



Written statement of Jeff Davis, Senior Fellow, Eno Center for Transportation

Before the Senate Committee on the Budget, July 31, 2024

“Charging Ahead: The Future of Electric Vehicles”

Mr. Chairman, Mr. Ranking Member, Senators, my name is Jeff Davis and I am a Senior Fellow at the Eno Center for Transportation. Eno is a nonpartisan think tank founded by traffic pioneer William Phelps Eno in 1921 to carry on his work increasing the safety and flow rate of vehicular traffic. We are a 501(c)(3) nonprofit organization that now studies all modes of transportation up and down the federalist chain of government.

The federal government began taxing motor fuels in 1932, to balance the federal budget, after the Depression collapsed incomes (and thus income tax receipts) but somehow people kept driving. By 1932, net income reported on tax returns had dropped 55 percent from its pre-Depression peak, but the number of gallons of gasoline used on roads had only dropped 9 percent.¹ The gas tax was a very broad-based and non-volatile revenue stream.

Gasoline and diesel fuel receipts were transferred to a new Highway Trust Fund created by Congress on July 1, 1956 to reassure the House members who had defeated the 1955 Interstate highway bill that the increased taxes levied by the revised 1956 legislation would be held separately from general revenues and would only be spent on specific highway programs. After Congress killed the 1972 highway bill, the Trust Fund was opened to mass transit spending as well, at local option, in 1973 and on a permanent basis by the establishment of a Mass Transit Account in 1982.

The Highway Trust Fund has been fundamentally insolvent since 2008. Electrification did not start this problem, but it stands to make the problem much worse in the coming years.

From the Trust Fund’s inception on July 1, 1956, through the end of last month, the Trust Fund had received \$1.4 trillion in excise taxes on highway users, principally from almost \$900 billion in gasoline and gasohol taxes and \$300 billion in diesel fuel taxes. Over the same 67-year period, the Trust Fund has paid out \$1.6 trillion in outlays.²

That “revenue gap” of \$0.2 trillion has been filled primarily with *ad hoc* transfers from the General Fund of the Treasury, to the tune of \$272 billion since the Trust Fund first became insolvent in 2008. The Infrastructure Investment and Jobs Act of provided the last \$118 billion tranche of General Fund transfers, of which \$113 billion remained unspent as of one month ago. The Trust Fund is expected to need replenishing again in the middle of 2028.

Table 1

Special Transfers to the Highway Trust Fund by Acts of Congress

Special General Fund Transfers to the Highway Trust Fund, 2008 to Present

(Billions of Dollars -Showing the Effects of Joint Committee Sequestration in FY 2014)

<u>Public Law</u>	<u>Enacted</u>	<u>Effective</u>	<u>Highway Account</u>			<u>Mass Transit Account</u>			<u>HTF</u>
			<u>Enacted</u>	<u>Sequest.</u>	<u>Net Total</u>	<u>Enacted</u>	<u>Sequest.</u>	<u>Net Total</u>	<u>Net Total</u>
PL 110-318	9/15/08	9/15/08	8.017		8.017	0.000		0.000	8.017
PL 111-46	8/7/09	8/7/09	7.000		7.000	0.000		0.000	7.000
PL 111-147	3/18/10	3/8/10	14.700		14.700	4.800		4.800	19.500
PL 112-141	7/6/12	10/1/12	6.200		6.200	0.000		0.000	6.200
PL 112-141	7/6/12	10/1/13	10.400	-0.749	9.651	2.200	-0.158	2.042	11.693
PL 113-159	8/8/14	8/8/14	7.765		7.765	2.000		2.000	9.765
P.L. 114-41	7/31/15	7/31/15	6.068		6.068	2.000		2.000	8.068
P.L. 114-94	12/4/15	12/4/15	51.900		51.900	18.100		18.100	70.000
P.L. 116-159	10/1/20	10/1/20	10.400		10.400	3.200		3.200	13.600
P.L. 117-58	11/15/21	11/15/21	90.000		90.000	28.000		28.000	118.000
Total, GF to HTF			212.450	-0.749	211.701	60.300	-0.158	60.142	271.843

Leaking Underground Storage Tank Trust Fund Transfers to the Highway Trust Fund

(Billions of Dollars -Showing the Effects of Joint Committee Sequestration in FY17 and FY18)

<u>Public Law</u>	<u>Enacted</u>	<u>Effective</u>	<u>Highway Account</u>			<u>Mass Transit Account</u>			<u>HTF</u>
			<u>Enacted</u>	<u>Sequest.</u>	<u>Net Total</u>	<u>Enacted</u>	<u>Sequest.</u>	<u>Net Total</u>	<u>Net Total</u>
PL 112-141	7/6/12	7/6/12	2.400		2.400	0.000		0.000	2.400
PL 113-159	8/8/14	8/8/14	1.000		1.000	0.000		0.000	1.000
P.L. 114-94	12/4/15	12/4/15	0.100		0.100	0.000		0.000	0.100
P.L. 114-94	12/4/15	10/1/16	0.100	-0.007	0.093	0.000		0.000	0.093
P.L. 114-94	12/4/15	10/1/17	0.100	-0.007	0.093	0.000		0.000	0.093
Total, LUST to HTF			3.700	-0.014	3.687	0.000		0.000	3.687

Total GF & LUST Transfers to HTF	216.150	-0.762	215.388	60.300	-0.158	60.142	275.529
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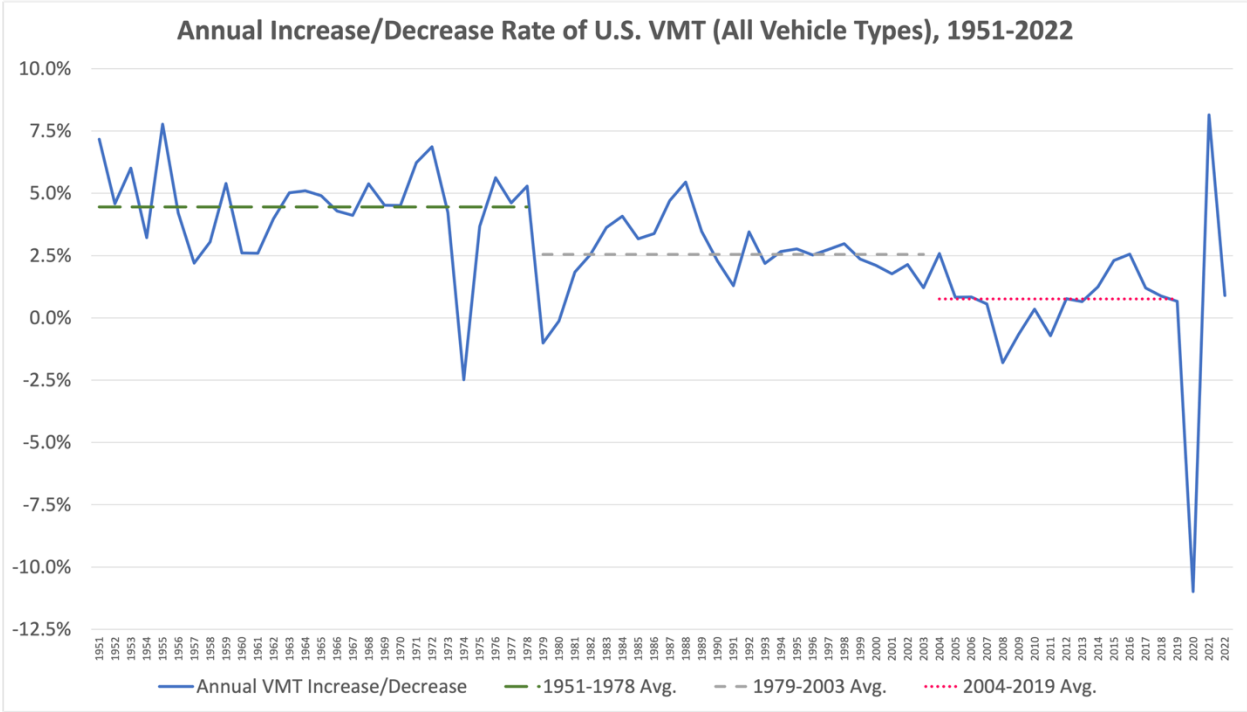
The insolvency problem predates modern, mass-marketed electric vehicles, and the trendlines were negative even before hybrids appeared on the market in 2000, but the latest U.S. policies towards rapid electrification of the U.S. vehicle fleet will have the side effect of making the Trust Fund’s imbalance much worse in the coming decade.

To begin with, taxing motor fuels on a fixed cent-per-gallon basis has always been a proxy for taxing the act of driving a vehicle itself. And the rate at which Americans drive, day-to-day, has stabilized after decades of rapid growth.

From the 1950s to the end of the 1970s, the number of miles driven on American roads grew on a pace to double every 16 years. Driving behavior changed following the second major worldwide oil shock of the decade, and beginning in 1979, driving only increased on a pace to double every 30 years.

But then, around 2004, habits changed again, and from then to 2019 (the pre-COVID year), total Vehicle-Miles Traveled (VMT) was basically stagnant, only increasing at a rate to double every 90 years.

Figure 1



Data sources: FHWA Table VM-201 in Highway Statistics Summary to 1995, and the December 2023 Traffic Volume Trends.

The new (June 2024) forecast from the Federal Highway Administration is for the VMT growth rate to keep slowing. For light-duty vehicles (the ones that use most gasoline), VMT is projected to grow at an 0.5% per year rate over the next two decades and slow after that. At that rate, VMT would take over 140 years to double again.

Table 2

Federal Highway Administration June 2024 Projected Compound Annual Growth Rates in Vehicle Miles Traveled (VMT)

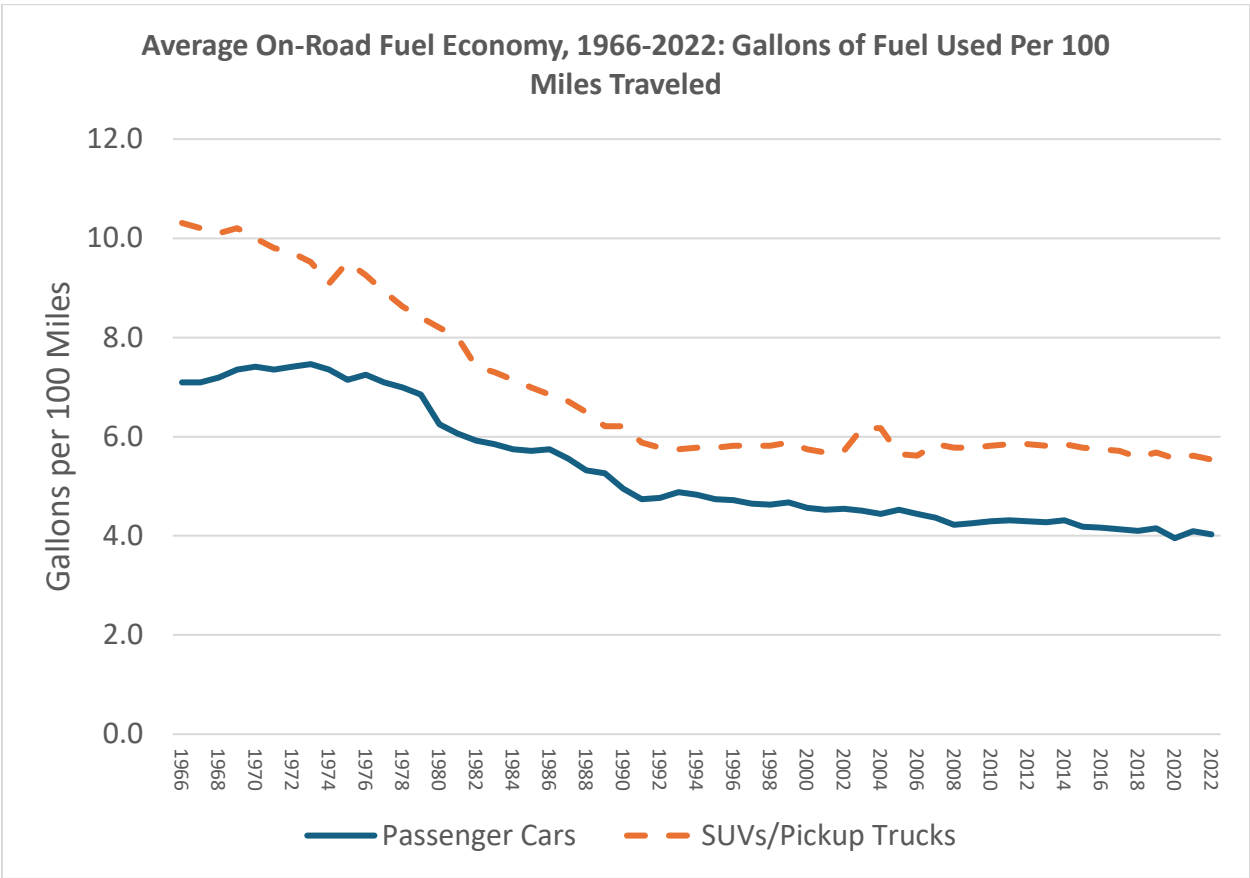
Vehicle Class	Pessimistic Economic Growth Outlook* 2019-2040 (21 Year)	Pessimistic Economic Growth Outlook* 2019-2050 (31 Year)	Baseline Economic Growth Outlook* 2019-2040 (21 Year)	Baseline Economic Growth Outlook* 2019-2050 (31 Year)	Optimistic Economic Growth Outlook* 2019-2040 (21 Year)	Optimistic Economic Growth Outlook* 2019-2050 (31 Year)
Light-Duty Vehicles	0.4%	0.3%	0.5%	0.4%	0.7%	0.6%
Single-Unit Trucks	1.5%	1.4%	2.1%	1.9%	2.9%	2.6%
Combination Trucks	1.1%	1.0%	1.3%	1.1%	1.5%	1.3%
Total	0.5%	0.4%	0.6%	0.5%	0.9%	0.8%

Because taxing gallons of gasoline consumed was a proxy for taxing miles driven, the number of gallons sold and taxed per year grew with VMT, and that was faster than inflation in the 1950s and 1960s, preventing the need for tax rate increases.

But after those oil shocks, the number of gallons of gasoline used on roads became a less and less perfect proxy for miles driven. Federal energy independence policy in the 1970s mandated more fuel-efficient cars, and these standards were raised again in the late 2000s as part of federal energy and environmental policy. To make the trend lines point the same direction, we can invert the ratio and look at gallons per mile instead of miles per gallon – in this instance, the average number of gallons of gasoline used for every 100 miles driven.

In 1976, the average passenger car on the road burned 7.2 gallons of gasoline for every 100 miles driven. Today, the average passenger car on the road only burns 4.0 gallons of gas every 100 miles. For SUVs and pickups, fuel efficiency has increased from 9.3 gallons per hundred miles in 1976 to 5.6 gallons per hundred miles today.

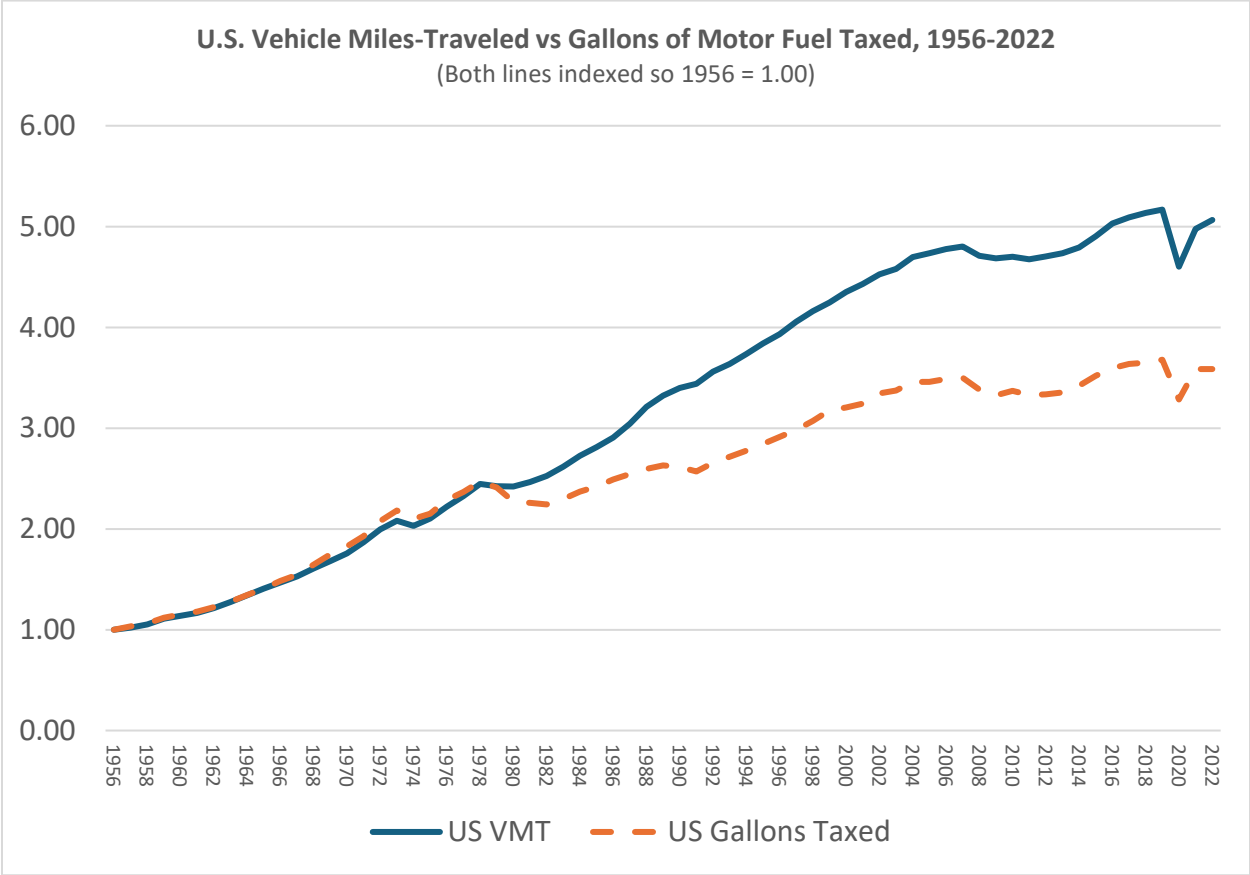
Figure 2



Data source: U.S. Energy Information Administration, Monthly Energy Review (June 2024), Table 1.8, Motor Vehicle Mileage, Fuel Consumption, and Fuel Economy

Putting the VMT trendline and the gallons taxed trendlines together and indexing them to the same starting point shows how the gas tax has become a worse and worse proxy for miles driven since the early 1980s.

Figure 3

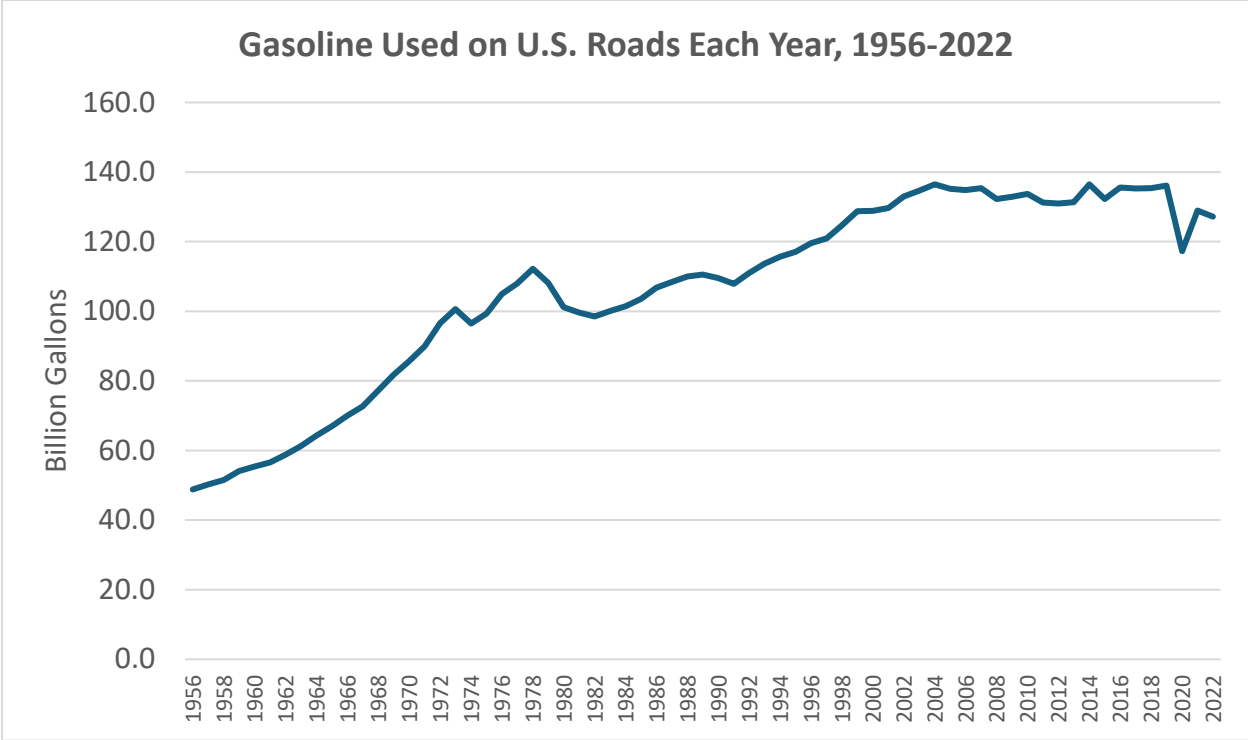


Data sources: For VMT: FHWA Table VM-201 in Highway Statistics Summary to 1995 and the December 2023 Traffic Volume Trends. For gallons: FHWA Table MF-202 in Highway Statistics 2022.

It became a feature of federal energy and environmental policy to reduce the number of gallons of fossil fuel used on roadways. But it was still federal transportation policy to fund highways and transit based on the number of gallons of fossil fuel used on roadways. In effect, the separate federal policies have been at war with each other since the 1970s, and although it took a while, the Highway Trust Fund eventually paid the price.

The following chart shows the number of taxable gallons of motor gasoline used on highways each year from 1956 to 2022.

Figure 4



Data source: FHWA, Highway Statistics 2022, Table MF-226.

Gasoline use on roads plateaued in 2004 at around 136 billion gallons per year and has floated around that level ever since. (Increases in diesel fuel use and in trucking industry tax receipts have provided some Trust Fund revenue growth since then to compensate.)

With the number of gallons of gasoline used each year essentially flat, Congress could have increased the cent-per-gallon tax rate for the Highway Trust Fund (set at 18.3 cents per gallon since the 1990s). Or they could have increased other Trust Fund tax rates. Or they could have reduced Trust Fund expenditures to ensure insolvency. Instead, they did none of these things. Congress has now enacted five consecutive multi-year funding bills in which new funding in the final year of the bill was at least 25 percent above new Trust Fund tax receipts and interest.

Table 3

Relation of New HTF Contract Authority to HTF Receipts and Interest, by Reauthorization Act			
(Billion Dollars)			
Last/Peak Year of	New HTF Contract Authority	New HTF Tax Receipts & Interest	New CA As Percent of New Receipts/Int
ISTEA (FY 1997)	\$24.5	\$25.3	97%
TEA21 (FY 2002)	\$41.2	\$32.6	126%
SAFETEA-LU (FY 2009)	\$52.2	\$35.0	149%
MAP-21 (FY 2014)	\$50.8	\$39.1	130%
FAST (FY 2020)	\$58.7	\$42.7	137%
IIJA (FY 2026)	\$80.0	\$44.4	180%

As a result of these trends, for several years, annual tax receipts from the 18.3 cent-per-gallon Highway Trust Fund excise tax on gasoline were predicted to slowly wither away over time, usually by about a half-percent per year (after some wild COVID-related fluctuations). The projected rate of decline increased after the April 2022 final CAFE standard increase, but the CBO forecast from February of this year, and the subsequent June baseline, have changed the picture drastically.

Table 4

Recent Congressional Budget Office Projections for Highway Trust Fund Gasoline/Gasohol Net Tax Receipts															
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Billion \$\$ per year at 18.3 cpg															
Jan 2020 Outlook	25.81	25.61	25.31	25.02	24.72	24.39	24.11	23.89	23.69	23.53	23.38				
Sept 2020 Update	23.60	24.59	25.11	24.89	24.68	24.45	24.28	24.15	24.03	23.93	23.83				
Feb 2021 Outlook		23.24	25.25	25.17	24.98	24.77	24.59	24.43	24.27	24.13	24.01	23.87			
July 2021 Baseline		23.81	25.27	25.56	25.43	25.22	25.01	24.83	24.65	24.49	24.35	24.22			
May 2022 Baseline			25.39	25.34	25.25	24.97	24.53	24.10	23.69	23.32	22.97	22.65	22.34		
Feb 2023 Outlook				25.01	24.81	24.55	24.13	23.72	23.36	23.01	22.70	22.41	22.12	21.83	
May 2023 Baseline				25.01	24.81	24.55	24.13	23.72	23.36	23.01	22.70	22.41	22.12	21.83	
Feb 2024 Outlook					25.09	24.67	24.11	23.44	22.62	21.75	20.86	19.92	19.07	18.33	17.67
June 2024 Baseline					25.26	24.90	24.50	23.99	23.23	22.25	21.03	19.56	18.25	17.15	16.21
Increase/decrease from prior year															
Jan 2020 Outlook		-0.8%	-1.2%	-1.1%	-1.2%	-1.4%	-1.1%	-0.9%	-0.8%	-0.7%	-0.6%				
Sept 2020 Update		+4.2%	+2.1%	-0.9%	-0.8%	-0.9%	-0.7%	-0.5%	-0.5%	-0.4%	-0.4%				
Feb 2021 Outlook			+8.7%	-0.3%	-0.7%	-0.8%	-0.7%	-0.6%	-0.7%	-0.6%	-0.5%	-0.6%			
July 2021 Baseline			+6.1%	+1.1%	-0.5%	-0.8%	-0.8%	-0.7%	-0.7%	-0.6%	-0.6%	-0.5%			
May 2022 Baseline				-0.2%	-0.4%	-1.1%	-1.7%	-1.8%	-1.7%	-1.6%	-1.5%	-1.4%	-1.4%		
Feb 2023 Outlook					-0.8%	-1.0%	-1.7%	-1.7%	-1.5%	-1.5%	-1.4%	-1.3%	-1.3%	-1.3%	
May 2023 Baseline					-0.8%	-1.0%	-1.7%	-1.7%	-1.5%	-1.5%	-1.4%	-1.3%	-1.3%	-1.3%	
Feb 2024 Outlook						-1.7%	-2.3%	-2.8%	-3.5%	-3.8%	-4.1%	-4.5%	-4.3%	-3.9%	-3.6%
June 2024 Baseline						-1.4%	-1.6%	-2.1%	-3.1%	-4.2%	-5.5%	-7.0%	-6.7%	-6.0%	-5.5%

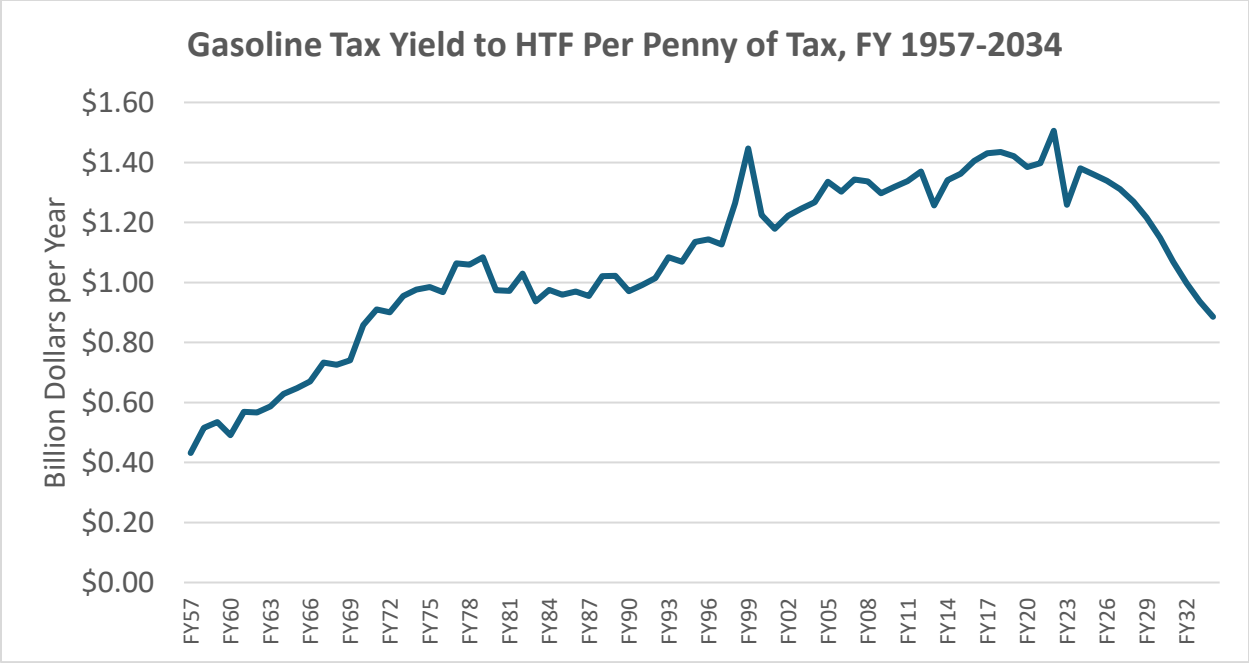
These last two forecasts incorporate real-world sales increases in electric vehicles, and some of the EV sales targets in recent regulations from the EPA. The new EPA rules are specifically designed to reduce fossil fuel consumption and accelerate EV adoption. The February 2024 forecast incorporated the EPA’s April 2023 and the new June 2024 forecast incorporates the EPA’s March 2024 final rule.

According to the June 2024 forecast, the number of gallons of gasoline taxed for the Highway Trust Fund will drop by one-third over the next decade, falling from around 138 billion gallons in 2024 to 89 billion gallons in 2034.

Because this is a cent-per-gallon tax, fewer gallons scales proportionally into fewer dollars. In the most recent forecast, annual gasoline tax receipts are projected to drop more than 5 percent per year starting in 2030. In 2033, the new prediction for gasoline tax receipts is almost \$5 billion per year lower than the projection from one year ago.

Increased fuel efficiency results in decreased tax yield (the amount of money raised per unit of tax, in this case each cent per gallon. After several decades of stability at around \$1.3 billion of net yield to the Trust Fund per penny of gasoline tax, and brief COVID instability, CBO’s new projections call for the gas tax yield to plummet to \$886 million per penny of tax by 2034.

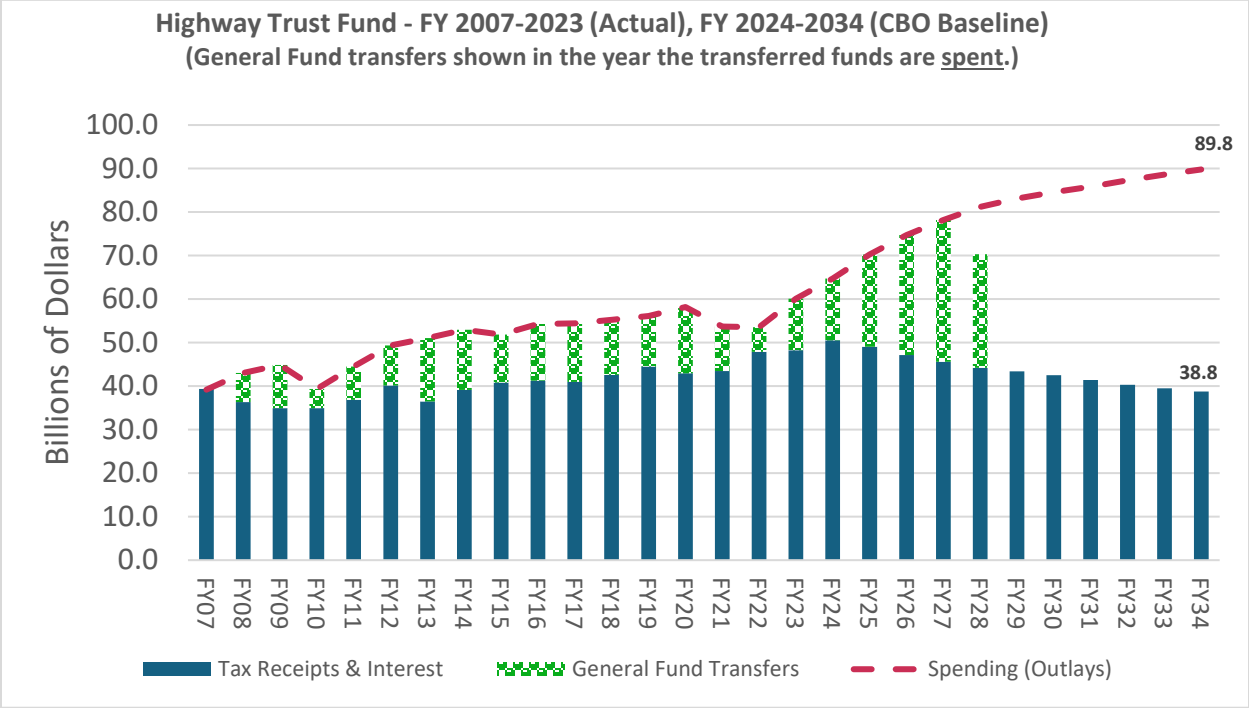
Figure 5



Data sources: For 1957-2023: FHWA Highway Statistics 2022, Table FE-210. For 2024-2034: Congressional Budget Office, Revenue Projections by Category, June 2024, "Excise Taxes" tab.

If we combine this sudden drop in gas tax revenues with currently projected Trust Fund spending, annual cash deficits in the \$13 billion per year range today will jump to an astounding \$51 billion per year deficit a decade from now.

Figure 6



Data source: For 1957-2023: Congressional Budget Office, "Baseline Projections June 2024, Highway Trust Fund Accounts".

This insolvency is subject to this committee's jurisdiction. Section 401 of the Congressional Budget Act purported to prevent trust funds from creating new contract authority unless that spending was at least 90 percent supported by user excise tax receipts at all times. This year, only 70 percent of Trust Fund outlays are expected to be supported by user tax receipts. CBO projects that to drop to 50 percent by 2030, and that the Trust Fund will only be 43 percent self-sufficient on user tax receipts in 2034.

While I am on the subject of SBC jurisdiction, I should point out that a series of loopholes in budget process law effectively exempts Highway Trust Fund spending from budget enforcement. Through some historical accidents, 99 percent of Highway Trust Fund spending is "split-scored," with budget authority scored as mandatory and outlays scored as discretionary. This means that:

1. HTF spending is exempt from spending caps, such as those in the Budget Control Act or the new ones in the Fiscal Responsibility Act, because those caps only measure discretionary budget authority, and HTF budget authority is mandatory.
2. HTF spending is exempt from statutory and Senate pay-as-you-go budget rules, because PAYGO only measures mandatory outlays, and HTF outlays are discretionary.
3. HTF spending thus cannot be reduced by budget sequestration, since sequestration is just a tool to enforce cap overages and PAYGO violations.
4. HTF spending is difficult to target via budget reconciliation, because reconciliation is almost exclusively used to change mandatory outlays, not discretionary outlays.

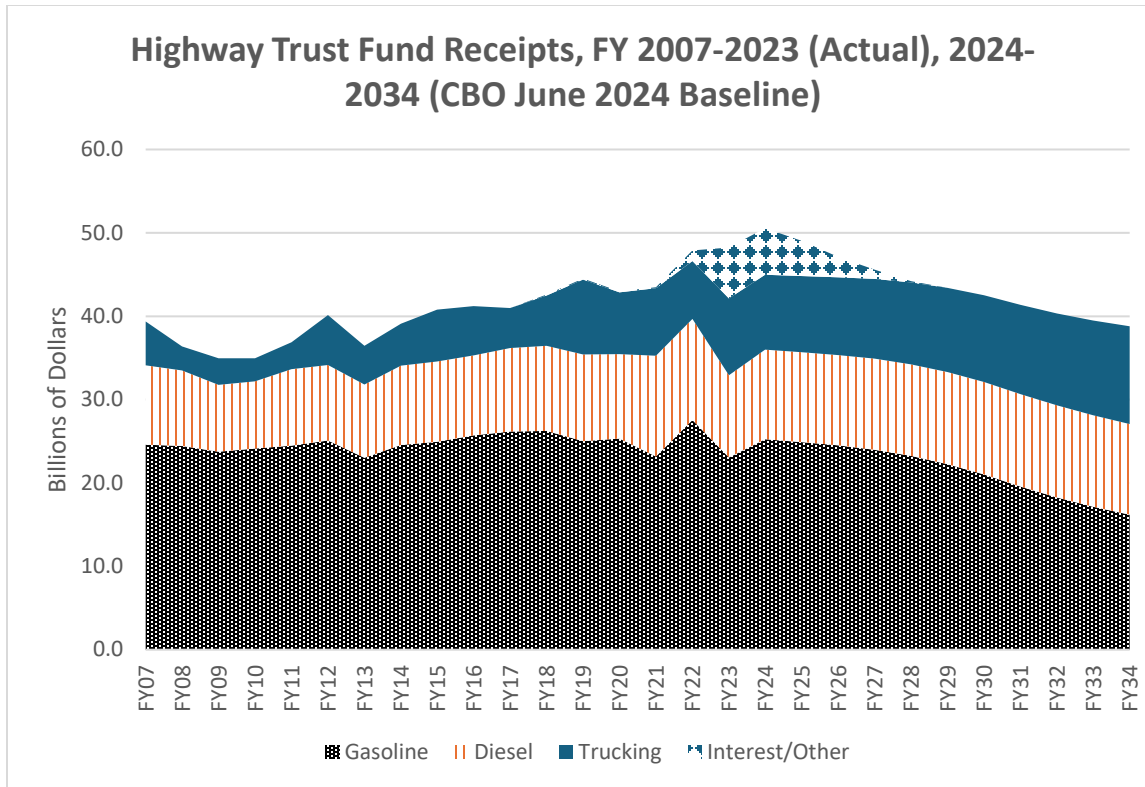
The highway program has such a broad base of political support that paring it back is never easy, regardless of the procedural situation. But on the rare occasions when Congress is in the mood for broad deficit reduction deals, the Trust Fund is never even part of the discussion.

With federal policy accelerating the trend away from fossil fuel use by motor vehicles, it is long past the time when Congress should decide whether or not to stick with the user-pay, user-benefit principle as the primary means of funding surface transportation. Reaffirming user-pay will mean some combination of significant spending cuts from highway and transit programs or significant tax increases on transportation system users. Formally jettisoning user-pay would mean getting rid of the Trust Fund concept and funding these programs some other way.

If Congress were to try to fix that projected \$51 billion Trust Fund deficit in 2034 solely by increasing gasoline taxes – which, let me emphasize, **absolutely no one is advocating** – the current 18.3 cent per gallon gasoline tax would need to be increased by around 58 cents per gallon, to a total tax of about 76 cents per gallon of gasoline. (This assumes complete inelasticity of demand, which gasoline shows at nickel-and-dime price variations but not at this level.)

Projections for the Trust Fund would be even worse were it not for stable demand for diesel fuel and increased revenues from the other taxes on the trucking sector, which have a robust growth forecast.

Figure 7



Data sources: For 2007-2023: FHWA Highway Statistics 2022, Table FE-210. For 2024-2034: Congressional Budget Office, Revenue Projections by Category, June 2024, "Excise Taxes" tab.

A large part of that is an increase in receipts from the 12 percent federal sales tax on new single-unit trucks and tractor-trailer combinations. Alone amongst Trust Fund excise taxes, this one is effectively indexed for inflation by being pegged to current prices. In fiscal 2007, the 12% truck/trailer tax brought in 40 percent of the dollars that the diesel fuel tax did. Today it brings in around two-thirds as much as the diesel tax, and CBO projects that because of increasing truck prices and relatively flat-lined diesel use, the truck-trailer tax will bring in 85% as much money as the diesel tax in 2034.

But trucking companies argue that retaining this tax is inconsistent with federal electrification goals, because it will make new electric trucks – already considerably more expensive than new diesel trucks – even more expensive and thus slow their adoption. If the 12 percent truck tax were to be repealed, the Trust Fund’s revenue hole would be \$9 billion per year deeper in 2034, according to CBO.

There are alternatives to motor fuel taxes that could maintain the user-pay, user-benefit paradigm that underlies federal trust funds, but none are as easy to administer as the gas tax.

Federal motor fuel taxes are levied at the “rack,” the point at which fuel is loaded from a refinery or tank farm onto a tanker truck for delivery to service stations. There are only around 1,300 such points of collection, and many fewer taxpaying entities, paying taxes of around \$35 billion per year. Going from the fuel to the vehicle as the point of taxation means going from 1,300 points of collection to 279 million points of collection (the number of privately owned

motor vehicles registered in the U.S. in 2022). Put another way, taxing vehicles would be over 200,000 times as much work for the IRS as taxing motor fuel.

Four states have now adopted voluntary road user charge (RUC) payment schemes in lieu of motor fuel taxes, and several more states are conducting pilot programs. Additionally, the IIJA provided USDOT with \$50 million and a mandate to conduct a national pilot program for such a fee, but the Administration is over 2 years behind in taking the first steps to implement such a pilot program, making it doubtful the pilot will yield results in time for IIJA reauthorization.

Other alternatives for raising revenue from road users either measure actual use inefficiently (annual registration fees) or create situations where the federal government is creating contradictory financial incentives.

For any mileage-based tax, there is also a replacement level issue. At present (in 2022), the federal gasoline taxes paid by motorists in the U.S. averaged from around \$80 per vehicle for cars and small crossovers to just over \$110 per year for large SUVs, pickups, and vans. Using fuel consumption averages for these types of vehicles, this works out to about three-quarters of a cent per mile for cars and smaller crossovers, and about one cent per mile for larger vehicles.

Table 5

2022 VMT and Fuel Consumption Averages for Light-Duty, Gasoline-Powered Vehicles			
	Wheelbase <u>Under 121 in.</u>	Wheelbase <u>Over 121 in.</u>	Average <u>Light-Duty</u>
Vehicle-Miles	10,847	11,412	10,917
Gallons of Fuel	437	617	480
Avg. MPG	24.8	18.1	22.8
HTF Fuel Taxes	\$79.97	\$112.91	\$87.84
Cent-per-Mile Eqv.	0.74	0.99	0.80

Data source: FHWA Highway Statistics 2022, Table VM-1.

With the high fixed administrative costs that would come from monitoring the mileage of every vehicle in the U.S. (electronically or manually), would it really be worth it just to collect an average of \$88 in taxes per vehicle?

An average of \$88 per vehicle per year doesn't sound like a lot compared to the general tax burden. But it adds up. There were 1.4 million plug-in electric vehicles sold last in the U.S. in 2023, and at an average of \$88 per year, that's an additional \$1.2 billion per year that motorists will no longer be paying into the Highway Trust Fund to support highway and mass transit programs.

Some states are experimenting with special registration fees on electric vehicles to recapture their lost motor fuel tax revenues. Flat fees are not particularly good proxies for actual road use because they are mileage-indifferent – the fee on a car that is only driven 3,000 miles per year is the same as a car that is driven 30,000 miles per year. But as long as an annual EV fee approximates the average amount that an internal combustion vehicle of the same size and

weight would pay in annual fuel taxes, such fees could be considered a fair balance between ease of administration and the user-pay principle.

The amount of revenue needed to actually fill the Trust Fund's projected revenue gap would require a tax rate much higher than this (if Congress were to try and solve the problem with revenues alone). But judging by the state experience with pilot programs, public acceptance of a new road user charge system seems dependent on convincing the public they are paying the same amount under each system, just with a different form of collection. Coupling a new, and more intrusive, collection system along with a significant tax rate increase would be politically problematic.

In conclusion, the revenue damage done to the Highway Trust Fund should be at least a part of the debate when Congress is discussing advancing electric vehicles. It is long past time for Congress to either strengthen, or else abandon, the user-pay model for surface transportation, since electrification is accelerating the demise of fossil fuel taxes, and the underlying goal of zero-emission transportation by 2050 would inherently eliminate fossil fuel taxation as a revenue stream.

Thank you very much, and I would be happy to answer any questions.

¹ Income: U.S. Census Bureau, *Statistical Abstract of the United States: 1935*, Table 177. Gallons: U.S. Public Roads Administration, *Highway Statistics Summary to 1945*, Table G-221.

² U.S. Federal Highway Administration, *Highway Statistics 2022*, Table FE-210; U.S. Treasury Department, *Treasury Bulletin – March 2024*, Table TF-6, and Funds Management Program Monthly Financial Reporting for the Highway Trust Fund, October 2023 through June 2024.