THE MOTOR FUELS TAX DILEMMA: HOW TO FUND ROAD CONSTRUCTION AND MAINTENANCE WITHOUT TANKING THE EV AND HYBRID VEHICLE MARKET

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Since 2008, excise taxes on gasoline, diesel, and other motor fuels—motor fuels taxes ("MFTs")—have failed to raise enough revenue to support the construction, maintenance, and repair of U.S. highways, bridges, and roads. This shortfall has been caused by a combination of stagnating MFT rates, inflation, increasing fuel efficiency in the nation's automobiles, and, to a far lesser degree, increased usage of hybrid and electric vehicles ("EVs"), which use little or no motor fuel. Governments and legal scholars have introduced three proposals to remedy the shortfalls in MFTs that focus on requiring owners of EVs and hybrids to pay additional fees and taxes. This Article evaluates these three proposals and demonstrates that they are ineffective, impractical, and disincentivize drivers from purchasing electric and hybrid vehicles without raising enough revenue to justify this interference. When appropriate, the Article offers solutions to improve the proposals. Finally, it discusses two proposals to address the shortfall in MFT revenue as effective solutions that do not disincentivize EV and hybrid adoption: raising MFT rates and funding roadwork through general revenue.

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INTRODUCTION

Excise taxes have been imposed on motor fuels—primarily gasoline and diesel—by both federal and state governments for several decades to raise funds for the construction, maintenance, and repair of highways, bridges, and roads (collectively "roadwork").[1] Previously, the revenue from these motor fuel taxes ("MFTs") was sufficient to fund most roadwork in the United States. But since 2008, due to a combination of inflation, MFT rate stagnation, increasing fuel efficiency of cars and trucks, and, to a far lesser degree, the increasing use of electric vehicles ("EVs") and hybrid vehicles, MFT revenue has fallen short, requiring alternative sources of funding to be sought.[2] For the past eighteen years, revenue shortfalls have been made up mostly by transfers into road funds from federal and state general revenue funds.[3] Increasing MFT rates and tying them to inflation has been suggested as a good way to reduce the shortfall;[4] however, increasing MFT tax rates is politically unsavory and has succeeded only in some states.[5] While EVs and hybrid vehicles make up only a tiny percentage of vehicles on U.S. roads at this time, three proposals for raising funds for roadwork have focused on imposing new taxes and fees on EV and hybrid owners. This Article evaluates these three proposals compared to other funding means. It demonstrates that they are overly complicated, impractical, and ineffective, and that they disincentivize the purchase of EVs and hybrids, thereby impacting attempts to decrease carbon emissions in the United States. It considers two alternatives for raising road funding—increasing MFT rates and using general revenue funds for roadwork—that would be effective in addressing the MFT shortfall and would not interfere with the adoption of EVs and hybrids. It recognizes that raising MFT rates at this time is likely impossible, especially at the federal level, for political reasons. In conclusion, it recommends using general revenue funding as a simple and effective solution for funding road work during the transition of U.S. vehicles to

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[1] Jason Anderson et al., *Examining the Economic Impacts of the Increased Fuel Efficiency Standards on State Gas-Tax Revenues*, 18 J. ACCT. & FIN. 10, 12 (2018).

[2] ROBERT S. KIRK & WILLIAM J. MALLETT, CONG. RSCH. SERV., R45350, FUNDING AND FINANCING HIGHWAYS AND PUBLIC TRANSPORTATION 1 (2020).

[3] *See* Nicholas J. Farber, Note, *Avoiding the Pitfalls of Public Private Partnerships: Issues to be Aware of When Transferring Transportation Assets*, 35 TRANSP. L.J. 25, 31 (2008). Other means of raising road funding have also been tried. *See, e.g.*, Carlos Sun, *The Toll Road Not Taken: Could the One Option Less Used Make a Difference?*, 21 KAN. J.L. & PUB. POL'Y 280 (2012) (state toll roads); Farber, *supra* (public-private agreements); Brian Edward Wheeler, *Oklahoma Constitutional Law: Highway Robbery: In re Oklahoma Capitol Improvement Authority: The Eulogy for Oklahoma Constitutional Debt Limitations*, 53 OKLA. L. REV. 319 (2000) (state highway improvement bonds); Alex Brown, *Gas Taxes Can't Pay for Roads Much Longer, but Amazon Deliveries Might*, STATELINE (July 9, 2024), https://stateline.org/2024/07/09/gas-taxes-cant-pay-for-roads-much-longer-but-amazon-deliveries-might/ [https://perma.cc/PTH8-6CEW] (retail delivery fees). These means are not discussed here.

[4] *See* CHAD SHIRLEY, CONG. BUDGET OFF., TESTIMONY ON THE STATUS OF THE HIGHWAY TRUST FUND: 2023 UPDATE 1-2 (2023), https://www.cbo.gov/system/files/2023-10/59634.pdf [https://perma.cc/H5DK-UUG6]; *EV Road Usage Fees: A 3-Step Guide for States*, PLUG IN AM. (July 24, 2023), https://pluginamerica.org/policy/ev-road-usage-fees/ [https://perma.cc/ES2P-TT5C].

[5] Anderson et al., *supra* note 1, at 21.

EVs and hybrid vehicles that does not require raising taxes, creating new taxes and fees, or discouraging EV and hybrid adoption.

I. BACKGROUND

Three proposed solutions to the MFT revenue shortfall focus on replacing MFT revenue with new taxes and fees on EVs and hybrid vehicles and infrastructure: (1) imposing a vehicle miles traveled ("VMT") tax, also known as a road user charge ("RUC"), either only on EVs and hybrids or on all vehicles; (2) charging EV and hybrid vehicle owners increased registration fees; and (3) enacting new taxes on the electricity used to charge EVs and plug-in hybrid vehicles. This Article demonstrates that, in their current forms, these proposals are ineffective, impractical, or unduly complicated.[6] In addition, while incentivizing EVs and hybrid vehicles and developing infrastructure to decrease carbon emissions and slow climate change is a policy priority in many states (and was a policy priority for the U.S. government under the previous administration),[7] all three of the proposed solutions listed above increase the cost and complexity of driving EVs and hybrids without raising enough funds to justify their negative consequences.

Policy analysts focusing solely on raising road funding without considering the efficacy, cost, and unintended consequences of different plans disregard these concerns. Given the tiny number of EVs and hybrids on U.S. roads today and in the foreseeable future,[8] the revenue that could be raised from taxes and fees imposed on EV and hybrid owners is a drop in the bucket compared to the shortfall in MFT revenue. Given their ineffectiveness, these proposals disincentivize EV and hybrid adoption, contrary to the urgent need to decrease carbon emissions in the United States, without contributing to improving the nation's roads and infrastructure in

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[6] Other articles have reached the same conclusion. *See, e.g.*, Madeline Melby, *Declining Motor Fuel Tax Revenue Due to Electric Vehicles and Increased Fuel Efficiency*, 34 LOY. CONSUMER L. REV. 343 *passim* (2022); Peyton Bellon, *Taxing Electric Vehicles: Striking a Balance Between Preventing Highway Deterioration and Promoting Environmental Responsibility*, 56 CREIGHTON L. REV. 607, 611 (2023); Sandy Manche, *Maintaining the Highway Infrastructure as Alternative Fuel Vehicle Usage Increases*, 7 KY. J. EQUINE AGRIC. & NAT. RES. L. 515, 515 (2015). *See also* EMMA LAGUARDIA, KRISTIN DZICZEK & RICK MATTOON, FED. RSRV. BANK CHI., ELECTRIC VEHICLES, MOTOR FUEL TAXES, AND ROAD FUNDING IN THE SEVENTH DISTRICT AND BEYOND (2023), https://www.chicagofed.org/publications/economic-perspectives/2023/2 [https://perma.cc/3KZX-UKT3].

[7] *See* Elliott Davis, Jr., *Some States Are Making Bold Climate Commitments, But Is It Enough?* U.S. NEWS & WORLD REP. (Jan. 14, 2022), https://www.usnews.com/news/best-states/articles/2022-01-14/some-states-are-taking-action-against-climate-change-but-does-it-matter [https://perma.cc/9M7G-J942]; *Biden-Harris Administration Announces Over $46 Million to Enhance EV Charging Reliability and Workforce Development*, U.S. DEPT. OF ENERGY (Jan. 19, 2024), https://www.energy.gov/articles/biden-harris-administration-announces-over-46-million-enhance-ev-charging-reliability-and [https://perma.cc/NYN6-WSFU] ("Electrifying America's transportation sector is essential to mitigating greenhouse gas pollution and addressing climate change, and the transition will improve health outcomes, reduce fuel and maintenance costs, and strengthen our national energy security.").

[8] Trey M. Gowdy, *The EV transition is taking time. That's expected.* UTILITY DIVE (Dec. 13, 2024), https://www.utilitydive.com/news/electric-vehicle-ev-transition-charging-station-buildout-taking-time/735438/ [https://perma.cc/3QNX-KM6J].

any meaningful way. Attempting to make up the MFT revenue shortfall through ineffective, complicated, or costly means will not solve the problem. When those attempts also make owning an EV or hybrid more cumbersome or expensive, efforts to increase the use of EVs and hybrid vehicles in the United States to slow climate change are impeded for no good reason.

Each of these proposed solutions comes with its own set of problems. Implementing a VMT tax is expensive, difficult to enforce, and raises privacy issues for drivers.[9] Charging EV and hybrid vehicle owners new registration fees and enacting new taxes on the electricity used to charge EVs and plug-in hybrid vehicles is unlikely to raise sufficient revenue to make up even a small portion of the shortfall in MFT revenue, will be difficult and expensive to enact and enforce on the federal level, is unfair to EV and hybrid owners, and discourages EV and hybrid adoption.[10]

Raising fees and taxes on EVs and hybrids makes no sense when doing so results in so little revenue. Experts predict it will take at least a decade, and likely significantly longer, for EV and hybrid adoption to increase significantly in the United States.[11] Given the revocation of federal tax breaks for EV and hybrid purchases and infrastructure, widespread adoption of these vehicles will take even longer.[12] Once EVs and hybrid vehicles make up a large percentage of vehicles on U.S. roads, taxing them may become an appropriate solution to raising road funds; however, that time is likely far in the future.

A. Literature Review

Several commentators have identified declines in MFT revenues and the need for alternative funding for road work as a critical concern. However, there has not been much agreement on the best ways to handle the shortfalls in MFT revenue.

Some recommend increasing MFT rates to discourage the use of conventional vehicles and have focused on the benefits of clean energy tax initiatives in the United States.[13] Others argue that increasing MFT rates is not a sustainable or equitable solution because of increased fuel efficiency in conventional vehicles and the adoption of EVs and hybrids, and they assert that increased MFT rates would negatively impact businesses, owners of conventional vehicles, and drivers in rural areas.[14] They argue that EV and hybrid owners are "economic freeloaders"[15] who must pay "their fair share" of road costs.[16] These commentators propose that charging EVs and hybrid owners increased registration

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[9] *See infra* Section II.A.

[10] *See infra* Section II.B-C.

[11] *E.g.*, Gowdy, *supra* note 8.

[12] *See infra* Section II.B.3.

[13] *See, e.g.*, Roberta F. Mann, *Driving Transformation: Tax Strategies for Electrifying Light-Duty Transportation*, 53 ENV'T. L. REP. 10298, 10301 (Apr. 2023); Erick Norem III, *An Electric Future for Today: An Analysis of Policy Options for State & Provincial Electric Vehicle Impact Standards to Expand Electric Vehicle Use*, 8 LA. ST. UNIV. J. ENERGY L. & RES. 127, 151 (2019).

[14] Melby, *supra* note 6, at 352.

[15] Bellon, *supra* note 6, at 609.

[16] Melby, *supra* note 6, at 348.

fees, taxing EV charging stations, and adopting VMT taxes would compensate for the shortfalls.[17]

One commentator argues that increasing EV and hybrid use will strain the electric grid and stresses that EV users must pay "their fair share" of road costs.[18] However, he also recommends that policymakers (1) reinvest taxes on EVs to benefit EV users by developing more infrastructure supporting EVs, (2) encourage municipalities to adopt electric fleets, and (3) create other benefits for EV and hybrid owners than tax breaks and other financial incentives, like HOV driving lane and bus lane access, free parking, and free toll road access.[19]

The Congressional Budget Office ("CBO") and the Congressional Research Service ("CRS") have repeatedly issued reports and given congressional testimony on decreasing MFT revenue and resultant shortfalls in the federal Highway Trust Fund and state road revenue.[20] The CBO and CRS set forth options for increasing road funding and discuss the potential benefits and problems with each.[21] However, because of their advisory role to Congress, they tend to provide an overview of options, along with the potential benefits and shortfalls of each, but do not offer opinions on the best course of action.[22] In addition, they do not provide detailed information on the potential conflict between some of the solutions and policies promoting the adoption of EVs and hybrids.[23]

The International Energy Agency's Global EV Outlook report provides EV adoption trends and policy responses across the globe and establishes the international context for national and subnational policy decisions.[24] Some legal scholars compare China and European countries, where EV adoption has been more successful, with the United States.[25] They argue that reduced taxes on EVs, much higher fuel taxes, and low-carbon energy transition policies in these countries have

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[17] *Id.* at 354; Bellon, *supra* note 6, at 614.

[18] Norem, *supra* note 13, at 146-47.

[19] *Id.* at 152.

[20] *See* KIRK & MALLETT, *supra* note 2, at 1; ROBERT S. KIRK & WILLIAM J. MALLETT, CONG. RSCH. SERV., IF10495, HIGHWAY AND PUBLIC TRANSIT FUNDING ISSUES (2021); JOSEPH KILE, CONG. BUDGET OFF., TESTIMONY ON ADDRESSING THE LONG-TERM SOLVENCY OF THE HIGHWAY TRUST FUND (2021); *see also* CONG. BUDGET OFF., ANSWERS TO QUESTIONS FOR THE RECORD FOLLOWING A HEARING ON THE BUDGET AND ECONOMIC OUTLOOK: 2024 TO 2034 (2024) [hereinafter ANSWERS] ("Reported amounts of fuel tax refunds and credits, specifically credits for the nontaxable use of gasoline, began to sharply exceed historical amounts in fiscal year 2023.").

[21] *See* KIRK & MALLETT, *supra* note 2, at 1; KIRK & MALLETT, *supra* note 20; KILE, *supra* note 20; ANSWERS, *supra* note 20.

[22] *See* KIRK & MALLETT, *supra* note 2, at 1; KIRK & MALLETT, *supra* note 20; KILE, *supra* note 20; ANSWERS., *supra* note 20.

[23] *See* KIRK & MALLETT, *supra* note 2, at 1; KIRK & MALLETT, *supra* note 20; KILE, *supra* note 20; ANSWERS., *supra* note 20.

[24] INT'L ENERGY AGENCY, GLOBAL EV OUTLOOK 2024 (2024), https://iea.blob.core.windows.net/assets/a9e3544b-0b12-4e15-b407-65f5c8ce1b5f/GlobalEVOutlook2024.pdf [https://perma.cc/G3LE-FVK8].

[25] Mann, *supra* note 13, at 10310-12; Emil H. Frankel, *Priorities in Mitigating Emissions from the Transportation Sector and in Adapting Transportation Facilities to Climate Change*, 44 FORDHAM URB. L.J. 1115, 1121-22 (2017); Mandy Meng Fang, *Greening the road: China's low-carbon energy transition and international trade regulation*, 35 LEIDEN J. INT'L L. 357, 359 (2022).

pushed EV adoption measures.[26] Other commentators explore Australia's changes to its fuel tax system in the face of changing vehicle technology and decreasing fuel tax revenue.[27]

This Article focuses on evaluating three of the most discussed proposed solutions to MFT shortfalls based on their practicality, their effectiveness in raising sufficient revenue, and the potential that they will interfere with the need to promote the adoption of EVs and hybrids in the United States to slow climate change. When appropriate, it suggests simple ways to modify these proposals to increase their effectiveness in raising funds to supplement lost MFT revenue. It also evaluates the efficacy of raising MFT rates but recognizes that this is likely impossible, at least at the federal level, for political reasons. In conclusion, it recommends a simple and effective solution to funding road work during the transition of U.S. vehicles to EVs and hybrid vehicles that does not require raising taxes, creating new taxes and fees, or unduly burdening EV and hybrid owners: continuing to use general revenue to bolster the funding for roadwork.

B. MFTs and Roadwork Funding

All states[28] impose MFTs on gasoline and diesel fuel, and the revenue raised from these taxes funds each state's roadwork.[29] The federal government also imposes MFTs to fund the Highway Trust Fund, which is used for roadwork and public mass transit systems.[30] A small amount of federal MFT revenue, $0.001 per gallon, also goes to the EPA's Leaking Underground Storage Tank Trust Fund.[31] In addition to MFT revenue, the Highway Trust Fund receives revenue from taxes on heavy vehicles, various fees, and interest on invested amounts.[32]

MFTs have long been considered well-designed user fees.[33] When almost every vehicle driving on U.S. roads and highways uses gasoline or diesel fuel subject to these taxes, the more individuals and companies drive their cars and trucks, the more tax revenue is raised to construct, maintain, and repair the roads they use. MFT collection is also efficient and convenient. Federal, state, and local MFTs are included in the cost of gasoline or diesel fuel; consumers automatically

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[26] Mann, *supra* note 13, at 10311; Frankel, *supra* note 25, at 1119.

[27] Alexander Robert "Lex" Fullarton, *The Impact of the Changing Technology of Motor Vehicles on Road Tax Revenue*, 20 J. AUSTL. TAX'N 26, 30 (2018); Celeste M. Black, *Taxing Energy or a Road User Charge? Australia's Fuel Tax System at the Crossroads*, 22 J. AUSTL. TAX'N 1, 1 (2020).

[28] Counties and municipalities in some states also impose MFTs. *See, e.g.*, County Motor Fuel Tax Law, 55 ILL. COMP. STAT. 5 / 5-1035.1 (Illinois); Municipal Motor Fuel Tax Law, 65 ILL. COMP. STAT. 5 / 8-11-2.3 (Illinois); STATE OF HAWAII, DEP'T TAX'N, TAX FACTS 99-1, at 1 (May 2025), https://files.hawaii.gov/tax/legal/taxfacts/tf99-1.pdf [https://perma.cc/E6SV-E5MW] (Hawaii has a county MFT).

[29] Melby, *supra* note 6, at 344-45.

[30] *Id.* at 345-46.

[31] SHIRLEY, *supra* note 4, at 7.

[32] *Id.*

[33] *See* Melby, *supra* note 6, at 344-45 ("These taxes have remained in place for a long time because they are simple, efficient, and widely accepted by the public. MFTs serve as a form of an indirect user fee based on the amount of fuel consumed.").

pay the tax when they fill up their vehicles with fuel based on how many gallons they pump, and the MFT owed per gallon is automatically added to the total cost of the fuel and paid by gas stations to government bodies.[34] In addition, MFTs increase the cost of driving; thus, they disincentivize driving when alternative means of transportation are available, which decreases pollution and traffic congestion.[35]

The main criticism of MFTs is that they are regressive from a vertical equity standpoint. Vertical equity in a tax system requires taxpayers with higher income and wealth to shoulder a greater tax burden than those with lower income and wealth.[36] All consumers and businesses pay the same amount of MFT per gallon of fuel purchased. As a flat excise tax, MFTs impose a higher burden on lower-income drivers than higher-income drivers.[37]

Every year, the federal government spends tens of billions of dollars on roads and highways. For instance, in 2022, the federal government spent $52 billion on roadwork, including federal programs subsidizing state and local borrowing for road projects.[38] Before the COVID pandemic, in 2019, the federal government spent $46 billion on roadwork, primarily through grants to state and local governments.[39] States also used these grants to create pilot programs and research funding alternatives to MFTs.[40] Other federal spending on highways is used for capital projects to expand or repair eligible federal-aid highways.[41]

State and local governments usually spend approximately three times as much of their own funds on roadwork each year compared to the federal funding

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[34] *See* Benjamin Jaros & Adam Hoffer, *How Are Electric Vehicles Taxed in Your State?*, TAX FOUND. (Sept. 20, 2023), https://taxfoundation.org/data/all/state/electric-vehicles-ev-taxes-state/ [https://perma.cc/6EA9-3MWQ].

[35] *See id.*

[36] Richard J. Wood, *Supreme Court Jurisprudence of Tax Fairness*, 36 SETON HALL L. REV. 421, 428 (2006) (footnote omitted) ("Vertical equity is essentially identified with the taxation of incomes at different rates with the higher rates reserved for higher incomes.").

[37] ANTHONY A. CILLUFFO, CONG. RSCH. SERV., R46938, FEDERAL EXCISE TAXES: BACKGROUND AND GENERAL ANALYSIS (2021) ("Excise taxes tend to be regressive, meaning that households with lower incomes generally pay a larger share of their income in excise taxes than households with higher incomes.").

[38] SHIRLEY, *supra* note 4, at 1.

[39] CONG. BUDGET OFF., REAUTHORIZING FEDERAL HIGHWAY PROGRAMS: ISSUES AND OPINIONS 1 (2020), https://www.cbo.gov/system/files/2020-05/56346-CBO-Highway-Reauthorization.pdf [https://perma.cc/U484-REJ4].

[40] U.S. GOV'T ACCOUNTABILITY OFF., GAO-22-104299, HIGHWAY TRUST FUND: FEDERAL HIGHWAY ADMINISTRATION SHOULD DEVELOP AND APPLY CRITERIA TO ASSESS HOW PILOT PROJECTS COULD INFORM EXPANDED USE OF MILEAGE FEE SYSTEMS intro. (2022). ("Since fiscal year 2016, 13 states, including two multistate coalitions, have used Surface Transportation System Funding Alternatives (STSFA) funds to pilot and research user-based funding alternatives to the fuel tax.").

[41] *See* SHIRLEY, *supra* note 4, at 4-5. ("Operation and maintenance costs include the costs of providing necessary operating services (such as snow removal) and maintaining and repairing existing capital (such as filling potholes) as well as the costs of funding other highway-related programs (such as education about highway safety).").

allocated to them, mostly on capital projects and to operate and maintain roads.[42] In 2022, state and local governments spent $180 billion on highways.[43]

In the past, MFTs funded most roadwork.[44] Since 2008, however, MFT revenue has been increasingly insufficient.[45] Today, roadwork is funded by a combination of federal and state MFTs, federal and state general fund transfers, fees, tolls, property taxes, and bond revenues.[46] In 2021, only 15% of U.S. roadwork funding came from federal MFTs and vehicle taxes, and 26% came from state MFTs and vehicle taxes.[47] Due to decreasing revenues collected by MFTs resulting from inflation and the increasing fuel efficiency of vehicles, both the federal government and most state governments have had to find funding from alternative sources or forgo roadwork.[48]

Many of the nation's roads are in poor repair. In 2025, the American Society of Civil Engineers ("ASCE") reported that 39% of U.S. roads are in mediocre or poor condition.[49] These conditions cause damage to vehicles, costing the average driver over $725 annually in vehicle operating costs; increased congestion, resulting in drivers losing an average of 43 hours and $771 worth of time in 2024; and increased road fatalities, with an average of 112 deaths per day in 2023.[50] As a result, the ASCE gave U.S. roads a grade of "D+."[51] It estimates the funding gap in road repair for the next ten years at $684 billion.[52] Additionally, according to the American Road and Transportation Builders Association, 7% of bridges are structurally deficient, and one in three requires repair or replacement.[53]

1. The Effect of Inflation on MFT Revenue Shortfalls

One of the primary reasons for the decline in MFT revenues is inflation. Federal MFTs are not tied to inflation and have stayed at a constant $0.18 per gallon

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[42] *Id.* at 4 fig. 2.

[43] *Id.* at 2.

[44] *See* LAGUARDIA ET AL., *supra* note 6, at 1.

[45] *See* Anderson, *supra* note 1, at 11 fig. 1.

[46] LAGUARDIA ET AL., *supra* note 6, at 1.

[47] *Id.*

[48] *Id.*

[49] AM. SOC'Y OF CIV. ENG'RS, 2025 REPORT CARD FOR AMERICA'S INFRASTRUCTURE 153 (2025) [hereinafter 2025 INFRASTRUCTURE REPORT CARD], https://infrastructurereportcard.org/wp-content/uploads/2025/03/Full-Report-2025-Natl-IRC-WEB.pdf [https://perma.cc/GZ8R-JFTF].

[50] *Id.* at 153, 155, 157.

[51] *See id.* at 152-53. This is an improvement over 2021, when the ASCE gave U.S. roads a grade of "D." AM. SOC'Y OF CIV. ENG'RS, EXECUTIVE SUMMARY OF 2021 REPORT CARD FOR AMERICA'S INFRASTRUCTURE 14 (2021), https://infrastructurereportcard.org/wp-content/uploads/2017/01/Roads-2021.pdf [https://perma.cc/GRR6-646T]; *see also* AM. SOC'Y OF CIV. ENG'RS, 2021 REPORT CARD FOR AMERICA'S INFRASTRUCTURE 108-15 (2021) [hereinafter 2021 INFRASTRUCTURE REPORT CARD], https://infrastructurereportcard.org/wp-content/uploads/2020/12/2021-IRC-Executive-Summary-1.pdf [https://perma.cc/HB6D-3LT7] (for the full roads report).

[52] 2025 INFRASTRUCTURE REPORT CARD, *supra* note 49, at 153.

[53] James McBride, Noah Berman & Anshu Siripurapu, *The State of U.S. Infrastructure*, COUNCIL ON FOREIGN REL. (Sep. 20, 2023), https://www.cfr.org/backgrounder/state-us-infrastructure [https://perma.cc/2MHP-8ZSR].

of gasoline and $0.244 per gallon of diesel fuel since October 1993.[54] The ASCE estimates that "the purchasing power of the federal gas tax has declined 80%" since 1993.[55] Most federal MFTs are set to expire on September 30, 2028.[56] After that date, if Congress does not act, the federal MFT on gasoline will fall even lower to $0.043 per gallon.[57] If federal MFT rates had been indexed for inflation since 1993, the MFT on gasoline now would be $0.33 per gallon and $0.44 on diesel.[58] In 2022, the federal Highway Trust Fund received $48 billion in revenue and interest, of which $40 billion came from MFTs, with $42 billion going to the highway account and $6 billion to the mass transit account.[59]

For nearly twenty years, federal spending on highways has been supplemented by transfers from the Treasury's general fund. Since 2008, Congress has enacted legislation to transfer $275 billion to the Highway Trust Fund from the Treasury's general fund to compensate for shortfalls in MFTs.[60] In late 2023, the CBO projected that the Highway Trust Fund amounts for highway and transit would be exhausted by 2028.[61] If federal MFTs remain at current levels and federal funding of roadwork keeps up with inflation, shortfalls between 2024 and 2033 will reach $241 billion.[62] The CBO predicts that if Congress extends federal MFTs at their current rates, MFT revenue will decrease by 1% per year until 2032 due to the increasing fuel economy of vehicles and the slow increase in the total number of miles traveled by vehicles.[63]

In contrast, twenty-three states and the District of Columbia have statutes that allow MFT rates to vary with inflation, gas prices, highway construction costs, or other factors.[64] Other states have raised or reformed their MFTs through legislative action or approved ballot initiatives.[65] However, thirteen states have had no gas tax increases since 2010.[66]

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[54] KILE *supra* note 20, at 2.

[55] 2025 INFRASTRUCTURE REPORT CARD, *supra* note 49, at 155.

[56] SHIRLEY, *supra* note 4, at 6-7.

[57] *Id.*

[58] Melby, *supra* note 6, at 346.

[59] SHIRLEY, *supra* note 4, at 2. Additional funds in the Highway Trust Fund come from excise taxes on trucks and trailers, a tax on heavy vehicles, and an excise tax on certain tires for heavy trucks. *See id.*

[60] *Id.*

[61] *Id.* at 1.

[62] *Id.*

[63] *See id.* at 7.

[64] LAGUARDIA ET AL., *supra* note 6, at 4.

[65] 2021 INFRASTRUCTURE REPORT CARD, *supra* note 51, at 112.

[66] *See id.* (citing Carl Davis, *How Long Has It Been Since Your State Raised Its Gas Tax?*, INST. ON TAX'N AND ECON. POL'Y (Mar. 5, 2021), https://itep.org/how-long-has-it-been-since-your-state-raised-its-gas-tax/ [https://perma.cc/8PFN-ZMPE]).

2. *Increasing Fuel Efficiency of Vehicles Contributes to MFT Revenue Shortfalls*

Another factor that has led to decreasing MFT revenues is increasing fuel efficiency. In 1975, in response to the first of the two oil crises of the 1970s,[67] through various statutory enactments,[68] Congress required the U.S. Department of Transportation ("U.S. DOT") to establish fuel economy standards for vehicles—the National Highway Traffic Safety Administration's ("NHTSA") Corporate Average Fuel Economy ("CAFE") standards—which "regulate how far our vehicles must travel on a gallon of fuel."[69] U.S. DOT estimates that CAFE standards have decreased U.S. oil consumption by approximately five million barrels per day.[70] Between 1993 and 2020, the average fuel economy of vehicles increased by 26%, with new passenger cars increasing by 61% and light-duty trucks increasing by 30% between 2010 and 2020.[71] CAFE standards do not include considerations of the fuel economy of EVs.[72]

On April 1, 2022, U.S. DOT announced updated CAFE standards for model years 2024 to 2026. It predicted that the new standards "will reduce fuel use by more than 200 billion gallons through 2050, as compared to continuing under the old standards."[73]

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[67] Constance K. Lundberg & Anthony L. Rampton, *Shale We Dance? Oil Shale Development in North America: Capoeira or Funeral Dance*, 52 ROCKY MT. MIN. L. INST. § 13.02, at 13-3 to -4 (2006) ("The two oil crises of the 1970s triggered a new awareness of the impact of oil prices and supply on the national and global economies. . . . The 1973 shock was caused by The Organization of Petroleum Exporting Countries (OPEC) embargoing the United States in retribution for the United States supporting Israel in the Yom Kippur War. Because of the Middle East dominance of the international oil market, the embargo had the effect of drastically limiting supply and raising prices. The 1978 shock was triggered by Iran's change in governance, the Ayatollah Khomeini assuming control of the oil fields, Iran's rejection of Western (and particularly U.S.) culture, and President Jimmy Carter's ban on the importation of Iranian oil in retaliation for the seizing of the U.S. Embassy and the hostages. Both oil shortages triggered worldwide recessions.").

[68] The first of these enactments was the Energy Policy and Conservation Act of 1975, Pub. L. No. 94-163, 89 Stat. 871 (1975).

[69] *Corporate Average Fuel Economy,* U.S. DEP'T. TRANSP., https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy [https://perma.cc/48G6-TMAN]. [https://perma.cc/R8GQ-JJ4G] (last visited Mar. 11, 2026).

[70] *USDOT Announces New Vehicle Fuel Economy Standards for Model Year 2024-2026*, NAT'L HIGHWAY TRANSP. SAFETY ADMIN. (Apr. 1. 2022), https://www.nhtsa.gov/press-releases/usdot-announces-new-vehicle-fuel-economy-standards-model-year-2024-2026 [https://perma.cc/5APZ-7MZM].

[71] LAGUARDIA ET AL., *supra* note 6, at 3 (citing Carl Davis, *Federal Inaction on the Gas Tax is Costing Us Dearly*, INST. ON TAX'N AND ECON. POL'Y (Feb. 26, 2020), https://itep.org/federal-inaction-on-the-gas-tax-is-costing-us-dearly/ [https://perma.cc/Q4BB-JASM]).

[72] *See* 49 U.S.C. § 32902(h)(1) (providing that "the Secretary of Transportation . . . may not consider the fuel economy of dedicated automobiles"); 49 U.S.C. § 32901(a)(8) (providing that "'dedicated automobile' means an automobile that operates only on alternative fuel").

[73] NAT'L HIGHWAY TRANSP. SAFETY ADMIN., *supra* note 70. An early version of the OBBB Act legislation contained a repeal of CAFE standards, but this repeal was omitted from the version that was signed into law. *See* H.R. 1, 119th Cong. § 42301 (2025) (as passed by the House, May 22, 2025) (proposing repeal of NHTSA rules on 2022 CAFE standards).

New CAFE standards were proposed again on August 17, 2023.[74] These will continue to increase fuel efficiency standards by 2% per year for passenger cars and 4% for light trucks for model years 2027 to 2032, and 10% for heavy-duty pickup trucks and vans for model years 2032 to 2035.[75]

> NHTSA estimates that this proposal, if implemented, would reduce gasoline consumption by 88 billion gallons relative to baseline levels for passenger cars and light trucks, and by approximately 2.6 billion gallons relative to baseline levels for HDPUVs [heavy-duty pickup trucks and vans] through calendar year 2050. Reducing fuel consumption has multiple benefits—it improves our nation's energy security, it saves consumers money, and reduces harmful pollutant emissions that lead to adverse human and environmental health outcomes and climate change. NHTSA estimates that this proposal, if implemented, could reduce carbon dioxide (CO2) emissions by 885 million metric tons for passenger cars and light trucks, and by 22 million metric tons for HDPUVs through calendar year 2050.[76]

The proposed standards are anticipated to increase the cost of model year 2032 vehicles by $932 and save owners of these vehicles about $1,043 in lifetime fuel costs.[77]

The increasing CAFE standards affect both federal and state MFT revenue.[78] As fuel efficiency increases in automobiles and trucks, they require less fuel to travel the same distance. With fewer gallons of fuel purchased per vehicle, less tax is collected, leading to shortfalls in MFT revenue.

3. The Minimal Impact of EVs and Hybrid Vehicles on Decreasing MFT Revenues

Sales of EVs have increased each year since they became commercially available.[79] As of 2023, the United States has the third-largest market for EVs and hybrids in the world.[80] In 2022, sales of EVs in the United States reached

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[74] Corporate Average Fuel Economy Standards for Passenger Cars and Light Trucks for Model Years 2027-2032 and Fuel Efficiency Standards for Heavy-Duty Pickup Trucks and Vans for Model Years 2030-2035, 88 Fed. Reg. 56128, (proposed Aug. 17, 2023) [hereinafter 2023 CAFE Standards] (to be codified at 49 C.F.R. pt. 531, 533, 535, 537). *But see* H.R. 1 § 42301 (proposing repeal of the NHTSA rules on the 2024 CAFE standards).

[75] 2023 CAFE Standards, *supra* note 74, at 56128.

[76] *Id.* at 56132.

[77] David Shepardson, *US proposes raising vehicle fuel economy standards to 58 miles per gallon by 2032*, REUTERS (July 28, 2023), https://www.reuters.com/business/autos-transportation/us-proposes-hike-vehicle-fuel-economy-standards-58-mpg-by-2032-2023-07-28/ [https://perma.cc/5KPY-Y7WT].

[78] Anderson, *supra* note 1.

[79] *See* INT'L ENERGY AGENCY, *supra* note 24.

[80] China (60%), Europe (25%), and the United States (10%) are the first, second, and third largest EV markets worldwide. Marek Guzek et al., *Electric Vehicles—An Overview of Current*

approximately 800,000 vehicles, around 6% of vehicles sold nationwide, more than twice the number of EVs sold in 2019.[81] The number of EVs sold increased by over 50% in 2024, with sales reaching 1.3 million—8.7% of all new cars sold in the United States.[82] Worldwide, EV sales reached ten million in 2022, with 15% of new vehicles sold being EVs or plug-in hybrids.[83] Analysts have predicted that sales of EVs in the United States will continue to grow in 2025.[84] However, the total number of EVs and hybrids in use in the United States is low, and political changes may slow EV adoption.

In August 2021, President Joseph Biden set a goal of having 50% of all new vehicles sold in the United States be electric by 2030.[85] On January 20, 2025, President Donald Trump issued an executive order in part "to eliminate the 'electric vehicle (EV) mandate.'"[86] This order has been interpreted as (1) revoking President Biden's non-binding goal that EVs make up half of new cars sold by 2030, (2) seeking to revoke potentially all tax credits for EVs and EV infrastructure, (3) seeking to terminate a federal exemption that allows California to phase out sales of gas-powered vehicles by 2035, and (4) attempting to pause federal spending on EV charging stations.[87] In addition, on February 6, 2025, the Trump administration

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Issues—Part 2—Infrastructure and Road Safety, 17 ENERGIES 495, at 3 (2024); INT'L ENERGY AGENCY, *supra* note 24.

[81] Guzek et al., *supra* note 80, at 3; *FOTW #1124, March 9, 2020: U.S. All-Electric Vehicle Sales Level Off in 2019*, U.S. DEP'T OF ENERGY (Mar. 9, 2020), https://www.energy.gov/eere/vehicles/articles/fotw-1124-march-9-2020-us-all-electric-vehicle-sales-level-2019 [https://perma.cc/4CUB-M67N]; *EV Sales Growth was a Highlight of 2022*, COX AUTOMOTIVE (Jun. 7, 2023), https://www.coxautoinc.com/insights/ev-sales-growth-was-a-highlight-of-2022/ [https://perma.cc/6VTT-A6N2].

[82] Sean Tucker, *America Set EV Sales Record in 2024*, KELLEY BLUE BOOK (Jan. 14, 2025), https://www.kbb.com/car-news/america-set-ev-sales-record-in-2024/ [https://perma.cc/CG7W-5VT7].

[83] *Id.*

[84] *Id.*

[85] WHITE HOUSE, BIDEN ADMIN., EV ACCELERATION CHALLENGE, https://bidenwhitehouse.archives.gov/cleanenergy/ev-acceleration-challenge/ [https://perma.cc/WK8F-4C67]; *see also* Josh Lederman, *Biden signs order aiming for half of new vehicles to be electric by 2030*, NBC NEWS (Aug. 5, 2021), https://www.nbcnews.com/politics/politics-news/biden-sign-order-aiming-half-new-vehicles-be-electric-2030-n1275995 [https://perma.cc/A24S-7UAF].

[86] Exec. Order No. 14154, 90 Fed. Reg. 8353, § 2(e) at 8353 (Jan. 20, 2025). This portion of the executive order states: "It is the policy of the United States: … to eliminate the 'electric vehicle (EV) mandate' and promote true consumer choice, which is essential for economic growth and innovation, by removing regulatory barriers to motor vehicle access; by ensuring a level regulatory playing field for consumer choice in vehicles; by terminating, where appropriate, state emissions waivers that function to limit sales of gasoline-powered automobiles; and by considering the elimination of unfair subsidies and other ill-conceived government-imposed market distortions that favor EVs over other technologies and effectively mandate their purchase by individuals, private businesses, and government entities alike by rendering other types of vehicles unaffordable."

[87] Alexa St. John & Matthew Daly, *What's next for EVs as Trump moves to revoke Biden-era incentives?*, ASSOCIATED PRESS (Jan. 21, 2025), https://apnews.com/article/climate-trump-electric-vehicles-pollution-standards-ae3a35faa376630e494765175aee2c28 [https://perma.cc/6FTN-45DW]. President Trump has said he will attempt to revoke federal tax rebates for purchases of EVs. This change was initially and surprisingly supported by Elon Musk, one of the heads of the U.S. Department of Government Efficiency and the co-founder and CEO of EV manufacturer Tesla.

suspended the National Electric Vehicle Infrastructure ("NEVI") program.[88] Finally, President Trump's One Big Beautiful Bill Act ("OBBB Act")[89] rolled back nearly every clean energy tax credit by phasing out those for EVs and hybrids, battery production, EV charging stations, and other alternative-fuel infrastructure on September 30, 2025.[90] The version of the bill that passed the House of Representatives added a federal registration fee for EVs and hybrids, but this fee was omitted in the Senate and is not included in the passed legislation.[91]

Elaine Buckberg and Cassandra Cole estimated that ending EV tax credits, cutting federal support of tax credits for EVs and EV infrastructure enacted in the 2022 Inflation Reduction Act and the 2021 Bipartisan Infrastructure Law, and withdrawing the Clean Air Act waiver for California would decrease the EV share of sales of new cars by 16%—to 32% from 48%—in 2030.[92] Princeton University's ZERO Lab predicted that if EPA tailpipe emissions regulations and EV tax credits are repealed, sales of EVs and hybrids could drop 30% in 2027 and 40% in 2030 relative to current expected sales, resulting in 8.3 million fewer EVs and hybrids on U.S. roads in 2030.[93]

EVs and hybrids are often blamed for the insufficient revenue from MFTs, as they use little to no motor fuel and therefore do not contribute to MFTs.[94] However, even though sales of EVs and hybrids have increased dramatically in the United States over the past few years to 8.7% of new cars sold in 2024, only about

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See Jarrett Renshaw, Chris Kirkham & Nora Eckert, *Exclusive: Trump's transition team aims to kill Biden EV tax credit*, REUTERS (Nov. 15, 2024), https://www.reuters.com/business/autos-transportation/trumps-transition-team-aims-kill-biden-ev-tax-credit-2024-11-14/ [https://perma.cc/HA9W-WPHR]; Kelley R. Taylor, *Is Trump Taking the EV Tax Credit Away? What You Need to Know*, KIPLINGER (Feb. 13, 2025), https://www.kiplinger.com/taxes/whats-happening-with-the-ev-tax-credit [https://perma.cc/CZY7-65A2]; *Elon Musk*, TESLA, https://www.tesla.com/elon-musk [https://perma.cc/L2NX-RLU4]; Andrew Stanton, *Exclusive: Tesla Investor Calls for Board To Oust Elon Musk as CEO*, NEWSWEEK (Mar. 22, 2025), https://www.newsweek.com/tesla-investor-calls-board-oust-elon-musk-2048755 [https://perma.cc/4CMV-6YGM].

[88] Zack Budryk, *Transportation Department suspends $5 billion EV charger program*, THE HILL (Feb. 7, 2025), https://thehill.com/policy/energy-environment/5132717-trump-administration-suspends-electric-vehicle-charging-network/ [https://perma.cc/9Q5J-KS5E].

[89] One Big Beautiful Bill Act, Pub. L. No. 119-21, 139 Stat. 72 (2025).

[90] *See id.* §§ 70501-70504.

[91] H.R. 1, 119th Cong. § 100003 (2025) (as passed by the House, May 22, 2025).

[92] ELAINE BUCKBERG & CASSANDRA COLE, TRUMP EV POLICY OVERHAUL: WHAT WILL HAPPEN TO EV ADOPTION, EMISSIONS, AND THE FISCAL BALANCE 3 (2025), https://salatainstitute.harvard.edu/wp-content/uploads/2025/03/Policy-Brief_Trump-EV-Policy-Overhaul.pdf [https://perma.cc/D5JN-NTD3].

[93] Jesse Jenkins, *Potential Impacts of Electric Vehicle Tax Credit Repeal on US Vehicle Market and Manufacturing*, PRINCETON UNIV. ZERO LAB (Mar. 18, 2025), https://zenodo.org/records/15047921 [https://perma.cc/PJ2X-YPBA].

[94] *See, e.g.*, Melby, *supra* note 6, at 344 ("Although these vehicles still contribute to the wear and tear associated with driving on roads, bridges, and highways, by not paying any motor fuel tax (MFT), their drivers effectively avoid contribution of funds necessary to maintain, repair, and replace effected infrastructure."); Bellon, *supra* note 6, at 609 ("Of the factors contributing to decreased highway funding, the rise of electric vehicles presents the most complex challenge to the current highway funding structure.").

1% of all vehicles in operation in the United States are EVs.[95] Thus, the existing shortfalls in MFT revenues cannot be blamed on EVs and hybrids. Further, it is unlikely in the foreseeable future that EVs and hybrids will make up a large percentage of cars on U.S. highways. Even assuming that the repeal of the tax incentives for EVs and hybrids does not slow the EV and hybrid market as predicted, and the United States meets President Biden's goal of EVs making up 50% of all new vehicles sold by 2030, the Federal Reserve Bank of Chicago staff has estimated that only approximately 12% would be electric at that time.[96] One expert predicted that even if "all new car sales were EVs . . . it would still take at least a decade and likely far longer to fully transition to electric vehicles."[97] Since only a tiny percentage of vehicles on U.S. roads are EVs or hybrids, a situation that is unlikely to change anytime soon, attempts to compensate for the long-standing shortfalls in MFT revenue by increasing fees and taxes on EVs and hybrids will be ineffective.

C. Why Incentivizing EV and Hybrid Adoption is Important

1. Climate Change

The transportation sector in the United States is the top source of greenhouse gas emissions.[98] Greenhouse gas emissions in the United States account for almost one-sixth of the total worldwide emissions.[99] Twenty-eight percent of the greenhouse gas emissions in the United States come from transportation—largely from gasoline and diesel fuel.[100] Light-duty vehicles, mostly cars, light trucks, and motorcycles, are responsible for approximately 53% of total transportation energy use in the United States.[101]

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[95] Tucker, *supra* note 82; *New Registrations of Gasoline Vehicles Are Still Growing Despite the EV Push*, INST. ENERGY RSCH. (Dec. 21, 2023), https://www.instituteforenergyresearch.org/fossil-fuels/gas-and-oil/new-registrations-of-gasoline-vehicles-are-still-growing-despite-the-ev-push/ [https://perma.cc/8BE5-LXEB].

[96] LAGUARDIA ET AL., *supra* note 6.

[97] Gowdy, *supra* note 8.

[98] CONG. BUDGET OFF., EMISSIONS OF CARBON DIOXIDE IN THE TRANSPORTATION SECTOR 2 (2022), https://www.cbo.gov/system/files/2022-12/58566-co2-emissions-transportation.pdf [https://perma.cc/6ZAP-GTFG] ("In 2021, CO_2 emissions from transportation in the United States totaled 1.7 BMT—the most from any sector of the economy.").

[99] *Id.* ("In 2021, worldwide emissions of greenhouse gases from all sources amounted to 40.8 billion metric tons (BMT). Greenhouse gas emissions in the United States are estimated to account for almost one-sixth of that amount—6.4 BMT.")

[100] *Sources of Greenhouse Gas Emissions*, U.S. ENV'T PROT. AGENCY, (Nov. 16, 2023), https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions [https://perma.cc/GP2K-UQM8]. The other sectors are Electricity Production (25%), Industry (23%), Commercial and Residential (13%), Agriculture (10%), and Land Use and Forestry (offsets 12% of 2021 emissions). *Id.*

[101] *Use of energy explained*, U.S. ENERGY INFO. ADMIN., (Aug. 16, 2023), https://www.eia.gov/energyexplained/use-of-energy/transportation.php#:~:text=Petroleum%20is%20the%20main%20source,in%20natural%20gas%20pipeline%20compressors [https://perma.cc/Y6F6-AZ5Z].

Twenty-seven percent of total U.S. energy consumption in 2022 came from transportation, and approximately 90% of the energy used in the transportation sector came from the use of petroleum products.[102] In 2022, electricity accounted for only a tiny percentage of energy used in transportation.[103] Increasing the use of EVs and hybrid vehicles and reducing reliance on petroleum fuels have been major parts of the United States' plan to decrease carbon emissions and address climate change, which has been identified as a global emergency, an international development issue, and a threat to human rights.[104] As discussed above, U.S. policy has long been to increase fuel efficiency in traditional motor vehicles by imposing fuel efficiency standards.[105] Like much of the world, the United States as a whole and many states made increasing EV and hybrid vehicle use a major policy goal.[106] While the federal government has changed its position on this, the importance of this policy goal remains.

The federal government and many states have enacted policies to increase EV and hybrid ownership to decrease carbon emissions and slow climate change.[107] The federal government alone provided roughly $600 million annually in tax incentives for EVs, plug-in hybrids, and other alternative fuel vehicles through the Inflation Reduction Act and the Bipartisan Infrastructure Law.[108] Given the transportation industry's huge impact on U.S. carbon emissions, encouraging the use of EVs and hybrids is a major part of reducing greenhouse gases to address climate change.[109] As part of the policy goal of replacing traditional motor fuel-powered vehicles with EVs and hybrids, the federal and state governments enacted generous financial incentives to encourage the purchase of EVs and hybrids and build charging stations and other infrastructure to support these vehicles.[110] At the

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[102] *Id.* ("Other fuel sources for transportation energy use include distillates (22%), jet fuel (12%), biofuels (6%), natural gas (5%), and other fuels (3%) [(which includes electricity (including electrical system energy losses), along with residual fuel oil, lubricants, and hydrocarbon gas liquids (propane)].")

[103] *See id.*

[104] Rosa Celorio, *The Kaleidoscope of Climate Change and Human Rights: The Promise of International Litigation for Women, Indigenous Peoples, and Children*, 13 ARIZ. J. ENV'T L. & POL'Y 155, 157-160 (2023).

[105] *Corporate Average Fuel Economy*, NHTSA https://www.nhtsa.gov/laws-regulations/corporate-average-fuel-economy, [https://perma.cc/F9KC-2LC5].

[106] See INT'L ENERGY AGENCY, *supra* note 24; Davis, *supra* note 7.

[107] *Biden-Harris Administration Announces Over $46 Million to Enhance EV Charging Reliability and Workforce Development*, U.S. DEP'T. OF ENERGY (Jan. 19, 2024), (Jan. 19, 2024), https://www.energy.gov/articles/biden-harris-administration-announces-over-46-million-enhance-ev-charging-reliability-and [https://perma.cc/JD9P-KS4S]; Davis, *supra* note 7.

[108] *How Do We Tax Energy in the United States? How Does It Compare to Other Countries?*, PETER G. PETERSON FOUND. (Sep. 13, 2021), https://www.pgpf.org/blog/2021/09/how-do-we-tax-energy-in-the-united-states-how-does-it-compare-to-other-countries [https://perma.cc/M5YT-GPLE].

[109] *See* U.S. DEP'T OF ENERGY, *supra* note 107 ("Electrifying America's transportation sector is essential to mitigating greenhouse gas pollution and addressing climate change, and the transition will improve health outcomes, reduce fuel and maintenance costs, and strengthen our national energy security.").

[110] *Id.*; Davis, *supra* note 7.

time, these federal incentives had bipartisan support in Congress, notwithstanding the current administration's repeal of them.[111]

a. History of Federal Incentives

For several years, the federal government enacted strategies to encourage consumers and businesses to adopt EVs and hybrids to reduce carbon emissions and reliance on oil. Many of these strategies involved tax policy.[112] The United States has used tax credits to incentivize the purchase of EVs and hybrids since 2009.[113] Under the initial statutory incentives, a federal tax credit of up to $7,500, called the clean vehicle credit, was available for each EV purchased by individuals and businesses.[114] This tax credit was phased out once an auto manufacturer sold 200,000 vehicles that qualified their purchasers for the credit.[115]

Under the Inflation Reduction Act,[116] enacted on August 16, 2022, Congress amended the clean vehicle credit[117] and added the previously owned clean vehicle credit,[118] the commercial clean vehicle credit,[119] and the qualified alternative fuel refueling credit.[120] These amendments changed certain requirements for the clean vehicle credit and provided businesses and consumers with tax credits for purchasing used EVs, plug-in hybrids, and fuel cell vehicles, and building charging stations.[121]

With the 2022 amendments to the clean vehicle credit, the phase-out of auto manufacturers, which restricted the credit to vehicles sold by manufacturers that had sold 200,000 clean vehicles or fewer, was discontinued.[122] The Inflation Reduction Act made the clean vehicle credit available to purchasers of EVs from any manufacturer if the vehicle met certain criteria: (1) the vehicle had to be first used by the purchaser; (2) it had to have four or more wheels; (3) it had to have a gross vehicle weight rating of less than 14,000 pounds; (4) it had to draw propulsion from a battery with at least seven kilowatt hours that could be recharged by an

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[111] *See* Rachel Franzin, *Johnson Says Approach to IRA Repeal Will be 'Between a Scalpel and a Sledgehammer'*, THE HILL (Feb. 27, 2025), https://thehill.com/policy/energy-environment/5167829-johnson-inflation-reduction-act-ira-climate-tax-infrastructure/ [https://perma.cc/2LH3-AGE3]; Josh Siegel & James Bikales, *House Republican Support Grows for Keeping Clean Energy Tax Breaks*, POLITICOPRO (Mar. 10, 2025), https://subscriber.politicopro.com/article/2025/03/house-republican-support-grows-for-keeping-clean-energy-tax-breaks-00218126 [https://perma.cc/N7HD-YEKK]; One Big Beautiful Bill Act, *supra* note 89.

[112] *See generally* Mann, *supra* note 13.

[113] *Id.* at 10300 ("In the United States, tax credits have been used to encourage purchase of EVs since 2009." (citation omitted)).

[114] *Id.* at 10302.

[115] I.R.C. § 30D(e)(2) (2018), amended by Inflation Reduction Act, H.R. 5376, 117th Cong. § 13401(d) (2022).

[116] Pub. L. No. 117-169, 136 Stat. 1818 (2022).

[117] I.R.C. § 30D (2022).

[118] I.R.C. § 25E (2022).

[119] I.R.C. § 45W (2022).

[120] I.R.C. § 30C (2022).

[121] Mann, *supra* note 13, at 10302.

[122] Inflation Reduction Act, *supra* note 115.

external source of electricity, that is, be plugged in; and, (5) starting in 2023, its final assembly had to occur in North America.[123] Whether a vehicle qualified for the total clean vehicle credit of $7,500 depended on whether it met domestic content requirements for critical minerals in the battery, on which half of the credit relied, and whether it satisfied domestic content requirements for battery components, on which the second half of the credit relied.[124] The vehicle's manufacturer's suggested retail price also had to be below a certain amount.[125] Further, a taxpayer was not entitled to the credit if their modified adjusted gross income exceeded a certain amount, depending on their income tax filing status.[126] The clean vehicle credit is non-refundable, which means that if a taxpayer's income tax liability for the year was less than $7,500, they would not receive the entire credit.[127] However, as long as the vehicle and the taxpayer qualified for the credit, the dealer could provide it as a cash rebate or a reduction in the vehicle cost or treat the purchaser as though they made a $7,500 down payment on the vehicle rather than having the purchaser use the credit when filing their income taxes.[128] This provided a benefit for lower-income purchasers who may not have had enough income tax liability to offset the full $7,500 credit.[129]

The previously-owned clean vehicle tax credit allowed taxpayers who purchased used EVs or plug-in hybrids to claim a tax credit of up to $4,000 as long as certain criteria, like those for the clean vehicle credit, were met.[130] The commercial clean vehicle credit applied to EVs and mobile machinery purchased or leased by businesses.[131]

The alternative fuel refueling property credit provided a tax credit of 30% of the cost of alternative fuel refueling property placed in service during the year, such as an EV charging station, up to $30,000 for depreciable property and $1,000 for nondepreciable property.[132] While many EV and plug-in hybrid owners charge their vehicles at their homes and only require charging stations when traveling long distances, increasing the number and saturation of charging stations throughout the

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[123] I.R.C. § 30D (2022); *see also* Randy Gardner & Julie Welch, *The Inflation Reduction Act's Residential and Vehicle Energy Credits*, 36 J. FIN. PLAN. 44, 45 (2023).

[124] I.R.C. § 30D, *supra* note 123.

[125] *See id.*

[126] *See id.*

[127] *See id.*

[128] *See id.*

[129] *See, e.g.*, Andrew Rabalais, *Drive Down to Electric Avenue: Taking Electric Vehicle Incentives Higher*, 5 LA. ST. UNIV. J. ENERGY L. & RES. 427, 440 (2017) ("Although citizens of all income levels may benefit from the tax credit, critics have observed that it has often favored higher wage earners. Structuring the subsidy as a tax credit instead of a rebate reduces its benefit to lower earners; it requires that one pay a certain minimum level of taxes in order to realize the credit's full amount. For individuals with lower tax liabilities, the credit is capped, as the most someone can do under the current structure is reduce their regular income tax liability to zero, rather than receiving an additional rebate for the remainder of the credit's value.").

[130] I.R.C. § 25E, *supra* note 118; *see also* Gardner & Welch, *supra* note 123.

[131] I.R.C. § 45W, *supra* note 119. This credit was originally available for previously owned cars purchased between 2022 and 2032.

[132] I.R.C. § 30C (2022).

country is crucial to encourage the adoption of EVs.[133] As of the end of 2025, there were 78,432 public electric vehicle charging stations in the United States.[134] In comparison, as of the end of 2025, there were 122,620 gas stations, most with multiple gas pumps.[135] The availability of charging stations varies significantly depending on the area of the country, whether in a rural or urban setting, and the state.[136] Further, many of the charging stations do not offer DC Fast Charging, also known as direct current or Level 3 charging, which enables rapid charging.[137] Finally, different EVs and different charging stations use different types of connectors, and some EVs may not be capable of fast charging, which requires a specific type of connector.[138] This has been rectified for most new EVs. Nearly all U.S. automakers announced that they would begin using Tesla's North American Charging Standard ("NACS") ports, which enable Level 3 charging at Tesla charging stations, rather than Combined Charging Standard ("CCS") ports, in either 2024 or 2025.[139] ChargePoint, a public charging network, announced that it is providing NACS connector support for its AC and DC chargers starting in October 2023, and it is likely that other charging stations will also make NACS connector charging available.[140] Standardizing ports and charging stations and increasing the number of charging stations in the United States, especially in rural and low-income areas, is an important priority to encourage the widespread adoption of EVs.[141]

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[133] LAGUARDIA ET AL., *supra* note 6.

[134] *Alternative Fueling Station Counts by State*, U.S. DEP'T OF ENERGY ALT. FUELS DATA CTR., https://afdc.energy.gov/stations/states?count=public&date=2025-12-31 [https://perma.cc/8UCA-B67W].

[135] *U.S Convenience Store Count,* NACS https://www.convenience.org/Research/Convenience-Store-Fast-Facts-and-Stats/FactSheets/IndustryStoreCount [https://perma.cc/WH77-SBSS].

[136] Steven Loveday & Warren Clark, *How Do You Charge Your Electric Car at a Public Charging Station?*, U.S. NEWS & WORLD REP. (Feb. 6, 2025), https://cars.usnews.com/cars-trucks/advice/ev-public-charging [https://perma.cc/CUU5-U6KT]. ("[A]vailability can vary dramatically from one region to the next. These stations are more common in urban and coastal areas and less prevalent in rural locales.").

[137] Bengt Halvorson, *Where to Charge Your EV in 2025: A Deep Dive Into U.S. Charging Networks*, U.S. NEWS & WORLD REP. (Sept. 19, 2025), https://cars.usnews.com/cars-trucks/advice/ev-charging-stations [https://perma.cc/7XER-NZAA].

[138] Loveday & Clarke, *supra* note 136.

[139] Andrew Beckford, *The Great NACS Migration: Which Car Companies Are Switching to Tesla's Charging Port?*, MOTORTREND (Sep. 5, 2025), https://www.motortrend.com/features/tesla-nacs-charging-port-automaker-compatibility/ [https://perma.cc/T6MG-HECM] (listing car manufacturers that have announced that they will make NACS ports standard on new EVs sold in the United States: Audi (2025); BMW (2025); Fisker (2025); Ford (2025); General Motors (2025); Genesis (2024); Hyundai (2024); Kia (2024); Lucid (2025); Mazda (2025); Porsche (2025); Rivian (2025); Scout (2025); Subaru (2025); Volkswagen (2025); Volvo (2025); Polestar (2025); Nissan/Infiniti (2025); Toyota/Lexus (2025); and Mercedes-Benz (2025)).

[140] *Id.*

[141] *See* U.S. DEP'T OF ENERGY, *supra* note 107 (discussing the Biden-Harris administration's "goal of building a national network of 500,000 public EV charging ports by 2030 and reaching net-zero emissions by 2050").

The current federal administration opposes federal tax incentives for EVs and EV infrastructure.[142] The OBBB Act repealed all tax credits for EV and hybrid purchases[143] along with other clean energy credits.[144] Repealing the clean vehicle tax credit alone is anticipated to save nearly $200 billion between 2025 and 2034.[145]

b. State Emissions Reduction Laws and EV and Hybrid Vehicle Incentives

Some states have enacted laws designed to decrease emissions from vehicles. In 1990, California adopted Low-Emission Vehicle ("LEV") regulations that required car manufacturers to decrease exhaust emissions on light- and medium-duty vehicles starting in 1994.[146] Since then, California has added tiers of LEV regulations to reduce criteria for pollutant emissions from new light- and medium-duty vehicles.[147] As a part of the LEV regulations, California also adopted the Zero-Emission Vehicle ("ZEV") regulations, which currently require ZEVs to include 100% of vehicles sold by the 2035 model year.[148] California's decision to end sales of all new gasoline-fueled vehicles starting in 2035 will have a major impact on auto sales in that state.[149] Further, California's governor committed to re-establishing a ZEV rebate program if Congress repealed the federal tax credits for EVs and hybrid vehicles.[150]

Twelve other states and the District of Columbia have adopted California's LEV and ZEV standards, requiring automobile manufacturers to sell a certain number of LEVs and ZEVs each year.[151] States have entered into multistate agreements to establish ZEV sales targets for medium- and heavy-duty vehicles of

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[142] *See* BUCKBERG & COLE, *supra* note 92; Kelley R. Taylor, *Is the EV Tax Credit Going Away Under Trump? What You Need to Know*, KIPLINGER (Sep. 3, 2025) , https://www.kiplinger.com/taxes/whats-happening-with-the-ev-tax-credit [https://perma.cc/96EM-9ZTR]; Franzin, *supra* note 111.

[143] Pub. L. No. 119-21, §§ 70501-70504, 139 Stat. 72 (2025).

[144] *See, e.g.*, *id.* §§ 70505-70525.

[145] Alex Muresianu & Peter Van Ness, *Four Paths for Inflation Reduction Act Reforms*, TAX FOUND. (Mar. 20, 2025), https://taxfoundation.org/blog/inflation-reduction-act-ira-credits-repeal-reform/ [https://perma.cc/SJR3-6UDR].

[146] *See Low-Emission Vehicle Regulation*, CAL. AIR RES. BD., https://ww2.arb.ca.gov/our-work/programs/low-emission-vehicle-program/about [https://perma.cc/375B-HD47].

[147] *See id.*

[148] Melby, *supra* note 6, at 7.

[149] *Id* ("The country's most highly populated state, California, has announced that beginning in 2035, it will end all new sales of gas-powered vehicles. This will have a dramatic effect as California currently accounts for over 1 out of every 10 new cars sold in the United States.").

[150] *As California Achieves Historic Milestone, Governor Newsom Commits to Restarting State's ZEV Rebate Program if Federal Tax Credit Is Eliminated*, GOVERNOR GAVIN NEWSOM (Nov. 25, 2024), https://www.gov.ca.gov/2024/11/25/as-california-achieves-historic-milestone-governor-newsom-commits-to-restarting-states-zev-rebate-program-if-federal-tax-credit-is-eliminated/ [https://perma.cc/226Y-8C9K].

[151] Laura Shields, *State Lawmakers Driving EV Policies in 2021*, NAT'L CONF. ST. LEGISLATURES (Mar. 26, 2021), https://www.ncsl.org/state-legislatures-news/details/state-lawmakers-driving-ev-policies-in-2021 [https://perma.cc/L6AC-EFJB]. The twelve states are Colorado, Connecticut, Maine, Maryland, Massachusetts, New York, New Jersey, Oregon, Rhode Island, Vermont, Virginia, and Washington. *Id.*

30% by 2030 and 100% by 2050.[152] They have also joined multistate agreements to increase the use of EVs and hybrids through other means, including increasing awareness, developing incentives, building infrastructure, and offering dealership training.[153] Additionally, some states are transitioning their own fleets of vehicles to electric.[154] Numerous funding incentives were available to state and local governments to replace diesel buses and heavy-duty vehicles with EVs or alternative fuel vehicles and fund other transportation electrification projects.[155]

Several states have enacted incentives to increase the adoption of EVs and hybrids as a policy goal. As of July 2023, nineteen states provided tax credits or sales tax exemptions to incentivize consumers to purchase EVs.[156] These ranged from $1,000 to $7,500, in addition to the federal tax credit of $7,500.[157]

Many states have also developed other creative ideas to promote EVs and hybrids. In forty-seven states and the District of Columbia, state legislatures and private utility companies have offered incentives to encourage EVs and hybrids.[158]

> Legislative incentives include measures that provide high-occupancy vehicle (HOV) lane exemptions, financial incentives for purchasing electric vehicles or electric vehicle supply equipment (EVSE), vehicle inspections or emissions test exemptions, parking incentives and utility rate reductions. Utilities also offer incentives, rebates, and grants for transportation electrification. One of the most common incentives is price reductions for charging EVs during off-peak hours. For example, several electric utilities offer lower off-peak price per kilowatt-hour. Other utilities incentivize purchasing EVs and equipment through rebates. Several states have implemented financial incentives, including tax credits, rebates and registration fee reductions designed to promote EV adoption.[159]

These laws and programs demonstrate that many states have embraced policy goals to decrease carbon emissions through incentivizing EV and hybrid vehicle adoption.

c. Lessons From Other Countries

Other countries that have been far more successful than the United States in adopting EVs—thereby reducing carbon emissions from transportation—have

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[152] Austin Igleheart, *State Policies Promoting Hybrid and Electric Vehicles*, NAT'L CONF. ST. LEGISLATURES (Aug. 23, 2023), https://www.ncsl.org/energy/state-policies-promoting-hybrid-and-electric-vehicles [https://perma.cc/N9KB-2GBD].

[153] *Id.*

[154] *Id.* at 2.

[155] *Id.* at 1.

[156] Jaros & Hoffer, *supra* note 34.

[157] *See id.*

[158] Igleheart, *supra* note 152.

[159] *Id.*

reduced taxes and fees on EVs to achieve these results. China and the European Union have the world's first- and second-largest markets for EVs.[160]

China produces approximately half of the EVs in the world.[161] It accounts for 60% of all new EVs sold worldwide.[162] In 2022, China exceeded its 2025 national target of EVs comprising 20% of total domestic car sales, when 29% of all cars sold were EVs.[163] China's green tax policies have driven the growth in the EV industry there.[164] EV and hybrid purchasers and manufacturers receive significant tax breaks.[165] For instance, since 2014, EVs and hybrids have been exempt from the 10% purchase tax imposed on other vehicle purchases.[166] China and its local governments have subsidized research and development, manufacturing, infrastructure, and purchases of EVs, which lowers their cost, though as EVs have gained a larger market share, those subsidies have been reduced to push innovation and avoid international trade concerns.[167] China also promotes EV adoption by exempting EVs from vehicle purchase restrictions in several cities, which are designed to address traffic congestion and pollution, and giving EVs and hybrids parking incentives and priority road rights.[168]

European countries have also been very successful in encouraging the adoption of EVs. In 2022, the EV share of passenger car sales reached 29% in Europe and 21% for the twenty-seven countries that make up the European Union.[169] They have done this primarily through incentives like tax and fee reductions and exemptions. For example, Norway exempts EVs from car registration tax and value-added tax ("VAT").[170] Norway also exempted EVs from road tax from 1996 to 2021, imposed a lower company car tax on EVs, and required local governments to reduce tolls and parking costs for EVs by at least 50%.[171]

Similarly, Germany provided owners of EVs registered between 2011 and 2030 a ten-year exemption from motor vehicle tax, imposed a lower company car

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[160] INT'L ENERGY AGENCY, *supra* note 24, at 18; Guzek et al., *supra* note 80, at 3. The United States has the third-largest market for EVs. *Id.*

[161] Roger E. Meiners & Andrew P. Morriss, *Addressing Green Energy's "Resource Curse"*, 33 DUKE ENV'T. L. & POL'Y F. 35, 46 (2022).

[162] Guzek et al., *supra* note 160, at 3.

[163] *Id.*

[164] Zhigang Hong & Danshera Wetherington Cords, *How Can Green Tax Laws Spur Green Behavior? An Analysis of The Influence of Chinese Tax Policy on Green Behavior*, 17 PITT. TAX REV. 165, 186-93 (2029); Fang, *supra* note 25, at 359.

[165] *Id.* at 190.

[166] *See China releases latest NEV catalogue eligible for purchase tax exemption*, GLOBAL TIMES (Dec. 5, 2024), https://www.globaltimes.cn/page/202412/1324394.shtml [https://perma.cc/Y9LA-4LP7]; Giulia Interesse, *China Extends NEV Tax Reduction and Exemption Policy to 2027*, CHINA BRIEFING (June 28, 2023), https://www.china-briefing.com/news/china-extends-nev-tax-reduction-and-exemption-policy-to-2027/ [https://perma.cc/WA64-UAT7].

[167] Fang, *supra* note 25, at 359; *see also* Hong & Cords, *supra* note 164, at 191-92.

[168] Xiaolei Zhao, et al., *Policy incentives and electric vehicle adoption in China: From a perspective of policy mixes*, 190 TRANSP. RSCH. PART A: POL'Y & PRAC. 104235, at 3-4 (2024), https://www.sciencedirect.com/science/article/pii/S0965856424002830.

[169] Fang, *supra* note 25; *see also* Hong & Cords, *supra* note 164, at 191-92.

[170] Mann, *supra* note 13, at 10311.

[171] *Id.*

tax for EVs, and offered grants for purchases of EVs.[172] The Netherlands also exempts EVs from purchase and ownership taxes and discounts company car tax.[173] It discourages ownership of conventional and diesel vehicles by imposing increased taxes and, in certain cases, a particulate matter surcharge.[174] Finally, the United Kingdom exempts EVs from vehicle excise taxes and offers corporate tax exemptions and reduced car taxes for EV company cars.[175] It also provides grants for purchases of lower-priced EVs.[176] Local governments in these countries provide additional incentives for EVs, such as free or low-cost parking.[177]

The success of these tax incentives, fee reductions, and subsidies in growing the EV and hybrid markets in China and European countries demonstrates their efficacy. Rather than raising taxes and fees on EV and hybrid owners, which directly undermines the goal of decreasing carbon emissions while raising very little revenue, states and the federal government should look to more effective and less problematic solutions to the MFT shortfall.

2. Investments in EV and Battery Manufacturing

States and the federal government, along with private industry, have made significant investments in EV and battery manufacturing over the past several years.[178] Between 2000 and September 2024, businesses announced $208.8 billion in investments in EV manufacturing, which corresponded to the creation of approximately 240,000 new jobs.[179] The passage of the OBBB Act and the repeal of the tax credits for EV and hybrid purchases, U.S. battery manufacturing plants, and other clean energy priorities enacted in the Inflation Reduction Act[180] will negatively impact auto manufacturers and could lead to the cancellation of many planned EV battery manufacturing facilities.[181]

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[172] *Id.*

[173] *Id.* at 10311-12.

[174] *Id.*

[175] *Id.*

[176] *Id.*

[177] *Id.*

[178] *See* TOM TAYLOR ET AL., ATLAS PUB. POL'Y & BLUEGREEN ALL. FOUND., TRACKING THE STATE OF U.S. EV MANUFACTURING 3 (Jan. 2025), https://atlaspolicy.com/wp-content/uploads/2025/01/Tracking-the-State-of-U.S.-EV-Manufacturing.pdf [https://perma.cc/D3GP-FBGP]; ENVT'L DEF. FUND, U.S. ELECTRIC VEHICLE MANUFACTURING INVESTMENTS AND JOBS: CHARACTERIZING THE IMPACTS OF THE INFLATION REDUCTION ACT AFTER 18 MONTHS 2 (Mar. 2024), https://www.edf.org/sites/default/files/2024-03/EDF_US_EV_Manufacturing_Investments_Spring2024.pdf [https://perma.cc/Q3CF-AG6T].

[179] TAYLOR ET AL., *supra* note 178, at 3.

[180] *See* Pub. L. No. 119-21, §§ 70501-70504, 139 Stat. 72, 250-51.

[181] *See, e.g.*, Neal E. Boudette, *Ford Will Keep Battery Factory Even if Republicans Ax Tax Break*, N.Y. TIMES (June 23, 2025), https://www.nytimes.com/2025/06/23/business/ford-battery-factory-electric-vehicles.html?smid=nytcore-ios-share&referringSource=articleShare [https://perma.cc/NZL8-JM6D] (citing David Green, *Tax credits that bring good union jobs home to Ohio and American should be preserved*, OHIO CAP. J. (June 23, 2025), https://ohiocapitaljournal.com/2025/06/23/tax-credits-that-bring-good-union-jobs-home-to-ohio-and-america-should-be-preserved/ [https://perma.cc/FC76-ZAEZ].

II. EVALUATING PROPOSALS FOR RAISING NEW ROAD FUNDING

Since 2008, decreasing MFT revenue has been subsidized with transfers from general revenue funds.[182] Some states have also increased their MFT rates and tied them to inflation, though the federal government and most states have not done so.[183]

Three new solutions have been proposed to increase funding for roadwork and cover the shortfall in MFT revenue by imposing new fees and taxes on EVs and hybrid vehicles: (1) creating a VMT tax on EVs; (2) imposing new state and federal registration fees on EVs and hybrid vehicles; and (3) taxing EV charging stations and home electricity used for EV and plug-in hybrid vehicle charging. Given the tiny number of EVs and hybrids currently being used in the United States, none of these plans will raise enough revenue to put a dent in the MFT shortfall. Each of these three solutions in its current form is ineffective, impractical, or unduly complicated.

The proposals are ineffective at raising sufficient revenue to replace the shortfalls in MFT revenue. EVs and hybrids are often blamed for insufficient revenues from MFTs, as they use little or no motor fuel and therefore do not pay MFTs.[184] However, even though sales of EVs and hybrid vehicles have increased dramatically over the past few years, only about 2.4% of all vehicles in operation in the United States are EVs.[185] Thus, the shortfalls in MFT revenues cannot be made up by raising taxes and fees on EVs and hybrids. Absent substantial and rapid change, which is unlikely to occur given the repeal of the federal tax cuts for clean vehicles and supporting infrastructure, it will be many years until the number of EVs and hybrid vehicles approaches the number of conventional vehicles on the road.[186] If these new proposals are applied only to EVs and hybrids, they will not raise enough funds to replace even a small percentage of the shortfalls in MFT revenue. In addition, by imposing extra costs on EV and hybrid owners, they disincentivize the adoption of these vehicles, thereby slowing the reduction of carbon emissions in the United States and hindering efforts to address climate change. Relatedly, the three proposals directly counteract policies and tax subsidies designed to encourage EV and hybrid vehicle adoption.[187] As these proposals are

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[182] SHIRLEY, *supra* note 4, at 10.

[183] *Id.*; PLUG IN AM., *supra* note 4.

[184] *See, e.g.*, Melby, *supra* note 6, at 344 ("Although these vehicles still contribute to the wear and tear associated with driving on roads, bridges, and highways, by not paying any motor fuel tax (MFT), their drivers effectively avoid contribution of funds necessary to maintain, repair, and replace effected infrastructure."); Bellon, *supra* note 6, at 609 ("Of the factors contributing to decreased highway funding, the rise of electric vehicles presents the most complex challenge to the current highway funding structure.").

[185] ALLIANCE FOR AUTOMOTIVE INNOVATION, GET CONNECTED: ELECTRIC VEHICLE QUARTERLY REPORT: THIRD QUARTER, 2025 15 (2025), https://www.autosinnovate.org/posts/papers-reports/Get%20Connected%20EV%20Quarterly%20Report%202025%20Q3.pdf [https://perma.cc/B2BL-NEMM].

[186] Gowdy, *supra* note 8.

[187] *See infra* Section II.C.

intended to apply only to EVs and hybrids and not to other vehicles, they will have a chilling effect on EV and hybrid adoption; thus, they directly undermine policies designed to decrease carbon emissions without providing sufficient revenue to justify this interference.

A. Imposing a VMT Tax

One proposed solution to address the shortfalls in highway funding from MFTs is to charge a tax based on the number of miles driven, known as a VMT tax. Both state and federal VMT taxes have been proposed to apply to EVs and hybrid vehicles.[188] Given the limited number of EVs and hybrids on U.S. roads, however, a VMT tax on them will raise very little revenue. In addition, even if VMT taxes are imposed on all vehicle owners, they are complicated and expensive to enact and raise privacy concerns for drivers.

1. State VMT Taxes

Starting in 2015, as required by the Fixing America's Surface Transportation ("FAST") Act, the U.S. DOT established the Surface Transportation System Funding Alternatives ("STSFA") program to provide grants to states for research and pilot programs evaluating user-based alternative funding mechanisms, such as per-mile fee systems, where drivers would pay fees based on their miles driven.[189] In 2021, the federal Infrastructure Investment and Jobs Act also provided $10 million per year from 2022 to 2026 for a federal VMT pilot program and funding to states that run VMT pilot programs.[190]

Oregon and Utah have initiated voluntary VMT tax programs that enable EV and plug-in hybrid owners to waive additional vehicle registration fees by participating.[191] Thirteen states, including two multistate coalitions, have started research studies and pilot programs to consider VMT taxes, and as of March 2023, eleven states received federal grant funds for these programs.[192] Twelve states'

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[188] *See Fixing America's Surface Transportation Act or "FAST" Act: Surface Transportation System Funding Alternatives Program*, U.S. DEP'T OF TRANSP. FED. HIGHWAY ADMIN. (Feb. 8, 2017), https://www.fhwa.dot.gov/fastact/factsheets/surftransfundaltfs.cfm [https://perma.cc/EV2M-Z7QN].

[189] In 2015, DOT was required by statute to establish the STSFA program to provide grants to states to explore the feasibility of user-based alternative funding mechanisms, such as mileage fees systems, where drivers would pay fees based on their miles driven. *See id.*; Fixing America's Surface Transportation Act, Pub. L. No. 114-94, §6020, 129 Stat. 1312, 1582-83 (2015); U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 40, at intro.

[190] *See* Infrastructure Investment and Jobs Act, Pub. L. No. 117-58, § 11101(d)(2)(A), 135 Stat. 429, 448 (2021); *see also* LAGUARDIA ET AL., *supra* note 6, at 9; Jaros & Hoffer, *supra* note 34.

[191] Doug Shinkle, *Special Registration Fees for Electric and Hybrid Vehicles*, NAT'L CONF. ST. LEGISLATURES (Jan. 15, 2026), https://www.ncsl.org/energy/special-fees-on-plug-in-hybrid-and-electric-vehicles [https://perma.cc/KNY8-ESY3].

[192] *Id.*; U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 40, at 10.

legislatures considered adopting VMT legislation in 2023,[193] with bills in Hawaii, Michigan, Vermont, Virginia, and Washington becoming law.[194]

Several logistical problems associated with VMT tax programs make them unduly complicated, expensive, and impractical. First, states implementing a VMT tax will have difficulty charging non-residents for their in-state travel.[195] Thus, state residents will bear the full burden of the tax while out-of-state drivers will bear none of it. Second, to determine how many miles a vehicle travels in-state, the vehicle's location will need to be tracked, raising privacy concerns, or users will need to self-report their in-state mileage, raising fraud concerns.[196] Many users may object to the government tracking their movements, and if self-reporting mileage is used, policing errors, whether deliberate or inadvertent, will be difficult to detect and address.[197] If a multi-state VMT tax system is enacted, imposing a VMT tax based on the state where a driver lives could create inequalities in collection because states with higher numbers of motorists and more trucking companies would collect more VMT tax, even though these drivers could be using roads in other states.[198]

The California state legislature identified other logistical issues to be considered by a Technical Advisory Committee in developing a VMT pilot program:

> (1) The availability, adaptability, reliability, and security of methods that might be used in recording and reporting highway use. (2) The necessity of protecting all personally identifiable information used in reporting highway use. (3) The ease and cost of recording and reporting highway use. (4) The ease and cost of administering the collection of taxes and fees as an alternative to the current system of taxing highway use through motor vehicle fuel taxes. (5) Effective methods of maintaining compliance. (6) The ease of reidentifying location data, even when personally identifiable information has been removed from the data. (7) Increased privacy concerns when location data is used in conjunction with other technologies. (8) Public and private agency access, including law enforcement, to data collected and stored for purposes of the RUC to ensure

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[193] These states are Arizona, Hawaii, Idaho, Massachusetts, Michigan, Minnesota, North Carolina, Oregon, Texas, Vermont, Virginia, and Washington. NCSL Staff, *Shifting Gears to Find a Gas Tax Alternative and Fight Impaired Driving*, NAT'L CONF. ST. LEGISLATURES (Nov. 28, 2023), https://www.ncsl.org/state-legislatures-news/details/shifting-gears-to-find-a-gas-tax-alternative-and-fight-impaired-driving [https://perma.cc/RJ5Z-GFEY].

[194] *Id.*

[195] Manche, *supra* note 6, at 529 ("One of the critical issues still being discussed by the task force is how to charge non residents for road usage.").

[196] *Id.* at 530. Hawaii appears to have solved this problem by requiring that mileage be reported through odometer readings during annual vehicle inspections. *See* NCSL Staff, *supra* note 193. This makes sense in a state of islands because it is unlikely that the total mileage of a vehicle driven both in Hawaii would include mileage from travel in another state.

[197] Manche, *supra* note 6, at 529, 531.

[198] *Id.* at 532.

> individual privacy rights are protected pursuant to Section 1 of Article I of the California Constitution.[199]

In addition to these concerns, because of the small number of EVs and hybrid vehicles in use, a VMT tax would not collect enough to offset more than a tiny percentage of the shortfalls in state MFT revenue, as discussed *supra*.[200] It would also directly undermine policies to promote the adoption of EVs and hybrid vehicles by increasing costs, inconvenience, and privacy concerns for EV and hybrid drivers.[201] Given all the above issues, state VMT taxes are a poor choice to replace lost MFT revenue.

2. Federal VMT Taxes

Imposing a federal VMT tax would raise concerns like those of state VMT taxes. The U.S. Government Accountability Office has criticized current STSFA programs, asserting that the "FHWA evaluations did not include scalability criteria . . . to identify how if at all, an individual state's pilot approaches could inform national policy."[202] For example, they did not include criteria examining whether the technologies used to track and report the participants' mileage in the pilot programs would be cost-effective for use in a national system.[203]

While a federal VMT tax would resolve one of the difficulties in state VMT taxes, specifically the potential inequities in imposing a VMT tax based on the state where a driver lives,[204] all the other concerns inherent in a state VMT tax on EVs and hybrid vehicles would be equally present in a federal VMT tax: driver privacy, complexity, potential for fraud, and insufficiency of revenue collected.

3. Suggested Solutions

Given the expense, logistical hurdles, and other problems associated with imposing a VMT tax, it is an impractical means to replace lost MFT revenue, even if imposed on all vehicles. While states would collect far more revenue if a VMT tax were applied to all vehicles rather than just EVs and hybrids, the complexity, the potential for inequalities, reporting difficulties, and other concerns in imposing state VMT taxes discussed above would apply equally whether a VMT tax is imposed on only EVs and hybrids or all vehicles.

The CBO considered whether Congress should impose a VMT tax for highway use on all vehicles, regardless of the vehicle's energy source (gasoline, diesel, electricity, etc.), to address the shortfalls in the Highway Trust Fund.[205] However, it cautioned that a VMT tax would be expensive to administer and raise

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[199] *Id.* at 530-31 (citing S.B. 1077, 2013-2014 Leg., Reg. Sess. (Cal. Sept. 29, 2014).
[200] LAGUARDIA ET AL., *supra* note 6.
[201] Manche, *supra* note 6, at 529.
[202] U.S. GOV'T ACCOUNTABILITY OFF., *supra* note 40, at intro.
[203] *Id.*
[204] Manche, *supra* note 6, at 532.
[205] SHIRLEY, *supra* note 4, at 2.

privacy concerns if vehicle movement tracking were required.[206] Further, the burden on lower-income households would be greater than on wealthier households because, like the MFT, a VMT tax would be a flat tax, thereby raising vertical equity concerns.[207]

To address these issues, the CBO suggested that Congress impose the VMT tax only on commercial trucks.[208] Many trucking companies already track their fleets, so there would be fewer privacy and administrative issues in imposing a VMT tax.[209] It projected that such a tax at $0.05 per mile would generate between $5 and $15 billion in revenue per year, with an additional $3 billion for each additional cent of tax imposed, depending on the types of trucks and roads the tax is imposed on.[210] However, the CBO warned that the cost of implementing this tax and ensuring compliance may be substantial.[211] The CBO did not limit the potential imposition of the VMT tax to only EV commercial trucks;[212] indeed, such a limitation would severely reduce the amounts potentially collectible. In 2024, U.S. companies deployed only 15,000 medium- and heavy-duty electric vehicles, including semi-trucks, passenger buses, and delivery vans.[213]

In conclusion, imposing a VMT tax only on EVs and hybrids would raise very little revenue in the foreseeable future and disincentivize the adoption of EVs and hybrids by making driving them more complicated and expensive. The VMT tax would be more equitable if imposed on all vehicles. However, developing the infrastructure and technology for a VMT system would be challenging and expensive either way and would not address the other concerns raised above. The CBO's solution of applying the VMT tax only to commercial trucks addresses both issues but would be expensive to implement and difficult to police.[214] For these reasons, imposing any VMT tax would be complicated, expensive, and problematic for drivers and governments.

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[206] *Id.* at 8.

[207] *Id.*

[208] *Id.*

[209] *Id.*

[210] *Id.* at 9.

[211] *Id.* at 2. The CBO also warned that the estimated revenues from a VMT tax would be lower because of the reductions in receipts from income and payroll taxes that would result. *Id.*

[212] *See id.* at 8.

[213] Anna Squires, *The Dawn of Electric Trucking Calls for High-Power Charging*, NAT'L LAB'Y ROCKIES (Jan. 15, 2025), https://www.nrel.gov/news/features/2025/the-dawn-of-electric-trucking-calls-for-high-power-charging.html [https://perma.cc/F4YG-LSRT]. For information on electric fleet trucks, see Mark Vaughn, *Electric Big Rigs Are Coming—And We Drive Four of Them*, AUTOWEEK (May 24, 2021), https://www.autoweek.com/news/green-cars/a36506185/electric-big-rig-semi-trucks/ [https://perma.cc/XY9D-G8VN].

[214] SHIRLEY, *supra* note 4, at 2.

B. Registration Fees and Additional Taxes on EVs and Hybrid Plug-Ins

1. State Registration Fees

Forty-one states impose a special annual registration fee on EVs.[215] Thirty-four of these states also impose a fee on hybrid vehicles.[216] These fees range from $50 in Colorado, Hawaii, and South Dakota to $260 in New Jersey.[217] New Jersey is planning to raise this rate to $290 in 2028.[218] The fees on hybrids range from $25 to $150.[219] At least twelve states have tied these fees to inflation.[220] Most states funnel these fees into their state transportation fund, though some states have earmarked some of this revenue for developing EV infrastructure and other programs.[221] Given the small number of EVs and plug-in hybrids, the amounts raised from these programs are very low compared to MFT revenue. For example, in Illinois, the road fund deposits from the additional $100 for EV registration totaled only slightly over $1 million in fiscal year 2023, while total MFT revenue was well over $2 billion; registration fees collected were less than half of one percent of MFT revenue.[222]

In addition, the amounts charged by some states are higher than the lost revenue from conventional vehicles, making the registration fee inequitable. As an example, in 2023, Texas imposed a special registration fee on EVs to replace state MFT revenue.[223] Prior to enacting this law, the Texas state legislature required the Texas Department of Motor Vehicles ("Texas DMV") to conduct a study on imposing fees on alternatively fueled vehicles to replace lost revenue from MFTs.[224] The Texas DMV found that "until the [EV] market matures further, it is difficult to reasonably project the impact on state highway funding."[225] It cited state and federal projections predicting that the total number of EVs in Texas in 2028 will be 486,811; however, it opined that this number may be too high.[226] In contrast,

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[215] Shinkle, *supra* note 191.

[216] *Id.*

[217] *Id.*

[218] *Id.*

[219] *Id.*

[220] *Id.*

[221] *Id.*

[222] The total amount raised through EV registrations was $1,108,305. *See* SUSANA A. MENDOZA, ILL. ST. COMPTROLLER, FEE IMPOSITION REPORT FOR FISCAL YEAR ENDED JUNE 30, 2023 B-5 (2023), https://illinoiscomptroller.gov/__media/sites/comptroller/assets/File/FeeImpRept/FY2023FeeImpositionReport.pdf [https://perma.cc/26Z7-9NKG].

[223] TEX. TRANSP. CODE ANN. § 502.360 (West 2023). *See also* Emily Foxhall, *Under new state law, Texas will bill electric vehicle drivers an extra $200 a year*, TEX. TRIB. (Aug. 21, 2023), https://www.texastribune.org/2023/08/21/texas-new-law-electric-vehicle-fee/ [https://perma.cc/UV9X-Z3ZF].

[224] TEX. DEP'T OF MOTOR VEHICLES, STUDY IN IMPOSING FEES ON ALTERNATIVELY FUELED VEHICLES 1 (2020), https://www.txdmv.gov/sites/default/files/report-files/SB_604_AFV-Report_120120.pdf [https://perma.cc/8MVM-W69K] [hereinafter TEX. DEP'T MOTOR VEHICLES I].

[225] *Id.*

[226] *Id.* at 14.

in 2021, the total number of passenger vehicles and pickup trucks in Texas was almost 21 million, roughly forty times greater than the number of EVs.[227]

The Texas DMV determined that replacing a conventional vehicle with an EV would result in a $100 reduction in the amount of MFT collected yearly by the state.[228] Notwithstanding these findings, starting in September 2023, Texas imposed a $200 annual fee on EVs, twice the amount paid in state MFT by the average owner of a conventional vehicle, and required purchasers of new EVs to pay $400 upfront for the first two years of registration.[229]

Assuming that the Texas DMV was correct in its finding that the average conventional vehicle owner pays approximately $100 per year in MFT, requiring EV owners to pay twice that amount each year actually punishes EV and hybrid owners compared to owners of conventional vehicles.[230] In addition, higher fees economically disincentivize the adoption of EVs and hybrids, especially for lower-income drivers, without providing much revenue.[231] Texas's requirement that two years' worth of fees, $400, be prepaid when the EV is first registered in Texas only increases this disparity. While some legal scholars argue that EV owners should pay their fair share of road costs, no one can argue with a straight face that EV owners should pay double or quadruple their fair share.

Even if the number of passenger vehicles and pickup trucks remains constant, EVs are expected to comprise only about 2.2% of the light-duty vehicles registered in Texas in 2028.[232] Thus, this registration fee, like the registration fees in other states, both disincentivizes EV adoption and is ineffective in replacing MFT shortfalls, and it is likely to remain so, potentially for decades.

2. Proposed Federal Fees on EVs and Hybrid Vehicles

Charging yearly fees on EVs and hybrids is also an ineffective way to replace the shortage in federal MFT revenue. The CBO determined that imposing a new yearly tax or fee on EVs would not have a substantial impact on the shortfall over the next ten years, as EVs are projected to account for only a small percentage of total vehicles on the road.[233] The CBO estimated that if the federal government

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[227] The total number of passenger vehicles registered in 2021 was 14,716,441 and the total number of pickup trucks was 6,152,508, for a total of 20,868,949. TEX. DEP'T MOTOR VEHICLES, FY01-21 NUMBER OF PASSENGER VEHICLES, MOTORCYCLES AND PICK-UP TRUCKS REGISTERED STATEWIDE (2021), https://www.txdmv.gov/publications/vehicle-titles-and-registration-data [https://perma.cc/D8LA-4VX9].

[228] TEX. DEP'T MOTOR VEHICLES I, *supra* note 224, at 1.

[229] TEX. TRANSP. CODE ANN. § 502.360 (West 2023). *See also* Foxhall, *supra* note 223; TEX. DEP'T MOTOR VEHICLES I, *supra* note 224, at 2.

[230] Bellon, *supra* note 6, at 616 ("Critics also point to the fact that many existing electric vehicle registration fees are 'punitive,' meaning that the fees are higher than the average amount that drivers of gasoline-powered vehicles pay in gasoline taxes, even though gasoline-powered vehicles produce more negative externalities—costs to third parties accruing from greenhouse gas emissions, etc., than electric vehicles.").

[231] *Id.* at 616 ("[E]ven when fees are not punitive, they still decrease demand for electric vehicles by increasing the cost of ownership.").

[232] TEX. DEP'T MOTOR VEHICLES I, *supra* note 224, at 15.

[233] SHIRLEY, *supra* note 4, at 2.

imposed a $100 fee on EVs and hybrid vehicles, which it, like the Texas DMV, determined is the average amount a driver of a light-duty vehicle pays in federal MFTs per year, only about $300 million would be raised, about half a percent of the total yearly revenue from federal MFTs.[234] It predicted that imposing a fee of $100 on EVs and hybrids would result in only $2 billion per year in revenue to the Highway Trust Fund from 2024 to 2033.[235] That amount does not account for the administrative costs of imposing such a fee or the impact on income and payroll taxes, particularly since the federal government does not require vehicle owners to register their vehicles.[236]

Notwithstanding the CBO's predictions, Congress recently considered a federal registration fee on EVs and hybrids in the version of the OBBB Act passed by the House of Representatives on May 22, 2025.[237] While it was called a "registration fee" in the legislation, this is misleading, as the federal government does not require registration of automobiles. The provision would have imposed a yearly fee of $250 on each EV and $100 on each hybrid vehicle, with yearly increases based on inflation, to be collected by state motor vehicle departments.[238] The federal government would withhold state funding of 125% of the amount to be collected for any state that did not comply with this law, even if the state did not impose a special registration fee on EVs or hybrids.[239] The revenue collected would have been deposited into the U.S. Highway Trust Fund.[240] Estimates for the total amount of revenue raised over ten years range from $111 billion in gross revenue and $82 billion in net revenue to $79 billion in gross revenue and $58 billion in net revenue, depending on whether EV adoption is high or low.[241] However, projections of the cumulative deficit in the Highway Trust Fund over the next ten years are between $287 billion and $335 billion.[242] Thus, these fees would have replaced only between 17 and 29% of the deficit. Given projections on the increasing likelihood of decreasing adoptions of EVs and hybrids,[243] the total fees raised would likely have been at the low end of that range.

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[234] *Id.* at 9. In 2021, revenue from federal MFTs was over $53 billion. *Motor Fuel Tax Revenue*, TAX POLICY CENTER (July 10, 2023), https://taxpolicycenter.org/statistics/motor-fuel-tax-revenue [https://perma.cc/8QES-X7CB].

[235] SHIRLEY, *supra* note 4, at 9-10.

[236] *Id.* at 2, 9.

[237] H.R. 1, 119th Cong. § 100003 (2025) (as engrossed in House, May 22, 2025). However, the provision was removed from the final version of the bill by the Senate on July 1, 2025. *See generally* Pub. L. No. 119-21, 139 Stat. 72 (2025).

[238] H.R. 1 § 100003.

[239] *Id.*

[240] *Id.* § 100004.

[241] Alex Muresianu, *Fixing Highway Funding in the Reconciliation Package*, TAX FOUND. (May 27, 2025), https://taxfoundation.org/blog/ev-tax-credit-reconciliation-bill-highway-funding/ [https://perma.cc/RU6K-PGYX]; *see also* Jeff Davis, *T&I Chairman Releases National EV Registration Fee Proposal*, ENO CTR. TRANSP. (Apr. 29, 2025), https://enotrans.org/article/ti-chairman-releases-national-ev-registration-fee-proposal/ [https://perma.cc/2RLD-6BWE].

[242] Muresianu, *supra* note 241; Davis, *supra* note 241.

[243] *See* Paul Eisenstein, *EVs Unplugged: New Report Shows Slowing Sales, Forecasts Growth*, GEARJUNKIE (Feb. 14, 2025), https://gearjunkie.com/motors/2025-jd-power-e-vision-intelligence-report [https://perma.cc/S3RX-XXBV].

In addition, the proposed legislation was criticized for charging EV and hybrid owners more than drivers of conventional vehicles.[244] The consumer advocacy organization Consumer Reports estimated that the average conventional vehicle pays $89 per year in federal MFT, while consumers driving the least efficient conventional vehicles pay $108.[245] These amounts are even lower for drivers aged 65 and older, who drive less than younger drivers.[246] Under the proposed legislation, the average EV driver would have paid more than three times the MFT that average drivers of conventional vehicles would have, hybrid drivers would pay twice as much, and senior EV and hybrid drivers would have paid more than six times and three times the average, respectively.[247]

3. Suggested Solutions

While charging additional registration fees at the state level is relatively simple compared to the other proposals for raising additional road funding, given the small number of EVs and hybrids on U.S. roads, even the lowest of these fees serves only to disincentivize EV and hybrid adoption without increasing revenue for roadwork in any meaningful way. In addition, in a number of states, the registration fees imposed on EVs and hybrids are significantly higher than the lost MFTs from comparable conventional vehicles, raising equity concerns.[248]

In contrast to state registration fees, imposing federal registration fees on EVs and hybrids would be complicated and expensive to implement since the federal government does not currently require vehicle registration; thus, an entirely new system of federal vehicle registration would need to be developed and implemented.[249] The proposed legislation attempted to force states to collect the additional fees, thus allowing the federal government to piggyback on states' DMVs to collect the additional registration fees.[250] The section was dropped as unworkable in the version of the OBBB Act passed by Congress and signed by the President, but legislators have indicated that similar legislation imposing fees on EVs and hybrids may be introduced at a later date.[251]

A more effective solution that would raise substantially more revenue and have less impact on EV and hybrid adoption would be to impose an increased registration fee on all vehicles, no matter how they are fueled. Assuming the accuracy of the estimates that roughly $100 in state MFT and $100 in federal MFT

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[244] *See, e.g.*, Chris Harto & Dylan Jaff, *Punitive Vehicle Tax Would Harm Consumers—and Especially Seniors—But Won't Solve Road Funding Shortfalls*, CONSUMER REPS. (May 2, 2025), https://advocacy.consumerreports.org/research/punitive-clean-vehicle-tax-would-harm-consumers-and-especially-seniors-but-wont-solve-road-funding-shortfalls/ [https://perma.cc/DR32-R3J7].

[245] *Id.*

[246] *Id.*

[247] *Id.*

[248] Shinkle, *supra* note 191.

[249] SHIRLEY, *supra* note 4, at 2.

[250] H.R. 1, 119th Cong. § 100003 (2025).

[251] *See* Suvrat Kothari, *The $250 EV Tax May Be Dead, But There's Something Else Brewing*, INSIDE EVS (June 17, 2025), https://insideevs.com/news/763016/senate-kills-the-250-dollar-ev-fee/ [https://perma.cc/T6Z4-WR7X].

is collected per year from the average conventional vehicle,[252] charging all vehicle owners an additional $100 state registration fee and a $100 federal fee each year would provide at least the same amount for roadwork as the amount collected by each state and the federal government in MFTs each year. This would raise significantly more revenue in an equitable way without economically disincentivizing the adoption of EVs and hybrids.

Given the limited revenue that can be collected by imposing additional registration fees on EVs and hybrids, these fees only disincentivize EV and hybrid adoption without significantly impacting the MFT shortfall. Raising registration fees on all vehicles, in contrast, may provide a means to make up lost MFT revenue.

C. Taxes on EV Charging Stations and Electricity from Home Charging

1. State Taxes[253]

Six states have legislated new taxes on the energy provided by EV charging stations.[254] These laws require public charging stations to install meters to collect tax per kilowatt hour or for a certain number of kilowatt hours.[255] Other states are also working on enacting legislation to tax EV charging stations. The Wisconsin Senate recently passed a bill that exempts business-owned EV charging stations from electric utility regulations as long as the electricity is sold based on the amount received by the customer rather than the amount of time the EV is on the charger.[256] Instead, the state will charge an excise tax of $0.03 per kilowatt-hour sold from the fastest EV charger, DC Fast Charging, also known as Level 3 charging.[257] This excise tax is anticipated to raise $3.1 million in fiscal year 2025.[258] As the Wisconsin Department of Revenue collected over one billion dollars in MFT revenue in 2024, between $58 million and $119 million each month,[259] this would contribute only a minuscule amount to the state's annual road funding while disincentivizing the construction and use of DC Fast charging stations.

Most EV charging, currently 83%, occurs at the vehicle owner's home.[260] However, those who live in an apartment or condominium or in an older home that would require an electrical upgrade to allow EV charging cannot do so.[261] If EV excise taxes are imposed only from charging stations, these taxes would be

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[252] TEX. DEP'T MOTOR VEHICLES I, supra note 224; SHIRLEY, *supra* note 4, at 9.

[253] The federal government does not impose taxes on electricity use.

[254] Jaros & Hoffer, *supra* note 34.

[255] *Id.*

[256] S.B. 791, 2023-2024 Leg., Reg. Sess. § 3 (Wis. 2024).

[257] *Id.* § 1, 8.

[258] Max Zahn, *What to know about a proposed Wisconsin tax on electric vehicle chargers*, ABC NEWS (Jan. 16, 2024), https://abcnews.go.com/Politics/proposed-wisconsin-tax-electric-vehicle-chargers/story?id=106409472 [https://perma.cc/64ZK-PCVL].

[259] *See* WIS. DEP'T REVENUE, FUEL TAX STATISTICAL REPORTS: 2024 (2024), https://www.revenue.wi.gov/Pages/ISE/Excise-Fuel-Home.aspx#fuelstat [https://perma.cc/QU34-R4Y2].

[260] INT'L ENERGY AGENCY, *supra* note 24, at 68; *see also* Loveday & Clarke, *supra* note 136; LAGUARDIA ET AL., *supra* note 6, at 10.

[261] Loveday, *supra* note 136.

inequitable to EV owners who do not have home charging capability.[262] In addition, while taxing home chargers is possible, it may be difficult or expensive to set up separate metering for EVs from home electricity to apply an EV tax to that electricity.[263] One state, Kentucky, imposes a tax on EV power distributed by electric power companies, which taxes EV owners who power up at their homes and public charging stations.[264]

As demonstrated by the Wisconsin example above, because of the very small number of EVs and plug-in hybrid vehicles, imposing taxes on the electricity used by EV and hybrid plug-in vehicles will not raise enough revenue to begin to address state MFT shortfalls, thus disincentivizing EV and hybrid adoption without justification.[265]

2. Potential Solutions

One commentator recommended imposing a lower tax on electricity used by EVs and plug-in hybrids compared to MFT percentages to balance the need for incentives to use alternative fuels and having EVs and hybrids pay a share of roadwork costs.[266] However, even with this limitation, given the small number of EVs and plug-in hybrids in the United States, taxing the electricity used by EVs and plug-in hybrids will not raise enough revenue to be worth the logistical burden of imposing these taxes, either through taxing the owners of charging stations or metering electricity used at owners' homes. Once EV and hybrid ownership increases substantially in the United States,[267] as it has in China, where nearly 1.9 million EVs were sold in the first quarter of 2024,[268] taxing electricity used to power EVs and plug-in hybrids to subsidize road funding may make sense. But since first-quarter sales of EVs in the United States in 2024 were only around 350,000,[269] the United States has a long way to go before EVs and plug-in hybrids reach China's levels of adoption.[270]

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[262] LAGUARDIA ET AL., *supra* note 6, at 11.

[263] *Id.*

[264] Jaros & Hoffer, *supra* note 34.

[265] *See* WIS. DEP'T REVENUE, *supra* note 259.

[266] Manche, *supra* note 6, at 532 ("A method that differentiates between fuel sources but also collects a highway usage tax would address the issue of electric vehicle owners not paying a tax for the use of the highways but it would also enable the state and federal government to further their goals of increasing the usage of alternative vehicles.").

[267] Electric vehicles are predicted to reach a tipping point in the United States when they reach price parity with gas-powered vehicles, which is anticipated to happen between 2029 and 2033. Manuela Andreoni, *The Electric Vehicle Future Is Coming. Just a Little More Slowly*., N.Y. TIMES (Sept. 5, 2024), https://www.nytimes.com/2024/09/05/climate/electric-vehicle-sales-projections.html?searchResultPosition=1 [https://perma.cc/T6H4-H8GA].

[268] INT'L ENERGY AGENCY, *supra* note 24, at 27.

[269] *Id.* at 28.

[270] *See, e.g.*, *id.* at 11-12, 35, 41-43.

D. Two Other Possibilities: Increasing MFT Rates and Subsidization

These three proposals to replace decreasing MFT revenue by imposing new fees and taxes on EV and hybrid vehicle owners are not the only ways additional road funding can be raised. Two other possibilities—increasing MFT rates and tying them to inflation, and subsidizing MFT revenue with general revenue funds—have been used since 2008.[271]

1. Increasing MFT Rates and Indexing Them to Inflation

An obvious solution to reduce the shortfalls in MFT revenues is to raise MFT rates and tie them to inflation. One EV advocacy group predicted that if the federal MFT on gasoline had been indexed to inflation in 1993, it would have raised an additional $21 billion in 2021, more than making up for the $16 billion shortfall that year.[272]

The cumulative shortfall in the Highway Trust Fund is predicted to be $241 billion by 2033.[273] The Joint Committee on Taxation estimated that increasing the federal MFT rate by $0.15 starting in 2024 would eliminate the projected shortfall in the Highway Trust Fund during the 2024 to 2033 period by $250 billion and provide an additional $9 billion in revenues by 2033.[274] However, the CBO predicted that the increase in the MFT rate would reduce other federal income and payroll tax revenue, resulting in deficit reductions totaling $188 billion, rather than $250 billion, from 2024 to 2033.[275] Under either scenario, though, increasing MFT rates would go a long way toward solving the underfunding issues.

From a policy perspective, raising MFT rates has another benefit in the fight against climate change. Increased MFTs would raise the cost of petroleum fuels, discouraging the use of petroleum-powered vehicles and increasing incentives for using EVs and hybrids.[276] Suppose gasoline and diesel fuel become more expensive through increased MFT rates. In that case, the difference in the cost of purchasing and operating an EV or hybrid compared to a conventional vehicle will decrease and may disappear entirely. This would help remove economic barriers to EV and hybrid adoption and speed the reduction of carbon emissions in the United States.[277]

Another argument for raising MFT rates is that other countries that have been more successful in adopting EVs have higher MFTs than the United States. MFTs in European countries are the highest in the world.[278] The European Union

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[271] *See, e.g.*, SHIRLEY, *supra* note 4; LAGUARDIA ET AL., *supra* note 6.

[272] PLUG IN AM., *supra* note 4.

[273] SHIRLEY, *supra* note 4.

[274] *Id.*

[275] *Id.*

[276] CILLUFFO, *supra* note 37 ("Because excise taxes generally increase the price of the taxed commodity, they also tend to lower consumer demand.").

[277] *See, e.g.*, *What You Can Do to Reduce Pollution from Vehicles and Engines*, U.S. ENV'T PROT. AGENCY (July 14, 2025), https://www.epa.gov/transportation-air-pollution-and-climate-change/what-you-can-do-reduce-pollution-vehicles-and [https://perma.cc/D87K-Y82L].

[278] *See* CONF. OF EUR. DIR. OF ROADS, FUNDING FORMULAS FOR ROADS: INVENTORY AND ASSESSMENT 10-14 (2017), https://www.cedr.eu/download/Publications/2017/TR2017-04-

requires its member states to charge a minimum excise tax on gasoline of $1.47 per gallon, and all but one E.U. country, Malta, levy higher rates.[279] The Netherlands has the highest gas tax in the European Union at $3.23 per gallon.[280] Taxes on diesel are lower, with the highest rate in the European Union at $2.53 per gallon.[281] All E.U. countries also charge an additional VAT on gas and diesel sales.[282] Similarly, the United Kingdom charges $2.56 per gallon on diesel.[283] While China's taxes on fuel are not as high as Europe's, they are significantly higher than the United States' at roughly $0.98 per gallon for gasoline and $0.74 per gallon for diesel.[284] For drivers in these countries, switching to an EV or hybrid vehicle saves significant money, not even considering the other financial incentives offered.[285]

One concern about raising MFT rates relates to vertical equity.[286] EVs and hybrids often cost more than conventional vehicles, which means that lower-income households are less likely to be able to afford one.[287] If conventional vehicle owners pay more tax through MFTs, and wealthy EV owners do not have this burden, MFTs will be even more regressive than currently, with lower-income households paying for road funding at even higher percentages. However, the pricing differences between EVs and conventional vehicles are diminishing,[288] and the average cost to fuel an EV is significantly less than for a conventional vehicle, decreasing their operating cost.[289]

Other equity concerns come into play with reducing the use of motor fuels and incentivizing clean energy. Pollution disproportionately affects communities

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Funding-formulas-for-roads.pdf [https://perma.cc/F2EN-ABSG]; Jacob Macumber-Rosin & Adam Hoffer, *Diesel and Gas Taxes in Europe, 2024*, TAX FOUND. EUR. (Aug. 12, 2024), https://taxfoundation.org/data/all/eu/gas-taxes-in-europe-2024/ [https://perma.cc/3SGL-BYAP].

[279] Macumber-Rosin & Hoffer, *supra* note 278.

[280] *Id.*

[281] *Id.*

[282] *Id.*

[283] *Id.*

[284] *See Fuel Taxes by Country*, ALT. FUELS DATA CTR., U.S. DEP'T OF ENERGY (Mar. 2019), https://afdc.energy.gov/data/10327.

[285] *See* discussion of China's and Europe's EV and hybrid vehicle adoption incentives, *supra* Section II.C.1.c.

[286] Wood, *supra* note 36.

[287] Bellon, *supra* note 6, at 615 ("[E]lectric vehicles are disproportionately owned by wealthy households and individuals—one survey indicated that of 15,000 households who received rebates for purchasing electric vehicles, only twenty-three percent of those households earned less than $99,000 annually.")

[288] Jeff S. Bartlett, *Electric Cars Are Becoming Less Expensive*, CONSUMER REP. (Jan. 13, 2023), https://www.consumerreports.org/cars/hybrids-evs/electric-cars-are-becoming-less-expensive-a6548270716/ [https://perma.cc/4MKB-U8V2].

[289] Jeff McMahon, *Electric Vehicles Cost Less Than Half As Much To Drive*, FORBES (Jan. 14, 2018), https://www.forbes.com/sites/jeffmcmahon/2018/01/14/electric-vehicles-cost-less-than-half-as-much-to-drive/?sh=169356f3f973 [https://perma.cc/78PX-DDRD] ("The average cost to operate an EV in the United States is $485 per year, while the average for a gasoline-powered vehicle is $1,117, according to the study by Michael Sivak and Brandon Schoettle of Michigan's Transportation Research Institute.").

of color and low-income communities,[290] and climate change has been recognized as a human rights issue.[291] For these reasons, the vertical equity issues of MFTs must be balanced with the dire impacts of climate change.[292] While statutory and regulatory means exist to reduce tax inequities by exempting lower-income taxpayers from higher taxes, such a balance cannot be achieved in reducing climate change and carbon emissions. Thus, governments can work to make MFTs more equitable without sacrificing the imperative push to maximize the use of EVs and hybrids in the United States.

As a practical matter, though, legislation increasing federal MFT rates and tying them to inflation is unlikely to pass. Historically, increasing MFTs has been difficult politically, and there is no indication that this has changed in the current environment.[293] In fact, given that decreasing reliance on petroleum products through increasing emissions standards and incentives for EVs and hybrids is a politically charged topic,[294] passing federal legislation to increase MFT rates may be nearly impossible at this time.

Increasing MFT rates and tying them to inflation appears to be less difficult for states than for the federal government. As discussed above, twenty-three states and the District of Columbia have statutes that allow MFT rates to vary with inflation, gas prices, highway construction costs, or other factors.[295] Other states have raised or reformed their MFTs through legislative action or ballot initiatives.[296] This has helped these states raise more money for roadwork, though it is likely that additional increases will be necessary if other funding options are not considered. However, in some states, it can be difficult to increase taxes. Some states require supermajorities to increase taxes, and others require voter approval through a referendum process, at least at the local level.[297] At least fifteen states

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[290] Alice Kaswan, *Environmental Justice and Domestic Climate Change Policy*, 38 ENV'T L. REP. 10287, 10288 (2008) ("[N]umerous studies have largely confirmed that poor and of color communities are disproportionately exposed to pollution.").

[291] Margaux J. Hall & David C. Weiss, *Avoiding Adaptation Apartheid: Climate Change Adaptation and Human Rights Law*, 37 YALE J. INT'L L. 309, 311 (2012) ("The increasing incorporation of human rights law in climate change analysis is important, and the efforts to link climate change and human rights law have shifted from asking whether there is such a connection to examining the implications of the relationship. This recognition that climate change implicates human rights is significant because it provides a tangible legal framework for analyzing state actions that lead to climate change.").

[292] Manche, *supra* note 6, at 527-28 (citing LEONARD E. BURMAN & JOEL SLEMROD, TAXES IN AMERICA: WHAT EVERYONE NEEDS TO KNOW 1, 163 (2012) ("[T]ax inequality may be allowed if there is a higher policy goal that the government is trying to achieve, such as lowering environmental costs through tax credits on electric vehicle purchases.")).

[293] KIRK & MALLETT, *supra* note 2, at 7-9; Anderson, *supra* note 1.

[294] *See* St. John & Daly, *supra* note 87; Renshaw et al., *supra* note 87; Taylor, *supra* note 87; Stanton, *supra* note 87.

[295] LAGUARDIA ET AL., *supra* note 6.

[296] AM. SOC'Y OF CIV. ENG'RS, *supra* note 51, at 112.

[297] Erin Adele Scharff, *Green Fees: The Challenge of Pricing Externalities Under State Law*, 97 NEB. L. REV. 168, 179 (2018).

have had no gas tax increases of any kind since 2010.[298] Thus, raising MFT rates is not often a politically practical or simple solution.

2. Subsidizing Road Funding with General Revenue Funds

The most practical, simple, and effective method to make up for the shortfall in MFT revenues is to continue subsidizing roadwork costs with funds from general revenue, as has been done since 2008 by both federal and state governments.[299] The CBO raised this as a workable option and found two advantages to continuing this funding mechanism.[300] First, the cost of collecting this revenue is negligible because it is already generated through income and other broad-based taxes. Second, unlike raising MFT rates, funding roadwork through general revenue sources would not raise vertical equity concerns; lower-income households would not bear a greater burden in funding roadwork.[301]

The CBO has also identified disadvantages to using general revenue to make up for the shortfall in MFT revenue. First, the general revenue funds used for roadwork could not be used for other programs.[302] Second, if debt financing were used to fund roadwork, less money would be available for private investment, which could slow economic growth.[303] Third, this would reduce incentives for consumers and businesses to drive less and conserve fuel, and reduce the fairness and efficiency in taxing motor fuel users for the benefits they receive.[304]

One benefit that the CBO did not identify is that using general revenue to fund roadwork does not disincentivize the adoption of EVs and hybrids, except to the extent that it keeps MFT rates low. Thus, while raising MFT rates and tying the rates to inflation is likely to provide the greatest incentives for consumers and businesses to drive less and adopt EVs and hybrids, continuing to use general revenue to subsidize MFT revenue is a more practical solution that considers political realities and is far more effective than imposing taxes and fees on EV and hybrid users.

Funding roadwork through a combination of general revenue and MFT revenue has been done successfully in other countries. For instance, in Australia, the official hypothecation of MFTs to roadwork ended in 1959.[305] After that time, grants from the Australian Commonwealth to the states to fund roadwork came

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[298] AM. SOC'Y OF CIV. ENG'RS, *supra* note 51, at 112. (citing Davis, *supra* note 66).

[299] *See* SHIRLEY, *supra* note 4; Farber, *supra* note 3; *see also* NCSL Staff, *Road Worries: Sagging Gas Tax, Rising Traffic Safety Woes*, NAT'L CONF. ST. LEGISLATURES (Apr. 21, 2023), https://www.ncsl.org/state-legislatures-news/details/road-worries-sagging-gas-tax-rising-traffic-safety-woes [https://perma.cc/2U8B-W57B] ("Some states, including Idaho, Louisiana and North Carolina, have recently devoted more general fund revenues to transportation purposes.").

[300] SHIRLEY, *supra* note 4, at 2.

[301] *Id.* at 10.

[302] *Id.*

[303] *Id.*

[304] *Id.*

[305] Fullarton, *supra* note 27, at 30.

from consolidated revenue rather than specifically from MFT revenue.[306] Since the early 1990s, funding for roadwork in Australia has been part of the general federal government budget process.[307] As Australia does not recognize a nexus between MFT revenue and funding for roadwork, at least one commentator believes that the reduction of MFT revenue caused by the adoption of EVs and hybrids has not negatively impacted government spending on Australian roads.[308]

Like the U.S. does at the federal and state levels, Canada imposes MFTs on gasoline and diesel fuels at the national and provincial and territorial levels.[309] However, unlike in the U.S. states, provinces and territories have sole jurisdiction over road building and maintenance.[310] Federal road funding comes from consolidated revenue allocated through a budgetary process, with some federal gas tax revenue earmarked for municipal infrastructure projects based on population.[311] At the provincial and territorial level, fuel taxes are not tied to highway and road infrastructure projects.[312] Instead, most government revenue for roadwork comes from general revenue and public-private partnerships.[313]

Given the success of funding roadwork from a combination of MFTs and general revenue funding in the United States and other countries, this solution does not have the political unpopularity of raising MFT rates. It is effective, practical, and simple. Until the number of EVs and hybrid vehicles on U.S. roads increases dramatically, it is the best solution for funding roadwork.

CONCLUSION

Since 2008, federal and state MFT rates have fallen short of raising enough revenue to construct, maintain, and repair highways and roads in the United States. Three new solutions to this revenue shortfall have been proposed and, in some cases, implemented: imposing a VMT tax on EVs and hybrids, charging higher and new registration fees on EVs and hybrids, and taxing charging stations and

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[306] Celeste M. Black, *Taxing Energy or a Road User Charge? Australia's Fuel Tax System at the Crossroads*, 22 J. AUSTL. TAX'N 1, 6 (2020).

[307] *Id.* at 8. As MFTs in Australia were seen mostly as a way to fund roadwork, Australia rebates MFTs paid by industry and others for "off-road" use of fuels. This adds complexity to the excise tax system in Australia, and commentators have recommended replacing the MFT with a road user charge system to decrease complexity.

[308] Fullarton, *supra* note 27, at 54. The reduction in MFT revenue caused by the adoption of EVs and hybrids in Australia is "so small as to be irrelevant to national road revenue collections." This may have something to do with Australia's MFT rates, which are much higher than the United States's. Australia taxes gasoline at $1.14 US per gallon and diesel at $0.92 US per gallon. *See* ALT. FUELS DATA CTR., U.S. DEP'T OF ENERGY, *supra* note 134.

[309] TRANSP. CAN., GOV'T OF CAN., TRANSPORTATION IN CANADA 2011: GOVERNMENT EXPENDITURES AND REVENUES FROM TRANSPORTATION (Oct. 6, 2025), https://tc.canada.ca/en/corporate-services/transparency/corporate-management-reporting/transportation-canada-annual-reports/transportation-canada-2011/government-expenditures-revenues-transportation [https://perma.cc/R6WX-Z6W9].

[310] *See* CONF. OF EUR. DIR. OF ROADS, *supra* note 278.

[311] *Id.* at 12-13.

[312] *Id.* at 13.

[313] *Id.*

electricity used to power EVs and plug-in hybrids. However, these proposals are ineffective, expensive, and impractical. They also conflict with the need to decrease reliance on petroleum and lessen carbon emissions to reduce the impact of climate change, without raising enough revenue to justify this conflict.

In their current forms, the three proposals will raise only negligible amounts of revenue compared to the shortfalls in road funding and are impractical and complicated. Further, they are likely to disincentivize the adoption of EVs and hybrids and the development of charging stations. Only one of these proposals could be modified to raise sufficient revenue to make up for some shortfalls in MFT revenue: imposing higher registration fees on all vehicles. However, the other two proposals are either too complex or too limited to replace sufficient MFT revenue effectively, no matter how they are modified.

Raising MFT rates and indexing them to inflation is another solution that would both raise significant revenue for roadwork and promote the reduction in carbon emissions and damage from climate change by disincentivizing the use of motor fuels; however, given political realities, it is not a practical solution for the federal government and many states. Continuing to supplement MFT revenue for roadwork with general revenue funds is a simple and politically expedient solution to address decreasing MFT revenue without disincentivizing the adoption of EVs and hybrids.