Today, the US Federal and State governments do not have enough funding to sufficiently maintain and operate, much less expand, a modern transportation system. Although a multitude of Federal and State taxes help fund transportation budgets, the single largest funding source for roadways remains the motor fuel tax. This article identifies the inherent problems with the fuel tax that have brought the US to a state of persistent transportation funding deficits, and examines whether a road use charge – a new mileage-based tax – would be a more effective, equitable and efficient alternative for funding our transportation system.

Given the public’s sentiment toward taxation, which generally ranges from negative to very negative, the question of how to best tax the public should be framed not as which tax is most desirable, but rather which tax is most tolerable. Virtually all opinion and focus group surveys on this topic indicate that the public would rather pay for roadways with user fees than with general taxes. Put simply, the public believes it is more equitable for taxpayers to pay for roadways based on what they use, not based on what they earn or what they own.

Historically, the fuel tax has been perceived as a fair and effective proxy for a road user fee, at least for light-duty and passenger vehicle travel in the US. Like any user fee, its fairness and effectiveness rests on the extent to which persons consuming the commodity pay their share of the cost. Only New Zealand currently imposes a road use charge on passenger vehicles – applying to approximately 25 per cent of them.
“Put simply, the public believes it is more equitable for taxpayers to pay for roadways based on what they use, not based on what they earn or what they own”

proportionate share of the cost for those goods or services.

While the fuel tax once functioned this way, it no longer does, and in fact has not functioned this way for quite some time.4 There is not a single cause for the fuel tax’s dysfunction, but rather four distinct causes (or problems):

Problem 1: The base tax rate is too low to generate sufficient revenue to pay for system needs;

Problem 2: There is no periodic calibration or indexing of the tax allowing it to keep pace with inflation and the increasing cost of transportation construction, maintenance and repair;

Problem 3: Revenues from fuel taxes will continue to decline on a per-mile basis as vehicle fuel economy improves; and

Problem 4: The amount the driver of an average vehicle pays for every 100 miles driven is radically different than a driver of a high MPG or alternative fuel vehicle traveling the same distance, raising doubts about the basic fairness of the fuel tax as a highway user fee.

Transportation industry leaders and public officials are understandably alarmed over the viability of the fuel tax. Unfortunately, these stakeholders often express their concerns about the fuel tax in a single burst, not clearly distinguishing which problems can be resolved only through increasing the tax rate (the first two problems listed above), from those problems that result from fundamental flaws in the taxing approach — problems that can only be solved by changing the underlying basis of taxation (the last two problems listed above).5 Solving these latter two problems — the systemic problems — is best accomplished by taxing vehicles based on how much of the roadway they use, instead of how much fuel they burn.

ROAD USE CHARGES AS THE PREFERRED FUNDING ALTERNATIVE

A Road Use Charge (RUC) system is the favored solution of experts for the last two problems. Several recent independent study commissions composed of economic, policy, and technical experts have recommended development of a distance-based user fee system, or a road use charge system,6 as a revenue-generating alternative preferable to the current fuel tax system.7 While distance-based taxes have been applied to the trucking industry for decades in the US and abroad, only New Zealand currently imposes a road use charge on passenger vehicles (it applies to approximately 25 per cent of their passenger vehicle fleet).8

Other road use charge programs may begin operation in the next five years, as government officials and the broader public are recognizing that the fuel tax will become increasingly unreliable as the primary means of funding maintenance and repair of our nation’s roadways.

Figure 1. Federal gas tax payments for same 11,489 miles driven

<table>
<thead>
<tr>
<th>Vehicle type</th>
<th>Dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hybrid (40 mpg)</td>
<td>$53</td>
</tr>
<tr>
<td>Sedan (22 mpg)</td>
<td>$96</td>
</tr>
<tr>
<td>SUV (16 mpg)</td>
<td>$132</td>
</tr>
</tbody>
</table>
Several states have begun to calculate the transportation budget costs of overdependence upon the fuel tax system. At both the state and Federal levels, the estimated revenue losses that will result from remaining on the fuel tax are daunting, especially in light of the recent Federal Corporate Average Fuel Economy (CAFE) standards, which require manufacturers of passenger vehicles to achieve 54.5 average MPG by 2025. For example, in Florida, recent analysis suggests fuel tax revenue collections over the next 20 years will be 37 per cent less than they are today, even accounting for projected population, fleet size, and VMT growth.

Why has a road use charge emerged as the preferred alternative to the fuel tax? Because it is a direct user fee, an effective means of raising revenue that restores the user pays or “fairness” principle for highway funding.

While the use of advanced technology makes possible the ability to price the use of roadways based on the type of facility, jurisdictional ownership of the roadway, time of day, or based on real-time traffic conditions, such applications of technology involve tradeoffs that the public and policymakers do not appear ready or willing to make. The states most actively considering road use charges have explicitly rejected approaches that would mandate the use of location-based technology. Devices with location-based capability are not necessary to implement an effective road use charge system that serves the primary purpose of providing funding for roadway maintenance and repair.

**WILL A ROAD USE CHARGE BE AN EFFECTIVE, EQUITABLE AND EFFICIENT ALTERNATIVE TO FUEL TAXES?**

Tax policy experts, including the Federal Government Accountability Office (GAO), academics and tax practitioners, commonly evaluate taxes and user fees against a core set of criteria that are summarized below as effectiveness, equity and efficiency. No tax will be perfect, but some will perform better than others in any fair analysis. In this context, a road use charge system should not be analyzed in isolation, but compared and contrasted against the status quo: the motor fuel tax.

1. **Effectiveness**

   The **effectiveness** of a tax is the extent to which it can produce a stable and significant amount of revenue capable of covering the cost of services at reasonable rates. When comparing fuel taxes with road use charges, we must remember that, all things being equal, both will still be vulnerable to two political problems identified at the outset: the amount of revenue raised under both systems will be determined, to a large extent, by the initial tax rate set by elected officials; and both systems are more effective if legislators authorize a mechanism to ensure collections keep pace with growth in the cost of maintaining and repairing the roadways (such as an inflation index).

   When the tax rate is held constant for both a road use charge and the fuel tax (that is, not adjusted to keep pace with inflation), the road use charge clearly out-performs the fuel tax in providing significant and stable revenues, as expected. A road use charge is unaffected by forthcoming increases in vehicle fuel economy or the use of alternative fuels; each mile is taxed at the same rate, regardless of propulsion type or amount of fuel burned. The only factor that results in less revenue is less driving, as should be the case with a direct user fee.

   The magnitude of difference in revenue generated between road use charges and fuel taxes is even more significant. Based on various transportation industry forecasts, when the base rate of both charges is held constant, over the next...
25 years, fuel tax revenue will be 20 per cent to 40 per cent less than would a road use charge. A tax that is so vulnerable to advancing vehicle technologies that it fails to collect not millions, but billions of dollars, clearly fails the stability and sufficiency test of tax effectiveness.

Some argue that other supplemental taxes should be pursued to backfill the expected losses in fuel tax revenue instead of instituting road use charges.15 One of the most favored proposals is to impose an annual registration surcharge on electric vehicles, since those vehicles currently pay no fuel tax.16 However, applying a fuel-tax-equivalency fee17 or surcharge on emerging vehicle technologies has proven extremely difficult in practice. Such tax-setting attempts must make broad assumptions about the number of miles that might be driven — essentially assuming all electric vehicle drivers drive about the same distance every year; or involve calculations about how far a vehicle could be propelled with a given unit of energy; or include conversion factors designed to approximate how much a vehicle would have paid in fuel taxes, if it had only been born with a conventional gasoline engine.

In the end, the surcharges and the methods for determining them tend to resemble complicated and comical Rube Goldberg contraptions—they are policies designed to mimic the fuel tax (which itself is designed to mimic a road use charge).

2. Equitable
In simplest terms, a tax is equitable if it is perceived as fair. What is “fair” is often in the eye of the beholder, and there are many different potential measures for fairness or equity. Two of the most useful criteria for evaluating the fairness of a tax or user fee are benefit equity, which essentially requires that people pay in proportion to the benefits they receive; and ability to pay, where people pay taxes based on their individual ability to pay.18

A common remedy offered for dealing with the deterioration in fuel tax revenue is to simply raise the fuel tax as needed to offset any losses resulting from greater vehicle fleet fuel economy. This is a very straight-forward solution, and in the short run, the side-effects are limited and probably manageable: asking most drivers (in the neighborhood of 95 per cent) to pick up the roadway funding tab for a very small number of drivers of alternative fuel and high-MPG vehicles (5 per cent) will probably not trigger significant tax increases.

However, in the mid-term (over the next decade or so), the side effects of this remedy will become more acute, as the fuel tax must again be increased by an order of magnitude necessary to backfill the revenue that a growing segment of electric and high-MPG vehicles are not paying, even though they are driving the same (or even more) miles on public roadways. Finally, if this approach is taken over the longer-run, the cure becomes worse than the ailment, as fuel tax increases needed to make up for the shortfalls resulting from a vastly more fuel-efficient vehicle fleet (CAFE standards of 54.5 MPG by 2025) will become politically intolerable.

Many elected officials will balk at perpetual fuel tax increases that do nothing more than backfill revenue shortfalls. In the end, public officials will be under duress to transition to a new roadway funding mechanism, or must live with the economic and public safety consequences of a transportation system in shambles due to chronic and severe highway funding shortfalls.

As noted at the outset, the public generally supports the notion of taxes based on benefit equity, or in other words, the user pays principle. A key component of this principle is that payments should be closely aligned with benefits received. In the case of a road use charge, all drivers would pay the same rate for the same distance traveled and in this manner, benefit equity is achieved. With the fuel tax, benefit equity is not achieved, since drivers pay different amounts for the same commodity (miles driven) based on the individual fuel economy of the vehicle they drive. For example, someone who drives 1,000 miles per month and averages 20 MPG would pay $25 per month, assuming fuel taxes of US$0.50 per gallon.

By comparison, a driver of a high-MPG vehicle eg, 50 MPG – would pay...
only $10 per month for those same miles. This poses a problem that is exacerbated each time the fuel tax must be raised to make up for revenue shortages caused by more and more people driving high-MPG vehicles. As the fuel tax is increased, both vehicles will pay more, but the owner of the average vehicle might need to pay a lot more, as the number of high MPG vehicles continues to grow, and the number of average or below-average MPG vehicles shrinks. Essentially, the fuel tax enters a financial death spiral as fuel consumption per mile falls sharply; frequent rate hikes are required to raise enough revenue to replace the shortfalls. People who are financially unable to purchase more fuel-efficient vehicles will be the ones left paying disproportionately high fuel taxes for use of the roadway network. As more drivers shift to higher-MPG vehicles, each successive tax increase to backfill the lost revenue will nudge even more people to conserve fuel.22

The fuel tax not only miserably fails the benefit equity test, but it is also in danger of failing the ability to pay test, albeit in a rather subtle way. Electric vehicles and high MPG vehicles – the kind that pay much less per mile traveled than the average vehicle – are newer vehicles, typically with higher price tags, and tend to be purchased by well-educated, upper-middle income groups.23 So on a proportionate basis, those persons least able to afford an upgrade to a high-MPG or electric vehicle are actually paying more for the same benefits (miles traveled) than persons at the higher income levels who are most able to pay.

Because road use charges clearly out-perform the fuel tax both by the measures of benefit equity and ability to pay, there is little question that the fuel tax system is far less equitable than a road use charge system.

3. Efficiency

The efficiency of a tax, as discussed here, refers to the cost of administering the tax (including collection, administration and enforcement). Efficiency is often expressed as cost as a percentage of the revenues collected.

Critics of road use charges often claim that higher costs of collecting and administering a distance-based tax negate its benefits. After all, the cost of collecting fuel taxes are very, very modest – estimated at approximately 1 per cent of revenues – making it among the lowest cost taxes to collect.24 In contrast, cost estimates for road use charges seem to vary widely.

However, the most extensive cost estimating was conducted for the proposed distance-based charging system in the Netherlands. The financial disclosures of three private firms that were competing to operate the system show the cost of collections and administration to range between 4 per cent25 and 7 per cent of revenues.26 Validating these Dutch cost estimates is difficult since there are very few analogs that can be used as a basis of comparison. However, independent comparative research shows that cost of collections for a road use charge system is likely to be lower than many toll systems in operation around the US.

In addition to the lack of perfect analogs, another difficulty in estimating the cost of collecting road use charges is that such costs will depend heavily on the details of how the charge is implemented. A high-tech system that involves devices capable of deducting distance driven on private roads from the driver's tax statement and allowing instant payments and refunds of taxes to be made at gas stations will cost more to operate than a low-tech system that merely collects an annual fee at the time of license renewal based on self-reported odometer mileage.

Comparing the total revenue to be collected over time between a road use charge versus the fuel tax would greatly (and unfairly) favor the road use charge. Comparing the net revenue – after the cost of collections is taken into account – is the better way to assess whether a particular road use charge operational concept is effective and a better alternative than the fuel tax. This is the precise analytical approach taken by the Washington State Road Usage Charge Steering Committee in evaluating whether a road use charge would produce better fiscal results than that state's current gas tax.

As illustrated in Figure 2, even though the cost of collections will consume a larger share of the revenue (especially during the ramp up years which is typical

<table>
<thead>
<tr>
<th></th>
<th>Fuel Taxes</th>
<th>Tolling</th>
<th>VMT Fees</th>
<th>Cordon Pricing</th>
<th>Parking Pricing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Cost over States</td>
<td>$50</td>
<td>$10</td>
<td>$0.10</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Average Cost over Agencies</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Average Cost over Providers</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Average Cost over Providers</td>
<td>$500</td>
<td>$500</td>
<td>$500</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>% of total revenue</td>
<td>0.92%</td>
<td>33.5%</td>
<td>6.6%</td>
<td>38.7%</td>
<td>56.6%</td>
</tr>
</tbody>
</table>

(1) For the fuel tax, tolling, and cordon pricing systems, data were collected from 2003 to 2007. To make a consistent and accurate comparison between the alternative revenue systems, only 2007 data were used in developing these averages.

(2) For the VMT fee systems, there is only one-year data available for comparison, and it is based on the revenue forecast to be collected in the Netherlands.

(3) System-generated revenues only.

Figure 4. Cost comparison between revenue systems27
“While it is true that a road use charge system will likely be more complex to administer than the fuel tax system, it does not follow that switching to a road use charge is therefore “illogical” as the ATA claims”

for any new revenue collection system due in part to capital costs), the juice will be well worth the squeeze: the net revenues generated from a road use charge will far exceed the net revenues from the fuel tax over the same period of time.

The uncertainties regarding the cost of collections for a road use charge system make detailed comparisons to the current fuel tax system extremely difficult. Nonetheless, the fuel tax system has a clear advantage in this regard, and may never be matched by any other transportation tax. However, the efficiency of administering such a tax cannot and should not be the driving reason for imposing it.\(^{28}\) The purpose of the road use charge is not to see how cheaply it can be collected; the purpose is to provide sufficient, stable revenue for roadways (effectiveness) without large disparities in tax payments between two similarly situated travelers (fairness, or equity).

**PROSPECTS FOR ROAD USE CHARGES AND POTENTIAL PATHWAYS FORWARD**

The ability of a road use charge system to deliver on its promise will largely depend on how well such a new tax system can be administered. Tax administration is a topic that excites neither the public nor elected officials. Both expect that, once a public policy has been established, a smooth and successful implementation will naturally follow. But professionals working in the tax and financial transactions industry understand the challenges inherent in establishing a new revenue collection system that requires new reporting, invoicing, payment, accounting, and remittance subsystems. The implementation details will matter, and it is vital for a road use charge system to get those details right in order to avoid problems with the public or with legislators.

Recently, the American Trucking Association (ATA) weighed in with their negative views toward a distance-based tax.\(^{29}\) The ATA has a long-standing history of opposing road use charges, interstate tolling and other road tax efforts that would allocate roadway cost responsibility back to the heaviest users and vehicles that impose the most wear and tear on the roadways. In their recent article, the ATA focused their commentary on the potential complexity and difficulty of administering a road use charge system.

As is often done in political debate, a straw man argument was constructed when discussing a road use charge.\(^{30}\) Thanks to the caricatures and distortions presented of road use charging, the ATA easily dismissed it as an undesirable tax policy, if one subscribes to their “logic.”\(^{31}\) However, a few points raised by the ATA have merit, and must be directly addressed to ensure that a road use charge succeeds:

- Reconciling small variations in odometer accuracy\(^{32}\),
- Providing data security in the handling of mileage records\(^{33}\), and
- Ensuring that out-of-state drivers are paying for use of the roadways.\(^{34}\)

These are three relevant concerns, and are the subject of ongoing research, development and testing. However, none of these pose insurmountable problems for road use charging, and current research shows promising developments in all of these areas.

While it is true that a road use charge system will likely be more complex to administer than the fuel tax system, it does not follow that switching to a road use charge is therefore “illogical” (as the ATA claims). By their reasoning, the public’s desire to travel by car instead of by horse is “illogical” because a car is more complex. The essential question is which tax – road use charge or motor
“Offers of support for fuel tax increases ring hollow, since it’s very unlikely that Congress will increase the Federal fuel tax in the foreseeable future”

fuel tax – is best suited for the purpose of funding roadways through user fees? This is the question that is being examined in many parts of the US and the industrialized world.

One of the major challenges to transitioning to a road use charge system is the urgent need for additional transportation funding – right now. Without question, the best option for an immediate infusion of revenue is to increase the current fuel tax, since that system already exists. Given that it will take several years for any state to implement a road use charge on a broad-scale, increasing the current fuel tax while concurrently developing the best tax system for the future is a prudent way forward. The message to the public must be clearly articulated: the fuel tax must be increased now to pay for immediate needs, while a road use charge system must be developed and ultimately adopted to address the looming revenue shortfalls that will occur due to high-MPG vehicles in the future.

Although it would be beneficial if a road use charge were implemented nation-wide, the Federal government will not lead a transition to a road use charge.35 Instead, research, development and experimentation is taking place in states, which are generally viewed as innovation labs for public policy—“crucibles of democracy.”36 At last count, 18 States have conducted some level of exploration or testing of road use charge concepts.

Oregon’s proposed road use charge system has been in continuous phases of development since 2003, but will become a permanent system beginning in July 2015. In California, legislation was recently enacted to conduct a statewide pilot project of a road use charge system. Washington State has completed two years of economic and policy analysis, and is now ready to move forward with a public demonstration. Once again, the states appear poised to modernize the transportation funding system on their own, and in active collaboration with each other. Several departments of transportation in the Western US have banded together as the Western Road Usage Charging Consortium to pool limited funding to conduct joint research and analysis of various fiscal, policy, operational, administrative and legal issues related to road use charges.37

There is a precedent for new transportation revenue collection systems being developed and implemented on a multi-state basis, without any involvement from the Federal Government: the International Fuel Tax Agreement (IFTA). IFTA was formed to administer the provisions of an international fuel tax agreement that requires commercial truckers operating in the lower 48 states and the Canadian provinces to report mileage driven in each jurisdiction, so that fuel taxes paid by the truckers can be remitted back to the states in proportion to the distances traveled. Importantly, IFTA was created by the states, and remains operated by and through the voluntary agreement of IFTA jurisdictions.

SUMMING UP

A road use charge system needs additional development and testing before it can be relied upon as the primary funding mechanism on a broad scale. It will likely cost more than the fuel tax does to collect, although probably less than other revenue generating alternatives, including wide-area tolling. While the implementation details and costs will be very important to manage, these challenges do not detract from the fact that a road use charge will be a more effective and equitable method of paying for our roadways than clinging to the fuel tax. Sometimes difficult things are worth doing.

Some interest groups – especially ones that tend to benefit under the current fuel tax regime – are opposed to a road use charge and instead advocate for “just raising the gas tax.” These offers of support for fuel tax increases ring hollow, since it’s very unlikely that Congress will increase the Federal fuel tax in the foreseeable future. In this political environment, agreeing to support fuel tax increases is like offering an opponent the first move in a game of tic-tac-toe: it’s a hollow gesture because the game, when played out to its logical conclusion, is certain to end in a stalemate – no tax increase will result.

Public officials that want to transition to a road use charge, but are reluctant to let go of the fuel tax, can take initial steps by assessing their own unique funding situations, learning from others that are modernizing their transportation funding system, and then take a first, cautious step by commissioning an investigation of road use charges tailored to their own jurisdiction’s circumstances.

Proceeding in this manner responds to the current funding crisis in the short run, while preparing to transition to a tax system much better suited for the future: next-generation fuels, next-generation vehicles and the next generation of drivers.
NOTES AND REFERENCES


3. There is long-standing debate about whether heavy commercial trucks are paying their proportionate share for wear and tear of the roadways. C.f., Highway User Fees: Updated Data Needed to Determine Whether All Users Pay their Fair Share, US Government Accountability Office, June 7, 1994.

4. A report issued by a blue-ribbon panel of experts found that the last time Federal highway system funding requirements were in balance with actual highway user fee revenue was 1961 when Congress approved Kennedy’s proposed increase in the Federal fuel tax. Paying our Way, Report of the National Surface Transportation Financing Commission, 2009.

5. For example, a recent opinion piece by Robert Pitcher of the American Trucking Association refers to “typical arguments” made by VMT tax promoters. His characterization includes arguments that are both relevant to mileage-based taxes (e.g., the impact of growing vehicle fuel economy on gas tax revenues) and irrelevant to mileage-based taxes (inflationary effects). Page 366, An Assessment of the Vehicle Miles Tax, Robert C. Pitcher, State Tax Notes, May 12, 2014.

6. A mileage-based user fee, vehicle miles traveled tax (VMT tax), and road use charges are all principally the same thing. We prefer Road Use Charge – not because we want to obscure the fact that it’s a tax, but to make clear the nexus between the commodity provided (the roadways), and the payment based on the quantity consumed (use charge) – analogous to water, electricity or other public utilities.

7. Federal level commissions making this recommendation include the National Surface Transportation Infrastructure Financing Commission (2009) and the National Surface Transportation Policy and Revenue Study Commission (2008).

8. The road use charge is applied to all diesel-powered vehicles, including passenger vehicles.


10. Figure 4, Government Accountability Office report to Subcommittee on Transportation, Housing and Urban Development, Pilot Program Could Help Determine the Viability of Mileage Fees for Certain Vehicles, December 2012.

11. Oregon, California and Washington have each adopted policy parameters that require any road use charge system to offer drivers a choice of mileage reporting methods.


14. See Washington State RUC Business Case Evaluation Final Report, January 7, 2014; and page 31 of the November 17, 2014 Financial Update, which demonstrates that road use charges out-perform fuel taxes, raising between 21% - 57% more net revenue when the tax rate is held constant over time for each.

15. Pitcher, at 366. The desire to shift responsibility for shortcomings in the motor and diesel fuel tax onto other vehicle owners through ownership fees brings to mind the famous quote from the great Louisiana Senator Russell Long: “Don’t tax you, don’t tax me, tax that fellow behind the tree!”


17. For example, California imposes excise taxes of $0.07 per cubic foot for compressed natural gas; $0.06 per gallon for propane; and half of the current tax on diesel for ethanol and methanol fuel blends containing up to 15 percent gasoline or diesel. The U.S. Department of Energy has promulgated rules about how to properly calculate a petroleum-equivalency for electric and plug-in hybrid vehicles. See Federal Register, Vol. 65, No. 113, Monday, June 12, 2000.

18. There are even further distinctions within the category of ability to pay, which include horizontal equity (people with the same resources, pay the same tax rate); and vertical equity (people with different resource levels pay at different tax rates). These distinctions are important but more detailed than required to draw out the main points of this section.

19. The legislature could also decide to have different rates for different groups of users. However, since the purpose of the analysis is to compare the current fuel tax system against a road use charge system, we will assume that special rates do not exist.

20. The rate of 1.8 cents per mile is equivalent to a state gas tax of 37.5 cents per gallon for a vehicle that gets 21 MPG – which is the average fleet fuel economy in the state of Washington, rounded to
the nearest mile. In other words, 1.8 cents per mile is the rate that the average vehicle in Washington State pays in state gas taxes.

21 The rate of 1.8 cents per mile has been set to match the state fuel tax paid by the driver of an average 21 MPG vehicle in Washington state.

22 This may be a very desirable (if unintended) outcome from an energy and environmental policy standpoint. Unfortunately, the transportation system will be the casualty so long as roadway funding is dependent on the fuel tax.


24 NCHRP Report 689, Cost of Alternative Revenue Generation Systems, (2011) at p. 66. However, some believe this figure does not account for various indirect and hidden costs, and put this number closer to 5%. Cf, Reason Foundation, Dispelling Myths: Toll and Fuel Tax Collection Costs in the 21st Century.

25 Ibid, page 90. Siemens’ proposed system showed costs just over 4% of revenues.

26 Ibid, page 90. The report finds that it may take 7% of revenue to operate a VMT fee system.

27 Ibid, page 92.

28 This brings to mind the parable of the jungle as told by Steven Covey, where managers are busily hacking away through the underbrush to clear a path, when a leader climbs a tall tree, surveys the land and distant horizon, and yells “Wrong jungle!” The response from the group of managers: “Shut up! We’re making great progress.” Leadership and Management, extracted from the Seven Habits of Highly Successful People, Steven R. Covey.

29 See article by Robert C. Pitcher, Vice President of the American Trucking Association: An Assessment of the Vehicle Miles Tax, Robert C. Pitcher, State Tax Notes, May 12, 2014

30 Ibid, p. 366: “the typical pro-VMT argument goes something like this…”

31 Ibid, p. 367: “Given that a VMT is …anything but simple to administer, it’s illogical to cite the fuel tax’s weakness and argue that a VMT should replace it.”

32 While the Federal government prohibits tampering with odometers, currently no Federal regulations set parameters for odometer accuracy. Many in the transportation industry have argued in favor of Federal requirements for such accuracy. Odometers are generally believed to vary plus or minus 2%.

Adoptions of standards for equipment accuracy, validating odometer mileage accuracy with testing devices, or providing allowances for very small variations are all possible approaches. Again, it must be noted that these minor imperfections also exist with the gas tax, which is why states allow for handling loss deductions (leakage, spillage, evaporation), and must perform field tests and audits to regulate gas pump inaccuracies. Regulations allow inaccuracies at the gas pump to be tolerated up to one half cup per five gallons – or 6.25% inaccuracy. Testing has shown fuel pumps to be off by as much as ½ gallon in a five gallon test. National Public Radio report, Inspection Reveals Variations in Gas-Pump Accuracy, Michelle Norris, March 27, 2006.

33 All states with electronic toll collection systems have adopted privacy protection and data security measures that are acceptable to citizens and privacy advocates alike. Similar protections are being developed for road use charges. The state of Oregon’s forthcoming system includes protection and security measures that have been agreed to by the American Civil Liberties Union, for example.

34 Various options including vignettes, shadow tolls, differentiated mileage reporting, or basic gas tax collection are all possible approaches to ensure payment of road use charges by out-of-state motorists. See Road Use Charge Inter-jurisdictional Travel Study, presented at Washington State Road Usage Charging Steering Committee Meeting, September 25, 2014.

35 Near zero recognizes that there is a mathematical possibility, as opposed to absolute zero, which means impossibility.

36 Going their separate ways: states and cities seize the initiative on transport funding, The Economist, November 22, 2014.

37 The Western Road Usage Charging Consortium (WRUCC) is a state-created, Federally sanctioned research consortium comprised of state departments of transportation. Only states that are members of the Western Association of State Highway and Transportation Officials (WASHTO) are eligible to participate. Of the 17 eligible states, 11 are currently WRUCC members. WRUCC is administered under a transportation pooled fund agreement between the member states, with the Oregon department of transportation serving as the administrator and financial fiduciary.