Testimony before the

U.S. House of Representatives

Committee on the Budget

on the

"State of the Highway Trust Fund"

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April 24, 2013

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Chairman Ryan, Ranking Member Van Hollen, distinguished Members of the Committee:

Thank you for the opportunity to submit testimony to the House Budget Committee of the U.S. House of Representatives on the current state of the Highway Trust Fund. I am R. Richard Geddes, Associate Professor in the Department of Policy Analysis and Management at Cornell University, Director of the Cornell Program in Infrastructure Policy, and Visiting Scholar at the American Enterprise Institute. I was a member of the National Surface Transportation Policy and Revenue Study Commission that reported its findings to Congress in 2008. I am also a member of the Revenue and Finance Committee of the Transportation Research Board. I make four main points in this testimony:

1. Under its current structure, the Highway Trust Fund (HTF) is not sustainable, and a new system of funding surface transportation infrastructure must be adopted.
2. The most desirable approach is a system of variable per-mile user fees, sometimes called Mileage-Based User Fees (MBUFs), which is consistent with the way providers of most goods and services, including utilities, charge their customers.
3. Adopting a system of direct MBUFs is a departure from past practice, and its widespread adoption may be unpopular with motorists. It is therefore important to consider policies to enhance the public appeal of MBUFs. An important new approach to enhancing the public appeal of MBUFs is to better recognize citizen-ownership of infrastructure assets, and to utilize a permanent fund – one type of public trust fund – to preserve economic value released by pricing and to generate dividends in perpetuity to asset owners.
4. Public-private partnerships, or PPPs, which allow competitive bidding by expert private infrastructure operators for the opportunity to operate and maintain infrastructure assets, are an important mechanism for releasing the value embedded in U.S. transportation infrastructure assets. That released value can be used to capitalize the public permanent fund.

I discuss each of those major points below.

1. The unsustainable structure of the Highway Trust Fund

The fiscal condition of the Highway Trust Fund (HTF) was a key focus of the Revenue and Policy Study Commission's work. The Commission was told of the effects of increasing vehicular fuel efficiency on projected HTF revenue, and that the fund was expected to experience large shortfalls. However, annual vehicle miles traveled (VMT) in the United States peaked in 2006 after rising almost continuously since 1960. As Figure 1 in the Appendix indicates, VMT has historically rarely declined, or even leveled off, even during periods of substantial economic weakness. The recent weakness in VMT thus appears to represent an important change in the demand for road use. Moreover, revenue from fossil fuel taxes naturally declines as motorists shift into alternative power sources, such as natural gas and electricity.

The combination of improving fuel efficiency and weak VMT growth has proved burdensome to the HTF, necessitating transfers from general funds. Infrastructure funding problems extend beyond the federal level, and similar factors have reduced state-level resources for transportation from fossil fuel taxes. The use of general funds for highways is disconcerting from a policy perspective. It represents further movement away from a user-pays model of highway funding, which was the cornerstone of the original fuel-tax funding approach for the Interstate Highway System. As I explain below, it is instead socially beneficial to move closer to a user-pays approach to transportation funding.

Moreover, HTF revenue declines are coming at a time of rising demand for resources to renovate roads and highways. In its *2013 Report Card for America's Infrastructure*, the American Society of Civil Engineers reported that 32 percent of America's roads are in poor or mediocre condition, and assigned a D as the overall grade for road condition. The *Report Card* stresses the recurring problem of deferred maintenance in leading to such low grades.

The problems facing the HTF are symptomatic of deeper problems created by the current approach to funding U.S. infrastructure that relies on the burning of fossil fuels. Increasing vehicular fuel efficiency is virtually certain given more stringent CAFÉ standards.

It is thus time to "think big" with regard to funding alternatives, and to move toward an approach that will create a sustainable, well-maintained highway system where investment is allocated to its highest valued use, and where traffic congestion is mitigated. Moving to a system of variable per-unit user charges can help achieve those important social goals.

A new funding approach to such a vast infrastructure system will take time and effort to adopt. In the medium term, steps should be taken to restore the user-fee approach to highway funding. Because fossil fuel taxes are paid by highways users, this implies reducing the use of general funds for transit as much as possible. One obvious step is to dedicate all fuel tax revenues to the Highway Account within the HTF only, and use general revenues to fund the Transit Account, rather than using general funds to subsidize both. This would have the added benefit of improving public governance, since it would increase the transparency of any direct taxpayer transit subsidies.

An increase in the federal gas tax is sometimes proposed as a remedy. I view this as politically infeasible. Indeed, after almost two years of work, a majority on our Commission recommended (and I dissented from) a 30 cent per gallon increase in federal fuel tax rates, a recommendation that was summarily dismissed. I believe that the only sustainable solution – and the best one – lies in the adoption of direct per-unit road user charges, or variable MBUFs .

2. Toward variable per-unit user fees, like other goods and services

The current U.S. transportation system suffers from a set of serious problems, including shortages of road capacity in many areas (which manifests as traffic congestion), deferred maintenance, under investment, and misdirected investment. The HTF – and our transportation

system more broadly – are facing such problems not because of factors unique to transportation infrastructure, but because of the way users (or customers) currently pay for system use. If, for example, the U.S. steel industry were government owned, funded through taxes, and gave its output away for free, it would be suffering from problems very similar to those in U.S. infrastructure.

There is now wide agreement among economists that the most socially beneficial policy change that could occur in transportation is adoption of variable per-unit user charges. That is, a per-mile fee that varies depending on factors that reflect the current scarcity of road capacity, such as time of day. The technology now exists to directly charge motorists based on road scarcity and miles traveled. Technology is no longer the barrier that it was in Eisenhower's time.

Variable per-unit prices paid directly by customers are the way in which the vast majority of goods and services are provided. Households pay for electricity per kilowatt hour used, per minute of cell phone use, per gallon of water, and per therm of natural gas. Those prices can be allowed to vary as desired. Indeed, virtually all goods are successfully provided through reliance on variable per-unit pricing. We pay per hamburger consumed, per car purchased, and per cup of coffee. Persistent problems of shortages, deferred maintenance, and underfunding do not exist in any sector relying on variable per-unit charges. Indeed, there is now a presumption in favor of the use of variable unit pricing of goods and services to regulate demand and to guide investment

From the perspective of the HTF and the stability of highway funding more generally, a key social benefit of moving to a system of MBUFs is the generation of facility-specific revenue that will ensure the facility is adequately maintained and expanded as necessary over time. By creating a stream of revenues directly from customers, MBUFs insulate funding for facility maintenance from budgetary uncertainty. However, there are several additional valuable social benefits of MBUFs, which include (among others):

- By increasing during periods of peak road demand, variable MBUFs provide motorists with clear signals as to when they should consider transportation alternatives. That is, they signal when road space is most scarce. Price signals are critical because they allow motorists to choose the alternative for conserving on scarce road capacity that is most appropriate for them, such as bus, transit, carpool, altering work schedules, telecommuting or biking. As a result, variable MBUFs reduce the environmental and other social harms associated with traffic congestion.

- By reflecting motorists' willingness to pay for road use, variable MBUFs provide guidance as to where investment can be most usefully directed. That is, they objectively signal where the value of added investment is highest to customers. Conversely, such price signals help avoid the allocation of scarce investment dollars to low value projects, sometimes referred to as "white elephants."

- Variable VMT fees reflect the same user-pays principle embodied in the original fuel-tax approach to Interstate highway funding, which is used successfully to fund the utilities mentioned above. It reflects the widely accepted fairness principle that someone receiving the benefits of a good or service should pay for them. Conversely, those who do not use the roads are not charged for them.

- The security of facility-specific revenues generated by MBUFs can be used to attract private investment, or to support municipal bond issues, to renovate and maintain the facility. In either case, the improved certainty of MBUF revenue (relative to federal or state budgetary allocations) will generate greater resources through the financial markets.

Because it shares a network structure with several key sectors, it is useful to think about the U.S. transportation system under a MBUF system as a public utility. This conceptual framework is useful because it facilitates examination of policy lessons learned from other public utilities. A complete examination of those lessons is outside the scope of this testimony.

Although there is wide agreement among academics that a system of MBUFs would generate large social benefits, use of them in the United States thus far has been limited. Variable user charges have been largely limited to new transportation capacity, such as the new High-Occupancy Toll (HOT) lanes on the Northern Virginia side of the Washington, DC beltway, or to conversions from High-Occupancy Vehicle (HOV) to HOT lanes. Such limited use is generally attributed to resistance from motorists to the adoption of new user fees.

It is insufficient to simply stress the benefits of MBUFs in the hope that they will be adopted. It is instead necessary to consider new approaches to enhancing the public appeal of using MBUFs. I offer one such approach below.

3. Enhancing the appeal of adopting MBUFs

Although they may seem unrelated at first glance, the key to increasing the public appeal of MBUFs is to clarify the rights citizens currently hold in public infrastructure assets. Clarifying the rights held by citizens allows them to capture some of the value created by MBUFs. Stressing the basic property rights of citizens as the ultimate owners of infrastructure assets improves citizen-stakeholdership in those assets, creating incentives typical of ownership in asset performance and maintenance.

The relevant jurisdiction of infrastructure asset ownership, and thus the correct citizen group, is currently well defined. For example the entire Interstate Highway System is, with the exception of federal ownership of the Woodrow Wilson Bridge, owned by the citizens of the states in which those highways are located.

One important aspect of ownership is a property right to asset-generated income. If a landlord owns several apartment units, for example, the landlord has a right to lease the use of a unit and to capture the rental revenue from its use, while retaining title to the unit. Analogously, the citizen-owners of infrastructure assets possess a right to benefits from pricing use of their infrastructure. Explicitly recognizing the public's right to asset revenue can be thought of as the "public-ization" of infrastructure assets.

The decision to adopt MBUFs lies with public-sector decision makers for publicly owned transportation facilities. To make adoption of variable MBUFs politically feasible, a broad group of citizens in the relevant jurisdiction must realize benefits from that change. Using MBUFs to price transportation capacity that is currently "free" (i.e. a price of zero) allows substantial economic value latent in those critical infrastructure assets to be released.

As noted above, MBUFs create a facility-specific revenue stream that can be used to generate a large up-front payment from either a municipal bond issue or from a concession payment if private partners are included through a public-private partnership (or PPP). The term "PPP" refers to a contractual relationship between a public-sector project sponsor and a private sector firm or firms coordinating to provide a critical public good or service.

In order to ensure that infrastructure owners realize benefits directly from the value released, a portion of the upfront payment facilitated by MBUFs should be protected in perpetuity through a public permanent fund. The permanent fund structure is governed by Government Accounting Standards Board rules. Annual dividends from the permanent trust fund can be distributed to all citizen-owners of the infrastructure.

Experience in preserving natural resource wealth using a permanent fund suggests that this approach is feasible, sustainable, and creates vast social benefits. Similar to a trust fund, a public permanent fund preserves wealth in perpetuity since the fund's principal is never spent. It is a *public* fund because it is citizen-owned. Such funds have been used successfully to preserve natural resource wealth in Alaska, Alberta, Norway, and Texas. The largest U.S. examples are the $45.5 billion Alaska Permanent Fund and the $28 billion Texas Permanent School Fund. The value embedded in citizen-owned infrastructure assets is thus preserved in a citizen-owned fund that provides annual dividends for those citizens.

The Alaska Permanent Fund is a semi-independent corporation created by the Alaskan constitution of 1976. Alaskan natural resource wealth in the form of North Slope oil reserves was quickly spent by the State's government after its discovery in 1968. As one commentator describes:

> In 1968, nine years after statehood, Atlantic Richfield pumped the first oil from Prudhoe Bay, beginning a new boom cycle. The following year the state held an auction for oil leases, and in a single day collected $900 million, at a time when the state budget itself was barely over $100 million. This shower of riches sent Alaska into a frenzy of public spending, particularly on capital projects. From 1961 to 1981 state general fund

expenditures grew at an average annual rate of 22 percent, from $45 million to over $3 billion.

In response, the Alaska Permanent Fund was established to help preserve state natural resource wealth for future generations and to protect it from short-term spending pressure. The Alaskan constitution required that at least 25 percent of the revenue from oil and gas sales or royalties be placed into the Permanent Fund. The Fund is invested in a diversified portfolio of assets, including stocks, bonds, real estate, and infrastructure itself. Investment income generated by the fund is used to pay an annual dividend to every Alaskan citizen, including children.

The Texas Permanent School Fund was created in the Texas Constitution of 1876. It was capitalized by sales, trades, leases and improvements to lands set aside for that purpose. Investment income generated is used to fund schools. Texas also has a Permanent University Fund created in the Constitution of 1876 to support the state's universities.

The permanent fund model can be extended easily to preserve wealth from non-resource sources, such as the lion's share of upfront payments from bonding against toll revenue or from concession leases. The key is to preserve value released by variable MBUFs through a permanent fund insulated from diversion of user-fee revenue for current spending in order to guarantee households an annual dividend in perpetuity. Research indicates that such dividends create permanently higher personal income and mitigate the effects of recessions. They are also progressive in that they represent a larger share of income for poor families, and thus reduce income inequality.

4. Tax-exempt bonding or PPP concession leases?

There are two main ways in which a stream of payments from tolls can be converted into an upfront payment. The first is by using tax-exempt bonds raised against toll revenue. The second is by securing up-front concession payments through PPP leases.

There are important benefits of including private participation through PPP leases relative to the municipal bond approach. Under a PPP approach, a public permanent fund is capitalized with concession lease payments paid by a private partner. The private partner operates the newly tolled, or priced, transportation facility, such as a road, bridge, or tunnel.

If properly implemented, such participation through greater PPP use helps address a set of problems that continue to plague America's transportation system. Social benefits of PPPs stem from four main qualities associated with increased private participation:

(i) High-powered, focused incentives to innovate, to seek new revenue, and to better manage costs in a sector where high-powered incentives are socially beneficial
(ii) Business acumen, knowledge, and experience sourced from a global market for infrastructure operators

(iii) Additional capital and highly developed risk-bearing services through access to new debt and equity capital markets

(iv) The utilization of a competitive contracting approach that enforces high-quality service and asset maintenance, and allows the discipline of competition to be harnessed for the public good

Such benefits of PPPs are currently being realized through private participation in many aspects of the U.S. transportation sector. For example, the entire U.S. freight rail system can be viewed as a large, multi-faceted PPP. The public sector provided the right of way and created the legal/institutional setting for contracting. Freight rail companies build, maintain and operate bridges, tunnels, tracks, signaling, and rolling stock, while private investors provide capital, bear risk, focused incentives, and budgetary discipline. It is thus no accident that the grade assigned to freight rail infrastructure by the American Society of Civil Engineers in its *2013 Report Card for America's Infrastructure* improved from a C- in 2009 to a B in 2013, the largest improvement of any sector. The improvement was mainly due to billions of added private investment.

PPPs are the key contractual vehicle for incorporating private investment into the provision and operation of transportation infrastructure. A PPP is subject to the standard rules of contracting, with clear performance standards linked to readily observable metrics.

There are many ways in which greater private participation through PPP concession leases will improve social welfare. Private partners contribute by bringing capital, risk-bearing services, focused incentives, and expertise to the management of existing transportation assets. Substantial investment in technology, upgrades, and renovation may be required, all of which can be supplied through a PPP.

Importantly, increased private, for-profit participation may not be appropriate for the provision of all goods and services. However, a consensus has emerged in economics that private participation may not be efficient where contracting with a private partner is complex and costly due to the inability to oversee – or "monitor" – the quality of service provided. To offer one possible example, one may be concerned about contracting out the operation of a wildlife sanctuary to a private firm for fear that the operator would not maintain the environment in the sanctuary to a certain socially desirable standard, which is difficult to monitor. Stated differently, the quality of the wildlife's environment could be costly to contract over because quality of performance is difficult for the public contract sponsor to observe.

Because they involve "hard" assets, the types of activities being considered here for increased private participation are precisely those activities where the private partner's performance is readily observable. Metrics indicating how well roads, bridges, and tunnels are maintained and operated are readily monitored. They can be provided for in a contract with measureable performance standards and clear enforcement provisions. Private participation in infrastructure management is thus likely to improve social welfare substantially through better asset performance. Perhaps more importantly, the enormous value locked within these critical national assets can be realized for all citizens, including future generations.

The above approach offers one way to enhance public acceptance of shifting to a system of MBUFs while capturing the benefits of private participation through public-private partnerships.

Appendix:

Figure 1: Annual Vehicle Miles Traveled in the United States from 1960 to 2010 (trillions of miles traveled)