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Hearing on Funding the Nation's Freight System

Before the Committee on Transportation and Infrastructure

Panel on 21st Century Freight Transportation

United States House of Representatives

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Chairman Duncan, Ranking Member Nadler and members of the Committee, I appreciate the opportunity to appear before you to discuss the issue of funding the nation's freight system.

I am the president and founder of the Information Technology and Innovation Foundation (ITIF). ITIF is a nonpartisan research and educational institute whose mission is to formulate and promote public policies to advance technological innovation, productivity and competitiveness. In addition, I served as the Chair of the Congressionally-mandated National Surface Transportation Infrastructure Financing Commission, one of two commissions created in the SAFETEA--LU legislation. The Commission released its final report to Congress in 2009. My comments today, however, reflect the view of ITIF and not necessary those of the Commission.

The Commission's charge was to examine financing issues related to our nation's surface transportation, in particular highways and transit. As such, I will not address issues related to air and water transportation and will concentrate on truck freight transportation. Because freight moved by trucks largely shares the same road network with passenger vehicles improving truck freight transportation largely means improving the entire highway and road system generally. However, as discussed below there are some specific improvements that can be made that would target truck travel, including the establishment of truck-only toll lanes/roads. In addition, there are specific steps that can be taken to increase funding from trucks. To do this, in the short-term I recommend that Congress should increase existing truck taxes, including the Heavy Vehicles Use Tax and diesel fuel taxes. In the medium term, I recommend that Congress should require that all heavy trucks move to a vehicle miles traveled tax system (VMT) and that all other taxes paid by trucks be eliminated. Finally, I recommended that Congress authorize a study to assess whether imbalances that have been documented in past studies between the burden that freight-carrying vehicles (especially heavy commercial vehicles) impose on the system and the funds they generate for the HTF still exist.

The Extent of the Problem

As you have heard in other hearings the U.S. surface transportation system faces major challenges. From 1980 to 2006, automobile vehicle miles traveled (VMT) increased 97 percent and truck VMT increased 106 percent, while over the same period the total number of highway lane miles grew only 4.4 percent. From 1982 to 2005, hours of delay per traveler increased 171 percent and total hours of delay increased 425 percent; over this same period, the total cost of congestion increased 383 percent and in the nation's 437 urban areas that cost is now estimated at over $78 billion per year. As of 2006, over half of total VMT on the overall federal-aid highway system occurred on roads that were in less than good condition, many of which are in rural areas that connect these regions to each other and to urban centers. Over one-quarter of the nation's bridges are structurally deficient or functionally obsolete. From 1994 to 2006, ton-miles of freight moved by truck and rail grew by 31 percent and 52 percent, respectively. And in 2008, the top 25 truck bottlenecks in the United States (primarily at interstate interchanges) accounted for approximately 320 million total vehicle hours of delay and 37 million truck hours of delay each year.

Truck Policy Issues

There are three principal issues involved in improving freight transportation for trucking: 1) how to invest funds in ways that help truck freight movement; 2) how to raise more money for these investments; and 3) how to ensure that trucking pays for the full costs they impose on the system.

Investing in Truck Freight Projects

Because for the most part cars and trucks share a common infrastructure, any comprehensive solution to truck transportation challenges will require a comprehensive solution to our nation's roads and highways. This is because the performance and conditions of the nation's highway and road system are clearly substandard. Improving the entire system will have beneficial impacts for trucks as well as for passenger vehicles.

Having said that, in freight transportation, there is one nearly universal truth: almost every unit of freight reaches its final destination via truck. Yet alleviating freight congestion bottlenecks and addressing the "first mile" or "last mile" linking public to private freight infrastructure are frequently not part of the federal-aid highway system and may even be overlooked by state and local transportation planners. As evidenced by the limited last-mile investments around ports, the general lack of focus on alleviating freight bottlenecks, and the calls by many stakeholders for a "national freight program," many of the nation's freight investment needs do not get adequately addressed through current federal policies and funding programs.

Because any freight-related revenue mechanism becomes an operating cost for the freight industry, visible benefits are necessary to generate the industry support required to make the mechanism politically viable. Thus, dedicating a significant portion of any additional freight-generated funds for freight purposes would improve their political viability. These projects include focusing on areas of freight-oriented congestion generally on the national highway system and on intermodal or border crossing projects, including access to and from ports.

Funding to Support for Freight Projects

There are two ways to pay for increased expenditures that would help truck travel: increasing the amount freight pays or obtaining the funds from other sources. Given the chronic underfunding of surface transportation and the significant federal budget deficit, it makes little sense to obtain funding from other sources. Diverting monies from the general fund either increases the deficit or reduces needed spending on other areas. Taking money from the Highway Trust Fund means that the existing level of underinvestment would only get larger and the conditions and performance of other parts of the system would get worse at a more rapid rate. Increasing other taxes means that these tax revenues cannot be used for other purposes such as debt reduction. Moreover, one key principle the Commission believed should guide surface transportation funding is that the user should pay for the costs they impose on the system. Increasing funding for freight-oriented projects without asking the trucking industry to pay more violates this principle.

With the possible exception of a container tax that could be used to fund an intermodal/border crossing program, the best way to increase funds from freight in the short term is by increasing the fees that the trucking industry currently pays into the federal Highway Trust Fund (HTF) and in the medium term by supporting the expansion of truck-only toll lanes/roads and moving to a vehicle miles traveled (MVT) fee system for trucks.

Increase truck taxes

The trucking industry pays a variety of different taxes to support the HTF. In 2007 about $3.8 billion was raised through a 12 percent federal sales tax on the retailer's sales price for tractors over 33,000 pounds gross vehicle weight (GVW) and trailers over 26,000 GVW. Another $1 billion was raised through the federal Heavy Vehicle Use Tax, which requires trucks with a GVW of 55,000 pounds or more to pay an annual tax of $100, plus $22 for each 1,000 pounds over 55,000 pounds. This tax is justified in part because it helps to recover some of the system damage costs caused by heavier vehicles. The remaining $500 million was raised through a federal excise tax on tires, which charges 9.45¢ for each 10 pounds of maximum rated load over 3,500 pounds. In addition, trucks pay a tax on diesel fuel, which raised $10.1 billion.

To raise funds needed for expanded investment, Congress should double the Heavy Vehicle Use Tax (HVUT) to account for the fact that it has not been increased since 1983 (doubling would recapture lost purchasing power) and then index the HVUT and the excise tax on truck tires to inflation going forward. The fact that this tax has not been increased since 1983 means that the trucking industry pays less in real terms each year, as its revenues increase every year due to inflation. Doubling the tax would raise approximately an additional $1 billion per year. In addition, if Congress does not want to increase fuel taxes (diesel and gas) it should at least index them to inflation. For not doing this is to have a defacto policy of cutting the taxes road users pay every year.

If Congress does increase and, where relevant, index for inflation the current fees, including the diesel tax, truck tire taxes, and the Heavy Vehicle Use Tax— and does not also increase the taxes paid by passenger vehicles, then a portion of these fees should be available only for freight-related investments, depending on the extent to which trucking does not currently pay its full share of system costs (as discussed below).

Enable truck-only toll lanes/roads

Significantly improving our nation's surface transportation infrastructure requires investment and that, by definition, is not free. Tolling can play a key role in generating the funding to pay for expanded capacity. While broad-based tolling to support new capacity expansion is required to improve mobility, especially if Congress does not increase funding for the Highway Trust Fund, there may be opportunities to develop truck-only toll lanes and/or roads. There are several steps Congress can take. First, Congress can require the federal Department of Transportation to structure the federal highway program so that it provides incentives for states to adopt tolling as a solution. Too many states do not want to support toll-funded projects because of fear of public opposition, despite the fact that toll projects are usually supported by the public after introduction. Lowering the share of federal funding for non-toll projects from its current 90 percent share, while funding the full 90 percent for toll projects would provide a stronger incentive for

states to establish more toll projects. In addition, enabling truck-only toll lanes on the Interstate system will require Congress removing the restriction on tolling the Interstate or at minimum allowing additional capacity on Interstates to be tolled.

Moving to a Truck VMT system

The policy change with the most promise is to move to a vehicle miles traveled system (VMT) for trucking. Because of the significant advantages of a VMT system, coupled with the fact that at some point in the future a significant share of vehicles are likely to be powered by electricity, it is largely only a matter of time before vehicles pay to use roads on the basis of a VMT system. As such, Congress should accelerate the transition to a VMT system by requiring that trucks adopt the system first.

The advantage of starting a national VMT program with trucks are two-fold. First, the scope of the program would be smaller (there are many fewer trucks than cars), making it easier to implement. In addition, the cost of a VMT system for a truck is a much smaller component of overall vehicle cost than for passenger vehicles, and any system could be designed around the technology already installed in the trucks. Second, the benefits from a VMT system for trucks is higher than for cars, in part because the variation of costs imposed by trucks on the system is much higher than it is for passenger vehicles.

At least one nation has adopted a truck VMT system. In 2005, Germany began charging all heavy vehicles (i.e., trucks over 12 tons) for all miles driven on roughly 7,500 miles of motorways throughout the country. Tolls are charged per kilometer based on a satellite Global Positioning System (GPS) for most vehicles, and they vary by axle number (trucks with more axles pay a higher toll since they presumably do more damage to the road)[1] and vehicle emission class (trucks that pollute more pay a higher toll). A manual online payment and on-road enforcement system is available for truckers who do not want to participate in the satellite-based system. Toll payments are in addition to existing motor fuel taxes and other fees; 50 percent of these revenues are spent on roads, 38 percent on rail, and 12 percent on waterways. In 2009, average tolls were 12.4 euro-cents per kilometer and are adjusted based on vehicle emission characteristics. Initial findings from the pricing system indicate that the shift to more direct user charges has led to increased efficiency in Germany's heavy vehicle industry and provided benefits the German economy as a whole.[2]

A truck VMT system could be designed in the following way. Trucks over a certain size and weight would be required to have an on-board unit installed (in new trucks such equipment would be mandatory) that would allow the unit to identify where it is, the time of day and day of week, and the charge for the segment of roadway the truck is traveling on. In addition, trucks would have axle weight sensors installed which would measure the weight of the truck per axle. Trucks would pay based on a number of different factors: the truck weight (heaver weights would pay more); emissions per mile ("dirtier" trucks would pay more); type of road (trucks would pay more to travel on roads not designed for heavy trucks and less on roads designed for them), and overall miles. In addition, trucks could be charged on the basis of congestion, with higher prices for driving on roads that are normally congested (e.g. urban freeways at rush hour periods). The system could be set up to collect and remit both state and federal taxes.

There are a number of advantages to a VMT system over the current way trucks pay federal taxes. First, taxes would be more carefully related to costs imposed. Trucks that do more damage to roadways, add to

congestion and pollute more would pay more. This in turn would increase efficiency by reducing payment damage, encouraging trucks to drive with fuller loads, and to pollute less. In addition, a truck VMT system would make it easier to implement truck-only toll lanes/roads as the payment system would be already in existence. And anonymized data on truck travel would help to identify when and where truck bottlenecks exist and to help measure their severity.

The trucking industry, however, has testified before this Committee that it opposes a truck-only VMT system. It provides several reasons for its position which are examined here.

One objection is that a VMT would be used to increase the taxes paid by trucking. However, the key thing to understand about a VMT system is that it can be used to generate less, the same, or more revenue; just as existing tax mechanisms can by lowering, raising or keep the tax rates the same. How taxes and fees are collected is a completely separate matter from the amount that are collected.

A second concern is that a VMT system (like tolling) could cause diversion, leading trucks to travel on roads other than the most efficient for them. In fact, a truck VMT system would have the exact opposite effect. By pricing the segments of roads based on the total cost a truck imposes on it, trucks would have a stronger incentive to make the most societally efficient route choices. Moreover, a VMT system can be easily structured so as to not double-charge trucks that are driving on tolled roads or bridges. The on-board computer would be able to download a pricing data base that would tell it when the truck is driving on a toll road and the truck would be charged only the toll, and not the VMT fee on top.

A third concern is that a VMT system would lead to trucks being subject to double taxation. However, any system should be designed (as the Oregon Department of Transportation VMT pilot program was) so as to not charge a diesel tax when a VMT-enabled truck buys fuel. Likewise, the tire tax, HVUT and vehicle tax would not be charged on trucks equipped with a VMT system.

A fourth concern is that there is no need to move to a VMT system until there is significant penetration of alternative fuel (e.g., electric vehicles). But this assumes that the principal purpose of a VMT system is simply to raise revenues. In fact, the purpose of a VMT system, whether it is for passenger vehicles of truck is not just to raise money but to charge fees that match that actual costs imposed on the system. Moreover, moving first to a truck VMT system it will be easier to later transition to a passenger VMT system, which will take more time. And during this time the growth of electric vehicles will surely increase.

A fifth concern is around privacy. To be sure, there is a very real concern among policy makers and the general public that a road pricing system that charges based on when and where individuals travel inherently threatens privacy. But in fact, the privacy concerns are largely based on a misperception of how these systems actually work. Any VMT design centers on the use of an on-board unit (one in each vehicle) that would contain a GPS receiver that receives satellite signals enabling it to calculate vehicle location in real time and a computer that calculates the associated VMT charge. The key point is that the satellite signal is only a one-way signal “telling” the car receiver where it is, and therefore outside the vehicle there is no tracking of where individuals travel. In essence, this receiving function of a VMT system would function like the GPS devices that millions of Americans have already installed in their cars without worry of privacy loss.

The more critical question related to privacy is what happens to the travel information that is stored on the on-board unit. Such a system can and should be designed so that the information transmitted to the administering agency would only relate to the bulk charges due and would not include specific information about trip origins and destinations, routes, or time of travel. In other words, the administrating agency would only receive information that a particular vehicle owes a particular amount each month. It should be noted that such a system would provide considerably more privacy than other information technology systems in our society, such as credit card and cell phone systems, where the relevant company knows not just how much a person owes but where the individual made purchases and what phone numbers were called (and, in fact, approximately where the person is when making a call). Moreover, information should be transferred from the vehicle to the administrative agency (or gas pump) in secure ways—for example, by encrypting the data transfer.

A sixth concern relates to pricing flexibility, with the industry asserting that it does not have the ability to absorb increased costs. As noted above any system can be structured to be revenue neutral should Congress decide to do this. But even if the overall revenues from trucking are the same, some segments of the industry or kinds of trucks could pay more (while others pay less). To ensure that charges are appropriate and encourage efficient use, prices must be established through a sound analytical process that considers the findings from cost allocation studies as well as broader policy considerations. But some representatives of the freight industry argue that they cannot always pass on added costs. While the industry may not be able to pass along all the costs of targeted tolls to customers in the short run, especially under weak economic conditions, truckers should be able to do so in the moderate and long term if the fees are stable or changed with sufficient advance notice. Indeed, a Transportation Research Board report argued that these costs could be passed on to customers,[3] and a study of the German heavy-vehicle toll system suggested that, overall, the trucking industry was able to do so.[4] In other words, stable, nondiscriminatory pricing, possibly supported by national information systems that let truckers and shippers know the likely costs of tolls for any particular route, should not adversely affect the trucking industry as a whole.

Moreover, per-mile pricing would create incentives to combine shipments in ways that minimize trip mileage. For example, the German heavy-vehicle comprehensive road pricing system has led to a 10 percent drop in empty trucks on long-distance trips, a 7 percent increase in containers moved by train, and a 6 percent increase in the purchase of truck tractors that emit less pollution.[5]

A final concern expressed is over administrative costs. It is likely that any VMT system would have higher costs of administration than the current truck tax system. However, VMT system costs are not likely to be significantly higher, and more importantly, as discussed above, a VMT system would likely generate significantly greater benefits. As an analogy, the administrative costs of credit card systems are higher than that associated with cash, but most Americans use credit cards and most merchants accept them because of the significant benefits they provide.

A VMT pricing system will have three major cost components. First, there will be the capital investment costs to enable the implementing agency to administer VMT charges. These will include costs for items such as hardware, system development, and start-up. These costs will likely be large—preliminary research conducted for U.S. DOT estimated initial agency capital costs for a comprehensive (passenger

vehicle and truck VMT system) in the range of $10 billion—but they would also likely be amortized over 20 or more years and could be lower due to declining information technology costs.[6]

Second, there is the cost associated with installing technology (e.g., GPS receivers/VMT charge calculators) in the vehicle fleet, which is currently difficult to assess. Most trucks already come equipment with GPS receivers, meaning that the costs of installing a system (VMT charge calculator) would be less. If done as standalone units that are retrofitted into existing vehicles, the cost would be relatively high. But if the necessary hardware were part of a broader vehicle technology platform that is installed in vehicles as original equipment on a large scale, the incremental cost to enable VMT pricing, on an individual vehicle basis, could be small.

The third cost component of comprehensive pricing will be the recurring cost to administer it. Preliminary U.S. DOT research estimates that administrative costs for a national system of road pricing using GPS technology would be 1.7 percent of estimated revenues (equivalent to the cost of processing credit card transactions). Although this is more than the cost of administering the current motor fuel taxes, estimated at 1.01 percent of revenues, it would still represent a comparatively inexpensive fee to administer.[7] One study of moving to a truck VMT system for New York State estimated that the costs of the program would be higher than the gas tax but but "significantly less than the costs to collect other transportation fees including registration fees and tolls, and less than the costs for the German truck toll system.[8] Moreover, as technology and experience with pricing improves, administrative costs are likely to fall.

The Oregon experiment provides another data point to inform this discussion. Under the pilot program, vehicles were retrofitted with on-board equipment that could identify where and when the vehicle was traveling, record the mileage by category, and communicate this information to the systems of participating gas stations when the vehicle was at the pump. These systems then made the appropriate adjustments to the driver's bill to account for VMT taxes. The annual cost to administer a similar system, deployed on a comprehensive statewide basis, is estimated to be $2 million, or about twice what it now costs Oregon to collect motor fuel taxes.[9]

Ensuring That Trucking Pays it Full Costs

There appears to be some evidence that truck freight is not paying its fair share, not just on an overall basis but for certain trucks and on certain routes. As the DOT found in its last cost allocation study:

> As a class single [truck] units will pay less than their share of highway costs, but the lightest single units will pay more than their share of highway costs. Combination trucks as a group will pay 90 percent of their highway cost responsibility in 2000, but like single units, there is large variation depending on the weight of the vehicle. Combination trucks registered at less than 50,000 pounds will pay 60 percent more in user fees than their share of highway costs while combinations registered over 80,000 pounds will pay on average only about 60 percent of their highway cost responsibility.[10]

If this is still the case, it suggests that trucking enjoys a defacto government subsidy of about 10 percent of total highway cost imposed, especially when compared to the freight rail industry which largely pays for its facilities and operations through its own revenue. As such, it suggests that increases in truck fee payments, especially if structured through VMT system which can more accurately levy fees that match costs imposed, would not only increase revenues for the HTF, but would increase freight system efficiency.

This is especially important in the context of freight rail and trucking competition. If trucks are not paying their full costs, then rail is at an unfair competitive disadvantage. But rather than address the problem of subsidy with adding yet another subsidy (e.g. a tax incentive for rail investment) a better policy would be to reduce the subsidy to trucking by requiring them pay their full costs. As such, the Commission recommended that Congress authorize a study to assess whether imbalances that have been documented in past studies between the burden that freight-carrying vehicles (especially heavy commercial vehicles) impose on the system and the funds they generate for the HTF still exist.

Endnotes:

1. Ideally any vehicle miles traveled system for heavy vehicles would charge by axle weight, since this is the factor most correlated with pavement damage. Real-time axle weight sensors have been developed, but they would have to be fully tested before widespread deployment would be possible.
2. Claus Dolla and Axel Schaffe, "Economic Impact of the Introduction of the German HGV Toll System," *Transport Policy*, vol. 14, issue 1, January 2007.
3. Transportation Research Board, *Paying Our Way: Estimating Marginal Social Costs of Freight Transportation* (Washington, DC: 1996).
4. Dolla and Schaffe, op. cit. note 20.
5. Presentation to the National Surface Transportation Infrastructure Financing Commission by the German Federal Ministry of Transport, Building and Urban Affairs, September 2007.
6. Based on preliminary analysis provided by the U.S. DOT.
7. Ibid.
8. "A Practical Approach to Truck VMT Fees Including Some Financial Implications and Possible Impacts on Traffic Congestion." Delcan Corporation, Calmar Telematics, and Greater Buffalo Niagara Regional Transportation Council, April 2011.
9. Based on supplemental information provided by the Oregon Department of Transportation.
10. "Executive Summary," Federal Highway Administration, 1997. http://www.fhwa.dot.gov/policy/hcas/final/execsum.htm.