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# Funding and Financing Highways and Public Transportation

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## Summary

Federal surface transportation programs are currently funded primarily through taxes on motor fuels that are deposited in the highway trust fund. Although there has been some modification to the tax system, the tax rates, which are fixed in terms of cents per gallon, have not been increased at the federal level since 1993. Prior to the recession that began in 2007, annual increases in driving, with a concomitant increase in fuel use, were sufficient to keep revenues rising steadily. This is no longer the case. Future increases in fuel economy standards are expected to suppress motor fuel consumption in the years ahead even if annual increases in vehicle mileage resume.

Congress has yet to address the surface transportation program's fundamental revenue issues, and has not given serious consideration to raising fuel taxes in recent years. Instead, Congress has financed the federal surface transportation program by supplementing fuel tax revenues with transfers from the U.S. Treasury general fund. The most recent reauthorization act, the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21; P.L. 112-141), signed by President Barack Obama on July 6, 2012, authorized spending on federal highway and public transportation programs through September 30, 2014 and provided for general fund transfers to finance the programs. MAP-21 did not address concerns about funding of surface transportation programs over the longer term.

This report begins with a discussion of the problems associated with the trust fund financing system (which supports both federal highway and public transportation programs) and then explores possible options for financing surface transportation infrastructure. Among the key points:

- Raising motor fuel taxes could provide the highway trust fund with sufficient revenue to fully fund the program in the near term, but it may not be a viable long-term solution due to expected future declines in fuel consumption.
- Replacing current motor fuel taxes with a fuel sales tax or a fee based on vehicle miles traveled (VMT) raise a variety of financial and administrative concerns.
- The political difficulty of adequately financing the highway trust fund could lead Congress to consider the desirability of changes to maintain the trust fund system or eliminating it altogether. Such changes might involve a reallocation of responsibilities and obligations among federal, state, and local governments.
- Interest in improving transportation infrastructure with private and non-grant funding sources, such as tolls, public-private partnerships (PPPs), and federal loan programs is increasing, but many projects may not be well suited to alternative financing.

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## Introduction

Almost every conversation about surface transportation finance begins with a two-part question: what are the “needs” of the national transportation system and how does the nation pay for them? This report is aimed almost entirely at discussing the “how to pay for them” question. Since 1956, federal surface transportation programs have been funded largely by taxes on motor fuels that flow into the highway trust fund (HTF). A steady increase in the revenues flowing into the HTF, due to increased motor vehicle use and occasional increases in federal fuel taxes, has accommodated growth in surface transportation spending over several decades. The growth in trust fund revenues, however, came to an end in 2008. Over the past five years there has been a large gap between the highway tax revenues and interest flowing into the HTF and funding of surface transportation authorized by Congress.

This gap was not totally unexpected. The authors of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA, FY2005-FY2009; P.L. 109-59) set up two commissions to advise Congress on changes to the surface transportation program and its funding mechanisms. To date, however, Congress has made no major changes in transportation financing, aside from authorizing transfers of money from the Treasury general fund to the HTF.

The Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21; P.L. 112-141), signed July 6, 2012,<sup>1</sup> authorized spending on federal highway and public transportation programs through September 30, 2014 and provided for extensive transfers from the general fund to the HTF. The mismatch between the desired surface transportation program and the revenues generated by motor fuels taxes persists, and is likely to emerge as a major issue as Congress considers options for reauthorizing the program beyond 2014.

## The Highway Trust Fund Financing Dilemma

The highway trust fund comprises two separate accounts—highways and mass transit. The primary revenue sources for these accounts are an 18.4-cent-per-gallon federal tax on gasoline and a 24.4-cent-per-gallon federal tax on diesel fuel. Although the HTF has other sources of revenue, such as truck registration fees and a truck tire tax, and is also credited with interest paid on the fund balances held by the U.S. Treasury, fuel taxes provide about 90% of the income to the fund. The transit account receives 2.86 cents per gallon of fuel taxes, with the remainder of the tax revenue flowing into the highway account. Separately, there is a 0.1-cent-per-gallon fuel tax reserved for the leaking underground storage tank (LUST) fund, which is not part of the transportation program.

Since the trust fund was created in 1956, motor fuels taxes have increased four times, in 1959, 1982, 1990, and 1993. The last two increases were initially partially reserved for deficit reduction purposes, with significant sums being deposited in the Treasury general fund account. By FY1998, following several years of congressional debate, all fuel tax collections were again being deposited into the trust fund.

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<sup>1</sup> CRS Report R42762, *Surface Transportation Funding and Programs Under MAP-21: Moving Ahead for Progress in the 21<sup>st</sup> Century Act (P.L. 112-141)*, coordinated by Robert S. Kirk.

Since the 1993 tax increase, additional changes to the taxation structure have modestly increased trust fund revenues. The American Jobs Creation Act of 2004 (P.L. 108-357), for example, provided the trust fund with increased future income by changing elements of federal “gasohol” taxation. In 2005, the finance title of SAFETEA included a number of tax and other revenue-raising changes designed to bolster the trust fund, mainly by addressing tax fraud. SAFETEA also provided for the transfer of some general fund revenues associated with transportation-related activities to the trust fund. It was believed at the time of SAFETEA’s passage that the tax changes, a \$12.5 billion unexpended balance in the trust fund, and, most important, expected economic growth would be sufficient to finance the program through its expiration at the end of FY2009. This prediction proved to be significantly off the mark.

The shortfalls resulting from the overly optimistic forecasts associated with SAFETEA were rectified by general fund contributions. Congress directed an \$8 billion transfer from the general fund to the highway account in FY2008 (P.L. 110-318). In FY2009, it provided for a \$7 billion transfer (P.L. 111-46). The Hiring Incentives to Restore Employment (HIRE) Act (P.L. 111-147) provided \$14.7 billion in general fund monies to the highway account and, for the first time, a general fund transfer of \$4.8 billion to the transit account.

MAP-21 provides for general fund transfers of \$6.2 billion and \$12.6 billion for FY2013 and FY2014, respectively.<sup>2</sup> Also, \$2.4 billion of the accrued balance of the LUST fund was transferred to the HTF for FY2012. According to Congressional Budget Office (CBO) estimates, the highway account of the HTF will retain a prudent end-of-year balance of \$4.0 billion at the end of MAP-21 in September 2014. The mass transit account is expected to have a balance of \$2 billion.<sup>3</sup>

## What Congress Faces in FY2015

CBO projections indicate that HTF revenues will continue to be inadequate to support baseline spending on surface transportation programs after FY2014, with balances in both the highway account and the mass transit account approaching zero in FY2015.<sup>4</sup> Although the HTF cannot run negative balances under current law, CBO projects a cumulative shortfall (assuming continued spending based on baseline funding plus inflation) of \$82 billion through FY2020. If Congress were to pass a six-year reauthorization bill to follow MAP-21 that increases spending on surface transportation programs in line with inflation, it would need to fill a nearly \$80 billion gap between planned spending (obligation limitations) and projected HTF revenues, as detailed in

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<sup>2</sup> Joint Committee on Taxation, *Estimated General Fund and Trust Fund Effects of the Conference Agreement for the Revenue Provisions Contained in Division D of MAP-21*, committee print, 112<sup>th</sup> Cong., 2<sup>nd</sup> sess., June 28, 2012, JCX-58-12, pp. 1-3.

<sup>3</sup> Congressional Budget Office, *Highway Trust Fund Projections: CBO May FY2013 Baseline 2012-2023*, May 22, 2013. Because requests for reimbursement from the HTF may occur at any time and because Treasury transfers to the HTF occur only twice each month and requests for reimbursement from the states can vary from month to month, FHWA deems it prudent to maintain a \$4 billion minimum in the highway account to prevent having to delay payments to states due to insufficient funds. The equivalent prudent balance for the mass transit account is \$1 billion.

<sup>4</sup> See also Sarah Puro, *Statement for the Record: Status of the Highway Trust Fund for the Committee on the Budget, House of Representatives*, Washington, Congressional Budget Office, April 24, 2013, 4 p., <http://cbo.gov/publication/44093>.

**Table 1.**<sup>5</sup> The difference between projected HTF outlays and projected revenues is even larger, \$85 billion.

**Table I. HTF Sufficiency Under a Baseline Six-Year Surface Transportation Act: FY2015-FY2020**

Billions of Dollars

Fiscal Year	HTF Revenue	Obligation Limitations		Outlays	
		Amount	Difference	Amount	Difference
2015	39	51	-12	53	-14
2016	40	52	-12	53	-13
2017	40	53	-13	55	-15
2018	41	54	-13	55	-14
2019	41	56	-15	55	-14
2020	41	56	-15	56	-15
Six-Year Total	242	322	-80	327	-85
Annual Average	40	54	-13	55	-14

**Source:** CRS based on CBO, *Highway Trust Fund Projections: May FY2013 Baseline 2012-2023*, May 15, 2013.

**Notes:** Includes combined figures from both the highway account and the mass transit account. The HTF is projected to have an unexpended balance of \$6 billion at the beginning of FY2015. The HTF Revenue column includes interest on the HTF balances.

Consequently, for the HTF to fund baseline spending over FY2015-FY2020 would require finding roughly \$85 billion in new revenue, a 33% increase from the level currently projected by CBO. The current motor fuels taxes are unlikely to produce such a large amount of additional revenue. Congress could transfer a like amount of Treasury general fund revenue to shore up the trust fund, but this could have significant budget deficit implications.

The era of automatic trust fund growth appears to be over, because annual vehicle miles traveled (VMT) are no longer increasing at the 2% average rate experienced from 1960s until 2008. The main immediate cause of stagnation in VMT was the sluggish economy, which has suppressed growth in personal incomes (reducing leisure travel), reduced work-related driving, and also weakened demand for freight shipments. Over the longer term, other forces are conspiring against the trust fund mechanism. Most important, recent policy changes are weakening the link between driving activity and motor fuel tax revenues. On August 28, 2012, the Obama Administration issued new passenger vehicle fuel economy standards for vehicle model years 2017-2025. Under these standards combined new passenger car and light truck Corporate Average Fuel Economy (CAFE) standards are expected to rise to as high as 41.0 miles per gallon in model year 2021 and 49.7 miles per gallon in model year 2025.<sup>6</sup> Meanwhile, the expanding fleet of hybrid and electric vehicles will pay little or nothing by way of fuel taxes.<sup>7</sup>

<sup>5</sup> CBO, May 2013 Baseline. The limitation on obligations (or ObLim) is used to control annual spending in place of an appropriation. The ObLim sets a limit on the total amount of contract authority that can be obligated in a single fiscal year. For practical purposes the ObLim is analogous to an appropriation.

<sup>6</sup> CRS Report R42721, *Automobile and Truck Fuel Economy (CAFE) and Greenhouse Gas Standards*, by Brent D. (continued...)

An increase in the existing fuel tax rates would provide immediate relief to the trust fund. As a rule of thumb, adding a penny to federal motor fuels taxes provides the trust fund with between \$1.6 billion and \$1.8 billion in new annual revenue.<sup>8</sup> The prospect of reduced motor fuel consumption, however, casts doubt on the ability of the motor fuels taxes to support increased surface transportation spending beyond the next decade even with modest increases in tax rates. In considering reauthorization of MAP-21, therefore, Congress would face a choice between finding new sources of income for the surface transportation program or settling for a smaller program, which might look very different from the one currently in place.

A smaller program might not provide immediate relief from the demands on the HTF. Because of the multiyear nature of the highway and public transportation programs and the multiyear availability of the contract authority that supports them, both programs have ongoing existing commitments. For FY2013, unspent contract authority for highway programs is expected to total roughly \$67 billion in unpaid obligated balances and \$30 billion in unobligated contract authority. For the public transportation programs these figures are roughly \$13 billion in unpaid obligations and \$8 billion in unobligated contract authority.<sup>9</sup> These obligations have been incurred by the federal government (under binding agreements such as highway project agreements) and must be paid.<sup>10</sup>

## Existing Highway Fuel Taxes<sup>11</sup>

The first federal tax on gasoline (1 cent per gallon) was imposed in 1932, during the Hoover Administration, as a deficit-reduction measure following the depression-induced fall in general revenues. The rate was raised to help pay for World War II (to 1.5 cents per gallon) and raised again during the Korean War (to 2 cents per gallon). The rate was raised in 1956 (to 3 cents per gallon) and 1959 (to 4 cents per gallon) to establish the HTF and fund it to pay for the construction of the Interstate Highway system. The gasoline tax remained at 4 cents from October 1, 1959 until March 31, 1983.

One of the attractive attributes of highway fuel taxes to policy makers during much of the history of the HTF was that revenues grew automatically from year to year, so long as vehicle miles

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(...continued)

Yacobucci, Bill Canis, and Richard K. Lattanzio.

<sup>7</sup> Congressional Budget Office, *How Would Proposed Fuel Economy Standards Affect the Highway Trust Fund?*, Washington, DC, May 2012, [http://cbo.gov/sites/default/files/cbofiles/attachments/05-02-CAFE\\_brief.pdf](http://cbo.gov/sites/default/files/cbofiles/attachments/05-02-CAFE_brief.pdf).

<sup>8</sup> Two commissions established in SAFETEA, the National Surface Transportation Policy and Revenue Study Commission and the National Surface Transportation Infrastructure Financing Commission, called for increases in federal fuels taxes; the latter also urged indexing of fuels taxes for inflation and a shift to a financing system based on vehicle miles traveled. See [http://www.transportationfortomorrow.com/final\\_report/index.htm](http://www.transportationfortomorrow.com/final_report/index.htm) and [http://financecommission.dot.gov/Documents/NSTIF\\_Commission\\_Final\\_Report\\_Mar09FNL.pdf](http://financecommission.dot.gov/Documents/NSTIF_Commission_Final_Report_Mar09FNL.pdf). MAP-21 did not call for additional studies on this subject.

<sup>9</sup> Office of Management and Budget, *Budget of the U.S. Government: Appendix*, Washington, DC, 2013, pp. 921, 952.

<sup>10</sup> CRS Report 98-720, *Manual on the Federal Budget Process*, by Robert Keith and Allen Schick (pdf), 181.

<sup>11</sup> This discussion tracks the changes in the rate of the gasoline tax. Over time other fuels such as diesel have been taxed at different rates. For instance, the current tax on diesel fuel is six cents higher than the gasoline tax. For a tabular history of the rates of the various federal fuel taxes see Federal Highway Administration, *Highway Statistics: Table FE101-A*, <http://www.fhwa.dot.gov/policyinformation/statistics/2009/fe101a.cfm>.



traveled grew.<sup>12</sup> Despite this, since 1983 lawmakers have passed legislation raising the tax rates on highway fuel use three times. Although infrequent, these rate increases were quite large in a proportional sense. The gasoline tax was raised on April 1, 1983 from 4 to 9 cents per gallon, a 125% increase; on September 1, 1990 from 9 to 14 (not counting the additional 0.1 cent for LUST), or 55%, and on October 1, 1993 from 14 to 18.3 cents, or 30%.

## How the Rates Have Been Raised Since 1983

Increasing the rate of the fuel taxes has never been popular. The last three increases were accomplished with difficulty and were influenced by the broader budgetary environment and the practical politics of the time.<sup>13</sup>

### The “Great Compromise” and the “Highway User Fee,” the Surface Transportation Assistance Act of 1982 (STAA; P.L. 97-424, Title V)

The increase in the fuels tax rate under STAA occurred in the lame duck session of the 97<sup>th</sup> Congress. Supporters of increased highway spending had come to an agreement with transit supporters (mostly from the Northeast) that a penny of a proposed 5-cents-per-gallon increase would be dedicated to a new mass transit account within the HTF. This meant that support for the bill during the lame duck session was widespread and bipartisan. During the congressional elections of 1982 the Democrats had picked up 26 seats in the House of Representatives. The economy was experiencing a major recession and some argued that increased highway spending would stimulate the economy. President Reagan’s opposition to an increase in the “gas tax” softened during the lame duck session. On November 23, 1982, President Reagan announced that he would support passage of STAA, even though it would “mean an increase in the highway user fee, or gas tax, of 5 cents a gallon ... Our country’s outstanding highway system was built on the user fee principle—that those who benefit from a use should share in its cost.”<sup>14</sup> Nonetheless, the bill faced a series of filibusters in the Senate, which were eventually overcome by four cloture votes. The conference report was again filibustered, and President Reagan helped secure the votes needed for cloture. President Reagan signed STAA into law on January 6, 1983, more than doubling the highway fuels tax to 9 cents per gallon.

### 50/50 Share: Deficit Reduction/Highway Trust Fund; the Omnibus Budget Reconciliation Act of 1990 (OBRA90; P.L. 101-508)

OBRA90, enacted November 5, 1990, was passed under the pressure of impending final FY1991 sequestration orders issued by President George H.W. Bush under Title II of P.L. 99-177, the Balanced Budget and Emergency Deficit Control Act of 1985, known as the Gramm-Rudman-Hollings Act (GRH). OBRA90 included budget cuts, tax changes, and the Budget Enforcement Act (P.L. 101-508), which rescinded the FY1991 sequestration orders. OBRA90 also raised the

<sup>12</sup> See CRS Report RL30304, *The Federal Excise Tax on Gasoline and the Highway Trust Fund: A Short History*, by James M. Bickley.

<sup>13</sup> Federal Highway Administration, *Financing Federal-aid Highways; Appendix M, Federal Excise Taxes on Highway Motor Fuel*, <http://www.fhwa.dot.gov/reports/fifahiwy/ffahappm.htm>.

<sup>14</sup> U.S. President (Reagan), “Remarks to Reporters Announcing the Administration’s Proposal for a Highway and Bridge Repair program: Nov. 23, 1982,” *The American Presidency Project; Public Papers*.

tax on gasoline by 5 cents per gallon to 14 cents. Half the increase went to the HTF (2 cents to the highway account and 0.5 cents to the mass transit account), with the other 2.5 cents per gallon to be deposited in the general fund for deficit reduction. This was the first time since 1957 the motor fuels tax had been used as a source of general revenue. Section 9001 expressed the sense of Congress that all motor fuel taxes should be directed to the HTF as soon as possible.

### **More for Deficit Reduction; the Omnibus Budget Reconciliation Act of 1993 (OBRA93; P.L. 103-66)**

OBRA93 Section 13241(a) made further changes in regard to fuels taxes:

- The 2.5-cents-per-gallon fuels tax dedicated to deficit reduction in OBRA90 was redirected to the HTF beginning October 1, 1995 and its authorization was extended to September 30, 1999.
- The highway account received 2 cents per gallon and the mass transit account 0.5 cents per gallon of the rededicated amount.
- An additional permanent 4.3 cents per gallon fuel tax took effect in October 1993 and was dedicated to deficit reduction.

This brought the gasoline tax to 18.3 cents per gallon, although for two years (October 1, 1993 to October 1, 1995) 6.8 cents per gallon of this was deposited in the general fund, dedicated to deficit reduction. On October 1, 1995, the amount going to the general fund dropped to 4.3 cents per gallon and the amount dedicated to the HTF increased to 14 cents per gallon.

### ***Redirection of the Deficit Reduction Tax to the HTF***

During 1996, Congress debated whether the permanent 4.3-cents-per-gallon federal excise tax on highway fuel should be repealed to reduce fuel prices at the pump or retained for deficit reduction. However, the Taxpayer Relief Act of 1997 (P.L. 105-34) redirected the entire amount to the HTF (3.45 cents to the highway account and 0.85 cents to the mass transit account). Since October 1, 1997, all revenue from the 18.3-cents-per-gallon gasoline tax has been dedicated to the HTF. (The LUST fund continues to receive the revenue from an additional 0.1 cents per gallon tax.)

Despite the redirection of the 4.3-cent fuel tax increase to the HTF in October 1997 and modest growth in annual vehicle miles traveled, beginning in FY2001 and continuing through FY2005, outlays from the HTF exceeded the revenues and interest credited to the fund. In part, this reflected a policy of spending down the unexpended balances that had built up in the HTF over the years. Revenue, however, had also not met expectations.<sup>15</sup>

Growth in HTF revenue has lagged inflation in most years since 2007. In some years, HTF revenue has declined even in nominal terms due to reduced vehicle travel. Because of the fixed nature of the cents-per-gallon gasoline and diesel taxes, the only way the taxes can generate

<sup>15</sup> See Congressional Budget Office, *How Would Proposed Fuel Economy Standards Affect the Highway Trust Fund?*, Washington, CBO, May 2012, p. 3. A drop in outlays in FY2006 helped bring the HTF briefly into balance in FY2006-FY2007.

additional revenue for the HTF is if motor-fuel consumption rises.<sup>16</sup> However, according to the Energy Information Administration, retail gasoline sales have declined for six consecutive years, and diesel fuel use by highway vehicles peaked in 2007.<sup>17</sup>

## Alternatives for HTF Financing

Because motor fuels taxes are fixed in terms of cents per gallon at a time when drivers are consuming less fuel, the revenues flowing into the HTF are not rising in line with the cost of constructing highway and transit projects. CBO estimates that revenue from the current motor fuels taxes will increase less than 1% per year through 2023, with all the growth coming from truckers' use of diesel fuel.<sup>18</sup> The political difficulty of increasing motor fuels taxes has led to interest in alternative approaches for supporting the HTF. These involve tying motor fuel tax rates to the price of fuel, changing the structure of the current fuel taxes, and charging drivers for the distance they drive rather than the fuel they consume.

### Sales Taxes

Under the sales tax concept, the federal motor fuels tax would be assessed as a percentage of the retail price of fuel rather than as a fixed amount per gallon. Some states already levy taxes on motor fuels in this way, either alongside or in place of fixed cents-per-gallon taxes on motor fuel purchases

The American Association of State Highway and Transportation Officials (AASHTO) estimated in 2011 that an 8.4% tax on gasoline sales and a 10.6% tax on diesel sales would produce revenue roughly equivalent to current excise tax collections. If fuel prices rise in the future, as forecast by the Energy Information Administration of the U.S. Department of Energy, sales tax revenues could rise from year to year even if consumption does not increase. The sales tax rates could be adjusted in future years, if necessary, to keep up with inflation in construction costs.

Conversely, however, a decline in motor fuels prices could lead to a drop in sales tax revenue. Many states which tied fuel taxes to prices after the price shocks of the 1970s encountered revenue shortfalls in the 1980s, when fuel prices fell dramatically. Over a 20-year period, most of these variable state fuel taxes disappeared.<sup>19</sup> Recently, however, Virginia eliminated its cents-per-gallon fuel taxes in favor of a sales tax on fuel and a general sales tax increase that was dedicated to transportation purposes.

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<sup>16</sup> In 2013, CBO estimated that if the 18.4-cent excise tax on gasoline and the 24.4-cent tax on diesel fuels had been indexed to the CPI, the “tax on gasoline today would be about 29 cents per gallon and the tax on diesel fuels would be about 39 cents per gallon.” CBO, *Statement for the Record: Status of the Highway Trust Fund*, p. 3.

<sup>17</sup> Energy Information Administration, *United States Product Supplied of Finished Petroleum Products*, <http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=mtpupus1&f=a>.

<sup>18</sup> Kim P. Cawley, *Testimony: Status of the Highway Trust Fund*, Congressional Budget Office, Washington, July 23, 2013, p. 3, [http://www.cbo.gov/sites/default/files/cbofiles/attachments/44434-HighwayTrustFund\\_Testimony.pdf](http://www.cbo.gov/sites/default/files/cbofiles/attachments/44434-HighwayTrustFund_Testimony.pdf).

<sup>19</sup> Jeffrey Ang-Olson, Martin Wachs, and Brian D. Taylor, *Variable-Rate State Gasoline Taxes*, Institute of Transportation Studies, University of California, Berkeley, Working Paper, UCB-ITS-WP-99-3, Berkeley, CA, July 1999.

A sales tax would likely be at best an interim solution to the long-term problem of financing transportation infrastructure because, like the current motor fuels tax, it relies on fuel consumption to fund transportation programs. To the extent that improved vehicle efficiency or adoption of hybrid or electric vehicles leads to long-term declines in fuel usage, a sales tax on fuel may not lead to increases in trust fund revenues. In addition, a sales tax calibrated to produce a desired amount of revenue in an environment of high motor fuel prices could significantly underperform if fuel prices were to be lower than anticipated.

## Reforms to the Current Fuel-Tax Structure

Several possible changes in the structure of the current fuel tax could increase its ability to raise revenue without shifting to a sales tax. One would take advantage of movements in fuel prices to make tax increases seem less burdensome to highway users, such as providing a tax increase to take effect only when the price of gasoline falls below a specified threshold. Another option would increase all highway taxes, not just the fuels taxes, so that the package could be presented as an increase in highway user charges rather than simply a hike in the gasoline tax. A third possibility would be to index the existing fuel taxes to some measure of inflation. A variant of the indexing option would be to adjust the fuel tax rates to restore the 1993 purchasing value of the fuel taxes and then perhaps also provide for annual inflation indexing of the rates.<sup>20</sup>

## Distance-Based (VMT) Charges

Both of the study commissions created by SAFETEA recommended charging drivers based on vehicle miles traveled to fund federal surface transportation activities. The Financing Commission supported its recommendation for VMT charges as follows:

The Commission ... concluded that indeed the most viable approach to efficiently fund federal investment in surface transportation in the medium to long run will be a user charge system based more directly on miles driven (and potentially on factors such as time of day, type of road, and vehicle weight and fuel economy) rather than indirectly on fuel consumed. At the same time, this choice for the federal system provides a foundation for state and local governments that choose to use it to develop their own mileage-based systems that piggy-back on the federal system in order to raise their share on needed revenues in ways that spur more efficient use of the system. The Commission believes that such a system can and should be designed in ways that protect users' privacy and civil liberties, that incorporate any necessary cross-subsidies (for instance, to benefit the national network or to meet social equity objectives), that do not interfere with interstate commerce, and that support goals for carbon reduction. Moreover, greater use of pricing mechanisms, including both targeted tolling and broad-based VMT pricing systems, may spur more efficient use of our highway network and, by shifting demand to less congested periods of the day or to other modes, may in turn enable more efficient investment, thus reducing the additional capacity that needs to be built.<sup>21</sup>

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<sup>20</sup> There are many indexes that could be used, and which one is most appropriate might become an issue of controversy. The most commonly used index is the U.S. Bureau of Labor Statistics' consumer price index (CPI), which, for example, is used to adjust certain aviation user fees. CPI-adjusting the 18.3 cents per gallon that supports the trust fund would calculate to roughly 29 or 30 cents per gallon today.

<sup>21</sup> Finance Commission. p. 5. [http://financecommission.dot.gov/Documents/NSTIF\\_Commission\\_Final\\_Report\\_Exec\\_Summary\\_Feb09.pdf](http://financecommission.dot.gov/Documents/NSTIF_Commission_Final_Report_Exec_Summary_Feb09.pdf).

Fees based on vehicle miles traveled have been discussed in the transportation world for years, and have been the subject of extensive study by the Transportation Research Board (TRB)<sup>22</sup> and other groups. The conclusions reached by these studies almost universally suggest that a transition to a VMT system of financing is desirable and feasible. These same studies, nonetheless, suggest that transition to a VMT system would take time, and they identify numerous obstacles to implementation. The most common recommendation is that the transition process begin on a pilot basis, to gain experience prior to potential national adoption.

Federal VMT charges could be used to provide revenue to the HTF, either in place of or alongside federal motor fuel taxes. Certain classes of vehicles might remain subject to fuel taxes even after a VMT charge is put into place. It is also possible that a VMT charge might be used in addition to other revenue-raising measures.

Distance charges are viewed by economists as being a superior form of user charge. Although the fuel tax is often referred to as a user fee, it is better understood as a proxy for a user fee because fuel use does not directly correspond to the quantity (miles) of infrastructure consumed. A Toyota Prius hybrid and a gasoline-powered sport utility vehicle making the same trip, for example, use the same amount of infrastructure (highway miles), but pay different taxes based on the fuel efficiency of the vehicles. With a VMT charge, by contrast, the amount paid would be directly related to the amount of road miles used. Adding vehicle weight into the equation might result in a charge that more fully incorporates infrastructure use by reflecting the pavement wear attributable to the vehicle as well.<sup>23</sup>

VMT charges have two particular attractions. One is that all road users would have to pay, whereas current drivers of vehicles powered by batteries, fuel cells, or other alternative technologies are able to use public roads without paying the fuel taxes used to improve them. The other is that a VMT charge can be adjusted to reflect the full costs of using a particular segment of infrastructure. For example, it can be set at a higher level on a heavily used urban highway than on a lightly used rural road. It can be varied by time, traffic level, or some other measure to reflect congestion on a road segment as it occurs, giving drivers price signals that might encourage them to change their driving patterns to avoid crowded roads or rush hours, perhaps even precluding the need for new construction or highway improvements.

Distance-related charges have a long history in the transportation sector. A few states impose weight and distance taxes on trucks, and many toll roads base their toll structure on miles traveled and the number of axles on a vehicle, which is used as a proxy for weight. The barrier to implementing distance-based fees on road users has always been finding an efficient means of measuring usage and collecting the corresponding fees.

The technology to assess and collect VMT charges already exists thanks to the widespread adoption of high-capacity electronics in new vehicles, combined with cellular communications technologies and integrated global positioning systems (GPS). Implementing a VMT system in the United States, however, would require a clear set of technical standards to enable the

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<sup>22</sup> Transportation Research Board, National Cooperative Highway Research Program, *Implementable Strategies for Shifting to Direct Usage-Based Charges for Transportation Funding*, NCHRP Project 20-24(69). Web-Only Document 143. October 2009. [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_w143.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w143.pdf).

<sup>23</sup> Congressional Budget Office, *Alternative Approaches to Funding Highways*, March 2011, p. 38, <http://cbo.gov/sites/default/files/cbofiles/ftpdocs/121xx/doc12101/03-23-highwayfunding.pdf>.

collection and processing of the information generated by this technology on a uniform basis. There are also privacy, cost, and administrative hurdles that would need to be addressed.

## Privacy Issues

The same technology that makes VMT charges possible is probably the major barrier to implementation. As a Florida newspaper editorialized,

It's not the government's business to know about everyone's whereabouts. A VMT pilot program in South Florida will use a tracking device to log drivers' mileage. Impose the VMT, and Big Brother, for all intents and purposes, will be in the back seat. Tracking your comings and goings isn't akin to installing cameras at intersections to catch red-light-runners who threaten anyone's safety, an effective measure we heartily endorse that saves lives. It's a gratuitous intrusion into drivers' lives. And an intrusion that policymakers need to steer clear of.<sup>24</sup>

Research suggests that it is the GPS tracking involved in some proposed collection schemes that causes the most unease.<sup>25</sup> Alternative technologies would allow tracking of vehicle mileage without the use of GPS. A well-known pilot study in Oregon relied on a periodic odometer reading of each vehicle, which could be done at some fixed interval by visiting a special facility, or else during refueling at a gas station equipped to record an electronically transmitted odometer reading. Another approach would use cellular-linked technology, such as a weekly automated contact between a vehicle and a collection center, to collect mileage information without disclosing details about individual travel. These less sophisticated reporting systems, however, would not be well suited to implementing variable pricing mechanisms.

Depending on the collection technology required for a VMT system, drivers of older vehicles could face the need to install potentially costly equipment. A VMT system could avoid this problem by allowing owners of older vehicles to continue to pay fuel taxes until they replace their vehicles. This, however, would increase the complexity and administrative cost of the system.

## Pricing

In principle, a VMT system could be revenue neutral; that is, the rate charged per mile could be set to equal the fuel tax paid by an average driver in the course of driving one mile. According to some studies, this would probably mean a fee of around 1 cent per mile initially.<sup>26</sup>

Individual drivers, however, do not necessarily pay "average" fuel taxes. While a VMT charge of around 1 cent per mile may be revenue neutral across the universe of American drivers, it may be more or less costly than the current motor fuels taxes for an individual driver. Some vehicle

<sup>24</sup> "Kick mileage tax to the curb before it gets any further," *Sun-Sentinel*, Fort Lauderdale, September 18, 2009.

<sup>25</sup> Martin Wachs, "After the Motor Fuel Tax: Reshaping Transportation Financing," *Issues in Science and Technology*, Summer 2009, pp. 85-89; Paul Sorensen, Liisa Ecola, and Martin Wachs, et al., *Implementable Strategies for Shifting to Direct Usage-Based Charges for Transportation Funding*, National Cooperative Highway Research Program, Transportation Research Board, NCHRP Web-Only Document 143, Washington, DC, June 2009, [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_w143.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w143.pdf).

<sup>26</sup> Miller Center of Public Affairs, University of Virginia, *Well Within Reach: America's New Transportation Agenda*, Conference Report, Charlottesville, VA, October 10, 2010, [http://web1.millercenter.org/conferences/report/conf\\_2009\\_transportation.pdf](http://web1.millercenter.org/conferences/report/conf_2009_transportation.pdf).

owners, such as those who have paid a premium to buy a hybrid vehicle that uses little fuel, may face higher costs with a VMT system—and may object to paying the same charges as an individual driving a fuel-inefficient SUV.

Such concerns introduce issues of social equity into the VMT rate-setting process. In theory, economists generally agree that drivers should pay the full “social cost” of their vehicles, but there is little agreement about what those costs are. Attempting to reward certain classes of vehicles with lower charges might raise further barriers to public acceptance of VMT charges.

Setting initial charges at the revenue-neutral level would pose a further problem. One argument for moving to VMT charges is that fuel taxes are providing insufficient funds for transportation infrastructure. If a VMT charge is to provide additional revenue, then by definition it cannot be revenue neutral, and would initially need to be higher than 1 cent per mile. Nor would raising a VMT rate on a periodic basis be easier politically than raising the fuel taxes has been. The obvious solution for this problem would be to index a VMT charge to some inflation measure, but this would have the same political issues as indexation of the existing fuel taxes, an idea that has not been enacted by Congress.

### Transition Costs/Complexity

A major advantage of the federal fuel tax system is its low cost of collection. Less than 1% of revenue is devoted to collection. In part this is due to the relatively small number of places where the fuel tax is collected: it is paid not at the fuel pump, but at the so-called “first point of distribution,” normally a refinery or a tank farm. This collection system reduces the opportunity for fraud and theft and also saves money, because it is much easier administratively to collect taxes from a few rather than many locations and firms.<sup>27</sup>

A VMT charge portends a far broader collection system. Depending on the technology employed, the number of collection locations could be extremely large. Experience in Germany, where trucks using the autobahns pay VMT charges, suggests that the cost of collecting a VMT charge could be 6% or more of collections, although that might decline over time.<sup>28</sup> Billing could be a major administrative challenge. There are 246 million privately owned vehicles in the United States in 2010.<sup>29</sup> Each of these vehicles is a potential tax collection point.

Obviously the transition from a tax collected at a few places to a fee collected at many places creates efficiency issues. Also relevant in this context are questions about a possible rise in avoidance and fraud, both of which, in the history of fuel tax collection, occurred more frequently when more collection points existed. These complexities would need to be overcome for a VMT charge to become an efficient source of revenue.

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<sup>27</sup> This 1% cost of collection figure has recently been challenged; see Daryl S. Fleming, *Dispelling the Myths: Toll and Fuel Tax Collection Costs in the 21<sup>st</sup> Century*, Reason Foundation, Culver City, CA, November 2012, [http://reason.org/files/dispelling\\_toll\\_and\\_gas\\_tax\\_collection\\_myths.pdf](http://reason.org/files/dispelling_toll_and_gas_tax_collection_myths.pdf).

<sup>28</sup> Estimates of the administrative costs that could be associated with a national VMT fee collection system vary dramatically. In part this is due to the lack of experience with VMT charge collection. A tax imposed on trucks using the German autobahn system is perhaps the closest example of a currently operating system VMT system. In scale and scope, however, it is much different from the national system under discussion in this CRS report: <http://utcm.tamu.edu/mbuf/2010/proceedings/US-deployment-panel.stm>.

<sup>29</sup> <http://www.fhwa.dot.gov/policyinformation/statistics/2010/mv1.cfm>.

## VMT and Non-highway Programs

Since 1982, when the transit account within the highway trust fund was established, there has been an unwritten truce between highway and other transportation interests not to reopen the debate over funding non-highway programs from the trust fund. The move to a VMT charge would reopen this debate. If the VMT charge were collected strictly from motorists and applied only to highway financing, it might reasonably be characterized as a user fee, even if, as noted above, the amount paid by each individual driver would be unlikely to correspond precisely to the social cost of that user's driving. If instead the amounts collected by a VMT charge were distributed among various transportation modes, the charge might appear more as a tax.

From a policy perspective, the question of whether a VMT charge is perceived as a user fee or a tax is an important question. Transit, bikeways, and a wide range of alternative transportation activities have had growing access to federal funds collected from highway users over the last three decades. If revenue from the VMT charge were to be limited to highway uses, Congress would face consideration of the future of non-highway programs now financed through the HTF.

## Other Options to Preserve the Highway Trust Fund

In addition to options discussed above, a wide range of additional proposals has been suggested to generate revenue for the highway trust fund. These proposals largely originated from the work of the two SAFETEA congressional commissions and of groups such as AASHTO and TRB.<sup>30</sup> Among them are freight-related taxes or fees such as a freight waybill tax, container fee, or terminal facility charge; the dedication of some portion of customs duties, which are deposited in the general fund, to freight-related port-of-entry infrastructure; a broad-based carbon tax; and many smaller fees and surcharges.

An AASHTO table showing estimates of the amounts various sources could produce for surface transportation over a six-year period is reproduced in **Figure 1**. It should be emphasized that the estimates are suggestive rather than precise forecasts. Also, there are variables attached to each estimate that are not delineated. For example, the number of annual auto registrations could turn out to be higher or lower than AASHTO assumed for purposes of revenue estimation.

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<sup>30</sup> The Transportation Research Board, through its research programs, has prepared several reports on future surface transportation finance that discuss VMT and other options, including National Cooperative Highway Research Program (NCHRP), "Future Financing Options to Meet Highway and Transit Needs," NCHRP Project 20-24, Web-Only Document 102, December 2006, available at [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_w102.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w102.pdf); and Transportation Research Board, *The Fuel Tax and Alternatives for Transportation Funding*, Special Report 285, January 2006, available at <http://onlinepubs.trb.org/onlinepubs/sr/sr285.pdf>.



Figure I. Revenue Options for Consideration

Matrix of Surface Transportation Revenue Options						
(All revenue estimates in \$ millions)						
Funding Mechanisms	Mechanism Yield (2012)	Current Rate	Illustrative Rate	Revenues 2011	Avg Revenues 2012-2017	Total Revenues 2012-2017
<b>Existing Mechanisms</b>						
Truck/Trailer Sales Tax Increase	1% of Sales = \$ 162	N/A	5.0%	\$ 812	\$ 1,359	\$ 8,152
Tire Tax on Light Duty Vehicles	\$1.00 Fee= \$ 1,862	N/A	\$3.00	\$ 5,585	\$ 5,881	\$ 35,284
Diesel Tax Increase	1¢/gal = \$ 386	24.4¢/gal	15.0¢	\$ 5,786	\$ 6,226	\$ 37,356
Diesel Tax Indexing		N/A		\$ -	\$ 585	\$ 3,512
Gas Tax Increase	1¢/gal = \$ 1,327	18.4¢/gal	10.0¢	\$ 13,272	\$ 13,303	\$ 79,818
Gas Tax Indexing		N/A		\$ -	\$ 1,370	\$ 8,218
Share of US Customs Revenues	1% of Receipts = \$ 277	N/A	1.0%	\$ 277	\$ 360	\$ 2,161
Truck Tire Tax Increase	100% Increase= \$ 346	N/A	10.0%	\$ 35	\$ 45	\$ 270
Annual Registration Fee (Light Duty Vehicles)	\$1.00 Fee= \$ 248	N/A	\$10.00	\$ 2,482	\$ 2,614	\$ 15,682
Annual Registration Fee (Trucks)	\$1.00 Fee= \$ 9	N/A	\$15.00	\$ 129	\$ 131	\$ 787
HVUT Increase	100% Increase= \$ 944	N/A	15.0%	\$ 142	\$ 141	\$ 844
Container Tax	\$1 per TEU= \$ 391	N/A	\$15.00	\$ 5,866	\$ 6,401	\$ 38,408
Imported Oil Tax	\$1.00/Bbls = \$ 3,528	N/A	\$1.00	\$ 3,528	\$ 3,528	\$ 21,171
Sales Tax on Diesel	1.0% of Sales = \$ 850	N/A	10.6%	\$ 9,013	\$ 10,862	\$ 65,172
Sales Tax on Gas	1.0% of Sales = \$ 3,347	N/A	8.4%	\$ 28,112	\$ 34,108	\$ 204,647
US Freight Bill -- All Modes	1% of Sales = \$ 7,612	N/A	1.0%	\$ 7,612	\$ 8,452	\$ 50,713
US Freight Bill -- Truck Only	1% of Sales = \$ 6,608	N/A	1.0%	\$ 6,608	\$ 7,338	\$ 44,028
Sales Tax on New and Used Light Duty Vehicles	1.0% of Sales = \$ 2,619	N/A	1.0%	\$ 2,619	\$ 2,619	\$ 15,715
Sales Tax on New Light Duty Vehicles	1.0% of Sales = \$ 1,625	N/A	1.0%	\$ 1,625	\$ 1,625	\$ 9,752
Harbor Maintenance Tax	0.1% Tax = \$ 1,236	N/A	0.5%	\$ 6,181	\$ 6,745	\$ 40,472
Annual Drivers License Surcharge	\$1.00 Surcharge= \$ 214	N/A	\$5.00	\$ 1,072	\$ 1,116	\$ 6,694
Dedicated Income Tax - Business	0.1% of current taxes = \$ 198	N/A	1.0%	\$ 1,984	\$ 4,291	\$ 25,745
Dedicated Income Tax - Personal	0.1% of current taxes = \$ 956	N/A	1.0%	\$ 9,560	\$ 15,429	\$ 92,576
Sales Tax on Auto-related Parts & Services	1.0% of Sales = \$ 2,327	N/A	1.0%	\$ 2,327	\$ 2,613	\$ 15,680
<b>Future Potential Mechanisms</b>						
Annual Highway Miles Traveled Fee (All Light Duty Vehicles)*	1¢/VMT = \$ 6,499	N/A	2.0¢	\$ 12,998	\$ 13,475	\$ 80,851
Annual Highway Miles Traveled Fee (All Trucks)*	1¢/VMT = \$ 908	N/A	3.0¢	\$ 2,723	\$ 2,823	\$ 16,936
Ton-Mile Freight Charge -- All Modes	1¢/ton-mile = \$43,497	N/A	0.5¢	\$ 21,748	\$ 24,150	\$ 144,898
Ton-Mile Freight Charge -- Truck Only	1¢/ton-mile = \$12,731	N/A	0.5¢	\$ 6,365	\$ 7,068	\$ 42,409
Ton Freight Charge -- All Modes	1¢/ton = \$ 164	N/A	25.0¢	\$ 4,111	\$ 4,565	\$ 27,389
Ton Freight Charge -- Truck Only	1¢/ton = \$ 113	N/A	25.0¢	\$ 2,835	\$ 3,148	\$ 18,890

\* VMT fee estimates refer to miles traveled on the Interstate System.

Source: Provided by AASHTO.

## The Future of the Trust Fund

If Congress chooses not to impose new taxes and fees dedicated to the highway trust fund, it could still maintain or expand the surface transportation program with general fund monies. Any of the financing options discussed above could be used to sustain the existing federal financing mechanism, the highway trust fund, but could also be used to support the general fund if Congress wishes to consider alternatives to the trust fund financing model. This would be a significant departure from past practice, and would weaken the historic link between the taxes and fees paid by highway users and spending on the nation's highways and bridges.

The trust fund was set up as a temporary device that was supposed to disappear when the interstate system was finished. It has endured, and its breadth of financing has expanded well beyond the interstates. But it is certainly not essential to a federal role in transportation finance. Congress routinely funds large infrastructure projects, such as those constructed by the Army

Corps of Engineers, from general fund appropriations. Before 1956, it funded highway and other transportation projects using annual appropriations. As recently as the 1990s, significant highway programs such as the Appalachian Highway System were funded from the general fund.

One alternative would be to devote the trust fund to highway-related programs integral to the national network, such as the Interstate Highways, the national highway system, key bridge infrastructure, and the Federal Lands Highway Program. This would leave transit and other surface transportation programs to be funded exclusively by annual appropriations of general funds. On February 9, 2012, such a proposal was reported out of the House Committee on Ways and Means in the American Energy and Infrastructure Jobs Financing Act of 2012 (H.R. 7). The bill would have dedicated all highway tax revenue to highways. Transit would have been funded via an alternative transportation account with general fund monies. This change was met by strong opposition and was not included in MAP-21.

Restricting trust fund spending to highways would have political implications. Since the early 1990s, transit and cycling advocates, environmentalists, and a wide range of other groups have become full-fledged supporters of the surface transportation program, as it has benefited their interests. The expanded coalition supporting the surface transportation program played an important role in the hard-fought political battles of the mid-1990s that gave the trust fund accounts special status as separate accounts in the budget. This special status broadened support for large spending increases in each of the last two reauthorization bills that preceded MAP-21. The desire for increased spending included support for keeping unexpended balances in the HTF as low as possible.

The 1998 budget changes, which gave the highway account and the transit account special status within the budget similar to that enjoyed by the Social Security trust fund, occurred over objections by the appropriations and budget committees, which had previously exerted far more control over transportation spending than they do today. MAP-21 did not continue these special status provisions and appropriators have regained the influence they had previously. Eliminating the HTF would reduce the influence of the authorizing committees and increase the influence of the appropriations committees over surface transportation.

Another alternative would be to eliminate the trust fund structure, thereby doing away with its complicated budget framework of contract authority, obligations, and apportionments.<sup>31</sup> Eliminating the trust fund would force surface transportation to compete with other federal programs for funding each year, possibly leading to less spending on transportation. The general fund transfers to the HTF since FY2008 and the additional infrastructure funding provided by the American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5), however, suggest that Congress is willing to spend money on surface transportation regardless of the revenue source.

There could be advantages to moving away from trust fund financing of surface transportation. One of the most intractable arguments in nearly every reauthorization debate concerns which states are “donors” to transportation programs and which are “donees.” The donor-donee dispute is unique to the federal highway program, and occurs only because of the ability to track federal fuel tax revenues by state. This issue would likely disappear if transportation-related taxes were

<sup>31</sup> Joshua Schank and Nikki Rudnick-Thorpe, *End of the Highway Trust Fund? Long-Term Options for Funding Federal Surface Transportation*, Bipartisan Policy Center, Washington, DC, November 10, 2010, <http://amonline.trb.org/1213f1/1213f1/1>.

deposited into the general fund instead of the trust fund. Treating fuel taxes as just another source of federal revenue would also dampen the long-standing link between road user charges and program spending. This would provide Congress with greater flexibility to allocate funding among various transportation modes and between transportation and non-transportation uses.

Eliminating the trust fund might also focus more attention on the costs and benefits of individual surface transportation programs. Most trust-fund outlays take the form of formula grants over which states have a great deal of spending discretion. Especially within the highway program, money can be transferred among projects relatively easily. While there are numerous federal requirements attached to trust fund expenditures, there have been until recently relatively few performance-oriented goals that the states are required to meet in selecting projects to be undertaken with federal monies. MAP-21 included a requirement for the use of performance management throughout the planning process, and this might be easier to implement without formula programs that automatically apportion funding to the states.

Eliminating the trust fund might also allow for creativity in thinking about the provision of transportation infrastructure across the modal boundaries that now define much of federal transportation spending. Historically, important parts of the U.S. transportation infrastructure, such as the transcontinental railroads and the Panama Canal, were authorized by specific congressional enactments rather than grant programs. Reconsidering the trust fund structure might give Congress and the President the opportunity to come up with a new way to fund infrastructure needs.

## Toll Financing of Federal-Aid System Highways

During much of the history of federal aid to highways, toll financing was prohibited, discouraged, or relegated to a minor role.<sup>32</sup> Given this, the small share (4.83% in 2010)<sup>33</sup> of overall highway finance provided by tolling is not surprising. The Federal-Aid Highway and Federal Highway Revenue Acts of 1956 (70 Stat. 374; P.L. 84-627), which provided for the construction and financing of the Interstate Highway system, reaffirmed the prohibition of tolling of federal-aid highways. Thirty-five years later, however, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA; P.L. 102-240) opened non-interstate system highways to tolling, subject to certain limitations (including requiring public jurisdiction over privately owned toll facilities). Both the 1998 Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21; P.L. 105-178, as amended by P.L. 105-206) and SAFETEA included provisions allowing tolling of some high-occupancy vehicle (HOV) lanes, establishing pilot projects for tolling interstate system routes, and permitting the use of congestion pricing in some instances.

MAP-21 allows for the tolling of new roads, including new Interstate Highway system roads and extensions. It allows for the reconstruction of existing roads and addition of new capacity lanes (on both Interstate Highways and non-interstate roads) and their conversion to toll facilities, as

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<sup>32</sup> The post-World War II toll road construction, most of which was “grandfathered” in to the interstate system, was done on the initiative of the states. Prior to the passage of the 1956 act, the states were far more active in road construction and spending on roads, spending nearly six times what the federal government did in 1955.

<sup>33</sup> Federal Highway Administration, *Highway Statistics 2011: Funding for Highways and Disposition of Highway-User Revenues, All Units of Government, 2011*, Table HF-10, Washington, DC, March 2013, <http://www.fhwa.dot.gov/policyinformation/statistics/2011/hf10.cfm>.

long as the total number of “free” lanes is not reduced.<sup>34</sup> The act eliminated the long-standing requirement that a toll agreement be executed with the FHWA prior to tolling a facility under the mainstream (Section 129) tolling program. Despite these changes, MAP-21 retains most of the prior restrictions on the use of toll revenues. Essentially MAP-21’s changes fit well with the support in both Congress and in the Obama Administration for the expanded use of congestion pricing.

Significant growth of nationwide toll revenues would require the building of more tolled facilities, conversion of free roads and bridges to toll roads, increases in toll rates on existing toll facilities, or increases in traffic. Augmenting toll road mileage is difficult to accomplish: FHWA statistics identify 5,540 tolled miles of roads, bridges, and tunnels as of January 1, 2011,<sup>35</sup> a net increase of 819 toll road miles, or 17%, since 1990, despite the relaxed federal tolling prohibitions.<sup>36</sup> Nor have the changes in the last three authorization bills led to an increase in toll receipts as a share of total revenues. Although toll revenues grew in nominal terms, from \$7.75 billion in FY2005 to \$9.98 billion in FY2011, they continued to account for approximately 5% of total funds available in each of the last six fiscal years.<sup>37</sup> This is similar to annual average since FY1955.<sup>38</sup>

Expanded ability of state and local governments to impose tolls on federal-aid highways could make it easier for them to build projects that might otherwise be delayed. Another advantage of tolls is that they can provide the cash flow necessary to attract private financing of road projects or to support public-private partnerships (PPPs) and other innovative financing techniques (such as those discussed later in this report). Unlike VMT charges, tolls are broadly familiar to the driving public. (Currently, 31 states have at least one toll road, bridge, or tunnel.) Variable tolls designed to keep traffic in the toll facility flowing freely are already in use on a number of roads, including lanes recently constructed on the Washington Capital Beltway (I-495) in Virginia.

**Table 2** briefly describes the provisions of *U.S. Code* Title 23 that now govern the tolling of federal-aid highways.

<sup>34</sup> This loosens the restrictions on the tolling of interstate highways but tightens them on the non-interstate roads.

<sup>35</sup> Federal Highway Administration, *Toll Facilities of the United States 2011*, “FHWA-PL-11-032,” Washington, DC, July 2011, <http://www.fhwa.dot.gov/policyinformation/tollpage/index.cfm>. The 5,540 miles of toll roads, bridges, and tunnels compare with the total federal-aid highway eligible road length of 999,689 miles.

<sup>36</sup> Federal Highway Administration, *Toll Facilities in the United States: Bridges-Roads-Tunnels-Ferries*, “Publication No: FHWA-PL-91-009,” Washington, DC, 1991, p. v.

<sup>37</sup> “Figure 6-6: Toll Facility Revenue: 1993-2008,” *Our Nation’s Highways: 2010*, [http://www.fhwa.dot.gov/policyinformation/pubs/pl10023/fig6\\_6.cfm](http://www.fhwa.dot.gov/policyinformation/pubs/pl10023/fig6_6.cfm). Also, Table HF-10 from *Highway Statistics 2010*.

<sup>38</sup> Federal Highway Administration, *Highway Statistics: Summary to 1975*, Table HF-211, Washington, DC, 1977, pp. 107-136. Also *Highway Statistics: Summary to 1995*, Table SF-210 and *Highway Statistics*, various years, Tables SF-21, HF-10 and HF-10a. Also “Figure 6-6: Toll Facility Revenue: 1993-2008,” *Our Nation’s Highways: 2010*, [http://www.fhwa.dot.gov/policyinformation/pubs/pl10023/fig6\\_6.cfm](http://www.fhwa.dot.gov/policyinformation/pubs/pl10023/fig6_6.cfm). Toll revenues grew during FY1993-FY2008 at an average annual rate approaching 8%.

**Table 2. Active Federal Tolling Programs**

Program	Intent
Section 129 Exceptions to the Freedom from Tolls Provision	Authorizes up to 80% federal participation in the initial construction of a toll road, bridge, tunnel, or ferry (both interstate system and non-interstate roads); reconstruction of existing toll facilities; reconstruction of a toll-free federal-aid highway (interstate or non-interstate) and conversion to a toll facility so long as the facility has the same number of toll-free lanes after construction as it did before; and preliminary studies to determine toll facility feasibility. Facility must be publicly owned or, if privately owned, under contract to a public authority.
High Occupancy Vehicle (HOV) Facilities	Section 166 of Title 23 allows states to charge tolls on vehicles that do not meet the occupancy requirements for HOV use (including HOVs on the interstate system).
Interstate System Reconstruction and Rehabilitation Toll Pilot Program	Allows tolls on three pilot projects in different states to reconstruct an existing interstate system highway and convert it to a tolled facility. Originally passed in 1998.
Value Pricing Pilot Program	Provides funds for local transportation programs to try the value pricing approaches to managing congestion, including use of tolling. No dedicated funding under MAP-21.

**Source:** FHWA. Title 23 U.S.C. §129, 166, 301. P.L. 112-141.

## Options for Expanded Use of Tolling

Congress would have numerous options if it wished to expand the role of tolling in surface transportation finance. Among them:

- It might require that most or all new construction on the federal-aid system be toll-financed. This would relieve the demands on the HTF or the general fund as sources of revenue for highway construction.<sup>39</sup>
- It could consider making all interstate system highways eligible for conversion to toll roads. The Interstates carry high traffic volumes relative to other roads and likely make up much of the road mileage that could generate sufficient toll revenues to support toll finance. In addition, in urban areas, increased tolling could have the added benefit of reducing congestion. Only 7% of urban Interstates are tolled. Allowing tolls on existing Interstates would overturn the “freedom from tolls” provision of the Federal-Aid Highway Act of 1956, and might be open to criticism that tolling of roads that were built or improved with highway trust fund revenues is double taxation.<sup>40</sup>

<sup>39</sup> According to FHWA, 60% to 70% of toll project revenues are used to pay for new highway, bridge, and tunnel capacity, compared with 20% of total highway revenues. See *Current Toll Road Activity in the U.S.: a Survey and Analysis*, by Benjamin Perez and Steve Lockwood, Washington, DC, Federal Highway Administration, January 2009, p. 21.

<sup>40</sup> Robert W. Poole, Jr., *Interstate 2.0: Modernizing the Interstate Highway System via Toll Finance*, Reason Foundation, Policy Study 423, Los Angeles, CA, September 2013, 44 p. The report suggests the gradual conversion of interstate system highways to toll facilities as its roads and bridges are reconstructed.

- An even broader alternative would be to allow states to toll any federal-aid highway. Such authorizations might, or might not, encourage further use of tolls that vary by time of day or by degree of congestion.
- Legislation could further encourage private entities to pursue toll road projects on the federal-aid highway system, presumably by constructing additional lanes or interchanges.

One issue in the expansion of tolling is the extent to which state and local governments could use increased toll revenues to substitute for other spending, reducing the net impact of more expansive federal tolling policy. If the aim of a policy of expanded use of tolling is to increase total spending on transportation infrastructure, it would be necessary to ensure that state and local governments not simply use revenues from tolls on federal-aid highways to replace current transportation outlays.

### Obstacles to the Expanded Use of Tolling

Greater reliance on tolls as a source of federal highway funding faces significant obstacles, not least the general public hostility to tolls. Title 23 (Highways) of the *U.S. Code* imposes certain limitations on the use of toll revenues but FHWA has no authority to oversee toll rates, either on roads or bridges, and thus has little direct influence over the amount of money raised.

Some states already rely on tolls as an important source of income. Florida, New Jersey, New York, Pennsylvania, and Illinois receive over 10% of their annual highway revenues from tolls.<sup>41</sup> On the other hand, there are 19 states that have no toll facilities and others that have only bridge or tunnel tolls. Because toll facilities by their very nature are local, public acceptance of tolling can vary by location. The fact that decisions about tolling are made locally may limit the impact of changes in federal policy.

At the local level, expanded use of tolling faces a number of challenges beyond general public hostility.<sup>42</sup> Revenue projections from planned toll facilities generally do not cover project costs, and some states find it hard to garner public support for toll projects that also require public subsidization. For toll projects with private partners, often either a public subsidy is needed or competing free facilities must be converted to toll facilities for the projects to make business sense. In some cases, proposed toll projects have raised public concerns about diversion of traffic, especially trucks, from the tolled roads to adjacent free roads. In addition, revenues do not always meet projections potentially leaving financial burdens on local governments.<sup>43</sup>

Trucking interests generally oppose tolling.<sup>44</sup> Major trucking companies have expressed a preference for raising fuels taxes but requiring that the increased revenues go exclusively for

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<sup>41</sup> Benjamin Perez and Steve Lockwood, *Current Toll Road Activity in the U.S.: A Survey and Analysis*, Federal Highway Administration, Washington, DC, January 2009, pp. 2-3, [http://www.fhwa.dot.gov/ipd/pdfs/2008\\_toll\\_activity\\_white\\_paper.pdf](http://www.fhwa.dot.gov/ipd/pdfs/2008_toll_activity_white_paper.pdf).

<sup>42</sup> U.S. Government Accountability Office, *Highway Finance: States' Expanding use of Tolling Illustrates Diverse Challenges and Strategies*, GAO-06-554, June 2006, pp. 32-42, <http://www.gao.gov/new.items/d06554.pdf>. See also GAO, *Highways and Transit: Private Sector Sponsorship of and Investment in Major Projects Has Been Limited*, GAO-04-419, Washington, DC, March 2004, pp. 20-24, <http://www.gao.gov/new.items/d04419.pdf>.

<sup>43</sup> Dan Weikel, "State probes fiscal health of O.C. Toll Roads," *Los Angeles Times*, December 12, 2012.

<sup>44</sup> American Trucking Association, *Issue: Tolls on the Interstate System*, <http://www.trucking.org/AdvIssues/> (continued...)

highway improvement. Independent truckers generally prefer the status quo, but also view federal fuel tax increases as preferable to tolls.<sup>45</sup> One reason for the preference for fuel taxes is that studies have concluded that funding highways with motor fuels taxes provide trucks a cross-subsidy from automobile users' gas tax payments.<sup>46</sup> Also, since toll rates are controlled locally, trucking interests are concerned that local officials may find it an attractive option to set high rates on trucks, whose shipments are often not local, and low rates on cars.

## Views on the Potential of Toll Financing

There have been few systematic estimates of the potential for tolls to generate revenues for highway construction. A 2006 TRB report, *Future Financing Options to Meet Highway and Transit Needs*, estimated that aggressive use of the tolling and pricing opportunities in SAFETEA had the potential to generate an average additional \$1.1 billion in revenue per year during 2010 to 2017, reaching an additional \$2.4 billion in 2017.<sup>47</sup> Another TRB publication from 2006, *The Fuel Tax and Alternatives for Transportation Funding*, argued that an aggressive program of “toll conversion and new toll road development following the models of the HOT networks and FAST lanes proposals might raise additional revenue equal to the tolls already being collected on U.S. highways (that is about \$10 billion per year or less).”<sup>48</sup>

Some more recent commentaries, however, have expressed caution in projecting revenues from high-occupancy toll (HOT) lanes and other tolled express lanes, warning that “HOT lanes are not necessarily big generators of revenue ... most projects—particularly HOV-to-HOT expansion projects—barely cover ongoing expenses for management and operations, much less offset the capital costs.”<sup>49</sup> Another article examining the value pricing experience of I-15 in San Diego found that it generated only enough revenue to cover operating costs, pay for the California Highway Patrol to enforce vehicle occupancy rules, and provide a small amount to support bus services on I-15.<sup>50</sup> In 2008, AASHTO president Pete Rahn testified before the House Transportation and Infrastructure Committee that “[e]ven the most optimistic forecasts project

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(...continued)

HighwayInf\_Fund/Tolls/Issue%20Paper%20-%20Tolls%20on%20the%20Interstate%20System.pdf. See also: “Trucking Industry Still Prefers Gas Tax over Tolling for Highway Repair Funding,” *Daily Report for Executives*, September 8, 2006.

<sup>45</sup> Owner-Operator Independent Drivers Association, <http://www.ooida.com/>.

<sup>46</sup> For the relative costs to the road network of use by different classes of vehicles see <http://www.fhwa.dot.gov/policy/hcas/summary/sum2.html>.

<sup>47</sup> Alan E. Pisarski and Martin Wachs, *Future Financing Options to Meet Highway and Transit Needs*, National Cooperative Highway Research Program, Transportation Research Board, NCHRP Web-Only Document 102, Washington, DC, December 2006, pp. ES-8, F-9, [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_w102.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w102.pdf). The National Surface Transportation Policy and Revenue Study Commission, *Final Report*, used the NCHRP estimates.

<sup>48</sup> Transportation Research Board, *Fuel Tax and Alternatives for Transportation Funding*, Special Report 285, Washington, DC, 2006, p. 154, <http://onlinepubs.trb.org/onlinepubs/sr/sr285.pdf>. “Fast Lanes” are electronically tolled express lanes with tolls set to limit traffic to the free-flowing maximum; the regular adjoining lanes would be free. The Express Lanes Demonstration Program enacted in SAFETEA is a version of the Fast Lanes proposal.

<sup>49</sup> Ginger Goodin and Chuck Fuhs, “Tolled Managed Lanes: Lessons Learned and Challenges to Meet,” *TR News*, no. 263 (July-August 2009), pp. 20-21.

<sup>50</sup> Derek Toups, “What’s in Store for Second-Generation Express Lanes in San Diego?,” *TR News*, no. 263 (July-August 2009), p. 24.

that this revenue source [tolls] would only meet seven to nine percent of investment needs nationally in the future.”<sup>51</sup>

Since most planned tolling projects in the United States would use express toll lanes that parallel “free” regular lanes, the revenue question is an important issue for federal policymakers. Annual national toll revenues totaled \$9.98 billion for FY2011, up from \$6.6 billion in FY2004. The revenue increase appears to have been due more to traffic growth and increases in the rates charged by toll authorities than to increased miles or lanes of tolled roads. The big generators of revenue continue to be the long-standing toll facilities. The *Fuel Tax* special study also concluded that adding tolls to all lanes of selected heavily traveled intercity routes could raise revenue, but would raise less than anticipated because public opposition would lead state legislatures to adjust other fees to partially offset the tolls.<sup>52</sup>

Using tolling to reduce the need for HTF resources and to avoid revenue increases or program reductions would likely require a major expansion of tolling. Examples of three scenarios that could do this include the following. First, there could be further expansion of leveraging programs as a major source of building new roads and bridges. This could lead to an increase in toll roads because leveraging programs generally require a revenue stream to support the debt that the program incurs, and tolls are a common choice of repayment mechanism. For example, the Transportation Infrastructure Finance and Innovation Act (TIFIA) program, discussed in detail later in this report, might be expanded. Appropriations, however, would be needed to cover the federal subsidy costs of such programs. Second, Congress might direct that all interstate system highways be converted to toll roads over time as the system is expanded or reconstructed. This change alone would eventually shift roughly a fourth of the nation’s vehicle miles traveled to a toll-based system. However, assuming users would continue to pay fuel taxes, the issue of double taxation could arise unless fuel taxes used on the Interstate highways are rebated.<sup>53</sup> This policy might be difficult to develop by September 2014, when MAP-21 expires, but it could be considered as part of a longer-term solution to funding needs. Finally, the weight distance charges commonly used in tolling are very similar to those of a VMT charge. Therefore, a VMT charge could be considered a toll by another name.

## Value Capture

Value capture represents an attempt to cover part or all of the cost of transportation improvements from landowners or developers who benefit from the resulting increase in the value of real property. Value capture revenue mechanisms include tax increment financing, special assessments, development impact fees, negotiated exactions, and joint development.<sup>54</sup> The federal

<sup>51</sup> U.S. Congress, House Committee on Transportation and Infrastructure, Hearing on State Perspectives on Transportation for Tomorrow, Recommendations of the National Surface Transportation Policy and Revenue Study Commission, Testimony by Pete Rahn, 110<sup>th</sup> Cong., 2<sup>nd</sup> sess., February 13, 2008, <http://transportation.house.gov/Media/File/Highways/20080213/Pete%20Rahn%20Testimony.pdf>.

<sup>52</sup> Growth in nationwide toll revenues alone is not an ideal metric for the provision of increased mobility or new infrastructure because the revenue growth can, in some years, be a reflection of rate increases at existing toll facilities.

<sup>53</sup> Robert W. Poole, Jr., *Interstate 2.0: Modernizing the Interstate Highway System via Toll Finance*, Reason Foundation, Policy Study 423, Los Angeles, CA, September 2013, p. 44 p.

<sup>54</sup> Adeel Lari, David Levinson, and Zhirong Zhao, et al., *Value Capture for Transportation Finance: Technical Research Report*, Center for Transportation Studies, University of Minnesota, June 2009, <http://www.cts.umn.edu/Research/Featured/ValueCapture/index.html>.



role in value capture strategies may be limited, as the Government Accountability Office (GAO) has noted,<sup>55</sup> but it is worth describing these strategies to provide a fuller picture of the ways in which they might supplement or supplant more commonly used funding and financing mechanisms.

Value capture is not a new idea. Land developers built and operated streetcar systems in the late 19<sup>th</sup> century as a way to sell houses on the urban fringe, for example. Much of the recent experience with value capture has been associated with public transit. GAO found that the most widely used mechanism is joint development, in which a real estate project at or near a transit station is pursued cooperatively between the public and private sectors. An example might involve a transit agency leasing air rights over a station to a developer in exchange for a regular payment.

GAO found that joint development has generated relatively small amounts of money for transit agencies.<sup>56</sup> For example, the Metropolitan Atlanta Rapid Transit Authority expected about \$4 million from such deals in FY2008, about 1% of its \$374 million operating budget. However, less widely used strategies, such as special assessment districts, are estimated to generate significant amounts of funding for specific projects. A special assessment district in Seattle produced \$25 million of the \$53 million (47%) needed to fund the South Lake Union streetcar project.<sup>57</sup>

There has been less use of value capture in highway projects, but this appears to be changing. Texas, for example, has authorized the creation of transportation reinvestment zones to help fund highway projects.<sup>58</sup> Special assessment districts have been set up in several states, including Florida and Virginia, to fund highway projects. In Virginia a special assessment district was used to help fund the expansion of Route 28 near Washington Dulles International Airport beginning in the late 1980s.<sup>59</sup>

## Public-Private Partnerships (PPPs)

Growing demands on the transportation system and constraints on public resources have led to calls for more private-sector involvement in the provision of highway and transit infrastructure through “public-private partnerships” (PPPs), which can be designed to lessen demands on public-sector funding. Private involvement can take a variety of forms, including design-build and design-build-finance-operate agreements. The opportunity to own or lease assets that could have the potential for generating stable, medium-level revenues over the long term has attracted private-sector interest. Typically the “public” in public-private partnerships refers to a state government, local government, or transit agency. The federal government, nevertheless, exerts

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<sup>55</sup> Government Accountability Office, *Public Transportation: Federal Role in Value Capture Strategies for Transit Is Limited, but Additional Guidance Could Help Clarify Policies*, GAO-10-781 (Washington, DC, July 2010), <http://www.gao.gov/new.items/d10781.pdf>.

<sup>56</sup> *Ibid.*, p. 16.

<sup>57</sup> *Ibid.*, p. 20.

<sup>58</sup> Sharada Vadali, Rafael Manuel-Aldrete, and Arturo Bujanda, et al., *Transportation Reinvestment Zone Handbook*, Texas Transportation Institute, College Station, TX, 2011, [http://ntl.bts.gov/lib/37000/37800/37821/0-6538-P1\\_Handbook\\_resub\\_editjd\\_sv.pdf](http://ntl.bts.gov/lib/37000/37800/37821/0-6538-P1_Handbook_resub_editjd_sv.pdf).

<sup>59</sup> For more information, see <http://www.28freeway.com/index.html>.

influence over the prevalence and structure of PPPs through its transportation programs, funding, and regulatory oversight.

## Private Financing

To be viable, PPPs involving private financing typically require an anticipated project-related revenue stream from a source such as vehicle tolls, container fees, or, in the case of transit station development, building rents. Private-sector resources may come from an initial payment to lease an existing asset in exchange for future revenue, as with the Indiana Toll Road and Chicago Skyway, or they may arise from a newly developed asset that creates a new revenue stream. Either way, a facility user fee is often the key to unlocking private-sector participation and resources.

In some cases, private-sector financing is backed by “availability payments,” regular payments made by government to the private entity based on negotiated quality and performance standards of the facility. For example, major improvements to I-595 near Fort Lauderdale, FL, are being made by a private company that is to design, build, finance, operate, and maintain the facility for 35 years with availability payments made by the Florida Department of Transportation (FDOT). Toll rates on the new express lanes will be set by FDOT, and revenue collected will be retained by the state.<sup>60</sup> The financing includes a federal TIFIA loan (see discussion below) and state funds.

Tolled highways are particularly attractive assets for private financing. Of course, the public sector can build toll roads, raise tolls on existing facilities, or, in some cases, even institute tolls on existing “free” roads, bridges, and tunnels. Two factors purportedly enable PPPs to attract more capital to highways than the public sector alone can muster.<sup>61</sup>

First, a privately operated toll road can be financed with both debt (bond) and equity financing. Because equity investors have an opportunity to share in the profits, they may be less conservative than traditional municipal bond investors in selecting which projects to finance. Private concessions are often for terms longer than traditional municipal bond maturities of 25, 30, or 40 years, and with an assured income stream over a longer period the concessionaire may be able to raise additional capital. One estimate suggests that, under public control, the Chicago Skyway would have supported at most \$800 million in traditional revenue-bond financing, compared with the \$1.83 billion received by the city for the 99-year concession.<sup>62</sup>

Second, toll facilities are thought to be more successful when operated privately because tolls can be raised in line with costs and demand. Due to political pressures, public agencies often have difficulty raising tolls, a factor that not only reduces revenues, but also affects an agency’s ability to borrow money to initiate construction. The private sector would be more able to generate funding if lenders think it more likely that decisions about toll rates will be based primarily on business considerations. The private operator usually does not have complete freedom to set tolls because toll rates are often regulated under leasing agreements. Nevertheless, proponents of

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<sup>60</sup> Florida Department of Transportation, *I-595 Improvements, District 4, Project Overview*, November 1, 2012, [http://www.i-595.com/documents/PressRoom/Newsletters/Archived-Overviews/2012-11-01\\_I-595\\_Project\\_Summary.pdf](http://www.i-595.com/documents/PressRoom/Newsletters/Archived-Overviews/2012-11-01_I-595_Project_Summary.pdf).

<sup>61</sup> Peter Samuel, “The Role of Toll in Financing 21<sup>st</sup> Century Highways,” *Reason Foundation Policy Study 359*, May 2007, <http://reason.org/files/7227d934ecfa04d5db576c126f0385a6.pdf>.

<sup>62</sup> *Ibid.*, p. 29.

private-sector involvement argue “long-term toll road concessions ... are not simply a private-sector version of a public-sector toll agency. They are a new and important innovation in U.S. highway finance.”<sup>63</sup>

It is widely believed that there are hundreds of billions of dollars of private monies available globally for infrastructure investment, such as surface transportation.<sup>64</sup> To date, however, private investment in U.S. highways and transit has been modest in comparison to spending by all levels of government. According to one study, from 1989 through early 2011 there were 96 transportation PPPs worth a total of \$54.3 billion in the United States; 11 of these projects, totaling \$12.4 billion, included a private financing component.<sup>65</sup>

It is quite possible that private investment will grow in the future. In this regard, the seven-fold increase in TIFIA program resources is likely to make some difference. But many impediments remain. Some of the major ones include the relative attractiveness of the tax-exempt financing available to state and local government, political opposition to tolling and privatization, and difficulties associated with project development.<sup>66</sup> On balance, therefore, it may be unrealistic to expect PPPs to generate more than 7% to 9% of the future needs of highway and transit infrastructure nationally. Private-sector financing generated through PPPs probably ought to be seen as a supplement to traditional public-sector funding rather than as a substitute.

State and local governments have significant demands for funding in many different areas, and there is no assurance that the resources generated from transportation PPPs will be reinvested to finance transportation infrastructure needs. Asset leases, in particular, provide a mechanism to generate large sums of money that could be used to fund a wide range of social or other governmental services.<sup>67</sup> Some evidence on this point comes from a GAO study of the effect of federal highway funding increases on state highway funding between 1982 and 2002. GAO observed a substitution effect, particularly between 1998 and 2002, when a 40% increase in federal capital spending was accompanied by a 4% drop in state and local capital spending.<sup>68</sup> This suggests that higher private spending on transportation through PPPs could be accompanied by reduced public spending at the state or local levels.

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<sup>63</sup> Robert W. Poole, “Tolling and Public-Private Partnerships in Texas: Separating Myth from Fact,” Reason Foundation Working Paper, May 2007, <http://reason.org/files/f4b3060c451c35f004519f3971d05fb3.pdf>, p. 5. An exception to the difference between the public and private sector in setting toll rates is the use of dynamic tolling in congestion pricing schemes in which the toll is adjusted up and down to maintain “free-flowing” traffic. In such cases, traffic demand determines the price. An exception to the difference between the public and private sector in setting toll rates is the use of dynamic tolling in congestion pricing schemes in which the toll is adjusted up and down to maintain “free-flowing” traffic. In such cases, traffic demand determines the price.

<sup>64</sup> U.S. Department of Transportation, “Over \$400 Billion Available Today for Road, Bridge and Transit Projects U.S. Secretary of Transportation Mary E. Peters Announces,” Press Release, DOT 43-08, Wednesday, March 26, 2008; Ken Orski, “A \$400 Billion Solution,” *Innovation Briefs*, Vol. 19, No. 8, March 10, 2008.

<sup>65</sup> William Reinhardt, *The Role of Private Investment in Meeting U.S. Transportation Infrastructure Needs*, The American Road & Transportation Builders Association Transportation Development Foundation, Washington, DC, May 2011, <http://www.artba.org/mediafiles/transportationp3whitepaper.pdf>.

<sup>66</sup> *Ibid.*, pp. 33-37.

<sup>67</sup> Steve A. Steckler, “Squeezing Cash from Concrete: Navigating the Perils of Turnpike Privatization,” Infrastructure Management Group, <http://www.imggroup.com/transportation/documents/PennsylvaniaTollwayLeasing.pdf>.

<sup>68</sup> Government Accountability Office, *Federal-Aid Highways: Trends, Effect on State Spending, and Options for Future Program Design*, GAO-04-802 (Washington, DC, 2004), <http://www.gao.gov/new.items/d04802.pdf>.

This concern has been realized in the case of the Chicago Skyway, as some of the lease payment has been used for non-transportation purposes. The city of Chicago contends, however, that it has created a reserve fund that generates in annual interest revenue as much as the road did in toll revenue, and notes that excess toll revenues from the Skyway were previously directed to the city's general fund.<sup>69</sup> GAO has stated that the city's credit rating improved when it reduced its general obligation debt using lease revenues, thereby reducing the future cost of borrowing.<sup>70</sup> The possibility remains, nevertheless, that future facility users may face higher tolls if the money generated by asset leases is used for non-transportation needs.<sup>71</sup>

Nearly all toll road privatization discussions face the issue of paying back federal funding spent to build or improve the facility that is up for lease. In the cases of the Indiana Toll Road and Chicago Skyway, toll facilities that were leased to private investors, this was not an issue, as the facilities were not built with federal funds. Many existing toll facilities, however, were built with federal aid. Congress could allow waiver of the payback provisions under certain circumstances, but careful scrutiny may be needed to ensure that privatization does not give the private investor a windfall thanks to earlier government investment.

## Other Resource Benefits of PPPs

In addition to attracting private capital, PPPs may generate new resources for highway and transit infrastructure in at least two ways. First, PPPs may improve efficiency through better management and innovation in construction, maintenance, and operation, in effect providing more infrastructure for the same price. Private companies may be more able to examine the full life-cycle cost of investments, whereas public agency decisions are often tied to short-term budget cycles. In the case of the Hudson-Bergen Light Rail in New Jersey, procured under a design-build-operate-maintain contract, the U.S. Department of Transportation (DOT) estimates saving of 30%, or about \$345 million, over the more traditional design-bid-build procurement method.<sup>72</sup> Such cost reductions may not materialize, however, if the public sector has to spend a substantial amount of time on procurement, oversight, dispute resolution, and litigation. For example, the California Department of Transportation has had a number of costly disputes with its private partners.<sup>73</sup> GAO argues that most state governments lack the capacity to manage PPP contracts.<sup>74</sup>

Second, PPPs are meant to reduce government agencies' costs by transferring the financial risks of building, maintaining, and operating infrastructure to private investors. These risks include

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<sup>69</sup> John Schmidt, "The Pros and Cons of Toll Road Leasing," *Public Works Financing*, Vol. 2005, May 2006, p. 9.

<sup>70</sup> Government Accountability Office, *Highway Public-Private Partnerships: More Rigorous Up-front Analysis Could Better Secure Potential Benefits and Protect the Public Interest*, GAO-08-44 (Washington, DC, February 2008), p. 21, <http://www.gao.gov/new.items/d0844.pdf>.

<sup>71</sup> *Ibid.*, p. 34.

<sup>72</sup> U.S. Department of Transportation, *Report to Congress on Public-Private Partnerships* (Washington, DC, 2004), pp. 38-39, <http://www.fhwa.dot.gov/reports/pppdec2004/pppdec2004.pdf>.

<sup>73</sup> Testimony of Alan Lowenthal, Chair, California Senate Transportation and Housing Committee, in U.S. Congress, House Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit, *Hearing on Public-Private Partnerships: State and User Perspectives*, May 24, 2007, <http://transportation.house.gov/Media/File/Highways/20070524/Cal%20State%20Senate%20Lowenthal%20testimony.pdf>.

<sup>74</sup> Government Accountability Office, *Federal-Aid Highways: Increased Reliance on Contractors Can Pose Oversight Challenges for Federal and State Officials*, GAO-08-198 (Washington, DC, 2008), <http://www.gao.gov/new.items/d08198.pdf>.

construction delays, unexpectedly high maintenance costs, and the possibility that demand will be less than forecast. There is a danger, however, this transfer of risk may prove illusory if major miscalculations force the public agency to renegotiate contracts or provide financial guarantees.<sup>75</sup> Moreover, as GAO points out, not all the risks can or should be shifted to the private sector. For instance, private investors are unlikely to accept the risk of higher construction costs due to delays in the environmental review process.<sup>76</sup>

## TIFIA Financing

An existing federal mechanism for providing credit assistance to relatively large transportation infrastructure projects is financing under TIFIA, enacted in 1998 as part of TEA-21.<sup>77</sup> TIFIA provides federal credit assistance in the form of secured loans, loan guarantees, and lines of credit.

Federal credit assistance provides funds at a relatively low rate and lowers project risk, thereby helping to secure other financing at rates lower than would otherwise be possible. Another purpose of TIFIA funding is to leverage non-federal funding, including investment from the private sector. Loans must be repaid with a dedicated revenue stream, typically a project-related user fee but sometimes also including dedicated tax revenue. As of August 26, 2013, according to FHWA, TIFIA since enactment in 1998 had provided assistance of \$11.3 billion to 34 projects. The overall cost of the projects supported is estimated to be \$44.7 billion.<sup>78</sup>

MAP-21 greatly enlarged TIFIA by increasing its funding from \$122 million annually to \$750 million in FY2013 and \$1 billion in FY2014. DOT estimates that after administrative costs and application of the obligation limitation it will have \$690 million for credit subsidy support in FY2013 and \$920 million in FY2014.<sup>79</sup> Assuming an average subsidy cost of 10%, this may provide DOT with the capacity to lend \$6.9 billion in FY2013 and \$9.2 billion in FY2014.<sup>80</sup> A major reason for the large increase in TIFIA program funding was the great demand for financing. In FY2012, for instance, there were requests for \$13 billion in TIFIA credit assistance, according to DOT, much more than the approximately \$1.1 billion available.<sup>81</sup> One open question is whether the increase in TIFIA's share of project costs to 49% will reduce the non-federal share of project costs and possibly also "crowd out" private financing.

<sup>75</sup> Engel, E., R. Fischer, and A. Galetovic, "Privatizing Highways in the United States," *Review of Industrial Organization*, 2006, Vol. 29, pp. 27-53.

<sup>76</sup> Government Accountability Office, *Highway Public-Private Partnerships*, February 2008.

<sup>77</sup> 23 U.S.C. §601 et seq.

<sup>78</sup> U.S. Department of Transportation, Federal Highway Administration, "TIFIA Portfolio," [http://www.fhwa.dot.gov/ipd/tifia/projects\\_project\\_profiles/tifia\\_portfolio.htm](http://www.fhwa.dot.gov/ipd/tifia/projects_project_profiles/tifia_portfolio.htm).

<sup>79</sup> Department of Transportation, "Letters of Interest for Credit Assistance Under the Transportation Infrastructure Finance and Innovation Act (TIFIA) Program," 77 *Federal Register* 45411-45415, July 31, 2012, [http://www.fhwa.dot.gov/ipd/pdfs/tifia/fy2013\\_tifia\\_nofa\\_073112.pdf](http://www.fhwa.dot.gov/ipd/pdfs/tifia/fy2013_tifia_nofa_073112.pdf).

<sup>80</sup> The subsidy cost is "the estimated long-term cost to the government of a direct loan or a loan guarantee, calculated on a net present value basis, excluding administrative costs," Federal Credit Reform Act of 1990 (FCRA), §502 (5A).

<sup>81</sup> Federal Highway Administration, "FY2012 TIFIA Letters of Interest Submitted," [http://www.fhwa.dot.gov/ipd/tifia/letters\\_interest\\_applications/letters\\_submitted\\_2012.htm](http://www.fhwa.dot.gov/ipd/tifia/letters_interest_applications/letters_submitted_2012.htm); Department of Transportation, "Letters of Interest for Credit Assistance under the Transportation Infrastructure Finance and Innovation Act (TIFIA) Program," 76 *Federal Register* 68257-68260, November 3, 2011, [http://www.fhwa.dot.gov/ipd/pdfs/tifia/NOFA\\_Published\\_110311.pdf](http://www.fhwa.dot.gov/ipd/pdfs/tifia/NOFA_Published_110311.pdf).

Another change made by MAP-21 is permitting TIFIA credit assistance to be provided for a program of projects secured by a common security pledge. This would be accomplished through a “master credit agreement.” Prior to MAP-21, TIFIA only allowed agreements on a project-by-project basis. The Los Angeles County Metropolitan Transportation Authority (Metro), for one, has sought this change to accelerate the financing of 12 transit projects (known as the 30/10 Initiative).<sup>82</sup> The master credit agreement also establishes a way to make a commitment of future credit assistance contingent on the availability of funds.

The threshold project cost to be eligible for TIFIA assistance remains \$50 million, or \$15 million for intelligent transportation system projects, except that MAP-21 includes a threshold of \$25 million for rural infrastructure projects.<sup>83</sup> MAP-21 also sets aside 10% of program funds to assist rural projects. Additionally, whereas loans for urban projects must be charged interest not less than the Treasury rate, rural projects that are assisted by the rural setaside are to be offered loans at half the Treasury rate. Rural projects are defined very expansively to include any project in an area other than a city with 250,000 or more inhabitants. MAP-21 also increases the maximum share of project costs that TIFIA may provide from 33% to 49%, probably lowering the share of nonfederal resources leveraged with federal loans.

Prior to MAP-21, projects seeking TIFIA assistance were evaluated by DOT on eight criteria.<sup>84</sup> MAP-21 eliminates these selection criteria and now permits TIFIA assistance for any eligible project. One of the key eligibility criteria is creditworthiness. To be eligible, a project’s senior debt obligations and the borrower’s ability to repay the federal credit instrument must receive investment-grade ratings from at least one nationally recognized credit rating agency. The TIFIA assistance must also be determined to have several beneficial effects: fostering a public-private partnership, if appropriate; enabling the project to proceed more quickly; and reducing the contribution of federal grant funding. Other eligibility criteria include satisfying planning and environmental review requirements and being ready to contract out construction within 90 days after the obligation of assistance. Applications for assistance must be accepted by DOT on a rolling basis.

## National Infrastructure Bank

Congress has considered several proposals to create a national infrastructure bank (I-bank) to help finance infrastructure projects.<sup>85</sup> Three I-bank proposals that have been introduced in the 113<sup>th</sup> Congress are the National Infrastructure Development Bank Act (H.R. 2553), by Representative DeLauro, the American Infrastructure Investment Fund Act (S. 387), by Senators Rockefeller and Lautenberg, and the Partnership to Build America Act (H.R. 2084), by Representative Delaney.

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<sup>82</sup> Los Angeles County Metropolitan Transportation Authority (Metro), *Metro’s 30/10 Initiative*, [http://libraryarchives.metro.net/DB\\_Attachments/100524\\_30\\_10\\_Initiative.pdf](http://libraryarchives.metro.net/DB_Attachments/100524_30_10_Initiative.pdf).

<sup>83</sup> The law also provides eligibility for projects whose total expected costs are 33.3% of the amount of federal highway assistance apportioned in the most recent fiscal year to the state in which the project is located. This is unchanged in MAP-21.

<sup>84</sup> These were the amount of private participation; environmental impact; national or regional significance; project acceleration; creditworthiness; use of new technologies; reduced federal grant assistance; and consumption of budget authority.

<sup>85</sup> For legislation introduced through the 112<sup>th</sup> Congress, see CRS Report R42115, *National Infrastructure Bank: Overview and Current Legislation*, by William J. Mallett, Steven Maguire, and Kevin R. Kosar.

The Partnership to Build America Act (H.R. 2084) proposes to create the American Infrastructure Fund (AIF) as a wholly owned government corporation. The AIF would be funded with \$50 billion using repatriated foreign earnings. The companies repatriating the earnings would receive tax benefits in return for investing a certain share of the repatriated earnings in 50-year bonds paying 1%. Transportation facilities would be only one of a number of infrastructure sectors eligible for help from the AIF. Other sectors would be energy, water, communications, and education. Like many I-bank proposals, the AIF would be authorized to make loans and loan guarantees to eligible projects. In addition, H.R. 2084 also permits the AIF to make equity investments (i.e., an ownership stake) up to a maximum of 20% of project costs.

The American Infrastructure Investment Fund Act (S. 387) proposes to create the American Infrastructure Investment Fund that would be a part of the Department of Transportation. Only transportation projects would be eligible for assistance. Financial assistance to projects would be limited to loans and loan guarantees. The act would authorize an appropriation of \$5 billion in FY2013 and FY2014.

The National Infrastructure Development Bank Act (H.R. 2553) proposes to create the National Infrastructure Development Bank (NIDB) as a wholly owned government corporation. The NIDB would be authorized to aid transportation, energy, environmental, and telecommunications infrastructure projects. In addition to providing loans and loan guarantees, the NIDB would be permitted to subsidize the interest on a new type of taxable bond called an American Infrastructure Bond (AIB). AIBs could be issued by eligible infrastructure project sponsors. An amount equivalent to the federal taxes paid by AIB holders would be credited to the NIDB for assisting other eligible infrastructure projects.

One purported advantage of an I-bank over other loan programs, such as TIFIA, is that it would have more independence in its operation, such as in project selection, and have greater expertise at its disposal. Additionally, an I-bank is typically set up to help a much wider range of infrastructure projects than a TIFIA program, such as water, energy, and telecommunications infrastructure. Proponents hope the best projects, at least those that are the most financially viable, would be selected from across these sectors.

In many formulations, capitalization of the I-bank comes from an appropriation, but in others an I-bank is authorized to raise its own capital through bond issuance. By issuing non-tax-exempt securities, it could tap pools of private capital that do not invest in tax-exempt bonds, the traditional source of much project finance. Tax-exempt municipal securities are unattractive to some investors, either because individual issues are too small to interest them or because the investors do not benefit from the tax preference. Taxable bonds with long maturities might be attractive to such investors, such as pension funds and foreign citizens.<sup>86</sup> An infrastructure bank

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<sup>86</sup> U.S. Congress, Senate Committee on Banking, Housing, and Urban Affairs, Testimony of Felix Rohatyn, Co-Chair of the Commission on Public Infrastructure, *Hearing on Condition of Our Nation's Infrastructure and Proposals for Needed Improvement*, 110<sup>th</sup> Cong., 2<sup>nd</sup> Sess., March 11, 2008, [http://banking.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing\\_ID=9ddc8203-a3d1-448d-946e-3b1f671fda8a](http://banking.senate.gov/public/index.cfm?FuseAction=Hearings.Hearing&Hearing_ID=9ddc8203-a3d1-448d-946e-3b1f671fda8a); U.S. Congress, House Committee on Transportation and Infrastructure, Testimony of Bernard Schwartz, President and CEO, BLS Investments, *Hearing on Financing Infrastructure Investments*, 110<sup>th</sup> Cong., 2<sup>nd</sup> Sess., June 10, 2008, [http://transportation.house.gov/Media/File/Full%20Committee/20080610/Schwartz%20Testimony\\_6-10-08.pdf](http://transportation.house.gov/Media/File/Full%20Committee/20080610/Schwartz%20Testimony_6-10-08.pdf). The Public Infrastructure Commission, Center for Strategic and International Studies, co-chaired by Felix Rohatyn, proposed the creation of a national infrastructure financing agency; see Ehrlich, Everett and Benjamin Landy, *Public Works, Public Wealth: New Directions for America's Infrastructure*, Center for Strategic and International Studies, November 2005.

also might reduce the federal government's share of project costs with greater reliance on non-federal capital and user fees.

Most infrastructure bank proposals assume the bank would improve the allocation of public resources by funding projects with the highest economic returns regardless of infrastructure system or type. Selection of the projects with the highest returns, however, might conflict with the traditional desire of Congress to assure funding for various purposes. In the extreme case, many transportation projects might not be funded if the bank were to exhaust its lending authority on water or energy projects offering higher returns.

Limitations of an I-bank include its duplication of existing programs like TIFIA and the Wastewater and Drinking Water State Revolving Funds. An infrastructure bank may not be the lowest-cost means of increasing infrastructure spending. CBO has pointed out that a special entity that issues its own debt would not be able to match the lower interest and issuance costs of the U.S. Treasury.<sup>87</sup> In some formulations, a national infrastructure bank exposes the federal government to the risk of default.<sup>88</sup> Others have argued that a national infrastructure bank would be an unnecessary centralization of authority from the state and local level to the federal level. An alternative would be to enhance the operation of state infrastructure banks.

## National Infrastructure Innovation and Finance Fund

After including a \$5 billion request for an I-bank in its FY2010 budget request,<sup>89</sup> contingent on its subsequent creation, the Obama Administration dropped this idea from its FY2011 budget in favor of \$4 billion for a National Infrastructure Innovation and Finance Fund. The Administration envisioned this \$4 billion as the first installment of five to eventually capitalize the fund with \$25 billion.<sup>90</sup> The fund would be set up as an operational unit of DOT and would provide loans and grants to leverage non-federal funding, including private-sector capital. Projects of national and regional significance would be chosen through some sort of merit-based analysis. In the FY2012 budget request, the Administration again proposed the creation of a \$5 billion I-bank.<sup>91</sup> The appropriations committees stated that they did not support the idea of an infrastructure fund, and neither it nor a national infrastructure bank was included in MAP-21.<sup>92</sup>

<sup>87</sup> U.S. Congress, House Committee of the Budget and Committee on Transportation and Infrastructure, Testimony of Peter R. Orszag, Director, Congressional Budget Office, *Hearing on Financing Infrastructure Investment*, 110<sup>th</sup> Cong., 2<sup>nd</sup> Sess., May 8, 2008, [http://transportation.house.gov/Media/File/Full%20Committee/20080508/05-08-Infrastructure\\_Testimony.pdf](http://transportation.house.gov/Media/File/Full%20Committee/20080508/05-08-Infrastructure_Testimony.pdf).

<sup>88</sup> U.S. Congress, House Committee on Ways and Means, Subcommittee on Select Revenue Measures, Testimony of Samuel Staley, *Hearing on the National Infrastructure Banks*, 111<sup>th</sup> Cong., 2<sup>nd</sup> sess., May 13, 2010, [http://waysandmeans.house.gov/media/pdf/111/2010May13\\_Staley\\_Testimony.pdf](http://waysandmeans.house.gov/media/pdf/111/2010May13_Staley_Testimony.pdf).

<sup>89</sup> Office of Management and Budget, *Budget of the U.S. Government, FY2010: Analytical Perspectives*, Washington, DC, 2009, table 6-2, <http://www.gpoaccess.gov/usbudget/fy10/pdf/spec.pdf>.

<sup>90</sup> U.S. Congress, House Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit, Testimony of Christopher Bertram, Assistant Secretary for Budget and Programs and Chief Financial Officer, U.S. Department of Transportation, *Hearing on Using Innovative Financing to Deliver Highway and Transit Projects*, 111<sup>th</sup> Cong., 2<sup>nd</sup> sess., April 14, 2010, <http://republicans.transportation.house.gov/Media/file/TestimonyHighways/2010-04-14-Bertram.pdf>.

<sup>91</sup> U.S. Department of Transportation, *Budget Estimates, FY2012, National Infrastructure Bank*, [http://www.dot.gov/sites/dot.dev/files/docs/CFO\\_FINANCING\\_IBank\\_FY2012\\_CJ.pdf](http://www.dot.gov/sites/dot.dev/files/docs/CFO_FINANCING_IBank_FY2012_CJ.pdf).

<sup>92</sup> H.Rept. 111-564, p. 20; S.Rept. 111-230, pp. 16-17.



## State Infrastructure Banks

Instead of creating a national infrastructure bank or fund, it has been suggested that something be done to enhance state infrastructure banks (SIBs) that already exist in many states. Most of these were created in response to a federal state infrastructure bank (SIB) program originally established in surface transportation law in 1995 (P.L. 104-59). According to a recent survey, 32 states had established federally authorized SIBs in 2012. Several states, among them California, Florida, Georgia, Kansas, Ohio, and Virginia, have SIBs that are unconnected to the federal program.<sup>93</sup> Local governments have also begun to embrace the idea. For example, the city of Chicago has established a nonprofit organization, the Chicago Infrastructure Trust, as a way to attract private investment for public works projects.<sup>94</sup> Another example is Dauphin County, PA, which has established an infrastructure bank to make loans to the 40 municipalities and private project sponsors within its borders. Funds for the loans are derived from a state tax on liquid fuels.<sup>95</sup>

One of the one of the biggest stumbling blocks to federally authorized SIBs has been capitalization. This is because federal grant funds that could be used to capitalize a SIB have typically been committed elsewhere. For this reason, one idea is to provide federal funds to states specifically dedicated to SIBs. For example, during the surface transportation reauthorization debate that led to the enactment of MAP-21, it was proposed that \$750 million per year be dedicated to SIBs (H.R. 7, 112<sup>th</sup> Congress). Another proposal was to authorize SIBs to issue a type of tax credit bond (S. 1436, 112<sup>th</sup> Congress). Neither proposal was enacted.

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<sup>93</sup> Robert Puentes and Jennifer Thompson, "Banking on Infrastructure: Enhancing State Revolving Funds for Transportation," Brookings Institution, September 2012, <http://www.brookings.edu/~media/research/files/papers/2012/9/12%20state%20infrastructure%20investment%20puentes/12%20state%20infrastructure%20investment%20puentes.pdf>.

<sup>94</sup> Chicago Investment Trust, <http://www.shapechicago.org/>.

<sup>95</sup> Jeff Frantz, "Dauphin County Creates Infrastructure Bank for Road Improvements," *PennLive*, March 1, 2013, [http://www.pennlive.com/midstate/index.ssf/2013/03/dauphin\\_county\\_creates\\_infrast.html](http://www.pennlive.com/midstate/index.ssf/2013/03/dauphin_county_creates_infrast.html); <http://www.dauphincounty.org/government/about-the-county/Pages/News.aspx?NewsID=220>.