Tennessee Comptroller of the Treasury

Offices of Research and Education Accountability

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Tennessee Transportation Funding: Challenges and Options

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Executive Summary

This report is in response to a 2014 request from the Fiscal Review Committee of the Tennessee General Assembly. The purpose of this study is to provide an overview of Tennessee's current financing system for highways and bridges, outline challenges to the existing system, and review alternative funding methods. The report is intended to provide objective analysis for state legislators to consider. It does not make recommendations, address the level of funding needed, or propose how funds should be spent. The study focuses on funding for highways and bridges, and does not specifically address funding for air, rail, water, and mass transit transportation systems.

In the last several years, revenues dedicated to transportation have stagnated in Tennessee and across the country. Tennessee's fuel taxes are not expected to be sufficient to maintain existing infrastructure and meet long-term transportation demands. Tennessee funds its state and local roads primarily with revenue from state and federal fuel taxes, which are assessed at a fixed rate per gallon of fuel. Fixed-rate fuel taxes tie transportation revenue to the level of fuel consumption. Fuel consumption in 2012 remained below its peak in 2007 and is expected to continue to decline as a result of several factors, including:

- increased fuel efficiency of vehicles,
- higher fuel prices, as well as demographic changes and preferences that have reduced the growth in vehicle miles traveled, and
- increased use of alternative fuel vehicles, such as electric vehicles, which are not currently subject to highway fuel taxes.

Fixed-rate fuel taxes are not directly linked to road use. The amount of fuel taxes paid by drivers depends on fuel efficiency and in part on the type of vehicle. Fixed-rate fuel taxes are not designed to influence motorists' travel choices and behaviors, such as whether they drive in congested areas or at peak travel times. Some costs of highway use – pavement damage, congestion, accidents, pollution, and noise – are more related to vehicle miles traveled than fuel consumption.

From 2000 through 2013, population in Tennessee grew 14 percent and gross domestic product (GDP) increased 57 percent. These growth trends tend to increase transportation needs, and would be expected to increase fuel tax revenues. However, Tennessee's fuel tax revenues have stayed relatively flat since 2000 in nominal dollars. Inflation erodes the purchasing power of fixed-rate fuel taxes, however, and Tennessee's gas tax would have to be 38 cents per gallon in 2014 to equal the purchasing power of 20 cents in 1989. The purchasing power of Tennessee's 20 cents per gallon gas tax in 2013 was equivalent to 11 cents in 1989.

Tennessee's per capita revenue for highways in 2010 was the lowest of the 50 states; however, its roads are generally rated as being of good quality. Tennessee was 4th highest among 50 states in the percentage of roads in good condition and 13th lowest in percent of deficient bridges. Tennessee relies

heavily on fuel taxes to fund its highways and does not use debt financing, tolls, or general fund revenues.

Federal highway revenue, which funded 53 percent of Tennessee's state transportation spending in FY2013, primarily comes from federal fixed-rate fuel taxes, which mirror the stagnating revenue trends seen with Tennessee's fixed-rate fuel tax. The federal Highway Trust Fund (HTF) provides states with transportation funding. On July 31, 2014, Congress passed the Highway and Transportation Funding Act of 2014, which transfers $8.8 billion to shore up the HTF until June 1, 2015, but does not provide a long-term solution to address regular shortfalls in the fund. In 2014, the Tennessee Department of Transportation, which cites a project backlog of $8.5 billion, stopped engineering work on all new construction in preparation for a potential loss of federal reimbursements.

Tennessee local governments rely heavily on state-shared highway user fees. Local governments face increasing costs of highway maintenance and diminishing revenue growth in highway user fee revenue. Local governments also use other local revenues, such as property, wheel, and mineral severance taxes, to fund expenditures for local roads. Information available for most counties from 2003 through 2013 shows local tax revenue to fund highways increased 52 percent ($63.7 million to $96.9 million). That information also indicates that in 2013 county local revenue contributions as a percentage of total highway expenditures varied from 0 percent to 70 percent. Additional analysis is needed to determine the reasons for the variation in local governments' highway expenditures. Fiscal capacity – which refers to a local government's ability to raise revenue from taxable resources (e.g., property and sales) – is likely one reason.

Possible Revenue Options for Highways

To address the eroding purchasing power of fixed-rate fuel taxes and the uncertainty of federal funding for transportation, many states have made, or are considering making, changes to how highways are funded. Actions taken include:

- increasing fuel tax rates,
- indexing fuel tax rates to inflation or the price of fuel,
- applying sales taxes to gas purchases,
- supplementing highway user taxes with general fund revenue,
- dedicating a portion of sales taxes to transportation projects,
- financing road construction with general obligation bonds,
- using debt financing systems to leverage available public funding with private capital and to leverage funding provided through federal credit assistance programs, and
- levying local option taxes dedicated to transportation projects by local governments.

To address broader structural issues with fuel taxes, policymakers in many states are also looking at options to supplement or eventually replace such taxes by adopting mileage-based tax systems or expanding the use of tolls.

In recent years, a number of states have appointed transportation funding task forces to study and make recommendations on funding options to meet state transportation needs. Recurring conclusions from these task forces include:

- Current fuel tax rate increases are the most likely short-term solution to help meet near-term transportation needs.
- Indexing fuel taxes to some measure of inflation or blending in a sales tax may improve fuel tax viability for a few more years.
- A long-term solution would tie highway user fees to more precise measures of highway use, such as a vehicle miles traveled (VMT) system. Making the transition from a fuel tax-based system to a VMT system will require a sustained and long-term effort by the federal and state governments.

Descriptions of several transportation funding and financing options are included in the report for Tennessee policymakers' consideration, including strengths and concerns for each option using evaluation criteria developed from a comprehensive review of transportation funding research. General estimates of potential revenue production for some options are included. More detailed analysis and estimates would be needed if legislators choose to pursue particular options.

Options and information to consider include:

<u>Motor Fuel Tax Rates</u>

- Tennessee's gasoline tax was last raised in 1989; its diesel fuel tax was last raised in 1990.
- Fuel taxes are based on the benefit, or "user pays," principle of taxation; however, variation in fuel efficiency among similar vehicles and differences in pavement damage based on vehicle weight have made motor fuel taxes less representative of motorists' highway use.
- A Tennessean driving a vehicle 15,000 miles annually and averaging 20 miles per gallon pays about $300 per year in federal and state gas taxes combined.
- Tennessee's gas tax rate is 13th lowest among the 50 states; its diesel fuel tax rate is 7th lowest. Tennessee's gas tax rate of 21.40 cents per gallon (cpg) is 9.82 cpg less than the U.S. average of 31.22 cpg. Tennessee's diesel tax rate of 18.40 cpg is 12.62 cpg less than the U.S. average of 31.02 cpg.
- Based on projected taxable fuel demand for FY2014-15, a one cent increase in the gas tax would increase revenue about $30.9 million, a 5 percent increase over FY2012-13. A

one cent increase in the diesel tax would increase revenue about $9.6 million, a 6.1 percent increase over FY2012-13.

- Tennessee is one of 13 states with a gas tax rate greater than its diesel tax rate. Tennessee's gas tax rate is 3 cents per gallon higher than its diesel tax rate. Six other states have gas tax rates 3 cents per gallon or more than diesel tax rates.

Variable Rate and Indexed Fuel Tax Rates

- Since 1989, when Tennessee last increased its gas tax rate, general inflation as measured by the Consumer Price Index (CPI) has increased 85 percent. The Federal Highway Administration's measure of highway-related construction costs increased 56 percent, with greater fluctuations above and below the CPI.
- Several states (18) have implemented variable rate taxes on fuels to allow fuel taxes to better adjust to changes in purchasing power over time. Measures used to adjust the rates include the CPI and/or the wholesale or retail price of fuel. Most states have placed limits on the variable rate to control for the potential volatility in fuel taxes. Some states collect sales taxes on fuel or dedicate a percentage of general sales taxes to highways. No states tie fuel tax rates to construction price indices.
- Using the CPI, to account for general inflation between 1989 and 2012, Tennessee's gas tax rate would need to increase 18 cents per gallon, for an estimated yield of $556.2 million in 2012. The diesel tax would need to increase 13 cents to account for inflation for an estimated yield of $124.8 million in 2012.
- Motor fuel purchases are exempt from Tennessee's sales tax. Applying current sales tax rates (7 percent state, 2.5 percent local) to gas and diesel fuel sales would yield an estimated $1 billion in state revenue and $368 million in local revenue.
- A 1 percent motor fuel sales tax would yield an estimated $147 million.
- A revenue-neutral motor fuel sales tax rate to replace the current per gallon taxes would be an estimated 6.2 percent for gasoline and 4.9 percent for diesel fuel, assuming fuel prices of $3.453 and $3.77, respectively.

Vehicle Registration Fees

- A $1 increase in vehicle registration fees in Tennessee would yield approximately $6.8 million annually.
- Other states' registration fees vary from a flat fee to variable fees based on vehicle value, weight, age, horsepower, and number of cylinders.
- Vehicle registration fees do not account for differences in the miles a motorist drives.

Weight-Distance Tax

- A weight-distance tax is calculated based on two variables: vehicle weight and distance traveled. Weight-distance taxes are designed to collect higher user fees from heavier vehicles, which cause more pavement damage.

- Four states – Kentucky, New Mexico, New York, and Oregon – levy weight-distance taxes on commercial freight vehicles. The tax is structured differently in each state.
- Tennessee levies vehicle registration fees on commercial freight vehicles according to vehicle weight, with heavier vehicles paying higher fees, but does not impose a weight-distance tax.

Tolls

- Tolling is used by some states to generate revenue to leverage and repay the capital costs associated with a particular project, such as a bridge, and fund maintenance costs.
- Tolls are direct payments for use of roads, bridges, and tunnels.
- In 2013, about 5,695 miles of toll roads, bridges, and tunnels were operating in 33 states.
- New electronic toll collection (ETC) tags allow drivers to pay tolls without stopping at toll booths.
- Tennessee does not currently charge tolls to use any highways or bridges. Tolling within specific criteria was authorized in Tennessee in 2007, but no projects studied by TDOT have met all the criteria.
- Tolls are seen as a means to better manage urban congestion. At least 10 states by 2012 had created high-occupancy toll (HOT) lanes, which permit drivers of low-occupancy vehicles to access high-occupancy vehicle (HOV) lanes in exchange for paying a toll.

General Funds

- In 2012, 33 states allocated general fund revenues to fund transportation costs; Tennessee did not. Since 2008, the federal government has increased its use of general fund monies to fund the federal transportation program. In 2010, general fund appropriations were 22 percent of highway revenues for all levels of government in the U.S. and 36 percent of local highway revenues in Tennessee.
- Transfers of general fund revenues to highways, without increasing the underlying tax rates, requires reducing funding to other state priorities.
- Reliance on annual appropriations of general fund revenue may affect the stability of funding and may affect multi-year transportation projects.

Debt Financing

- Tennessee has not used general obligation bonds or other debt instruments to finance transportation projects since 1977, and is currently one of only four states not to do so. Local governments in Tennessee use loans or bonds to finance some transportation projects.
- Debt finance is not a direct source of transportation revenue; states must repay bonds from highway user taxes or fees, or other revenue.

- Debt finance can be cost efficient if interest costs are less than rising construction costs and sufficient future revenues are available to cover bond repayments.
- Debt finance can be used to leverage other private and public revenue sources.

Alternative Fuel Vehicles

- Growth in the number of alternative fuel vehicles (AFVs) is expected to continue in the coming decades, but AFVs are not expected to comprise a large share of the motor vehicle market.
- Owners of AFVs pay less in gas taxes than drivers of conventional motor vehicles.
- Some states collect an annual fee from owners of electric and hybrid-gas/electric vehicles, who pay less in gas taxes because of their vehicles' fuel efficiency.

Local Funding Options

- Local governments are responsible for the majority of the roads in the state, though these carry less traffic. Local roads comprise 85 percent of the road miles in Tennessee, but account for 27 percent of the vehicle miles traveled.
- Federal funds made up 3 percent of local highway revenues in 2011.
- Options to increase or provide a more sustainable source of state highway user fee revenue would also provide additional revenue to local governments to maintain locally-controlled roads if current distribution formulas are maintained.

Vehicle Miles Traveled (VMT) Tax

- Recent studies from a variety of groups have concluded that road-user charges based on miles driven, known as a VMT fee system, could provide a viable alternative to fuel taxes. VMT taxes would not decline with increased fuel efficiency or the use of alternative fuels.
- VMT fees can either be fixed, with users paying a certain number of cents per mile for all travel, or variable, based on one option or a combination of options (e.g., time of travel, miles driven in different jurisdictions, congestion levels, type of road traveled on, type and weight of vehicle, vehicle emissions).
- Administering a VMT fee system has become more feasible with the advent of new electronics and communication technologies, although the cost of administering a VMT system is likely to be higher than collecting fuel taxes.
- The tracking technology often used in VMT programs has led to concerns about protection of privacy.
- Accounting for non-resident driving presents a challenge, particularly when surrounding states are not using a VMT system.
- Oregon's Department of Transportation (ODOT) is scheduled to implement a mileage collection system for 5,000 volunteer motorists beginning July 1, 2015. ODOT is authorized to charge 1.5 cents per mile for up to 5,000 volunteer cars and light

commercial vehicles and issue a gas tax refund to those participants. The program is expected to expand in coming years.

Public-Private Partnerships

- Some states allow broader authority than Tennessee to use Public-Private Partnerships (P3s) to finance, operate, and/or maintain transportation projects. In some cases, P3s may be used as a debt finance option to supplement fuel tax revenues and public bonding authority funds by attracting private sector capital or leveraging federal credit assistance programs.
- Additional up-front capital can accelerate project delivery as well as share or shift financial risk from the public sector.
- P3s do not provide new money for highway projects. P3s require either a commitment of existing or new user fees or tolls to cover costs and a return on investment to the private partner.
- Other potential concerns include the loss of public control over a highway or bridge for the length of the contract and the risk of bankruptcy or default by a private partner.

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Introduction

In the last several years, revenue sources dedicated to transportation have stagnated in Tennessee and across the country. Without change, the current fixed-rate fuel taxes are not expected to be sufficient to maintain existing infrastructure and support long-term transportation demands.

Tennessee funds its roads primarily with revenue from state fuel taxes and federal transportation funds derived from federal fuel taxes. Both Tennessee and federal fuel taxes are a fixed rate per gallon of fuel, which ties transportation revenue to the level of fuel consumption. Although Tennessee is one of four states with no transportation debt and its roads are generally rated as being of good quality, the state's continued reliance on fixed-rate fuel taxes to provide transportation funding is likely not sustainable given a number of trends, including improved vehicle fuel efficiency, increased use of alternative fuel vehicles, and a decrease in driving per capita. State fuel tax collections have remained relatively flat since 2000. Tennessee last increased the gasoline tax in 1989 and the diesel tax in 1990. The purchasing power of Tennessee's 20 cents per gallon gas tax in 2013 was equivalent to 11 cents in 1989.

Purpose and Scope

The Comptroller's Offices of Research and Education Accountability (OREA) produced this report in response to a 2014 request from the Fiscal Review Committee of the Tennessee General Assembly. The purpose of this study is to provide an overview of the current Tennessee transportation infrastructure financing system and challenges to the existing system, along with a review of alternative funding methods to consider. Alternative funding options are described generally; additional analysis would be needed to further define the options and to more accurately project their revenue potential.

This report focuses on funding mechanisms for the highway system in Tennessee, but does not address the level of funding needed or how funds are spent. The study focuses on highway funding and does not specifically address funding for air, rail, water, and mass transit transportation systems.

The report is intended to provide objective analysis and does not make recommendations.

Background

Roads and Bridges in Tennessee

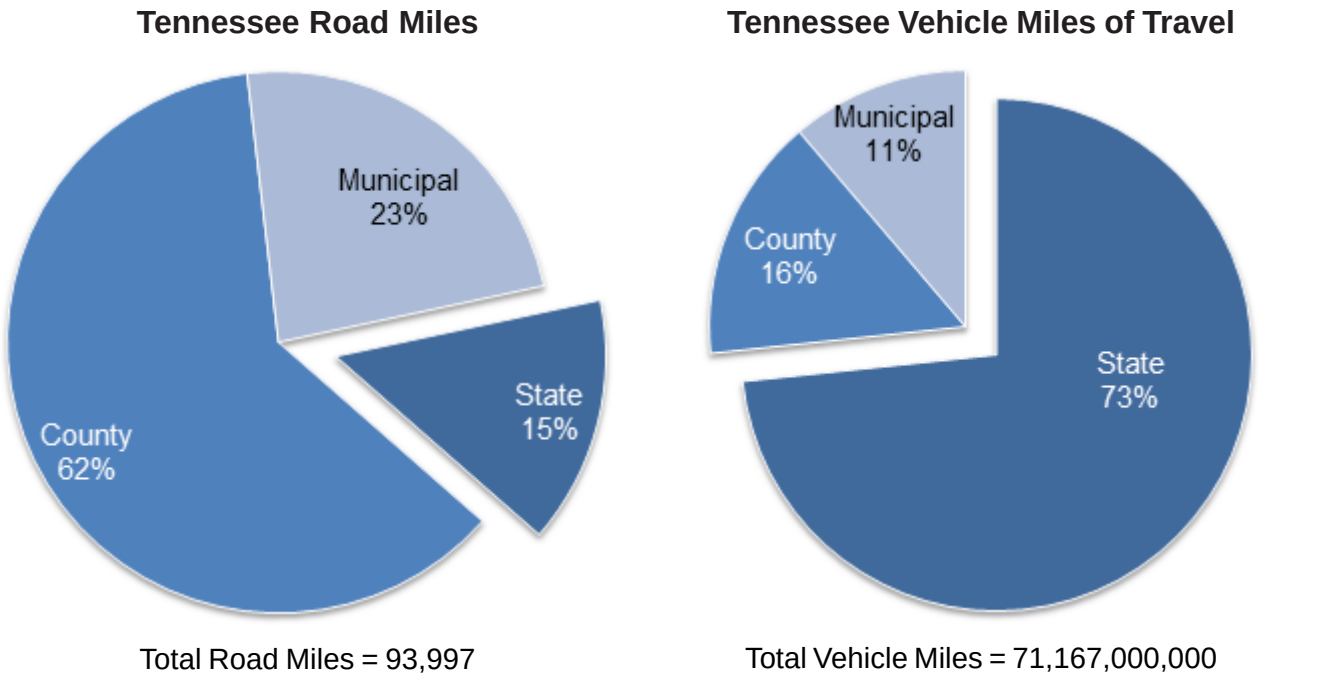
In 2012, Tennessee governments had 93,997 miles of roads[1] and 19,635 bridges[2] to maintain. The state is responsible for the most heavily traveled roads in the state, including the interstate highways. State roads comprise 15 percent of the road miles, but account for 73 percent of the vehicle miles traveled. Local governments are responsible for the bulk of the roads throughout the state, though

these carry less traffic. Local roads comprise 85 percent of the road miles, but account for 27 percent of the vehicle miles traveled. (See Exhibit 1.)

In Tennessee, 19 percent of road miles are designated as federal-aid highways and are eligible for federal funding. The federal-aid highways in the state include 4,720 miles on the National Highway System (the interstate highway system and other roadways important to the nation's economy, defense, and mobility) and 13,152 miles of other roads. Federal-aid highways account for 82 percent of vehicle miles traveled, and include all state-designated roads and 5 percent of locally-designated roads.[3, 4]

In 2012, Tennessee had 19,635 bridges on public roads; 8,238 of these were maintained, owned, and operated by the state and 11,397 were owned, maintained, and operated by local governments.[5]

Exhibit 1: Tennessee Road Miles and Vehicle Miles of Travel by Ownership, 2012



Total Road Miles = 93,997

Total Vehicle Miles = 71,167,000,000

Note: Vehicles Miles of Travel was estimated by ownership of road based on the percentage of road miles in each functional category of road by ownership and the vehicle miles reported for the category.
Source: OREA calculations based on Federal Highway Administration, *Highway Statistics 2012*, Tables 4.4.1.3 (HM-50) and 5.4.1 (VM-2), http://www.fhwa.dot.gov/ (accessed Oct. 24, 2014).

Conditions of Tennessee's Roads and Bridges

Roads

Tennessee's roads are generally reported to be of good quality. For several years, the Tennessee Department of Transportation (TDOT) has received national awards related to pavement smoothness and preservation.[6] Tennessee also generally ranks well in comparisons to other states. A 2013 report from the Reason Foundation analyzed highway statistics from the Federal Highway Administration (FHWA) for 1989 through 2008 and compiled state rankings. For interstates in urban areas, the report ranks Tennessee at five out of the 50 states, and for interstates in rural areas, at 19 out of 50, in order of most improved condition (1) to most deterioration (50).[7] According to a 2009 review by the Tennessee Section of the American Society of Civil Engineers, the condition of Tennessee's roads warranted a grade of B-, well above the grade of D- for the U.S. overall.[8]

The chart in Exhibit 2 compares states on the percentage of highway mileage that is rated as "good," based on pavement quality. The data are reported by states to the FHWA.

Bridges

Tennessee has significantly reduced the number of its deficient bridges (which includes both structurally deficient and functionally obsolete bridges) over the last several years, from 33.1 percent in 1993 to 19.0 percent in 2013, a 14 percentage point reduction. The state ranked at 13 out of all states and the District of Columbia in 2013 for the smallest percentage of deficient bridges. During the same period, the U.S. dropped from 36.3 percent to 24.3 percent, a 12 percentage point reduction. (See Exhibit 3 and "What is a deficient bridge?")

Local Road Conditions
The statistics cited in this section about road conditions in Tennessee refer to interstate highways and state-maintained roads in Tennessee only. Information is not available on the condition of local roads, which are maintained by cities and counties.

What is a deficient bridge?
Two terms describe bridge deficiency: structurally deficient and functionally obsolete. As long as bridges classified as structurally deficient or functionally obsolete are properly managed – for example, posted with weight and speed limits – they are not considered to be unsafe for use. The Federal Highway Administration defines the terms:

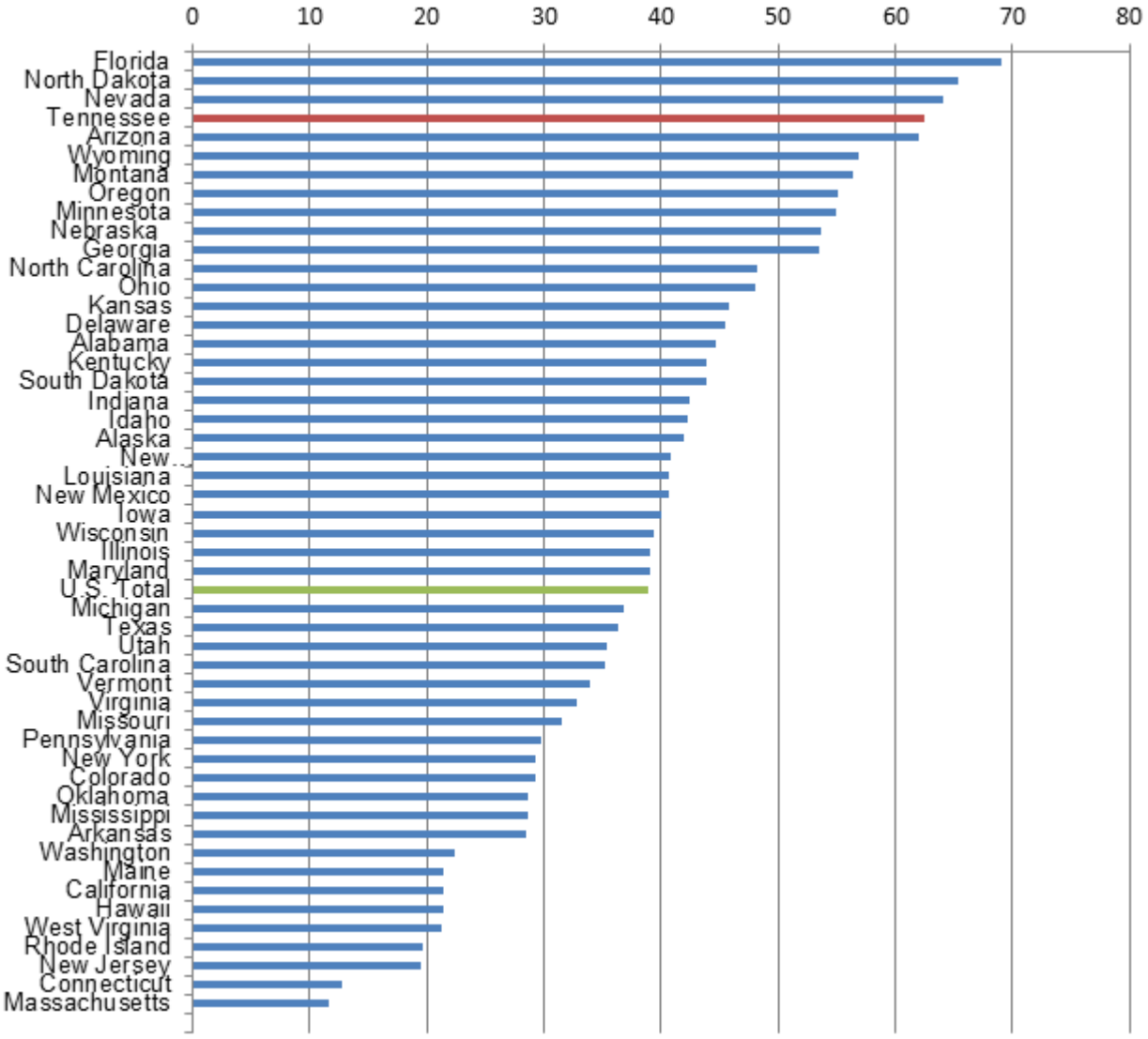
A **structurally deficient** bridge requires significant maintenance and repair to remain in service. A highway bridge is classified as structurally deficient if the deck, superstructure, substructure, or culvert is rated in "poor" condition (0 to 4 on the National Bridge Inventory rating scale).

A **functionally obsolete** bridge does not meet current design standards (for criteria such as lane width), either because the volume of traffic carried by the bridge exceeds the level anticipated when the bridge was constructed and/or the relevant design standards have been revised. Any bridge classified as structurally deficient is excluded from the functionally obsolete category.

Sources: U.S. Department of Transportation, Federal Highway Administration, Bridges and Structures, Updated Aug. 29, 2013, http://www.fhwa.dot.gov/. 2010 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance, Chapter 3,System Conditions: Highways and Bridges, http://www.fhwa.dot.gov/.

The Tennessee Section of the American Society of Civil Engineers (ASCE) produced a 2009 infrastructure report card for Tennessee (the most recent), which rated the state's bridges at B- compared to the national rating that year of C.[9] The national ASCE rated the nation's bridges at C+ in its 2013 Report Card for America's Infrastructure.[10]

Exhibit 2: Percent of Roads in Good Condition by State, 2012



Note: The graph contains no information about local road conditions in Tennessee; the graph includes information about state-maintained roads only. Information was drawn from two tables in the Highway Statistics for 2012: Table HM-63 contains data for pavement roughness by International Roughness Index (IRI) and Present Serviceability Rating (PSR) for rural major collectors, urban minor arterials, and urban major and minor collectors; Table HM-64 contains data for pavement roughness by IRI for rural and urban interstates, other freeways and expressways, other principal arterials, and minor arterials.
Source: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Policy Information, *Highway Statistics 2012*, Table HM-63: Functional System Length – 2012, Miles by measured pavement roughness/ Present Serviceability Rating, http://www.fhwa.dot.gov/, (accessed Aug. 5, 2014), and Table HM-64: Length by measured pavement roughness, all systems, http://www.fhwa.dot.gov/ (accessed Aug. 5, 2014).

Funding for Tennessee's Transportation System

Tennessee's transportation system is supported by federal, state, and local funding. Federal and state highway user taxes and fees are the primary source of revenue for the construction and maintenance of highways in Tennessee. Fuel taxes are the largest source of federal and state revenue for highways followed by state vehicle registration and licensing fees. General fund revenues from taxes that are not dedicated to highways make up a large portion of funds used by local governments for highways and have been a source of federal highway funds since 2008.

Federal Funding

The federal government primarily provides funds to the states and large Metropolitan Planning Organizations to help build and maintain the National Highway System – the interstate highway system and other roadways important to the nation's economy, defense, and mobility – as well as other primary roads designated as federal-aid highways. Most state or locally-owned roads with documented safety issues are eligible for federal safety funds. Deficient publicly-owned bridges are eligible for federal bridge grants; states are required to spend a portion of their federal-aid funding on locally-owned bridges. A few other federal transportation grant programs are available.[11]

In 2012, gasoline, diesel, and special fuel taxes made up 80 percent of federal highway revenue. (See Exhibit 4.) Current tax rates are 18.4 cents per gallon for gasoline and 24.4

Exhibit 3: Percent of Deficient Bridges by State, Ranked by Smallest Percent in 2013

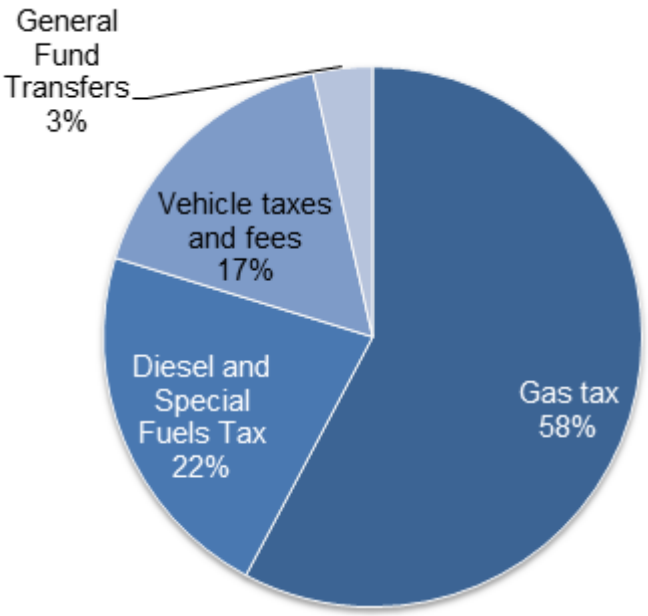
	State	2013	2003	1993
1	Minnesota	11.5	13.7	21.7
2	Arizona	12.1	11.7	12.1
3	Nevada	13.7	15.1	23.8
4	Wisconsin	14.0	20.6	29.2
5	Utah	14.7	20.2	29.3
6	Illinois	15.9	18.3	27.5
7	New Mexico	16.6	20.0	16.8
8	Colorado	16.7	18.1	25.1
9	Florida	16.9	20.5	27.3
10	Montana	17.2	22.7	26.6
11	Georgia	17.6	22.1	30.5
12	Kansas	17.7	24.2	33.6
13	**Tennessee**	19.0	24.3	33.1
14	Texas	19.0	23.5	29.5
15	Idaho	20.3	19.4	23.2
16	Delaware	20.5	17.5	31.4
17	South Carolina	20.7	23.6	21.5
18	Mississippi	21.3	31.5	45.5
19	North Dakota	21.8	24.9	32.3
20	Indiana	22.0	25.3	34.3
21	Alabama	22.4	32.8	38.0
22	Arkansas	22.7	30.0	38.1
23	Oregon	22.9	25.9	29.2
24	Wyoming	23.3	22.6	23.6
25	Alaska	24.2	34.2	27.8
	U.S.	24.3	29.1	36.3
26	Nebraska	24.5	27.0	36.5
27	Ohio	24.6	28.8	35.6
28	South Dakota	24.8	26.2	31.1
29	Oklahoma	25.4	42.6	43.1
30	Iowa	25.7	29.6	31.2
31	Virginia	26.1	28.2	34.1
32	Washington	26.1	28.8	27.8
33	Maryland	26.8	32.0	40.4
34	Missouri	27.2	38.4	51.8
35	Michigan	27.4	32.8	37.5
36	California	27.9	29.5	30.3
37	Louisiana	29.0	34.5	41.7
38	North Carolina	30.5	31.3	40.3
39	Kentucky	31.4	31.4	37.9
40	New Hampshire	32.4	37.5	42.7
41	Maine	32.9	38.0	40.2
42	Vermont	33.1	39.1	45.2
43	Connecticut	34.9	34.6	42.6
44	West Virginia	35.3	41.0	54.7
45	New Jersey	35.5	38.8	48.9
46	New York	38.8	41.8	68.9
47	Pennsylvania	42.2	45.7	48.4
48	Hawaii	43.9	47.2	53.8
49	Massachusetts	52.5	56.7	66.0
50	Rhode Island	56.5	60.4	59.2
51	District of Columbia	71.4	77.7	74.7

Note: The term "deficient" refers to both structurally deficient bridges and functionally obsolete bridges. See "What is a Deficient Bridge?" for definitions.
Source: U.S. Department of Transportation, Federal Highway Administration, Bridges and Structures, Deficient Bridges by State and Highway System, http://www.fhwa.dot.gov/ (accessed Aug. 11, 2014).

cents per gallon for diesel fuel.[12] Federal fuel taxes have not been changed since 1993. Other federal Highway Trust Fund revenues include taxes on truck and trailer sales, tires, and an annual truck ownership tax (17 percent).[13] In 2012, general fund transfers made up 3 percent of federal highway revenue.

In 2012, motorists in Tennessee paid $841 million in federal user fees; the state received $856 million in federal transportation funding, a ratio of 1.02. From 1956 through 2012, Tennessee received $1.03 from the federal Highway Trust Fund for every $1 motorists in Tennessee paid into it.[14]

Exhibit 4: Source of Federal Highway Trust Fund Revenue, 2012



Total Revenue = $36.5 Billion

Notes: Excludes funds dedicated for transit programs.
Source: Federal Highway Statistics, 2012, Table FE-210, http://www.fhwa.dot.gov/ (accessed Oct. 30, 2014).

State Funding

Tennessee's highway fund receives state dedicated taxes and fees as well as federal and local revenue to support the construction and maintenance of the state's transportation network. In 2013, about half (53 percent) of Tennessee transportation funding came from federal sources. Forty-four percent came from state highway-user revenue, and the remaining 3 percent consisted of the matching funds local governments are required to pay to receive state highway funds. (See Exhibit 5.)

Like transportation revenue for the federal government, fuel taxes are the primary source of state-generated revenue (65 percent) for the state transportation budget: 47 percent from gasoline taxes,

Tennessee's "Pay as you Go" Highway Funding System

Tennessee does not currently use debt financing to build or maintain its state and federal-aid transportation network. Tennessee last issued bonds to pay for transportation projects in 1977; these bonds were paid off in 1997. Since that time, the General Assembly has annually authorized some debt for transportation projects as an assurance to highway contractors that general obligation bonds can be issued if current revenues are not sufficient to cover contracted work. Tennessee also allocates a portion of state highway user fees to the Debt Service Fund ($107 million in FY 2013) as security for other state General Obligation Bonds. (TCA 9-9-104(a)) These funds are later transferred by the Department of Finance and Administration to the Highway Fund when the State Funding Board certifies that the funds are not needed to cover payment of any outstanding debt. (TCA 9-9-104(b))

Source: Sandi Thompson, Director, Office of State and Local Finance, Tennessee Comptroller of the Treasury.

14 percent from diesel and other fuel taxes, and 4 percent from the special petroleum taxes. Motor vehicle registration fees are the other major source of state funds for transportation (26 percent). Other sources of revenue for the Tennessee Department of Transportation include sales taxes on aviation, rail, and waterway fuel and a portion of the beer tax and gross receipt taxes for litter removal. (See Exhibit 6.)

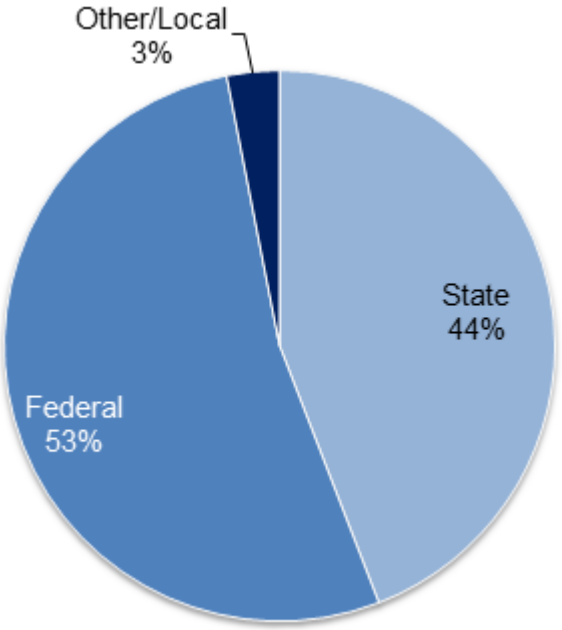
Tennessee has a "pay as you go" state highway funding system: it does not issue debt and does not use general fund revenues to fund TDOT transportation programs.

Local Funding

In 2011, Tennessee local governments' highway revenue came primarily from state user fees (49 percent) and local revenue sources (36 percent).[15] (See Exhibit 7.) Local governments appropriate funds for highways and bridges annually from local revenue sources, such as property tax, wheel tax, and mineral severance tax. Local governments are authorized to levy an additional one cent gasoline tax for gas purchased within their jurisdiction if approved by a public referendum to support public transportation. No local government has used this authority.[16, 17]

In FY 2013-14, local governments received $318.3 million in state funding for highways and bridges.[18] Local governments receive a portion of state fuel tax revenues and State-Aid Highway program funds; the exact amount received by a given local government is based on statutory funding formulas.[19] Exhibit 8 lists the state highway funds that were distributed to local governments in FY2014 and the distribution formulas.

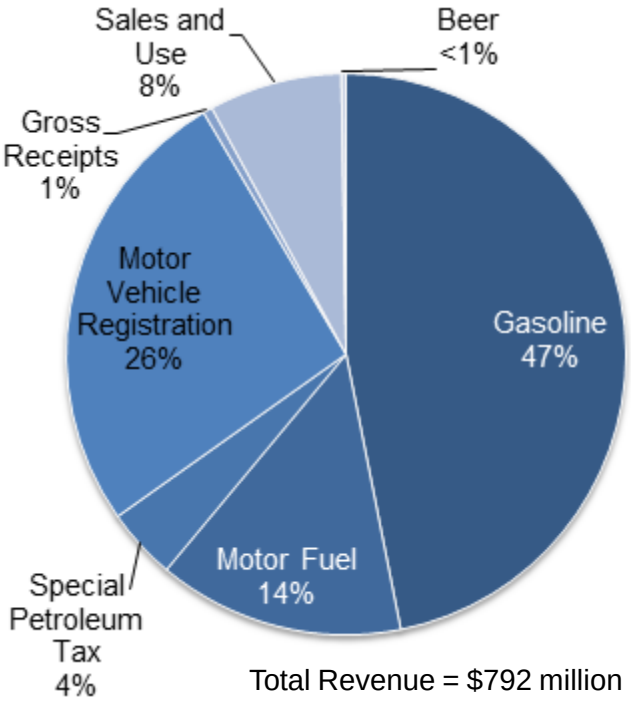
Exhibit 5: Source of Tennessee Transportation Revenue, FY2013



Total Revenue = $1.86 billion

Source: State of Tennessee, Budget FY 2014-15, p. B-320, http://www.tn.gov/f (accessed Oct. 30, 2014)

Exhibit 6: Source of Tennessee State Transportation Revenue, FY2013



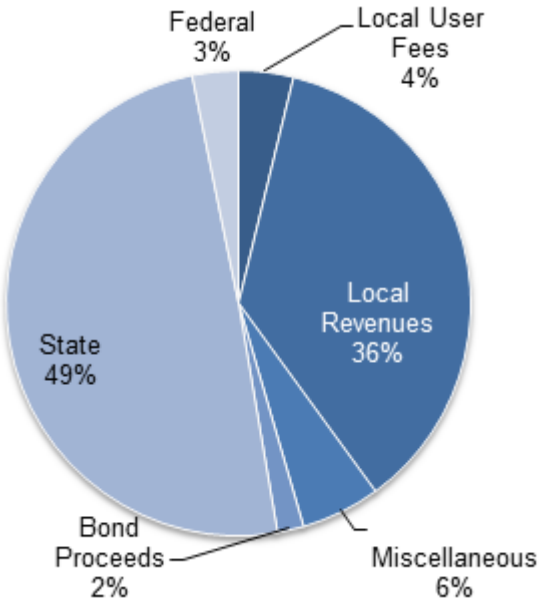
Total Revenue = $792 million

Note: Includes $107 million in gas tax revenue initially allocated to the Debt Service Fund.
Source: State of Tennessee, Budget FY 2014-15, p. A-65, http://www.tn.gov/ (accessed Oct. 30, 2014).

To receive their share of the 1985 increase in fuel taxes, county governments may not reduce the amount of local revenue allocated to highways below the average for the prior five years.[20]

Federal funds made up 3 percent of local highway revenues in 2011. These primarily include federal-aid highway funds for designated locally-owned federal-aid highways in some cities. Locally-owned roads also may receive federal safety, bridge, and other transportation grants.[21]

Exhibit 7: Sources of Highway Revenue, Tennessee Local Governments, 2011



Total Revenue = $591.7 million

Source: Federal Highway Administration, *Highway Statistics 2012*, Table LGF-21, updated Oct. 2013, http://www.fhwa.dot.gov/ (accessed Nov. 18, 2014).

Tennessee Transportation Highway Taxes and Fees and Distribution

Fuel Taxes

Tennessee has fixed per gallon excise taxes on fuel for motor vehicles using public roadways. Tennessee's gasoline tax is 20 cents per gallon and has been set at that rate since 1989. The tax on diesel fuel is 17 cents per gallon, which was last set in 1990. Tennessee highway users also pay a special petroleum tax of 1.4 cents per gallon, which includes an environmental assurance fee of 0.4 cents per gallon earmarked for the Petroleum Underground Storage Tank Fund. (See Exhibit 9 on the history of the highway user taxes and fees in Tennessee.)

Tennessee fuel tax revenue is primarily dedicated to state and local roads after a small percentage (about 2 percent or less) is deducted from the state general fund to go toward the costs of collecting and administering the taxes.[22] Exhibit 10 shows the apportionment of fuel taxes to the state, counties, and cities to support highways.

Motor Vehicle Registration

Tennessee law establishes an annual state motor vehicle registration fee, which varies by type of vehicle and license plate.[23] Fees range from $21.50 for a passenger motor vehicle to $1,368.75 for a freight motor vehicle with a declared maximum weight of 80,000 pounds.[24] County clerks collect the fees and remit them to the Tennessee Department of Revenue, which distributes the funds according to a series of legislative directives. In general, state law directs that 98 percent of revenues derived from motor vehicle registration fees are to be distributed to the highway fund and 2 percent to the general fund, but several other legislative directives must first be fulfilled.[25] Two of the directives include

Exhibit 8: Amount and Distribution of State Highway Funds to Local Governments, FY2014

Gasoline and Diesel Fuel Taxes:

Gasoline Tax	$232,900,000
Diesel Tax	$ 42,800,000

Counties: Approximately 5 cents of the 20 cent per gallon gasoline tax [(a)]; 3 cents of the 17 cent diesel tax

- 50% shared equally among 95 counties
- 25% based on population
- 25% based on land area

Cities: 2.5 cents of 20 cent per gallon gas tax; 1.5 cents of 17 cent diesel tax

- Based on population

Special Petroleum Tax and Export Fees:

$12,017,000 from 1 cent per gallon special privilege tax on all petroleum products and 1/20 of 1 cent on certain petroleum products exported from the state

Counties: $381,583 per month based on population
Cities: $619,833 per month based on population [(b)]

State Aid Program: Limited to designated State-Aid Highways and bridges on county-owned roads (*TCA* 54-4-403 and 54-4-501, et seq.)

Annual appropriation

State-Aid Roads	$ 21,082,000
State Bridge Program	$ 9,540,000

Highways: Requires 25% local match (*TCA* 54-4-404 and 54-4-103)

- 50% shared equally among 95 counties
- 25% based on population
- 25% based on land area

Bridges: Requires a 20% local match (*TCA* 54-4-507); 2% in FY15 and FY16 [(c)]

- 50% shared equally
- 50% based on structural needs from bridge inspections

Notes: (a) University of Tennessee, County Technical Assistance Service is allocated $28,250 per month from counties' share of gas tax.
(b) University of Tennessee, Center for Government Training is allocated $10,000 per month from cities share of special petroleum tax.
(c) Public Chapter 573 of 2014 reduces the minimum local match to 2 percent in FY 2015 and 2016; *Tennessee Code Annotated* 54-4-507(d).
Source: State of Tennessee Budget, Fiscal Year 2014-2015, pp. A-12, A-66 and A-76 through A-78, http://www.tn.gov/. *Tennessee Code Annotated* as noted. State bridge program appropriation in Public Chapter 919 of 2014 (Appropriations Bill), Section 1.2, Item 30, http://www.tn.gov/ (accessed Dec. 8, 2014).

Exhibit 9: Tennessee Highway User Rate History

Gasoline Tax		Motor (Diesel) Fuel Tax		Special Petroleum Tax [a]	
Cents per gallon	Effective date	Cents per Gallon	Effective date	Cents per gallon	Effective Date
2	1923	7	1941	1	1979
3	1925	8	1963	1.4	1990 [b]
5	1929	12	1981	[c]	1998
7	1931	14	1986		
9	1981	15	1987		
12	1985	16	1989		
16	1986	17	1990		
20	1989				

Notes: (a) Prior to 1979, Tennessee collected a gas inspection fee, which was set at one cent per gallon in 1967. According to the Department of Revenue the 1979 act changed the name to the special petroleum tax to reflect the change from a regulatory fee to a revenue raising device.
(b) A 0.4 cent per gallon environmental assurance fee was added and earmarked to the Underground Storage Tank Fund. (Public Chapter 1012, 1990)
(c) A .05 cent per gallon export tax was added for fuel stored in the state and subsequently exported; a fuel wholesaler is reimbursed 0.95 cent per gallon of the special petroleum tax on such fuel. (Public Chapter 316 (1997), *TCA* 67-3-205)
Sources: Stan Chervin, et al., *Highway Finance in Tennessee*, Tennessee Advisory Commission on Intergovernmental Relations, Oct. 2002, p. 24, http://www.state.tn.us/; Tennessee Departments of Revenue, http://www.tn.gov/revenue/tntaxes/motorfuel.shtml, and Transportation, http://www.tdot.state.tn.us/gastax/history.htm.

Exhibit 10: Apportionment of Tennessee Fuel Taxes

	Gasoline Tax 20 cpg	Motor Fuel (Diesel) Tax 17 cpg	Special Petroleum Tax (1 cpg) & Export Tax[b] (.05 cpg)	Environmental Assurance Fee 0.4 cpg
State General Fund	1.6%	2%	2% after local apportionment	
State Highway Fund	60.3% [a]	71.6% [a]	98% after local apportionment	
Cities	12.7%	8.8%	$381,583	
University of Tennessee Center for Government Training			$10,000	
Counties	25.4%	17.6%	$381,583	
Petroleum Underground Storage Tank Fund				100%

Notes: (a) Includes revenue initially allocated to the Debt Service Fund ($107 million in FY 2013) as security for other state General Obligation Bonds. Those funds are later transferred to the Highway Fund when the State Funding Board certifies that the funds are not needed to cover payment of any outstanding debt (*TCA* 67-3-901, et seq.).
(b) Export Tax for fuel stored in Tennessee and subsequently exported outside the state (*TCA* 67-3-205).
Source: State of Tennessee Budget, FY 2014-15, pp. A-76 through A-78, http://www.tn.gov/ (accessed Dec. 8, 2014).

appropriating funds annually to cover the cost of issuing the plates and collecting $1 per registration to cover the cost of making the plates reflective.[26] In 2013, out of the total monies distributed from receipt of motor vehicle registration fees (about $255 million), the Department of Revenue distributed about 82 percent (about $208 million) to the highway fund. Other funds and uses to which motor vehicle registration fees are statutorily directed, prior to distribution to the highway fund, include those shown in Exhibit 11.

Tennessee also sells specialty and personalized license plates, the purchase price of which includes the base $21.50 plus $35 for either a specialty plate (i.e., for a university, charity, cultural organization) or a personalized plate (or $70 for both). Most of the funds for specialty and personalized plates go to the applicable organization and/or the Tennessee Arts Commission; 10 percent of the revenue from certain specialty plates and 20 percent of the revenue from cultural plates go to the highway fund.[27]

The bulk of the state's motor vehicle registrations (62 percent) come from standard license plates for regular automobiles. The total number of current license plates registered in Tennessee as of July 2014 was about 6.8 million; more than 4 million of these were for automobiles with traditional plates. Trucks account for about 1.5 million license plates, about 22 percent of registrations.[28]

Tennessee state law also authorizes the collection of fees for issuing a certificate of title for a motor vehicle. No portion of the $5.50 fee is allocated to the Highway Fund; $1.50 of the fee is earmarked for debt service on a state parks bond issue and $0.50 is earmarked for enforcement action against odometer fraud. The remainder of the $5.50 is earmarked for capital projects at state parks.[29]

Tennessee Code Annotated 5-8-102 and 7-51-703 authorize counties and municipalities to levy motor vehicle privilege taxes or wheel taxes, but the proceeds from these are not necessarily used for road development or maintenance.

Exhibit 11: Motor Vehicle Registration Fee Distributions Other than the Highway Fund

Fund or Use	Amount of fee increase	Amount distributed in 2013	Legislative Directive
Police Pay Supplement Fund	$1 in most non-commercial fees	$5,378,413	Public Chapter 461, 1985 (TCA 55-4-111)
Trooper Safety Fund	$0.75 in registration fees	$4,292,364	Public Chapter 321, 1987
Motorcycle Rider Safety Fund	$2.00 in motorcycle and autocycle fees	$335,572	Public Chapter 446, 1987 (TCA 55-51-104)
Computerized titling and registration system	$1.00 all fees	$5,785,402	Public Chapter 459, 1999 (TCA 55-4-132)

Source: Kirk Johnson, Director of Research, Tennessee Department of Revenue, e-mail and attachment, July 11, 2014; Catherine Corley, Statistical Research Specialist, Tennessee Department of Revenue, e-mail and attachment, July 16, 2014.

Tennessee Transportation Funding Compared to Other States

While providing some general perspective on how Tennessee compares to other states, state to state comparisons of transportation spending must be used carefully. The cost of road construction and maintenance varies among states based on such factors as climate and terrain, miles of highways and pavement type, population density and number of large cities, traffic levels, and types of vehicles.[30] To control for regional differences based on those factors, the comparisons below focus on states surrounding Tennessee. To account for differences among states in the assignment of financial responsibility for roads between state and local governments, comparisons focus on spending at all levels of government in a state. The following comparisons provide some general perspective on how Tennessee's transportation funding compares with other states. More detailed analysis would be needed to determine the possible reasons for funding differences among states and their impact on the quality of a state's transportation infrastructure.

Revenue Used for Highways

Revenue used for highways in Tennessee was the lowest of all states in 2010, at $325.71 per capita. For all states combined, revenue per capita was $620.59, ranging from $325.71 to $1,561.88. For states surrounding Tennessee, the range was $485.09 to $623.22. (See Exhibit 12.)

Tennessee ranked 36 among the 50 states (highest to lowest) on highway-user fees per capita in 2010, at $246.23. For all states, user fees generated an average of $256.32 per capita, ranging from $144.24 to $564.40. States surrounding Tennessee ranged from $202.47 to $351.88. (See Exhibit 12.)

Exhibit 12: Revenue Used for All Highways per Capita, All Levels of Government, 2010

	Receipts per Capita	User Fees per Capita
All States	$620.59	$256.32
Tennessee	**$325.71**	**$246.23**
Alabama	$489.33	$298.34
Arkansas	$518.25	$289.47
Georgia	$490.79	$202.47
Kentucky	$509.90	$351.88
Mississippi	$553.73	$314.33
Missouri	$608.26	$271.46
North Carolina	$485.09	$287.76
Virginia	$623.22	$225.92

Source: Federal Highway Administration, *Highway Statistics* 2010 and 2011, Tables HF-1, https://www.fhwa.dot.gov/ and DL-1C, https://www.fhwa.dot.gov/ (both accessed Oct. 30, 2014).

Sources of Revenue

Tennessee relies more heavily on highway-user taxes to fund highway spending than all other states. In Tennessee, user fees made up 76 percent of highway revenue for all levels of government in 2010.[31] For all states, user fees made up 41 percent of revenue for highways, ranging from 24 percent to 76 percent. For states surrounding Tennessee, the percentage ranged from 36 percent to 69 percent. Other states rely more on general fund revenue, bond proceeds, tolls, and other taxes to fund highways than Tennessee. (See Exhibit 13.)

Exhibit 13: Revenue used for All Highways by Source (%), All Levels of Government, 2010

State	Total Receipts	Highway User Revenue	Tolls	General Funds	Property Tax	Bond Receipts	Other
All States	100%	42%	5%	22%	5%	11%	15%
Tennessee	**100%**	**76%**	**0%**	**15%**	**0%**	**2%**	**7%**
Alabama	100%	61%	0%	23%	3%	0%	13%
Arkansas	100%	56%	0%	25%	5%	0%	14%
Georgia	99%	41%	1%	30%	1%	18%	10%
Kentucky	99%	69%	0%	21%	0%	0%	9%
Mississippi	101%	57%	0%	23%	8%	3%	10%
Missouri	100%	45%	0%	14%	3%	16%	22%
North Carolina	100%	59%	0%	16%	0%	8%	17%
Virginia	99%	36%	3%	33%	0%	3%	24%

Note: Some states' total receipts do not equal 100 percent because of rounding. Table includes all revenue used for highways as reported by federal, state, and local governments in 2010.
Source: Federal Highway Administration, *Highway Statistics*, 2011, HF-1, https://www.fhwa.dot.gov/ (accessed Dec. 9, 2014).

Analysis: Issues and Challenges with Current Transportation Funding

Declining Highway User Fee Revenue

Tennessee's fixed-rate highway user taxes are a diminishing tax base and without change are not expected to provide a long-term, stable, and growing source of revenue to fund transportation infrastructure.

Tennessee's fixed per gallon fuel tax revenues are no longer growing with the economy and population. Prior to 2000, user fee revenues grew as the number of vehicles, miles of travel, and fuel consumption grew. User fee revenues have stayed relatively flat since 2000, and have decreased substantially when adjusted for inflation. Fuel consumption, which drives the revenue collected from fixed fuel taxes, has declined in recent years and is expected to continue to decline as a result of several factors, which are described in more detail below, including:

- increased fuel efficiency of vehicles, and efforts to further increase fuel efficiency in new vehicles
- higher fuel prices, as well as demographic changes and preferences that have reduced the growth in vehicle miles traveled
- development of alternative fuel vehicles, such as electric vehicles, which are not currently subject to highway fuel taxes

Federal highway revenue, which funded 53 percent of Tennessee's state transportation spending in FY2013, primarily comes from federal fixed-rate fuel taxes, which mirror the stagnating revenue trends seen in Tennessee.

Diminished Growth in Tennessee Highway User Revenue

Throughout the 1990s, highway user revenues grew at an average annual rate of 3 percent. The annual growth rate slowed to 0.6 percent beginning in 2000, and gasoline tax revenues, which made up 57 percent of state highway user revenue in FY2013, declined in FY2012 and FY2013. Highway user tax revenues, after decreasing 6 percent in 2008, remain below pre-2008 recession levels. (See Exhibit 14.)

As population increases and more people use the roadways, and as the economy grows and more goods are transported, the need for road construction and maintenance also grows. Tennessee highway user revenue has not grown at similar rates to its population and its economy since 2000. From 2000 through 2013, Tennessee's population increased 14 percent, gross domestic product (GDP) grew 57 percent, and personal income per capita increased 43 percent; highway user revenues increased 8 percent. (See Exhibit 15.)

In more recent years, other factors have tempered the rise in fuel consumption and diminished the corresponding growth in fuel tax revenue. Also, Tennessee last increased its gasoline and motor (diesel) taxes in 1989 and 1990, respectively.

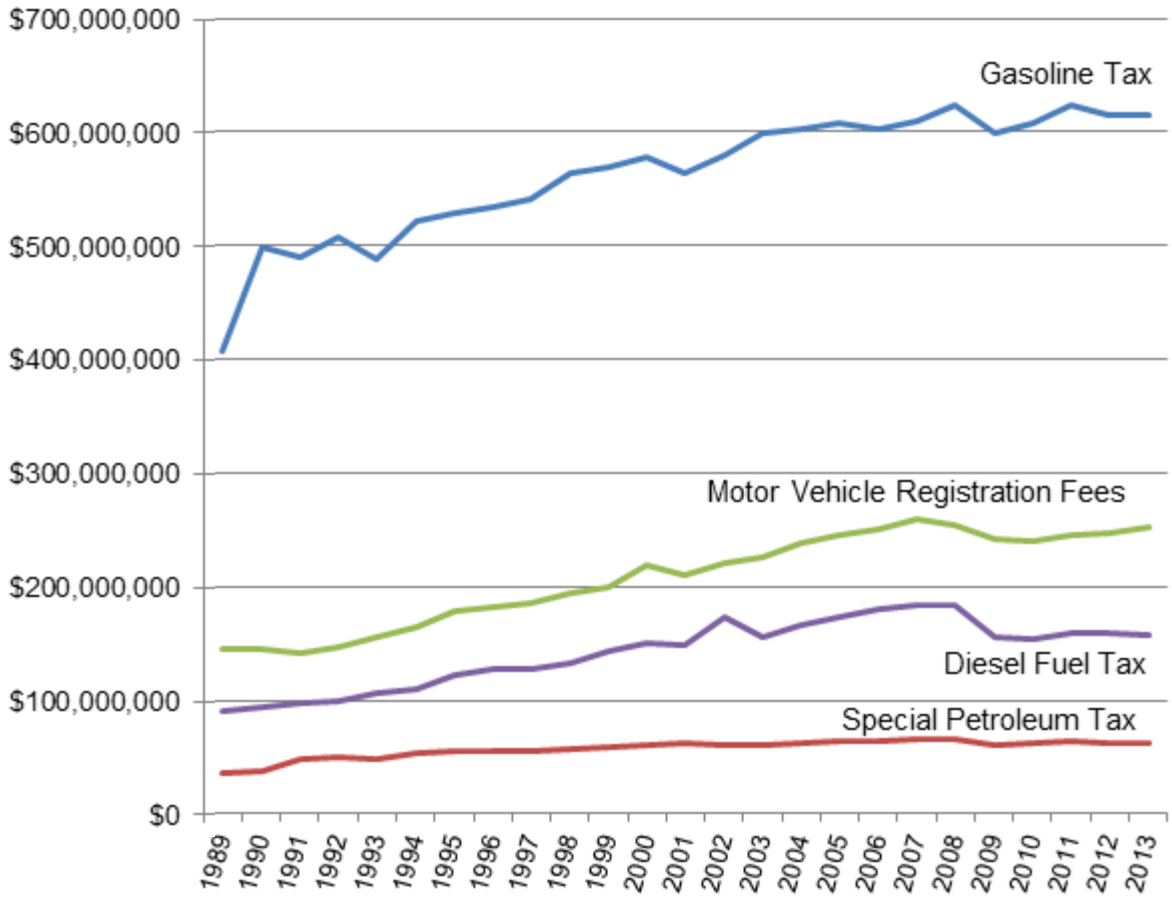
Decrease in Fuel Consumption

Taxable fuel consumption in Tennessee increased 27 percent between 1989, when the state gasoline tax was last increased, through 2012. However, the fuel consumption rate of growth has been significantly less since 2000: 5 percent between 2000 and 2012, compared to 20 percent from 1989 to 2000. Taxable fuel consumption peaked in 2007, declined with the recession between late-2007 and mid-2009, and in 2012 remained below the 2007 peak. (See Exhibit 16.)

Eroding Purchasing Power of Fuel Taxes

The purchasing power of Tennessee's fixed-rate fuel taxes has declined as general inflation and highway construction-related costs, in particular, have increased.[32] Exhibit 17 shows the decline in the purchasing power of fuel tax revenues between 1989 and 2012 after adjusting for general inflation and increased highway construction costs. Tennessee's current gas tax rate of 20 cents per gallon was last set in 1989, when it was increased from 16 to 20 cents. Tennessee's gas tax would need to be 38 cents per gallon in 2014 to equal the purchasing power of 20 cents in 1989; the 17 cent per gallon diesel fuel tax would need to be 31 cents.[33]

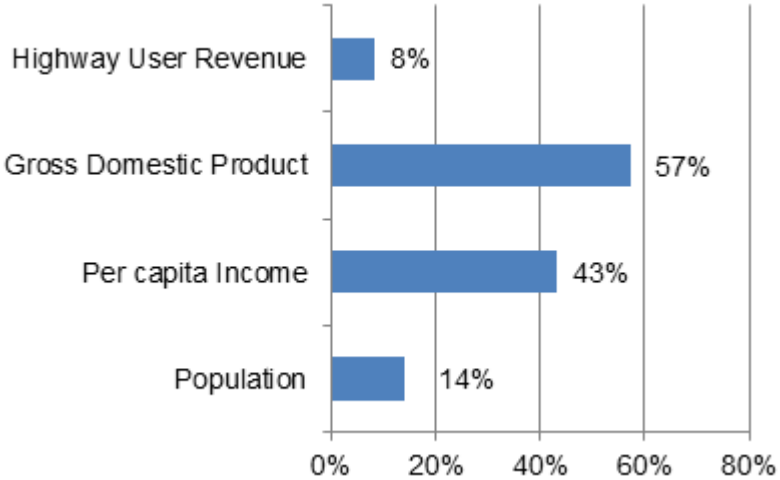
Exhibit 14: Tennessee Highway User Tax Revenues, 1989-2013



Source: Tennessee Department of Revenue, Collection Spreadsheets, 1989-2013, http://tn.gov/ (as of March 18, 2014).

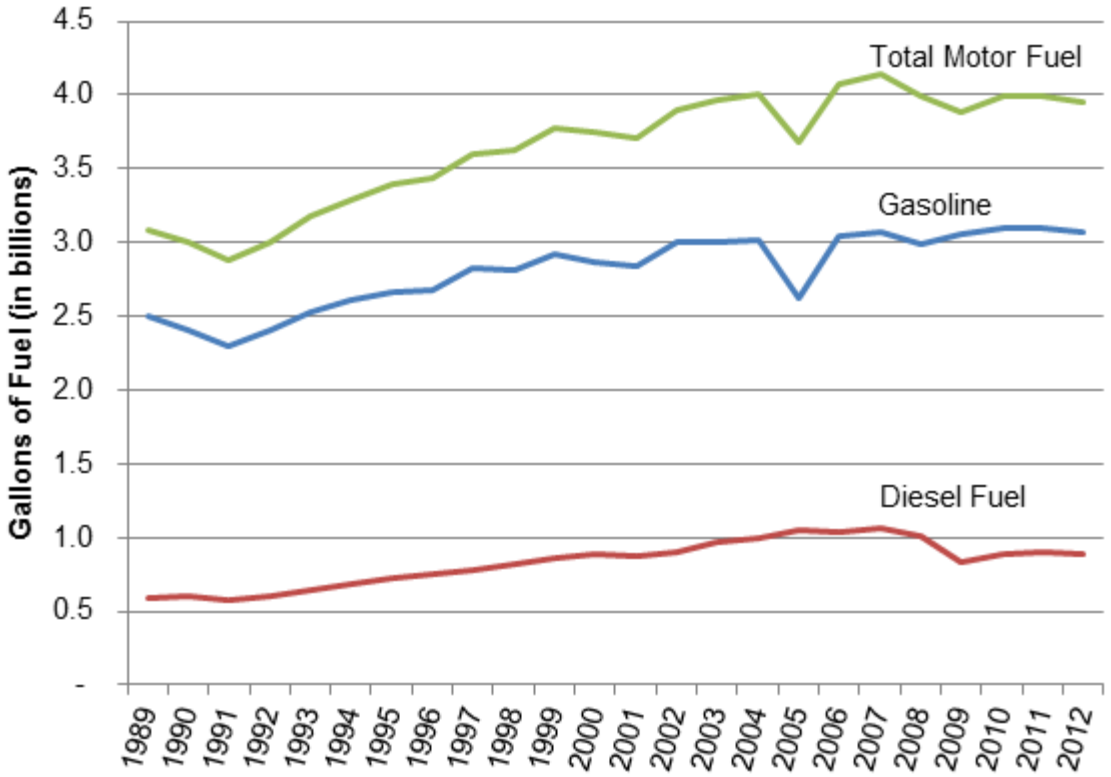
Based on the increase in highway construction-related costs (e.g., asphalt, concrete, heavy equipment, and wages), a highway construction project that cost $500,000 in 1989 would cost about $780,000 to complete in 2012.[34] Highway construction costs are related to the cost of petroleum products, such as asphalt and fuel, to operate heavy machinery. As fuel costs increase (and average U.S. retail gas prices increased from $1.02 per gallon in 1989 to $3.53 in 2013),[35] so does the cost of highway construction.

Exhibit 15: Percent Change Tennessee Highway-User Revenue Compared to Population and Economic Growth, 2000 through 2013



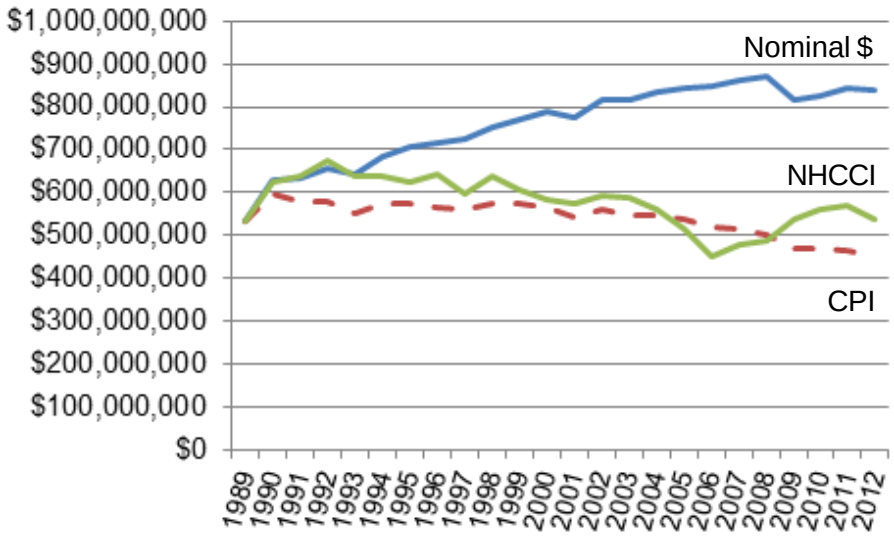
Sources: Analysis based on data from U.S. Bureau of Economic Analysis, U.S. Census Bureau, Tennessee Department of Revenue.

Exhibit 16: Tennessee Taxable Fuel Consumption, in gallons, 1989 through 2012



Note: The decrease in 2005 corresponds with the gas shortages and high prices following Hurricane Katrina in the Gulf of Mexico.
Source: Federal Highway Administration, *Highway Statistics*, 1989 through 2012, Table MF-2, https://www.fhwa.dot.gov/ (accessed Dec. 9, 2012).

Exhibit 17: Tennessee Fuel Tax Revenue, Nominal and Inflation-adjusted Dollars, 1989 through 2012



Notes: (a) Includes all revenue from the gasoline taxes, special fuels tax, and gas inspection fee as collected by the Tennessee Department of Revenue.
(b) The NHCCI replaced the FHWA's Bid Price Index (BPI) in 2004, but FHWA staff provided historical BPI data to OREA to develop trends from 1989.
Sources: Tennessee Department of Revenue, Statistics/Collections, http://www.tn.gov/revenue/ (accessed Dec. 8, 2014); U.S. Bureau of Labor Statistics, Consumer Price Index, All Urban Consumers (CPI), http://www.usinflationcalculator.com/ (accessed Oct. 10, 2014); Federal Highway Administration, National Highway Construction Cost Index (NHCCI), https://www.fhwa.dot.gov/ (accessed Oct. 10, 2014). Adapted from model presented in Institute on Taxation and Economic Policy, *Building a Better Gas Tax: How to Fix One of State Government's Least Sustainable Revenue Sources*, Dec. 2011, http://www.itep.org/ (accessed Nov. 7, 2014).

Tennessee fuel taxes are excise taxes or “per unit taxes” that are collected by the gallon; they are not tied to the price of fuel or costs of constructing and maintaining a transportation network.

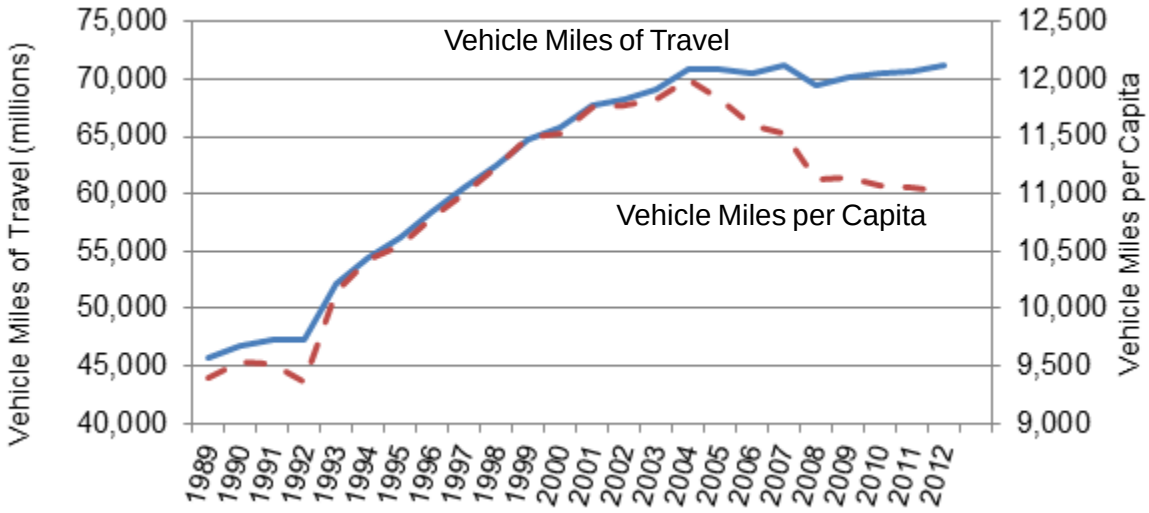
Reduced Growth in Vehicle Miles of Travel

A 44 percent increase in miles of travel from 1989 to 2000 contributed to an increase in fuel tax revenue in Tennessee. From 2004 through 2012, however, miles of travel stayed fairly constant, and actually decreased in 2008, due in part to rising fuel costs and the beginning of the recession. Total miles of travel did not return to the pre-recession level until 2012. Vehicle miles per capita decreased 8 percent from 2004 through 2012. (See Exhibit 18.)

Prior to 2000, fuel tax revenue continued to grow with increases in the number of vehicle miles driven. Factors include the increase in commuters to suburban residential communities, an increase in truck traffic to meet the change to “just in time” manufacturing processes, and the increase in women entering the workforce. Since 2000, however, factors other than higher gas prices and the recession are decreasing travel demand, including:[36]

- an aging population no longer commuting daily to jobs;
- decreasing rates of licensing and travel among younger age groups;
- technological changes, such as an increase in telecommuting;
- an increasing preference for compact, mixed use neighborhoods, which reduce the need for driving;
- an increase in population living in urban areas, which reduces the length of work commutes and adds options for other modes of transportation, e.g., public transit, walking, and bicycling.

Exhibit 18: Tennessee Vehicle Miles of Travel, 1989-2012



Source: Federal Highway Administration, *Highway Statistics* series, Table VM-2, https://www.fhwa.dot.gov/ (accessed Dec. 9, 2014); U.S. Census Bureau, Intercensal Population Estimates, 1989 through 2013.

The Energy Information Administration's Energy Outlook 2014 projects an annual increase in vehicle miles of travel for highway vehicles of 1.2 percent from 2012 through 2040, if recent trends in travel demand and other factors continue. This is much less than the 4 percent annual growth seen from 1989 to 2000, but more than the 0.4 percent annual increase between 2001 and 2012.[37]

Most of the vehicle mile growth to 2040 is expected from commercial trucks. Light duty vehicles (8,500 pounds or less) have a projected growth rate of 0.9 percent annually; vehicle mile growth for commercial light trucks (8,500 to 10,000 pounds) is estimated at 1.8 percent and 1.9 percent for freight trucks (over 10,000 pounds).[38]

Increased Fuel Economy of Vehicles

Improvements in motor vehicle fuel efficiency – increasing the miles traveled per gallon of fuel purchased – reduce the amount of fuel tax collected. Average fuel economy for new vehicles sold in the U.S. increased from 19.9 miles per gallon (mpg) in model year 2005 to 23.6 mpg in 2012.[39] Proposed federal Corporate Average Fuel Economy (CAFE) standards call for a nationwide improvement in fuel economy for cars and light trucks. The proposed 2011 rule for new vehicles manufactured beginning in 2017 is expected to increase the average from 23.6 miles per gallon in 2012 to 49.6 in 2025, representing "the most significant federal action ever taken to reduce GHG [greenhouse gas] emissions and improve fuel economy in the U.S."[40]

In May 2012, the Congressional Budget Office (CBO) estimated that the proposed 2025 fuel economy standards will significantly decrease fuel consumption and, thus, reduce the amount of revenue going to the Highway Trust Fund. The CBO estimates a 21 percent reduction in *total* fuel consumption (including fuels other than gasoline that are also subject to the fuel tax) by light-duty vehicles in 2040. CBO predicts the 21 percent decrease will reduce gasoline tax revenues to the Highway Trust Fund by 21 percent. The decrease is estimated to reduce total trust fund receipts (from the gas tax and other sources) by 13 percent.[41]

The U.S. Energy Information Administration (EIA) projects an average annual increase of 0.9 percent in vehicle miles of travel for cars and light trucks from 2012 to 2040, but also estimates that rising fuel economy will more than offset the expected increases.[42] The energy demand for heavy-duty vehicles (i.e., fuel needed for tractor trailers, buses, vocational vehicles, and heavy-duty pickup trucks and vans) is projected to grow between 2012 and 2040 at a faster pace than other modes of transportation, but the growth will be offset by the improved fuel efficiency of light-duty vehicles.[43]

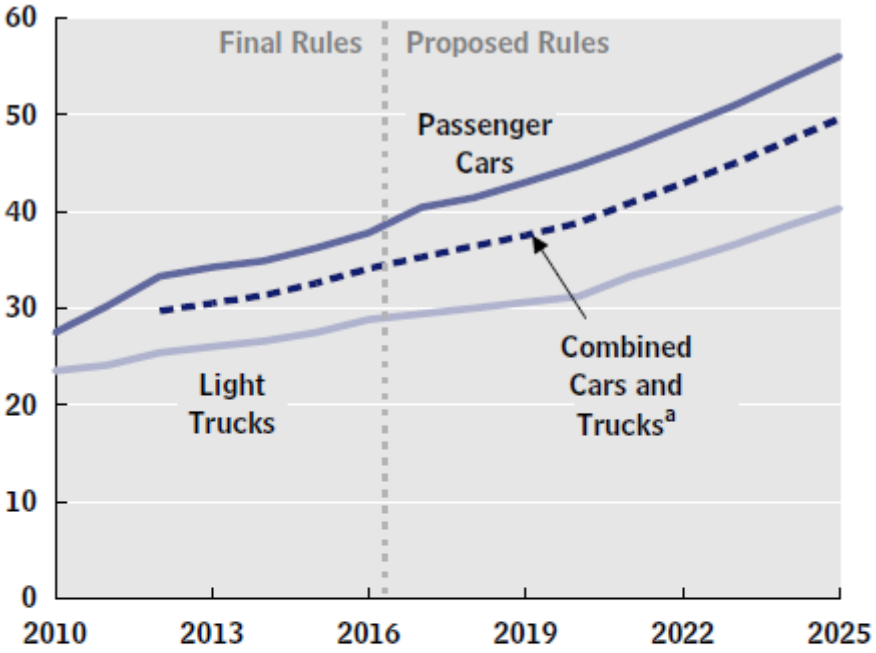
Emergence of Alternative Fuel Vehicles

The number of AFVs produced and sold has increased in the last several years, due in part to federal incentives. In 1995, the number of AFVs in use in the U.S. was about 246,000; by 2011, the number (including hybrids) was about 2.4 million.[44] Growth in the number of alternative fuel vehicles (AFVs) on the road is expected to continue, but is not expected to comprise a large share of the motor vehicle market for several decades. The Energy Information Administration projects alternative fuel passenger vehicles to make up 55 percent of new passenger vehicle sales by 2040.[45]

As of 2012, AFVs represented a small share of the motor vehicle market, comprising less than 0.5 percent of all vehicles manufactured.[46] Even so, states have become concerned about the effects that the growing use of alternative fuel, hybrid, and high-efficiency vehicles could have on transportation funding.

Sales of all-electric vehicles are expected to increase, but the vehicles are not projected to have a major market share even by 2040. Plug-in hybrid and all-electric vehicles are projected to account for 2 percent of total light-duty vehicle sales by 2040.[47]

Exhibit 19: Estimated Average Fuel Economy of Light-Duty Vehicles under CAFE Standards, 2010 to 2025



Sources: Congressional Budget Office based on data from the Department of Transportation.

Notes: CAFE standards are fuel economy targets that apply to vehicles on the basis of size and type; smaller vehicles have higher fuel economy targets. The average fuel economy of the fleet of new light-duty vehicles will depend on the mix of vehicles that is actually produced.

CAFE = corporate average fuel economy.

a. Combined standards were not calculated until 2012.

Source: Terry Dinan and David Austin, Congressional Budget Office, *How Would Proposed Fuel Economy Standards Affect the Highway Trust Fund?*, May 2012, p. 5, http://www.cbo.gov/ (accessed Aug. 21, 2014).

U.S. Department of Transportation definition of alternative-fuel vehicle (AFV)

A vehicle designed to operate on an alternative fuel (e.g., compressed natural gas, methane blend, electricity). The vehicle could be either a dedicated vehicle designed to operate exclusively on alternative fuel or a nondedicated vehicle designed to operate on alternative fuel and/or a traditional fuel.

Source: U.S. Department of Transportation, Transportation and Climate Change Clearinghouse, Glossary, http://climate.dot.gov/ (accessed Nov. 18, 2014).

The amount of natural gas fuel used for transportation is also projected to grow, especially for medium to heavy trucks, but will remain about 3 percent of energy consumed for transportation by 2040.[48]

How hybrid-electric and all-electric vehicles fit into the passenger vehicle market

Figures from the U.S. Department of Energy's Alternative Fuels Data Center provide a current market perspective of hybrid-electric and all-electric vehicles.

- Total passenger vehicles (conventional and AFV) sold in the U.S. in 2013: 14.37 million
- U.S. hybrid-electric vehicle (HEV) sales in 2013: 495,529
- Number of all-electric vehicles in use in the U.S. in 2011: 67,295

Source: U.S. Department of Energy, Alternative Fuels Data Center, Light-Duty Vehicles Sold in the U.S., http://www.afdc.energy.gov/; U.S. Hybrid-Electric Sales, http://www.afdc.energy.gov/; Alternative Fuel Vehicles in Use, http://www.afdc.energy.gov/ (all accessed Sept. 3, 2014).

Structural Issues with Fixed-Rate Highway Excise Taxes

Current per gallon user fees are not as directly linked to road use as in the past. The amount of fuel taxes paid by drivers depends on the fuel efficiency of a vehicle and in part on the type of vehicle driven. A driver of a more fuel-efficient passenger vehicle who drives the same miles as a driver with a similar, but less fuel-efficient vehicle pays less in fuel taxes, but contributes equally to the wear and tear on the road. While trucks pay more in estimated fuel taxes per mile than passenger vehicles for the same number of miles, the additional revenue may not fully compensate for the pavement damage resulting from their heavier weight.[49] (See "Weight-Distance Tax.")

The current fuel tax structure is not designed to influence motorists' travel choices and behaviors. Some costs of highway use – pavement damage, congestion, accidents, pollution, and noise – are more related to vehicle miles traveled than fuel consumption. A 2011 CBO report noted that "estimates from several sources indicate that most highway users currently pay much less than the full cost of their travel."[50] For example, passenger vehicles currently pay about 2 cents per mile through fuel taxes. In comparison, the FHWA estimates that the average cost of congestion from automobile travel is about 10 cents per mile[51] – much higher in urban areas and much lower in rural communities.

Exhibit 20: Alternative Fuel Vehicles in Use, 2011

Type of Alternative Fuel	Light Duty Vehicles	Medium Duty Vehicles	Heavy Duty Vehicles	Total
Electric-Gasoline Hybrid	2,126,357	N/A	N/A	2,126,357
Liquid Petroleum Gas (Propane)	76,647	26,855	35,975	139,477
Natural Gas	66,147	23,473	32,030	121,650
Electric – Battery	66,409	87	779	67,275
Hydrogen	425	1	101	527
Total	2,335,985	50,416	68,885	2,455,286

Note: This table excludes ethanol-flex fuel vehicles, which totaled 862,837 in 2011, most in the light-duty category. Although ethanol is an alternative fuel, the category is not included here because flex fuel vehicles are designed to run on either gasoline or an ethanol-gasoline blend; in Tennessee flex fuel vehicle owners pay the same tax on ethanol that vehicle owners pay for gasoline.
Source: U.S. Energy Information Administration, Frequently Asked Questions, How many alternative fuel and hybrid vehicles are there in the U.S.?, Last updated: May 16, 2013, http://www.eia.gov/ (accessed Aug. 29, 2014).

Costs of highway use can vary based on where, when, or what an individual drives, which current taxes do not fully account for. Some economists have proposed adopting a different taxing system that would charge drivers differently based on varying factors, such as whether they drive in congested areas or at peak traffic times. An economically efficient taxing system would provide an incentive for highway users to consider all the costs of their road use, to themselves and imposed on others, to determine whether the value of a trip exceeds the full costs. If other costs were included, higher taxes might influence motorists' travel choices and behaviors to reduce costs from highway overuse.

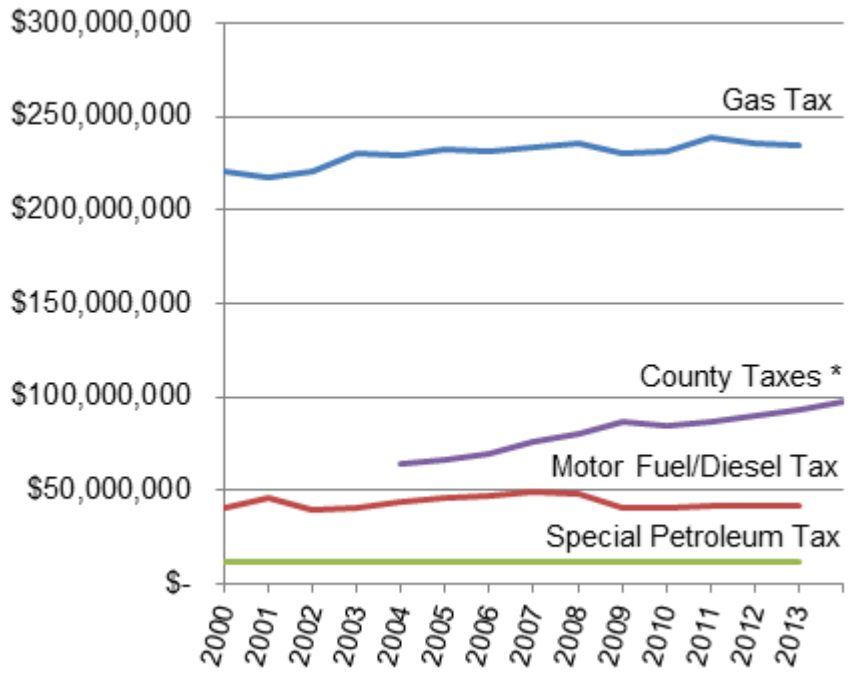
Funding for highways is for the most part based on fuel consumption, which conflicts with other public policy goals to reduce harmful vehicle emissions, to conserve limited fuel resources, and to reduce the need for new highway capacity. As noted previously, funding for transportation infrastructure prior to 2000 increased because fuel consumption increased. Revenue growth diminished after 2000, in part because of other public policies intended to increase fuel efficiency, to increase the use of alternative fuels, and to encourage mass transit, carpooling, or other modes of travel.

Local Government Highway Funding

Local governments face increasing costs of highway maintenance and diminishing revenue growth in highway user fee revenue in part because they rely heavily on state-shared highway user fees. From FY2000 through FY2013, the amount of state fuel tax revenues distributed to local governments increased 6 percent, an average of 0.44 percent per year. This is similar to the 8 percent increase in total statewide fuel revenues. (See Exhibit 14 and Exhibit 21.)

Quantitative information is not available to determine the impact of diminishing revenue growth on the quality and conditions of local roads. Local officials interviewed by OREA indicate funding constraints have led to delays in resurfacing and major maintenance projects.

Exhibit 21: State Highway User Fees Shared with Local Governments, FY2000 through FY2013



Note: * Local taxes appropriated to highways for the 89 counties audited by the Tennessee Comptroller of the Treasury. Comparable information was not readily available from the remaining six counties (Davidson, Hamilton, Knox, McMinn, Shelby, and Washington) audited by certified public accounting firms.
Source: State of Tennessee Budget, FY2001 through FY2014, http://www.tn.gov/ (accessed Dec. 9, 2014. Local taxes to highways provided by University of Tennessee, County Technical Assistance Service, based on the 89 counties' annual financial reports prepared by the Tennessee Office of the Comptroller.

County funding for highways has increased since 2003. Information available for most counties shows an increase from 2003 through 2013 in county tax revenue to fund highways increased 52 percent ($63.7 million to $96.9 million). (See Exhibit 21.) However, local funding for highways varies among Tennessee's county governments. In FY2013, county revenues for highways ranged from 0 percent to 70 percent of total highway revenue.[52] Eight counties used local revenues to fund over half of highway expenditures; 34 counties funded 25 percent to 50 percent; and in 47 counties local revenue made up less than 25 percent of highway expenditures. The local revenue per capita for highways in FY2013 ranged from $0 to $69.

Additional analysis is needed to determine the reasons for the variation in local governments' highway expenditures. Fiscal capacity – which refers to a local government's ability to raise revenue from taxable resources (e.g., property and sales) – is likely one reason. Differences in fiscal capacity among Tennessee counties have long been recognized in the distribution of state education dollars. Other factors that can affect a county's highway expenditures include road miles, traffic volume, population growth, economic development, road conditions, weather, terrain, and other public funding obligations, such as education.

Federal Highway Trust Fund

The future of the federal Highway Trust Fund (HTF) – the source of about half of Tennessee's transportation budget – is uncertain. Congress has not yet come to an agreement about a long-term transportation funding solution to address shortfalls in the HTF. On July 31, 2014, Congress passed the Highway and Transportation Funding Act of 2014, which transfers $8.8 billion to the highway account of the HTF and extends the authority of transportation programs authorized under MAP-21 until May 31, 2015, with spending authority for the HTF extended until June 1, 2015.[53] Federal funds for transportation currently play an important role in state transportation infrastructure maintenance and development.

Congress first transferred funds to the HTF from the general fund in FY 2008, when fund expenditures exceeded estimated revenues. Although there was a surplus in the HTF, revenues fell short by about $4 billion in FY2008 due to the diminishing economy. To maintain the trust fund's solvency, Congress enacted legislation in the fall of 2008 to provide an $8 billion transfer from the general fund, a need that continued in subsequent years.[54] From 2008 to 2014, Congress transferred a total of $54 billion to the HTF.[55] Without these transfers, the Federal Highway Administration would have been unable to pay states for transportation projects they had completed.

The HTF revenue distributed to states funds a substantial portion of the nation's roads and transit infrastructure. Until the last few years, the HTF was a stable and largely predictable fund, with revenues that steadily increased year after year in proportion to the increase in the number of vehicles. According to the Congressional Budget Office, receipts into the HTF, primarily financed by the federal motor fuel (gasoline and diesel) tax, have not kept pace with outlays since 2001.[56] Revenue from the motor fuel tax

has declined over time because the public is driving less and vehicle fuel efficiency has improved. Also, Congress has not raised the motor fuel tax rate since 1993, and inflation has eroded the purchasing power of the fund. Revenues from fuel taxes, which are set at a cents-per-gallon rate rather than a percentage of sale price, do not increase with inflation.

The Congressional Research Service predicts that HTF revenues will continue to fall short of outlays by an average of $15 billion per year through FY2020. (See Exhibit 22.)

Some states have reacted to the federal funding uncertainty by delaying or cancelling state transportation projects. In 2014, the Tennessee Department of Transportation, which cites a project backlog of $8.5 billion, stopped engineering work on all new construction, in preparation for a potential loss of federal reimbursements.[57] Other states that have postponed projects or moved to a maintenance-only approach because of fiscal uncertainty include Kentucky, Oregon, and Wyoming.

Congress has a limited number of actions it could take to address transportation funding:

- reduce spending by narrowing the scope or eliminating federal surface transportation programs
- transfer money from the general fund into the HTF or eliminate the HTF and fund transportation programs directly from the general fund
- authorize other sources of revenue for the HTF

Congress could also choose to reconsider the federal role in transportation. The HTF was originally created as a temporary method to fund construction of the interstate system, which is essentially

Exhibit 22: Projected Highway Trust Fund Sufficiency: FY2015 – FY2020 (Billions of Dollars)

Fiscal Year	HTF Revenue	HTF Outlays	Difference
2015	39	53	-14
2016	39	53	-14
2017	39	53	-14
2018	39	55	-16
2019	39	55	-16
2020	39	55	-16
Four-year total	156	214	-58
Four-year annual average	39	54	-15
Six-year total	234	324	-90
Six-year annual average	39	54	-15

Notes: Includes combined figures from both the highway account and the mass transit account. The HTF Revenue column includes interest on the HTF balances. Outlays refer to the spending of budget authority. In this case the spending of funds debited from the HTF.
Source: Robert S. Kirk, William J. Mallet, David Randall Peterman, John Frittelli, Bill Canis, and Linda Luther, *Surface Transportation Program Reauthorization Issues for Congress*, Congressional Research Service, May 7, 2014, p. 3, http://nationalaglawcenter.org/ (accessed Sept. 16, 2014). CRS calculations based on CBO, *Projections of Highway Trust Fund Accounts Under CBO's April 2014 Baseline*, April 2014. Figures may not add due to rounding.

complete. Legislation was introduced in Congress in November 2013 to eliminate the federal role in the U.S. highway and surface transportation program, excluding the interstate and defense highways.[58] (No action has yet been taken on the bill.)[59] Under such a scenario, the federal government likely would retain certain responsibilities, including the setting of standards, environmental regulation and enforcement, and research and development. Other responsibilities and financial obligations would need to be reallocated among federal, state, and local governments.

In the event that Congress acts to eliminate federal fuel taxes, *Tennessee Code Annotated* 67-3-206 provides that the existing state tax imposed on the fuel taxes would be adjusted to maintain the amount of funding for the Tennessee Department of Transportation currently generated by the federal tax.

Possible Revenue Options for Highways

The following section provides a general description of various transportation funding and financing options for policymakers' consideration. OREA has identified strengths and concerns for each option using evaluation criteria developed from a comprehensive review of transportation funding research.[60]

These are funding options for legislative consideration, not recommendations, and are not intended to support any particular level of transportation system spending. This report does not address how much Tennessee should spend on transportation or how those funds should be spent.

Recent Changes in Other States

To address the eroding purchasing power of fixed-rate fuel taxes as well as the uncertainty of federal funding for transportation, many states have made, or are considering making, changes to how highways are funded. Possible revenue options include increasing fuel tax rates, indexing fuel tax rates to inflation or highway construction costs, applying sales taxes to gas purchases, and applying a variable rate tax to gas purchases. (See Appendix B for recent changes in other states.) In addition, some states have supplemented highway user taxes with general fund revenue and financed road construction with general obligation bonds. Many states have also turned to debt financing systems to leverage available public funding with private capital for highway construction.

To address broader structural issues with fuel taxes, policymakers in many states are also looking at options to supplement or eventually replace such taxes by adopting mileage-based tax systems or expanding the use of tolls.

Recurring Conclusions in Transportation Funding Studies

States' Transportation Funding Commissions

In recent years, a number of states have appointed transportation funding task forces to study and make recommendations on funding options to meet state transportation needs. In a review of special transportation funding commissions in several other states, the Council of State Governments noted recurring conclusions on the future of fuel taxes:

- Current fuel tax rate increases are the most likely short-term solution to help meet near-term transportation needs.
- Indexing fuel taxes to some measure of inflation or blending in a sales tax may improve the viability of the fuel taxes for a few more years.
- A long-term solution tying highway user fees to more precise measures of highway use such as vehicle miles traveled is needed. Most commissions agree this will require a sustained and long-term effort by the federal and state governments to design and implement a VMT system.[61]

Other Research Organizations

A 2006 Transportation Research Board study concluded that:

> The risk is not great that the challenges evident today will prevent the highway finance system from maintaining its historical performance over the next 15 years. That is, the system should be able to fund growth in spending and capacity, although not at a rate that will reduce congestion. However, transportation system users and the public could benefit greatly from transition to a fee structure that directly charged for actual use of roads.[62]

The report goes on to indicate that legislative adjustments to current user fee rates could sustain current levels of spending at least until the 2020s, followed by a transition to a system of direct charging for road use, (e.g., based on mileage, road, and traffic conditions).

Evaluation Criteria

Based on a comprehensive review of transportation funding research, OREA assembled the following criteria for evaluating the transportation funding options described in this report:

- *User benefit principle* – Do highway users[63] pay taxes and fees in proportion to their highway use and the relative wear and tear on the roads based on vehicle size and weight?
- *Equity* – Does the proposed tax put a greater cost burden on particular groups of highway users for similar levels of use? Equity factors include income level, rural versus urban driving, in-state versus out-of-state driving, individuals and businesses, and vehicle types?
- *Economic efficiency* –To what extent does the transportation funding option address economic efficiency factors such as congestion, pollution, traffic accidents?
- *Alignment with other public policies* – Does the transportation funding option align with other public policy goals, such as increased vehicle fuel efficiency and use of alternative fuels, decreased congestion, reduced need for new highway capacity, more use of mass transit, carpooling, and other modes of travel?
- *Implementation and administrative costs* – What are the implementation and administrative costs associated with a particular transportation funding option?
- *Flexibility* – Does the system allow for tax rate differences based on other cost factors such as time of day, type of road, vehicle weight, driver categories, and types of vehicles?
- *Enforceability* – What is the potential for tax evasion?
- *Volatility* – To what extent does the tax base fluctuate and impact the tax revenue produced?
- *Sustainability* – Does the revenue produced grow with factors tied to increased use of the transportation infrastructure, such as economic and population growth? Does the revenue system adjust with inflation and highway-related price changes (e.g., construction costs)? Does the system adjust with changes in travel behavior and technology such as increasing fuel efficiency and use of alternative fuels?
- *Revenue Potential* – Does a small change in the tax rate produce substantial revenue with little cost to individual users?
- *Privacy* – Is there a reasonable balance between individual privacy and system data requirements?
- *Comprehensiveness* – Does the revenue system include funding for all types of roads – state and local?

Opinion surveys about transportation infrastructure and funding

Tennessee

In 2013, the Tennessee Department of Transportation commissioned separate surveys of three customer groups: residents, elected officials, and partners (non-elected representatives of agencies who partner with TDOT). Each group was asked to rank the five most important transportation priorities for the state. Repairing and maintaining existing highways was the top priority for all three groups. Other priorities and their ranking by group are listed in the table below.

Rank	Residents	Partners	Elected Officials
1	Maintaining existing highways	Maintaining existing highways	Maintaining existing highways
2	Relieving congestion	Relieving congestion	Building new highways
3	Addressing commercial truck traffic	Building new highways	Relieving congestion
4	Expanding public transportation	Expanding public transportation	Expanding public transportation
5	Addressing mobility needs for seniors	Addressing commercial truck traffic	Adding shoulders

The three groups were also asked whether funding for transportation services in Tennessee should increase, stay the same, or be reduced in the next five years. A significant portion of all three groups indicated that funding should be increased (residents, 60 percent; elected officials, 84 percent; and partners, 86 percent).

Also in 2013, AAA of Tennessee commissioned a survey of Tennessee voters. The statistically significant survey found that 45 percent of voters opposed any changes in state transportation fees, but 55 percent favored one or more changes to the means by which the state funds transportation. Changes included charging tolls on new roads (19 percent supported), adjusting gas taxes based on construction costs (14 percent), increasing gasoline taxes (13 percent), and charging based on miles traveled (10 percent).

National

In 2014, AAA conducted a national survey of 2,013 adults, which found that more than two-thirds of Americans (68 percent) believe the federal government should invest more than it does now on roads, bridges, and mass transit systems; 52 percent indicated they are willing to pay higher fuel taxes per month on average for better roads, bridges, and mass transit systems.

In July 2014, the Associated Press surveyed the American general population 18 years and older concerning U.S. transportation funding. Given options to pay for transportation projects and maintenance of public roads,

- 58 percent of respondents opposed raising the federal gas and diesel taxes, 26 percent neither supported nor opposed, 14 percent supported, and 2 percent did not respond.
- 40 percent opposed replacing gas and diesel taxes with a vehicle miles traveled tax, 37 percent neither supported nor opposed, 20 percent supported, and 2 percent did not respond.

Most survey respondents (59 percent) believed that the economic benefits from good quality highways, railroads and airports outweigh the cost to taxpayers; 37 percent believe that the benefits are not worth the cost; 4 percent did not respond.

Sources: Patsy Mimms, Office of Strategic Planning, Tennessee Department of Transportation, e-mail, July 17, 2014, attachments; Otto T. Wright, Regional President, The Auto Club Group – Tennessee, Letter to Justin P. Wilson, Comptroller of the Treasury, State of Tennessee, Sept. 5, 2014; The AP-Gfk Poll, July 2014, http://ap-gfkpoll.com/.

Options

Motor Fuel Taxes

All states have some sort of motor fuel tax in addition to federal fuel taxes. Tennessee has imposed fuel taxes to fund transportation for over 90 years.[64] According to a 2007 Tax Foundation report, fuel taxes have historically served as a proxy measure of how much a person drives; because heavier vehicles have lower fuel efficiency, fuel taxes also serve to compensate for the additional wear and tear on the roads from such vehicles.[65]

Strengths:

- Motor fuel taxes meet the benefit, or "user pays," principle of taxation if the revenue is dedicated to highways, as it primarily is in Tennessee.
- Fuel taxes dedicated to transportation provide a stable source of revenue for the long-term commitment required for highway projects.
- Fuel taxes are collected from fuel distributors, not directly from filling stations or individuals, which results in a relatively low administrative burden, low compliance costs for users, and lower probability of tax evasion.
- Tennesseans, as well as motorists from other areas, pay fuel taxes when they purchase fuel in the state. Large commercial trucks traveling interstate (i.e., in more than one state) pay fuel taxes to each state through the International Fuel Tax Agreement (IFTA). (See "International Fuel Tax Agreement.") The taxes paid are based on the amount of estimated fuel consumed on roads in each state, not where the fuel was purchased, and each state's fuel tax rates.
  In 2013, IFTA-qualified trucks drove an estimated 3.6 billion miles in Tennessee; 75 percent were by non-Tennessee motor carriers.[66]
- Fuel taxes also can generate substantial amounts of revenue with little cost to individual users. A one cent increase in the Tennessee gasoline tax – $7.50 for an average passenger vehicle driving 15,000 miles per year[67] – would generate about $30.9 million in revenue. (See Exhibit 23.)
- Privacy concerns with fuel taxes collected at the gas pump are minimal.
- Higher per gallon fuel taxes can provide some incentive for motorists to use less fuel.

International Fuel Tax Agreement (IFTA)
IFTA is a tax collection agreement among the 48 contiguous states and the 10 Canadian provinces bordering the U.S. It simplifies the reporting of fuel use by commercial trucks (generally those over 26,000 pounds or with three or more axles) that operate in more than one jurisdiction, allowing them to have one license and one set of decals to operate in all states. Prior to IFTA, motor carriers needed separate tax permits for each state in which they operated.

Under IFTA, qualified motor vehicles register in one state (called a base jurisdiction), where they file one tax return each quarter, and submit one payment for any taxes owed for each state in which they've traveled, or document credit they are due for overpayment. Tax payments or refunds are based on total taxable miles traveled and the total fuel purchased in each state.

Each base jurisdiction processes the IFTA tax reports it receives, and distributes any incurred motor fuel use taxes to other member jurisdictions in which licensees traveled. Base jurisdictions also issue refunds where appropriate on behalf of all member states.

Source: International Fuel Tax Agreement, Articles of Agreement and Procedures Manual, 2013, (accessed Nov. 6, 2014).

- Under current distribution formulas in Tennessee, local governments receive a share of any increase in state motor fuel tax revenue for maintenance of local roads.

Concerns:

- Variation in fuel efficiency among similar vehicles has made motor fuel taxes less representative of motorists' highway use. Projected fuel efficiency increases will threaten the sustainability of these taxes in the near future – motorists pay less in user taxes per mile driven as fuel efficiency increases.
- Unless increased on a regular basis, fixed-rate taxes are no longer a sustainable source of revenue that grows with the population, economy, and highway costs.
- Fuel taxes are regressive in that lower-income individuals typically pay a higher percentage of their income in fuel taxes than higher-income individuals. Citizens who live in rural areas are more likely to drive older and less fuel efficient vehicles, which means they pay more per mile driven than citizens with newer, more fuel efficient cars, who tend to have higher incomes and live in more urban settings.
- Drivers of some alternative fuel vehicles, such as electric cars in Tennessee, do not pay fuel taxes.
- Fixed-rate taxes are not flexible enough to encourage different travel behavior or to promote economic efficiency, such as driving at off-peak hours to decrease congestion.
- Some studies have indicated that current fuel taxes do not reflect the additional cost of wear and tear based on the weight of vehicles or encourage the use of trucks with more axles, which tend to damage the road less.

Exhibit 23: Tennessee Revenue Projections– Increases in Current Fuel Tax Rates, FY 2014-15

Gas Tax

1 cent increase = $30.9 million **5% increase over FY2012-13 revenue**

Under current distribution:

State Highway Fund (60%)	$18.54 million
Cities and Counties Highways (38%)	$11.74 million
General Fund (2%)	$0.62 million

Diesel Tax

1 cent increase = $9.6 million **6.1% increase over FY2012-13 revenue**

Under current distribution:

State Highway Fund (72%)	$6.91 million
Cities and Counties Highways (26%)	$2.50 million
General Fund (2%)	$0.19 million

Source: Tennessee Department of Revenue, 2013-14 General Assembly Fact Book, p. 7, http://www.capitol.tn.gov/ (accessed July 30, 2014); State of Tennessee Budget FY 2014-15, pp. A-65, A-75, and A-76, http://www.tn.gov/ (accessed Dec. 8, 2014).

Changes in the rate or structure of motor fuel taxes are the primary means states have used to address the limitations of fixed-rate fuel taxes. Potential fuel tax options for Tennessee are listed below.

Option: Increase fuel tax rates

Exhibit 23 includes revenue estimates of a one cent increase in the gasoline and diesel fuel taxes in Tennessee and the distribution of the revenue based on current statutes. Based on projected taxable fuel demand for FY2014-15, a one cent increase in the gas tax would increase revenue about $30.9 million, a 5 percent increase over FY2012-13. A one cent increase in the diesel tax would increase revenue about $9.6 million, a 6.1 percent increase over FY2012-13.

A Tennessean with a common passenger vehicle (see "Annual Gas Tax Paid – Common Passenger Vehicle") pays about $300 per year in gas taxes: $160 in state taxes, which are shared with local governments, and about $140 in federal taxes, which over time have been reallocated to Tennessee. A one cent increase in the Tennessee gas tax would add a cost of $7.50 per year, per vehicle.

The last increase in Tennessee's gas tax occurred in 1989, when the rate was set at 20 cents per gallon. Inflation erodes the purchasing power of fixed-rate fuel taxes, however, and Tennessee's gas tax would have to be 38 cents per gallon in 2014 to equal the purchasing power of 20 cents in 1989.[68] If Tennessee's gas tax were 38 cents per gallon, the driver of the common passenger vehicle (described in the sidebar) in Tennessee would pay an additional $135 per year in state gas taxes.

Tennessee's gas tax rate is 13th lowest among the 50 states; its diesel fuel tax rate is 7th lowest. At 21.40 cents per gallon (cpg), Tennessee's gas tax rate is 9.82 cpg less than the U.S. average of 31.22. At 18.40 cpg, Tennessee's diesel tax rate is 12.62 cpg less than the U.S. average of 31.02. Among states surrounding Tennessee, Tennessee's total gas tax rate is 2.35 cpg less than the average, and Tennessee's diesel rate is 6.22 cpg less than the average. Four of Tennessee's eight surrounding states have higher gas tax rates than Tennessee and four have lower. Six of the surrounding states have higher diesel fuel tax rates than Tennessee and two have lower. (See Exhibit 24 and Exhibit 25.)

Annual Gas Tax Paid – Common Passenger Vehicle

Assumptions: 15,000 miles driven per year/
20 miles per gallon =
750 gallons of gas

State Gas Tax

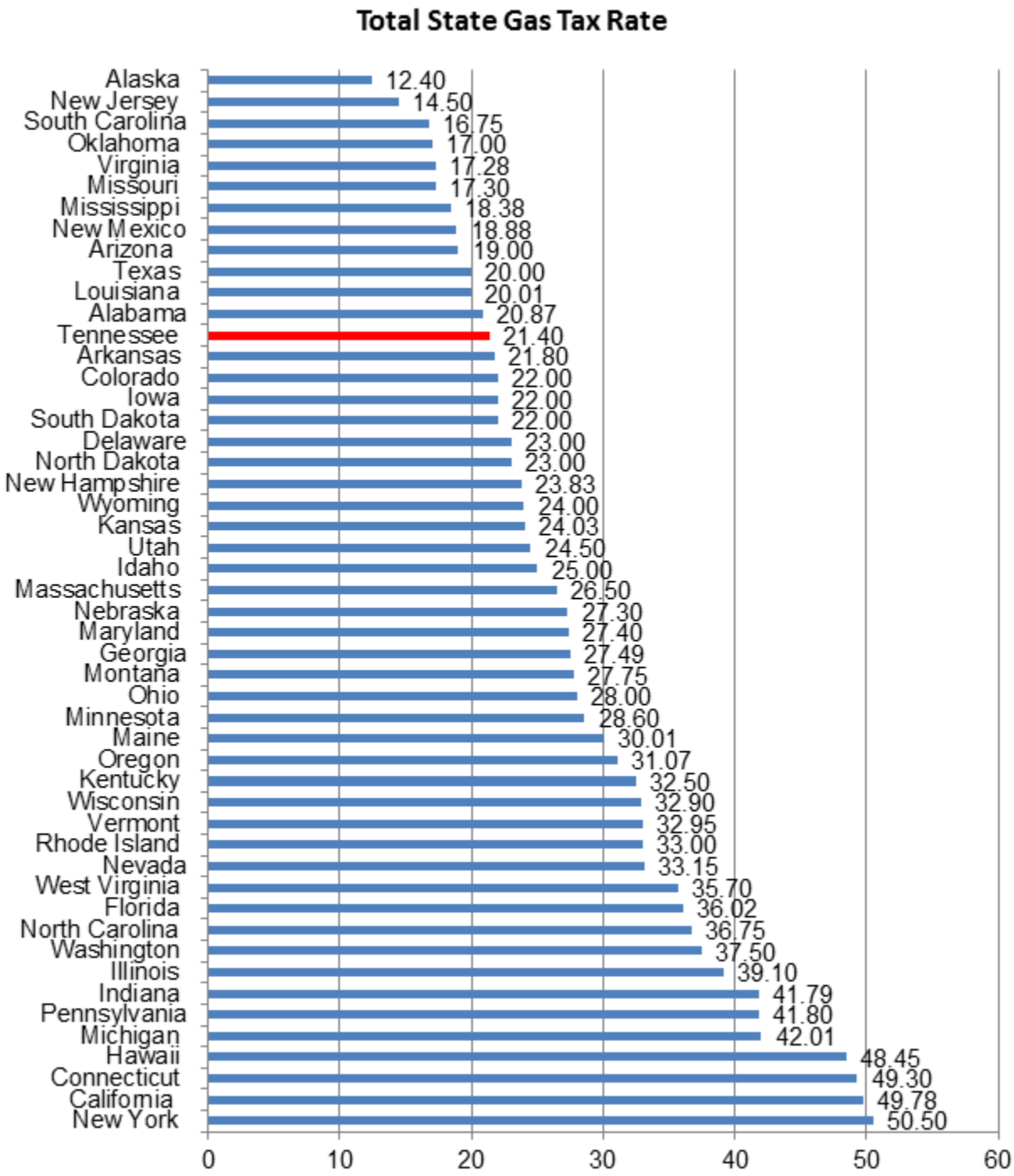
750 gallons X 21.4 cents per gallon =	**$160.50**
	1.1 cent per mile

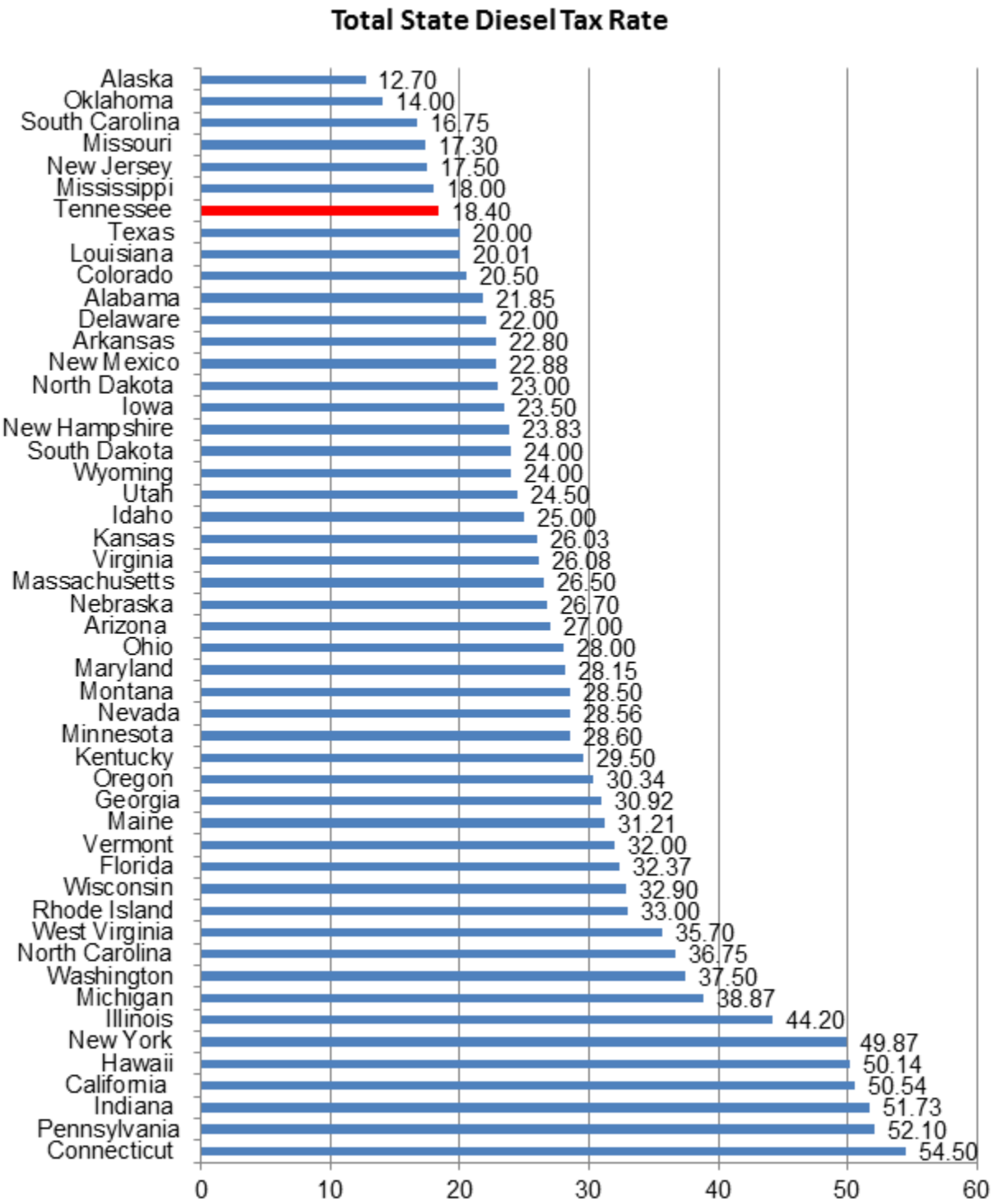
Federal Gas Tax

750 gallons X 18.4 cents per gallon =	**$138.00**
	1 cent per mile
Total State and Federal Gas Tax =	**$298.50**

See Tennessee Department of Transportation "Tax Calculator" at http://www.tdot.state.tn.us/ for rates with varying assumptions.

Exhibit 24: Tennessee Fuel Tax Rates (cents per gallon) Compared to Other States, 2014





Source: American Petroleum Institute, July 2014, http://www.api.org/ (accessed July 25, 2014).

Option: Increase the diesel tax rate to equal or greater than the gasoline tax rate.

Tennessee is one of 13 states with a gas tax rate greater than its diesel tax rate.[69] Tennessee's gas tax rate is three cents per gallon higher than its diesel tax rate. From 1941 to 1986, Tennessee's diesel tax rate was greater than or equal to the gas tax rate. (See Exhibit 9.) Twenty states have a diesel tax rate greater than their gas tax rate; 17 states have equal rates for gas and diesel fuel. Six states have gas tax rates three cents per gallon or more than diesel tax rates. (See more about this in "Weight-Distance Taxes.")

Exhibit 25: State Fuel Tax Rates, Tennessee Compared to Surrounding States, July 2014

	Gasoline Tax Cents per gallon	Diesel Tax Cents per gallon
All States, Average(1)	31.22	31.02
Tennessee and Surrounding states, Average(2)	23.75	24.62
Tennessee	**21.40**	**18.40**
Alabama	20.87	21.85
Arkansas	21.80	22.80
Georgia	27.49	30.92
Kentucky	32.50	29.50
Mississippi	18.38	18.00
Missouri	17.30	17.30
North Carolina	36.75	36.75
Virginia	17.28	26.08

Notes: (1) Volume-weighted average calculated by American Petroleum Institute.
(2) Arithmetic average calculated by OREA; volume information was not readily available for the states selected.
(3) Does not include the federal gasoline tax of 18.4 cents per gallon and diesel tax rate of 24.4 cents per gallon.

Source: American Petroleum Institute, July 2014; analysis by OREA.

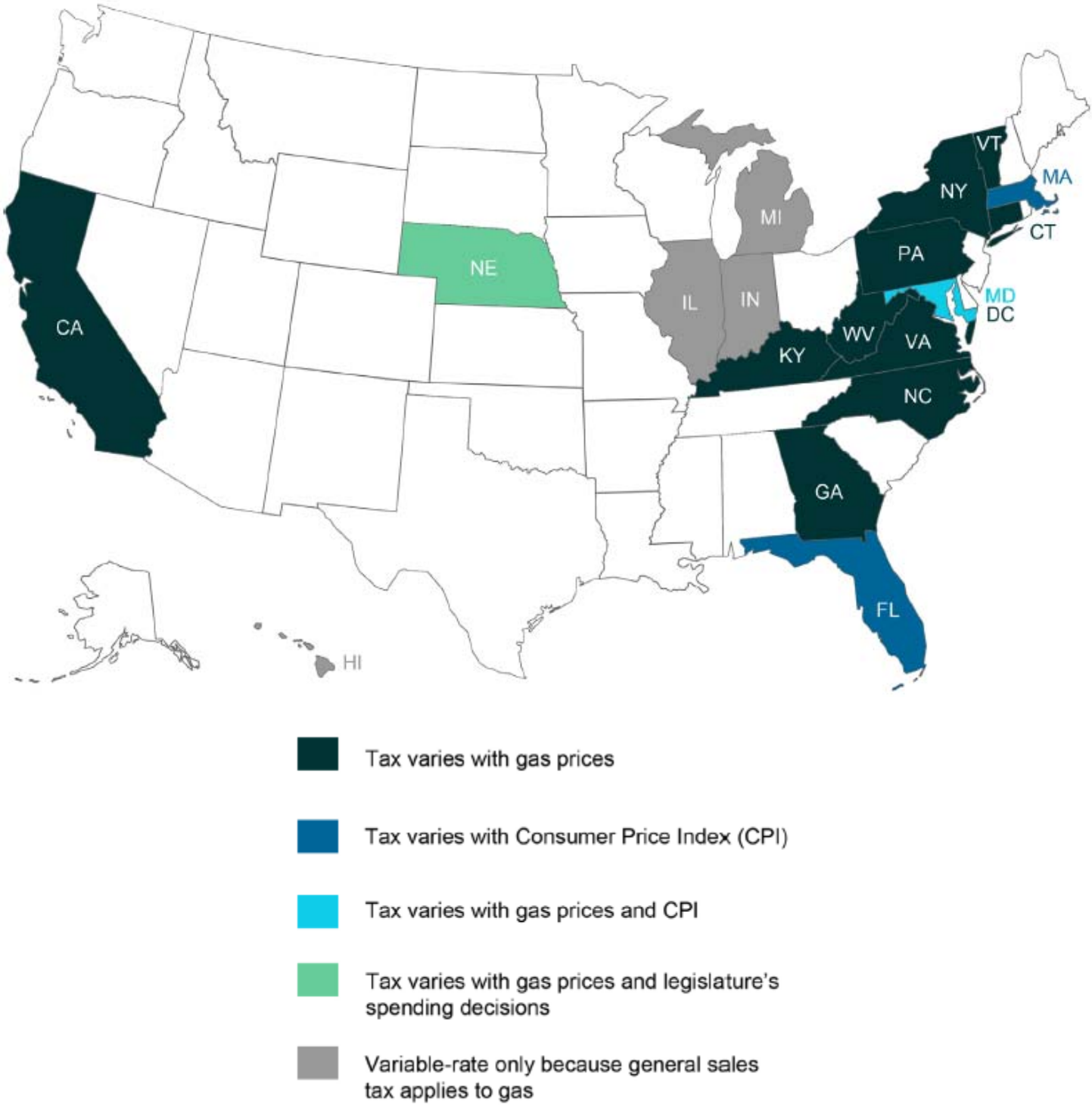
Variable Rate and Indexed Fuel Tax Rates

Several states (18) have implemented variable rate taxes on fuels to allow fuel taxes to better adjust for changes in purchasing power over time. (See Exhibit 26.) Most states added these variable components to a flat-rate excise tax.

Florida, Massachusetts, and Maryland tie their fuel tax rates to the Consumer Price Index (CPI) to reflect general price inflation in the economy.[70] No states tie fuel tax rates to construction price indices.[71] Eleven states – California, Connecticut, Georgia, Kentucky, Maryland, Nebraska, North Carolina, New York, Pennsylvania, Virginia, and West Virginia – link their tax rates to the price of fuel, which tends to rise with inflation. (See Exhibit 27 for a comparison of retail gasoline prices in nominal and inflation-adjusted dollars.) Some use the retail price and some use the wholesale price of fuel. Nebraska also has authority to adjust a portion of its motor fuel tax rate so that the resulting revenue is sufficient to pay for the highway fund appropriations.[72]

In addition to fixed-rate fuel taxes per gallon, several states dedicate sales tax revenues to highways. Revenues from sales or gross receipt taxes on fuel increase as gas prices rise, similar to sales taxes

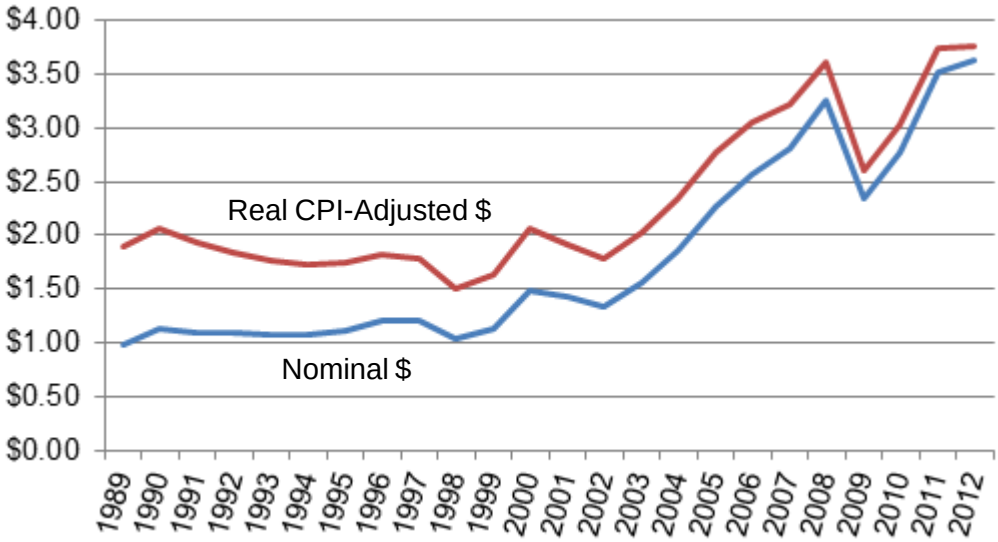
Exhibit 26: States with Variable-Rate Gasoline Taxes, 2014



Source: Institute on Taxation and Economic Policy, *Most Americans Live in States with Variable Rate Gas Taxes*, April 1, 2014, http://www.itep.org/ (accessed Aug. 28, 2014).

on other products. Some states – Illinois, Indiana, Hawaii, and Michigan – apply a set percentage sales tax to motor fuels, not necessarily the full amount applied to other goods. Some states dedicate a portion of the sales tax rate on all taxable goods and services to transportation. Some collect the tax from consumers and others collect a prepaid sales tax from the supplier. Other states tax fuel distributors' gross earnings, receipts, or income for transportation purposes. States vary on whether the revenues produced from the sales tax on fuel is dedicated for highways or goes to the state's general fund.

Exhibit 27: Annual U.S. Average Motor Gasoline Regular Retail Price (per gallon), 1989 through 2012



Source: U.S. Energy Information Administration, http://www.eia.gov/ (accessed Nov. 7, 2014).

Substantial fluctuations in the price of fuel have prompted some states to repeal variable rate fuel taxes. Other states with variable rate taxes use different techniques to manage fuel tax volatility. One technique is to use the average price of fuel per year or, if fuel prices are particularly volatile, multiple years. Another means is to limit the maximum rate change in a year. Some states impose floors and ceilings on the tax rate or base price used for tax calculations. For example, West Virginia's fuel tax rate is based on the average wholesale price of fuel with a price floor of $2.34 per gallon and a maximum 10 percent fluctuation per year.[73]

Strengths:

- The primary benefit of variable rate or indexed fuel taxes is to provide a more sustainable source of revenue that grows with other factors that reflect transportation funding needs, such as population and the economy.
- Variable rate taxes also address some of the concerns about the eroding purchasing power of fuel tax revenue due to inflation.
- Taxes based on fuel purchases retain the user fee aspect of fuel taxes, if dedicated to transportation uses.
- Variable rate taxes that tie into existing excise and sales taxes should retain relatively low implementation and administrative costs.
- Indexed rates require less frequent legislative action to change the rates.

- The expected higher tax rates and revenue with variable rates will increase the price of fuel and, thus, may reduce highway overuse and associated costs (e.g., congestion, pollution, traffic accidents).

Concerns:

- The potential volatility of the measure used to determine the tax rate could result in wide swings in revenue. For example, gas prices and construction costs can rise or fall considerably from year to year, potentially triggering frequent rate changes and fluctuations in revenue.
- Setting a ceiling and floor on the tax rate or base price serves to limit the frequency and magnitude of rate changes, but limits that are too stringent can result in a variable rate inadvertently becoming a fixed rate over time.
- Indexed rates require neither public comment nor legislative deliberation and approval on the need for a tax rate change.
- Frequent changes in tax rates impose administrative costs on fuel retailers.
- Any changes from the current system of collecting fuel taxes from distributors to collection by retailers should consider the added administrative costs and risks of tax evasion.
- If the costs of transportation input products (e.g., asphalt, concrete, steel) tend to increase more than the CPI or the price of fuel, the revenue growth could prove inadequate over time.
- Variable rate fuel tax revenue adjusted for price inflation may not compensate for projected decreased fuel consumption related to greater fuel-efficiency and alternative fuel vehicles.
- As with fixed-rate taxes, the tax burden is greater on low income users as a percentage of their income.
- Variable rates do not affect when, where, or what motorists drive.

Listed below are some general options to illustrate the impact of variable or indexed fuel tax rates based on a few indices. Additional economic analysis would be needed to more fully evaluate and examine the impacts and appropriateness of using several of the numerous price indices available related to highway construction costs.

Option: Index the fixed-rate fuel taxes to measures of cost of inflation

Exhibit 28: Tennessee Revenue and Tax Rate Estimates – Indexing Fuel to Consumer Price Index and Highway Construction Costs

***Index to Consumer Price Index*:**

	Year last increased	Decline in Tax Purchasing Power in 2012 since last increased	Increase needed to offset decline	FY2014-15 Estimated Revenue Yield of Rate increase
Gasoline Tax	1989 to 20 cents	-46%	+18 cents	$556.2 million
Diesel Tax	1990 to 17cents	-43%	+13 cents	$124.8 million

Note: FY2014-15 estimated revenue based on information included in Exhibit 23: Tennessee Revenue Projections – Increases in Current Fuel Tax Rates, FY 2014-15. Consumer Price Index was only available through 2013 so dates are not completely comparable.
Source: OREA Analysis based on the U.S. Bureau of Labor Statistics, Consumer Price Index, All Urban Consumers (CPI-U), http://www.usinflationcalculator.com/ (accessed Oct. 10, 2014).

***Index to Highway Construction Costs*:**

	Year last increased	Decline in Tax Purchasing Power in 2012 since last increased	Increase needed to offset decline in purchasing power	FY2014-15 Estimated Revenue Yield of Rate increases
Gasoline Tax	1989 to 20 cents	-36%	+11 cents	$339.9 million
Diesel Tax	1990 to 17 cents	-36%	+9 cents	$86.4 million

Notes:

(a) This analysis is based on the Federal Highway Administration's Bid Price Index (BPI) (from 1989 to 2002) and extrapolated by its replacement, the National Highway Construction Cost Index (2003 through 2012). This index and other construction price indices fluctuate more than the CPI. If this option is considered, additional analysis would be needed to evaluate and examine the impact of various indices.

(b) 2012 Estimated Revenue based on information included in Exhibit 23: Tennessee Revenue Projections– Increases in Current Fuel Tax Rates, FY 2014-15. The National Highway Construction Cost Index was available only through 2012 so dates are not completely comparable.

(c) No states currently index fuel tax rates to construction cost indices.

Sources: OREA analysis based on the Federal Highway Administration, National Highway Construction Cost Index (NHCCI), https://www.fhwa.dot.gov/ (accessed Oct. 10, 2014). FHWA staff provided historical BPI data to OREA to develop trends from 1989. Adapted from model presented in Institute on Taxation and Economic Policy, *Building a Better Gas Tax: How to Fix One of State Government's Least Sustainable Revenue Sources*, Dec. 2011, http://www.itep.org/ (accessed Nov. 7, 2014).

Option: Index the fuel taxes to the price of fuel

OREA did not develop potential Tennessee revenue estimates from indexing fuel taxes to the price of fuel because of the numerous variations in criteria that can be used. Kentucky indexes its gas tax to the wholesale price of fuel (see "Case Study: Kentucky Variable Gas Tax"). Additional discussion and analysis would be needed to develop estimates under different assumptions if this is an option policymakers want to consider.

Case Study: Kentucky Variable Gas Tax
In addition to a five cent per gallon fixed tax rate, a portion of the gasoline tax in Kentucky is indexed to the average wholesale price of gasoline. The variable rate is based on 9 percent of the average wholesale price of fuel received in the state with a minimum price of $1.786 per gallon. The rate is adjusted quarterly and includes a maximum increase of 10 percent per year. According to staff at the Kentucky Department of Revenue (DOR), the intent of the variable rate component was to provide for more stable gas tax revenue when gas consumption declined following increases in gas prices.

Kentucky's average annual gas tax rate increased from 15 cents per gallon in 1989 to about 30 cents per gallon in 2013, with most of the rate increase occurring over the last decade. Kentucky's 2013 gas tax rate of 30 cents per gallon is greater than the 28 cents needed to equal the buying power of its 15 cent per gallon rate in 1989. Information provided by the Kentucky DOR indicates that over the last five years, gas consumption has stayed fairly constant and gas tax revenues have increased slightly. It is not clear how the variable gas tax rate will respond to recent decreases in gas consumption that are more the result of increased fuel efficiency and changes in motorists' preferences and behaviors than higher gas prices.

Sources: Kentucky Department of Revenue and *Kentucky Revised Statutes* 138.210 and 220.

Option: Add sales tax to fuel

Highway-use motor fuel purchases are exempt from Tennessee's sales tax. Exhibit 29 includes estimates of the revenue that would be generated if current sales tax rates in Tennessee were applied to gasoline and diesel fuel purchases.

As shown in Exhibit 29, revenues generated from applying the sales tax to fuel would increase state fuel tax revenues by about 186 percent and local revenues by approximately 127 percent.

Exhibit 29: Tennessee Revenue Projection – Add Current Sales Tax Rates to Fuel Purchases, FY2014-15 Estimated Revenue

	State 7% Rate	Local 2.5% Rate
Total Fuel Sales Tax	**$ 1,029.5 million**	**$ 367.7 million**
Gasoline Sales Tax	$ 746.8 million	$ 266.7 million
Diesel Fuel Sales Tax	$ 282.7 million	$ 101.0 million
% Increase over estimated FY 2014-15 Total Motor Fuel Tax Revenue	**186%**	**127%**
Total Fuel Excise Taxes [(a)]	**$ 552.9 million**	**$ 289.1 million**
Gas Excise Tax Revenue (20 cpg)	$ 380.8 million	$ 234.0 million
Diesel Excise Tax Revenue (17 cpg)	$ 120.4 million	$ 43.1 million
Special Petroleum Tax (1.4 cpg)	$ 51.7 million	$ 12.0 million

Notes: (a) State fuel excise tax revenue includes $31.4 million allocated from fuel taxes to State General Fund.
Source: State of Tennessee Budget, FY2014-15, pp. A-67, A-71, and A-74, http://www.tn.gov/ (accessed Dec. 9, 2014); OREA calculation.

A 1 percent sales tax added to Tennessee's fuel gasoline, diesel, and other motor fuel taxes would generate $147.1 million for FY2014-15, a 17.5 percent increase if added to current excise fuel tax rates. (See Exhibit 30.) The distribution of the additional revenue if a sales tax was added would be subject to legislative discretion.

Exhibit 30: Tennessee Revenue Projection: 1% Motor Fuel Sales Tax, FY 2014-15 Estimated Revenue

Add 1% Sales Tax to Fuel Purchases		
Total	**$147.1 million**	
Gasoline	$106.7 million	
Diesel	$ 40.4 million	
% Increase over FY2014-15 Total Motor Fuel Tax Revenue		**17.5%**
Total Revenue		**$842.0 million**
Gasoline		$614.8 million
Diesel		$163.5 million
Special Petroleum		$ 63.7 million

Note: Based on average fuel prices of $3.453 per gallon for gasoline and $3.77 for diesel fuel; sales tax revenue would fluctuate with the price of fuel.
Source: State of Tennessee Budget, FY2014-15, p. A-71, http://www.tn.gov/ (accessed Dec. 9, 2014); OREA calculation.

Exhibit 31 provides an estimate of the sales tax rate needed to produce the same level of revenue as existing fixed-rate fuel taxes in Tennessee.

Exhibit 31: Sales Tax Rate Required to Replace FY2014-15 Estimated Total Fuel Tax Revenues

Revenue-Neutral Gasoline Sales Tax Rate = 6.2%
Assumptions for FY2014-15:
Estimated gas tax revenue (20 cpg) = $614.8 million
Estimated special petroleum tax revenue (1.4 cpg) = $43.0 million
Average retail gas price = $3.453 per gallon
Estimated gas gallons taxed = 3,074 million gallons
Estimated gas sales = $10,614.5 million

Revenue-Neutral Motor Fuel Sales Tax Rate = 4.9%
Assumptions for FY2014-15:
Estimated Motor Fuel Tax revenue (17 cpg) = $163.5 million
Estimated special petroleum tax revenue (1.4 cpg) = $13.46 million
Average retail detail price = $3.77 per gallon
Estimated fuel gallons taxed = 961.8 million gallons
Estimated gas sales = $ 3,626 million

Sources: Estimated revenue from FY2014-15 State of Tennessee Budget, p. A-67, http://www.tn.gov/ (accessed Dec. 9, 2014); fuel prices used in budget calculations from Tennessee Department of Revenue; other estimates calculated by OREA. Adapted from an analysis presented by the Tennessee Department of Transportation in 2007.

Vehicle Registration Fees

All states collect some type of motor vehicle registration fees. Tennessee uses a flat rate for most passenger vehicles and fees for trucks based on weight. Some local Tennessee governments assess wheel taxes, but these revenues may not be dedicated to highways.

State registration fees vary from a flat fee to variable fees based on vehicle value, weight, age, horsepower, and number of cylinders. (See Exhibit 32 for a comparison of surrounding states' registration fees for passenger vehicles.) Variable registration fees, such as those associated with truck weights, are more closely related to highway use and wear and tear of the roads. Tennessee's truck registration fees, which are based on gross vehicle weight, range from $52.25 for a 9,000 lb. vehicle to $1,368.75 for a vehicle weighing 80,000 lbs.[74]

Some states also collect an annual fee from owners of hybrid-electric vehicles, who pay less in gas taxes because of their vehicles' fuel efficiency. (See "Alternative Fuel Vehicles.")

Exhibit 32: Vehicle Registration Fees for Tennessee and Surrounding States (passenger vehicles only)

State	Registration Fee
Alabama	$23
Arkansas	$17 cars 3,000 lbs. or less $25 cars 3,000 – 4,500 lbs. $30 cars over $4,500 lbs. plus $2.50 validation decal for all automobiles
Georgia	$20
Kentucky	$21
Mississippi	$14
Missouri	Less than 12 horsepower (hp) - $18.50 12 hp - 23 hp: $21.25 24 hp - 35 hp : $24.25 36 hp - 47 hp: $33.25 48 hp - 59 hp: $39.25 60 hp - 71 hp: $45.25 72 hp and greater: $51.25 +$3.50 processing fee
North Carolina	$28
South Carolina	$24 - for people under 64 years old $22 - for people who are 64 years old $20 - for people who are 65 or older
Tennessee	$21.50
Virginia	$40.75 vehicles less than 4,000 lbs. $45.75 vehicles more than 4,000 lbs.
West Virginia	$30

Note: Average 2013 passenger vehicle weights: car, 3,578 lbs.; trucks, 4,878 lbs., U.S. Environmental Protection Agency, *Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2013*, EPA-420-R-13-011, Dec. 2013, pp. 22-23, http://www.epa.gov/ (accessed Sept. 3, 2014).

Sources: National Conference of State Legislatures, Registration and Title Fees by State (2012 Chart, Updated Aug. 2014), http://www.ncsl.org/ (accessed Aug. 26, 2014). Tennessee Department of Revenue, Vehicle Services Division, Class Code/Fee Schedule, Revised Sept. 22, 2014, (Revision #7), p. 1, http://www.tn.gov/ (accessed Aug. 20, 2014).

Strengths:

- Motor vehicle registration fees are already collected, so vehicle owners are accustomed to paying them.

Concerns:

- Vehicle registration fees do not vary based on miles driven or other variables related to road use such as driving in congested areas or during peak times.
- Individuals who drive only occasionally pay the same registration fees as those, for example, who commute long distances to work.
- Vehicle registration fees are regressive, which means they have a greater impact on individuals in lower income brackets.[75]

Option: Increase vehicle registration fees

A $1 increase in registration fees across the board would yield approximately $6.8 million annually, based on the number of registrations as of July 2014. Most of the increase would go to the highway fund (after distribution of certain amounts to other statutorily directed funds and uses).[76]

Weight-Distance Tax

A weight-distance tax is calculated based on vehicle weight and distance traveled and is designed to collect higher user fees from heavier vehicles, which cause more pavement damage.[77] According to a Congressional Budget Office brief, truck pavement damage costs range from about five to 55 cents per mile, depending on truck weight, the number of axles over which the weight is distributed, and type of road where the truck is operated.[78] Although Tennessee does not have a direct weight-distance tax, in general, truck owners tend to pay more in fuel taxes than car owners do because trucks have much lower fuel efficiency.

Four states – Kentucky, New Mexico, New York, and Oregon – levy weight-distance taxes on commercial freight vehicles. The tax is structured differently in each state. Kentucky's weight-distance tax structure is the simplest of the four states, applying a single rate per mile ($0.0285) to all vehicles with a gross weight of more than 59,999 pounds. The Kentucky tax does not apply to lighter-weight trucks, which differs from the other states' systems. New Mexico, New York, and Oregon apply rates per mile that increase in proportion to truck weight, and all three apply the tax to lighter-weight trucks as well.[79] (The New York tax applies to trucks that weigh more than 18,000 pounds, and taxes for both New Mexico and Oregon apply to trucks that weigh more than 26,000 pounds.)[80] The amount of revenue collected through the weight-distance tax varies considerably among the four states, with Kentucky's limited system collecting the lowest amount (about $75.1 million in 2012) and Oregon collecting the highest (about $151.4 million in 2011).[81] All four states also levy gas and diesel taxes, which account for a larger share of transportation revenue than the weight-distance tax in each state.[82]

States estimate weight-distance tax rates by conducting highway cost allocation studies, which are designed to determine the fair share that each class of road user should pay for the construction, maintenance, operation, improvement, and related costs of state highways, roads, and streets. The studies are based on a series of calculations to approximate revenue collected and expenditure allocated to each vehicle class using total revenue, total expenditure, highway design parameters, and vehicle miles traveled by vehicle class. According to an analysis by the Transportation Research Board, 19 of 22 state highway cost allocation studies conducted between 1982 and 2007 found that "estimated payments were less than the costs allocated to heavy-duty trucks."[83]

TDOT officials indicate that the state has not undertaken a highway cost allocation study and that there are no current plans to do so.[84]

In 1997, the Federal Highway Administration conducted a national highway cost allocation study, which was updated in 2000. The study estimated, for each vehicle and highway (rural or urban interstate) class, the cents-per-mile costs for pavement. Although these estimates are more than 15 years old, the *relative* costs are likely still similar.[85] The estimated pavement costs for an 80,000 pound, five-axle combination truck on urban interstate roads were 40.9 cents-per-mile compared to 0.1 cents-per-mile for an automobile on the same type of road. (See Exhibit 33.)

Tennessee levies vehicle registration fees on commercial freight vehicles according to vehicle weight, with heavier vehicles paying higher fees, but does not impose a weight-distance tax.

Exhibit 33: 2000 Marginal Pavement Cost by Vehicle and Type of Roadway

Vehicle Class/Highway Class	Marginal Cost (cents per mile) for Pavement
Autos / Rural Interstate	0
Autos / Urban Interstate	0.1
40,000 lb. 4-axle single-unit truck / Rural Interstate	1.0
40,000 lb. 4-axle single-unit truck / Urban Interstate	3.1
60,000 lb. 4-axle single-unit truck / Rural Interstate	5.6
60,000 lb. 4-axle single-unit truck / Urban Interstate	18.1
60,000 lb. 5-axle combination truck / Rural Interstate	3.3
60,000 lb. 5-axle combination truck / Urban Interstate	10.5
80,000 lb. 5-axle combination truck / Rural Interstate	12.7
80,000 lb. 5-axle combination truck / Urban Interstate	40.9

Notes: (1) Costs reflect middle range. (2) Original FHWA table also includes costs for congestion, crashes, air pollution, and noise. Those are excluded for the purposes of this report.
Source: Adapted from U.S. Department of Transportation, Federal Highway Administration, Addendum to the 1997 Federal Highway Cost Allocation Study, May 2000, Table 13, https://www.fhwa.dot.gov/ (accessed Nov. 13, 2014).

Strengths:

- A weight-distance tax system based on a highway allocation study can account for differences in pavement damage among highway users.
- A weight-distance tax system provides state agencies and policymakers more detailed information about the types of commercial vehicles in operation within the state.

Concerns:

- A weight-distance tax system would require a highway cost allocation study.
- Depending on how the tax is administered, there could be considerable administrative and/or industry costs for mileage-tracking software, supporting documentation, return preparation, vehicle inventory maintenance, and audits. Some administrative costs could be reduced through the adoption of an electronic collection system. None of the four states with weight-distance taxes are currently using such a system.[86, 87]
- Computing tax payments can be complicated, which has raised concerns in Kentucky about the accuracy of filers' returns.

Tolls

Tolling can generate revenue to leverage and repay the capital costs and fund maintenance costs associated with a particular project. With tolls, drivers pay directly for their use of toll roads, bridges, and tunnels. In 2013, about 5,695 miles of toll roads, bridges, and tunnels[88] were operating in 33 states.[89] Some states use tolls to provide a stream of revenue to pay off debt used to construct and maintain a road over time, often through public-private partnerships. Tolling is much more prevalent in European countries.

Advances in electronic toll collection systems are creating new interest in expanding the use of tolls to address shortcomings in fuel tax revenues. New electronic toll collection (ETC) tags allow drivers to pay tolls without stopping at toll booths.

For most of the history of the interstate highway system, federal law prohibited tolling. Beginning in 1991, tolls were allowed on non-interstate federal-aid highways, subject to certain restrictions. In 1998 and 2005, federal laws changed to allow the tolling of some HOV lanes, pilot projects for tolling interstate system routes, and the use of congestion pricing in some cases. MAP-21, the federal surface transportation program that passed in 2012, allows for the construction of new interstate highways as toll roads and the construction of additional lanes, such as high-occupancy toll lanes, as long as the number of toll-free lanes is not reduced.[90]

Tolls are also seen as a potential means to better manage urban congestion. Congestion pricing refers to tolls based on demand, i.e., higher tolls at peak capacity times. Higher prices are intended to reduce or spread out highway use, which can reduce congestion and its related vehicle, time, and environmental costs, as well as reduce the rate of wear and tear on the transportation infrastructure.

As of 2012 at least 10 states had created high-occupancy toll (HOT) facilities.[91] These systems charge low-occupancy vehicles that are willing to pay the toll to access the high-occupancy vehicle (HOV) lanes. Other lanes remain open to all users. HOT lanes can be existing lanes or added capacity lanes.

Tolling within specific criteria was authorized in Tennessee in 2007 (Tennessee Tollway Act of 2007).[92] Tennessee does not currently charge tolls to use any highways or bridges. As required by the 2007 law, TDOT studied tolling as a possible means to construct, maintain, and operate highway and bridge projects in Tennessee. TDOT conducted public hearings on tolling and performed technical and financial feasibility studies of eight potential tolling candidate projects (four roadways and four bridge projects). No single project appeared self-sustaining from toll revenue alone and none met the statutory criteria that included tolling only new construction; availability of alternative, free roadways or bridges; public and local elected official support; consistency with planning and environmental requirements; and use of the existing state bonding process and TDOT management. The TDOT study suggested that tolling could be feasible if the criteria were expanded to include tolls on existing roads or bridges, as a way to supplement funding from traditional sources, as a way to encourage more efficient use of existing highways, such as through congestion pricing and HOT lanes, and possibly the use of public-private partnerships to finance and manage toll projects. The study identified continued public education on tolling as essential.[93]

Strengths:

- Tolls can generate revenue for highway construction and maintenance and reduce congestion.
- Tolls are directly related to the service or benefit received by a particular highway user.
- Tolls can also serve as a measure of whether a highway project is economically justified – the benefits to particular road users must be sufficient to cover the costs of the project.
- Tolls can be used to better address economic efficiency issues by reducing travel demand or by applying congestion pricing to reduce congestion and its related environmental costs.

Concerns:

- If toll revenues are less than projected and do not cover project costs, then other public funds are needed to cover the obligated costs.
- Tolls are regressive in that lower-income individuals would typically pay a higher percentage of their income in tolls than higher-income individuals.
- An unintended consequence of tolling can be a shift of traffic to non-toll roads, which may increase congestion on those roads.
- Toll roads require that users pay tolls in addition to fuel taxes and registration fees for road use.

General Funds

In 2012, 33 states allocated general fund revenues to fund transportation costs.[94] Tennessee does not use state general funds for highways; however, 36 percent of highway revenue for local governments in Tennessee was from local revenue sources. (See Exhibit 7.) As noted, since 2008, the federal government has increased its use of general fund monies to fund the federal transportation program. In 2010, general funds were 22 percent of highway revenues for all levels of governments in the U.S. (See Exhibit 13.) General fund revenues include property taxes, sales taxes, income taxes, and other state and local fees. A few states have pledged a share of “Internet sales taxes” to transportation if passed by Congress.

Strengths:

- Transfers of general funds to highways does not require creation of a new collection system.

Concerns:

- Transfers of general fund revenues to highways, without increasing the underlying tax rates, requires reduced funding to other state priorities.
- Increasing the tax rates of existing general fund taxes, e.g., the sales tax, are not necessarily tied to the miles a person drives and, thus, do not necessarily fit with the "user pays" principle.
- Reliance on annual appropriations of general fund revenue reduces the stability of funding available to commit to multi-year transportation projects.
- The "user pays" principle is reduced as well as incentives to reduce highway use, resulting in overuse and congestion.
- Tennessee's primary funding options of sales and property taxes are a greater burden for lower-income individuals.

Debt Financing

Debt financing can take multiple forms. Most states use bonds to finance some highway construction costs over time. Local governments also use bonds and bank loans to finance highway projects. Several governments are using debt instruments developed by the U.S. Department of Transportation in conjunction with state and local officials to finance transportation projects at low costs. (See "U.S. DOT Project Finance.")

Tennessee is one of four states that do not use general obligation bonds or other debt instruments to finance transportation projects.[95] (Local governments in Tennessee use loans or bonds to finance some transportation projects.) Tennessee had a "disastrous experience with debt-financed road and bridge construction during the 1920's and 30's" and while the state did use some long-term debt financing to leverage funds to construct roads for the federal Interstate Highway Program from 1958 through 1977,[96] the state has since chosen to use a "pay as you go" transportation finance system for state roads. Tennessee has not issued debt for highways in over 35 years.[97, 98]

Strengths:

- Debt finance can be cost efficient if interest costs are less than rising construction costs and sufficient future revenues are available to cover bond repayments.
- Debt finance can be used to leverage other private and public revenue sources.
- Debt financing is often used to complete large and costly projects that would require a major portion of current year funding and would delay other projects. With debt financing, costs of large projects are spread over the multi-year useful life of the project.

Concerns:

- Debt finance is not a direct source of transportation revenue; states must repay bonds from highway user taxes or fees or other revenue over time.
- Using debt financing may require new revenue sources to pay back the bonds or loans issued.

U.S. DOT Project Finance

The U.S. Department of Transportation has developed several tools in conjunction with state and local officials to finance transportation projects at low costs. These include:

GARVEEs – Grant Anticipated Revenue Vehicles (GARVEEs) are debt-financing instruments issued by a state or political subdivision with principal and interest, as authorized by the US DOT, to be repaid primarily with future federal-aid funds.
See http://www.fhwa.dot.gov/ipd/fact_sheets/garvees.aspx.

TIFIA – Transportation Infrastructure Finance and Innovation Act (TIFIA) provides credit assistance to states that meet certain criteria for nationally or regionally significant projects. States must pledge repayment through dedicated revenue sources such as user fees, tolls, or other sources. See http://www.fhwa.dot.gov/ipd/finance/tools_programs/federal_credit_assistance/.

SIBs – State Infrastructure Banks (SIBs) are revolving loan funds to make loans or provide credit enhancements for transportation projects. SIBs are capitalized with federal-aid highway funds and matching state funds. Repayments and interest are used to fund loans for additional projects. States can set specific criteria for SIB funding so as to focus on priority projects. See http://www.fhwa.dot.gov/ipd/finance/tools_programs/federal_credit_assistance/sibs/.

Other Project Finance alternatives include Section 129 loans, Private Activity Bonds, and Build America Bonds.

See http://www.fhwa.dot.gov/ipd/finance/default.aspx for more information on Project Finance techniques and tools. Each instrument has specific requirements and regulations that an applicant must meet and follow.

Alternative Fuel Vehicles

Exhibit 34: Tennessee per gallon use tax for motor vehicle alternative fuels

Type of fuel	Per gallon use tax
Diesel	$0.17
Liquefied Gas (Propane)	$0.14
Compressed Natural Gas	$0.13

Sources: *Tennessee Code Annotated* 67-3-202, 67-3-1102, and 67-3-1113.

Alternative fuel vehicles generally have higher fuel efficiency than conventional motor vehicles that use gasoline. Most alternative fuel vehicles (AFVs) rely in part on gas, diesel, or other fuels that are taxed in Tennessee, but the vehicles' higher fuel efficiency reduces fuel purchased and, thus, tax revenue generated per mile of travel. All-electric vehicles, though fewer in number than other AFVs, require no gasoline or other fuel subject to tax in Tennessee. At least nine states require an annual fee for AFVs instead of a tax on fuel. Not all states that collect these fees dedicate the revenues to highway maintenance and operation.

Tennessee collects per gallon use taxes for diesel fuel, liquefied gas (propane), and compressed natural gas when used in motor vehicles, but at a lower rate than for gasoline. (See Exhibit 34.) A portion of the use taxes collected for liquefied gas (56 percent) and for diesel fuel and compressed natural gas (61.25 percent) is distributed to the state highway fund; the remainder is distributed using a statutory formula to counties, municipalities, and the general fund.[99]

Strengths:

- Taxing alternative fuels and/or requiring AFV drivers to pay an annual fee addresses transportation equity concerns (i.e., ensuring that all road users contribute to transportation infrastructure costs) and the "user-pays" principle.
- Although AFVs are still a small part of the motor vehicle market, their numbers are increasing gradually. Introducing this approach while AFV numbers are still small would allow potential AFV purchasers to estimate cost of ownership of such vehicles.

Concerns:

- Because AFVs will continue to constitute only a small part of the motor vehicle market for the near future, requiring an annual fee from these vehicles is unlikely to produce significant revenue.[100]
- A fixed-rate fee violates the "user pays" principle because it is not related to the number of miles driven.
- Requiring AFV owners to pay any additional amount may be counter to states' other related public policy goals, such as reducing emissions by encouraging the use of AFVs and the adoption of alternative fuel technologies.

Option: Impose special registration or license fees for alternative vehicles to compensate for different types of fuel and electric-only vehicles.

Tennessee incentives for alternative fuel providers and owners/drivers of alternative fuel vehicles

- TDOT administers the Biofuel Green Island Corridor Grant Project to provide financial assistance for purchasing, preparing, and installing fueling facilities at private sector fuel stations. The goal of the project is to help establish biofuel stations within 100 miles of each other along Tennessee's interstate system and major highways.
- Any public utility, commercial, or industrial property certified to fuel natural gas vehicles may not be valued for property tax purposes at more than 30 percent of its total installed cost. The Tennessee Department of Environment and Conservation must certify that the station uses compressed or liquefied natural gas for the purpose of fueling motor vehicles and is projected to displace more than 6,000 gallons of petroleum annually.
- The state also provides an incentive for owners/drivers of certain energy-efficient vehicles (as defined by the U.S. Environmental Protection Agency) by allowing them use of high-occupancy vehicle (HOV) lanes regardless of the number of vehicle occupants. The vehicles must display a special decal provided by the Department of Revenue.

Source: U.S. Department of Energy, Alternative Fuels Data Center, Tennessee Laws and Incentives, http://www.afdc.energy.gov/ (accessed Dec. 3, 2014).

Local Funding Options

Tennessee local governments rely on their allocated share of state highway user revenues to fund expenditures for locally-controlled highways and bridges; local governments face the same issues as the state relative to a diminishing tax base. Options to increase or provide a more sustainable source of state highway user fee revenue would also provide additional revenue to local governments to maintain locally-controlled roads if current distribution formulas are maintained.[101]

Tennessee local governments also rely on local revenue sources to a varying degree to support highway expenditures in their jurisdictions. Local governments have discretion to determine their level of highway expenditures from local taxes, but highway expenditures must compete for funding with other local programs. This report does not address the condition of locally-controlled highways and bridges or whether local governments possess sufficient taxing authority necessary to maintain and improve local highways and bridges. Some states have authorized discretionary local taxes or fees earmarked for transportation to provide additional local revenue for highways.

Potential Tennessee Local Transportation Revenue Options by Tennessee Municipal League, 2008

- Change Special Petroleum Tax from fixed amount to local governments to a percentage distribution
- Local Option Fuel tax for any transportation needs by ordinance
- Local Option Vehicle Registration Fee
- Local Option Personal Property Tax on vehicles based on value of vehicle
- Convert existing motor fuel taxes to sales tax on retail price (revenue neutral first year)
- Convert existing motor fuel taxes to sales tax on wholesale price (revenue neutral first year)
- Excise tax on new tire purchases
- Fee on oil change

Source: Tennessee Municipal League, provided June 17, 2014.

Option: Authorize local highway user taxes or fees

According to the National Association of Counties, in 2014, 12 states, including Tennessee,[102] authorize counties to assess their own local gasoline taxes. These taxes usually require public approval at the local government level, such as the local referendum required in Tennessee, and are limited to a maximum rate or use, such as the one cent gas tax dedicated to public transportation in Tennessee.[103] Most counties in three states (Florida, Hawaii, and Nevada) and some counties in five other states have adopted a local gas tax. Counties in Nevada can impose a variable rate gas tax indexed to inflation. In four of the states that have authorized a local gas tax (Montana, Tennessee, California, and New Mexico), no counties have adopted the tax.

Local vehicle registration fees, in addition to state fees, could also be an option to raise additional local revenue for counties.

Strengths:

- Local highway user taxes provide a dedicated funding source for highway improvements as deemed necessary by a local jurisdiction.
- Local highway user taxes account for differences in population growth and economic development and the related need for highway expansion and maintenance within a state.
- Local gas taxes follow the user-pays principle more closely than other local taxes, such as broad-based sales or property taxes.

Concerns:

- Because of less traffic and lower fuel sales, areas with smaller populations or large land areas are at a disadvantage compared to more populous areas in raising revenue for highways.
- Administrative changes would be needed to determine the fuel taxes due in different areas within the state.
- Local fuel taxes or vehicle fees can be avoided if a neighboring jurisdiction has lower rates.

Vehicle Miles Traveled (VMT) Tax

Recent studies from a variety of groups (such as the Transportation Research Board, the University of Iowa, and the Oregon Road User Fee Task Force) have concluded that road-user charges based on miles driven could provide a viable alternative to motor-vehicle fuel taxes.[104] One benefit cited for the vehicle-miles traveled (VMT) approach is that it preserves the "user pays" principle.

Tennessee Transportation Revenue Options Considered by Tennessee Special Joint Study Committee (2009)

- Increase in Gas Tax Rate
- Increase in Motor Fuel/Diesel Rate
  - Increase motor fuel tax to same level as gas tax
- Increase in Vehicle Registration Fees
- Increase driver license fees
- Sales tax on gasoline and motor fuels (revenue neutral)
  - Tax floor if price of fuel decreases
- A sales tax on diesel fuel
- Indexing Fuel Tax rates to CPI
- State Wheel Tax on registered vehicles
- State Hotel/Motel Tax
- State Rental Car Tax of $2.50 per day
- Tolls where applicable
- Weight-mile tax
- Vehicle Miles Traveled fee
- Sales tax or property tax on vehicles based on value of the vehicle
  - Minimum and maximum amount
- Increase safety violation fines
- Allow HOT lanes
- Allow Public-Private Partnerships

Source: Tennessee House of Representatives, Transportation Committee files; no report was published.

The Federal Highway Administration (FHWA) defines VMT fees as:

> . . . distance-based fees levied on a vehicle user for use of a roadway system. As opposed to tolls, which are facility specific and not necessarily levied strictly on a per-mile basis, these fees are based on the distance driven on a defined network of roadways.[105]

VMT fees can either be fixed, with users paying a certain number of cents per mile for all travel, or variable based on one option or a combination of options (e.g., time of travel, miles driven in different jurisdictions, congestion levels, type of road traveled on, type and weight of vehicle, vehicle emissions).

Several states, including Oregon, Minnesota, Nevada, Georgia, Texas, and Washington, have undertaken research efforts to determine the viability of imposing VMT fees in lieu of motor-vehicle fuel taxes. Most notably, Oregon completed two pilot studies (in 2006-07 and 2012-13) and passed legislation in July 2013 authorizing the Oregon Department of Transportation (ODOT) to set up a mileage collection system for 5,000 volunteer motorists beginning July 1, 2015. ODOT is authorized to charge 1.5 cents per mile for up to 5,000 volunteer cars and light commercial vehicles and issue a gas tax refund to those participants. The program is expected to expand in coming years. The legislation creating the program also required:[106]

- The development of methods that volunteer vehicles will use to measure and report mileage that includes at least one method that does not use vehicle location technology.
- Choices for volunteers to select from multiple methods for how their billable mileage will be collected and reported.
- Ensuring an open-systems approach that uses common standards for developing the technology used so that different sources and providers can be used for the required equipment.
- The establishment of contracted private sector partners to provide volunteers the option of private sector administration for their participation.
- The protection of personally identifiable information from disclosure and the elimination of all location-based and daily metered use data according to strict timelines, unless the volunteer consents to retention.
- Enforcement of the new law via penalties for false statements, non-payment, and tampering with the in-vehicle technology.

Oregon has studied the issue since 2001, when it established the Road User Fee Task Force, an independent body of state legislators, transportation commissioners, local government officials, and citizens.

Strengths:

- VMT fees would not decline with increased fuel efficiency or the use of alternative fuels. "Since 1980, VMT has doubled while fuel consumption has increased by only 50 percent. Available projections indicate that VMT growth will continue to outpace growth in fuel consumption through 2030."[107]
- The program can be structured to address other transportation policy goals, including the reduction of traffic congestion, by varying the per-mile charge based on, for example, size or weight of the vehicle or the time and location of travel.
- Administering a VMT fee system has become more feasible with the advent of new electronics and communication technologies.

Concerns:

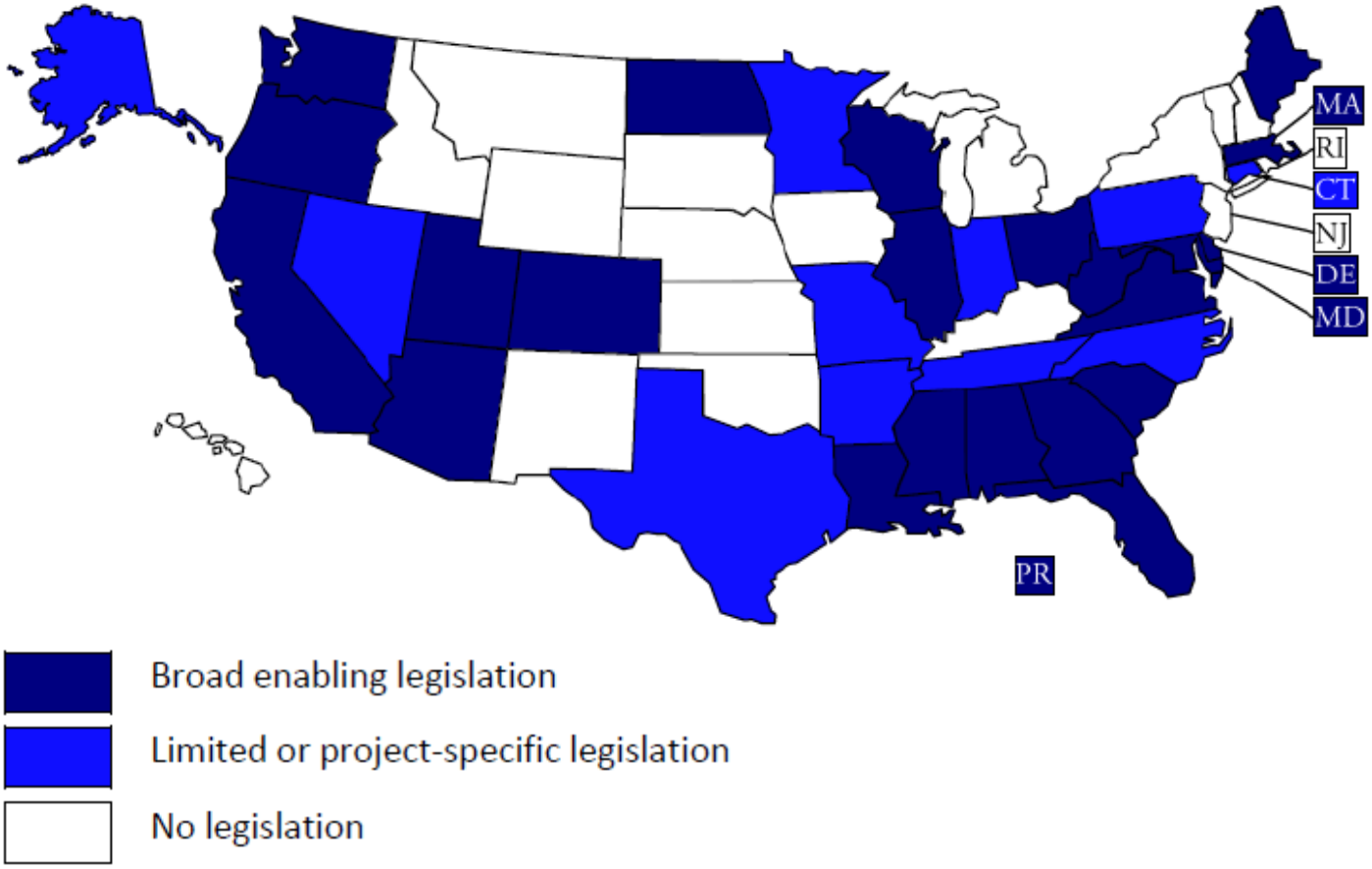
- Gaining public acceptance for using VMT fees to fund transportation infrastructure may be difficult.
- The tracking technology often used in VMT programs raises road users' concerns about protection of privacy.
- Administering such a system is likely to be more costly than fuel tax collection.
- Accounting for non-resident driving presents a challenge, particularly when surrounding states are not using a VMT system.

Public-Private Partnerships (P3s)

Public-Private Partnerships (P3s) are contracts between a government agency and a private company to undertake transportation projects traditionally performed by the government.[108] P3s take a variety of forms and may include a private partner working with a public highway department in some combination of highway design, construction, financing, operation, and maintenance.[109] P3s involve a commitment from private partners to take on a share of the financial, technical, and/or operational risk of public highway projects. The public sector usually retains ownership and oversight of the project, but gives the private partner decision rights in how the project is completed and managed to meet defined performance goals. P3s can be structured as "demand-risk," where the private developer is paid back through user fees, e.g., tolls, authorized by the public entity or "availability-payment," where the public entity pays the private developer an agreed-upon fee as long as the highway facility is available and meets specified performance goals.[110] P3 projects have included the lease of existing transportation facilities, development of new facilities, and added capacity to existing highways.

As of February 2014, according to the National Conference of State Legislatures, 33 states, including Tennessee, have laws enabling P3s for highway and bridge projects. Tennessee and 10 other states have limited or project-specific legislation; the other 22 states have broad enabling legislation. (See Exhibit 35.)

Exhibit 35: States with Transportation Public-Private Partnership Enabling Legislation, February 2014



Source: Jamie Rall, *Public-Private Partnerships for Transportation: A Toolkit for Legislators, February 2014 Updates and Corrections*, National Conference of State Legislatures, http://www.ncsl.org/, (accessed Aug. 25, 2014).

According to the Tennessee Department of Transportation, TDOT does not have the tolling and bonding authority necessary to implement a P3 as used in many other states.[111] Tennessee allows TDOT to enter into a limited number of design-build contracts for highway-related projects that may include design, right of way acquisitions, or utility relocation along with construction by a single entity.[112] Under the Tennessee Tollway Act, TDOT is authorized to contract with private parties to develop or operate a tollway or toll facility for any pilot projects approved by the General Assembly. [113] No toll projects have been authorized as of 2014.

A National Governors Association report states that potential P3 projects must be carefully designed and evaluated by both the public and private partners to protect the public's interest, to ensure that performance goals are met, and to determine the economic feasibility for both the private and public partners.[114]

Strengths:

- P3s may be used as a debt finance option to supplement motor fuel tax revenues and public bonding authority funds by attracting private sector capital or leveraging federal credit assistance programs.
- Additional up-front capital can accelerate project delivery as well as share or shift financial risk from the public sector.
- Some studies have found that private sector involvement can provide a potential for cost and time savings through more efficient techniques and management over the lifecycle of a project and can encourage innovation and improved project quality with private sector input in designing and managing infrastructure projects.

Concerns:

- P3s include a potential loss of public control over the use or expansion of the roadway and the allowable tolls on such projects.
- In the long-term, P3s do not provide new money for highway projects.
- P3s require either a commitment of existing or new user fees or tolls to cover costs and a return on investment to the private partner.
- Another issue is the multi-year commitment of an asset to a private entity, which limits public policy decisions regarding the specific highway road or bridge for a significant period of time.
- There is a risk of bankruptcy or default by a private partner, especially if the public sector must absorb the unexpected additional costs of projects involving the private partner.

Some argue that these and other performance concerns can be mitigated through enabling legislation and contract specifications.

Other Funding Sources

Other funding sources used by some states include:

- Driver license fees
- Rental car taxes
- State lottery/gaming funds
- Oil company taxes
- Vehicle weight fees
- Investment income

Endnotes

[1] Federal Highway Administration, *Highway Statistics 2012*, Table HM-10, http://www.fhwa.dot.gov/ (accessed Oct. 23, 2014). Excludes 1,525 road miles under specific federal or other jurisdiction (1 percent of the 95,522 total public road miles in Tennessee).

[2] Federal Highway Administration, Highway Bridge by Owner 2012, http://www.fhwa.dot.gov/ (accessed Dec. 9, 2014). Includes only Tennessee state and locally-owned bridges.

[3] Federal Highway Administration, *Highway Statistics 2012*, Tables HM-15, VM-2, and VM-3, http://www.fhwa.dot.gov/ (accessed Oct. 23, 2014).

[4] The 5 percent of locally-designated roads includes 14 percent of all municipal roads and 2 percent of all county roads.

[5] Excludes 347 federally-owned bridges.

[6] Tennessee Department of Transportation, *Driving to be the Best: Keys to Success*, 2011-2013, p. 3, http://www.tdot.state.tn.us/ (accessed July 31, 2014). See, for example, the nine national "Perpetual Pavement" awards TDOT has won since 2002 at http://www.asphaltroads.org/. To qualify for the award, the pavement must be at least 35 years old and must have never had a structural failure.

[7] David T. Hartgen, M. Gregory Fields, and Elizabeth San José, *Are Highways Crumbling? State and U.S. Highway Performance Trends, 1989-2008*, Reason Foundation, Policy Study 407, Feb. 2013, pp. 6 and 8, http://reason.org/ (accessed Aug. 1, 2014).

[8] American Society of Civil Engineers, Tennessee Section, 2009 Tennessee Infrastructure Report Card, http://tnasce.org/ (accessed Aug. 5, 2014). The 2009 report is, to date, the most recent report specific to Tennessee; the American Society of Civil Engineers produced a 2013 report in which U.S. roads received a grade of D+. See www.infrastructurereportcard.org/.

[9] American Society of Civil Engineers, Tennessee Section, 2009 Tennessee Infrastructure Report Card, www.infrastructurereportcard.org/, (accessed Aug. 5, 2014). The 2009 report is, to date, the most recent report specific to Tennessee.

[10] The American Society of Civil Engineers produced a 2013 report in which U.S. bridges received a grade of C+. American Society of Civil Engineers, 2013 American Infrastructure Report Card: Bridges, www.infrastructurereportcard.org/ (accessed Aug. 5, 2014).

[11] Federal Highway Administration, Our Nation's Highways 2011, pp. 7-10, https://www.fhwa.dot.gov/ (accessed Dec.1, 2014); Federal Highway Administration, *Highway Statistics 2012*, Users' Guide, Sections Federal-aid Highways, Interstate System, National Highway System, Functional System Data, www.fhwa.dot.gov/ (accessed Oct. 24, 2014); Paul Degges, Deputy Commissioner, Tennessee Department of Transportation, e-mail, Nov. 25, 2014.

[12] Fuel tax revenue is divided between the Highway and Transit accounts of the Highway Trust Fund. The Transit account receives 2.86 cents per gallon. The separate leaking Underground Storage Tank Fund receives 0.1 cent per gallon.

[13] Congressional Budget Office, *Alternative Approaches to Funding Highways*, March 2011, p. 2, http://www.cbo.gov/ (accessed Oct. 27, 2014).

[14] Federal Highway Administration, *Highway Statistics 2012*, Table FE-221, Revised Jan. 2014, https://www.fhwa.dot.gov/ (accessed Nov. 17, 2014).

[15] Federal Highway Administration, Highway Statistics, Table LGF-21, http://www.fhwa.dot.gov/ (accessed Nov.18, 2014) as reported by Tennessee local governments. This information is collected every two years; 2011 was the most current published comparison. Specific data on highway revenue for all counties and cities in Tennessee is not readily available.

[16] University of Tennessee, County Technical Assistance Service, http://ctas-eli.ctas.tennessee.edu (accessed Dec.1, 2014).

[17] *Tennessee Code Annotated* 67-3-1001, et seq.; University of Tennessee, Municipal Technical Advisory Service, https://resource.ips.tennessee.edu (accessed Dec. 1, 2014).

[18] State of Tennessee, Fiscal Year 2014-2015 Budget, pp. A-66 and A-12, http://www.tn.gov/ (accessed Dec.1, 2014); 108th Tennessee General Assembly, Public Acts 2014, Chapter No. 919 (Appropriations Bill), Section 1.2, Item 30, http://www.tn.gov/ (accessed Dec. 5, 2014).

[19] The State-Aid Highway Program includes funds, as appropriated annually, for maintenance of roads designated as "State-Aid Routes" and for rehabilitation of bridges on local roads. *Tennessee Code Annotated* 54-4-101, et seq., and 54-4-404(a).

[20] *Tennessee Code Annotated* 67-3-901(d). If a county falls below the required level of local funding, fuel tax distributions are reduced by that amount and transferred to the state highway funds to be used on roads in that county.

[21] Paul Degges, Deputy Commissioner, Tennessee Department of Transportation, e-mail, Nov. 21, 2014.

[22] *Tennessee Code Annotated* 67-3-901(b)(20).

[23] *Tennessee Code Annotated* 55-4-111.

[24] Tennessee Department of Revenue, Vehicle Services Division, Class Code/Fee Schedule, Revised Sept. 22, 2014, (Revision #7), pp. 1 and 64, http://www.tn.gov/ (accessed Aug. 20, 2014).

[25] *Tennessee Code Annotated 55-6-107*. Kirk Johnson, Director of Research, Tennessee Department of Revenue, e-mail and attachment, July 11, 2014; Catherine Corley, Statistical Research Specialist, Tennessee Department of Revenue, e-mail and attachment, July 16, 2014.

[26] See *Tennessee Code Annotated 55-6-107*(a)(2) and 55-4-103. In 2013, the General Assembly appropriated $4.1 million to cover the cost of issuing plates.

[27] *Tennessee Code Annotated* 55-4-211(a)(1). *Tennessee Code Annotated* 55-4-209 defines "new specialty earmarked plate" as a motor vehicle registration plate authorized by statute on or after July 1, 1998, which statute earmarks the funds produced from the sale of that plate to be allocated to a specific nonprofit organization or state agency or fund to fulfill a specific purpose or to accomplish a specific goal. The statute describes "cultural license plate" as one authorized by statute prior to July 1, 1998, and enumerated in 55-4-202(c)(5), or an honorary plate authorized on or after July 1, 1998, the funds for which are not specifically earmarked by statute. Cultural plates include collegiate plates and personalized plates unless those plates are specifically excluded by statute.

[28] Catherine Corley, Statistical Research Specialist, Tennessee Department of Revenue, e-mail and attachment, July 16, 2014.

[29] *Tennessee Code Annotated* 55-6-101.

[30] Adapted from Stan Chervin, et al., *Highway Finance in Tennessee,* Tennessee Advisory Commission on Intergovernmental Relations, Oct. 2002, p. 14, http://www.state.tn.us/ (accessed Aug.13, 2014).

[31] 2010 is the most current year available that includes local government revenue.

[32] From 1989 through 2012, the Consumer Price Index (CPI), a measure of general inflation in the economy, increased 85 percent; highway construction costs, as measured by the National Highway Construction Cost Index (NHCCI) increased 56 percent, with greater year to year fluctuations above and below the CPI.

[33] U.S. Bureau of Labor Statistics, Consumer Price Index Inflation Calculator, http://www.bls.gov/ (accessed Dec. 5, 2014).

[34] OREA calculation based on 56 percent change in National Highway Construction Cost Index from 1989 through 2012.

[35] U.S. Bureau of Labor Statistics, Consumer Price Index for Gasoline, unleaded, regular, http://data.bls.gov/ (accessed Nov. 12, 2014).

[36] Information compiled from several sources including: Robert Puentes and Adie Tomer, *The Road…Less Traveled: An Analysis of Vehicle Miles Traveled Trends in the U.S.*, Brookings Institution, 2008, http://www.brookings.edu/ (accessed Nov.19, 2014); Patricia Hutchins, Annual Energy Outlook 2014, Light-duty vehicle energy demand: demographics and travel behavior, U.S. Energy Information Administration, April 2014, http://www.eia.gov/ (accessed Nov. 19, 2014); Douglas Shinkle, Jaime Rall, and Alice Wheet, *On the Move: State Strategies for 21st Century Transportation Solutions,* National Conference of State Legislatures, July 2012, p. 9, http://www.ncsl.org/ (accessed Sept. 8, 2014).

[37] OREA calculation based on U.S. Energy Information Administration, *Annual Energy Outlook 2014 with projections to 2040*, April 2014, p. A-16, http://www.eia.gov/ (accessed Oct. 22, 2014).

[38] U.S. Energy Information Administration, *Annual Energy Outlook 2014 with projections to 2040,* April 2014, p. A-16, http://www.eia.gov/ (accessed Oct. 22, 2014).

[39] U.S. Environmental Protection Agency, *Light Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 through 2013*, Dec. 2013, p. 4, http://epa.gov/ (accessed July 16, 2014).

[40] Department of Transportation, Federal Register, Vol. 76, No. 231, Dec. 1, 2011, p. 74859, http://www.gpo.gov/ (accessed Aug. 21, 2014). Further, The Energy Information Administration projects fuel economy to average 55.6 mpg for passenger cars and 40.9 mph for light trucks mpg by 2040 with other fuel-savings technology. See http://www.eia.gov/forecasts/aeo/MT_transportation.cfm#ghgcafe.

[41] Terry Dinan and David Austin, Congressional Budget Office, *How Would Proposed Fuel Economy Standards Affect the Highway Trust Fund?,* May 2012, p. 6, http://www.cbo.gov/ (accessed Aug. 21, 2014).

[42] U.S. Energy Information Administration, Annual Energy Outlook 2014, May 7, 2014, http://www.eia.gov/ (accessed Aug. 21, 2014).

[43] U.S. Energy Information Administration, Annual Energy Outlook 2014, Market Trends: Transportation sector energy demand, http://www.eia.gov/ (accessed Aug. 21, 2014).

[44] U.S. Department of Energy, Alternative Fuels Data Center, Alternative Fuel Vehicles in Use, http://www.afdc.energy.gov/ (accessed Sept. 3, 2014). Note that hybrid vehicles were not introduced to the U.S. market until 1999.

[45] U.S. Energy Information Administration, Annual Energy Outlook 2014, Market Trends: Transportation sector energy demand, http://www.eia.gov/ (accessed Aug. 21, 2014).

[46] U.S. Environmental Protection Agency, *Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 Through 2013*, EPA-420-R-13-011, Dec. 2013, p. 84, http://www.epa.gov/ (accessed Sept. 3, 2014).

[47] U.S. Department of Energy, Energy Information Administration, Annual Energy Outlook 2014, Market Trends: Transportation sector energy demand, http://www.eia.gov/ (accessed Sept. 3, 2014).

[48] U.S. Energy Information Administration, Annual Energy Outlook 2014, Market Trends: Transportation sector energy demand, http://www.eia.gov/ (accessed Aug. 21, 2014).

[49] Congressional Budget Office, *Alternative Approaches to Funding Highways*, March 2011, p. vii, http://www.cbo.gov/ (accessed Nov. 5, 2014); General Accounting Office, *Highway Trust Fund: Pilot Program Could Help Determine the Viability of Mileage Fees for Certain Vehicles*, December 2012, pp. 9-10, http://www.gao.gov/ (accessed Dec. 8, 2014).

[50] Congressional Budget Office, *Alternative Approaches to Funding Highways*, March 2011, p. viii, http://www.cbo.gov/ (accessed Nov. 5, 2014).

[51] Additional costs from congestion include hours in delay and additional fuel required for all motorists. Additional costs also impact consumers of goods transported because of higher shipping costs.

[52] Information was not readily available on local funding support for highways by cities and some counties. Information was readily available from the University of Tennessee, County Technical Assisstance Service based on the financial statements for the 89 counties audited by the Tennessee Comptroller's Office. These counties include 60 percent of the state's population. The four most populous counties are not included. Information for the 89 counties indicates significant variation in their level of support for local roads and bridges. In FY2013, those 89 counties had $295.8 million in highway fund revenues; state revenue made up 62 percent of those expenditures and local revenues were 35 percent.

[53] The 2014 legislation also calls for a transfer of $2 billion into the mass transit account of the HTF. Most of the total $10.8 billion will come from extending customs user fees for one year to Sept. 30, 2024; an increase in corporate tax revenue resulting from changes to corporate pension contributions; and a transfer from the Leaking Underground Storage Tank Fund. Nick Jacobs, *Highway Trust Fund Fix Heads to President*, Federal Funds Information for States, Issue Brief 14-26, Aug. 1, 2014, http://www.ffis.org/ (accessed Sept. 15, 2014; subscription required).

[54] U.S. General Accountability Office, *Highway Trust Fund: Improved Solvency Mechanisms and Communication Needed to Help Avoid Shortfalls in the Highway Account*, Feb. 2009, pp. 1, 9-10, http://www.gao.gov/ (accessed Dec. 1, 2014).

[55] Congressional Budget Office, *The Highway Trust Fund and the Treatment of Surface Transportation Programs in the Federal Budget*, June 2014, p. 3, http://www.cbo.gov/ (accessed Sept. 15, 2014).

[56] Congressional Budget Office, *The Highway Trust Fund and the Treatment of Surface Transportation Programs in the Federal Budget*, June 2014, p. 2, http://www.cbo.gov/ (accessed Sept. 15, 2014).

[57] Daniel C. Vock, "Congressional Inaction on Road Funding Hits the States," *Governing*, April 14, 2014, http://www.governing.com/ (accessed Sept. 16, 2014).

[58] U.S. Government Printing Office, H.R. 3486, "To empower States with authority for most taxing and spending for highway programs and mass transit programs, and for other purposes," 113th Congress, http://www.gpo.gov/ (accessed Dec. 10, 2014).

[59] Congress.gov, H.R. 3486, Transportation Empowerment Act, 113th Congress, All Actions, Including Floor Amendments, https://beta.congress.gov/ (accessed Dec. 10, 2014).

[60] See Select Resources for the primary publications used by OREA to identify and evaluate state transportation revenue options.

[61] Sean Slone, "States Turn to Commissions, Task Forces for Transportation Funding Solutions," *The Book of the States 2012*, The Council of State Governments, http://knowledgecenter.csg.org/; *Transportation Funding Commissions II*, July 2013, http://knowledgecenter.csg.org/ (both accessed Nov. 10, 2014).

[62] Transportation Research Board of the National Academies, *The Fuel Tax and Alternatives for Transportation Funding*, Special Report 285, 2006, p. 186, http://onlinepubs.trb.org/ (accessed Aug.11, 2014).

[63] Highway use also includes the direct benefit to consumers of shipped goods.

[64] For a history of highway funding, see Stan Chervin, et al., *Highway Finance in Tennessee*, Tennessee Advisory Commission on Intergovernmental Relations, Oct. 2002, p. 21, http://www.state.tn.us/ (accessed Aug.13, 2014).

[65] Jonathan Williams, *Paying at the Pump: Gasoline Taxes in America*, Tax Foundation, Oct. 2007, p. 2, http://taxfoundation.org/ (accessed Nov. 12, 2014).

[66] Josh Tillman, Assistant General Counsel and Legislative Liaison, Tennessee Department of Revenue, e-mail, Nov. 6, 2014.

[67] OREA calculation based on information in "Annual Gas Tax Paid – Common Passenger Vehicle."

[68] U.S. Bureau of Labor Statistics, Consumer Price Index Calculator, http://data.bls.gov/cgi-bin/ (accessed Dec. 8, 2014). Assumes the 1.4 cent special petroleum tax stays the same.

[69] OREA analysis based on data from American Petroleum Institute, July 2014, http://www.api.org/ (accessed Jul. 25, 2014).

[70] Maryland ties its rates to both gas prices and CPI.

[71] Institute on Taxation and Economic Policy, *Building a Better Gas Tax: How to Fix One of State Government's Least Sustainable Revenue Sources*, Dec. 2011, p. 8, http://www.itep.org/ (accessed Nov.7, 2014).

[72] Douglas Shinkle, Jaime Rall, Alice Wheet, *On the Move: State Strategies for 21st Century Transportation Solutions*, National Conference of State Legislatures, July 2012, pp. 6-7, http://www.ncsl.org/ (accessed Sept. 8, 2014).

[73] West Virginia Code 11-14C-5(b)(2), http://www.legis.state.wv.us/ (accessed Nov. 7, 2014)

[74] Tennessee Department of Revenue, Vehicle Services Division, Class Code/Fee Schedule, Revised Sept. 22, 2014, (Revision #7), pp. 61 and 64, http://www.tn.gov/ (accessed Aug. 20, 2014).

[75] U.S. Department of Transportation, Federal Highway Administration, Tolling and Pricing Program, "Income-Based Equity Impacts of Congestion Pricing – A Primer," Last modified Sept. 22, 2014, http://ops.fhwa.dot.gov/ (accessed Dec. 1, 2014).

[76] A portion of vehicle registration fee revenues are earmarked by statute for certain public safety-related funds, such as the Police Pay Supplement Fund ($5.4 million in 2013), the Trooper Safety Fund ($4.3 million in 2013), and the Motorcycle Rider Safety Fund ($335,000 in 2013). See Exhibit 11.

[77] The Deficit Reduction Act of 1984 (DRA) called for a Heavy Vehicle Cost Responsibility Study which concluded that most pavement costs are directly related to heavy vehicles, and that axle loads are more important than gross weight in determining a vehicle's pavement cost responsibility. U.S. Department of Transportation, Federal Highway Administration Cost Allocation Study, Aug. 1, 1997, p. I-5, http://ntl.bts.gov/ (accessed Nov. 10, 2014).

[78] Chad Shirley, *Spending and Funding for Highways*, Economic and Budget Issues Brief, Congressional Budget Office, Jan. 2011, p. 6, http://www.cbo.gov/ (accessed Sept. 12, 2014).

[79] Iowa Department of Transportation, Summary of State Use of Weight Distance Tax, June 24, 2011, http://www.iowadot.gov/ (accessed Sept. 11, 2014).

[80] New Mexico: New Mexico Taxation and Revenue Department, Motor Vehicle Division, Commercial Vehicle Bureau, Weight Distance Tax Return – Long Form, p. 3, revised 11/06, http://www.mvd.newmexico.gov/. New York: American Transportation Research Institute, New York State Ton-Mile Tax Analysis: Estimation of Untaxed Commercial Vehicle Miles Travelled, Feb. 2008, p. 11, http://www.atri-online.org/. Oregon: Oregon Department of Transportation, Motor Carrier Transportation Division, Mileage Tax Rates, Rates Effective Oct. 1, 2010, p. 1, http://www.odot.state.or.us/. All sources accessed Sept. 12, 2014.

[81] Andrew Martin, Mark Bell, and Jennifer Walton, *Motor Carrier Tax Consolidation Study*, University of Kentucky, Kentucky Transportation Center, 2013, p. 1, http://www.ktc.uky.edu/ (accessed Sept. 11, 2014). Oregon Department of Transportation, *2013-2015 Governor's Balanced Budget*, p. 405, http://www.oregon.gov/ (accessed Nov. 5, 2014). Oregon.gov, Fuels Tax Group, Use Fuel User, Frequently Asked Questions, question 12, http://www.oregon.gov/ (accessed Nov. 5, 2014). Note that if a vehicle is subject to Oregon's weight-mile tax, it does not pay taxes on diesel fuel; its weight-distance tax rates are higher than the other three states' rates.

[82] Kentucky: Mike Helton, *Driving Kentucky's Future: The Road Plan*, Government Strategies, undated, http://www.govplan.com/. New Mexico: University of New Mexico, Bureau of Business and Economic Research, *Motor Fuel Taxes and Highway Finance in New Mexico*, 2001, p. 14, https://bber.unm.edu/. New York: Thomas P. DiNapoli, New York State Comptroller, *The Dedicated Highway and Bridge Trust Fund: Where Did the Money Go?*, Oct. 2009, pp. 25-26, http://www.osc.state.ny.us/. Oregon: Oregon Department of Transportation, *Budget 2011-2013*, pp. 5-6, http://www.oregon.gov/. All sources accessed Sept. 12, 2014.

[83] Patrick J. Balducci and Joseph Stowers, *State Highway Cost Allocation Studies: A Synthesis of Highway Practice*, National Cooperative Highway Research Program, Synthesis 378, Research sponsored by the American Association of State Highway and Transportation Officials in cooperation with the Federal Highway Administration, 2008, https://itd.idaho.gov/ (accessed Sept. 11, 2014).

[84] Joseph Galbato III, Deputy Commissioner/Chief Financial Officer, Tennessee Department of Transportation, e-mail, Sept. 15, 2014.

[85] FHWA officials suggest that the estimated share of commercial truckers' responsibility for road damage may have changed since the 2000 study in part because of increases in miles traveled by heavy trucks relative to smaller trucks and cars. GAO reports that FHWA officials have no plans to update the Highway Cost Allocation Study. United States Government Accountability Office, *Highway Trust Fund: Pilot Program Could Help Determine the Viability of Mileage Fees for Certain Vehicles*, GAO-13-77, Dec. 2012, pp. 44-45, http://www.gao.gov/ (accessed Sept. 12, 2014).

[86] Oregon and New York have considered transitioning to an electronic collection, and pilot projects in both states found that implementation costs would be reduced with electronic collection. The New York study reported that many large trucks already have the GPS technology needed to support mileage fees. Trucking firms use these to monitor mileage traveled, driver speed, estimated delivery times, and other business information. United States Government Accountability Office, *Highway Trust Fund: Pilot Program Could Help Determine the Viability of Mileage Fees for Certain Vehicles*, GAO-13-77, Dec. 2012, pp. 29-30, http://www.gao.gov/ (accessed Sept. 12, 2014).

[87] A Kentucky report found that state administrative costs would be reduced if the tax were eliminated, but also concluded that a weight-distance tax likely produces a more equitable revenue system than the increases in plate fees the study considered. See Andrew Martin, Mark Bell, and Jennifer Walton, *Motor Carrier Tax Consolidation Study*, University of Kentucky, Kentucky Transportation Center, 2013, pp. 45 and 46, http://www.ktc.uky.edu/ (accessed Sept. 11, 2014).

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[89] National Conference of State Legislatures, Toll Facilities in the United States, http://www.ncsl.org/ (accessed Nov.14, 2014).

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Select Resources

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Congressional Budget Office

Alternative Approaches to Funding Highways, March 2011, https://www.cbo.gov/

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The Council of State Governments

Sean Slone, "States Turn to Commissions, Task Forces for Transportation Funding Solutions," in *The Book of the States 2012*, http://knowledgecenter.csg.org/

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Institute on Taxation and Economic Policy

Building a Better Gas Tax: How to Fix One of State Government's Least Sustainable Revenue Sources, Dec. 2011, http://www.itep.org/

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Mark Burton, Matthew Murray, and Donald Bruce, *Policy Brief 2: The Current Tennessee Landscape*, *Sustaining Mobility in Tennessee: Fuels, Roadway Use, and User-Funded Alternatives*, prepared for the Tennessee Department of Transportation, July 2013.

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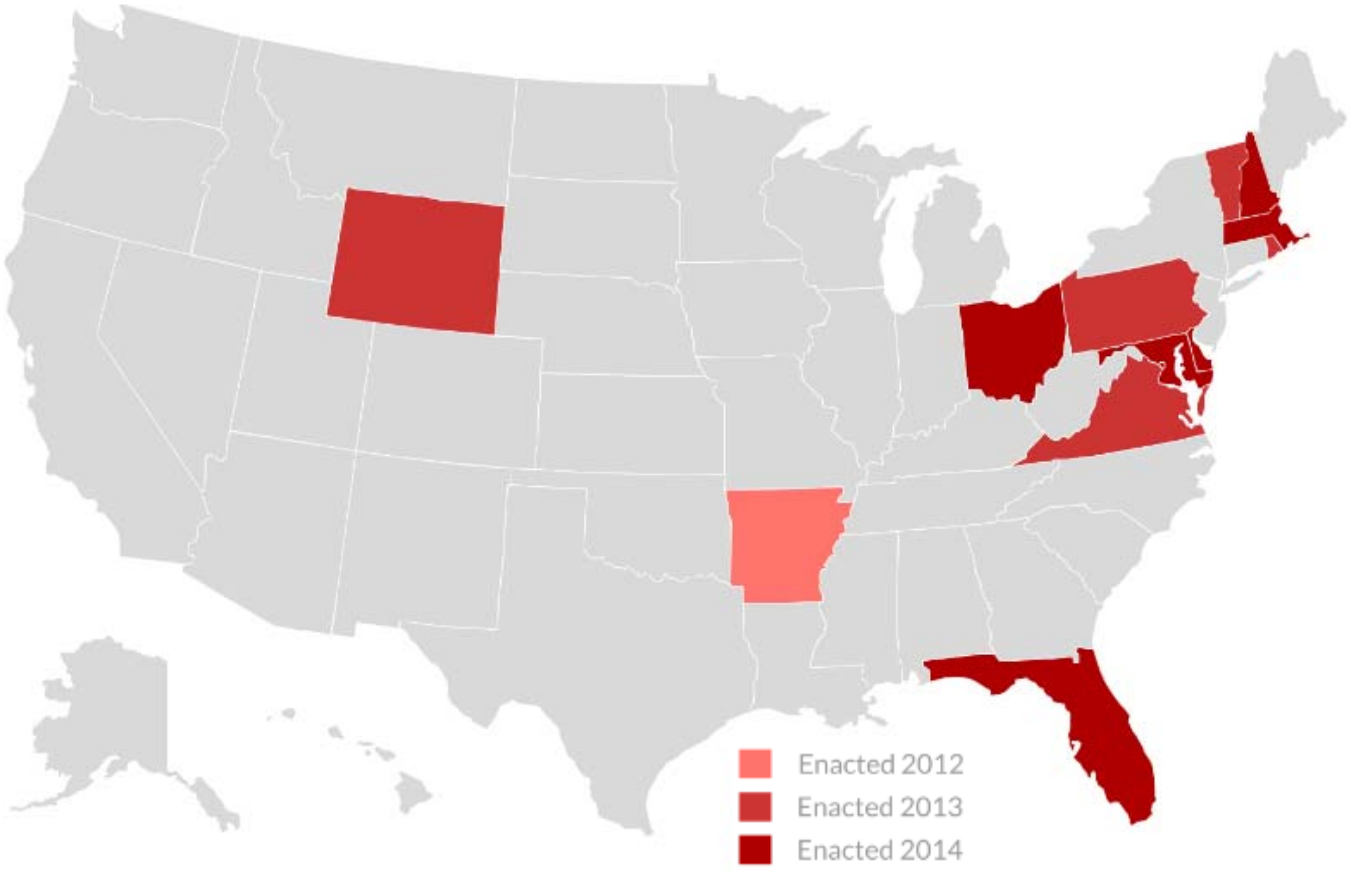
Appendix A: Organizations Providing Input to Comptroller's Office

Tennessee Department of Transportation
Tennessee Department of Revenue
Tennessee County Highway Officials Association
Tennessee County Services Association
Tennessee Municipal League
Tennessee Advisory Commission on Intergovernmental Relations
University of Tennessee, Center for Business and Economic Research
University of Tennessee, County Technical Assistance Service

Tennessee Road Builders Association
Tennessee Chamber of Commerce
AAA Tennessee, The Auto Club Group
Tennessee Trucking Association
American Council of Engineering Companies of Tennessee
Tennessee Society of Professional Engineers
Tennessee Fuel and Convenience Stores Association

Appendix B: Recent State Legislation Enacted to Raise Transportation Revenue



2012

Arkansas

- Approves a 0.5 cent increase in the statewide sales tax to repay $1.3 billion in new 10-year bonding authority for a four-lane state highway network and to repair rural and local roads.

2013

Maryland

- Raises $4.4 billion over six years, which includes borrowing ability against future revenues
- Indexes the gas tax to inflation (ceiling of no more than 8 percent in any given year.)
- Adds a 3 percent sales tax at the pump
- Indexes transit fares MTA to inflation (CPI Index)
- Increases sales tax on gasoline to 4 percent if the congressional ban on Internet sales tax is lifted, 5 percent if Congress does not lift the ban
- Multimodal

Massachusetts

- Raises the gas tax three cents and indexes it to inflation
- Requires MassDOT and MBTA to raise a greater portion of their costs—up to an additional $229 million per year—from tolls, fees, fares and other sources and from efficiencies
- Dedicates other state funds—including all proceeds from vehicle sales taxes—to transportation
- Increases taxes on cigarettes and tobacco products

Ohio

- Authorizes $1.5 billion in new toll-road debt to be repaid with increased turnpike tolls

Pennsylvania

- Raises an additional $2.3 billion per year for highways and transit
- Establishes a Multimodal Transportation Fund for local economic development
- Allocates a 60 percent increase to local governments
- Eliminates the per gallon gas tax
- Increases the sales tax on gas assessed at the wholesale level (by gradually eliminating the cap on taxable value and replacing it with a floor)
- Increases vehicle registration, licensing and truck weight fees, and moving violation fines

Vermont

- Raises $28 million annually
- Adds 2 percent sales tax assessment to gasoline
- Reduces gas tax from 20 cents to 19.2 cents
- Issues a $9 million bond to be repaid with existing revenues
- Increases diesel per gallon tax three cents over two years

Virginia

- Raises $3.5 billion over five years
- Directs 0.175 percent of existing sales tax revenues to transportation; raises sales tax by 0.3 percent with 1.25 percent of the increase dedicated to transit and passenger rail
- Imposes mandatory local taxes in two regions: in Northern Virginia, increases sales tax by 0.7 percent and adds 15 cents per $100 assessed value to real estate transfer tax along with a 2 percent increase in hotel tax; in Hampton Roads it increases sales tax by 0.7 percent and adds a 2.1 percent wholesale tax on gasoline
- Eliminates the cents per gallon tax on gasoline and diesel; adds a 3.5 percent wholesale tax on gasoline and 6 percent on diesel (wholesale tax increases by 1.6 percent in 2015 if the Internet sales tax ban is not lifted)
- Adds a $64 fee on hybrid vehicles
- Raises the motor vehicle sales and use tax by 1.15 percent

- Directs a portion of Internet sales tax receipts to transportation if Congressional ban is lifted, which would raise $1.13 billion over five years
- Multimodal

Wyoming

- Raises $70 million annually for highways
- Increases the gas tax 10 cents per gallon

2014

Delaware

- Generates $20 million annually for road maintenance and to avoid cuts in local transportation fund
- Increases tolls on State Route 1 to $1 on weekends

Florida

- New revenue for roads and maintenance revenue
- Allows leases of right-of-way for cell phone towers on state property
- More toll roads

New Hampshire

- Increases the per gallon tax by 4 cents dedicated to rehabilitation and bridge repair projects
- Adds bonds for the widening of I-93
- Extends fuel taxes to fuels used by alternative fuel vehicles

Rhode Island

- Directs revenues from vehicle fees and rental car taxes to the state highway maintenance fund
- Increases the gas tax by approximately one cent in 2015 and sets it to inflation for future years
- Calls for a statewide referendum to approve issuing $35 million in bonds to fund multi-modal transit hub infrastructure

Note: An additional 19 states considered legislation to raise additional transportation revenue in 2013 and 2014. See http://t4america.org/maps-tools/state-transportation-funding/ for more details.
Source: Summarized from Transportation for America, http://t4america.org/ (accessed Nov. 14, 2014).

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