	762	546	321
MT	42	292	-	-	-	257	111	115	74
NE	2,722	2,033	1,980	484	-	22,054	22,587	25,107	13,880
NV	-	-	-	-	-	-	-	-	13,191
NH	1,216	445	445	-	-	-	726	126	124
NJ	-	-	-	-	-	-	-	-	-
NM	-	-	-	-	-	-	-	-	-
NY	574	564	863	-	-	1,011	1,067	1,072	615
NC	78	135	80	109	-	157	211	191	102
ND	927	684	-	938	-	1,421	1,807	1,981	1,163
OH	1,476	1,540	1,559	-	-	1,915	2,178	1,995	1,666
OK	351	308	339	-	-	822	1,041	1,116	924
OR	-	-	-	1,126	-	2,077	292	273	161
PA	465	263	210	207	-	245	367	-	164
RI	-	-	-	-	-	-	-	-	-
SC	147	136	354	182	-	277	413	340	164
SD	981	1,002	971	-	-	556	674	426	218
TN	1,111	1,423	1,344	912	-	1,505	-	-	1,172
TX	2,121	1,308	1,132	1,927	-	838	856	1,023	359
UT	-	10	862	550	-	2,250	6,577	5,500	3,165
VT	114	330	-	287	-	436	196	474	1,675
VA	400	550	798	773	-	774	689	641	601
WA	1,710	5,213	4,928	4,922	-	6,595	2,300	1,210	2,363
WV	-	6	-	-	-	5	7	8	5
WI	3,732	3,819	5,409	4,032	-	3,991	3,513	3,509	2,871
WY	394	329	-	847	-	-	-	-	-
Total	43,076	71,337	61,980	53,735	-	104,619	108,151	100,478	85,937
Avg.	1,390	2,038	2,066	2,239	-	2,989	3,090	2,871	2,323

**Inflation Adjusted Tolls and Crossing Fees Used by States for
State-Administered Highways, Per Capita (2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	-	-	-	-	-	-	-	-	-
AK	39.98	40.01	36.64	36.15	34.18	35.37	33.81	32.55	34.85
AZ	-	-	-	-	-	-	-	-	-
AR	-	-	-	-	-	-	-	-	-
CA	4.76	5.16	5.09	5.04	8.23	11.55	11.28	10.77	10.88
CO	-	-	-	-	-	-	-	-	-
CT	0.10	0.11	0.09	0.08	0.07	0.07	0.05	0.05	0.04
DE	201.22	211.77	206.04	203.29	209.48	190.47	246.47	236.33	268.79
FL	32.79	35.34	38.00	44.17	44.57	44.99	47.09	44.75	51.20
GA	3.29	3.03	3.62	3.66	3.77	3.78	3.50	3.31	3.19
HI	-	-	-	-	-	-	-	-	-
ID	-	-	-	-	-	-	-	-	-
IL	36.97	37.89	38.06	38.20	37.82	37.98	37.08	35.80	36.73
IN	17.59	17.50	17.49	16.81	17.86	18.33	18.52	17.88	17.53
IA	-	-	-	-	-	-	-	-	-
KS	28.68	30.72	31.27	31.18	32.20	31.95	30.35	29.37	31.55
KY	4.22	4.21	4.49	4.63	4.68	4.67	4.48	4.32	4.14
LA	11.13	11.86	12.23	12.18	11.88	11.24	9.24	9.00	8.96
ME	50.69	49.44	50.29	50.52	50.89	61.83	58.73	56.66	61.36
MD	37.79	38.29	37.20	37.58	37.89	37.89	35.49	34.00	31.30
MA	39.62	40.62	39.35	39.27	43.23	40.75	41.26	39.73	44.14
MI	2.85	3.05	3.32	3.41	3.67	3.75	4.23	4.09	3.99
MN	-	-	-	-	-	-	-	-	-
MS	-	-	-	-	-	-	-	-	-
MO	-	-	-	-	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	-	-	-	-	-	-	-	-	-
NH	63.91	63.12	62.82	63.89	64.65	65.35	64.96	62.11	63.91
NJ	103.10	103.52	102.55	102.91	99.45	106.77	107.67	103.77	109.79
NM	-	-	-	-	-	-	-	-	-
NY	52.66	54.33	54.31	58.25	58.19	57.73	62.05	59.98	67.39
NC	0.31	0.32	0.29	0.27	0.31	0.31	0.26	0.25	0.27
ND	-	-	-	-	-	-	-	-	-
OH	13.31	14.20	15.50	17.97	20.03	21.90	20.82	20.17	20.49
OK	46.77	48.42	49.47	50.84	52.81	52.45	51.14	49.52	65.14
OR	-	-	-	-	-	-	-	-	-
PA	40.18	41.78	44.50	46.56	47.40	47.58	50.81	49.33	46.12
RI	14.49	14.75	15.13	15.94	16.23	15.75	14.48	13.95	14.16
SC	-	-	-	-	-	-	-	-	-
SD	-	-	-	-	-	-	-	-	-
TN	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
TX	3.70	3.83	4.04	4.10	4.25	4.97	6.21	5.90	8.34
UT	0.24	0.25	0.26	0.11	0.18	0.19	0.12	0.11	0.13
VT	-	-	-	-	-	-	-	-	-
VA	18.09	19.11	15.07	16.18	16.14	16.43	16.63	15.92	15.56
WA	22.10	21.35	20.72	19.86	21.40	21.67	21.69	20.76	23.33
WV	36.25	37.93	28.98	38.26	40.63	38.04	38.33	37.47	38.97
WI	-	-	-	-	-	-	-	-	-
WY	-	-	-	-	-	-	-	-	-
Total	926.83	951.95	936.85	961.34	982.10	983.78	1,036.76	997.84	1,082.26
Avg	31.96	32.83	32.31	33.15	33.87	33.92	35.75	34.41	37.32

**Inflation Adjusted Tolls and Crossing Fees Used by States for
State-Administered Highways, Per Capita (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	-	-	-	-	-	-	-	-	-
AK	36.78	37.28	38.19	42.07	-	36.56	32.81	64.62	63.63
AZ	-	-	-	-	-	-	-	-	-
AR	-	-	-	-	-	-	-	-	-
CA	9.70	3.82	7.60	6.13	-	5.27	8.73	6.15	-
CO	-	-	-	-	-	-	-	-	-
CT	0.06	0.05	0.06	0.05	-	0.06	0.05	0.04	0.04
DE	252.74	249.08	247.73	269.90	-	177.83	307.35	411.66	303.36
FL	53.18	57.51	60.08	62.84	-	61.62	57.80	57.44	57.68
GA	3.02	2.83	1.84	1.98	-	3.11	2.12	0.57	2.07
HI	-	-	-	-	-	-	-	-	-
ID	-	-	-	-	-	-	-	-	-
IL	38.33	38.65	56.10	53.37	-	74.24	55.19	54.57	54.19
IN	16.52	16.77	16.74	18.08	-	24.91	152.13	26.77	25.97
IA	-	-	-	-	-	-	-	-	-
KS	31.16	31.96	31.64	31.35	-	29.93	30.22	31.06	30.01
KY	-	-	-	-	-	-	-	-	-
LA	9.82	9.80	9.01	9.44	-	9.46	9.05	8.50	8.20
ME	61.48	62.31	75.81	74.50	-	85.58	107.86	107.47	102.77
MD	19.86	23.32	32.50	46.02	-	45.81	51.78	58.40	59.24
MA	43.85	52.02	49.62	46.93	-	73.64	61.58	49.73	47.99
MI	3.78	3.84	3.66	3.69	-	3.74	3.61	4.02	4.96
MN	-	-	-	-	-	-	-	-	-
MS	-	-	-	-	-	-	-	-	-
MO	-	-	-	-	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	0.12	0.13	0.25	0.28	-	0.26	0.26	0.31	0.33
NH	63.33	61.10	58.70	73.00	-	83.12	84.68	93.07	90.17
NJ	77.62	124.61	120.88	122.04	-	116.87	141.62	137.18	142.51
NM	-	-	-	-	-	-	-	-	-
NY	62.60	66.09	66.17	64.81	-	58.44	65.04	65.25	63.59
NC	0.36	0.36	0.31	0.29	-	0.26	0.24	0.22	0.22
ND	-	-	-	-	-	-	-	-	-
OH	19.88	20.32	18.69	18.53	-	17.64	17.32	21.53	20.50
OK	61.34	64.66	64.44	60.86	-	58.00	59.93	64.03	72.84
OR	-	-	-	-	-	-	-	-	-
PA	48.36	55.53	68.97	73.28	-	66.19	67.42	53.94	83.86
RI	13.65	13.78	13.45	12.96	-	12.14	10.80	18.28	18.62
SC	2.51	2.55	2.66	2.91	-	2.76	2.90	4.44	2.58
SD	-	-	-	-	-	-	-	-	-
TN	0.00	0.00	0.00	0.01	-	0.01	0.01	0.01	0.00
TX	8.49	8.94	9.31	9.82	-	15.01	17.86	19.90	16.36
UT	0.11	0.11	0.08	0.09	-	0.50	0.47	(0.10)	0.14
VT	-	-	-	-	-	-	-	-	-
VA	15.17	16.38	18.23	21.09	-	17.68	2.79	7.89	7.45
WA	24.52	25.03	24.79	24.47	-	24.88	26.00	27.54	28.65
WV	31.94	36.79	36.32	38.87	-	33.16	31.57	44.89	45.09
WI	-	-	-	-	-	-	-	-	-
WY	-	-	-	-	-	-	-	-	-
Total	1,010.29	1,085.63	1,133.82	1,189.64	-	1,138.68	1,409.18	1,439.37	1,353.89
Avg	33.68	36.19	37.79	39.65	-	37.96	46.97	47.98	45.13

**Inflation Adjusted Tolls and Crossing Fees Used by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	-	-	-	-	-	-	-	-	-
AK	2,157	2,166	1,950	1,844	1,820	1,915	1,870	1,761	1,953
AZ	-	-	-	-	-	-	-	-	-
AR	-	-	-	-	-	-	-	-	-
CA	3,034	3,306	3,290	3,161	5,222	7,739	7,721	7,471	7,522
CO	-	-	-	-	-	-	-	-	-
CT	35	37	30	24	21	24	19	18	16
DE	13,318	14,123	13,673	13,473	14,072	12,910	17,289	16,713	19,136
FL	11,932	12,957	14,132	15,960	16,929	17,183	18,907	18,191	21,034
GA	521	483	590	625	631	644	625	600	588
HI	-	-	-	-	-	-	-	-	-
ID	-	-	-	-	-	-	-	-	-
IL	9,978	10,286	10,345	10,236	10,317	11,004	11,025	10,710	11,033
IN	3,579	3,605	3,630	2,783	3,732	3,859	3,989	3,877	3,812
IA	-	-	-	-	-	-	-	-	-
KS	2,974	3,196	3,260	3,204	3,379	3,563	3,429	3,331	3,589
KY	271	272	290	299	304	306	299	290	279
LA	1,263	1,353	1,396	1,254	1,358	1,284	1,079	1,048	1,044
ME	3,531	3,452	3,520	3,548	3,577	4,375	4,219	4,100	4,470
MD	12,791	13,026	12,729	12,687	13,429	13,506	12,916	12,546	11,667
MA	25,130	25,842	25,258	28,044	30,365	28,891	30,187	29,413	32,807
MI	1,012	1,080	1,182	748	1,318	1,353	1,539	1,492	1,458
MN	-	-	-	-	-	-	-	-	-
MS	-	-	-	-	-	-	-	-	-
MO	-	-	-	-	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-
NE	-	-	-	-	-	-	-	-	-
NV	-	-	-	-	-	-	-	-	-
NH	8,293	8,275	8,336	8,575	8,792	8,885	9,103	8,819	9,182
NJ	91,975	93,976	94,296	95,721	99,414	106,336	108,297	103,641	110,395
NM	-	-	-	-	-	-	-	-	-
NY	23,595	24,286	24,317	24,767	27,832	27,614	30,939	30,052	33,905
NC	14	14	13	12	14	14	13	12	14
ND	-	-	-	-	-	-	-	-	-
OH	3,020	3,237	3,532	4,188	4,708	5,110	4,887	4,738	4,820
OK	5,113	5,311	5,444	4,979	6,074	6,051	6,041	5,872	7,697
OR	-	-	-	-	-	-	-	-	-
PA	5,314	5,547	5,885	6,206	6,411	6,439	7,052	6,876	6,443
RI	4,710	4,930	5,050	5,642	5,561	4,947	5,005	5,036	5,165
SC	-	-	-	-	-	-	-	-	-
SD	-	-	-	-	-	-	-	-	-
TN	3.11	3.55	3.30	2.95	2.04	1.06	0.99	0.96	0.90
TX	377	390	418	427	449	532	688	668	957
UT	31	33	34	15	25	27	17	17	20
VT	-	-	-	-	-	-	-	-	-
VA	958	1,018	806	870	874	895	932	931	919
WA	6,591	6,454	6,379	4,563	6,652	6,756	7,018	6,813	7,728
WV	1,011	1,050	798	1,049	1,095	1,007	993	964	1,002
WI	-	-	-	-	-	-	-	-	-
WY	-	-	-	-	3,158	3,301	3,494	-	-
Total	242,529	249,710	250,590	254,904	277,535	286,472	299,593	286,003	308,657
Avg	8,363	8,611	8,641	8,790	9,251	9,549	9,986	9,862	10,643

**Inflation Adjusted Motor and Carrier Taxes Used by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	21,868	13,633	11,957	14,238	-	7,643	10,656	11,403	8,574
AK	2,823	2,925	3,174	2,849	-	2,706	644	2,421	2,420
AZ	25,146	25,616	28,601	20,323	-	33,659	2,592	390	3,333
AR	10,490	9,902	9,858	8,927	-	8,655	7,879	8,734	8,230
CA	16,794	51,456	31,647	43,236	-	27,173	18,591	32,739	32,848
CO	22,694	20,664	20,218	26,430	-	19,529	16,178	7,876	7,135
CT	35,445	40,595	33,998	43,023	-	34,590	25,356	31,717	19,998
DE	11,925	12,339	11,936	11,660	-	9,255	6,017	9,029	6,012
FL	43,055	42,369	39,801	52,415	-	30,365	29,679	24,821	20,608
GA	8,419	1,349	9,241	6,781	-	15,831	16,668	6,266	9,197
HI	36,710	23,068	27,028	30,567	-	29,597	26,160	28,069	28,471
ID	10,814	8,981	12,336	10,430	-	8,859	6,569	6,901	7,935
IL	13,079	17,026	12,586	15,321	-	24,597	12,220	12,023	11,664
IN	19,523	14,469	11,547	11,177	-	22,523	22,762	19,874	17,785
IA	4,645	8,060	11,108	5,984	-	5,090	4,349	2,425	3,419
KS	9,674	7,743	9,829	9,469	-	7,112	5,158	13,145	5,851
KY	6,158	6,806	6,287	7,790	-	7,282	6,560	7,086	8,183
LA	17,905	16,964	17,646	17,777	-	16,527	16,389	15,630	14,720
ME	11,917	12,626	12,310	12,935	-	13,018	12,606	13,545	12,930
MD	9,475	12,324	16,133	15,419	-	11,490	24,958	19,074	6,073
MA	73,327	60,527	76,707	22,682	-	3,505	64,953	6,967	6,542
MI	22,617	11,064	17,069	16,555	-	10,735	10,417	12,403	10,408
MN	10,733	11,195	11,165	13,782	-	6,258	4,051	1,772	430
MS	9,010	9,144	10,469	9,837	-	8,828	6,960	6,785	8,022
MO	7,987	7,576	7,079	7,845	-	5,925	5,897	5,805	4,639
MT	10,767	9,770	1,668	4,390	-	4,070	3,161	3,338	2,904
NE	7,098	7,623	7,495	5,538	-	983	4,383	3,268	1,282
NV	27,501	28,567	25,059	25,686	-	23,811	35,183	20,382	19,809
NH	16,412	16,600	16,585	16,465	-	14,272	13,801	13,495	13,302
NJ	36,171	20,230	22,022	42,210	-	33,990	28,287	34,497	20,928
NM	7,101	5,943	7,605	3,855	-	4,514	3,772	5,563	4,888
NY	23,184	23,008	31,291	24,099	-	11,940	19,649	24,180	6,442
NC	6,621	7,737	7,935	7,775	-	7,929	8,074	8,059	8,673
ND	3,111	2,043	3,735	3,924	-	3,883	4,577	3,401	4,601
OH	18,319	22,664	19,043	26,524	-	21,566	14,100	14,421	14,951
OK	4,184	1,567	6,879	11,607	-	12,415	635	3,048	1,190
OR	22,093	21,819	7,029	20,976	-	15,441	10,316	11,705	11,050
PA	15,188	15,744	22,932	24,280	-	14,083	11,301	23,666	22,472
RI	32,824	29,434	24,359	29,754	-	20,640	16,615	10,614	501
SC	3,606	3,891	5,597	5,400	-	5,839	5,540	5,609	5,379
SD	6,169	4,749	6,471	7,741	-	3,952	3,968	3,297	2,312
TN	14,752	11,944	15,051	17,188	-	12,010	14,550	13,812	11,989
TX	13,363	11,635	9,672	11,400	-	7,086	5,194	7,249	12,095
UT	17,242	15,742	18,698	20,206	-	13,801	19,264	14,118	14,089
VT	12,142	8,739	5,462	5,970	-	6,929	5,653	8,299	8,521
VA	4,923	6,143	6,788	5,945	-	4,158	3,793	4,358	4,361
WA	28,088	35,891	36,820	29,241	-	27,002	35,952	34,036	35,780
WV	5,110	5,266	4,858	4,757	-	5,372	5,642	5,449	5,481
WI	15,840	14,857	19,132	14,883	-	12,723	14,689	10,689	11,959
WY	5,415	5,617	3,046	4,926	-	2,602	2,071	2,102	2,310
Total	819,455	785,644	794,966	812,193	-	661,762	654,434	595,554	512,697
Avg.	16,389	15,713	15,899	16,244	-	13,235	13,089	11,911	10,254

**Inflation Adjusted Motor Vehicle and Carrier Taxes Used by States for
State-Administered Highways, Per Capita (Million Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	44.99	44.20	43.38	35.26	34.60	33.88	29.75	48.01	32.04
AK	57.36	57.45	56.01	56.20	55.18	70.52	47.98	47.19	35.37
AZ	33.43	29.09	28.70	28.36	25.33	32.40	25.78	37.25	30.71
AR	47.62	44.25	50.38	41.18	42.81	57.05	54.21	36.27	37.48
CA	42.76	50.97	47.16	45.60	56.94	50.44	59.35	50.09	56.63
CO	33.93	35.67	35.44	43.32	20.26	31.40	54.16	35.40	32.95
CT	68.36	61.30	64.21	64.05	56.79	58.18	55.24	67.22	56.85
DE	123.29	132.09	134.59	131.87	118.94	137.51	157.79	151.44	154.74
FL	45.13	51.34	54.19	52.13	57.72	60.24	49.76	42.82	41.05
GA	24.11	0.80	26.96	33.44	29.91	37.81	29.58	16.21	28.21
HI	33.15	68.70	37.16	74.03	53.25	57.76	65.91	70.81	67.00
ID	65.19	63.61	66.21	69.35	59.43	67.12	67.51	37.61	56.51
IL	62.55	60.03	55.72	61.54	67.12	64.51	88.84	80.99	85.84
IN	23.11	21.89	19.88	21.96	34.66	43.03	31.43	23.93	20.05
IA	65.27	69.54	58.36	72.76	69.59	68.76	55.66	52.19	49.69
KS	46.03	45.50	42.33	44.40	47.43	46.29	42.94	44.08	39.96
KY	132.66	165.42	157.17	166.95	181.78	188.30	181.15	156.52	176.23
LA	48.98	47.40	48.04	44.73	48.02	46.95	26.08	37.45	33.83
ME	60.96	57.01	67.72	62.01	63.30	55.06	54.51	54.25	55.76
MD	68.80	65.73	86.45	46.49	66.59	88.68	82.29	58.63	64.46
MA	54.24	60.97	33.97	41.52	35.06	56.55	33.74	34.81	40.49
MI	32.78	29.42	38.17	38.65	36.90	38.29	33.70	45.92	25.15
MN	92.36	92.58	95.44	101.85	86.76	102.59	91.91	70.31	60.95
MS	41.30	40.58	36.82	41.32	39.24	42.05	41.15	34.31	26.30
MO	55.43	50.70	48.62	45.52	44.56	46.83	44.69	40.56	35.94
MT	55.66	54.54	51.53	55.87	52.54	65.74	54.64	48.67	40.50
NE	27.13	26.30	26.25	26.36	35.94	31.12	15.18	44.37	31.61
NV	71.85	70.05	61.78	61.90	72.94	59.19	49.32	51.37	49.30
NH	67.76	70.59	62.45	63.94	63.26	58.34	48.46	60.98	67.57
NJ	37.61	35.92	18.89	26.31	34.91	54.31	67.64	66.83	45.10
NM	137.36	101.30	98.49	112.89	76.66	137.04	144.74	133.71	79.56
NY	32.19	34.76	35.35	38.79	29.90	39.80	27.90	33.11	23.25
NC	55.59	62.80	63.93	63.58	66.64	26.73	18.40	55.84	59.17
ND	52.39	54.56	50.46	51.20	47.23	61.08	50.80	87.85	40.38
OH	23.71	8.05	8.90	8.50	32.44	14.75	28.96	9.60	9.24
OK	16.41	20.67	17.53	45.15	47.74	93.37	87.15	20.53	51.71
OR	70.02	67.78	72.87	65.21	75.66	75.66	65.37	56.58	59.35
PA	64.40	62.64	62.04	66.31	81.50	79.18	75.75	80.63	72.34
RI	80.05	20.98	25.98	26.24	60.96	64.28	24.74	32.26	57.99
SC	13.96	18.48	30.50	24.77	24.69	22.89	22.24	9.67	20.55
SD	13.77	14.83	13.88	14.21	14.34	12.51	2.71	24.71	22.21
TN	44.32	49.54	44.98	41.25	43.83	52.60	32.58	47.85	41.84
TX	48.76	50.35	50.41	50.86	51.61	49.64	50.33	47.02	101.29
UT	24.13	24.18	24.10	28.82	37.43	41.34	25.83	43.10	32.66
VT	117.37	132.60	112.25	150.45	74.97	90.06	127.94	113.10	198.57
VA	70.82	88.30	90.55	96.74	104.84	111.39	119.74	76.61	83.68
WA	122.38	85.79	98.14	103.04	87.19	119.35	59.55	57.91	30.39
WV	158.87	146.53	147.18	148.04	158.32	155.96	169.70	151.05	165.72
WI	32.79	36.90	41.43	44.09	44.50	38.22	35.51	28.56	41.19
WY	112.98	103.77	108.58	114.46	88.28	96.93	108.79	101.13	117.92
Total	2,956.07	2,888.45	2,851.52	2,993.48	2,940.48	3,233.68	3,019.08	2,857.29	2,887.28
Avg	59.12	57.77	57.03	59.87	58.81	64.67	60.38	57.15	57.75

**Inflation Adjusted Motor Vehicle and Carrier Taxes Used by States for
State-Administered Highways, Per Capita (Million Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	58.40	50.95	34.19	32.92	-	14.25	15.53	18.49	12.62
AK	49.46	57.14	69.62	66.34	-	57.68	53.20	58.39	48.02
AZ	34.00	41.58	40.68	28.45	-	53.32	3.89	0.56	4.95
AR	33.71	41.44	33.67	42.60	-	38.58	38.42	37.27	35.08
CA	46.04	41.96	65.58	66.81	-	32.63	27.36	52.77	13.60
CO	139.66	131.70	137.94	164.24	-	126.10	129.67	62.56	55.67
CT	50.24	62.96	55.82	56.85	-	45.80	35.83	43.60	27.10
DE	152.63	155.18	129.90	146.72	-	128.99	81.84	129.49	94.05
FL	44.04	45.12	42.35	62.78	-	35.81	34.78	44.60	40.67
GA	33.85	4.46	21.63	27.44	-	33.18	17.90	7.09	21.92
HI	35.12	61.24	40.19	72.24	-	70.11	56.35	61.55	58.75
ID	61.28	50.31	60.91	58.63	-	51.90	37.50	38.59	48.59
IL	40.86	53.77	84.72	95.41	-	69.68	40.51	40.06	38.76
IN	18.51	19.50	8.86	10.00	-	27.14	27.09	24.53	22.65
IA	32.51	57.06	63.53	43.51	-	38.89	35.74	21.07	30.72
KS	48.56	34.97	40.89	41.16	-	17.60	12.31	29.00	13.44
KY	161.89	142.98	145.90	132.20	-	111.00	86.47	86.49	97.82
LA	36.19	37.79	11.18	55.01	-	56.77	43.09	24.92	25.29
ME	40.90	46.32	43.05	45.53	-	25.40	40.62	52.82	59.80
MD	49.19	63.12	94.47	59.63	-	20.48	54.20	10.53	21.78
MA	48.36	52.85	55.95	10.38	-	-	47.64	3.35	3.23
MI	21.24	46.35	39.96	39.28	-	26.79	26.13	35.22	27.60
MN	54.53	52.29	51.42	68.61	-	27.97	16.54	7.02	1.72
MS	34.40	31.62	30.94	26.47	-	25.36	25.44	26.53	30.51
MO	30.01	29.08	31.42	52.97	-	38.99	31.63	30.80	24.38
MT	36.23	62.98	28.75	45.17	-	99.60	91.18	71.73	78.42
NE	21.86	20.75	30.70	20.80	-	4.49	10.96	10.50	4.64
NV	73.52	74.38	55.39	60.68	-	87.48	82.67	77.57	43.87
NH	74.12	73.61	70.73	63.91	-	87.29	83.19	100.44	97.30
NJ	36.85	17.38	29.52	56.12	-	66.99	45.21	60.00	40.37
NM	96.85	142.34	120.49	78.94	-	74.38	67.08	88.80	81.57
NY	30.52	30.82	27.92	39.71	-	14.85	28.58	50.21	14.06
NC	50.31	44.98	54.96	60.75	-	63.31	63.25	58.11	60.78
ND	48.57	29.91	51.29	61.14	-	68.28	69.31	52.67	70.67
OH	8.00	19.63	33.52	15.31	-	13.36	26.70	27.90	29.52
OK	46.01	11.47	38.31	92.82	-	169.82	6.90	32.90	13.73
OR	76.47	86.05	32.41	100.51	-	73.37	48.79	93.80	58.11
PA	50.40	51.30	73.66	73.64	-	39.04	27.49	62.07	35.93
RI	4.32	41.67	29.87	17.89	-	22.39	21.10	14.50	0.70
SC	34.07	38.37	28.22	19.65	-	58.51	37.71	33.47	37.28
SD	22.41	51.54	3.30	5.19	-	1.66	2.47	1.95	1.77
TN	47.87	46.04	28.07	48.96	-	28.15	38.08	30.54	26.25
TX	46.93	60.92	69.56	45.76	-	84.56	66.28	63.93	142.36
UT	42.65	37.99	32.00	33.92	-	24.61	36.76	40.03	39.97
VT	157.51	101.10	149.91	99.28	-	131.30	104.14	132.55	162.16
VA	67.03	88.33	89.16	74.94	-	48.87	55.01	61.93	65.60
WA	30.21	50.05	34.43	47.80	-	45.16	32.68	27.61	38.29
WV	178.10	171.42	171.23	161.43	-	152.83	140.12	128.01	142.90
WI	47.27	28.40	43.40	53.27	-	36.44	47.63	35.70	38.80
WY	93.87	84.15	70.07	110.48	-	77.12	68.43	53.73	62.69
Total	2,777.50	2,877.32	2,831.65	2,994.25	-	2,748.29	2,321.37	2,357.94	2,246.44
Avg	55.55	57.55	56.63	59.89	-	56.09	46.43	47.16	44.93

**Inflation Adjusted Motor and Carrier Taxes Used by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	1994	1995	1996	1997	1998	1999	2000	2001	2002
AL	6,939	6,881	6,749	6,270	5,466	5,370	4,788	7,735	5,161
AK	3,095	3,111	2,981	2,866	2,939	3,819	2,653	2,553	1,983
AZ	8,580	7,648	7,815	7,100	6,192	8,900	7,599	11,241	9,267
AR	3,339	3,134	3,581	2,752	3,056	4,061	4,037	2,710	2,808
CA	27,267	32,632	30,479	28,618	36,148	33,804	40,639	34,753	39,148
CO	5,514	5,942	6,033	6,656	3,548	5,630	10,265	6,905	6,521
CT	22,898	20,542	21,460	20,035	17,707	19,553	19,251	23,587	20,052
DE	8,160	8,809	8,931	8,740	7,990	9,320	11,068	10,710	11,017
FL	16,421	18,825	20,150	18,837	21,926	23,008	19,976	17,405	16,864
GA	3,819	128	4,401	5,718	5,003	6,442	5,283	2,939	5,196
HI	14,534	30,266	17,028	36,015	26,111	27,859	33,427	36,007	34,429
ID	6,266	6,267	6,670	6,581	6,138	7,060	7,349	4,174	6,346
IL	16,883	16,294	15,145	16,490	18,308	18,690	26,418	24,232	25,789
IN	4,704	4,507	4,127	3,634	7,244	9,058	6,768	5,189	4,359
IA	7,951	8,516	7,106	8,447	8,306	8,320	6,498	6,348	5,752
KS	4,773	4,733	4,414	4,561	4,977	5,162	4,851	5,000	4,546
KY	8,507	10,677	10,172	10,780	11,796	12,330	12,090	10,503	11,878
LA	5,559	5,408	5,483	4,605	5,489	5,365	3,046	4,360	3,943
ME	4,247	3,981	4,739	4,356	4,449	3,896	3,916	3,926	4,062
MD	23,287	22,360	29,579	15,695	23,602	31,610	29,951	21,633	24,026
MA	34,404	38,792	21,801	29,655	24,625	40,093	24,687	25,770	30,100
MI	11,628	10,432	13,594	8,487	13,231	13,817	12,246	16,754	9,195
MN	14,431	14,608	15,238	11,301	14,082	16,848	15,612	12,056	10,524
MS	4,274	4,331	3,899	4,248	4,174	4,568	4,585	3,833	2,914
MO	4,253	3,875	3,735	3,504	3,455	3,669	3,583	3,273	2,915
MT	2,592	2,581	2,787	2,669	2,524	3,590	3,039	2,381	1,984
NE	2,043	1,986	1,992	1,871	2,709	2,346	1,173	3,427	2,448
NV	8,454	8,613	7,958	7,607	9,634	8,113	7,455	8,149	8,093
NH	8,792	9,254	8,287	8,582	8,604	7,933	6,791	8,659	9,709
NJ	33,549	32,611	17,366	24,469	34,902	54,085	68,027	66,744	45,347
NM	8,319	6,254	6,205	7,203	4,884	8,775	9,703	8,942	5,268
NY	14,422	15,537	15,825	16,490	14,302	19,036	13,912	16,592	11,699
NC	2,403	2,755	2,850	2,854	3,035	1,235	891	2,750	2,947
ND	1,988	2,081	1,931	1,655	1,793	2,302	1,940	3,323	1,521
OH	5,380	1,835	2,028	1,982	7,622	3,442	6,797	2,255	2,174
OK	1,794	2,268	1,929	4,422	5,491	10,773	10,296	2,435	6,109
OR	11,631	11,654	12,821	11,464	13,602	13,718	12,690	10,763	11,468
PA	8,516	8,317	8,205	8,839	11,021	10,714	10,513	11,240	10,106
RI	26,025	7,009	8,674	9,289	20,885	20,193	8,550	11,647	21,148
SC	575	762	1,266	1,050	1,062	997	999	440	942
SD	561	610	576	528	532	520	116	1,057	953
TN	6,773	7,669	7,008	6,443	6,900	8,240	5,299	7,841	6,882
TX	4,956	5,127	5,217	5,293	5,450	5,311	5,579	5,328	11,625
UT	3,099	3,171	3,231	3,820	5,206	5,838	3,825	6,539	5,023
VT	11,266	12,836	10,936	14,038	7,324	8,840	12,877	11,459	20,200
VA	3,749	4,701	4,843	5,198	5,677	6,068	6,708	4,482	4,942
WA	36,499	25,932	30,215	23,680	27,109	37,205	19,268	19,007	10,065
WV	4,430	4,058	4,053	4,058	4,265	4,128	4,397	3,887	4,261
WI	5,846	6,622	7,463	7,575	7,712	6,946	6,606	5,348	7,740
WY	-	3,189	-	3,421	-	-	-	3,197	3,760
Total	485,390	480,130	448,977	460,448	498,212	578,600	548,038	531,483	515,209
Avg	9,906	9,603	9,163	9,209	10,168	11,808	11,184	10,630	10,304

**Inflation Adjusted Motor and Carrier Taxes Used by States for
State-Administered Highways, Per Lane Mile (2012 Dollars)**

State	2003	2004	2005	2006	2007	2008	2009	2010	2011
AL	21,868	13,633	11,957	14,238	-	7,643	10,656	11,403	8,574
AK	2,823	2,925	3,174	2,849	-	2,706	644	2,421	2,420
AZ	25,146	25,616	28,601	20,323	-	33,659	2,592	390	3,333
AR	10,490	9,902	9,858	8,927	-	8,655	7,879	8,734	8,230
CA	16,794	51,456	31,647	43,236	-	27,173	18,591	32,739	32,848
CO	22,694	20,664	20,218	26,430	-	19,529	16,178	7,876	7,135
CT	35,445	40,595	33,998	43,023	-	34,590	25,356	31,717	19,998
DE	11,925	12,339	11,936	11,660	-	9,255	6,017	9,029	6,012
FL	43,055	42,369	39,801	52,415	-	30,365	29,679	24,821	20,608
GA	8,419	1,349	9,241	6,781	-	15,831	16,668	6,266	9,197
HI	36,710	23,068	27,028	30,567	-	29,597	26,160	28,069	28,471
ID	10,814	8,981	12,336	10,430	-	8,859	6,569	6,901	7,935
IL	13,079	17,026	12,586	15,321	-	24,597	12,220	12,023	11,664
IN	19,523	14,469	11,547	11,177	-	22,523	22,762	19,874	17,785
IA	4,645	8,060	11,108	5,984	-	5,090	4,349	2,425	3,419
KS	9,674	7,743	9,829	9,469	-	7,112	5,158	13,145	5,851
KY	6,158	6,806	6,287	7,790	-	7,282	6,560	7,086	8,183
LA	17,905	16,964	17,646	17,777	-	16,527	16,389	15,630	14,720
ME	11,917	12,626	12,310	12,935	-	13,018	12,606	13,545	12,930
MD	9,475	12,324	16,133	15,419	-	11,490	24,958	19,074	6,073
MA	73,327	60,527	76,707	22,682	-	3,505	64,953	6,967	6,542
MI	22,617	11,064	17,069	16,555	-	10,735	10,417	12,403	10,408
MN	10,733	11,195	11,165	13,782	-	6,258	4,051	1,772	430
MS	9,010	9,144	10,469	9,837	-	8,828	6,960	6,785	8,022
MO	7,987	7,576	7,079	7,845	-	5,925	5,897	5,805	4,639
MT	10,767	9,770	1,668	4,390	-	4,070	3,161	3,338	2,904
NE	7,098	7,623	7,495	5,538	-	983	4,383	3,268	1,282
NV	27,501	28,567	25,059	25,686	-	23,811	35,183	20,382	19,809
NH	16,412	16,600	16,585	16,465	-	14,272	13,801	13,495	13,302
NJ	36,171	20,230	22,022	42,210	-	33,990	28,287	34,497	20,928
NM	7,101	5,943	7,605	3,855	-	4,514	3,772	5,563	4,888
NY	23,184	23,008	31,291	24,099	-	11,940	19,649	24,180	6,442
NC	6,621	7,737	7,935	7,775	-	7,929	8,074	8,059	8,673
ND	3,111	2,043	3,735	3,924	-	3,883	4,577	3,401	4,601
OH	18,319	22,664	19,043	26,524	-	21,566	14,100	14,421	14,951
OK	4,184	1,567	6,879	11,607	-	12,415	635	3,048	1,190
OR	22,093	21,819	7,029	20,976	-	15,441	10,316	11,705	11,050
PA	15,188	15,744	22,932	24,280	-	14,083	11,301	23,666	22,472
RI	32,824	29,434	24,359	29,754	-	20,640	16,615	10,614	501
SC	3,606	3,891	5,597	5,400	-	5,839	5,540	5,609	5,379
SD	6,169	4,749	6,471	7,741	-	3,952	3,968	3,297	2,312
TN	14,752	11,944	15,051	17,188	-	12,010	14,550	13,812	11,989
TX	13,363	11,635	9,672	11,400	-	7,086	5,194	7,249	12,095
UT	17,242	15,742	18,698	20,206	-	13,801	19,264	14,118	14,089
VT	12,142	8,739	5,462	5,970	-	6,929	5,653	8,299	8,521
VA	4,923	6,143	6,788	5,945	-	4,158	3,793	4,358	4,361
WA	28,088	35,891	36,820	29,241	-	27,002	35,952	34,036	35,780
WV	5,110	5,266	4,858	4,757	-	5,372	5,642	5,449	5,481
WI	15,840	14,857	19,132	14,883	-	12,723	14,689	10,689	11,959
WY	5,415	5,617	3,046	4,926	-	2,602	2,071	2,102	2,310
Total	819,455	785,644	794,966	812,193	-	661,762	654,434	595,554	512,697
Avg.	16,389	15,713	15,899	16,244	-	13,235	13,089	11,911	10,254

Appendix C: State Trends in Use of Funding Mechanisms

State Highway Investment Mechanisms								
	Funding					Financing		
	General funds	Fuel taxes	Sales taxes on fuel	Vehicle registration fees	Tolls	Bonds	State Revolving Funds	PPPs authorized
AL	✓	✓		✓		✓		✓
AK	✓	✓		✓	✓	✓	✓	✓
AZ	✓	✓		✓		✓	✓	✓
AR	✓	✓		✓		✓	✓	✓
CA	✓	✓	✓	✓	✓	✓	✓	✓
CO	✓	✓		✓	✓	✓	✓	✓
CT	✓	✓	✓	✓		✓		✓
DE	✓	✓		✓	✓	✓	✓	✓
FL		✓	✓	✓	✓	✓	✓	✓
GA	✓	✓	✓	✓	✓	✓	✓	✓
HI		✓	✓	✓		✓		
ID		✓		✓		✓		
IL	✓	✓	✓	✓	✓	✓		✓
IN		✓	✓	✓	✓	✓	✓	✓
IA		✓		✓		✓	✓	
KS	✓	✓		✓	✓	✓	✓	
KY	✓	✓		✓		✓		
LA	✓	✓		✓	✓	✓		✓
ME		✓		✓	✓	✓	✓	✓
MD		✓		✓	✓	✓		✓
MA	✓	✓		✓	✓	✓		✓
MI		✓	✓	✓	✓	✓	✓	
MN	✓	✓		✓	✓	✓	✓	✓
MS		✓		✓		✓	✓	✓
MO	✓	✓		✓		✓		✓
MT		✓		✓		✓		
NE	✓	✓		✓		✓	✓	
NV	✓	✓		✓		✓		✓
NH	✓	✓		✓	✓	✓		
NJ	✓	✓		✓	✓	✓		
NM		✓		✓	✓	✓	✓	
NY	✓	✓	✓	✓	✓	✓	✓	
NC		✓		✓	✓	✓	✓	✓
ND	✓	✓		✓		✓	✓	✓
OH	✓	✓		✓	✓	✓	✓	✓
OK	✓	✓		✓	✓	✓	✓	
OR	✓	✓		✓		✓	✓	✓
PA	✓	✓		✓	✓	✓	✓	✓
RI	✓	✓		✓	✓	✓	✓	
SC	✓	✓		✓	✓	✓	✓	✓
SD	✓	✓		✓			✓	
TN		✓	✓	✓			✓	✓
TX	✓	✓		✓	✓	✓	✓	✓
UT	✓	✓		✓	✓	✓	✓	✓
VT	✓	✓	✓	✓		✓	✓	
VA		✓	✓	✓	✓	✓	✓	✓
WA		✓		✓	✓	✓	✓	✓
WV	✓	✓	✓	✓	✓	✓		✓
WI	✓	✓		✓		✓	✓	✓
WY	✓	✓		✓			✓	



600 W. 22nd St., Suite 220
Oak Brook, IL 60523
630-574-0650 | Fax 630-574-0132
www.aednet.org

AED GOVERNMENT AFFAIRS OFFICE

121 North Henry Street
Alexandria, VA 22314
703-739-9513 | Fax 703-739-9488
www.aednet.org/government