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# Potential Benefits of Mileage-Based User Fees to the Freight Industry and Industry Concerns

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# **Potential Benefits of Mileage-Based User Fees to the Freight Industry and Industry Concerns**

## **Final Report**

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## EXECUTIVE SUMMARY

The concept of funding surface transportation infrastructure through fees charged on miles driven has been receiving growing attention from transportation professionals and researchers in recent years. Highway funding in the United States has traditionally been done through user fees, most notably motor vehicle fuel taxes. However, there are growing concerns among some policymakers that fuel taxes no longer serve as an adequate, sustainable, efficient, nor equitable user fee (Coyle et al. 2011). Two congressional commissions, the National Surface Transportation Infrastructure Financing Commission (2009) and the National Surface Transportation Policy and Revenue Study Commission (2007), both recommended that policy makers consider a mileage-based user fee as a long-term solution to funding shortfalls for surface transportation.

The concept of distance-based user fees has seen increasing support from a number of groups in recent years; however, it faces opposition from many in the general public, and in particular from the trucking industry – which largely objects to this approach to funding transportation, as described in Chapter 4: Industry Concerns. This paper is part of a larger effort exploring the benefits to the freight industry of mileage-based user fees, while highlighting industry concerns over its implementation.

Surface transportation funding shortfalls have resulted, largely, from a failure to raise adequate levels of fuel tax revenue over time. Three main factors are responsible for these shortfalls: (1) Ongoing increases in vehicle fuel economy, (2) ongoing growth in the number of vehicles that use alternative fuels and hybrid and electric power, and (3) reluctance to either index fuel taxes to inflation or to periodically raise rates to keep up with construction costs and growing infrastructure needs

While improving motor vehicle fuel economy is good for the environment and results in lower costs for motorists, fuel-based taxes are an inequitable, inefficient, and unsustainable, albeit a low-cost mechanism for assessing road usage (Coyle et al. 2011). The Federal Highway Trust Fund (HTF), which is funded mostly through fuel taxes, has received approximately \$35 billion in bailouts since 2008. The last federal fuel tax increase in 1993 was targeted at general fund deficit reduction. After almost 20 years of no federal fuel tax increases, the prospects for raising the fuel tax are bleak: Recent Congressional focus on “no new taxes” is well known; furthermore, when asked recently about the future of the gas tax, Transportation Secretary Ray LaHood responded, “We’re not doing anything about it” (Nichols et al. 2011), which has been the position of recent administrations.

Increases in vehicle fuel economy, especially for passenger cars, not only reduce HTF revenues, but lead to equity issues since a greater number of fuel-efficient vehicles pay less for highway use than less fuel-efficient vehicles. Since 1975, miles per-gallon (MPG) of new model year vehicles has increased dramatically. As drivers consume less fuel to travel the same amount of miles, they pay less in fuel taxes per-mile of travel. Given the United States’ policy to become more energy independent and efficient, this trend is not likely to reverse in coming years. Failure to raise federal fuel taxes since 1993 has resulted in a substantial loss in purchasing power due to inflation. A recent story in *Governing* (Nichols et al. 2011) noted that the gas tax has lost a third

of its purchasing power over the past 18 years. If fuel taxes were indexed to inflation or linked to vehicle miles traveled (VMT), instead of to gallons of fuel consumed, these funding shortfalls would diminish substantially.

The combination of increasing fuel economy, rise in the number of alternative fuel vehicles, and failure of fuel taxes to keep pace with inflation has led to a significant reduction, in real terms, in the amount the HTF collects in user fees per-mile of travel.

Recognizing the problems that arise when surface transportation is funded through motor fuel taxes, several entities, both in the United States and abroad, have conducted pilot projects or have implemented mileage-based fees. Several of these have been specifically designed for heavy trucks. Germany fully implemented tolling of domestic and foreign-registered heavy vehicles on the entire German Autobahn system in 2005 (Robinson 2008). The State of Oregon has conducted a pilot project that involved motorists paying mileage-based fees at the pump.

Oregon has also completed the first round of testing on a project that uses a global positioning system (GPS) device to automate the collection of Oregon's weight-mile tax for trucks (Oregon.gov 2011). Delcan Corporation, Calmar Telematics, and Greater Buffalo Niagara Regional Transportation Council have worked closely with New York-based trucking firms in conducting a study outlining the implications and possibilities of a truck VMT fee (Mudge et al. 2010). We recognize that, while the above experiences are not necessarily fully transferable, many of the lessons learned from these mileage-based user fee (MBUF) pilot tests and implementations can be used to inform future implementations of MBUF in the United States.



## CHAPTER 1. INTRODUCTION

The concept of funding surface transportation infrastructure through fees charged on miles driven has been receiving growing attention from transportation professionals and researchers in recent years. Highway funding in the United States has traditionally been done through user fees, most notably motor vehicle fuel taxes. However, there are growing concerns among some policymakers that fuel taxes, despite their low collection cost, no longer serve as an adequate, sustainable, efficient, nor equitable user fee (see Coyle et al. 2011). Two congressional commissions, the National Surface Transportation Infrastructure Financing Commission (2009) and the National Surface Transportation Policy and Revenue Study Commission (2007), both recommended that policy makers consider a mileage-based user fee as a long-term solution to funding shortfalls for surface transportation. The National Transportation Policy Project of the Bipartisan Policy Center (2011) has recently released a report which recommends that

“...the U.S. DOT should be directed to coordinate a set of strategic analyses and trials to test new, more sustainable revenue-raising options. While VMT-based fees face substantial technical and political challenges from an implementation standpoint, they can potentially provide operational benefits and better align incentives for efficient use of the transportation system than fuel taxes. Mileage-based user fees merit careful study and trials to assess their potential for correcting the growing inability of fuel taxes to fully capture the varying costs imposed by users of transportation infrastructure” (p. 52).

Surface transportation funding shortfalls at the federal level have resulted, largely, from a failure to raise adequate levels of fuel tax revenue over time. Three main factors are responsible for these shortfalls: (1) Ongoing increases in vehicle fuel economy, (2) ongoing growth in the number of vehicles that use alternative fuels and hybrid and electric power, and (3) reluctance to either index fuel taxes to inflation or to periodically raise tax rates to keep up with increases in construction costs and growing infrastructure funding needs.

There are two major concerns related to truck travel: The first is that trucks, especially heavy trucks, consume a great deal of roadway capacity not only because of their size and operating characteristics, but also because, according to the Federal Highway Administration, trucks travel an average of about 69,000 miles per year (while light duty vehicles average 11,500 miles per year); the second is that road wear and tear caused by the combination of truck mileage and heavy loads is significant and disproportionate to the number of trucks on the road.

While improvements in motor vehicle fuel economy is good for the environment and result in lower costs for motorists, fuel-based taxes are an inequitable, inefficient, and unsustainable mechanism for assessing road usage (Coyle et al. 2011). According to Coyle, the fuel tax is inequitably applied because the inherent differences in vehicle fuel efficiencies and propulsion systems mean that many drivers pay less than their fair share of taxes for using the road while others pay no taxes. This happens despite the fact that similar vehicles with similar mileage cause similar road wear and tear.

Fuel taxes result in a number of inefficient uses of the system. Unlike fuel taxes, mileage-based fees, if properly structured, have the ability to recover the total costs imposed on the system by drivers. Since the fuel tax is hidden in the price of the fuel purchased, drivers are often unaware or they underestimate how much fuel taxes they actually pay. In other words, fuel taxes do not send a clear price signal, which can lead to overuse of road capacity, resulting in congestion; to modal imbalances (e.g., auto v transit and truck v rail); and to inefficient investment in overused capacity resulting from underpricing.

For reasons described previously, the fuel tax, despite being around for more than 50 years, has proven to be an inadequate source of transportation funding as evidenced by the regular need for infusions from the general fund. Furthermore the fuel tax is unsustainable in the long term as evidenced by the historic decline in revenues collected per mile, and by the fact that current federal conservation policies are aimed at reducing fuel use.

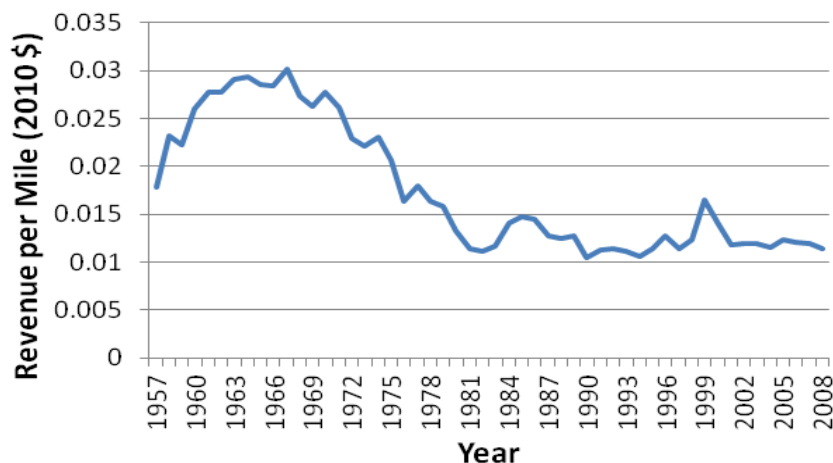
One clear advantage of the fuel tax is that it is simpler to collect and is the least costly to administer among transportation taxing options.

It should be noted that the Federal Highway Trust Fund (HTF), which is funded mostly through fuel taxes, has received approximately \$35 billion in bailouts since 2008. At the same time, it must be mentioned that the last federal fuel tax increase was targeted at general fund deficit reduction, which explains in part the funding deficit. After almost 20 years of no federal fuel tax increases, the prospects for raising the fuel tax are bleak: Recent Congresses' stance on no new taxes is well known; furthermore, when asked recently about the future of the gas tax, Transportation Secretary Ray LaHood responded, "We're not doing anything about it." (Nichols et al. 2011), which is a position that recent administrations have taken.

Increases in vehicle fuel economy, especially for passenger cars, not only reduce HTF revenues, but lead to equity issues since a greater number of fuel-efficient vehicles pay less for highway use than less fuel-efficient vehicles. As drivers consume less fuel to travel the same amount of miles, they pay less in fuel taxes per-mile of travel.

Failure to raise federal fuel taxes since 1993 has resulted in a substantial loss in purchasing power due to inflation. A recent story in *Governing* (Nichols et al. 2011) noted that the gas tax has lost a third of its purchasing power over the past 18 years. If fuel taxes were indexed to inflation or linked to vehicle miles traveled, instead of to gallons of fuel consumed, these funding shortfalls could diminish substantially, provided that adequate per-mile rates are established.

The combination of increasing fuel economy, continued rise in the number of alternative fuel, hybrid and electric vehicles, and failure of fuel taxes to keep pace with inflation has led to a significant reduction, in real terms, in the amount the HTF collects in user fees per-mile of travel. Figure 1.1 illustrates how real-term, inflation-adjusted revenue per mile going into the highway account of the HTF has fallen since the highs of the 1960s. Even after 1993, when the fuel tax was last increased, revenue per mile has remained relatively flat, in the face of growing infrastructure investment needs.



\*(Data from FHWA 2008 Highway Statistics adjusted by CPI from BLS)

**Figure 1.1 HTF Highway Account Revenue per Mile**

Recognizing the problems described in connection with funding surface transportation through motor fuel taxes, several entities, both in the United States and abroad, have conducted pilot projects or have implemented mileage-based fees as an alternative approach. Several of these have been specifically designed for heavy trucks. Germany fully implemented tolling of domestic and foreign-registered heavy vehicles on the entire German Autobahn highway system in 2005 (Robinson 2008). The State of Oregon has conducted a pilot project that involved motorists paying mileage-based fees at the pump. Oregon has also completed the first round of testing on a project that uses a global positioning system (GPS) device to automate the collection of Oregon’s weight-mile tax for trucks (Oregon.gov 2011). Delcan Corporation, Calmar Telematics, and Greater Buffalo Niagara Regional Transportation Council have worked closely with two New York-based trucking fleets in conducting a study outlining the implications and possibilities of a truck VMT fee (Mudge et al. 2010). We recognize that, while the above experiences are not necessarily fully transferable, many of the lessons learned from these MBUF pilot tests and implementations can be used to inform future implementations of MBUF in the United States.

This paper proceeds as follows: Chapter 2 summarizes potential benefits the freight industry could receive if mileage-based user fees were implemented; Chapter 3 presents the results of a willingness-to-pay analysis; Chapter 4 highlights industry concerns over mileage-based user fee implementation, including comments received through interviews with industry representatives in Minnesota; and Chapter 5 presents study conclusions and a final discussion.

## CHAPTER 2. POTENTIAL BENEFITS

Before beginning the discussion of potential benefits it is important to outline major assumptions and considerations underlying this analysis. The first is that if MBUF is implemented, it is not expected to occur in the short term, but is more likely in 10 to 15 years. Second, full benefits of pricing will not accrue in the initial, transition phases, but are more likely to occur once the system is fully implemented. Third, while we focus on issues related primarily to motor vehicle fuel taxes, we recognize that trucks also contribute to the Highway Trunk Fund through heavy vehicle use tax and tire excise tax, and that truck fuel-efficiency improvements and use of alternative fuels have not changed much in the past decades. In addition, it is assumed that, while MBUF would be eventually implemented on most roads, it may be applied, initially, on higher level roads. Also, it is assumed that all vehicles would be priced, even though, initially, only a subset might be involved. Finally, it is assumed that congestion pricing would be an added layer, once mileage-based user fees are in place.

This section summarizes some of the potential benefits to the freight industry of mileage-based user fees, derived not only from research on the subject, but also from a limited number of experiences and tests of mileage-based user fees. The benefits relate to travel time, travel time predictability, improvement in road quality and level of service, predictability of toll operation costs, and ability to pass on toll costs, and data collection and reporting benefits.

### 2.1. Travel Time

The nation's roadway system continues to experience high and growing levels of congestion, especially in urban areas. In general, there are two types of congestion: recurring congestion, which occurs when demand is near, or exceeds roadway capacity, and is commonly associated with bottlenecks. The second type is known as non-recurring congestion, and is caused by factors such as crashes, adverse weather conditions, and construction activities. Regardless of the causes of congestion, however, a reduction in traffic levels will result in a decrease in congestion. The average yearly hours of delay per auto commuter for the nation's 15 largest urban areas stood at 50 hours in 2009, up 31 hours from 1982 (Texas Transportation Institute 2010). This congestion leads not only to longer commuter travel times, but to increased travel times for the freight industry. For the nation's 15 largest urban areas, congestion-related delays for large trucks reached over 180 million hours in 2009 (Texas Transportation Institute 2010). These high levels of congestion led the National Surface Transportation Policy and Revenue Study Commission (2007) to remark, "Without a doubt, congestion is one of the greatest threats to the integrity of the Nation's transportation system and the country's overall vitality and quality of life" (National Surface Transportation Policy and Revenue Study Commission, 2007).

High levels of congestion come with significant costs. Annual congestion costs for shippers was estimated at approximately \$7 billion (Winston and Shirley 2004). More recently, the Texas Transportation Institute found that truck congestion costs, based on value of increased travel time, fuel and other costs of operating large trucks, were approximately \$33.3 billion in 2009 for the nation's 439 urban areas (Texas Transportation Institute 2010). While the difference between the above two estimates of truck congestion costs is large (and likely due to methodological differences, e.g., shipper costs vs. cost for all trucks), both results show that the order of

magnitude of congestion costs is substantial. It should be noted that congestion is not built into the cost structure, even though it is partially passed on through shippers' pricing structures.

A low mileage-based rate for all vehicles, if it does not vary with time of travel and location, would have an effect—albeit a small one—on travel demand and a lessening of congestion. However, a mileage-based user fee that included a congestion pricing component that was set sufficiently high for all vehicles, given that each additional vehicle marginally adds to the level of congestion, could have a significant effect on congestion and travel times. Since discretionary trips are more likely to be affected by peak-period congestion pricing, and more discretionary auto trips than truck trips are made during peak periods, truck trips stand to benefit from the reduction in auto-related congestion, particularly given their high value of truck travel time. Several studies have shown that users do in fact respond to the price signals put out by congestion pricing, and that traffic levels diminish when pricing is implemented. Litman (2004) indicates that traffic decreased by approximately 20 percent in the first few months after cordon pricing was implemented in London. (While the cordon pricing scheme implemented in London is not the type of congestion pricing system envisioned by this study, it does help to illustrate the fact that drivers have been shown to respond to price signals.) This significant decline in traffic is the more startling given that pricing applied to only about 30 percent of vehicles in downtown — the remaining vehicles were exempt from the charge. Robinson (2006) reported similar results after pricing was implemented in Stockholm, where traffic volumes returned to pre-pricing levels when cordon pricing was lifted after seven months, but declined again when cordon pricing was re-installed permanently several months later. Oh (2008) found that vehicle use during peak periods could be reduced by approximately 10 percent with a congestion toll. The experience with pricing in London, Stockholm and Singapore shows that reductions in traffic volumes result in larger drops in congestion levels. The initial congestion-reduction effects of pricing may diminish over time for a variety of factors such as continued growth in demand due to economic activity and population growth, and decisions to use existing roadway capacity for other activities (e.g., pedestrian and bicycle use, carpooling, transit, and green space). However, any subsequent growth in congestion would start from a lower set-point and could be checked, if desired, by adjusting the congestion pricing rate structure.

What would reduced congestion and shorter travel times mean for the freight industry? Quite a bit, according to a report by Global Insights, Inc. (2008) prepared for The Office of Economic and Strategic Analysis at the Office of the Secretary of Transportation. Global Insights, Inc. used an econometric cost model to look at how congestion relief through tolling affects the trucking industry. Simulations were conducted, using actual truck data, for three motor carrier segments (dry van truck load (DVTL), less-than-truckload (LTL), and refrigerated dry van (Reefer)), and five different tolling scenarios (local urban 5-mile, local urban 15-mile, intercity 100-mile, intercity 50-mile, and intercity 20-mile). The simulations found average cost savings per-mile of \$0.52 for LTLs, \$0.27 for DVTLs, and \$0.24 for Reefers under the local urban 5-mile tolling scenario. The cost savings for the other scenarios were not as high as the local urban 5-mile scenario; however, cost savings still ranged from \$0.05 to \$0.20 per-mile (Global Insights, Inc. 2008). These cost savings occur because of the time savings carriers experience when using a tolled facility rather than a more congested “free lane”. With reduced vehicle hours, a reduction in several firm inputs, from fuel to labor hours, could be expected. It is important to note that not all delays are due to “recurring” congestion, which occurs regularly on stretches of roads where demand exceeds available capacity. It is estimated that 40 to 50 percent of all delays is due to

other factors such as crashes, adverse weather conditions and construction activity, most of which cannot be anticipated by drivers on a given trip. This type of congestion is referred to as “non-recurring.” The effects of congestion pricing on delays are twofold: first, pricing can reduce peak-period travel, and thus congestion and delays, and second, it can reduce the secondary effects of non-recurring congestion because lower levels of traffic translate into lower exposure to non-recurring congestion. (For example, as Figure 2.2 in Section 2.6 illustrates, there is an inverse relationship between speed and crash rates. During peak periods, when demand is high and speeds experience substantial drops, crash rates also increase substantially (Soboleski et al. 2009). It follows that if congestion lessens and speeds increase as a result, crash rates should decline; and if this happens, congestion levels will decline further.

The cost savings found in the Global Insights, Inc. (2008) study, based on data from a number of actual freight companies, could be interpreted as a carrier’s maximum willingness to pay per-mile. For example, LTLs were found to be willing to pay up to \$0.52 per-mile to use the local urban 5-mile tolled road. As noted in the report:

“Therefore, a motor carrier’s maximum willingness to pay to obtain the financial benefit offered by the use of a congestion-priced route is equal to the expected cost savings accompanying the use of the managed lane. In other words, if the congestion price equals the cost-savings, then the driver is indifferent to the use of the managed lane. If the congestion price is less than the expected cost savings, the managed lane provides economic benefits. Conversely, if the congestion price exceeds the cost savings, there is an economic loss, and the managed lane will not be used (under the presumption of economic rationality)” (Global Insights, Inc., 2008).

The Global Insights, Inc. (2008) study estimated that average annual cost for the trucking industry from congestion-induced delay in large urbanized areas is approximately \$60 billion.

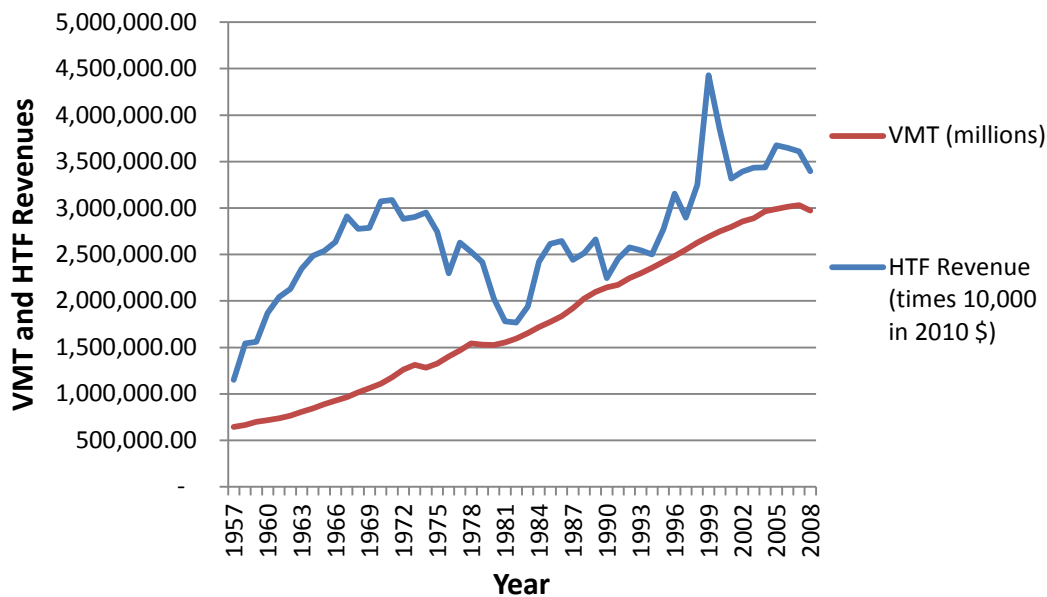
## **2.2. Travel Time Predictability**

The expected decrease in congestion, and better demand management of highways under a mileage-based user fee approach, could also lead to increased predictability of travel times for all vehicles, including freight. A study by Fowkes et al. (2004) entitled “How Highly Does the Freight Transport Industry Value Journey Time Reliability—and for What Reasons?” looked at three types of delays to road freight in the UK: (1) delay resulting from an increased journey time, with fixed departure time; (2) an increase in the spread (or range) of arrival times for a fixed departure time; and (3) schedule delay, where the departure time is effectively put back (delayed). The study found that the average valuation in end-of-2000 prices for the first type of delay was 107 pence per minute (\$1.57 per minute); for the second type it was 85 pence per minute (\$1.24 per minute); and for the third type it was 66 pence per minute (\$0.97 per minute) (Fowkes et al. 2004). Therefore, to the degree that mileage-based user fees can reduce congestion and lead to more stable patterns in highway traffic, they should work to lessen the costs associated with the first two types of delays mentioned above. Fowkes et al concluded that “...in certain sectors of the freight transport market at least, there are relatively high valuations of all three types of delay under investigation” (Fowkes et al. 2004). It can be inferred that these valuations represent the willingness to pay for reductions in the various forms of delay. It should

be noted that, under a congestion pricing regime, travel time predictability would increase, but there would be more variability in the amount of tolls paid, especially if dynamic variable pricing is used. While it is possible that the level of the above valuations may be different in the U.S., their magnitude are sufficiently high that it would be reasonable to expect that similar order-of-magnitude values may also be found in the U.S.

### 2.3. Quality of Roads

To the extent that mileage-based user fee revenue is put back into highway maintenance and road improvements, the freight industry stands to benefit from a better maintained roadway infrastructure. However, historically, not all revenue has been put back into the Highway Trust Fund. It has been broadly documented that the Highway Trust Fund and the current fuel-tax-based highway funding system in the U.S. is on an unsustainable path. Since 2008, the Highway Trust Fund has received about \$51.7 billion in transfers from the general fund (including stimulus dollars) in order to remain solvent. Moreover, ongoing growth in vehicle fuel efficiency means less fuel tax revenue for the Highway Trust Fund per-mile of vehicle travel. Figures 2.1 and 2.2 illustrate the problems facing funding for surface transportation in the United States. Figure 2.1 shows the growth in VMT and user fee revenues (in 2010 dollars) going into the highway account of the HTF since 1957. Figure 2.1 shows that, while VMT has steadily grown since 1957, highway account revenues in real terms have fluctuated greatly, resulting in today's revenues not being much larger than real-term revenues in the late 1960s.



\*(Data from FHWA 2008 Highway Statistics adjusted by CPI from BLS)

**Figure 2.1 HTF Highway Account Revenues in 2010 Dollars and VMT, 1957-2008**

As documented previously in Figure 1.1, real-term, inflation-adjusted user fee revenue contributions to the federal highway account (per-mile of VMT) have been falling since the early 1960s. Increasing fuel efficiencies and the eroding effect of inflation on fuel taxes have led to the highway account of the HTF receiving less revenue per-mile of travel.

As noted by the National Surface Transportation Infrastructure Financing Commission (2009), “Without changes...it is estimated that revenues raised by all levels of government for capital investment will total only about one-third of the roughly \$200 billion necessary each year to maintain and improve the nation’s highways and transit systems” (National Surface Transportation Infrastructure Financing Commission, 2009). The Commission went on to note that the HTF long-term annual revenues were estimated to be only \$32 billion per year, based on current tax rates, while required investments total approximately \$100 billion per year.

If mileage-based user fee revenues are used for highway improvements, industry firms are likely to see lower inventory and logistics real costs. Shirley et al. (2004) found that highway infrastructure investments had rates of return that reached 17.6 percent in the 1970s, but fell to 4.9 percent in the 1980s, and to one percent in the 90s. Given the decrease in the rate of return, Shirley et al. (2004) conclude that, “It is also possible that inefficient highway pricing and investment policies have undermined the benefits from government spending.” Implementing mileage-based user fees could potentially have a double dividend: highway pricing could lead to more efficient use, and the revenues used for highway improvements would yield a greater rate of return, brought about by efficiencies created by mileage-based pricing. Another study by Winston and Langer (2004) found that one dollar of government spending on highways reduced congestion costs by \$.11, and concluded that road pricing would be more effective in reducing congestion costs than simply greater government spending on highways.

Better quality roads may also benefit the freight industry, provided more money is made available for highway maintenance, since smoother ride may result in less damage to fragile cargo and, possibly, less maintenance for heavy trucks. This study was unable to find research on this specific topic, which suggests that this may be a good area for further research.

It is important to realize that traffic conditions would improve—even if all additional pricing revenue is not put back into the roads—since reduction in unnecessary or discretionary peak-period trips by auto drivers will lead to less congestion for truckers. And, while many truck drivers try to avoid traveling during peak hours, many continue to do so and would be helped by a reduction in congestion. Furthermore, mileage-based pricing could lead to more efficient investment, based on the assumption that priced roads that continue to experience congestion would be improved first. When roads are priced efficiently, it becomes clearer to highway professionals and policymakers which roads continue to experience “true” demand in excess of capacity, possibly because there are no alternatives, and should be improved, and which roads are artificially congested due to under-pricing, and should receive a lower maintenance priority.

## **2.4. Passing-On Costs to Customers**

An additional potential benefit to the freight industry of mileage-based user fees is that charges would not affect the predictability of operating costs and, given the ability to document these charges, they could be passed on to customers – as is the case with the German system



(Robinson 2008) mentioned previously. And while, initially, peak-period, variable congestion pricing could introduce an element of unpredictability, the ability to document these peak-period charges over time could provide the basis for establishing baseline charges.

It has been pointed out by the freight industry that shippers are not willing to pay tolls now, and there is no evidence that they would be willing to do so for mileage-based pricing. However, there is an important difference between the two: toll facilities are limited in number and in many instances truck drivers have route options and thus the ability to avoid toll roads. This may explain shipper's unwillingness to pay tolls. Mileage-based fees, on the other hand, would apply to all roads and would therefore be difficult to avoid. Since all trucks would pay the fee, it would become part of the cost of doing business.

Unlike fuel prices, which are not precisely known when freight carriers sign contracts, a mileage-based user fee can be more precisely estimated before contracts are signed. Thus, it is expected that mileage charges could be incorporated into contracts and passed on to customers. Holguín-Veras (2009) has shown that, "...in time-distance pricing the tolls enter into the marginal costs implying that the carriers will be able to pass them to the receivers." It should be noted that mileage-based charges can be more difficult to predict when congestion pricing is an element of the pricing scheme. However, the industry should be able to compile supporting evidence based on actual historic peak-period charge payments, which it could then use to negotiate upcoming contracts.

## **2.5. Data Collection and Reporting of Mileage**

Whitty et al. (2009) have noted, "Some within the trucking industry may see distance-based charges as a way to accurately collect truck travel data to satisfy requirements of the International Fuel Tax Agreement and International Registration Plan." There may be additional benefits in this area, in that fleet owners may be better able to track their trucks by means of the technology infrastructure needed for mileage-based user fee implementation.

In *A practical Approach to Truck VMT Fees (2011)*, the authors report on under reporting of mileage, as follows:

"Interstate truckers are required to report mileage each quarter to IFTA (International Fuel Tax Association). IFTA balances payments among the states based on miles driven in each state. Motor carriers, however, have an incentive to under report mileage in [a] high tax states (such as New York) and to over report taxes in nearby relatively low tax states (such as New Jersey and Pennsylvania). These data are self-reported and it is not easy to audit the large number of independent drivers and small firms..."

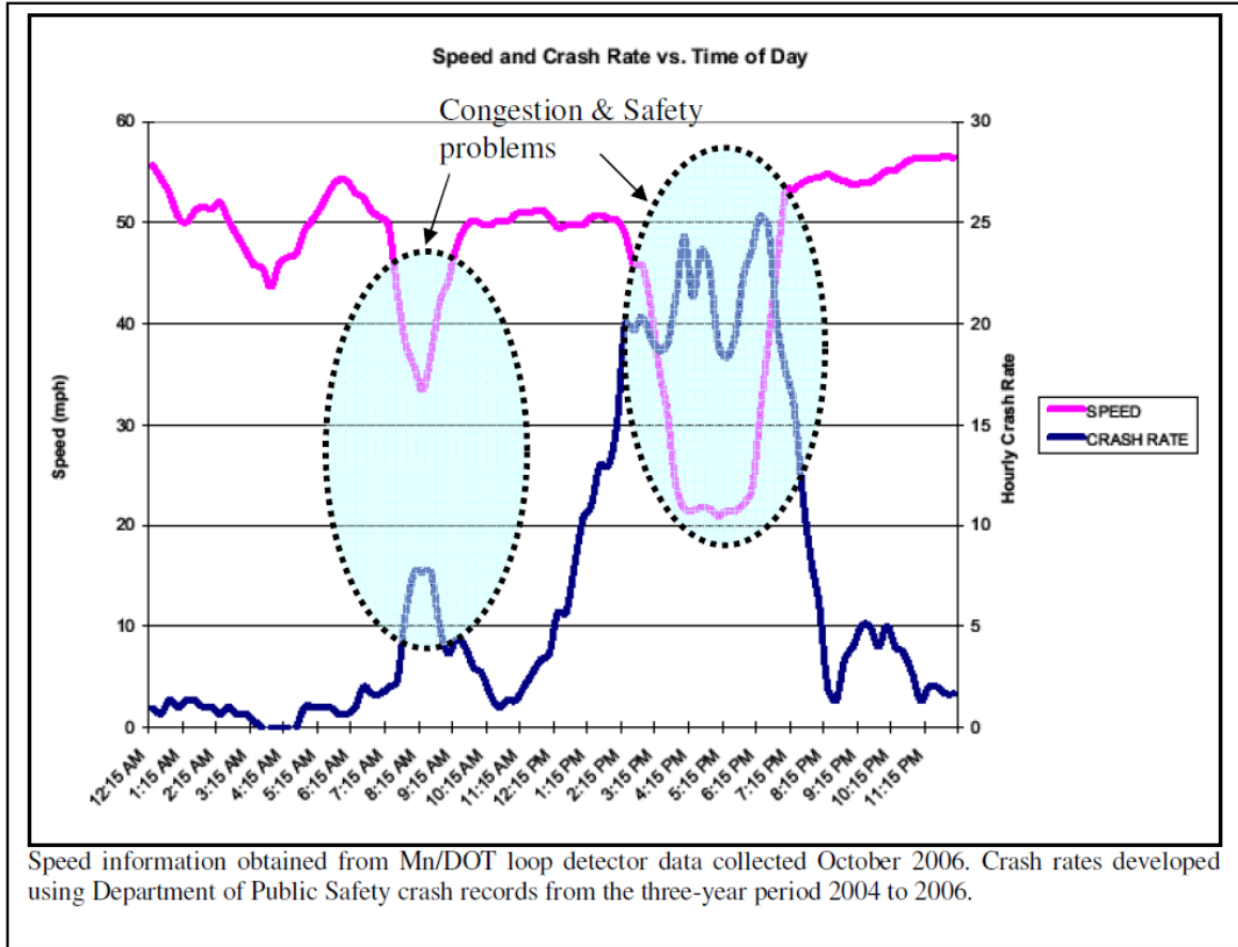
This is the kind of underreporting that the VMT technology infrastructure could help to avoid since mileage within jurisdictional boundaries would be captured for billing purposes.

## **2.6. Secondary Benefits of Travel Time Reduction and Improved Reliability**

The time savings that come with mileage-based pricing is likely to lead to reduced operating expenditures for such things as fuel, tires, and maintenance, and could put a downward pressure on wages. As driving in congestion substantially reduces fuel efficiency, and constant stopping and starting puts added wear and tear on trucks, a mileage fee that reduces congestion will work to lessen these operating costs.

### ***Congestion Reduction Can Reduce Crash Exposure***

To the extent that mileage-based pricing reduces congestion, the trucking industry may receive some safety benefits. Zhou et al. (1997) found that crash rates increase at peak volume-to-capacity ratios (Note: Zhou et al also found that crash rates increased at the lowest levels of congestion as well). A report by Sobolewski (2009) notes, “Highly congested locations and high crash rate locations often coincide”. This study goes on to note five examples of this correlation in the Twin Cities Metro Area: I-94 near Rogers, I-494/TH 169 Bloomington, I-94 commons area, I-494 near I-35W, and TH 169 near I-394. Figure 2.2, taken directly from the Sobolewski et al (2009) report, illustrates the inverse correlation between speed and crash rate for westbound I-94 in Minneapolis between TH 55 and 11<sup>th</sup> Street. For the trucking industry, a reduction in congestion could have not only a direct benefit of fewer crashes and related delays, but could also have, ultimately, an effect on insurance rates.



**Figure 2.2 Speed and Crash Rate vs. Time of Day (Reproduced with Permission)**

## CHAPTER 3. WILLINGNESS TO PAY

This section reports the results of a preliminary willingness-to-pay exercise. Heavy commercial vehicle-miles (HCVMT) traveled in the state of Minnesota, combined with marginal cost estimates that Global Insights used to generate cost savings or willingness-to-pay estimates, allow us to develop willingness-to-pay estimates per-mile under different scenarios. (Willingness to pay can be interpreted as the amount one is willing to pay to save a larger amount. It is based on the assumption that firms want to maximize cost reductions and savings after considering all relevant factors.) HCVMT data comes from MnDOT's Transportation Data and Analysis Office (2011) and accounts for all HCVMT in Minnesota on trunk highways (U.S., Interstate, and MN roads). Using this source, HCVMT for 2009 was 2.58 billion miles or approximately 7.8% of total state VMT on trunk highways.

The Global Insights, Inc. report shows that the marginal cost for a vehicle hour of travel (VHT) for a Dry Van Truck Load (DVTL) is \$15.37 (\$0.256 for one vehicle minute). This is significantly lower than the estimate by the American Transportation Research Institute (ATRI) (Fender et al. 2011) of \$59.61 per hour for 2010. However, the ATRI estimate is an accounting estimate of average variable cost while the Global Insights estimate is an econometric estimate of marginal cost based on more limited data. Using the ATRI estimate would result in a substantially higher willingness-to-pay value.

Using average speeds that heavy commercial trucks could attain under toll road operation compared to "free" roads, we can estimate overall willingness to pay. For example, if we assume that trucks in MN average 30 MPH (ATRI's estimate of national truck fleet speed is 30.3 mph across all roads) when using trunk highways, then heavy commercial truck VHT was approximately 86.1 million (VMT/MPH) in 2009. If a hypothetical tolling scenario would allow heavy commercial trucks to travel at an average of 35 MPH on trunk highways, then VHT would have been approximately 73.8 million, and would have resulted in approximately 12.3 million hours in time savings in 2009.

Applying the marginal cost for DVTL found in the Global Insights, Inc. study, we can now estimate willingness to pay for the tolling scenario. Multiplying marginal cost by total time savings ( $\$15.37 \times 12.3$  million hours) we get \$189.05 million in total cost savings. Dividing this figure by HCVMT (2.58 billion miles) we obtain cost savings or willingness to pay per-mile, which is 7.32 cents per-mile. Table 3.1 illustrates willingness to pay under different scenarios for heavy commercial vehicles.

**Table 3.1 Heavy Commercial Vehicles Willingness to Pay (up to) Under Different Tolling Outcomes**

<b>Scenario</b>	<b>Willingness to Pay Up to</b>
Average speeds increase from 30 MPH to 35 MPH	7.32 cents per-mile
Average speeds increase from 30 MPH to 40 MPH	12.81 cents per-mile
Average speeds increase from 30 MPH to 45 MPH	17.08 cents per-mile
Average speeds increase from 40 MPH to 45 MPH	4.27 cents per-mile
Average speeds increase from 40 MPH to 50 MPH	7.69 cents per-mile
Average speeds increase from 40 MPH to 55 MPH	10.48 cents per-mile
Average speeds increase from 50 MPH to 55 MPH	2.79 cents per-mile
Average speeds increase from 50 MPH to 60 MPH	5.12 cents per-mile
Average speeds increase from 50 MPH to 65 MPH	7.09 cents per-mile

\*(Data: Global Insights Inc. 2008 and MnDOT 2011)

Other studies have estimated marginal costs for the trucking industry and these marginal cost figures could be used with the same scenarios to produce willingness to pay estimates. Most notably, a study by Fender et al. (2011) for the ATRI entitled “An Analysis of the Operational Costs of Trucking” provides marginal cost estimates for as recent as the first quarter of 2010. Fender et al. (2011) report a marginal cost per hour of \$59.61 for the trucking industry. Table 3.2 reproduces Table 3.1 using Fender et al.’s marginal cost estimate. As seen by comparing the two tables, Fender et al.’s marginal cost figure yields significantly greater willingness-to-pay estimates.

**Table 3.2 Heavy Commercial Vehicles Willingness to Pay (up to) Under Different Tolling Outcomes with Fender et al.'s (2011) Marginal Cost Estimate**

<b>Scenario</b>	<b>Willingness to Pay Up to</b>
Average speeds increase from 30 MPH to 35 MPH	28.39 cents per-mile
Average speeds increase from 30 MPH to 40 MPH	49.68 cents per-mile
Average speeds increase from 30 MPH to 45 MPH	66.23 cents per-mile
Average speeds increase from 40 MPH to 45 MPH	16.56 cents per-mile
Average speeds increase from 40 MPH to 50 MPH	29.81 cents per-mile
Average speeds increase from 40 MPH to 55 MPH	40.64 cents per-mile
Average speeds increase from 50 MPH to 55 MPH	10.84 cents per-mile
Average speeds increase from 50 MPH to 60 MPH	19.87 cents per-mile
Average speeds increase from 50 MPH to 65 MPH	27.51 cents per-mile

\*(Data: Fender et al. 2011 and MnDOT 2011)

## CHAPTER 4. INDUSTRY CONCERNS

This chapter highlights several issues and concerns raised by the freight industry with regard to mileage-based user fees. Concerns have been summarized from industry presentations at the 2010 Symposium on Mileage-Based User Fee, and from interviews and focus group discussions with industry representatives conducted as part of this study.

Following are concerns often expressed by industry representatives as well as comments regarding these concerns. At the end of this section are additional concerns and comments expressed at focus group interviews and discussions with industry representatives.

### *Trucks Are Already Paying*

An often-cited objection of the freight industry to mileage-based user fees is identified in the report by Global Insights, Inc. (2008). “Typically, objections from the trucking industry to ‘traditional’ (revenue-generation) tolls follow two general themes: (1) truckers already pay taxes, fuel charges, tolls, licensing fees and other regulatory costs to use ‘free’ roads and thereby should not be required to pay additional charges to make use of the road network...” While many envision mileage-based user fees as being a replacement to current fuel taxes, it is possible that mileage fees could be implemented as a partial supplement to current taxes. And while many in the freight industry believe that they are already paying enough, several studies have shown that, especially heavier trucks, are in fact currently under-paying. Gupta et al. (2009) found that while autos and light trucks pay more than their cost responsibility, many truck categories currently pay less than their cost. Similar conclusions were drawn in the Federal Highway Administration’s Cost Allocation Study of 1997, updated in 2000 (Federal Highway Administration 2000).

A study by Parry (2006) found that when “accounting for external costs from congestion, accidents, pavement damage, noise, energy security, and local and global pollution,” the most efficient tax structure for heavy-duty trucks in the U.S. contained a 69 cent-per-gallon tax on fuel, and mileage taxes ranging from 7 (for single-unit trucks in rural areas) to 33 cents per-mile (for combination trucks in urban areas). If mileage fees are not included, the optimal diesel tax was found to be \$1.12 per gallon. These tax rates price for the externalities (i.e., societal costs not currently accounted for in the fuel tax structure) brought about by truck VMT and fuel consumption, and thus lead to efficient outcomes where social welfare is maximized. In stark contrast, the current federal diesel tax stands at 24.4 cents per-gallon, and state average diesel tax stands at 21.38 cents per-gallon (Federal Highway Administration 2011).

### *Opposition to Weight-Distance Taxes*

At the 2010 Symposium on Mileage-Based User Fees, the comment was made that “The trucking industry has always supported a user fee system and a fair vehicle registration system that is based on weight, but not a weight-distance tax. A VMT on trucks will be rightly viewed as a weight-distance tax and opposed by trucking. More than 20 states have repealed weight-distance taxes with only four states still having them in existence today. Weight-distance taxes are cumbersome, expensive, unfair, and open to evasion.” Sorensen et al. (2009) has also noted,

“Generally speaking, the application of weight-distance truck tolls has resulted in higher road user charges for trucks.”

With respect to this objection, it is important to note once again that many transportation researchers and professionals believe that while the fuel tax was once an efficient and fair user fee, it no longer functions as an effective user fee system in which users pay for the costs they impose on the system (Coyle et al 2011). In fact, the current fuel tax system leads many categories of trucks and autos to pay less than their fair share (e.g., heavy trucks and high fuel-efficient cars). Furthermore, a once-a-year truck registration fee is a fixed charge based on maximum gross weight, and is not based on the relationship between weight and road damage.

While the trucking industry considers the fuel tax to be an “efficient” transportation funding method, this designation is based primarily on the fact that fuel tax collection costs are expected to be significantly lower than is estimated for mileage-based user fees. It must be said, however, that the fuel tax is an “efficient” way to collect an inefficient tax. The fuel tax is inefficient in several ways. First, as currently structured, adequate levels of revenue are not collected; second, the fuel tax is not a sustainable funding mechanism—it relies on taxing a non-renewable fuel whose use we are trying to reduce because of environmental and national security reasons; third, because the fuel tax is set at a level that does not reflect full costs, and it is hidden in the price of fuel, it no longer sends a clear price signal to users, who do not relate the amount of driving (VMT) to the cost of driving; and, finally, the fuel tax is not environmentally sustainable (based on the second and third reasons presented above) (Coyle et al. 2011).

### *Concerns over Enforcement*

At the 2010 Symposium, it was noted that “Moving to evasion: taxes are easier to collect...from a small number of payers and/or there is something to withhold for non-payment. The fuel tax is collectable, enforceable, and efficient. There are issues with VMT fees which could cause evasion problems. First, there will be several hundred million tax payers. In addition, odometers are often off by around 4% and GPS can be unreliable if the conditions aren’t right. Furthermore, odometer tampering does occur. Who would enforce the VMT? The IRS’ history with excise taxes is not as good as their history with the income tax.” While enforcement issues are likely to continue to hamper the political acceptability of mileage-based user fees, the enforcement issue is not insurmountable, as demonstrated by Germany’s heavy-vehicle tolling system, Toll Collect has charging tolls with a reliability of 99.7 percent since 2005, and technology-aided enforcement has been able to keep toll violations below two percent (Robinson 2008). Germany collects distance-weight-emission tolls on all heavy trucks using the Autobahn, one-third of which are foreign trucks. Sorensen et al. (2009) have noted that redundancy checks, tamper-resistant on-board units, and external on-board unit checks can all be used to minimize evasion. Furthermore, a report and presentation on Oregon’s TRUE electronic weight-distance fee pilot project by Jim Whitty lists “Difficult to Evade-Evasion is minimized” as one of its advantages of mileage-based charges stating, “Evasion is minimized, particularly in a state like Oregon that has weigh station facilities and an aggressive size and weight enforcement program that checks trucks and records scale crossings.” However, he goes on to note that “the full potential for evasion of TRUE has not been measured” (Whitty 2011).



It must be recognized that while several countries, notably Holland, have considered implementing mileage-based pricing for all vehicles, to date none have done so for a variety of reasons. Regarding enforcement costs if cars are included, it can be assumed that, overall, the unit cost would drop considerable because of the large number of vehicles that would be involved.

### ***Privacy Issues and Costs of New Technology***

Another concern, voiced not only by the freight industry but also by many individuals, involves the privacy and costs involved with the technologies necessary to implement mileage-based user fees.

For the freight industry, however, this may not be as significant an issue. Mudge et al. (2010) note, “Most large trucks already have installed required equipment”, and “...privacy [is] less of an issue since fleet owners have the right to know location of their trucks.” Finally, the “cost to equip additional trucks [is low].” Nonetheless, privacy and cost issues will be a significant hurdle for mileage-based user fees to gain public and political support. The trucking industry is concerned with data becoming available to attorneys in litigation cases, especially because trucks carry more insurance than automobiles and may be targeted for this reason. Finally, the fact is that not all trucks are equipped with the technology required and their acquisition and installation cost remains a concern.

### ***How Revenues will be Spent***

Williams et al. (2010) note that with all of the new technology involved with mileage-based user fees, billions of dollars would go to installing new equipment before any revenue would go for infrastructure investment. There is also a concern that mileage-based user fees revenues would be used for other purposes.

These are important concerns. However, it is anticipated that, in the long term, the benefits of mileage-based user fees could outweigh its initial costs. The factors that will help increase revenue capture include: fees will be based on miles driven, which are projected to increase in the long term, and higher payments will be received from many current and future vehicles that are currently underpaying because of exemptions and other inequities. And while it is likely that a mileage-based user fee system would be costlier to administer than the fuel tax, it is important to note once again that a mileage-based system will also correct many shortcomings of the fuel tax in the areas of efficiency, equity, and revenue adequacy and sustainability. In addition, typical cost estimates of mileage-based systems assume implementation today, and consider the costly need to retrofit vehicles with the new technology. However, in the 10- to 15-year timeframe expected for mileage-based system implementation, technology prices are expected to fall substantially, especially since most vehicles will likely be factory-equipped with the needed technology. Finally, as already noted in the above section, many heavy trucks are already equipped with some or all of the required technology.

With regard to where revenues will be spent, it has been a tradition at the federal level to uphold a user-pays-and-benefits system when it comes to highway user taxes and fees, which is why these revenues are dedicated to transportation. Thus, it is anticipated—and hoped--that mileage-

based user fee revenue will be targeted towards highway maintenance, reconstruction, and new construction. However, the record with the disposition of federal fuel tax revenues, without going into the question of merit, shows poor adherence to the user-pays-and-benefits principle: more than 10 percent of revenues goes to fund users of modes and activities that do not pay into the fund.

### ***Declining Fuel Tax Revenues Apply to Autos not Heavy Trucks***

The argument is made that heavy trucks are not experiencing fuel efficiency increases like autos and light trucks, nor have hybrids/electric alternatives penetrated the truck market. Thus, many in the trucking industry argue that these issues do not apply to heavy trucks. As noted at the 2010 Symposium, “The same problems undermining gasoline taxes are not present in the trucking industry as there is no satisfactory alternative to diesel fuel for heavy trucks, so there is less need to look at VMT for the trucking industry.”

While there may be merit to the idea of implementing mileage-based user fees for autos only, heavy trucks are not completely immune from potential fuel economy increases, especially if policy makers continue to focus on decreasing the United States’ dependence on oil. In fact, in response to a May 2010 presidential memo, the National Highway Traffic Safety Administration and the Environmental Protection Agency recently proposed the first national program to regulate the fuel efficiencies of medium and heavy trucks. Furthermore, some shippers, such as Schwan Foods (MN), which has a fleet of more than 5,000 vehicles, use the cheaper propane gas, which is also taxed at a lower rate, as an alternative to diesel fuel. As diesel fuel prices rise, as they do periodically as well as over the long term, truck fleet owners and operators will look to cheaper or more efficient alternative fuels as a way to decrease operating expenses and improve profit margins.

According to the Minnesota MBUF Risk Assessment, a final chapter of Minnesota’s MBUF public opinion study, the number one risk identified by a diverse group of transportation professionals was the risk of raising the rates when necessary. Just like the motor fuel tax today, MBUF rates will need to be adjusted from time to time, and just like the motor fuel tax, raising those rates will be very difficult. Complicating the problem is the assumption that there may be a whole series of rates for different types of vehicles. As a result, there may be a whole series of rates to be raised – which might create a significant challenge as various groups look out for their own best interests.

### ***Reactions to the Concept of Mileage-Based User Fees (Results of a Focus Group with Minnesota Trucking Industry Executives)***

Five executives from the Minnesota Trucking Industry met on February 15, 2012 at the Hubert H. Humphrey School of Public Affairs to discuss their reactions to the concept of Mileage-Based User Fees. Prior to the time of the focus group, two of the participants in the focus group had been invited to provide their reactions to the MBUF concept; this focus group discussion may have been the first time that the remaining participants have been exposed to the concept of Mileage-Based User Fees in any extensive way.

Focus group participants included two who are presidents of large over-the-road trucking firms as well as individuals representing a large international shipping and delivery firm, a local construction dirt-hauling firm and another over-the-road trucking firm. The discussion was facilitated and a report was prepared by Harold Cook of William & Kaye, Inc., Victoria, MN. See Appendix A for a summary of the focus group proceedings.

### ***Reaction to the Concept of Mileage-Based User Fees***

Prior to discussing reactions to the concept of Mileage-Based User Fees, participants were introduced to Mileage-Based User Fees via a brief Power Point presentation (Appendix B). Before discussing their reactions to the information presented in the Power Point, participants were asked to write down what they “liked” about the concept of Mileage-Based User Fees and what concerns they may have.

There was very little that is liked by these participants regarding Mileage-Based User Fees. One participant did offer several reasons why such a system could be of benefit as a way to help fund transportation; in particular, the participant:

- Viewed MBUF as “innovative; it utilizes existing and developing technology.”
- Supported the “direction of fuel efficiency; the gas tax is a ‘dinosaur’.”
- Supported the “‘greening’ effort; MBUF creates the proper incentives for fuel efficiency.”
- Recognized that “MBUF provides [funding] help for the decaying transportation system.”
- Stated that “MBUF creates more of a ‘fair share’ approach for the transportation system.”

Overall, other participants were opposed to Mileage-Based User Fees for the trucking industry as a way to find additional money for transportation funding. The participant identified above had previously been asked to provide input on the idea of Mileage-Based User Fees and had concluded there is sufficient reason to continue exploring the possibility of initiating it as a way to help support transportation funding. Transportation funding, according to this industry executive, is sorely needed as there now exists, “a highway system in drastic need of fixing.” However, if a potential way to fix this “drastic need” is through Mileage-Based User Fees, another participant adamantly opposed to adopting a MBUF to do so states, “The freight industry cannot afford this!”

An initial concern expressed regards “invasion of privacy.” The participants assumed that a GPS or similar device will be needed to record the mileage driven by vehicles and suggest it is a “big-brother” problem and wonder how privacy can be protected. They also questioned how to charge miles when some commercial trucks are driven for personal use as well as for trucking industry purposes.

One of the major reasons expressed for the statement – “The freight industry cannot afford this.” – reflects industry concerns surrounding the competition between trucking and rail for freight shipping. Recognizing that “efficient movement of goods is how commerce operates,” they felt that an increase in costs to the trucking industry (i.e., through MBUF) is unlikely to become a pass-through item to their customers and could mean that the cost to ship by truck may potentially become more costly than the cost to ship by rail. Specifically, they stated that:

- “We currently are able to pass on incremental costs to customers when fuel taxes increase.”
- “Increased costs to the trucking industry” [i.e., costs presumed to rise due to MBUF] could make trucking “non-competitive with rail.”

Part of this reluctance to thinking that trucking would not remain competitive with rail may result from not understanding what costs trucking firms would experience should Mileage-Based User Fees be adopted. Without knowing how much tax would be charged per mile, the presumption was that trucking firms would be paying more than they do now under the fuel-tax system. Another participant asked, “Can the freight industry afford this?”

Two of the trucking industry executives discussed how much effort is now directed towards determining how the cost to move freight is determined. Total gallons of fuel per year are calculated; estimates of future costs to move freight are partially based upon these calculations. One of these two executives indicated that his firm uses “two and one-half million gallons of fuel each year,” which enters into the calculation of yearly costs to move freight and helps determine how much to charge their customers for the movement of freight. In addition to knowing gallons of fuel consumed yearly, the amount of fuel tax paid is also calculated; whenever the fuel tax increases, it is likely that the cost to the customer to ship freight also increases.

These two executives apparently assumed that Mileage-Based User Fees would no longer provide them with a way of determining cost to ship freight and pass any incremental costs onto their customers. Yet, both indicated that their firms know exactly how many miles their trucks are driven yearly:

- “We know every mile we drive on the road.”
- “We track every mile we run; we track gallons of fuel used.”

If additional dollars are needed for transportation funding purposes, some of the participants in the focus group would be open to an increase in the fuel tax and mention supporting an increase in fuel taxes because they are usually able to pass along any increase in the fuel tax to their customers. The presumption appears to be that MBUF would be more costly to trucking than any fuel tax increase which could likely result in trucking firms being unable to stay competitive with rail – unable to pass along the increased cost to customers as they may do, when necessary, due to a fuel tax increase.

In addition, some of the participants accepted the fuel tax as a “fair” way to pay their share for funding transportation. One participant suggested, “We have a ‘perfect’ carbon tax – the amount of carbon you use is what you pay for.” Another summarized this idea with the statement, “We all pay our fair share.” It was also mentioned that the American Trucking Association favors a fuel tax increase.

Another reason for preferring an increase in the fuel tax over Mileage-Based User Fees revolved around their current effort to change their fleets of trucks by adding more fuel-efficient vehicles while also spending money on emission-control devices and reducing their “carbon footprint.” At least one or two of the represented firms is in the process of “trying to replace trucks with those getting better mpg.” Another firm is looking into purchasing trucks that run on natural gas

or LP. One summarized the point with the comment, “We’re purchasing more efficient fuel-using trucks; they’re [MBUF] trying to penalize us for trying to minimize fuel consumption.” (Note: The dilemma that arises is that as trucking firms look for ways to reduce their fuel consumption they also reduce the amount of taxes paid, which leads to an increase in the transportation funding gap. This is the problem that MBUF is trying to solve.)

One participant asked: “If we are moving toward more efficient vehicles, how are we going to pay for the system in the future?” Another participant lamented that, if the solution is Mileage-Based User Fees, moving from a taxing system that encourages trucking firms to find ways to save on amount of fuel consumed to MBUF, which does not “reward” firms who are dedicated to fuel saving, would “penalize me to burn less fuel.” An additional concern of switching from a fuel tax to Mileage-Based User Fees might be less interest on the part of trucking firms to spend the money needed to purchase more fuel-efficient trucks, resulting in a decreased desire to support the “greening” movement. The current fuel tax system was mentioned as likely being “more green” than Mileage-Based User Taxes because taxing fuel encourages trucking firms to find ways to save money by cutting down on the amount of fuel their trucks consume. (Note: Shortly after the date of the focus group discussion, one of the participants in the focus groups was featured in an article published in the Star Tribune on February 27, 2012 reporting how his firm is converting some trucks to compressed natural gas (CNG) fuel, suggesting that “natural gas costs the equivalent of \$1 to \$2 per gallon less than diesel fuel.” In addition, the tax on CNG is lower than for diesel fuel.)

Overall, four of the five participants were concerned that Mileage-Based User Fees would cost more than the fuel tax system for raising funding dollars for transportation. While they would favor an increase in the fuel tax, which they suggested they could likely pass along to customers, they seemed convinced that a MBUF would cost them more – without being able to pass along any of that cost to customers. (Note: While much was said during the focus group about the expected “high” cost to the trucking industry of switching to Mileage-Based User Fees rather than staying with fuel taxes, the participants did not explain why they are able to pass along an increase in the fuel tax but would be unable to pass along any increased costs to ship due to the amount of MBUF paid.)

The State of Oregon was mentioned as a place where fuel taxation has been replaced by an alternate system, and the result has been that it costs more to operate trucks moving into and out of Oregon than it would if Oregon collected fuel tax as other states do. This is another reason why most participants did not favor Mileage-Based User Fees.

Upon being asked how transportation could be funded in lieu of raising the fuel tax or switching to Mileage-Based User Fees, the participants offered the following:

- “Electric cars and hybrids should be taxed—they use the highways.”
- “Add a tax on tires.”

Another dilemma is that while the trucking industry would support an increase in the fuel tax, it is dedicated, at the same time, to finding alternative fuels that are taxed at a lower rate, or switching to more fuel-efficient trucks, and all of this is being done in the context of a transportation system that is deteriorating and in need of additional funding. Four of the five

participants in this focus group rejected Mileage-Based User Fees as a means for funding transportation. They acknowledged there is a need for more funding, and seemed willing to pay more in fuel taxes while at the same time “economizing” to save dollars they now spend for the taxes on fuel. They did not see any benefits of MBUF. One participant suggests, “It’s a bad idea that won’t disappear!”

Should the fuel tax not be increased nor MBUF be created, assuming one of the goals of Mileage-Based User Fees is to reduce the volume of traffic on the highways, a few ways to save on fuel consumption and get some personal vehicles off the roads would be to:

- “Lower the federal speed limit, it will save a lot of fuel.”
- “Find a way to price transportation such that it would move people to public transit.”
- “When people become uncomfortable enough while sitting in heavy traffic, then, they might turn to public transit.”

An interesting consideration is that while trucking firms report they “know every mile we drive on the road” and “track every mile we run,” some of the participants questioned how Mileage-Based User Fees would be able to accurately “track” the miles and separate the ones that should be charged to the trucking firms and the miles that are driven for personal reasons.

Overall, four of the five participants in this focus group were opposed to Mileage-Based User Fees and see no reason to switch to MBUF and replace the fuel tax system. Nevertheless, the fifth participant did see potential for continuing exploration of what Mileage-Based User Fees could do in the future to help fund transportation. Recognizing this is a future option to the fuel tax for raising dollars at a time when fuel consumption may continue to decrease – per vehicle – while the use of alternate sources of energy (such as electricity) may increase, MBUF may provide the dollars needed to fund transportation.

## CHAPTER 5. CONCLUSION

This paper has summarized several potential benefits to the freight industry of mileage-based user fees, while illuminating many of the industry's chief concerns over mileage-based user fee implementation. Potential benefits include travel time reductions, increased predictability of travel times, improved road quality, increased predictability of operation costs, and ability to collect better freight data, and, last but not least, the ability of the industry to pass on pricing costs to customers. Industry concerns include tax overpayment, opposition to weight-distance taxes, concerns over enforcement, data privacy, high costs, how revenues will be used and, finally, opposition on the basis that highway funding problems are related to autos and do not apply to heavy trucks.

In this paper we have attempted to provide some caveats, where necessary, about potential benefits of pricing to the freight industry as well as arguments that serve to put industry concerns into a broader perspective. The whole issue of pricing is relatively new and many of the potential benefits remain to be tested in real-life implementations. At the same time, many of the concerns expressed may rise from precisely this lack of experience.

During the past two decades there has been a sizable body of research that has concluded, for the most part, that mileage-based user fees would have a positive effect on transportation funding and lead, in turn, to a more efficient use of the transportation infrastructure. Many of the research findings are supported by the outcomes of the limited number of pricing experiences in the U.S. and abroad. What seems to be lacking, on the other hand, is research that supports industry concerns. This may be an area where researchers and industry might want to consider addressing in the future.

## REFERENCES

- Coyle, David D., Ferrol O. Robinson, Zhirong (Jerry) Zhao, Lee W. Munnich Jr., and Adeel Z. Lari. 2011. *From fuel taxes to vehicle miles-travelled fees: Rationale, technology, and implementation issues*, Center for Transportation Studies, University of Minnesota. Minneapolis, MN.
- Coyle, David, and Richard T. Baker. 2010. "Proceedings: 2010 Symposium on Mileage-Based User Fees: Moving forward," Minneapolis, MN.
- Environmental Protection Agency (EPA). 2010. *Light-duty automotive technology, carbon dioxide emissions, and fuel economy trends: 1975 through 2010*, Environmental Protection Agency, Washington, D.C.
- Federal Highway Administration 2000, *Addendum to the 1997 federal highway cost allocation study*, U.S. Department of Transportation, Washington, D.C.
- Federal Highway Administration. 2011. *Highway Statistics 2009, State Motor-Fuel Tax Rates, 1996-2009*, U.S. Department of Transportation. Available from <http://www.fhwa.dot.gov/policyinformation/statistics/2009/mf205.cfm>, accessed March 2012.
- Fender, Katherine J., and David A. Pierce. 2011. *An analysis of the operational costs of trucking: A 2011 update*, American Transportation Research Institute, Arlington, VA.
- Fowkes, A. S., P. E. Firmin, G. Tweddle, and A. E. Whiteing. 2004. "How highly does the freight transport industry value journey time reliability-and for what reasons?" *International Journal of Logistics: Research and Applications* 7 (1): 33-44.
- Global Insight, Inc. 2005. *The U.S. truck driver shortage: Analysis and forecasts*. Prepared for American Trucking Association, Global Insights, Inc., Englewood, CO.
- Global Insight, Inc. 2008. *Benefits of road pricing to the trucking industry*, United States of America Department of Transportation, DTOS59-05-A-00205, Washington, D.C.
- Gupta, Diwakar, and Hao-Wei Chen. 2009. *Highway cost allocation and determination of heavy freight truck permit fees, task 1 report – 2009 Minnesota highway cost allocation study*, Minnesota Department of Transportation, St. Paul, MN.
- Holguín-Veras, José. 2009. *Urban delivery industry response to cordon pricing, time-distance, and carrier-receiver policies*, TRB 2010 Annual Meeting. Transportation Research Board, Washington, D.C.
- Litman, T. 2004. *London congestion pricing: implications for other cities*, Victoria Transport Policy Institute, Victoria.



- Minnesota Department of Transportation, Office of Transportation Data and Analysis. 2011. Vehicle Miles. Available from <http://www.dot.state.mn.us/roadway/data/reports/vmt.html>, accessed March 2012.
- Mudge, Richard, Roz Wilson, and Sumala Tirumalachetty. Presentation April 20, 2010. "Truck-Based VMT Fees A Value Pricing Project in New York State," Minneapolis, MN.
- National Surface Transportation Infrastructure Financing Commission. February 2009. *Paying our way: A new framework for transportation finance*, Washington, D.C.
- National Surface Transportation Policy and Revenue Study Commission. December 2007. *Transportation for tomorrow*, Washington, D.C.
- National Transportation Policy Project. 2011. *Performance driven: Achieving wiser investment in transportation*, Bipartisan Policy Center, Washington, D.C.
- Nichols, Russell and Ryan Holeywell. June 2011. "Six ideas for fixing the nation's infrastructure problems," *Governing*. <http://www.governing.com/topics/transportation-infrastructure/six-ideas-for-fixing-the-nations-infrastructure-problems.html>, accessed March 2012.
- Office of Innovative Partnerships and Alternative Funding, Oregon Department of Transportation, Oregon.gov. 2011. Truck Road Use Electronics Pilot Project. Available from <http://www.oregon.gov/ODOT/HWY/OIPP/TRUE.shtml#TRUE>.
- Oh, J., and K. Sinha. 2008. *Alternative to fuel tax: a state level perspective*, Purdue University, West Lafayette, IN.
- Parry, I. W. H. 2006. "How should heavy-duty trucks be taxed," *Journal of Urban Economics* 63 (2) (April 2006): 651-668.
- Robinson, Ferrol O. October 2008. *Heavy vehicle tolling in Germany: Performance, outcomes, and lessons learned for future pricing efforts in Minnesota and the U.S.*, State and Local Policy Program, Hubert H. Humphrey School of Public Affairs, University of Minnesota, Minneapolis, MN.
- Robinson, Ferrol O. 2006. *Pricing experience in northern Europe: lessons learned and applicability to Minnesota and the United States*, State and Local Policy Program, Hubert H. Humphrey School of Public Affairs, University of Minnesota, Minneapolis, MN.
- Shirley, Chad, and Clifford Winston. 2004. "Firm inventory behavior and the returns from highway infrastructure investments," *Journal of Urban Economics* 55 (2): 398-415.
- Sobolewski, Mike. 2009. *Safety and the operational implications of freeway congestion*, Minnesota Department of Transportation, St. Paul, MN.

- Sorensen, Paul, Liisa Ecola, Martin Wachs, Max Donath, Lee Munnich, and Betty Serian. June 2009. *Implementable strategies for shifting to direct usage-based charges for transportation funding*, National Cooperative Highway Research Program, Transportation Research Board, Washington, D.C.
- Texas Transportation Institute. 2010. *2010 annual urban mobility report*, Texas Transportation Institute, College Station, TX.
- Whitty, James M. and John R. Svadlenak. March 31, 2009. *Discerning the pathway to implementation of a national mileage-based charging system*, Washington, D.C.: The National Academics.
- Whitty, James. February 2011. Presentation on TRUE. Oregon Department of Transportation, Portland, OR.
- Williams, Steve, and Dan Murray. 2010. "The creative financing sidestep," *TR News*, 267, March-April 2010.
- Winston, Clifford, and Ashley Langer. 2004. *The effect of government highway spending on road user's congestion costs*, Federal Highway Administration, Washington, D.C.
- Winston, Clifford, and Chad Shirley. 2004. *The impact of congestion on shippers' inventory costs*, Federal Highway Administration, Washington, D.C.
- Zhou, Min, and Virginia P. Sisiopiku. 1997. *On the relationship between volume to capacity ratios and accident rates*, Michigan Department of Transportation and Michigan State University Department of Civil and Environmental Engineering, East Lansing, MI.

## **OTHER REFERENCES**

- Hensher, David A., and Sean Puckett. 2008. "Assessing the influence of distance-based charges on freight transporters," *Transport Reviews* 28 (1): 1-19.
- Minnesota Department of Transportation. September 2010. Potential benefits of distance-based road user fees, Transportation Research Synthesis 1008. Available from <http://www.dot.state.mn.us/research/TRS/2011/TRS1008%20for%20posting.pdf>.

**APPENDIX A: FREIGHT INDUSTRY FOCUS GROUP  
SUMMARY**

## **Reactions to the Concept of Mileage-Based User Fees: Results of a Focus Group with Minnesota Trucking Industry Executives**

Five executives from the Minnesota Trucking Industry met the morning of February 15, 2012 at the Hubert H. Humphrey School of Public Affairs to discuss their reactions to the concept of Mileage-Based User Fees. Prior to the time of the focus group, two of the participants in the focus group had been invited to provide their reactions to the MBUF concept; during the focus group discussion, the remaining three participants may have been exposed to the concept of Mileage-Based User Fees for the first time.

The focus group participants included two who are presidents of large over-the-road trucking firms as well as individuals representing a large international shipping and delivery firm, a local construction dirt-hauling firm and another over-the-road trucking firm. The focus group was facilitated and report prepared by Harold Cook of William & Kaye, Inc., Victoria, MN.

### Reactions to the Concept of Mileage-Based User Fees

Prior to discussing their reactions to the concept of Mileage-Based User Fees, the participants were introduced to Mileage-Based User Fees via a brief Power Point presentation. [*The presentation is appended to this report. This initial presentation did not cover the final five slides which include slides identifying, "Potential Benefits of Mileage-Based User Fees to the Freight Industry." The remaining five slides were presented after the participants reported their reactions to the MBUF concept.*] Before discussing their reactions to the information presented in the Power Point, participants were asked to write down what they "like" about the concept of Mileage-Based User Fees and what, if any, concerns they may have.

There is very little that is liked by these participants regarding Mileage-Based User Fees. One participant does offer a few reasons why such a system could be of benefit as a way to help fund transportation:

- "Innovative; utilizes existing and developing technology."
- "Supports the direction of fuel efficiency." ("The gas tax is a 'dinosaur!'")
- "Supports the 'greening' effort; creates the proper incentives for fuel efficiency."
- "Provides help for the decaying transportation system."
- "Creates more of a 'fair share' approach for the transportation system."

Overall however, the other four of the five participants are opposed to Mileage-Based User Fees for the trucking industry as a way to find additional money for transportation funding. The remaining participant, identified above, had previously been asked to provide input on the idea of Mileage-Based User Fees and had concluded there is sufficient reason to continue exploring the possibility of initiating it as a way to help support transportation funding. Transportation funding, according to this industry executive, is sorely needed as there now exists, "a highway system in drastic need of fixing." However, if a potential way to fix this "drastic need" is through Mileage-Based User Fees, another participant adamantly opposed to adopting MBUF to do so states, "The freight industry cannot afford this!"

An initial concern expressed regards “invasion of privacy.” The participants assume that a GPS or similar device will be needed to record the mileage driven by vehicles and suggest it is a “Big Brother” problem and wonder how privacy can be protected. They also question how to charge miles when some commercial trucks are driven for personal use as well as for trucking industry purposes.

One of the major reasons for the statement (“The freight industry cannot afford this”) reflects their concerns surrounding the competition between trucking and rail for freight shipping. Recognizing that “efficient movement of goods is how commerce operates,” an increase in costs to the trucking industry (i.e., MBUF) is unlikely to become a pass-through item to their customers and could mean that the cost to ship by truck may potentially become more costly than the cost to ship by rail.

- “We pass on incremental costs to customers when fuel taxes increase.”
- “Increased costs to the trucking industry” [i.e., those presumed to develop due to MBUF] could make trucking “non-competitive with rail.”

Part of this reluctance to thinking that trucking could not remain competitive with rail may be a result of not understanding what costs a trucking firm would experience should Mileage-Based User Fees be adopted. Without knowing how much tax would be charged per mile, the assumption presumed is that trucking firms would be paying more than they do now under the fuel-tax system. Another participant wonders, “Can the freight industry afford this?”

Two of the trucking industry executives discuss how much effort is now directed towards determining how the cost to move freight is determined. Total gallons of fuel per year are calculated; estimates of future costs to move freight are partially based upon these calculations. One of these two executives mentions his firm uses “two and one-half million gallons of fuel each year” which enters into the calculation of yearly costs to move freight and helps determine how much to charge their customers for the movement of freight. In addition to knowing gallons of fuel consumed yearly, the amount of fuel tax paid is also calculated; whenever the fuel tax increases, it is likely the cost to the customer to ship freight is also increased.

These two executives apparently assume that Mileage-Based User Fees would no longer provide them with a way of determining cost to ship freight and pass any incremental costs onto their customers. Yet, each of the two indicates their firms know exactly how many miles their trucks are driven yearly.

- “We know every mile we drive on the road.”
- “We track every mile we run; we track gallons of fuel used.”

If additional dollars are needed for transportation funding purposes, some of the participants in the focus group would be open to an increase in the fuel tax and mention supporting an increase in fuel taxes because they are usually able to pass along any increase in the fuel tax to their customers. The presumption appears to be that MBUF would be more costly to trucking than any fuel tax increase which could likely result in trucking firms being unable to stay competitive with rail – unable to pass along the increased cost to customers as they may do, when necessary, due to a fuel tax increase.

In addition, some of the participants accept the fuel tax as a “fair” way to pay their share for funding transportation. One participant suggests, “We have a ‘perfect’ carbon tax – the amount of carbon you use is what you pay for.” Another summarizes this idea with the statement, “We all pay our fair share.” It is also mentioned that the American Trucking Association favors a fuel tax increase.

Another reason for preferring an increase in the fuel tax over Mileage-Based User Fees revolves around their current effort to change their fleets of trucks by adding more fuel-efficient vehicles while also spending money on emission-control devices and reducing their “carbon footprint.” At least, one or two of the represented firms is in the process of “trying to replace trucks with those getting better mpg.” Another firm is looking into purchasing trucks that run on natural gas or LP. One summarizes the point with the comment, “We’re purchasing more efficient fuel-using trucks; they’re [MBUF] trying to penalize us for trying to minimize fuel consumption.”

However, one dilemma is that if trucking firms are looking for ways to reduce their fuel consumption causing the amount of taxes paid to subsequently decrease, the funding gap would need to be solved. Asks one participant, “If we are moving toward more efficient vehicles, how are we going to pay for the system in the future?” Another participant laments that, if the solution were to be Mileage-Based User Fees, moving from a taxing system that encourages trucking firms to find ways to save on amount of fuel consumed to MBUF, which does not allow for “rewarding” firms who are dedicated to fuel saving, would “penalize me to burn less fuel.” An additional concern of switching from a fuel tax to Mileage-Based User Fees might be less interest on the part of trucking firms to spend the money needed to purchase more fuel-efficient trucks, resulting in a decreased desire to support the “greening” movement. The current fuel tax system is mentioned as likely being “more green” than Mileage-Based User Taxes because taxing fuel encourages trucking firms to find ways to save money by cutting down on the amount of fuel their trucks consume.

[NOTE: Shortly after the date of the focus group discussion, one of the participants in the focus groups was featured in an article published in the Star Tribune on February 27, 2012 reporting how his firm is converting some trucks to compressed natural gas (CNG) fuel, suggesting that “natural gas costs the equivalent of \$1 to \$2 per gallon less than diesel fuel.”]

Overall, four of the five participants are concerned that Mileage-Based User Fees would cost more than the fuel tax system for raising funding dollars for transportation. While they would favor an increase in the fuel tax which they suggest they could likely pass along to customers, they seem convinced that a MBUF would cost them more – without being able to pass along any of that cost to customers.

[NOTE: While much was said during the focus group about the expected “high” cost to the trucking industry of switching to Mileage-Based User Fees rather than staying with fuel taxes, the participants did not explain why they are able to pass along an increase in the fuel tax but would be unable to pass along any increased costs to ship due to the amount of MBUF paid.]

The State of Oregon is mentioned as a place where fuel taxation has been replaced by an alternate system, and the result has been that it costs more to operate trucks moving into and out

of Oregon than it would if Oregon collected fuel tax as other states do. This is another reason why most participants do not favor Mileage-Based User Fees.

Upon being asked how transportation could be funded in lieu of raising the fuel tax or switching to Mileage-Based User Fees, the participants offer the following:

- “Collect taxes for electric and hybrid cars.”
- “Electric cars and hybrids should be taxed – they use the highways.”
- “Add a tax on tires.”
- “Put a tax on tires.”

Thus, another dilemma: a trucking industry that would support an increase in the fuel tax and an industry that, at the same time, is dedicated to either finding alternative fuels to use that are taxed at a lower rate or switching to more fuel-efficient trucks within the framework of a transportation system that is deteriorating and in need of additional funding. Four of the five participants in this focus group reject Mileage-Based User Fees as a means for funding transportation. They may acknowledge there is a need for more funding and are willing to pay more in fuel taxes while at the same time “economizing” to save dollars they now spend for the taxes on fuel. They do not see the benefit of MBUF. One participant suggests, “It’s a bad idea that won’t disappear!”

Should the fuel tax not be increased nor MBUF be created, assuming one of the goals of Mileage-Based User Fees is to reduce the volume of traffic on the highways, a few ways to save on fuel consumption and get some personal vehicles off the roads would be to

- “Lower the federal speed limit, it will save a lot of fuel.”
- “Find a way to price transportation such that it would move people to public transit.”
- “When people become uncomfortable enough while sitting in heavy traffic, then, they might turn to public transit.”

[NOTE: An interesting consideration – while trucking firms report, “We know every mile we drive on the road.” “We track every mile we run . . . ,” some of the participants question how Mileage-Based User Fees would be able to accurately “track” the miles and separate the ones that should be charged to the trucking firms and the miles that are driven for personal reasons. There must be a system already in use to determine business use and personal use of trucks.]

Overall, four of the five participants in this focus group are opposed to Mileage-Based User Fees and see no reason to switch to MBUF and replace the fuel tax system. Nevertheless, the fifth participant does see potential for continuing exploration of what Mileage-Based User Fees could do in the future to help fund transportation. Recognizing this is a future option versus the fuel tax system for raising dollars at a time when fuel consumption may continue to decrease – per vehicle – while the use of alternate sources of energy (such as electricity) may increase, MBUF may provide the dollars needed to fund transportation versus finding sufficient-enough money collected from fuel taxes.

**APPENDIX B: FREIGHT INDUSTRY FOCUS GROUP  
PRESENTATION**



# *Transportation Finance*

## *Freight Industry Discussion*

February 15, 2012

Humphrey School of Public Affairs

University of Minnesota

HUBERT H. HUMPHREY  SCHOOL OF PUBLIC AFFAIRS



  
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# Agenda

- Welcome & Introductions
- Purpose of Gathering
- Background Information
- Statement of Problem
- Mileage-Based User Fees
- Discussion



# Why are we here today?

- MnDOT is conducting a research project on Mileage-Based User Fees (MBUF)
  - One possible funding alternative
  - 2007 Legislature requested study
  - Being looked at nationally and internationally
- MnDOT needs your help
  - Wants to hear from you
  - Needs your feedback to increase learning



# Clarifications

- Comments received will be reported in summary form, without identifying specific participant contributions
- We understand that comments made do not necessarily reflect the opinion of the organizations represented



# Purpose of Gathering

- To discuss a potential transportation funding approach in which vehicles are charged by miles traveled rather than by gallons of fuel consumed
- To receive your feedback regarding what you like, concerns you may have, and any suggestions you can offer

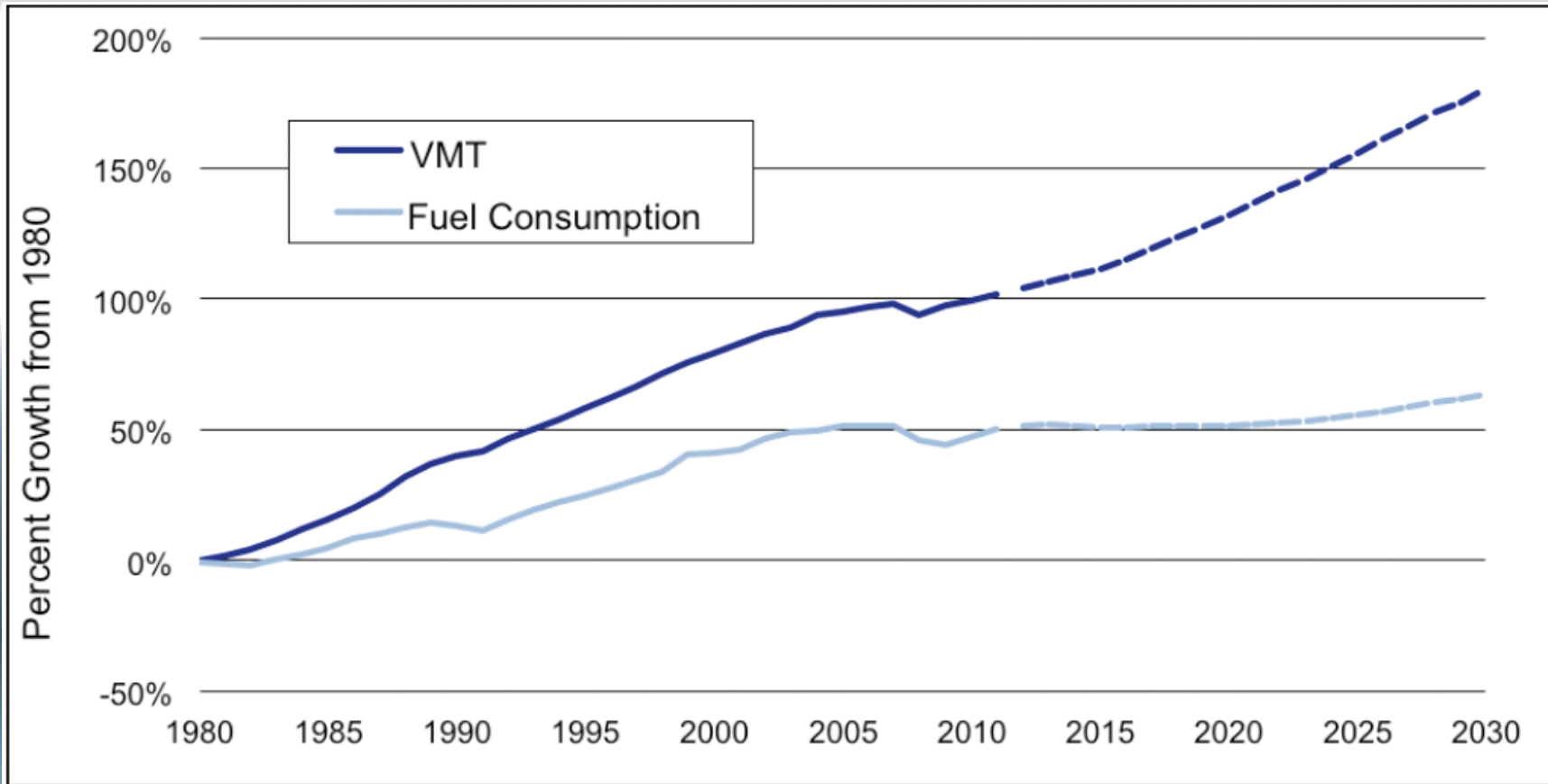


# Background

- Since before 1980, the trend in fuel consumption and associated fuel tax revenues has increasingly lagged miles traveled; this lag is expected to worsen in the future



# Trends in Total Vehicle Miles Traveled and Fuel Consumption



Source: Federal Highway Administration, Energy Information Administration



**MILEAGE-BASED USER FEE (MBUF) - Community Listening Sessions**

# Background

- Many drivers using the road system pay proportionally less than other drivers because of the following:
  - Ongoing growth in number of higher fuel-efficient vehicles and hybrids: A person who drives 15,000 miles per year and gets an average of 20 mpg will pay 50 to 100 percent more in fuel taxes than someone who gets 30 mpg or drives a hybrid





# Background

- Growing use of alternative fuel vehicles, the taxes on which are 25-40 percent lower than diesel and gasoline taxes (e.g., LP, LNG, E-85)
- Future growth in electric vehicles that pay no fuel tax but use the roads as much as other vehicles
- In summary: Road use taxes could be based on amount of use and related road wear and tear, rather than on gallons of fuel consumed, which is affected by fuel efficiency and vehicle type



# Questions about Mileage-Based User Fees

- **Why not just increase the fuel tax?** Federal tax last increased in 1993; Minnesota's in 2010. It is estimated that, to catch up with demand, the tax would have to more than double. Implications of relying upon a tax on the very fuels whose use we are trying to reduce?
- **When is MBUF expected to be implemented?** Not soon. Two Congressional Commissions and many experts think it would take at least 10 to 20 years. This time is needed to examine and resolve policy, privacy, technology and administrative issues



# Mileage-Based User Fee Policy Task Force Problem Statement

*“As more people continue to use fuel efficient and alternative-fuel vehicles that are not fully taxed or are untaxed, less revenue will be generated by the fuel tax. In addition, changes in demographics and travel trends will further reduce revenue contributed to the fuel tax fund. As a result, future revenues will be inadequate to fund Minnesota's transportation infrastructure...”*



# Primary Objectives

- **Promote Equity:** *Ensure that all motorists pay for their use of the roadway transportation system, regardless of vehicle energy source*
- **Generate Transportation Funds:** *Generate transportation revenues by supplementing or replacing the motor fuel tax with mileage-based user fees over time*



# Ancillary Long-Term Objectives

- ***Protect the Environment:*** Support environmental objectives by reducing vehicle emissions and fuel consumption
- ***Improve Transportation System Performance:*** Reduce the need for additional investment in roadway transportation system capacity by more efficiently managing travel demand



# Potential Benefits of Mileage-Based User Fees to the Freight Industry

(Some of the benefits listed assume a surcharge for travel during peak congested periods or a discount for travel during uncongested periods)

- Improved travel time, reduced delays, and improved travel time reliability and predictability, especially when used with peak-period congestion pricing in urban areas
- Reduced operating expenses due to greater fuel efficiency and reduced wear and tear from operating in less congested conditions (fewer starts and stops)



# Potential Benefits of Mileage-Based User Fees to the Freight Industry

- Reduction in crash exposure. There's a correlation between speed and crash rates during peak congested periods: when speeds decline due to congestion, crashes increase, and vice versa
- Improved road conditions due to better system preservation and maintenance, provided MBUF revenues are put back into road improvements (“user-pays-and-benefits” principle). As a result, industry firms could see lower inventory and logistics costs



# Potential Benefits of Mileage-Based User Fees to the Freight Industry

- Passing-on mileage-based fees to customers. Unlike the burden placed on the industry by unanticipated fluctuations in fuel prices, and the inability to pass on these increases to customers, mileage-based charges are predictable and documentable and therefore easier to pass on





# Concluding Discussion

- What are your “take-aways” from the materials presented and our discussion?
- What are the top three benefits you see for mileage-based user fees?
- What are your top three concerns with mileage-based user fees?
- What suggestions could you offer that would make mileage-based user fees more acceptable?
- What would you suggest as next steps?



# Thank you!

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*MILEAGE-BASED USER FEE (MBUF) - Community Listening Sessions*