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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 (HTF). 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 vehicle mileage increases.

Congress has yet to address the surface transportation program's fundamental revenue issues, and has given limited legislative 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 21st 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. On August 8, 2014, President Barack Obama signed the Highway and Transportation Funding Act of 2014 (P.L. 113-159). The act provided $10.8 billion in transfers to the HTF and extended the policies and funding authorizations of MAP-21 from October 1, 2014, through May 31, 2015. On May 29, 2015, the Highway and Transportation Funding Act of 2015 (P.L. 114-21) extended both the programmatic authority and the HTF expenditure authority through July 31, 2015. Existing balances in the HTF were sufficient to support the extension.

This report begins with a discussion of the challenges facing 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 HTF 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) raises a variety of financial and administrative concerns.
- Treasury general fund transfers could be used to make up for the HTF's projected shortfalls but could require budget offsets of an equal amount.
- The political difficulty of adequately financing the HTF could lead Congress to consider the desirability of changes to maintain the trust fund system or of 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 (P3s), and federal loan programs, is increasing, but not all projects are 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 seven years there has been a large gap between the dedicated revenues 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 21st Century Act (MAP-21; P.L. 112-141), signed July 6, 2012,[1] 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. On August 8, 2014, President Barack Obama signed the Highway and Transportation Funding Act of 2014 (P.L. 113-159). The act provided $10.8 billion in transfers to the HTF and extended the policies and funding authorizations of MAP-21 from October 1, 2014, through May 31, 2015. On May 29, 2015, the Highway and Transportation Funding Act (P.L. 114-21) provided the authority to continue highway programs and expenditures from the HTF through July 31, 2015. The existing balance in the HTF is thought to be sufficient to support this extension. The mismatch between the desired surface transportation program and the revenues generated by motor fuel taxes persists, and has emerged as a major issue as Congress considers options for reauthorizing the program.[2]

The Highway Trust Fund Financing Dilemma

The HTF has 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 amounts paid into the fund by highway users. 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

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

[2] CRS In Focus IF10025, Surface Transportation Funding and Infrastructure Challenges, by Robert S. Kirk and William J. Mallett.

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 fuel 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.

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.[3] This prediction proved to be incorrect. The shortfalls resulting from the overly optimistic forecasts associated with SAFETEA were rectified by Treasury general fund contributions. In September 2008, Congress enacted a bill that transferred $8 billion of Treasury general funds to shore up the HTF. Other transfers followed; see **Table 1**.

The era of automatic trust fund growth may 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 suppressed growth in personal incomes (reducing leisure travel), reduced work-related driving, and also weakened demand for freight shipments.[4] Total annual VMT has begun to grow again, and is projected to grow at an average of roughly 1% per year over the next 20 years.[5] Over the longer term, other forces are putting pressure on 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, thus reducing the outlook for the number of gallons of fuel used, although the impact in the near term will be modest.[6] Meanwhile, the expanding fleet of hybrid and electric vehicles will, respectively, pay less or nothing by way of fuel taxes.[7]

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[3] U.S. Congress, House Committee of Conference, *Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users*, Conference Report on H.R. 3, 109th Cong., 1st sess., July 28, 2005, H.Rept. 109-203, pp. 1136-1138.

[4] The stagnation in VMT may have reversed with the strengthening of the U.S. economy; VMT in the first quarter of 2015 is estimated to have been the highest ever in the first quarter of a calendar year. See Department of Transportation, "Driving Topped 262 Billion Miles in March, New Data Show," press release, May 20, 2015, http://www.fhwa.dot.gov/pressroom/fhwa15377.cfm.

[5] Federal Highway Administration, *FHWA Forecasts of Vehicle Miles Traveled (VMT): May 2014*, Washington, DC, May 22, 2014, http://www.fhwa.dot.gov/policyinformation/tables/vmt/vmt_forecast_sum.pdf.

[6] CRS Report R42721, *Automobile and Truck Fuel Economy (CAFE) and Greenhouse Gas Standards*, by Brent D. Yacobucci, Bill Canis, and Richard K. Lattanzio.

[7] Congressional Budget Office, *How Would Proposed Fuel Economy Standards Affect the Highway Trust Fund?*
(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 fuel taxes provides the trust fund with roughly $1.5 billion per year.[8] The prospect of reduced motor fuel consumption, however, casts doubt on the ability of the motor fuel taxes to support increased surface transportation spending beyond the next decade even with modest increases in tax rates.[9] In considering reauthorization of MAP-21, Congress could face a choice between finding new sources of income for the surface transportation program and settling for a smaller program, which might look very different from the one currently in place.

Since September 2008 Congress has passed five laws that have transferred a total of $65.3 billion from the Treasury's general fund and the Leaking Underground Storage Tank (LUST) trust fund to shore up the HTF (see **Table 1**). Even so, according to Congressional Budget Office (CBO) estimates, the highway and transit accounts of the HTF will fall to roughly $3 billion near the end of FY2015, far below the $5 billion level considered prudent.[10]

(...continued)

Washington, DC, May 2012, http://cbo.gov/sites/default/files/cbofiles/attachments/05-02-CAFE_brief.pdf. Because of the gradual turnover in the car and truck fleet and because the new CAFE standards will not take effect until model year 2017, CBO estimates that the standards will reduce "gasoline tax revenues between 2012 and 2022 by less than 1 percent."

[8] Sarah Puro, "Statement for the Record: Status of the Highway Trust Fund," Congressional Budget Office, Washington, DC, April 24, 2013, p. 4, http://cbo.gov/sites/default/files/cbofiles/attachments/44093-HighwayTrustFund.pdf.

[9] Despite this, 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 fuel taxes as the near-term solution; the latter also urged indexing of fuel taxes for inflation and an eventual shift to a financing system based on vehicle miles traveled. See http://www.transportationfortomorrow.com/final_report/index.htm and http://financecommission.dot.gov/Documents/NSTIF_Commission_Final_Report_Mar09FNL.pdf. MAP-21 did not call for additional studies on this subject.

[10] Congressional Budget Office, *Highway Trust Fund Projections: CBO March FY2015 Baseline 2014-2025*, March 2015. According to CBO, because requests for reimbursement from the HTF may occur at any time while Treasury transfers to the HTF occur only twice each month and requests for reimbursement from the states can vary from month to month, the Federal Highway Administration (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 in the mass transit account is at least $1 billion.

Table 1. Transfers to the Highway Trust Fund

Billions of Dollars (Reflects Sequestration for FY2013 and FY2014)

Public Law	Effective Date	Highway Account	Mass Transit Account	Highway Trust Fund Total
P.L. 110-318	Sept. 15, 2008	8.017	0	8.017
P.L. 111-46	Aug. 7, 2009	7.000	0	7.000
P.L. 111-147	Mar. 18, 2010	14.700	4.800	19.500
P.L. 112-141 (MAP-21)	July 6, 2012			
From LUST	For FY2012	2.400	0	2.400
From GF	For FY2013	5.884	0	5.884
From GF	For FY2014	9.651	2.042	11.693
P.L. 113-159	Aug. 8, 2014	7.765	2.000	9.765
From LUST	Aug. 8, 2014	1.000	0	1.000
General Fund Total		53.017	8.842	61.859
LUST Fund Total		3.400	0	3.400
Total Transfers		56.417	8.842	65.259

Source: Public laws as indicated. Sequestration amounts from FHWA.

Note: Transfers are from the Treasury's general fund unless indicated. LUST refers to the Leaking Underground Storage Trust Fund.

What Congress Faces

According to projections by CBO, revenue flowing into the HTF through FY2021 pursuant to existing law will fall far short of the amount needed to sustain the current rate of outlays (see **Table 2**). CBO projects that HTF revenues will fall short of outlays by an average of almost $15 billion per year, or roughly $85 billion-$90 billion over a six-year period (FY2016-FY2021).[11] Even factoring in the $10.8 billion in transfers provided in the extension legislation, the HTF would still not have the money available to reimburse state governments and local transit agencies in a timely fashion for expenses the federal government is obligated to pay in FY2015. This could require the Federal Highway Administration (FHWA) to slow payments to the states sometime during the summer of 2015.[12]

This is what the House Ways and Means Committee and the Senate Committee on Finance face in terms of raising revenues or finding offsets for Treasury general fund transfers, should Congress choose to fund surface transportation at the current, or "baseline," level, adjusted for inflation.

[11] See CBO, Letter to the Honorable Sander M. Levin, May 28, 2015, http://www.cbo.gov/publication/50234.

[12] Ibid. To extend MAP-21 to the end of FY2015, Congress would have to provide roughly $3 billion in transfers or new revenues (based on current CBO projections). To extend MAP-21 to the end of the calendar year 2015, Congress will have to provide $8 billion.

Table 2. Projected HTF Sufficiency: FY2016-FY2021

Billions of Dollars

Fiscal Year	HTF Revenue	Obligations		HTF Outlays	
		Amount	Difference	Amount	Difference
2016	40	52	-12	53	-13
2017	40	53	-13	54	-14
2018	40	54	-14	54	-14
2019	40	55	-15	55	-15
2020	40	56	-16	56	-16
2021	40	57	-17	57	-17
4-YR: FY2016-2019 Total	160	213	-52	216	-56
4-YR: FY2016-2019 Average	40	53	-15	54	-14
6-YR: FY2016-2021 Total	240	325	-85	330	-89
6-YR: FY2016-2021 Average	40	54	-14	55	-15

Source: CRS calculations based on CBO, *Highway Trust Fund Projections: March 2015 HTF Baseline 2014-2025.* HTF obligations are projected obligation limitations plus annual exempt obligations. Figures may not add due to rounding.

Notes: Includes combined figures from both the highway account and the mass transit account. Obligations do not reflect Federal Transit Administration general fund authorizations. The "HTF Revenue" column includes interest on the HTF balances.

Since the HTF currently provides all but about $2 billion of annual spending authorized in the surface transportation act (the main exception being the Federal Transit Administration (FTA) New Starts program), these numbers have implications for the size of the program Congress can approve.

Shaping a program that could be supported by revenues that now flow into the HTF implies annual highway and transit outlays of roughly $40 billion through 2021, significantly less than the expected FY2015 outlays of roughly $54 billion. It also implies that the FHWA and FTA would have less contract authority to approve projects on which money would be spent in future years.[13]

The center columns in **Table 2** project the annual amount of funds the federal government could obligate (promise to pay) from the trust fund given the outlays shown in the table. These are the approximate funds available for obligation that the authorizing committees would have available to work with within a baseline-plus-inflation surface transportation bill.

Under this scenario, total obligations plus projected Treasury general funds for FTA (slightly over $2 billion per year), would sum to a four-year bill total of roughly $221 billion and a six-year total of roughly $337 billion. This would be for a baseline-plus-inflation bill with no net increase

[13] Contract authority is a type of budget authority that is available for obligation even without an appropriation (although appropriators must eventually provide liquidating authority to permit the eventual outlays). Contract authority is the type of budget authority used by the HTF.

in the program size.[14] To support bills of this size Congress would have to find new revenues or transfers of roughly $56 billion for a four-year bill and approaching $90 billion for a six-year bill.

The option of 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, both programs must make payments in future years pursuant to commitments that have already been incurred. As of FY2015, committed but unspent contract authority for highway programs was roughly $65 billion, not counting another $24 billion state governments had yet to place under contract. Public transportation programs had roughly $17 billion in unpaid obligations and $8 billion in unobligated contract authority.[15] These amounts are binding obligations of the federal government and must be paid out of future years' HTF receipts.

Existing Highway Fuel Taxes[16]

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 policymakers during much of the history of the HTF was that revenues grew automatically from year to year, so long as vehicle miles traveled grew. 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 cents (not counting the additional 0.1 cent for LUST), or 55%, and on October 1, 1993, from 14 to 18.3 cents, or 31%.[17]

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.[18]

[14] 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. Specified "exempt obligations" are not subject to the obligation limitation.

[15] Office of Management and Budget, *Budget of the U.S. Government: Appendix*, Washington, DC, 2015, pp. 939, 981.

[16] 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.

[17] CRS Report RL30304, *The Federal Excise Tax on Motor Fuels and the Highway Trust Fund: Current Law and Legislative History*, by Sean Lowry.

[18] 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.

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 fuel tax rate under STAA occurred in the lame-duck session of the 97th Congress. In the Great Compromise, 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."[19] 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 fuel tax to 9 cents per gallon.[20]

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 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 fuel 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 fuel taxes:

- The 2.5-cents-per-gallon fuel 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.

[19] 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.*

[20] Jeff Davis, *Reagan Devolution: the Real Story of the 1982 Gas Tax Increase*, Eno Center for Transportation, Washington, DC, 2015, pp. 1-40.

- 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.

Subsequently, under the Taxpayer Relief Act of 1997 (P.L. 105-34), all motor fuel tax revenue was redirected to the HTF (3.45 cents to the highway account and 0.85 cents to the mass transit account), effective October 1, 1997. (The LUST fund continues to receive the revenue from an additional 0.1 cents per gallon tax.)

Since that time, revenue flowing into the HTF has not met expectations in most years, and has generally lagged inflation since FY2007.[21] 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 additional revenue for the HTF is if motor-fuel consumption rises.[22] However, according to the Energy Information Administration, retail gasoline sales declined for five consecutive years before rising in 2013, and diesel fuel use by highway vehicles peaked in 2007.[23]

Alternatives for HTF Financing

The political difficulty of increasing motor fuel 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, as well as freight-related charges and a variety of nontransportation-related options. Revenue estimates by the American Association of State Highway and Transportation Officials (AASHTO) for many such proposals are provided in **Figure 1**.

Sales Taxes

Under the sales tax concept, the federal motor fuel 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.

[21] 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.

[22] 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.

[23] Energy Information Administration, "Petroleum & Other Liquids: Supply and Disposition," http://www.eia.gov/dnav/pet/pet_sum_snd_a_epd0_mbbl_a_cur.htm.

AASHTO estimates for 2015-2020 that an 8.0% tax on gasoline sales and an 11% tax on diesel sales would together average roughly $47 billion in revenues each year, roughly $8 billion above CBO's projected annual HTF revenues and interest. If fuel prices rise in the future, 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 that 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.[24] 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. The Virginia law mandates that the tax be imposed on the average wholesale price (calculated twice each year) but sets a price floor; if prices of motor fuels fall beneath that floor, the amount of fuel tax charged per gallon is not reduced further.[25]

A federal sales tax on motor fuel would likely be at best an interim solution to the long-term problem of financing transportation infrastructure because, like the current motor fuel 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.[26]

Reforms to the Current Fuel-Tax Structure

"Fixing" the Gas Tax

A differently designed gas tax might be indexed to both inflation (either inflation generally or in construction costs) and fuel-efficiency growth.[27] This new design would be imposed after raising the current gas tax rate to compensate for the loss in purchasing power since the last rate increase in 1993.[28] One bill with some of these attributes is the Update, Promote, and Develop America's Transportation Essentials Act (UPDATE; H.R. 680), introduced by Representative Earl Blumenauer. The bill would raise the tax rates on gasoline, diesel, and kerosene by 15 cents over

[24] 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, July 1999. See also, M. Madowitz and K. Novan, "Gasoline taxes and revenue volatility: an Application to California," *Energy Policy*, v. 59, 2013, pp 663-673, http://www.sciencedirect.com/science/article/pii/S0301421513002577.

[25] Virginia, House Bill 2313, 2013 session. Wholesale price is the price at the "rack." The price floor is the wholesale price as of February 20, 2013.

[26] A fuel price floor could be established but its impact would depend on how high the floor is set and whether the floor is indexed to inflation. The outcome could still fail to meet revenue expectations.

[27] There are many inflation 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. If the 18.3-cent-per-gallon tax that supports the trust fund had been adjusted according to the CPI since the tax took effect in 1993, it would be roughly 30 cents per gallon today.

[28] Institute on Taxation and Economic Policy, *A Federal Gas Tax for the Future*, Washington, DC, September 2013, pp. 1-13, http://www.itep.org/pdf/fedgastax0913.pdf.

three years: by 8 cents per gallon for 2016, by 4 cents per gallon for 2017, and by 3 cents per gallon for 2018. Of these increases, the revenue from 1 cent per gallon per year is directed to the mass transit account. The full 15-cent increase is authorized through the end of 2028. The rates would be adjusted annually for inflation. The bill does not provide for an adjustment for gains in fuel efficiency.[29]

An alternative approach might take advantage of movements in fuel prices to make tax increases seem less burdensome to highway users, perhaps by 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 fuel taxes, so that the package could be presented as an increase in highway user charges rather than simply a hike in the gasoline tax.[30]

Providing a Tax Rebate to Offset a Fuels Tax Increase

Recently a number of Members of Congress expressed interest in a gas tax increase if a means of "offsetting" the cost to taxpayers could be found.[31] The basic idea is that personal income tax filers would receive an income tax rebate approximating the average cost of the fuels tax increase to the typical driver. The cost of the rebates would be less than the taxes collected because truckers and other commercial users as well as non-filers would not receive the rebates. The rebates are seen as a way to bridge the support in Washington for resolving the HTF dilemma, with increases in taxes on highway users with a means of making the tax increase palatable to taxpayers as well as Members of Congress who are hesitant to increase the tax burden of their constituents. The rebates would be temporary, either ending or being phased out after a specific number of years, but the tax would continue. Because the proposal raises more revenues than the rebates cost, it could be seen as lowering the deficit (all else being equal). It would provide an increased HTF revenue stream that could fund a long-term surface transportation bill that would not end in a "fiscal cliff."

This solution raises a number of issues. The proposal could be seen, in effect, as a general fund transfer. Depending on the language of the House and Senate budget resolutions, the rebates might have to be offset. Also, although it would eliminate the fiscal cliff, the proposal would have to include indexing the tax rate for inflation, or revenues would still be on a downward slope in the long run. It could be seen as setting a precedent for providing rebates for tax increases in other areas.

Distance-Based (VMT) Charges

Both study commissions created by SAFETEA recommended charging drivers based on vehicle miles traveled to fund federal surface transportation activities.[32] Fees based on vehicle miles

[29] Senators Chris Murphy and Bob Corker have made public a "Highway Funding and Tax Reduction Proposal." The proposal would increase the fuels tax by six cents per gallon in each of the next two years and index the tax rate to the Consumer Price Index (CPI) thereafter. The proposal would also use a number of budgetary offsets to the increased revenue to provide "tax relief" to the public. As of this writing the bill has not been officially introduced.

[30] Other highway taxes include taxes on truck and truck trailer sales, heavy tires, and the heavy vehicle use tax.

[31] For example, see http://www.epw.senate.gov/public/index.cfm?FuseAction=Hearings.Choose&Hearing_id=26e9c9e7-de24-cd3b-de08-81f0cc03dfcb.

[32] Finance Commission. p. 5. http://financecommission.dot.gov/Documents/NSTIF_Commission_Final_Report_Exec_Summary_Feb09.pdf.

traveled have been discussed in the transportation world for years, and have been the subject of extensive study by the Transportation Research Board (TRB)[33] 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 hybrid car and a gasoline-powered sport utility vehicle making the same trip, for example, use the same amount of infrastructure (highway miles), but pay different amounts of tax 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.[34]

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 to some extent 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 GPS-based VMT system in the United States, however, would require a clear set of technical standards to enable the collection and processing of the information generated by this technology

[33] 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.

[34] 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.

on a uniform basis. There are also privacy, cost, and administrative hurdles that would need to be addressed.

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.[35]

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 fuel taxes for an individual driver. Some vehicle 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. Conversely, the case may be made that charging VMTs to hybrid and all electric vehicles' use might discourage their purchase.

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. One solution for this problem would be to index a VMT charge to some inflation measure, but this would likely have the same political issues as indexation of the existing fuel taxes, an idea that has not been enacted by Congress.

[35] 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. AASHTO has suggested the rate for trucks would be 4 cents per mile; see **Figure 1**.

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.[36] 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.[37]

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 collection and management of a VMT system could be 13% or more of collections.[38] Billing could be a major administrative challenge. Based on 2012 figures, there are roughly 250 million privately owned motor vehicles in the United States.[39] 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.

VMT and Non-highway Programs

Since 1982, when the transit account within the HTF 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 not 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, and Congress would face consideration of the future of non-highway programs now financed through the HTF.

[36] This is often referred to as collecting at the "rack." According to the Internal Revenue Service, in 2013 there were 850 registered taxpayers at the "rack."

[37] This 1% cost of collection figure has been challenged; see Daryl S. Fleming, *Dispelling the Myths: Toll and Fuel Tax Collection Costs in the 21st Century*, Reason Foundation, Culver City, CA, November 2012, http://reason.org/files/dispelling_toll_and_gas_tax_collection_myths.pdf.

[38] U.S. Government Accountability Office, *Highway Trust Fund: Pilot Program Could Help Determine the Viability of Mileage Fees for Certain Vehicles*, December 2012, pp. 22-27. 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.

[39] Federal Highway Administration, *2012 Highway Statistics*, http://www.fhwa.dot.gov/policyinformation/statistics/2012/mv1.cfm.

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 HTF. These proposals largely originated from the work of the two SAFETEA congressional commissions and of groups such as AASHTO and TRB.[40]

Among the many proposals that have been advanced 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 or fees for leases for drilling on federal lands or ocean areas, 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. It should be emphasized that the revenue estimates above 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. An AASHTO table showing estimates of the amounts of revenues from various sources that could be produced for surface transportation over a six-year period is reproduced in **Figure 1**.

[40] 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; 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 1. AASHTO Matrix of Revenue Options with Estimates

Existing Highway Trust Fund Revenue Mechanisms	Illustrative Rate or Percentage Increase	Definition of Mechanism/Increase	$ in Billions	
			Assumed 2014 Yield	Total Forecast Yield 2015–2020
Motor Fuel Tax—Diesel	15.0¢	¢/gal increase in current rate (approx. 10% increase in total rate)	$6.54	$41.79
Motor Fuel Tax—Gas	10.0¢	¢/gal increase in current rate (approx. 10% increase in total rate)	$13.21	$78.12
Heavy Vehicle Use Tax	50%	Increase in current revenues, structure not defined	$0.55	$3.42
Sales Tax—Trucks and Trailers	10%	Increase in current revenues, structure not defined	$0.33	$2.19
Tire Tax—Trucks	10%	Increase in current revenues, structure not defined	$0.04	$0.23
Potential Highway Trust Fund Revenue Mechanisms	**Illustrative Rate or Percentage Increase**	**Definition of Mechanism/Increase**	**Assumed 2014 Yield***	**Total Escalated Yield 2015–2020***
Container Tax	$15.00	Dollar per TEU	$0.66	$4.26
Customs Revenues	5.0%	Increase in/reallocation of current revenues, structure not defined	$1.80	$11.66
Drivers License Surcharge	$5.00	Dollar annually	$1.08	$6.98
Freight Bill—Truck Only	0.5%	Percent of gross freight revenues (primary shipments only)	$3.07	$19.90
Freight Bill—All Modes	0.5%	Percent of gross freight revenues (primary shipments only)	$3.80	$24.60
Freight Charge—Ton (Truck Only)	10.0¢	¢/ton of domestic shipments	$1.17	$7.54
Freight Charge—Ton (All Modes)	10.0¢	¢/ton of domestic shipments	$1.44	$9.29
Freight Charge—Ton-Mile (Truck Only)	0.10¢	¢/ton–mile of domestic shipments	$1.41	$9.15
Freight Charge—Ton-Mile (All Modes)	0.10¢	¢/ton–mile of domestic shipments	$3.48	$22.52
Harbor Maintenance Tax	25.0%	Increase in/reallocation of current revenues, structure not defined	$0.43	$2.79
Imported Oil Tax	$2.50	Dollar/barrel	$5.76	$37.28
Income Tax—Business	1.0%	Increase in/reallocation of current revenues, structure not defined	$2.79	$18.06
Income Tax—Personal	0.5%	Increase in/reallocation of current revenues, structure not defined	$6.70	$43.36
Motor Fuel Tax Indexing to CPI—Diesel	–	¢/gal excise tax	–	$5.22
Motor Fuel Tax Indexing to CPI—Gas	–	¢/gal excise tax	–	$10.87
Oil, Gas, and Minerals Receipts	25.0%	Increase in/reallocation of current revenues, structure not defined	$2.20	$14.25
Registration Fee—Electric LDVs	$100.00	Dollar annually	$0.01	$0.06
Registration Fee—Hybrid LDVs	$50.00	Dollar annually	$0.17	$1.12
Registration Fee—Light Duty Vehicles	$15.00	Dollar annually	$3.57	$23.11
Registration Fee—Trucks	$150.00	Dollar annually	$1.63	$10.54
Registration Fee—All vehicles	$20.00	Dollar annually	$4.98	$32.21
Sales Tax—Auto-related Parts & Services	1.0%	Percent of sales	$2.32	$15.04
Sales Tax—Bicycles	1.0%	Percent of sales	$0.06	$0.38
Sales Tax—Diesel	7.6%	Percent of sales (excl. excise taxes)	$9.65	$62.50
Sales Tax—Gas	5.6%	Percent of sales (excl. excise taxes)	$24.05	$155.66
Sales Tax—New Light Duty Vehicles	1.0%	Percent of sales	$2.41	$15.61
Sales Tax—New and Used Light Duty Vehicles	1.0%	Percent of sales	$3.46	$22.40
Tire Tax—Bicycles	$2.50	Dollar per bicycle tire	$0.08	$0.53
Tire Tax—Light Duty Vehicles	1.0%	Of sales of LDV tires	$0.33	$2.12
Transit Passenger Miles Traveled Fee	1.5¢	¢/passenger mile traveled on all transit modes	$0.84	$5.45
Vehicle Miles Traveled Fee—Light Duty Vehicles	1.0¢	¢/LDV vehicle mile traveled on all roads	$27.12	$175.58
Vehicle Miles Traveled Fee—Trucks	4.0¢	¢/truck vehicle mile traveled on all roads	$10.93	$70.73
Vehicle Miles Traveled Fee—All Vehicles	–	¢/vehicle mile traveled on all roads	$38.05	$246.31

** Base annual yield escalated using CPI-U.*

Source: Provided by AASHTO, 2015.

The Future of the Trust Fund

If Congress chooses not to impose new taxes and fees dedicated to the HTF, 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 HTF, 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 historical 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, 112th Congress). 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 more control over transportation spending than they do today. MAP-21 did not continue these special status provisions, and appropriators have regained much of the influence they had previously. Eliminating the HTF would reduce the influence of the authorizing committees further 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.[41] 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. Prior to the injection of general fund revenues into the HTF, one of the most intractable arguments in reauthorization debates concerned which states were "donors" to transportation programs and which were "donees." Donor states are states whose highway users are estimated to pay more to the Highway account of the HTF than they receive. Donee states receive more than they pay. The donor-donee dispute was unique to the federal highway program, and occurred largely because of the ability to track federal fuel tax revenues by state. This issue would likely disappear if transportation-related taxes were 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 programs 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.

Make a General Fund Share Permanent

An alternative to an all-or-nothing view of the future of the HTF would be to keep the HTF revenues at their current or modestly increased levels and provide an annual general fund share for highways. The public transportation titles of surface transportation bills already fund the New Starts program with general fund appropriated funds. The Federal Aviation Administration (FAA)

[41] Joshua Schank, *Life and Death of the Highway Trust Fund: How We Pay for Transportation*, Eno Center for Transportation, Washington, DC, December 2014, https://www.enotrans.org/store/research-papers/the-life-and-death-of-the-highway-trust-fund-2.

budget is also supported by a combination of trust funds and general funds. In aviation policy, the public interest refers to the portion of the costs of FAA's operation of the airways system that is appropriated from the Treasury general fund for FAA's budget. The general fund amount is supposed to approximate what the military and other government users, as well as "societal" non-users, would have contributed to the trust fund had they paid fees based on the value of the benefits they received from the aviation system. A similar argument could be made regarding the public good benefits of a well-functioning highway system to justify an annual general fund appropriation to support spending on roads.[42]

Should Congress agree on an annual general fund share for federal highway funding, the financing structure of the federal-aid highways program could change. Congress would have the choice of appropriating the general fund share to the HTF and maintaining the programmatic status quo, or it could fund some programs from the trust fund and fund others via appropriations. Congress could also consider a two-pronged approach to authorization. It could authorize the trust funded programs separately from the appropriated programs. This would give Congress the option of trust funding a very long (perhaps as much as 10-year) authorization bill for programs that fund projects that typically take many years to plan and complete. The long-term authorization could be paired with a series of short-term bills funded with appropriated general funds for programs whose projects are more likely to be completed quickly.[43]

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.[44] Given this, the small share (generally about 5%)[45] of overall highway finance provided by toll revenues 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.[46] 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 21st 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

[42] Joseph E. Stiglitz, *Economics of the Public Sector* (New York, NY: W.W. Norton Co., 1986), p. 599.

[43] See Jeff Davis, *Why Not a Ten-Year Year Surface Transportation Bill? (Executive Summary)*, Eno Center for Transportation, February 26, 2015, p. 1.

[44] CRS Report R43575, *Tolling U.S. Highways*, by Robert S. Kirk.

[45] 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.

[46] The post-World War II toll road construction, most of which was "grandfathered" into 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.

(on both Interstate Highways and non-Interstate roads) and their conversion to toll facilities, as long as the total number of "free" lanes is not reduced.[47] 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. MAP-21's changes fit well with support in 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 5,746 tolled miles of roads, bridges, and tunnels in 2013,[48] a net increase of 1,025 toll road miles, or 22%, over 1990.[49] The changes in the authorization bills since ISTEA appear to have led to a modest increase in toll receipts as a share of total revenues used for highways, at least for FY2012. Revenues used for highways grew, in nominal terms, from $7.75 billion in FY2005 to $13.53 billion in FY2012 (a nearly $4 billion increase occurred between FY2011 to FY2012). They continued to account for approximately 5% to 6% of total funds available for highways from all units of government during these years. The annual average since FY1955 has been roughly 5%.[50]

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 (P3s) 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, 35 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 3 briefly describes the provisions of *U.S. Code* Title 23 that now govern the tolling of federal-aid highways.

[47] This loosens the restrictions on the tolling of Interstate Highways, but tightens them on the non-Interstate roads.

[48] Federal Highway Administration, *Toll Facilities in the United States: Toll Mileage Trends 2003-2013*, "FHWA-PL-11-032," July 2013, http://www.fhwa.dot.gov/policyinformation/tollpage/miletrends.cfm. The 5,745 miles of toll roads, bridges, and tunnels compare with the total federal-aid highway eligible road length of 1,001,874 miles (0.57%).

[49] Federal Highway Administration, *Toll Facilities in the United States: Bridges-Roads-Tunnels-Ferries*, "Publication No: FHWA-PL-91-009," 1991, p. v.

[50] Federal Highway Administration, *Highway Statistics: Summary to 1975*, Table HF-211, 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. Toll revenues grew during FY1993-FY2008 at an average annual rate approaching 8%.

Table 3. 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 lane 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 has numerous options if it opts to expand the role of tolling in surface transportation finance. Among them are the following:

- 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 new highway construction.[51]
- 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 urban areas, increased tolling could have the added benefit of reducing congestion. Allowing tolls on existing Interstates would overturn the "freedom from tolls" provision of the Federal-Aid Highway Act of 1956.[52]
- 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.

[51] 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 (non-toll revenues). See *Current Toll Road Activity in the U.S.: a Survey and Analysis*, by Benjamin Perez and Steve Lockwood, Federal Highway Administration, January 2009, p. 21.

[52] See CRS Report R43575, *Tolling U.S. Highways*, by Robert S. Kirk.

- 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 a 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. Another issue is one of timing. Even a broad policy shift toward tolling, such as converting the Interstate highway system to tolling as it is reconstructed, would take many years and would provide little relief in the near term.

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 exercises no authority over toll rates, either on roads or on 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.[53] On the other hand, there are 15 states and the District of Columbia that have no toll facilities.[54]

At the local level, expanded use of tolling faces a number of challenges beyond general public hostility.[55] 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.[56]

Trucking interests generally oppose tolling.[57] Major trucking companies have expressed a preference for raising fuel taxes but requiring that the increased revenues go exclusively for highway improvement. Independent truckers generally prefer the status quo, but also view federal

[53] Benjamin Perez and Steve Lockwood, *Current Toll Road Activity in the U.S.: A Survey and Analysis*, Federal Highway Administration, January 2009, pp. 2-3, http://www.fhwa.dot.gov/ipd/pdfs/2008_toll_activity_white_paper.pdf.

[54] Federal Highway Administration, *Toll Facilities in the United States: Table T-1*, September 2013, http://www.fhwa.dot.gov/policyinformation/tollpage/cover.cfm. The data in Table T-1 are based on voluntary responses received biennially.

[55] 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, March 2004, pp. 20-24, http://www.gao.gov/new.items/d04419.pdf.

[56] Dan Weikel, "State probes fiscal health of O.C. Toll Roads," *Los Angeles Times*, December 12, 2012.

[57] American Trucking Association, *Issue: Tolls on the Interstate System*, http://www.trucking.org/AdvIssues/HighwayInf_Fund/Tolls/Issue%20Paper%20-%20Tolls%20on%20the%20Interstate%20System.pdf.

fuel tax increases as preferable to tolls.[58] One reason for the preference for fuel taxes is that studies have concluded that funding highways with motor fuel taxes provides trucks a cross-subsidy from automobile users' gas tax payments.[59] 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.

An additional obstacle could be the billing and operating costs of toll roads. Using tolls to support transportation expenditures may be a comparatively inefficient form of funding because of high administrative costs relative to the gasoline tax. In principle, the cost of operating an electronic tolling system should be much lower than the cost of manual collection and it is commonly assumed that once electronic tolling predominates, the costs should fall. However, recent financial reports from public agencies indicate that even with extensive use of electronic tolling, collecting highway tolls costs between 8% and 12% of the amount collected.[60]

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.[61] 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)."[62]

High-occupancy toll (HOT) lanes and other tolled express lanes are not likely to be big revenue raisers. Covering the costs of expenses for management, operating costs, debt, capital costs, and, in the case of PPPs, a reasonable profit for the investor, is unlikely to leave a surplus.[63] Some HOT lanes have significantly underperformed financially. The I-95 Express Toll Lanes in Maryland have generated revenues substantially below forecasts, and have reportedly barely generated enough revenues to pay for the cost of collecting the tolls.[64] Use of HOT lanes does tend to increase gradually over time, however.

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[58] See, for example, Owner-Operator Independent Drivers Association, "Truckers urge rejection of Ohio House bill 533 on tolling," May 8, 2014, http://www.ooida.com/MediaCenter/PressReleases/pressrelease.asp?prid=348.

[59] 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.

[60] CRS Report R43575, *Tolling U.S. Highways*, by Robert S. Kirk

[61] 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, December 2006, pp. ES-8, F-9, http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w102.pdf. The National Surface Transportation Policy and Revenue Study Commission, *Final Report*, used the NCHRP estimates.

[62] Transportation Research Board, *Fuel Tax and Alternatives for Transportation Funding*, Special Report 285, 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.

[63] U.S. Government Accountability Office, *Traffic Congestion: Road Pricing Can Help Reduce Congestion, but Equity Concerns May Grow*, January 2012, pp. 17-18, http://www.gao.gov/products/GAO-12-119.

[64] Ben Ross, "Maryland Will Pay for Underused I-95 Toll Lanes," November 5, 2014,
(continued...)

Using tolling to reduce the need for HTF resources and to avoid revenue increases or program reductions would require a major expansion of tolling. There are several potential approaches. First, there could be further expansion of debt finance to build new roads and bridges. Debt-financed projects lend themselves to tolling because of the need for a revenue stream to support the debt incurred. Congress could support this approach by further expanding the Transportation Infrastructure Finance and Innovation Act (TIFIA) program, discussed later in this report, although appropriations would be needed to cover the federal subsidy costs Second, Congress might direct that all Interstate System highways be converted to toll roads over time as the system is expanded or reconstructed. 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. This policy might be difficult to implement nationally within the time frame of the next reauthorization bill, but could be considered as part of a longer-term solution to funding needs. Finally, the weight and 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.[65] The federal role in value capture strategies may be limited, as the Government Accountability Office (GAO) has noted,[66] 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 19th 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.[67] 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

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http://greatergreaterwashington.org/post/20673/maryland-will-pay-for-underused-i-95-toll-lanes/.

[65] 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.

[66] 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, July 2010, http://www.gao.gov/new.items/d10781.pdf.

[67] Ibid., p. 16.

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.[68]

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.[69] 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.[70]

Private Financing via P3s

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 P3s, 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. Typically, the "public" in public-private partnerships refers to a state government, local government, or transit agency. The federal government, nevertheless, exerts influence over the prevalence and structure of P3s through its transportation programs, funding, and regulatory oversight.[71]

To be viable, P3s 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, were made by a private company under a 35-year design-build-finance-operate-maintain contract. The Florida Department of Transportation (FDOT) began making availability payments to the private partner when the facility opened in 2014. Toll rates on the new express lanes are set by FDOT, and revenue collected is retained by the state.[72] The financing includes a federal TIFIA loan (see discussion below) and state funds. Aversion in the private sector to the risk that too few users will be willing to pay for use of a new facility has made availability payment P3s more common over

[68] Ibid., p. 20.

[69] 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.

[70] For more information, see http://www.28freeway.com.

[71] CRS Report R43410, *Highway and Public Transportation Infrastructure Provision Using Public-Private Partnerships (P3s)*, by William J. Mallett.

[72] Federal Highway Administration, *I-595 Corridor Roadway Improvements,* http://www.fhwa.dot.gov/ipd/project_profiles/fl_i595.aspx.

the past few years. As a result, state and local governments are retaining project demand risk more often.[73]

It is widely believed that there are hundreds of billions of dollars of private monies available globally for infrastructure investment, such as surface transportation.[74] 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 P3s worth a total of $54.3 billion in the United States; 11 of these projects, totaling $12.4 billion, included a private financing component.[75]

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.[76] Tolling, both public and private, accounts for about 5% to 6% of highway revenues.[77] Thus even with aggressive increases in tolling, it may be unrealistic to expect P3s to generate more than 7% to 9% of the future needs of highway and transit infrastructure nationally. Private-sector financing generated through P3s might best be seen as a supplement to traditional public-sector funding rather than as a substitute.

In addition to attracting private capital, P3s may generate new resources for highway and transit infrastructure in at least two ways. First, P3s 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.[78] 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. GAO argues that most state governments lack the capacity to manage P3 contracts.[79]

Second, P3s may reduce government agencies' costs by transferring the financial risks of building, maintaining, and operating infrastructure to private investors. These risks include 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

[73] "Demand Risk P3s Are An Unhappy Family," *Public Works Financing*, September 2014, p. 19.

[74] 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.

[75] William Reinhardt, *The Role of Private Investment in Meeting U.S. Transportation Infrastructure Needs*, The American Road & Transportation Builders Association Transportation Development Foundation, May 2011, http://www.artba.org/mediafiles/transportationp3whitepaper.pdf.

[76] Ibid., pp. 33-37.

[77] CRS Report R43575, *Tolling U.S. Highways*, by Robert S. Kirk.

[78] 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.

[79] Government Accountability Office, *Federal-Aid Highways: Increased Reliance on Contractors Can Pose Oversight Challenges for Federal and State Officials*, GAO-08-198, 2008, http://www.gao.gov/new.items/d08198.pdf.

miscalculations force the public agency to renegotiate contracts or provide financial guarantees.[80] 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.[81]

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.[82] 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 February 23, 2015, according to DOT, TIFIA since enactment in 1998 had provided assistance of $21.2 billion to 50 projects. The overall cost of the projects supported is estimated to be $77.1 billion.[83]

MAP-21 greatly enlarged TIFIA by increasing its funding from $122 million annually to $750 million in FY2013 and $1 billion in FY2014. Funding was continued at the level of $1 billion annualized in the Highway and Transportation Funding Act of 2014. DOT estimated 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.[84] Assuming an average subsidy cost of 10%, this may have provided DOT with the capacity to lend $6.9 billion in FY2013 and $9.2 billion in FY2014.[85] A major reason for the large increase in TIFIA program funding was the great demand for financing, and this has continued. Before the end of FY2013, DOT had received enough applications to exhaust the budget authority made available for FY2013 and FY2014.[86]

[80] Engel, E., R. Fischer, and A. Galetovic, "Privatizing Highways in the United States," *Review of Industrial Organization*, Vol. 29, 2006, pp. 27-53.

[81] Government Accountability Office, *Highway Public-Private Partnerships*, February 2008.

[82] 23 U.S.C. §601 et seq.

[83] Department of Transportation, "Projects Financed by TIFIA," http://www.dot.gov/tifia/projects-financed.

[84] 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.

[85] 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), Title V of the Omnibus Budget Reconciliation Act of 1990 (P.L. 101-508), Section 502(5)(A)).

[86] In FY2013, as of July 24, 2013, DOT had received requests for a total of $15.8 billion in loans to help finance 31 projects. Total loan capacity over the two years covered by MAP-21 is about $16 billion. Testimony of Anthony Foxx, Secretary of Transportation, U.S. Congress, Senate Environment and Public Works, Oversight Hearing on Implementation of MAP-21's TIFIA Program Enhancements, 113th Cong., 1st sess., July 24, 2013, http://www.epw.senate.gov/public/index.cfm?FuseAction=Hearings.Testimony&Hearing_ID=f32ed6aa-9f39-b2e4-4727-822a1eec59b1&Witness_ID=3e0f8e09-e029-48ec-ad60-3677a96c18f6.

Because of the very large increase in budget authority provided by MAP-21 to the TIFIA program, a provision was included to restrict the amount of unobligated funds that could be carried beyond April 1. The amount was set at 75% of the funds made available for the fiscal year, calculated to be about $500 million in FY2015. This "clawback" provision resulted in a reduction in TIFIA budget authority of $640 million on April 1, 2015, an amount that would have been enough to provide roughly $6 billion in project loans. The funds taken from the TIFIA program were subsequently distributed to the states for surface transportation program grants.[87]

Another change made by MAP-21 permits 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, sought this change to accelerate the financing of 12 transit projects (known as the 30/10 Initiative).[88] 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. 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 increased the maximum share of project costs that TIFIA may provide from 33% to 49%. 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.

National Infrastructure Bank

Congress has considered several proposals to create a national infrastructure bank (I-bank) to help finance infrastructure projects.[89] One proposed in the 114th Congress is the Partnership to Build America Act of 2015 (H.R. 413), by Representative Delaney.[90] Two other I-bank proposals that were introduced in the 113th Congress were the National Infrastructure Development Bank Act (H.R. 2553), by Representative DeLauro, and the American Infrastructure Investment Fund Act (S. 387), by Senators Rockefeller and Lautenberg.

The Partnership to Build America Act of 2015 (H.R. 413) 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-

[87] CRS Insight IN10269, *Capacity Cut of $6 Billion May Mean Fewer TIFIA Loans for Major Transportation Projects*, by William J. Mallett.

[88] Los Angeles County Metropolitan Transportation Authority (Metro), *Metro's 30/10 Initiative*, http://libraryarchives.metro.net/DB_Attachments/100524_30_10_Initiative.pdf.

[89] CRS Report R43308, *Infrastructure Banks and Debt Finance to Support Surface Transportation Investment*, by William J. Mallett and Steven Maguire.

[90] A similar bill, H.R. 2084, was introduced by Representative Delaney in the 113th Congress.

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. 413 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, 113th Congress) proposed 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, 113th Congress) proposed 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 NDIB 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 nontax-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.[91] An infrastructure bank 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

[91] 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*, 110th Cong., 2nd Sess., March 11, 2008, 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*, 110th Cong., 2nd Sess., June 10, 2008.

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.[92] In some formulations, a national infrastructure bank exposes the federal government to the risk of default.[93] 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.

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 FHWA, 32 states and Puerto Rico have established federally authorized SIBs.[94] Several states, among them California, Florida, Georgia, Kansas, Ohio, and Virginia, have SIBs that are unconnected to the federal program.[95] 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.[96] 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.[97]

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,

[92] 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*, 110th Cong., 2nd Sess., May 8, 2008.

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

[94] Federal Highway Administration, State Infrastructure Banks (SIBs), http://www.fhwa.dot.gov/ipd/finance/tools_programs/federal_credit_assistance/sibs/.

[95] 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.

[96] Chicago Investment Trust, http://www.shapechicago.org/.

[97] 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.dauphincounty.org/government/about-the-county/Pages/News.aspx?NewsID=220.

112th Congress). Other proposals include authorizing SIBs to issue a type of tax credit bond (S. 1250, 113th Congress), and modifying the TIFIA program to allow up to 10% of the program's budget authority to support federal loans to SIBs, which would then originate loans to project sponsors (S. 2322, 113th Congress). None of these proposals have been enacted.

Until passage of the Moving Ahead for Progress in the 21st Century Act in 2012 (MAP-21; P.L. 112-141), a federally authorized SIB could be capitalized using some of a state's apportioned and allocated highway and transit funds, and any amount of rail program funds. Federal funds had to be matched with state funds, generally on an 80% federal, 20% state basis. Although the authority to create a SIB in cooperation with the federal government still exists, MAP-21 failed to extend the authority to capitalize a SIB with federal funds. Several bills introduced in the 113th Congress (H.R. 3872/S. 1553, S. 2322) would restore states' ability to use federal highway, transit, and rail funds to capitalize SIBs.

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