



September 26, 2012
No. 12-02

PolicyReport

There's More Than One Way to Pave a Road *A study of alternatives for Tennessee transportation funding*

by Paul C. Stumb, Ph.D., Kaleigh Walker, and Alexandria Wood

EXECUTIVE SUMMARY

Within the past decade (2000–2010), the population of Tennessee has grown approximately 12 percent, but miles traveled on Tennessee highways have increased by more than 25 percent. In the previous decade (1990–2000), these figures were estimated at 17 percent and 41 percent, respectively. Tennessee road construction and maintenance is funded almost exclusively by state treasury revenues that are generated by gasoline taxes. Further, an increasing number of hybrid and electric powered vehicles are causing a reduction in fuel consumption and associated tax revenues. As a result, the state of Tennessee must identify and adopt new methods for funding the increasing demand for transportation infrastructure.

This policy report examines alternative funding techniques that have been considered or adopted by other states, and explores the benefits and shortcomings of each. These include: public-private partnerships (PPPs); tax increment financing (TIF); tolling; vehicle miles traveled (VMT) taxes; congestion pricing, vehicle weight-mile taxes; state infrastructure banks (SIBs); vehicle CO₂ emissions, taxes, and fees; mass transportation; debt instruments; and increasing the fuel tax.

Clearly there are many competing objectives when determining how to best generate transportation funds in both an adequate and equitable manner. Ultimately, this report offers a set of recommendations that are believed to optimize these competing objectives and provide the best long-term solution to this important and growing issue that affects virtually every citizen of the state.

Introduction

Tennessee boasts the reputation as home to many of the nation's highest quality roads, as well as efficient transportation and infrastructure. CNBC ranks Tennessee fourth in the nation on this topic, and out of the handful of states that fund transportation and infrastructure without debt, Tennessee is ranked highest. The next debt-free state ranks at just nineteenth.¹ Yet in recent years, Tennessee's transportation revenues have decreased due to a lack of efficient funding. Tennessee's "pay-as-you-go" finance method is funded primarily by collecting fuel taxes added into the cost of gasoline. This system has been in place since the 1980s, when the fuel tax system was cemented during Gov. Lamar Alexander's administration in response to the Better Roads Program.² Since then, however, the collection of fuel taxes has morphed into an inefficient funding mechanism for transportation projects and highway maintenance costs. Tennessee's fuel tax has remained at 21.4 cents per gallon since 1989; during that same time period, the cost of inflation coupled with the increase in fuel-efficient cars has failed to raise sufficient funds to meet the state's infrastructure needs.³

Political unrest has heavily influenced market trends. Over the past several decades, there has been a number of "crises" surrounding oil supply. These crises have caused fluctuating fuel prices and, consequently, instability in fuel tax revenues. In an effort to buffet themselves, American consumers have begun to purchase vehicles with better fuel economy in the form of fuel efficient, hybrid, and electric vehicles. While hybrid and electric vehicles are still far from overtaking vehicles run solely on gasoline, new technologies will eventually allow retailers to sell these vehicles at a more affordable price, increasing the number of fuel-efficient drivers. Despite these trends, Tennessee's fuel tax fails to price congested roads properly, fails to pay for all road costs, and fails to protect against the erosion of fuel tax revenues from inflation and fuel-efficient cars. Tennessee should adopt alternative mechanisms that address these problems in ways that allow it to maintain and to improve its transportation systems.

The Problem

In the state of Tennessee, there are roughly 4.2 million drivers who use and contribute to the funding of Tennessee roads.⁴ This number, which already accounts for 70 percent of the population, is expected only to increase over time. So too will the number of roads built and the cost of road maintenance. As the population grows, Tennessee residents leave crowded urban areas, resulting in a greater number of drivers commuting farther distances to work. Less than 50 percent of the residents in 32 counties currently work in their home county.⁵ The increase in commuting yields more congestion, accidents, and road repair. More road repair thus requires an increase in transportation funding. Tennessee is not alone when it comes to insufficient transportation funding. Every state in the union has been forced to develop new funding techniques to finance transportation due to the many problems that result from paying for road use exclusively with fuel taxes. The consumption of fossil fuels

has been the backbone of our transportation funding for decades. This policy served its purpose when fuel sales were high and inflation was low, but now that the market has shifted toward lower fuel consumption, this method is losing its efficacy.

First, the federal fuel tax and many state fuel taxes (such as Tennessee's) are not indexed to inflation. In the last fifty years, highway construction costs have increased by about 10 times, yet the fuel tax has grown only by about five times. This means the tax on one gallon of gasoline buys only about half as much highway work as it did 50 years ago.⁶ A second problem lies in the fuel-efficiency of vehicles today. The move toward highly efficient vehicles has become official government policy since the federal government reached agreement with automakers last July for new vehicles to meet an average standard of 54.5 miles per gallon by 2025.⁷ Unless funding mechanisms change, this will prove to be detrimental to the federal highway trust fund. Under the current system, fuel-efficient vehicles are taxed less and do not contribute as much revenue as do other vehicles to maintain the roads they use. Third, fuel taxes are mainly used for federal and state roads. City and county governments must spend money from their own general funds to cover the cost of local transportation funding.⁸

Tennessee's transportation funding problem is not experiencing a mere phase or economic anomaly that can be cured with quick fixes. Addressing the problem will require creative thinking on the part of policymakers. Fortunately, several states and policy organizations have developed innovative financing techniques that can serve as the next evolution in transportation funding. There are a number of other tools that are already being used or studied, as well as untapped resources available in the form of federal bonds, public-private partnerships, and funding appropriations that can be redirected to finance transportation projects.

Alternatives Defined

Public-Private Partnerships (PPPs) are contractual agreements between the public and private sector in regard to the design, construction, and management of transportation projects. "This expanded private role can range from both designing and constructing the same facility (design-build) to including broader responsibilities such as operations and maintenance (design-build-operate-maintain) or finance (design-build-finance-operate)."⁹

Tax Increment Financing (TIF) is a method in which geographic areas (designated as TIF districts) issue bonds to finance specific improvements to the area, hoping to increase the assessed property value by encouraging private development as a result of the improvements. The rise in property value yields higher property tax revenue, and the additional revenue collected over and above the original rate before the improvements were made is used to finance the debt from the bonds.¹⁰

Tolling is a type of user fee in that drivers must pay a toll in order to use toll roads. Before the massive public road system we know today came about, private toll roads accounted

for much of the transportation system. This technique has been growing in popularity as transportation funding restraints have spurred the need for the generation of new revenue.¹¹

Vehicle Miles Traveled Tax (VMT) is a method that would completely replace the fuel tax, as it charges a tax based on miles traveled, directly tying it to damage done to roads rather than the amount of fuel consumed, thus focusing on road consumption instead of fuel consumption.¹²

Congestion Pricing charges fees based on the demand of a road. The goal of this pricing system is to divert discretionary drivers to alternate routes, as it assumes that most rush hour drivers are not actual commuters to work. This allows traffic to move much more fluidly without having to change road capacity by adding lanes.¹³

Vehicle Weight-Mile Tax is a graduated fee based on the weight of the vehicle and the number of miles traveled in the designated period. “Studies show that even though fuel consumption is directly affected by the weight and size of the vehicle, the fuel tax does not fairly distribute the tax with regard to cost responsibility, i.e., the amount of damage done to the roads by these vehicles and the subsequent cost incurred.”¹⁴

State Infrastructure Banks are funds in which states have access to various loans and other forms of credit assistance in order to finance transportation and infrastructure projects. Each bank is unique depending on the needs of the state for which it was designed.¹⁵

Vehicle CO₂ emission taxes and fees are a popular international answer to pollution problems. The theory is that drivers will be inclined to invest in more fuel-efficient and environmentally friendly vehicles, which consequently reduce the amount of damage done to the roads, because the vehicles are generally lighter in weight. Even though the trend toward more fuel-efficient vehicles seems to be universal, studies show that higher gas prices do not have an appreciable impact on consumption.

Mass transportation is a system in which drivers become riders, removing a significant number of cars from congested areas and reducing damage done to roads from heavy traffic. Under ideal circumstances, fares collected pay for the system, but this depends on ridership. This alternative relies on demand that does not currently exist within the state of Tennessee, therefore mass transit systems would necessarily require supplemental funds from private investors and/or dollars pulled from the state’s general transportation fund.¹⁶

Debt Instruments are another option for state transportation financing. A Grant Anticipation Revenue Vehicle (GARVEE) is a tax-exempt debt instrument that has the promise of federal funding via future reimbursements; Build America Bonds (BABs) are taxable bonds that are eligible for an interest payment subsidy paid directly from the U.S. Treasury; and Private Activity Bonds (PABs) are debt instruments issued by state or local governments for public-purpose projects in which bond proceeds are used to finance a

project developed by a private entity or where there is significant private investment. To date, the state of Tennessee is one of only a few states that has not elected to fund road construction with debt financing.¹⁷

Increasing the fuel tax has been the chief option for raising quick revenue in the past; however, the fuel tax fails to be a sustainable and efficient method of funding road costs. After adjusting for inflation, drivers today pay only one-third as much for each mile they drive as they did in 1956.¹⁸

Discussion of Alternatives

One alternative mechanism for transportation funding is the concept of public-private partnerships (PPPs). PPPs are contractual agreements between the public and private sector to engage in various transportation projects. Twenty-nine states enable PPPs, and an additional six states allow for them at the local level.¹⁹ Design-build is the most common vehicle for PPPs. This is a method by which the state issues a single contract for both the design and construction of a project to a member or members of the private sector, but this can extend to other responsibilities, such as maintenance.²⁰ Seven states employ this tactic without the presence of specific PPP-enabling legislation, including Idaho, Kentucky, Montana, and New Mexico (Appendix B). Tennessee is currently among the states with PPP-enabling laws with certain legislative requirements (Appendix B).

PPPs are mutually beneficial because they serve as investment opportunities for the private sector that can increase property values, which will in turn generate new property tax revenue for local governments. PPPs lead to efficiency and save the state money by providing the project with greater access to private capital. One concern about these partnerships is that, with the private sector providing funding and resources, the public sector may lose too much control over projects. Additionally, this method does not generate new revenue, so it does not solve the problem of a funding deficit. It can, however, be used in conjunction with other tools to modify the process by which projects are funded and executed to save money and improve quality. The most fundamental disadvantage to PPPs is that any capital provided for project execution will have to be repaid, and typically private partners require a project to generate a reasonable cash flow, which is often achieved through tolling. Tolling, like any fee or tax, has the potential for adversely affecting low-income drivers and the trucking industry, making it a more politically challenging option.

Tax increment financing (TIF) involves the creation of “districts,” or geographical areas, and provides a funding mechanism for area specific improvement projects, including transportation and road projects. Under this approach, bonds are issued within the districts, and the revenue collected is utilized to fund projects with the hope that the improvements will increase the area’s assessed value. This will in turn increase property tax collections, and the increased revenue is used to pay off the original debt.²¹ This process is called tax increment financing, and 49 states (including Tennessee) permit this type of

financing.²² In fact, the only state that does not have specific legislation authorizing TIF is Arizona, which has nonetheless approved individual TIF projects.²³ Tennessee has never employed this method specifically to fund transportation projects, but as this option generates new revenue, TIF could cover the growing gap between costs of transportation and revenue generated to pay those costs.²⁴ Not only can TIF districts benefit from their own improvements, but neighboring districts can also benefit through increases in their assessed property values. TIF, however, can have a complicated implementation process, and could displace residents who may not be prepared for the higher tax burden generated by the intended high property values. Furthermore, TIF does not incur immediate results; instead, funds trickle in over the lifetime of the district.²⁵ It can also be argued that this method relies too heavily on the public sector. The counter-argument is that the improvements will spark interest by the private sector and will attract new businesses and potential financing partners to further increase the area's value.

Tolling is another method of transportation financing that Tennessee has explored in recent years. As suggested above, tolling may be a tool used to generate revenue with which to repay loans granted for transportation projects. Revenue from tolls can also be used to operate, maintain, and expand the roadway on which the toll is collected. By using tolls to reduce congestion, highway capacities can nearly double for several hours of the day, allowing commuters to better predict arrival times and potentially decrease the number of traffic-related accidents.²⁶ Further, the presence of high-occupancy toll (HOT) lanes allows drivers to avoid tolls if they wish. HOT lanes allow single-occupant vehicles to use the lanes by paying a toll. The tolls change throughout the day according to real-time traffic conditions, which are intended to manage the number of cars in the lanes to keep them less congested. Tolling ensures that drivers are paying for the roads they are using, and it has been in practice far longer and is more familiar to people than other forms of congestion pricing and vehicle-miles-traveled taxes that are being studied in states across the country. The Tennessee General Assembly passed the Tennessee Tollway Act in 2007, which charged the Tennessee Department of Transportation with studying the feasibility of certain toll projects across the state.²⁷ While there are still no tollways in Tennessee, 28 other states have used tolling to successfully generate transportation revenue (Appendix B).

One of the concerns with tolling is that it has the potential to divert traffic to non-toll roads, which will create more congestion rather than relieve it. There is also a certain degree of private sector control that is unavoidable, but may prove to be more beneficial as it gives the project sponsor the freedom to act independently of overly-regulated public control. Tolling is also considered by some to be "double-taxation," as drivers are already paying a gas tax and various registration and other fees. Therefore there is limited public and political support for such a system, particularly if implemented in addition to, rather than in lieu of, a fuel tax.

One alternative that directly responds to the fuel-efficient, hybrid, and electric vehicle boom in the last decade is the vehicle-miles-traveled tax (VMT). Instead of imposing a flat

tax on fuel purchased, a VMT would consider vehicle miles traveled and whether the miles are traveled in highly congested areas at peak times. Oregon pioneered this method via a pilot program in 2006 and 2007 in which 200 voluntary participants were asked to install GPS equipment in their cars and save the VMT report on the receipts they received when they pumped their gas. This program was generally successful, but there were several concerns about privacy and initial costs to install the GPS equipment. The Oregon Department of Transportation (ODOT) has since revised its approach and is preparing to launch another pilot program without the use of GPS in late 2012.²⁸

A VMT can replace the fuel tax and can be collected conveniently in a variety of nonintrusive ways. The new pilot program ODOT is launching allows consumers to select the collection method they prefer. For example, drivers can choose to report mileage via manual data entry at the gas pump, via a government supplied electronic device (e.g., On-Star or other GPS device) or via annual mileage reporting at emissions testing stations. Regardless of the methodology for collecting mileage data, the owner/operator is charged a tax based on the number of miles traveled. The more sophisticated data collection techniques can charge an additional premium for miles traveled in particularly high traffic areas and/or for travel at peak traffic times of day. For drivers who wish to avoid technological means altogether, they can simply report directly from their odometer, as some already do for “pay as you go” insurance, or they can pre-purchase a number of miles in advance similar to pre-paid minutes on a phone card.²⁹

The biggest concerns with the VMT approach outside of the privacy issue are the timetable and costs associated with implementation. If the fuel tax is to be replaced, the entire framework of transportation funding will need to be changed. Because this is such a new concept and very few studies have been conducted, there is minimal political support, but three states other than Oregon (California, Colorado, and Washington) have passed legislation to study the feasibility of VMT (Appendix B).

The first VMT pilot program used congestion pricing, which imposes a surcharge on drivers when they enter high-traffic areas at peak times of the day. This pricing mechanism can also be employed as a standalone pricing structure. The goal of this system is to divert a fraction of rush-hour traffic to other routes under the premise that most drivers contributing to these backups are not commuters. Congestion pricing has never been attempted in the U.S., but there are a few international examples—including Singapore and London—that use this system to reduce congestion and maintain the roads that are most often traveled. There are a few similar pricing structures in place in the U.S., including toll roads in California and Florida. The congestion pricing system has the capability to reduce delays and, subsequently, the stress of drivers, which can also reduce aggressive driving and accidents. With fewer traffic jams, drive time can be more predictable, and reduced travel time will also result in a commensurate reduction in CO₂ emissions. At least seven states have enacted legislation to study the feasibility of congestion pricing (Appendix B). Like tolling, however, congestion pricing is seen by many as “double taxation” and can adversely affect low-income drivers.³⁰

Another system similar to a VMT is the vehicle weight-mile tax, or weight-distance tax. This approach provides that drivers of heavier vehicles, which do the most damage to roads, will pay a higher or additional tax based on a combination of the vehicle weight and the number of miles traveled.³¹ Some states, such as North Dakota, assess the registration tax based upon the gross weight of the vehicle.³² Kentucky, New Mexico, New York, and Oregon employ weight-distance taxes only on larger vehicles.³³ This system encourages economic and environmental efficiency and, since the framework for collection is already in place, has the potential for low administrative and technology costs. There is, however, a certain level of inconvenience on drivers to track weight and mileage. This type of tax is seen as more of a user fee—those with heavier vehicles pay a higher tax due to the increased damage to the roads. However, this argument really does not hold true when comparing passenger vehicles and light trucks. A weight-based tax is more regressive in that older, heavier vehicles often pay a higher tax than do newer vehicles. However, many feel that this approach is justifiable, for the concept behind a user fee is that those vehicles that cause the most damage to roads will pay the most to repair that damage and maintain those roads. Though roads are designed to accommodate heavy trucks, the majority of damage inflicted on roads is caused by these heavy vehicles, while passenger vehicles and lighter weight trucks have a negligible effect on highway surfaces.

Similar to tax increment financing, State Infrastructure Banks (SIBs) use debt instruments to finance infrastructure projects. SIBs provide loans and credit assistance from the federal government (unless the SIB is state-funded) in order to enhance public-private sponsors. A majority of states participate in SIBs and only a handful is state-funded.³⁴ SIBs extinguish project delays, promote economic discipline, and allow for a reasonable 60-day approval process. They provide the state with plenty of flexibility in financing and a “revolving fund,” which finances more projects than would otherwise be affordable.³⁵ However, the drawback to using SIBs is the red tape accumulated by involving the federal government. For example, if the state uses federal funds along with state funds, the SIB must adhere to federal regulations and may require revenue bonds generated from toll roads and transit fees.³⁶ SIB is a common practice in Tennessee, though it does have the disadvantages of being a debt instrument and involves the federal government and all its rules and regulations.

Vehicle CO₂ emissions, taxes, and fees provide another way to generate new revenue while following the current trend toward fuel economy. This system has yet to be practiced in the U.S., but a number of Western European countries have a pricing system in place to tax vehicles based on the amount of CO₂ emissions per kilometer driven.³⁷ The environmental benefits of this option include reducing CO₂ emissions, improving air quality, and promoting fuel efficient and electric vehicles. This pattern is already prevalent; therefore, it is reasonable to suggest that a state might feasibly enforce such a tax or fee. Despite the advantages of CO₂ emissions fees, there are a number of objections, mainly from the trucking industry, which would sustain larger fees based on the high amount of CO₂ they emit. Other concerns derive from the potential of high administrative costs along with the lack of U.S. examples of implementation at this point in time. This would also be another tax

in addition to those Tennessee taxpayers already pay, such as annual registration fees and wheel taxes. Although the American economy is moving toward “cleaner” vehicles, the trucking industry has been making little progress in terms of reducing emissions. Container vehicles are heavier by virtue of their purpose and therefore not only emit more CO₂, but are responsible for much of the damage to roads. A tax on emissions may encourage more efficiency in the trucking industry, reducing air pollution and road damage, while generating new revenue to finance road maintenance. Such a tax would not, however, be without an economic impact due to the burdens placed on the trucking industry, which will inevitably be passed on to consumers in the form of higher prices, at least in the short-term.

Commuters are not only buying more fuel-efficient and electric vehicles; some are also looking at public mass transportation options in their area. Public transit provides mobility to many drivers who might otherwise use their own vehicles to damage roads and contribute to congestion, and many states have extensive public transit systems already in place. This particular option has been a controversial issue among policymakers as many believe that it is not a viable system in Tennessee. Mass transit is costly and many studies suggest that fares collected do not cover the costs of running a multimodal mass transit system. One such report illustrates that in 2008, Tennessee transit agencies spent \$138 million operating transit lines, but only collected \$26 million in fares.³⁸ Unless Tennessee drivers shift their mindsets from “driving” to “riding,” public mass transportation is not something that will be financially sustainable.

Several states have turned to federal help in the form of debt financing tools. The three most notable are Grant Anticipation Revenue Vehicles (GARVEE), Private Activity Bonds (PABs), and Build America Bonds (BABs). GARVEE is a debt instrument issued to a state from the federal government based on anticipated revenue.³⁹ PABs encourage private sector investment by allowing private entities to fund developing transportation projects with the benefit of tax-exempt bonds. BABs are similar to PABs in that they seek to fund transportation projects, but BABs do not involve the private sector and are specifically for governmental purposes.⁴⁰ These bonds accelerate construction timelines, spread out costs, and provide upfront monetization.⁴¹ As with any federal assistance/intervention, the state must meet federal requirements and regulations. GARVEEs have a 12-year maximum term and are limited to right of way and construction costs, and PABs have a cap of \$15 million.⁴² These limitations may inhibit the ability of projects to be completed on state terms. Also, as with any debt instrument, the use of these tools simultaneously increases the amount of the state’s debt that will need to be repaid with an already insufficient supply of funds.

Raising the fuel tax has been the “go-to” option for several years to quickly raise transportation revenue. This option provides easy implementation and does not require new spending. Furthermore, the contribution from out of state drivers provides an added source of revenue. From an inflation standpoint, increasing the fuel tax is a better way to respond and bridge the gap inflation creates.

There are several reasons why a mere increase in gasoline taxes is not the best solution and why so many states—Tennessee included—should seek to find alternative solutions. The most significant reason is the inefficiency of the fuel tax, which has prompted states across the country to begin research and develop new funding techniques.⁴³ Therefore, raising the tax is only a short-term solution to a long-term problem. Vehicles will continue to become more fuel-efficient and the revenue collected from the fuel tax will continue to decrease. Aside from the impracticality of such a measure, there is very little political and public support for a tax hike of any kind, particularly one on a product that is so dramatically affected by inflation.⁴⁴ The fluctuation in fuel prices has already drawn many drivers to vehicles that receive better gas mileage. Therefore, a tax increase may only serve to encourage even more drivers to buy vehicles with better fuel economy and cause an even bigger rift between costs and revenue.

Recommendations

Lawmakers cannot continue to allow increases in fuel taxes and other fees in hopes that it will bridge the growing gap between transportation funding and costs. The market has changed so dramatically that the current system of funding is no longer capable of meeting the transportation needs of the citizens of Tennessee. Therefore a substantial restructuring of transportation infrastructure funding is both imperative and inevitable.

Because Tennessee has been so successful at avoiding extensive transportation debt, most everyone can agree on the importance of finding a funding mechanism that does not invoke the use of debt financing. Therefore, it is not recommended that policymakers adopt any of the debt instruments such as those used in many other states (GARVEE bonds, PABs, and BABs). Such a policy shift would, in fact, represent a step backward for Tennessee, putting an even bigger strain on TDOT to come up with less expensive alternatives and possibly sacrifice quality in the process. Debt incurred by the state would almost certainly be passed onto taxpayers via a tax increase or the creation of new taxes and fees. Many bonds are also federally regulated and come with a stream of red tape, limitations, and bureaucratic requirements that often result in delayed project completion. Thus, debt financing does not represent a viable solution.

Tax increment financing and public-private partnerships are two generally untapped resources that could prove effective. While TIF does require the issuance of bonds, the increased property value and subsequent increased property tax revenue could serve to repay this debt efficiently and without placing too large of a burden on taxpayers. The tax-increment district's goal will be to increase property value, which invariably includes higher tax revenues without increasing tax rates. Similarly, PPPs can play a major role in increased property value by bringing businesses and jobs to an area, which can provide funding for any remaining principal from the initial capital provided.

The alternative that has the greatest potential to solve the inefficiencies of the fuel tax, however, is the vehicle miles traveled (VMT) tax, and there are many compelling arguments to support the long-term funding of transportation initiatives via VMT mechanisms. The implementation of VMT funding, however, will most likely require a phased approach—with diesel burning (not including clean diesel) vehicles (e.g., semi trucks) first, followed by the smaller gasoline, clean diesel, hybrid, and electric vehicles. The actual mechanics of collecting VMT data (mandatory GPS devices, odometer readings during annual emission checks, etc.) can be considered intrusive or even violations of privacy, and must be carefully and thoughtfully considered. The success of the second run of the VMT program in Oregon will undoubtedly give rise to interest and pilot studies in other states of the same or similar programs. If this system can be improved and privacy concerns addressed through research and field studies, this may be the optimal long-term solution for transportation infrastructure funding in Tennessee. VMT can feasibly remove the necessity of a fuel tax and therefore generate revenue in a more equitable and sustainable manner. Implementing VMT based policies will require a considerable amount of time and effort, as well as cooperation among legislators, policymakers, and other transportation officials, but the benefits of long-term funding stability far outweighs the short-term costs and challenges of such a solution.

Conclusion

In summary, Tennessee is currently at the threshold of a significant and essential shift in policy. The near-term issues associated with supporting the growing need for transportation infrastructure across the state of Tennessee are both acute and substantial. Furthermore, in the words of H.L. Mencken: “For every complex problem, there is always a simple solution, and it’s almost always wrong.” There are, however, a number of viable solutions which do not involve debt financing and which do not include tax increases. The solution set that appears most desirable includes a VMT tax in which the vehicle owners and operators who benefit most from the road system bear the largest burden for maintaining it.

It is important to bear in mind, however, that every state in the union is also being forced to address similar issues and alter transportation policies that have been in place for decades. If Tennessee wishes to retain its reputation for superior transportation infrastructure funded by debt-free, pay-as-you-go financing, it should strive to be on the forefront of this transformation and be a leader in the identification and adoption of innovative approaches to supporting the growing need for more and better roads.

Appendix A: Pros and Cons of Various Funding Proposals

Alternatives/Solutions	Pros	Cons
Public-Private Partnerships (PPPs)	<ul style="list-style-type: none"> • Greater efficiency • Cost savings • Greater access to private capital 	<ul style="list-style-type: none"> • Loss of public sector control • No new revenue • Adverse effects on low-income drivers & trucking industry
Tolling	<ul style="list-style-type: none"> • Drivers pay for their roads use • New source of revenue • Congestion relief • Private sector development 	<ul style="list-style-type: none"> • Private sector control • Diversion of traffic to non-toll roads • “Double taxation” • Adverse effects on low-income drivers
Vehicle Miles Traveled Tax (VMT)	<ul style="list-style-type: none"> • Reduce congestion • Replace fuel tax • Increase road competition • Significant revenue potential and economic efficiency 	<ul style="list-style-type: none"> • GPS privacy concerns by drivers • Implementation could take from 6-20 years • Minimal political support • Significant upfront investment
Congestion Pricing	<ul style="list-style-type: none"> • Reduce delays and stress • Increase predictability of trip times • Positive environmental improvements 	<ul style="list-style-type: none"> • “Double taxation” • Potential high costs (depend on toll road pricing) • Adverse effects on low-income drivers
Vehicle Weight-Mile Tax	<ul style="list-style-type: none"> • Economic efficiency • Potential for low administrative costs with technology 	<ul style="list-style-type: none"> • Regressive tax • Potential for high administrative costs • Inconvenient to track weight and mileage
Tax Increment Financing	<ul style="list-style-type: none"> • New tax revenue • Feasible mechanism for local government • Multiple ways to fund upfront cost • Create jobs and increase local wages • Neighboring districts can benefit 	<ul style="list-style-type: none"> • Complicated implementation process • Potential to displace residents • Results long term • Creates avoidable public sector financial risk
State Infrastructure Banks (SIB) State Funded:	<ul style="list-style-type: none"> • Provide financial assistance to enhance public/private sponsors • Extinguish project delays and promote economic discipline • 60-day approval process • “revolving fund” 	<ul style="list-style-type: none"> • If using federal funds, must adhere to federal regulations • Require revenue bonds generated from toll roads and transit fees
Vehicle CO₂ Emissions, Taxes, and Fees:	<ul style="list-style-type: none"> • Reduce CO₂ emissions • Improve air quality • Promote fuel efficient/electric cars 	<ul style="list-style-type: none"> • Regressive tax • Burdens placed on trucking industry • Cost and convenience unknown; only international examples
Debt Instruments (GARVEE Bonds, PABs, BABs):	<ul style="list-style-type: none"> • Accelerate construction timelines • Cost spread out • Upfront monetization 	<ul style="list-style-type: none"> • Must meet federal requirements and regulations • 12-year maximum term • Limited to right of way/construction costs

Appendix B: Status of Various Proposals in Each State⁴⁵

State	Alabama	Alaska	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	Florida
Gas Tax Increase						F	P		
Other Fees	E		E	E		E		E	E
BAB		E			E	E		E	E
PAB		E				E			
GARVEE	E	E	E	E	E	E	E	E	E
SIBs		E	E	E	E	E		E	S
Congestion Pricing*			P		E	F			E
Weight-Mile									
VMIT*			F		E	E			
Tolling	E		E	E	E	E	P	E	E
TIF	E	E		E	E	E	E	E	E
Design-Build	E	E	E	E	E	E	E	E	E
PPPs	E	E	E	E	E	E	E	E	E

State	Georgia	Hawaii	Idaho	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana
Gas Tax Increase		F	F	P	E				
Other Fees	E	E	E	E	E	E			E
BAB	E			E			E	E	E
PAB				E					
GARVEE	E		E					E	
SIBs	S				E	E	S		
Congestion Pricing*		F							
Weight-Mile								E	
VMT*		F			F				
Tolling	E	F		E	E		E	P	E
TIF	E	E	E	E	E	E	E	E	E
Design-Build	E	E	E	E			E	E	E
PPPs	E	P		E	E				E

State	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana
Gas Tax Increase								
Other Fees	E	E	E				E	E
BAB		E		E		E	E	
PAB						E		
GARVEE	E	E	E	E		E	E	E
SIBs	E			E	E		E	
Congestion Pricing*		E			E			
Weight-Mile								
VMT*						F		
Tolling	E	E	E	P	E			
TIF	E	E	E	E	E	E	E	E
Design-Build	E	E	E	E	E	E	E	E
PPPs	E	E	E		E	E	E	

State	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina
Gas Tax Increase	F	E					
Other Fees		E		E	E	E	E
BAB			E	E			
PAB							
GARVEE		E	E	E	E		E
SIBs	E				E	E	E
Congestion Pricing*						F	
Weight-Mile					E	E	
VMT*							
Tolling			E	E		E	E
TIF	E	E	E	E	E	E	E
Design-Build		E	E	E	E	E	E
PPPs		E		E		E	E

State	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina
Gas Tax Increase				E	P		
Other Fees		E		E	E	E	E
BAB		E		E	E		
PAB							
GARVEE	E	E	E	E		E	
SIBS	E	S		E	S	E	E
Congestion Pricing*				E			
Weight-Mile				E			
VMT*				E			
Tolling		E	E		E		P
TIF	E	E	E	E	E	E	E
Design-Build	E	E		E		E	E
PPPs	E	E		E		E	E

State	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia
Gas Tax Increase	F			F		F		
Other Fees			E	E		E	E	E
BAB	E		E	E		E	E	
PAB			E			E		
GARVEE			E			E	E	E
SIBs	E	E	E	E	E	E	E	
Congestion Pricing*						E	E	
Weight-Mile								
VMT*			F			F	E	
Tolling		P	E	E		E	E	E
TIF	E	E	E	E	E	E	E	E
Design-Build		E	E	E	E	E	E	E
PPPs		E	E	E		E	E	E

State	Wisconsin	Wyoming
Gas Tax Increase		F
Other Fees		E
BAB	E	
PAB		
GARVEE		
SIBS	E	E
Congestion Pricing*		
Weight-Mile		
VMT*		
Tolling		
TIF	E	E
Design-Build	E	E
PPPs	E	

*Bills related to starred topics only allow studies to be conducted. This does not reflect an actual use of this funding mechanism.

LEGEND
E - Enacted
S - State Funded
F - Failed
P - Pending or Not Enacted

- 1 "CNBC Ranks Tennessee 4th in 'America's Top States for Transportation and Infrastructure.'" Newsroom and Media Center, Tennessee Department of Transportation. <http://news.tn.gov/node/9216>.
- 2 "Moving Forward: Public Transportation in Tennessee." Tennessee Advisory Commission on Intergovernmental Relations. January 2011. http://www.tn.gov/tacir/PDF_FILES/Other_Issues/MovingForward.pdf.
- 3 "Tennessee May Consider Toll Roads." *Nashville City Paper*. <http://tinyurl.com/9d53rvd>.
- 4 "Auto Insurance Resources for TN State Residents." <http://www.einsurance.com>.
- 5 "Moving Forward: Public Transportation in Tennessee." Tennessee Advisory Commission on Intergovernmental Relations. January 2011. See Figure 1, "Commuter Concentration." <http://tinyurl.com/8eplo27>.
- 6 Randal O'Toole. "Ending Congestion by Refinancing Highways." Cato Institute. Policy Analysis No. 695. May 15, 2012. p. 1.
- 7 "Road User Charge Pilot Program." Oregon Department of Transportation. <http://tinyurl.com/6pjee5f>.
- 8 O'Toole, "Ending Congestion by Refinancing Highways."
- 9 "Public Private Partnerships, Part 1: An Introduction." Chicago Metropolitan Agency for Planning. <http://tinyurl.com/9vz94dh>.
- 10 Rose Naccarato. "Tax Increment Financing: Opportunities and Concerns." Tennessee Advisory Commission on Intergovernmental Relations. Research Brief No. 14. March 2007. <http://tinyurl.com/8c3qqfb>.
- 11 "Toll Funding." AASHTO Center for Excellence in Project Finance. <http://tinyurl.com/8j2ovc5>.
- 12 "Road User Charge Pilot Program."
- 13 "Congestion Pricing: A Primer." Federal Highway Administration. FHWA-HOP-07-074.
- 14 "Weight-Mile Tax." Oregon Department of Transportation. <http://tinyurl.com/8jqsyro>.
- 15 "State Infrastructure Banks." Knowledge Center. The Council of State Governments. <http://tinyurl.com/9rq72bj>.
- 16 Randal O'Toole. "Tackling Public Transit in Tennessee." Policy Report No. 10-04. June 2010. Tennessee Center for Policy Research. p. 1-3.
- 17 "Project Finance: A Primer." Federal Highway Administration. FHWA-OIPD-10-005.
- 18 O'Toole, "Ending Congestion by Refinancing Highways."
- 19 "Public Private Partnerships." AASHTO Center for Excellence in Project Finance. <http://tinyurl.com/8vgks9l>.
- 20 "Public Private Partnerships, Part 1."
- 21 Naccarato, "Tax Increment Financing."
- 22 "Tax Increment Financing Best Practices Guide." Council of Development Finance Agencies and International Council of Shopping Centers. <http://tinyurl.com/9lrwb7q>.
- 23 Naccarato, "Tax Increment Financing."
- 24 *Ibid.*
- 25 "Tax Increment Financing." Montana Department of Transportation. <http://tinyurl.com/9ddq56t>.
- 26 O'Toole, "Ending Congestion by Refinancing Highways."
- 27 "Tennessee Tollway Act of 2007: Status Report." Tennessee Department of Transportation. January 1, 2009. <http://tinyurl.com/9hwzy6z>.
- 28 "Road User Charge Pilot Program."
- 29 *Ibid.*
- 30 "Congestion Pricing: A Primer."
- 31 "Weight-Mile Tax." Oregon Department of Transportation. <http://tinyurl.com/8jqsyro>.
- 32 "Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation." National Conference of State Legislatures. <http://tinyurl.com/9jhc8z>.
- 33 "Summary of State Use of Weight-Distance Tax." Iowa Department of Transportation. June 24, 2011. <http://tinyurl.com/8w65m6m>.
- 34 "State Infrastructure Banks: Overview." AASHTO. <http://tinyurl.com/8ddx8l6>.
- 35 "State Infrastructure Banks." Knowledge Center, The Council of State Governments. <http://tinyurl.com/9rq72bj>.
- 36 "State Infrastructure Banks: Overview."

- ³⁷ “CO₂-Based Vehicle Taxes.” Institute of Environmental Management and Assessment. <http://tinyurl.com/9dnh7lb>.
- ³⁸ O’Toole, “Tackling Public Transit in Tennessee.”
- ³⁹ “Tools & Programs: Federal Debt Financing Tools.” Federal Highway Administration. <http://tinyurl.com/8d3z6ba>.
- ⁴⁰ “Project Finance: A Primer.” Federal Highway Administration” FHWA-OIPD-10-005.
- ⁴¹ “Tools & Programs: Federal Debt Financing Tools.”
- ⁴² “Grant Anticipation Revenue Vehicles (GARVEE) Bond Program.” California Department of Transportation. <http://tinyurl.com/8wzz997>.
- ⁴³ “Transportation Governance and Finance: A 50-State Review.”
- ⁴⁴ O’Toole, “Ending Congestion by Refinancing Highways.”
- ⁴⁵ “Legislation Database.” National Conference of State Legislators. <http://www.ncsl.org/issues-research/transport/ncsl-transportation-funding-legislation-database.aspx>; “Transportation Governance and Finance.” National Conference of State Legislators. <http://www.ncsl.org/documents/transportation/STATE-PROFILES.pdf>.

About the Authors

Paul C. Stumb, Ph.D., is a senior fellow at the Beacon Center of Tennessee. Kaleigh Walker is a graduate assistant to Dr. Stumb at Cumberland University. Alexandria Wood is a research associate at the Beacon Center of Tennessee.

About the Beacon Center of Tennessee

The Beacon Center of Tennessee is an independent, nonprofit, and nonpartisan research organization dedicated to providing concerned citizens, the media, and public leaders with expert empirical research and timely free market policy solutions to public policy issues in Tennessee.

The Center generates and encourages public policy remedies grounded in the innovation of private enterprises, the ingenuity of individuals, and the abilities of active communities to achieve a freer, more prosperous Tennessee.

Guarantee of Quality Scholarship

The Beacon Center of Tennessee is committed to delivering the highest quality and most reliable research on Tennessee policy issues. The Center guarantees that all original factual data are true and correct and that information attributed to other sources is accurately represented. The Center encourages rigorous critique of its research. If an error ever exists in the accuracy of any material fact or reference to an independent source, please bring the mistake to the Center's attention with supporting evidence. The Center will respond in writing and correct the mistake in an errata sheet accompanying all subsequent distribution of the publication, which constitutes the complete and final remedy under this guarantee.



Copyright © 2012 by the Beacon Center of Tennessee, Nashville, Tennessee
P.O. Box 198646 · Nashville, Tennessee 37219 · (615) 383-6431 · Fax: (615) 383-6432
info@beacontn.org · www.beacontn.org

Permission to reprint in whole or in part is hereby granted, provided that the Beacon Center of Tennessee is properly cited.