



Issue Brief

Federal Funding for U.S. Transit and Roadway Infrastructure

August 2013

The United States' surface transportation infrastructure is funded through a combination of federal, state and local revenue. This revenue is primarily collected through transportation user fees, including state and federal taxes on fuel purchases. Federal fuel taxes on gasoline and diesel make up about 90 percent of revenue for the Highway Trust Fund (HTF), the primary fund for federal investment in surface transportation infrastructure. Federal fuel taxes, which are set per-gallon fees and not based on percentage of sales, have not been changed in 20 years. As construction and maintenance costs rise, the HTF has lost significant purchasing power. Compounding matters, fuel consumption trends have cut into fuel tax revenue. Congress has shown little appetite for increasing the per gallon user fees and has opted to dip into general funds to meet HTF obligations.

Infrastructure investment is no longer meeting the needs of the national transportation system, and current revenue from user fees is below investment levels. Transportation infrastructure is deteriorating as a result, putting a strain on the national economy. The nation's transit and roadway infrastructure received a grade of D in the American Society of Civil Engineers' 2013 Report Card on America's Infrastructure; the report highlighted U.S. Department of Transportation studies indicating a \$112B annual funding gap to bring roads, bridges and transit to a state of good repair over 20 years.¹ An increasing number of states have taken action; recently Wyoming increased its per gallon fuel tax from 14 to 24 cents. So far, the federal government has not taken similar action.

The private sector is requesting increased federal user fees to fund surface transportation infrastructure improvements that will improve interstate commerce and access to ports. The U.S. Chamber of Commerce, which supports higher fuel taxes, states that infrastructure construction spending produces double the initial spending in economic output over two years.² The American Trucking Association supports an increase in the fuel tax rate and adjustments for inflation, noting that 31 percent of travel occurs on deficient pavement. The higher freight cost is currently passed on to consumers.³ One major poll found that Americans support higher transportation user fees – 67 percent support a 10 cent per gallon federal gas tax increase if the revenue is spent on roads, and 64 percent support "spending some gas tax revenue on public transit." Those polled were much less supportive of a blank check – only 20 percent supported the same tax increase when no specifics on use of the funds were provided.⁴

The **Moving Ahead for Progress in the 21st Century Act** (MAP-21, P.L. 112-141), signed into law in July 2012, authorized \$105B of surface transportation funding over fiscal years (FY) 2013 and 2014. MAP-21 made important improvements for financing and public-private partnerships; however, these programs are most applicable to new construction projects. The taxes which have historically supplied nearly all the revenue for the HTF, and are needed to maintain and repair existing infrastructure, did not change. As a result, short-term general funding sources were tapped to ensure that the HTF would remain solvent through FY14, though barely. The HTF's projected low balance at the start of FY15 will force DOT to delay distribution of funds, and the Fund will go broke soon thereafter.^{5,6} The next surface transportation reauthorization bill will face the challenge of developing a longer-term solution to keep the HTF solvent and better meet the funding needs of the nation's infrastructure.

HIGHWAY TRUST FUND REVENUE

The HTF was established in 1956 with a three cents per gallon fuel tax, raised to four cents in 1959. The tax was designed as a user fee to help build the Interstate Highway System.⁷ Rates were raised several times between 1982 and 1993, reaching 18.4 cents for gasoline and 24.4 cents for diesel. Federal fuel taxes have not been changed since then.⁸ Gasoline and diesel fuel respectively make up over 77 percent and over 22 percent of total fuel sold, with special fuels at less than half a percent.⁹ Fuel taxes provide 90 percent of the fund's income.¹⁰ In support of the 1983 fuel tax rate increase, President Reagan explained that “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.”¹¹ Setting the usage price of a resource based on its cost encourages more efficient, less cost intensive use of the resource.

Allocation of Funds

Total HTF outlays (or actual payment of obligations) were \$49B in FY2012 and are projected to gradually increase to \$55B in FY2017.¹² The HTF Mass Transit Account receives 2.86 cents of the per gallon fuel tax. This equates to 15.5 and 11.7 percent of gasoline and diesel revenue respectively, significantly less than the often quoted 80/20 funding split between highways and transit. All but 0.1 cent of the remainder goes to the HTF Highway Account.¹³ Virtually all federal roadway investment and 80 percent of federal transit investment (e.g. \$8.6B of \$10.7B in FY 2014)¹⁴, comes from the HTF. There are approximately 800 urban transit providers and more than 1,300 rural transit providers who receive or benefit from federal funding.¹⁵

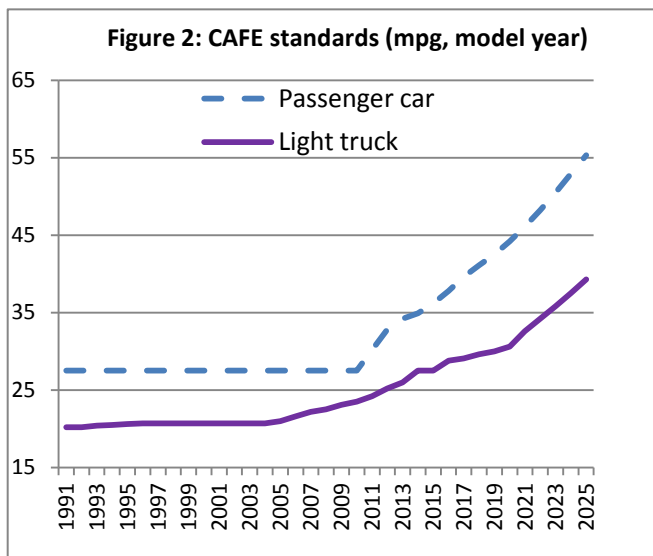
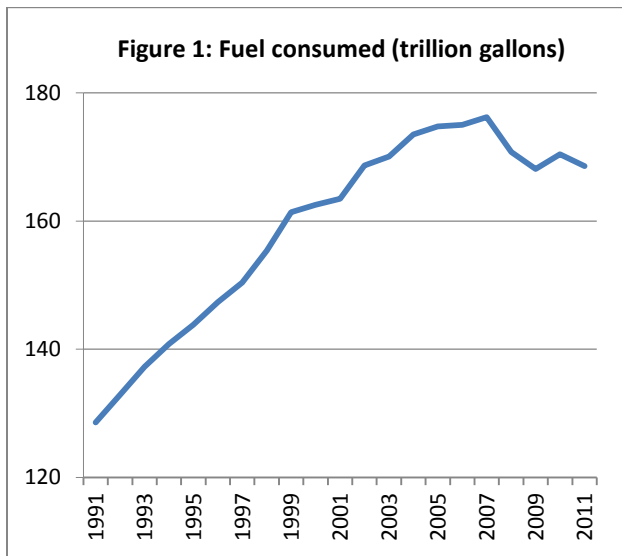
When President Reagan supported the 1983 fuel tax increase of five cents per gallon, he cited the critical need to fund not only the nation’s bridges and highways, but also its transit systems.¹⁶ Due to deteriorating conditions and increased urbanization, that need is even greater today. Urbanized areas are now home to 71 percent of the U.S. population.¹⁷ In 2011, public transportation was used for 56 billion passenger miles of travel. Without public transportation, residential and commercial drivers would have experienced an additional 865 million hours of travel delay, and consumed 450 million more gallons of fuel.¹⁸ The economic strength of metropolitan areas is dependent on maintaining both highway and transit systems in a state of good repair. The two systems, and their efficiency, are interdependent. The use of HTF funds to maintain both provides significant dividends.

A case can be made that the portion of the HTF allocated to transit is actually too small. Between 2004 and 2011, transit passenger miles traveled increased 12 percent as highway vehicle miles traveled remained flat.¹⁹ In 2010, U.S. urban highway congestion caused Americans to waste an average of 34 hours and a total of two billion gallons of fuel, costing the U.S. economy \$101 billion.²⁰ More efficient use of resources will be necessary to keep production costs down and to remain competitive in a global economy. Increasing transit capacity and accessibility is crucial not only to move people in densely populated areas, but also to avoid urban highway congestion which would increase the cost of delivering goods in urban areas. Finally, 22 percent of the \$112B annual funding gap highlighted in the 2013 infrastructure report card from the American Society for Civil Engineers relates to transit funding. This is another indicator that raising the percentage of the fuels tax now flowing into the HTF’s Mass Transit Account should be considered.

Fund Receipt Trends

Fuel sales by volume increased every year between 1991 and 2007, by a total of 37 percent (see Figure 1 below).²¹ Vehicle miles traveled increased each year as well, averaging three percent annually between 1991 and 1999, two percent between 1999 and 2004, and 0.7 percent between 2004 and 2007.²² The steady increase in receipts eased the process of managing outlays to receipts. However, the volume of fuel sold dropped by three percent in 2008, the first drop since 1991. It dropped again by 1.5 percent in 2009. The volume of fuel sold in 2011 remained below 2002 levels, and 4.3 percent below the 2007 peak. While the economic collapse and recovery has impacted fuel

sales, the shock exposed the impacts of longer term trends that will likely keep future U.S. fuel sales volume near-flat. This is a result of changing population demographics (increasingly urban²³ and higher proportion over 62²⁴) and rising Corporate Average Fuel Economy (CAFE) standards for trucks²⁵ and cars (see Figure 2 below).^{26,27}



The halt in steady fuel sales growth cut revenue into the HTF, leading to annual shortfalls in the fund every year since 2008. Thus far Congress has addressed these shortfalls by transferring General Funds into the HTF as follows:

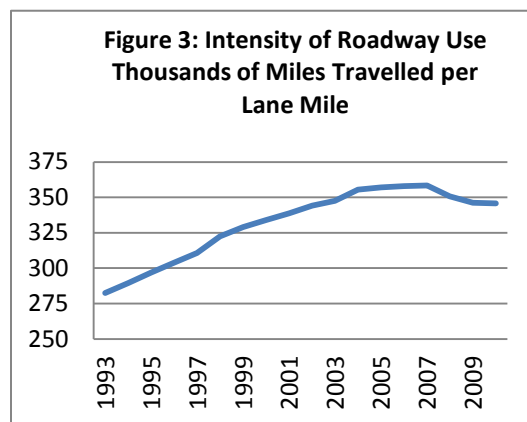
- 2008-09: \$15B²⁸
- 2010: \$19.5B – interest payments previously (1998-2009) diverted to General Funds, returned to HTF²⁹
- 2013: \$6.2B (less 5.1 percent or \$320M due to sequester)³⁰
- 2014: \$12.6B (less 5 percent or \$630M if still impacted by sequester)

Prior to sequestration, the Congressional Budget Office (CBO) projected a cumulative HTF shortfall (absent further action) of \$65B by 2019, starting with \$8B in 2015, and increasing by about \$14B annually.³¹ HTF deficit spending is not a legal option – current law does not allow the HTF to incur a negative balance, and there is no authority to borrow additional funds if a zero balance occurs.

SURFACE TRANSPORTATION INFRASTRUCTURE NEEDS

The need to increase transportation infrastructure maintenance funding has been growing slowly and steadily for decades, but it became most clear in Congress in 2007, when the revenue stream into the HTF stopped increasing. Since the last federal fuel tax rate increase in 1993, infrastructure maintenance demand has grown as follows:

- The intensity of use of the national roadway network has increased. Roadway miles increased only four percent between 1993 and 2010, but vehicle miles traveled per lane mile increased 18 percent.³²
- Deferred maintenance, a common technique to manage inadequate funding, has resulted in decaying infrastructure and a staggering backlog. Thirty-six percent of public bridges are structurally deficient or do not meet current safety standards.³³
- The U.S. rail transit network has grown and is being used more – there were 77 percent more transit rail miles operational in 2010 than in 1993³⁴, and a 72 percent increase in transit rail car miles traveled between 1993 and 2011.³⁵



- A 2011 ASCE study found that deficiencies in the nation's surface transportation infrastructure cost \$130B in 2011. Three-fourths of the added costs came in vehicle operation costs, and virtually all of the remainder resulted from travel time delays. Without increased investment in our infrastructure, the annual cost is projected to increase to \$220B in 2020. At that point the cumulative cost to the nations' economy would be \$912B, split nearly equally between business and households.³⁶
- The Federal Transit Administration (FTA) estimates that one-third of the nation's transit assets are in marginal or poor condition, with \$75B required (post-ARRA) to achieve a state of good repair. An annual expenditure of \$14.4B is needed to prevent that backlog from increasing. This compares to a current investment level of about \$13B. The Federal Highway Administration (FHWA) estimates that at least \$13B more than current annual spending is required to maintain current performance of highway and transit systems.³⁷
- The 2013 infrastructure report card from the American Society for Civil Engineers (ASCE) highlights an FTA analysis indicating that there is a \$25B per year funding gap to improve transit infrastructure from its current D grade to a B grade, which ASCE defines as a state of good repair. The 2013 ASCE report card gives U.S. roads a D and bridges a C+. The report highlights that current funding for roads and bridges needs to increase by \$10B annually to maintain present conditions and performance. Investment of an additional \$87B annually for 20 years would improve the nation's bridges and roads to a state of good repair.³⁸

HIGHWAY TRUST FUND SOLVENCY

The FY15 Highway Trust Fund baseline projections are for \$53B in outlays and \$39B in receipts.³⁹ The HTF will remain insolvent without the aid of cash transfers from the General Fund or elsewhere. By becoming less dependent on user-generated revenue, the system allows drivers to use infrastructure while paying a lower direct share of overall costs. This can encourage increased and less efficient use of infrastructure, leading to higher maintenance costs and congestion levels. To maximize the benefit of government spending on transportation infrastructure, the system should be used more efficiently. The General Fund approach also increases pressure on other budget areas. Spending cuts could bring the HTF to solvency, but this would accelerate infrastructure deterioration around the country and increase hidden costs. There are options, however, to keep the HTF solvent while meeting current surface transportation investment levels that continue to enable economic growth.

Index the Fuel Tax to Inflation

The federal fuel tax rates have not been adjusted since October 1, 1993. If rates had been adjusted, or indexed, annually based on the previous year's Consumer Price Index (CPI), beginning in January 1994, the gasoline tax rate would have increased a total of 12 cents per gallon by 2013, with a maximum annual increase of one cent. Fuel tax revenue in 2011 would have been approximately \$52B rather than \$34B. The HTF would have been solvent without requiring any of the nearly \$50B in general funds required in 2008-10 and 2013-14.^{40,41} In addition, a significantly higher portion of the U.S. roadway and transit infrastructure would be in a state of good repair.

Given the growing deficit between HTF revenue and outlays, indexing alone will not bring the HTF back to solvency. An estimated 11 years of index-based rate increases would be required to reach a fuel tax rate that would keep the HTF balance barely positive in FY15.⁴² If federal fuel taxes are raised to balance multi-year outlays and revenue, annual index-based adjustments would help provide long-term solvency for the HTF.

Most states collect fuel taxes with a set charge per gallon. Seventeen states (CA, CT, GA, HI, IL, IN, KY, MA, MI, NC, NE, NY, VT, WV) now levy at least a portion of their fuel taxes using a variable rate.^{43,44} Excluding the three (MA, MD, VA) that implemented variable-rates mid-2013, 13 of the 14 states varied their rate based on the price of fuel. Bridge and road conditions in these thirteen states are ranked an average of 28th and 25th, respectively.⁴⁵ Florida, however, is different. Its state fuel tax rate has been indexed to the CPI since 1991. It also set a floor for its fuel tax

rate, and began indexing it to the CPI in 1997. The only legislative change since was in 2000, to stop the diversion of 7.3 percent of fuel taxes into general revenues. Florida’s fuel taxes have increased from 11.5 cents in 1991 to 20 cents in 2013. From 1985 to 1990, Florida indexed rates to fuel price, but revenue stream volatility inspired the 1991 change to the CPI index. Florida has the nation’s lowest share of bridges that are structurally deficient, and ranks sixth in roads rated above mediocre condition. It is also worth noting that at least 15 percent of Florida’s state fuel tax receipts are dedicated for public transportation, rather than a fixed amount per gallon.⁴⁶

Raise the Fuel Tax

The CBO projects that the HTF will begin FY15 with a balance of \$5B in the Highway Account and \$3B in the Transit account.⁴⁸ Current projected baseline spending, which assumes annual inflation-based increases, would require a 4.5 cent per gallon of gasoline increase for FY15 (diesel and other fuel tax rates raised proportionally) in order to maintain a positive HTF balance and avoid General Fund transfers. However, when the HTF Highway and Transit accounts have been drawn down and approach \$5B and \$1B, respectively, the DOT must institute cash flow management procedures which delay fund distribution to states. This, in turn, impacts the states’ ability to pay its contractors on a timely basis. A 7.5 cent increase would keep the HTF accounts at approximately the threshold to avoid such cash management procedures. A 10 cent increase would restore the HTF to a \$10.7B balance level by the end of FY15 – this provides a one-month distribution “cushion” and is still less than half the average balance over the last 20 years. It is important to note that projections are subject to error. In fact, the DOT has recently projected that the HTF balance at the start of FY15 will be \$1B less than that projected by CBO – this is a difference of approximately 2 to 2.5 percent of projected outlays and revenues, respectively. If the DOT projection is correct, all future fuel tax rates mentioned in this paragraph would need to increase by almost one cent to achieve the cited HTF balances.⁴⁹

Cost of Higher Gas Tax for Average Driver ⁴⁷	
Increase Per Gallon	Avg. Cost Per Month
\$0.01	\$0.44
\$0.05	\$2.21
\$0.10	\$4.41
\$0.15	\$6.62

A 10 cent per gallon increase at the start of FY15, combined with current baseline expenditure projections, would enable the HTF balance to return to its 20-year average by the end of FY16. This would enable incremental expenditures of \$7B in FY17 and \$10B thereafter, with annual increases for inflation. However, if a \$10-12B HTF balance became the “new normal,” incremental expenditures could begin a year earlier: \$6B in FY16 and \$10B thereafter, with annual increases for inflation. However, this incremental spending would still fall short of the level needed to maintain current infrastructure service levels (see below).

Alternative Index

The DOT National Highway Cost Construction Index (NHCCI) tracks the cost of road construction labor and materials. It has been published since 2003.⁵⁰ If federal fuel taxes had been adjusted annually based on the NHCCI since 2003, the gasoline tax would have peaked at 25.2 cents in 2007, and the maximum increase for any one year would have been a 2.8 cent increase for 2007. It then would have dropped back to 19.2 cents in 2010 before increasing again to 20.5 cents for 2013. This volatility would have created issues for program managers and caused confusion among consumers. However, indexing fuel taxes to the NHCCI since 2004 would also have eliminated the need for any of the General Fund transfers referred to above.

It is possible to significantly reduce the revenue flow volatility from indexing fuel taxes to the NHCCI by applying annual “floors and ceilings.” A ceiling could limit the amount of any annual rate tax increase so that a one year spike would be blunted. If the index drops, setting a floor would keep the tax rate flat (and revenues steady).

Offset Declining Revenue Caused by CAFE Standards

Fuel efficiency standards for cars and light trucks are increasing by about four percent annually starting with Model Year (MY) 2012⁵¹, and are currently set to increase through MY2025, effectively doubling passenger vehicle

fuel efficiency.⁵² Heavy truck CAFE standards will also increase between MY2014 and MY2018 by 15-20 percent.⁵³ The U.S. vehicular fleet generally turns over in about 15 years, so the corresponding reduction in fuel purchases (and therefore HTF revenues) will occur over an extended period.⁵⁴ In a 2012 analysis of the CAFE standards proposed for MY2017-2025, CBO projected a HTF cash flow reduction of 21 percent by 2040.⁵⁵ While the impact of increasing fuel efficiency (including greater use of electric vehicles) on HTF revenues will clearly need to be addressed in a more robust manner in the next decade, its impact through 2020 would likely be balanced by a two cent per gallon increase starting in 2015, or a 0.5 cent increase per year between 2016 and 2020.

RESTORING TRANSPORTATION INFRASTRUCTURE

Restoring the Highway Trust Fund to solvency through increased user fees would be an important achievement, but current federal investment in surface transportation infrastructure is not meeting the needs of a healthy economy. Additional revenue from user fees, at various levels, could help restore the transportation network.

Maintain Current Infrastructure Service Levels

Based on DOT analyses highlighted by the ASCE, annual spending needs to increase by \$12-\$13B to prevent road, bridge and transit infrastructure from deteriorating beyond the current D rating. To meet this objective without General Fund transfers, and adjusting the incremental spending annually using the projected CPI, a minimum of a 12.5 cent increase in the FY15 gasoline tax rate and proportional increases in other fuels, is required. Annual incremental investment would ramp up from \$5B in FY15, to \$12.5B in FY16, increasing with inflation thereafter.

Achieve a State of Good Repair and Support Economic Growth

Based on DOT analyses highlighted by the ASCE, there is an annual funding gap of \$112B to bring the transportation system back to a state of good repair within 20 years. A 15 cent gasoline tax increase for FY15, and proportional increases in other fuels, would fund eight percent of the total gap in FY15, and 17 percent thereafter – equivalent to slightly less than half the current federal share of capital funding for both transit and highways. (The federal share of total funding for transit and highways is about 19 percent and 22 percent respectively.)^{56,57} Phasing the increase over two years would keep the HTF solvent, but incremental spending would be delayed by one year. A 15 cent per gallon increase would cost the average auto driver about \$6.62 per month.

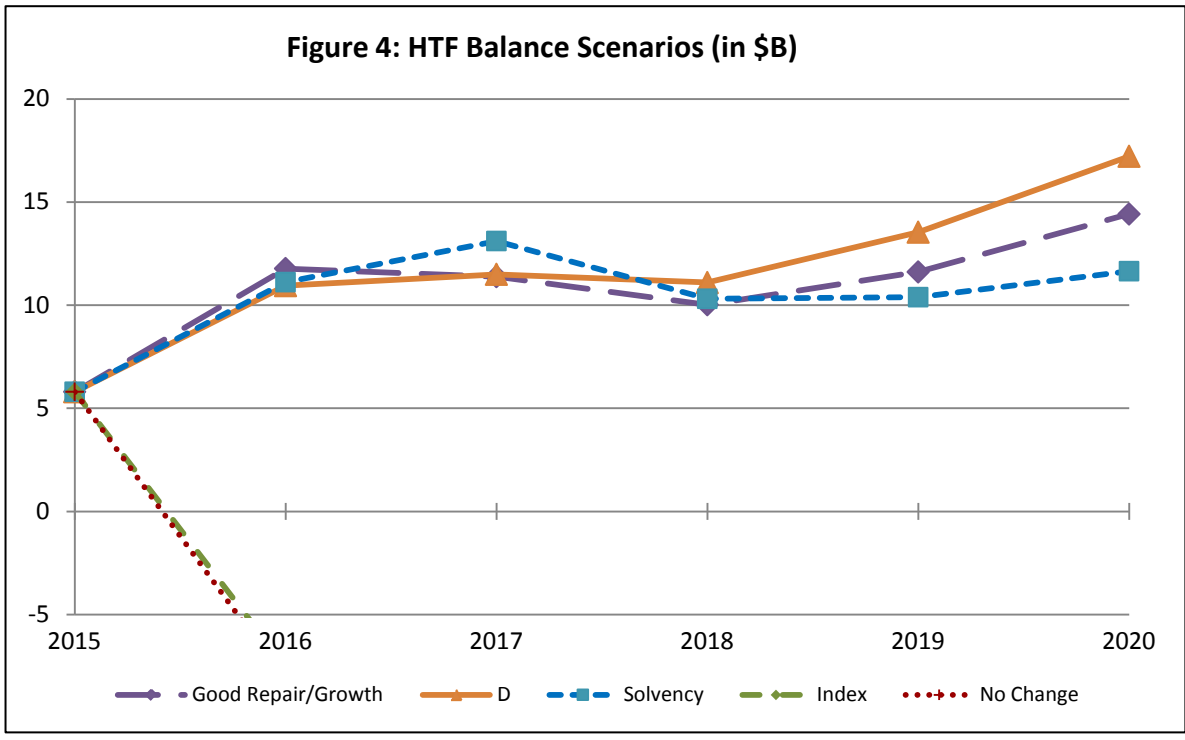
HTF Balance Projections

Figure 4 charts the HTF starting balance by year for different fuel tax and infrastructure investment scenarios to achieve the objectives outlined above. CBO projections are used as a baseline.^{58,59}

1. Good Repair/Growth: A **15 cent** per gallon gasoline tax increase for FY15, with other fuel taxes increased proportionately. Fuel taxes are indexed to the CPI beginning in FY16.
2. D (Maintain current service levels): A **12.5 cent** per gallon gasoline tax increase for FY15, with other fuel taxes increased proportionately. Fuel taxes are indexed to the CPI beginning in FY16.
3. Solvency: A **10 cent** per gallon gasoline tax increase for FY15, with other fuel taxes increased proportionately. Fuel taxes indexed to the CPI beginning in FY16. Service levels continue to deteriorate.
4. Index: Fuel taxes are indexed to the CPI beginning in FY15, baseline
5. No change: Fuel taxes and spending levels are left unchanged.

A 15 cent per gallon increase for 2015 would account for the approximately 13 cent change due to increases in the CPI from 1993 through 2014, and two cents to account for reduced fuel usage resulting from increased vehicle fuel efficiency through 2020 (see the Impact of CAFE Standards section above).

Figure 4: HTF Balance Scenarios (in \$B)



FUEL SALES TAX

Rather than rely on discrete or formula-driven increases to the per gallon federal excise tax, some have argued that the tax should be replaced with a federal sales tax. This tax could be applied at the consumer or wholesale level. An 8.4 percent tax on gasoline and a 10.6 percent tax on diesel sales would produce revenue equivalent to the current federal fuel taxes.⁶⁰ A major problem with this approach is that fuel price volatility causes unpredictable cash flow for capital program managers.

As discussed earlier, some states use a sales tax model for fuel, often applied at the wholesale level or in the form of a variable excise tax based on fuel prices. Georgia levies a 4.0 percent sales tax based on the average price of fuel over a six-month period. Michigan applies a 6.0 percent sales tax.⁶¹ On July 1, 2013, both Maryland and Virginia changed their transportation funding sources. Virginia eliminated its 17.5 cent fuel excise tax, replacing it with a 3.5 percent wholesale tax on gasoline (6.0 percent on diesel fuel), an increase in the car sales tax and an annual fee for alternative fuel vehicles. Maryland created a hybrid fuel tax system, adding a one percent (increasing by an additional one percent in each of the next two years) wholesale fuel tax to pair with the state's fuel excise tax rate. In addition, it became the second state in the nation to increase its fuel excise tax annually based on changes to the CPI, with annual increases capped at eight percent of the previous year's rate.

USER FEES BASED ON VEHICLE MILES TRAVELED

Rather than raising fuel taxes, some have argued to eliminate them altogether. The consumption tax would be replaced with a different user fee structure based on driving distance, commonly referred to as a vehicle miles traveled (VMT) fee. A VMT fee provides a more direct correlation to the cost of infrastructure use, especially if a vehicle's weight class is factored into the rate fee. This fee structure decouples HTF revenue from fuel efficiency gains and wider adoption of alternative fuel vehicles.

A basic VMT approach does not require tracking drivers continuously – periodic odometer readings could be used to determine a driver's balance. Privacy concerns, a common argument against VMT strategies, would not be a significant issue for this approach. A more complex approach could use GPS technology to passively track vehicles,

which could be used to broadly apply a congestion and/or road-type pricing mechanism. A congestion-based model would involve varying the price of roadway use based on time of day or other factors, increasing the efficiency with which the roadway is used. However, privacy issues enter the discussion, and implementation costs would be more significant, depending on what proportion of the infrastructure is deemed to require congestion pricing. Limited congestion pricing is being used today on a small subset of bridges and limited access highways. A more broadly applied congestion pricing approach may raise privacy issues, due to the need to track where and when the vehicle is being driven.

A number of states have expressed interest in VMT. Oregon is the most prominent; two overlapping three-month live pilots involving a total of 93 participants were successfully completed there earlier this year. Drivers paid 1.6 cents per mile to the state in lieu of fuel taxes. Participants chose from four options: a simple device that counts mileage, a GPS system that forgoes charges when on private or out-of-state roads, a smart-phone GPS app that can be turned off, or a flat fee payment. As part of the pilot, some participants' accounts were managed by the state while others were managed by a private company. Participants found the system generally acceptable and gave high marks for privacy protection.⁶² In July 2013, the Oregon legislature passed a voluntary VMT tax program limited to 5,000 drivers. Participants will pay a 1.5 cent per mile tax instead of the 30 cent per gallon tax.

The FHWA found that heavier trucks pay only 50 to 80 percent of their share of maintenance cost responsibility.⁶³ A South Dakota DOT document states that 50 years of road tests have shown that a 20,000 pound truck axle consumes a thousand times as much pavement life as a 2,000 pound automobile axle.⁶⁴ Oregon's DOT estimated that "...it takes roughly 750 automobiles weighing 3,800 pounds each to do the same pavement damage as one fully-loaded, 80,000-pound truck.⁶⁵ The difference between diesel and gasoline tax rates could be increased under the current funding structure; under a VMT structure, weight-indexed VMT fees more directly address the issue.

Even for a basic VMT approach, it would be necessary to coordinate with states to plan, define and deploy support processes for periodic mileage data collection, billing and collection. The upcoming surface transportation authorization bill is an opportunity to commission a study to develop a detailed plan and conduct a demonstration pilot. Areas to explore include coordination with state-level vehicle programs such as emissions inspections, driver licensing or vehicle registration. Insurance companies are potential private partners – they are ubiquitous, have a billing infrastructure in place, and often use VMT to help determine premiums.

Changing the means by which revenue is obtained (from a fuel tax to VMT) would not automatically repair the current problems of HTF solvency and underfunded infrastructure. The rate must be set at an adequate level, at the outset, to balance the costs of maintaining and upgrading the nation's infrastructure, and a rate adjustment mechanism is required to maintain that balance in future years.

For More Information:

[APTA Primer on Transit Funding - FY 2013 Through FY 2014](#) – American Public Transportation Association
[Funding and Financing Highways and Public Transportation](#) – Congressional Research Service
[2013 Report Card For America's Infrastructure](#) – American Society of Civil Engineers
[National Transportation Statistics](#) – U.S. Department of Transportation

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- ¹ [2013 Report Card For America's Infrastructure](#), American Society of Civil Engineers (ASCE). The report card refers to annual gaps of \$79B, \$8B and \$25B for roads, bridges and transit, totaling \$112B. ASCE obtained these figures from the FHWA and FTA. Also, based on ASCE's 2011 Failure to Act report (see endnote below) which found a total funding gap of \$846B, ASCE derived a \$94B annual gap if applied to 2012-2020. Since this gap increases each year investment lags, by FY15 this gap will have increased significantly.
 - ² [Testimony of Thomas J. Donohue, President and CEO U.S. Chamber of Commerce, House Committee on Transportation and Infrastructure Hearing on: "The Federal Role in America's Infrastructure"](#), February 13, 2013
 - ³ [Testimony of Derek J. Leathers, President and Chief Operating Officer, Werner Enterprises Inc., House Committee on Transportation and Infrastructure Hearing on: "The Federal Role in America's Infrastructure"](#), February 13, 2013
 - ⁴ [What do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year Four of a National Survey](#), Mineta Transportation Institute, MTI Report 12-07, 2013, Appendix A, Question 18
 - ⁵ [Testimony of Kim Cawley, Chief, Natural and Physical Resources Cost Estimates Unit of the Congressional Budget Office, House Subcommittee on Highways and Transit, Committee on Transportation and Infrastructure, July 23, 2013](#)
 - ⁶ [Testimony of Polly Trottenberg, Undersecretary for Policy United States Department of Transportation \(USDOT\), House Committee on Transportation and Infrastructure Hearing on: "The Federal Role in America's Infrastructure"](#), July 23, 2013
 - ⁷ [The Highway Trust Fund](#), USDOT, Federal Highway Administration, Policy and Governmental Affairs, Legislative Affairs and Policy Communications, accessed 4/17/2013
 - ⁸ [Federal Excise Tax Rates on motor fuels and lubricating oil](#), [Highway Statistics](#), USDOT, Federal Highway Administration, Office of Highway Policy Information, Highway Statistics Series, 2011, Section 8.2.1
 - ⁹ [National Transportation Statistics](#), USDOT, Research and Innovative Technology Administration (RITA), Bureau of Transportation Statistics, Table 4-10
 - ¹⁰ [Funding and Financing Highways and Public Transportation](#), Robert S. Kirk and William J. Mallett, 12/26/12, Congressional Research Service (CRS), R42877
 - ¹¹ Ibid.
 - ¹² [Testimony of Kim Cawley, Chief, Natural and Physical Resources Cost Estimates Unit of the Congressional Budget Office, House Subcommittee on Highways and Transit, Committee on Transportation and Infrastructure, July 23, 2013](#)
 - ¹³ [Highway Trust Fund and Taxes](#), USDOT, Federal Highway Administration, MAP-21 Fact Sheet, accessed 4/17/2013
 - ¹⁴ [APTA Primer on Transit Funding - The Moving Ahead for Progress in the 21st Century Act and Other Related Laws, FY 2013 Through FY 2014](#), American Public Transportation Association (APTA), Jan 2013
 - ¹⁵ [Testimony of Polly Trottenberg, Undersecretary for Policy USDOT, House Committee on Transportation and Infrastructure Hearing on: "The Federal Role in America's Infrastructure"](#), July 23, 2013
 - ¹⁶ [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.](#)
 - ¹⁷ [2010 Census Urban and Rural Classification and Urban Area Criteria, Urban, Urbanized Area, Urban Cluster, and Rural Population, 2010 and 2000: United States](#), US Department of Commerce, US Census Bureau, accessed 5/13/2013
 - ¹⁸ [2012 Urban Mobility Report](#), Texas A&M Transportation Institute, December 2012
 - ¹⁹ [The Business Case for Investment in Public Transportation](#), American Public Transportation Association (APTA), March 2013
 - ²⁰ [2013 Report Card For America's Infrastructure](#), ASCE
 - ²¹ [National Transportation Statistics](#), USDOT, RITA, Bureau of Transportation Statistics, Table 4-9
 - ²² [National Transportation Statistics](#), USDOT, RITA, Bureau of Transportation Statistics, Table 1-35
 - ²³ [2010 Census Urban and Rural Classification and Urban Area Criteria, Urban, Urbanized Area, Urban Cluster, and Rural Population, 2010 and 2000: United States](#), US Department of Commerce, US Census Bureau, accessed 5/13/2013
 - ²⁴ [Age and Sex Composition in the United States: 2010 Census Brief](#), US Department of Commerce, US Census Bureau, accessed 4/16/2013
 - ²⁵ [FACTSHEET: Paving the Way Toward Cleaner, More Efficient Trucks](#), National Highway Traffic Safety Administration, August 8, 2011
 - ²⁶ [FACTSHEET: NHTSA and EPA Establish New National Program To Improve Fuel Economy and Reduce Greenhouse Gas Emissions For Passenger Cars and Light Trucks](#), National Highway Traffic Safety Administration, May 1, 2010
 - ²⁷ [FACTSHEET: DOT/NHTSA and EPA Set Standards to Improve Fuel Economy and Reduce Greenhouse Gases for Passenger Cars and Light Trucks for Model Years 2017 and Beyond](#), National Highway Traffic Safety Administration, August 28, 2012
 - ²⁸ [Funding and Financing Highways and Public Transportation](#), Robert S. Kirk and William J. Mallett, 12/26/12, CRS, R42877
 - ²⁹ [APTA Primer on Transit Funding - The Moving Ahead for Progress in the 21st Century Act and Other Related Laws, FY 2013 Through FY 2014](#), American Public Transportation Association (APTA), Jan 2013
 - ³⁰ [OMB Report to Congress on the Joint Committee Sequestration](#), Office of Management and Budget, March 1, 2013
 - ³¹ [Testimony of Kim Cawley, Chief, Natural and Physical Resources Cost Estimates Unit of the Congressional Budget Office, House Subcommittee on Highways and Transit, Committee on Transportation and Infrastructure, July 23, 2013](#)
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