

THE EMERGING HIGHWAY AND ROADS REVENUE GAP

THE ELECTRIC VEHICLE TRANSITION AND
IMPLICATIONS FOR STATE BUDGETS



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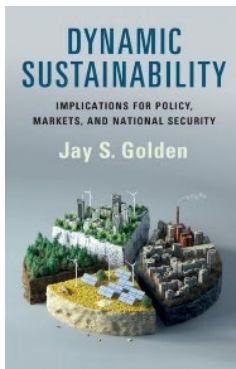
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EXECUTIVE SUMMARY

The first highway constructed entirely with federal funding was the National Road, which was authorized by Congress in 1806. Construction began in Cumberland, Maryland, in 1811 and eventually reached Vandalia, Illinois, in the 1830s, when construction ceased because of a lack of funds.¹ In many ways, history is poised to repeat itself as the **funding available to construct and maintain** the more than 4,187,440 miles of U.S. highways, roads,¹ and **bridges faces a perilous future.**

As the United States and nations around the world quickly transition away from internal combustion engines (ICEs) that use fossil fuels toward zero-emission vehicles (ZEVs) mainly in the form of electric vehicles (EVs), the legacy approach to funding our nation's surface transportation infrastructure through a fuel tax will soon be far too insufficient. **States across the country must quickly develop new transportation funding strategies, or we will face a significant national crisis.** This will include impacts to productivity, state economies, and economic competitiveness as well as our fiscal security, human health, the environment, and the resiliency of our infrastructure to the impacts of climate change.

From the fall of 2023 to the spring of 2024, The Pew Charitable Trusts undertook an examination of how the rapid transition to ZEVs and, more specifically, EVs in the United States will impact state budgets through anticipated losses in revenues (especially from fuel taxes), coupled with the anticipated increased funding demands on states to support the transition, primarily through infrastructure needs.

Importantly, the scenarios presented in this report are intended to raise the awareness of leaders at all levels of government as well as of the general public as domestic EV ownership continues to increase. Some of the **scenarios will occur over an extended period of time** as a full-scale transition from ICE vehicles to EVs takes place. In the interim, hybrids, plug-in hybrids, and continued reliance on ICE vehicles will be observed. However, the findings of **this report should serve as a serious wake-up call to leaders** to develop strategies to address rapidly growing budget gaps and deteriorating roads.

¹ See Appendix C.

5 Key Findings of this Report

1 Without new funding solutions, states will run out of money to support transportation programs, in particular because of the increased loss of federal and state fuel taxes. This will be a result as drivers transition from paying for gasoline or diesel at the pump and instead use electricity to charge their vehicles. Importantly, the U.S. Highway Trust Fund is not keeping pace with state and local highway and road needs and is expected to be exhausted by 2028, according to a 2023 report by the Congressional Budget Office.

2 States across the country are failing to adequately account for emerging budget shortfalls resulting from the EV transition. In addition to the midterm and longer-term loss of fuel tax revenues, states can expect to simultaneously experience increasing losses in sales and property tax also indirectly resulting from the EV transition.

3 States are ill-prepared for the growing demand on budgets resulting from “increased” infrastructure expenditures as our highways, roads, and bridges continue to decay and are not well maintained. This will be further exacerbated as highway infrastructure is exposed to new EVs and trucks, which weigh, on average, 30% more than conventional internal combustion engine (ICE) vehicles.

4 A very limited number of states are exploring alternative tax programs, including technologies to track and impose fees on actual vehicle mileage in a calendar year, as well as additional tolls and fees for EV registrations. The federal government is also funding pilot programs in states.

5 The EV transition will also impact mass transit in some states, most notably the state of New York, which relies on fuel tax revenues generated throughout the state to support public transit in New York City (Appendix E).

FINDING #1

Funding for Transportation Infrastructure in the United States Has Not Kept Pace with Demand

Federal investments for surface transportation primarily come through the federal excise tax paid at the pump of \$0.184/gallon of gasoline and \$0.244/gallon of diesel. Those funds as presented in this report are redistributed to the states based on state fuel consumption. States themselves also place additional state excise and sales taxes on fuels.

In a recent report, the Congressional Budget Office projected that both the highway and mass transit accounts of the **Highway Trust Fund will be exhausted in 2028** if the taxes that are currently credited to the trust fund remained in place and if funding for highway and transit programs increased annually at the rate of inflation. It estimates that the shortfalls accumulated from 2024 to 2033 would total \$241 billion.ⁱⁱ

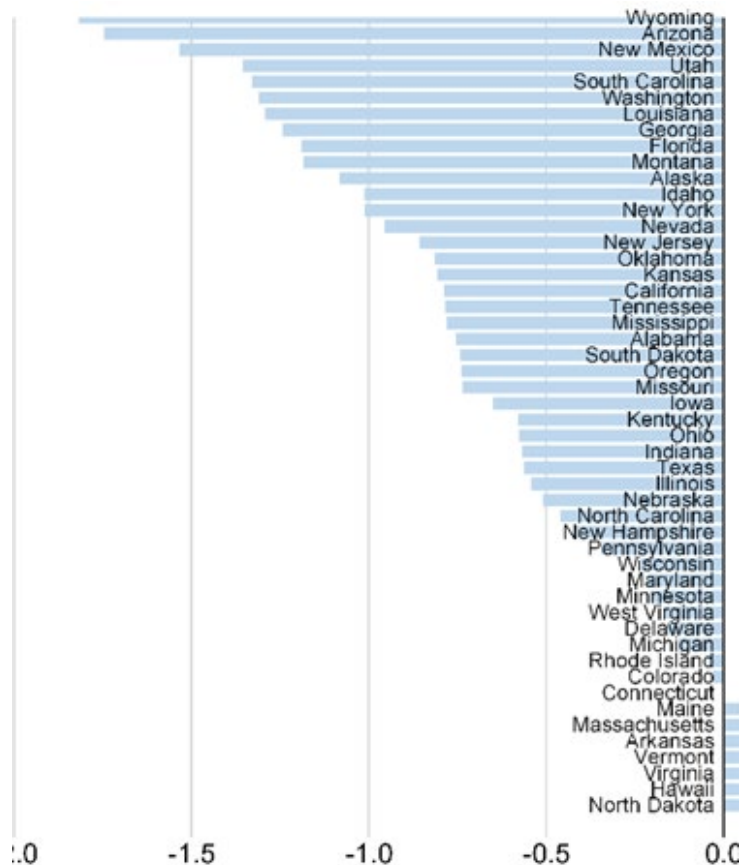


Figure #ES-1. Change in state and local capital investment 2009-2021 as presented as a percentage of state GDP. Source: U.S. Department of the Treasury (2023).ⁱⁱⁱ

Additionally, across the country the **share of state and local government budgets devoted to capital investment for transportation has been in decline**. It fell sharply in the 1970s and has continued ever since. As presented in Figure #ES-1, 42 states saw declining infrastructure investment as a share of their economies over this period.

The impending decline in highway funding comes as our aging infrastructure continues to deteriorate. In fact, in its most recent national report card on the nation's infrastructure, the American Society of Civil Engineers (ASCE) **graded America's roads**, which move \$17 trillion (72%) of the nation's goods, **with a "D" grade**.^{iv}

This report documents that the U.S. underfunding of our roadway system has resulted in a \$786 billion backlog of road and bridge capital needs. The bulk of the backlog (\$435 billion) is in repairing existing roads, while \$125 billion is needed for bridge repair, \$120 billion for system expansion, and \$105 billion for system enhancement such as safety and operational improvements.

Climate change will also continue increase demand for funding. One example includes rising temperatures, which are estimated to add approximately \$19 billion to pavement costs each year by 2040. This number does not include additional climate-related issues such as severe storms and rising coastal waters.

FINDING #2

The EV Transition Will Further Erode State Transportation Funding Without New Funding Strategies

While EVs represent a relatively small percentage of all currently registered vehicles at about 1% of new registrations, sales of electric cars and commercial trucks continue to rapidly grow, and they are now the fastest-growing new car category as federal and state incentives of up to \$10,000 take effect and more manufacturers produce larger varieties of EVs.

In fact, in the first three quarters of 2023, EV registrations grew to 9.8% of all new vehicle purchases (including a group of states far exceeding that number), most notably California at almost 26%.²

There are obvious real-world benefits of the EV transition to our nation. First the sector (transportation) that contributes the largest percentage of greenhouse gas emissions (28%) in the United States.^v Secondly, the U.S. is expanding automotive manufacturing, including all aspects of the value chain, to be in a more competitive position compared with other countries, most notably China.

In fact, the number of EV-only manufacturing plants in the U.S. is set to rise from nine today to 41 in 2029, according to a PwC analysis. The same report indicates that the EV components sector will realize major growth, with U.S. electric power trains and batteries sectors alone expected to hit \$128 billion by 2035, up from \$10 billion in 2021.^{vi}

However, the transition to EVs and other ZEVs poses a serious budgetary impact to our states. As presented in our case studies, **California anticipates that annual state transportation revenues are expected to decline by \$4.4 billion, or 31%, over the next 10 years.**

As further discussed in our case studies, Michigan has missed out on an estimated \$50 million from 2019 to 2021 from the EV transition even though the state does charge an additional EV registration fee. **Cumulatively, by 2030, the road funding deficit in Michigan because of EV usage would be \$390 million to \$470 million, under current policies.**

² See Figures 1.4a and 1.4b.

While it is important to note that not every state will be affected equally based on EV penetration rates, each state will face some sort of budgetary impact increasingly as battery EVs and hybrid EVs expand in the marketplace over the long term.

Additionally, there are other state and local budgetary considerations that must be evaluated as part of the transition to EVs. As detailed in Section 2 of this report, they include:

- a. sales tax losses from purchases at convenience stores that sell gasoline and diesel fuels.
- b. sales tax losses from lower maintenance costs (it has been documented that EVs require less maintenance than ICEs).
- c. lottery sales coupled with fuel purchases made at convenience stores.
- d. property tax as the demand for convenience stores selling fuel will wane.

FINDING #3

The EV Transition Will Increase Budgetary Demands for State Infrastructure Spending

Surface transportation budgets for states will be affected not only by the emerging reductions of fuel tax revenues resulting from the EV transition but also by ongoing increased fuel efficiencies of ICEs.

However, several immediate and longer-term costs as a result of the EV transition will further adversely affect state surface transportation budgets unless addressed in the immediate term:

Infrastructure Consideration #1

As detailed in this report, on average, **EVs currently weigh 30% more** than their legacy ICE vehicles, primarily because of the weight of lithium-ion batteries. This additional weight will impact the required maintenance of roads, highways, and bridges. Increased weights can cause rutting and shoving of pavements and place greater stress on bridges.

Infrastructure Consideration #2

States will need to make **EV charging infrastructure** available both for state-owned vehicles and, importantly, for drivers of EV cars and commercial trucks using state highways and roads. Cost considerations include land development, utility electricity transmission, distribution, and on-site availability, Type 2 and Type 3 charging stations, as well as the administrative infrastructure to collect any user fees. States and local jurisdictions will likely need to evaluate public-private partnerships.

Infrastructure Consideration #3

New funding programs will need to be put in place, as discussed in Finding #4, to design and deploy alternative revenue funding mechanisms.

Infrastructure Consideration #4

There are over 553,000 underground storage tanks in the United States, and as demand for convenience stores/gas stations diminishes, states will need to manage abandoned sites.

FINDING #4

A Number of Alternative Budget Strategies Are Emerging Nationally, But Increased Urgency Is Needed

Over two years ago, on Nov. 15, 2021, President Joe Biden signed the Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Law), which will provide \$550 billion over fiscal years 2022 through 2026 in new federal investment in infrastructure, including in roads, bridges, and mass transit, water infrastructure, resilience, and broadband. According to a November 2023 U.S. Department of Treasury report, approximately \$175 billion will be used on roads, bridges, and major projects as presented in Figure #ES-2.

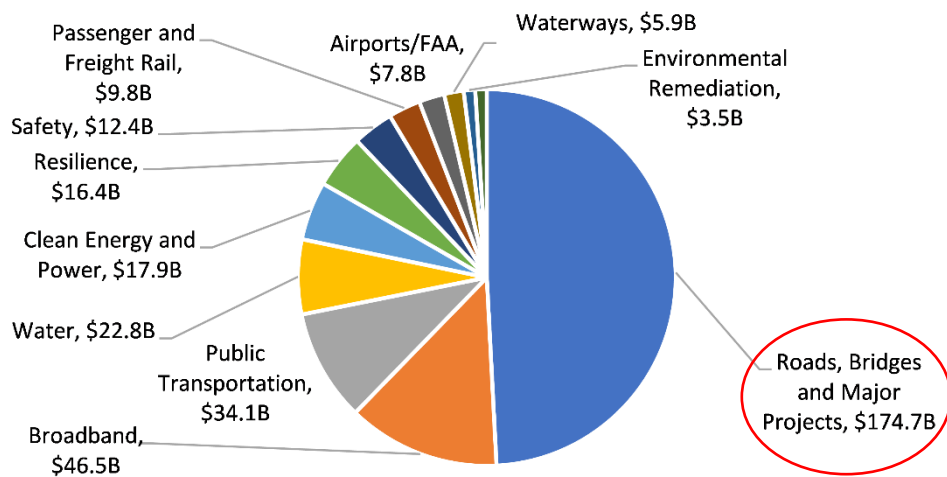


Figure #ES-2. U.S. Department of the Treasury breakdown of Bipartisan Infrastructure Law funding by project type. Source: U.S. Department of the Treasury (2023).^{vii}

While this funding comes at a critical time, the two years of funding that remains will be insufficient to meet all current and future surface transportation needs by states as documented within this report.

While states could continue to reduce funding of surface transportation, we strongly recommend against that option if possible. As discussed in this report, it would have significant negative implications spanning from the overall state and national economy to human health and safety.

Therefore, we have explored a number of different approaches taken by states to address the increased budgetary funding gaps brought about by the EV transition.

Strategy	Description	Trade-Offs	Adopters
Model Surface Transportation Budget Shortfalls	While it seems intuitive, most state governments have not undertaken detailed modeling of how the EV transition will impact both revenues through the loss of fuel tax as well as increased expenditures due to the infrastructure required to support the EV transition.		<ul style="list-style-type: none"> California Michigan Rhode Island New York <p>All take different forms of depth.</p>
Quantify Fuel Tax Revenues Derived From Out-of-State Automobiles and Truckers	All states should quantify the current percentage of fuel tax revenues obtained from nonresident vehicles. As detailed in this report, Tennessee provides a strong example of modeling this variable is important as 30% to 40% of Tennessee’s current fuel tax is paid by truckers and other out-of-state drivers.		
Road User Charge Road usage charging (RUC) is also referred to as <ul style="list-style-type: none"> Distance-based user fees (DBUF), Vehicle miles traveled tax (VMTT), Mileage-based user fees (MBUF). 	<ul style="list-style-type: none"> Car owners are charged for their use of a road system based on how many miles they travel. On-board GPS unit placed in the vehicle to track miles or, Annual reporting of miles similar to annual safety inspection. 	<ul style="list-style-type: none"> Fairly easy to implement. Federal government is providing funding grants for state pilot projects. Requires developing a new administrative program including contracting with vendors which establishes new state expenditures. Will require working with citizens who may be hesitant to have state/third party track movement of vehicles. Direct taxation on road usage. Will not capture nonresident usage of state highways, roads, and bridges. 	The following states are piloting projects or have implemented programs: <ul style="list-style-type: none"> Washington California Colorado Delaware Hawaii Oregon Pennsylvania Minnesota
EV Annual Registration Fee	<ul style="list-style-type: none"> An annual charge to EVs and other ZEVs. This is often an additional fee to the annual registration fee. 	<ul style="list-style-type: none"> Likely will not fully fund the revenue gaps from the EV transition and/or overall surface transportation budget gaps. Some constituents and policymakers view this as a means to deter EV registrations / ownership in their state. A flat registration fee does not account for varying weight of different types of EV vehicles and models. 	<ul style="list-style-type: none"> 33 states have some form of annual EV additional fees.

<p>Increase Existing Fuel Tax</p>	<ul style="list-style-type: none"> States would increase the state-specific gasoline/gasohol/diesel fuel taxes on top of the federal fuel taxes. 	<ul style="list-style-type: none"> Generally strong pushback from constituents. Over time places greater financial burden on drivers of legacy ICE cars and trucks Revenues would diminish as ICE vehicles continue to increase miles-per- gallon performance. 	
<p>Electricity Sales Tax</p>	<ul style="list-style-type: none"> Users of EV charging units would pay a tax on the electricity used. Measures road usage on the basis of units of electricity used. 	<ul style="list-style-type: none"> Does not cause privacy concerns found in a RUC program. Requires further research on efficient and cost-effective implementation. 	<ul style="list-style-type: none"> Georgia will require stations collect a tax for every 11 kilowatt-hours (kWh) (effective January 2025). Iowa imposes a \$0.026/kWh tax on public EV charging stations. Kentucky imposes a tax of \$0.03/kWh on EV power distributed. Montana imposes a tax of \$0.03/kWh. Utah imposes a tax on retail sales at charging stations.
<p>Dramatically Expand Tolling in States</p>	<ul style="list-style-type: none"> Expand the number of miles of state highways and roads / bridges that will charge tolls. 	<ul style="list-style-type: none"> Technology is readily available. Would require capital investments for sensors. Would need to overcome user views. 	<ul style="list-style-type: none"> N/A

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2. **Section 1** photo courtesy of: Pew Research Center. Accessed from: <https://www.pewresearch.org/short-reads/2023/07/13/how-americans-view-electric-vehicles/>
3. **Section 2** photo courtesy of: National Park Service. Accessed from: <https://www.nps.gov/places/000/desert-view-gas-station.htm>
4. **Section 3** photo courtesy of the North Carolina Department of Transportation. Accessed from:
5. <https://www.ncdot.gov/initiatives-policies/Transportation/how-road-gets-built/Pages/construction.aspx>
6. Top Maintenance Image from Federal Highway Administration (2021). Accessed from: <https://highways.dot.gov/public-roads/autumn-2021/06>
7. Energy Infrastructure Image from National Renewable Energy Laboratory (2023). Accessed from: <https://www.energy.gov/eere/i2x/articles/tackling-high-costs-and-long-delays-clean-energy-interconnection>
8. EV Charging Infrastructure Image from U.S. DOE (2023). Accessed from: <https://www.energy.gov/scep/blueprint-4b-ev-charging-infrastructure-community>
9. Personnel and Equipment Image from the U.S. Department of Labor (2023). Accessed from: <https://blog.dol.gov/2023/06/28/a-year-of-progress-for-labor-management-partnerships>
10. Underground Storage Tank image from the U.S. EPA (2020). Accessed from: <https://www.epa.gov/sciencematters/epa-develops-national-picture-underground-storage-tank-facilities-and-leaking>
11. **Section 4** photo courtesy of: Federal Reserve Bank of San Francisco. Accessed from: <https://www.frbsf.org/our-district/about/sf-fed-blog/7-things-you-may-not-know-about-us-currency/>
12. **Section 5** photo courtesy of: State of Tennessee Department of Tourism. Accessed from: <https://www.tnvacation.com/local/nashville-tennessee-state-capitol>
13. **Section 6** image courtesy of the Federal Highway Administration. Accessed from: <https://highways.dot.gov/public-roads/julyaugust-2017/its-changing-world>
14. Photo of Underground Storage Tanks. U.S. EPA (2023). Underground Storage Tanks Research. Accessed from: <https://www.epa.gov/land-research/underground-storage-tanks-research>
15. **Case Studies** Image of Trucks Placed in New York State Case Study. Courtesy of the FHWA (2021). <https://highways.dot.gov/research/laboratories/saxton-transportation-operations-laboratory/Truck-Platooning> Accessed from: <https://highways.dot.gov/research/laboratories/saxton-transportation-operations-laboratory/Truck-Platooning>
16. **Case Studies** Image of Mass Transit in New York City. Courtesy of MTA (2023). About the MTA. Accessed from: <https://new.mta.info/about>
17. **Appendices.** Image of NC Toll Sign. Courtesy of NC DOT (2020). Toll Operations. Accessed from: <https://www.ncdot.gov/divisions/turnpike/Pages/toll-operations.aspx>

GLOSSARY OF TERMS

CBO Congressional Budget Office

Collectors: The collectors provide both land access service and traffic circulation within residential neighborhoods, commercial and industrial areas, and downtown city centers. Collectors connect local roads and streets with arterials, and provide less mobility than arterials at lower speeds, and for a shorter distance.

DBUF: Distance-Based User Fees

EV Electric Vehicle, also known as a **BEV** Battery Electric Vehicle

FHWA: Federal Highway Administration

ICE Internal Combustion Engine

Interstate System: The Interstate System consists of all presently designated freeway routes meeting the Interstate geometric and construction standards for future traffic, except for portions in Alaska and Puerto Rico. The Interstate System is the highest classification of arterial roads and streets. It provides the highest level of mobility, at the highest speed, for a long uninterrupted distance.

IRA: Inflation Reduction Act of 2022

IRI: International Roughness Index (IRI)

LEV: Low-Emission Vehicle

Level 1 Charger: Alternating Current (AC) Level 1 chargers use a 120-volt AC plug and are used most often in homes. One hour of charging delivers 2 to 5 miles of range, and Level 1 chargers require no additional charging equipment.

Level 2 Charger: AC Level 2 chargers use a 240-volt plug for residential use and a 208-volt plug for commercial use and offers 10 to 20 miles of range per hour of charging.

Level 3 – DC Fast Charger: Direct-current fast chargers use a 480-volt AC input and can provide 60 to 80 miles of range per 20 minutes of charging. DC fast chargers are typically installed along heavy traffic corridors.

Locals: The local roads and streets provide a high level of access to abutting land but limited mobility.

MBUF: Mileage-based user fees

NEVI: National Vehicle Infrastructure

Other Arterials: These consist of limited access freeways, multilane highways, and other important highways supplementing the Interstate System

PHEV: Plug-in Hybrid Electric Vehicle

RUC: Road Usage Charge

VMTT: Vehicle-miles traveled tax

ZEV: Zero-Emission Vehicle

SECTION 1 INTRODUCTION



1.0 INTRODUCTION

The United States is highly dependent on highway vehicles as the primary mode of transportation. Steadily, the number of vehicles in the U.S. has continued to rise even as recently as the past 20 years as presented in Figure #1.1.

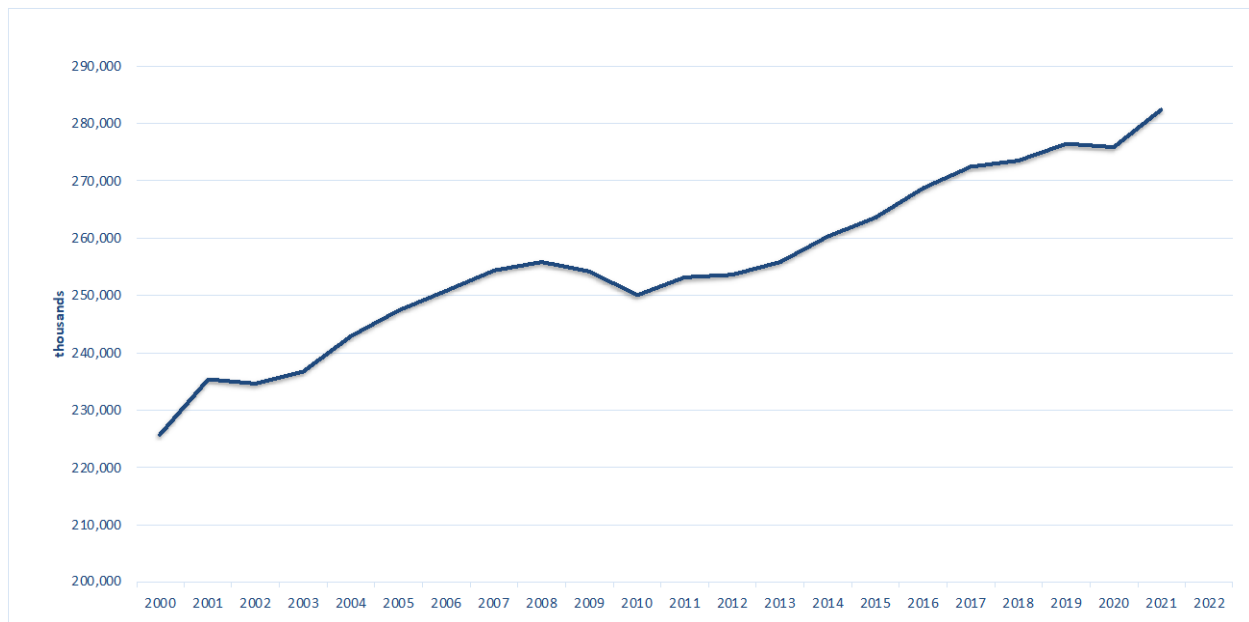


Figure #1.1. The number of highway vehicles excluding transit vehicles in the United States 2000-2022. Source: U.S. DOT (2023).^{viii}

Currently, the vast majority of registered vehicles in the United States use legacy fossil fuels, namely gasoline and diesel, to power their internal combustion engines (ICEs). For each gallon of fuel purchased, the user pays an excise fuel tax, which provides revenues at the federal and state levels to support the construction, operation, and maintenance of the nation’s vast highway, roads, and streets network— totaling over 4.21 million miles.^{ix} For a state breakdown of functional road types and length by state, see Appendix C.

In 2023, states realized financial cushions resulting from both higher-than-expected revenue gains post-pandemic, and a surge of federal aid resulting from COVID-19, providing a record combined savings of over \$134 billion at the start of fiscal year 2023.^x

However, as of 2024, state revenues and budgets face growing uncertainty resulting from inflation, discontinuing of federal relief and continued supply chain impacts.^{xi} Looking forward, one of the larger disruptors to state budgets will be the rapid transition away from legacy internal combustion cars and trucks to electric vehicles (EVs). With this transition comes a paradigm shift where the reliance by states on revenues generated from point-of-sale tax on fuel consumption will be significantly disrupted as the nation moves to electrifying fleets. This raises the potential for significant budget gaps to support the infrastructure and operation of our nation’s roads and highways.

As of 2020, there were 105,135,300 registered automobiles in the U.S. and 275,936,367 registered vehicles in total, including automobiles (cars), buses, trucks, and motorcycles.^{xii} When vehicles go to the local gas station or fuel-providing convenience store and fill up the gas tank, the money that they spend not only goes for the extraction and processing of the petroleum-based fuels³ but also includes a fuel tax, which, as presented in Figure 1.2, is equivalent to 13% of the total cost on a national average.^x

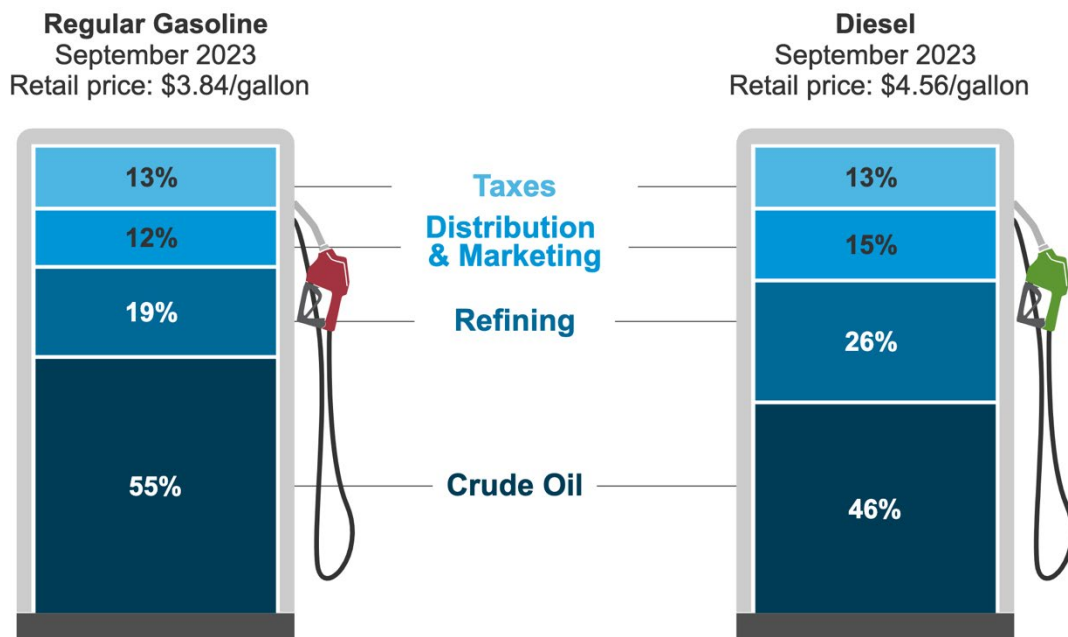


Figure #1.2: What we pay for in a gallon of gasoline and diesel as of September 2023. Source: U.S. Energy Information Administration (2023).^{xiii}

³ As well as ethanol additives based on seasonality and geography.

1.1 Incentives for EVs and EV Infrastructure

EVs are not a recent discovery. Around 1832 Scottish inventor Robert Anderson developed the first EV. In the U.S., William Morrison, who moved to Iowa from Scotland, developed his first EV around 1891.^{xiv,xv} Yet, it was not until the 21st century that policies developed that have brought EVs to the forefront of the automotive industry.

From a policy standpoint, the transportation sector has been the largest source of greenhouse gas emissions⁴ in the United States.^{xvi} As both countries around the globe and states throughout the country commit to a net-zero carbon transition, they are adopting a number of policies as part of their pathway. One of the most impactful is the adoption of zero-emission vehicles (ZEVs).

California has led this effort with their low-emission vehicle (LEV) standards as part of their Advanced Clean Cars Program. Under this effort, the state implemented its ZEV program, which applies to light and medium-duty vehicles and requires manufacturers to produce and deliver 22% ZEVs by 2025 and eventually 100% of all new vehicles to reach 100% zero-emission and clean plug-in hybrid-electric in California by the 2035 model year.^{xvii} As of December 2023, 13 states have a ZEV program (adopting California's program⁵): Colorado, Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, Virginia, Vermont, and Washington state—plus the District of Columbia.^{xviii}

On August 5, 2021, the White House announced an executive order⁶ that set a target to make half of all new vehicles sold in 2030 ZEVs, including battery electric, plug-in hybrid electric, or fuel cell EVs.^{xix xx} Further, on Nov. 5, 2021, President Joe Biden signed into law the Bipartisan Infrastructure Law (BIL), enacted as the Infrastructure Investment and Jobs Act (IIJA), which established the National Vehicle Infrastructure (NEVI) Formula Program providing guidance for implementation of investments in EV charging infrastructure. Under the NEVI Formula Program, each state is required to submit an EV Infrastructure Deployment Plan on an annual basis that describes how the state intends to use its apportioned NEVI Formula

⁴ 28% in 2021.

⁵ As authorized by Section 209 of the Clean Air Act.

⁶ EO 14037

Program funds, which is presented as Table #1.1.

State	Actual	Estimated	Estimated	Estimated	Estimated	Estimated
	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Total
Alabama	\$11,738,801	\$16,892,267	\$16,892,384	\$16,892,399	\$16,892,434	\$79,308,285
Alaska	\$7,758,240	\$11,164,195	\$11,164,272	\$11,164,282	\$11,164,305	\$52,415,294
Arizona	\$11,320,762	\$16,290,704	\$16,290,816	\$16,290,830	\$16,290,864	\$76,483,976
Arkansas	\$8,010,850	\$11,527,704	\$11,527,783	\$11,527,793	\$11,527,817	\$54,121,947
California	\$56,789,406	\$81,720,595	\$81,721,161	\$81,721,230	\$81,721,400	\$383,673,792
Colorado	\$8,368,277	\$12,042,045	\$12,042,129	\$12,042,139	\$12,042,164	\$56,536,754
Connecticut	\$7,771,342	\$11,183,049	\$11,183,127	\$11,183,136	\$11,183,159	\$52,503,813
Delaware	\$2,617,339	\$3,766,380	\$3,766,406	\$3,766,409	\$3,766,417	\$17,682,951
Dist. of Col.	\$2,468,807	\$3,552,641	\$3,552,666	\$3,552,669	\$3,552,676	\$16,679,459
Florida	\$29,315,442	\$42,185,251	\$42,185,543	\$42,185,579	\$42,185,666	\$198,057,481
Georgia	\$19,978,342	\$28,749,059	\$28,749,258	\$28,749,282	\$28,749,342	\$134,975,283
Hawaii	\$2,616,956	\$3,765,829	\$3,765,855	\$3,765,858	\$3,765,866	\$17,680,364
Idaho	\$4,425,511	\$6,368,360	\$6,368,404	\$6,368,409	\$6,368,422	\$29,899,106
Illinois	\$21,998,178	\$31,655,626	\$31,655,845	\$31,655,872	\$31,655,938	\$148,621,459
Indiana	\$14,743,125	\$21,215,523	\$21,215,670	\$21,215,688	\$21,215,732	\$99,605,738
Iowa	\$7,604,168	\$10,942,483	\$10,942,559	\$10,942,568	\$10,942,591	\$51,374,369
Kansas	\$5,847,059	\$8,413,984	\$8,414,042	\$8,414,049	\$8,414,067	\$39,503,201
Kentucky	\$10,280,470	\$14,793,712	\$14,793,815	\$14,793,827	\$14,793,858	\$69,455,682
Louisiana	\$10,859,512	\$15,626,960	\$15,627,068	\$15,627,081	\$15,627,114	\$73,367,735
Maine	\$2,856,158	\$4,110,043	\$4,110,072	\$4,110,075	\$4,110,084	\$19,296,432
Maryland	\$9,298,080	\$13,380,042	\$13,380,134	\$13,380,146	\$13,380,174	\$62,818,576
Massachusetts	\$9,397,238	\$13,522,732	\$13,522,825	\$13,522,837	\$13,522,865	\$63,488,497
Michigan	\$16,290,764	\$23,442,593	\$23,442,756	\$23,442,775	\$23,442,824	\$110,061,712
Minnesota	\$10,089,418	\$14,518,786	\$14,518,886	\$14,518,899	\$14,518,929	\$68,164,918
Mississippi	\$7,483,268	\$10,768,508	\$10,768,582	\$10,768,591	\$10,768,614	\$50,557,563
Missouri	\$14,647,722	\$21,078,237	\$21,078,383	\$21,078,400	\$21,078,444	\$98,961,186
Montana	\$6,348,350	\$9,135,347	\$9,135,410	\$9,135,418	\$9,135,437	\$42,889,962
Nebraska	\$4,472,243	\$6,435,608	\$6,435,652	\$6,435,658	\$6,435,671	\$30,214,832
Nevada	\$5,618,414	\$8,084,961	\$8,085,017	\$8,085,024	\$8,085,041	\$37,958,457
New Hampshire	\$2,556,450	\$3,678,760	\$3,678,786	\$3,678,789	\$3,678,796	\$17,271,581
New Jersey	\$15,448,790	\$22,230,983	\$22,231,137	\$22,231,156	\$22,231,202	\$104,373,268
New Mexico	\$5,681,977	\$8,176,429	\$8,176,486	\$8,176,493	\$8,176,510	\$38,387,895
New York	\$25,971,644	\$37,373,488	\$37,373,747	\$37,373,779	\$37,373,856	\$175,466,514
North Carolina	\$16,137,196	\$23,221,608	\$23,221,768	\$23,221,788	\$23,221,836	\$109,024,196
North Dakota	\$3,841,352	\$5,527,749	\$5,527,787	\$5,527,792	\$5,527,804	\$25,952,484
Ohio	\$20,739,853	\$29,844,883	\$29,845,089	\$29,845,114	\$29,845,177	\$140,120,116
Oklahoma	\$9,812,934	\$14,120,923	\$14,121,021	\$14,121,032	\$14,121,062	\$66,296,972
Oregon	\$7,733,679	\$11,128,851	\$11,128,928	\$11,128,937	\$11,128,961	\$52,249,356
Pennsylvania	\$25,386,631	\$36,531,648	\$36,531,901	\$36,531,932	\$36,532,008	\$171,514,120
Puerto Rico	\$2,020,490	\$2,915,577	\$2,909,472	\$2,908,724	\$2,906,890	\$13,661,153
Rhode Island	\$3,383,835	\$4,869,376	\$4,869,410	\$4,869,414	\$4,869,424	\$22,861,459
South Carolina	\$10,360,855	\$14,909,387	\$14,909,490	\$14,909,503	\$14,909,534	\$69,998,769
South Dakota	\$4,363,463	\$6,279,072	\$6,279,116	\$6,279,121	\$6,279,134	\$29,479,906
Tennessee	\$13,074,884	\$18,814,906	\$18,815,036	\$18,815,052	\$18,815,091	\$88,334,969
Texas	\$60,356,706	\$86,853,980	\$86,854,582	\$86,854,655	\$86,854,836	\$407,774,759
Utah	\$5,372,731	\$7,731,421	\$7,731,474	\$7,731,481	\$7,731,497	\$36,298,604
Vermont	\$3,140,247	\$4,518,851	\$4,518,882	\$4,518,886	\$4,518,895	\$21,215,761
Virginia	\$15,745,244	\$22,657,583	\$22,657,740	\$22,657,759	\$22,657,806	\$106,376,132
Washington	\$10,489,110	\$15,093,948	\$15,094,052	\$15,094,065	\$15,094,096	\$70,865,271
West Virginia	\$6,761,785	\$9,730,285	\$9,730,352	\$9,730,361	\$9,730,381	\$45,683,164
Wisconsin	\$11,642,061	\$16,753,057	\$16,753,173	\$16,753,188	\$16,753,222	\$78,654,701
Wyoming	\$3,963,841	\$5,704,011	\$5,704,051	\$5,704,056	\$5,704,067	\$26,780,026
Total	\$615,000,000	\$885,000,000	\$885,000,000	\$885,000,000	\$885,000,000	\$4,155,000,000

Table #1.1. FY 2022-2026 Funding for the National Electric Vehicle Infrastructure Formula Program under the Bipartisan Infrastructure Law. Source: FHWA (2023)^{xxi}

States must comply with the National Electric Vehicle Infrastructure Standards and Requirements (Title 23 of the Code of Federal Regulations (CFR) 680), effective 3/30/23. These standards specify technical aspects of chargers, including connector types, power levels, minimum number of charging ports per station, minimum uptime (reliability standards), and payment methods; data submittal requirements; workforce requirements for installation, operation, or maintenance by qualified technicians; interoperability of EV charging infrastructure; traffic control devices and signage; network connectivity; and publicly available information.^{xxii}

As each state will receive funding for EV infrastructure, Americans will also be eligible to receive federal incentives to purchase EVs in the form of a credit up to \$7,500 under the Inflation Reduction Act of 2022 and Internal Revenue Code Section 30D. The vehicle must be a “qualified” plug-in EV or fuel cell electric vehicle (FCV). The credit is available to individuals⁷ and their businesses.^{xxiii} In 2024, the incentives transition from the tax filer to complete paperwork as part of the annual tax return to receive the tax discount to the car dealer and the discount applied at the point of new car sale, making it a much more streamlined process and lowering the sticker price of the vehicle.

Additionally, 19 states offer an incentive in addition to the federal \$7,500 credit, ranging from \$1,000 incentive in Alaska and Delaware to \$7,500 in California, Connecticut, and Maine as presented in Table #1.2.^{xxiv}

⁷ \$300,000 for married couples filing jointly, \$225,000 for heads of households and \$150,000 for all other filers.

State	EV Purchase Tax Credit
Alabama	0
Alaska	1,000
Arizona	0
Arkansas	0
California	\$750-\$7,500
Colorado	\$5,000
Connecticut	\$750-\$7,500
Delaware	\$1,000-\$2,500 (b)
Florida	0 (c)
Georgia	0
Hawaii	0
Idaho	0
Illinois	\$4,000 (b)
Indiana	0
Iowa	0
Kansas	up to \$2,400
Kentucky	0
Louisiana	0
Maine	Up to \$7,500 (e)
Maryland	\$3,000 (f)
Massachusetts	Up to \$3,500
Michigan	0
Minnesota	0 (g)
Mississippi	(c)
Missouri	0
Montana	0

State	EV Purchase Tax Credit
Nebraska	0
Nevada	0 (c)
New Hampshire	0 (c)
New Jersey	Up to \$4,000 (b) (h)
New Mexico	0
New York	Up to \$2,000
North Carolina	0
North Dakota	0
Ohio	0
Oklahoma	Up to \$5,500
Oregon	Up to \$5,000 (b) (e)
Pennsylvania	Up to \$3,000
Rhode Island	Up to \$2,500
South Carolina	0
South Dakota	0
Tennessee	0
Texas	0
Utah	0
Vermont	Up to \$4,000
Virginia	2,500
Washington	0 (l)
West Virginia	0
Wisconsin	0
Wyoming	0

Table #1.2. State Incentives for EV Purchases. Source: Tax Foundation (2023).^{xv}

Notes:

- (a) n/a.
- (b) Offers a rebate, not credit.
- (c) There are local credits and/or rebates.
- (d) n/a
- (e) Varies by income level.
- (f) For purchase price under \$50,000.
- (g) The state offers an E-ZPass incentive (one-time credit of \$250 for full electric and \$125 for plug-in hybrids)
- (h) The EV purchase is exempt from sales tax. The rebate is \$25 per mile of EPA-rated all-electric range up to \$4000.
- (l) Purchase is exempt from sales tax.

1.2 Rate of Adoption for Electric Vehicles.

By the end of 2023 in the United States, there were over 285 million light-duty registered vehicles, and EVs represent 1.3% of these registrations comprising just over 3.7 million registered light-duty EVs.^{xxvii} In 2016 there were just 9 EVs per 10,000 people in the United States, and by 2022 that had increased to 73.^{xxv}

Longer-term, the range of EV market penetration varies and is impacted by inflation, supply chains, the availability of charging infrastructure, the effectiveness of recent federal and state rebates, and the potential for lower-cost foreign imports such as those from China making their way to the domestic market. The S&P Global Mobility forecast has EV sales in the United States reaching 40% of total passenger car sales by 2030⁸ with other projections ranging from 10% to over 25% during the same period.^{xxvi, xxvii}

However, the rate of adoption of EVs, —especially light-duty vehicles, continues to grow at a fast pace. For the first half of 2023, traditional internal combustion gas and diesel vehicle sales in the United States decreased 4.1 percentage points as compared to 2022. Meanwhile EV sales increased 57 percentage points compared to the first half of 2022. Over 600,000 EVs were sold in the first half of 2023.^{xxviii} As presented in Figure #1.3, market share of light duty EVs continues to rise and is anticipated to grow at an even higher rate as a result of federal and state EV purchasing incentives and manufactures transition to primarily EV products moving forward – especially after Jan. 1, 2024, when IRS rules allow incentives to go through dealers rather than complex filings by individual taxpayers. Figure #1.4 provides a summary of all new registrations in 2023 quarters 1-3 and the share of EVs. As presented, California leads the nation’s EV market share of new vehicle registrations at almost 26 percent of all new vehicle registrations being some form of an EV.^{xix}

⁸ EV sales include battery EVs and also plug-in hybrids, which will still consume gasoline or diesel fuels.

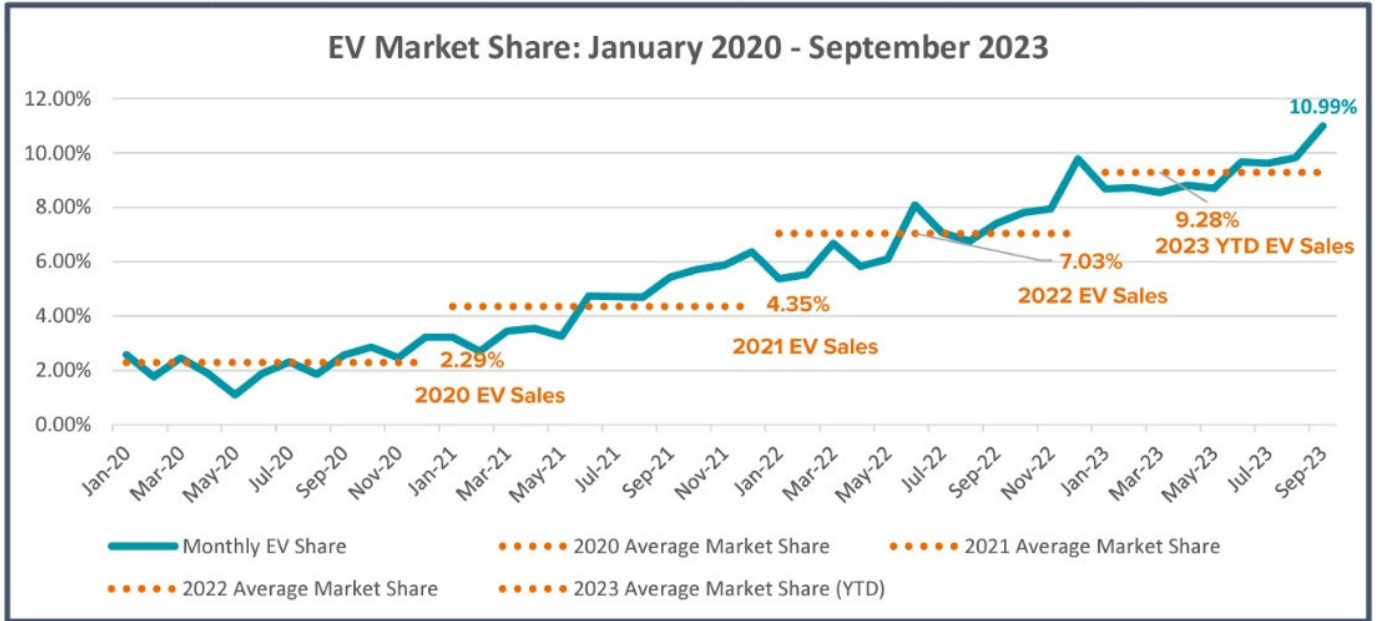


Figure # 1.3: EV new car sale market share, from January 2020 to September 2023 in the United States. Source: Alliance for Automotive Innovation (2023).^{xxviii}

2023 New Light-Duty Vehicle Registrations By Powertrain (YTD Q3)					
Rank	State	Advanced Powertrain Market Share			EV Total
		PHEV	BEV	FCEV	
1	CA*	3.43%	22.34%	0.21%	25.98%
2	DC	3.98%	15.38%	0.00%	19.36%
3	WA*	2.97%	15.63%	0.00%	18.60%
4	OR*	3.55%	11.60%	0.00%	15.15%
5	CO*	4.12%	9.95%	0.00%	14.07%
6	NJ*	2.69%	10.56%	0.00%	13.24%
7	NV*	1.64%	11.54%	0.00%	13.18%
8	MA*	3.99%	7.87%	0.00%	11.86%
9	MD*	2.70%	8.36%	0.00%	11.06%
10	HI	1.05%	9.79%	0.00%	10.84%
11	CT*	3.34%	6.62%	0.00%	9.95%
12	VA*	1.32%	8.35%	0.00%	9.68%
13	VT*	3.38%	6.00%	0.00%	9.37%
U.S. Average		1.77%	7.49%	0.02%	9.28%
14	AZ	1.18%	7.88%	0.00%	9.06%
15	DE	2.09%	6.62%	0.00%	8.71%
16	UT	1.52%	6.82%	0.00%	8.33%
17	NY*	3.43%	4.70%	0.00%	8.13%
18	IL	1.15%	6.40%	0.00%	7.54%
19	RI*	3.22%	4.20%	0.00%	7.42%
20	GA	0.70%	6.65%	0.00%	7.35%
21	NC	1.04%	5.92%	0.00%	6.96%
22	FL	0.90%	6.05%	0.00%	6.95%
23	PA	2.09%	4.15%	0.00%	6.23%
24	MO	2.79%	3.41%	0.00%	6.20%
25	TX	0.65%	5.49%	0.00%	6.14%
26	MN*	1.27%	4.82%	0.00%	6.09%
27	ME*	2.67%	3.13%	0.00%	5.80%
28	NM	1.19%	3.63%	0.00%	4.82%
29	TN	0.64%	4.15%	0.00%	4.79%
30	NH	1.63%	3.08%	0.00%	4.71%
31	ID	1.30%	3.17%	0.00%	4.47%
32	KS	0.89%	3.58%	0.00%	4.46%
33	WI	0.92%	3.17%	0.00%	4.08%
34	MI	0.99%	2.97%	0.00%	3.96%
35	OH	0.92%	3.04%	0.00%	3.95%
36	IN	0.85%	3.07%	0.00%	3.91%
37	SC	0.77%	3.06%	0.00%	3.83%
38	AK	0.84%	2.68%	0.00%	3.53%
39	NE	1.07%	2.45%	0.00%	3.51%
40	KY	0.77%	2.54%	0.00%	3.31%
41	MT	1.06%	2.06%	0.00%	3.12%
42	IA	0.87%	2.21%	0.00%	3.08%
43	OK	1.47%	1.37%	0.00%	2.84%
44	AL	0.51%	1.95%	0.00%	2.46%
45	AR	0.51%	1.68%	0.00%	2.19%
46	SD	0.83%	1.19%	0.00%	2.02%
47	WY	0.81%	1.17%	0.00%	1.98%
48	LA	0.46%	1.44%	0.00%	1.89%
49	WV	0.63%	1.11%	0.00%	1.73%
50	MS	0.38%	0.98%	0.00%	1.36%
51	ND	0.58%	0.74%	0.00%	1.32%
U.S.		1.77%	7.49%	0.02%	9.28%

Public Charging Outlets And Registered EVs (as of 9/30/2023)			
	Share of Registered EVs****	EVs Per Charger	EVs Per 10K Residents
CA*	35.52%	34	359.68
FL	6.23%	30	117.13
TX	5.67%	28	79.20
NY*	4.29%	17	87.97
WA*	3.98%	32	211.59
NJ*	3.47%	43	156.24
IL	2.74%	35	86.24
AZ	2.52%	32	140.89
CO*	2.48%	21	174.58
MA*	2.41%	16	139.71
VA*	2.27%	25	106.91
GA	2.27%	21	86.29
PA	2.25%	23	70.42
MD*	2.07%	19	137.55
NC	1.99%	24	76.95
OR*	1.98%	29	189.49
OH	1.53%	19	52.30
MI	1.50%	21	60.08
NV*	1.26%	29	166.43
UT	1.08%	21	136.86
MN*	1.07%	24	76.44
CT*	1.02%	21	114.18
TN	0.94%	21	55.91
OK	0.92%	31	93.62
MO	0.81%	13	52.68
IN	0.79%	24	47.50
WI	0.75%	24	51.49
HI	0.71%	38	199.40
SC	0.60%	21	47.22
AL	0.37%	18	30.45
KS	0.35%	13	48.31
KY	0.34%	19	30.70
NH	0.34%	27	98.99
NM	0.32%	21	60.80
IA	0.32%	17	40.35
ME*	0.32%	13	94.75
ID	0.28%	31	64.49
VT*	0.26%	12	166.31
LA	0.25%	16	21.89
DC	0.25%	11	144.74
DE	0.25%	23	103.80
RI*	0.23%	14	86.31
NE	0.22%	17	45.46
AR	0.19%	10	25.47
MT	0.14%	18	54.56
MS	0.11%	12	15.37
WV	0.09%	10	20.98
AK	0.08%	30	41.24
SD	0.06%	11	27.69
WY	0.04%	7	28.06
ND	0.03%	7	18.16
U.S.	100.00%	26	122.44

Figure #1.4 a & b: EV adoption rates in the U.S. in first three quarters of 2023 (1.4a) and percentage of national EVs registered in the U.S. with charger density (1.4b). Source: AAI, (2023).^{xix}

1.3 Federal Fuel Tax Overview

In 1932 the U.S. federal government enacted the temporary Gasoline Excise Tax for Deficit Reduction,⁹ a manufacturer's excise tax on gasoline, levied at the rate of \$0.01 per gallon and scheduled to end in 1934.^{xxix} It was estimated the tax would yield the U.S.

Treasury approximately \$165 million in revenues during fiscal 1933.¹⁰ It became permanent at \$0.015 per gallon in 1941,^{xxx,xxxi} and as of July 1, 2023, the current tax is \$0.184/gallon of gasoline and \$0.244/gallon of diesel; Figure #1.5 displays the fuel rate through the years.^{xxxii}

See Section 2 for a more detailed breakdown of the federal fuel tax and associated taxes paid at the pump, both federal and state.

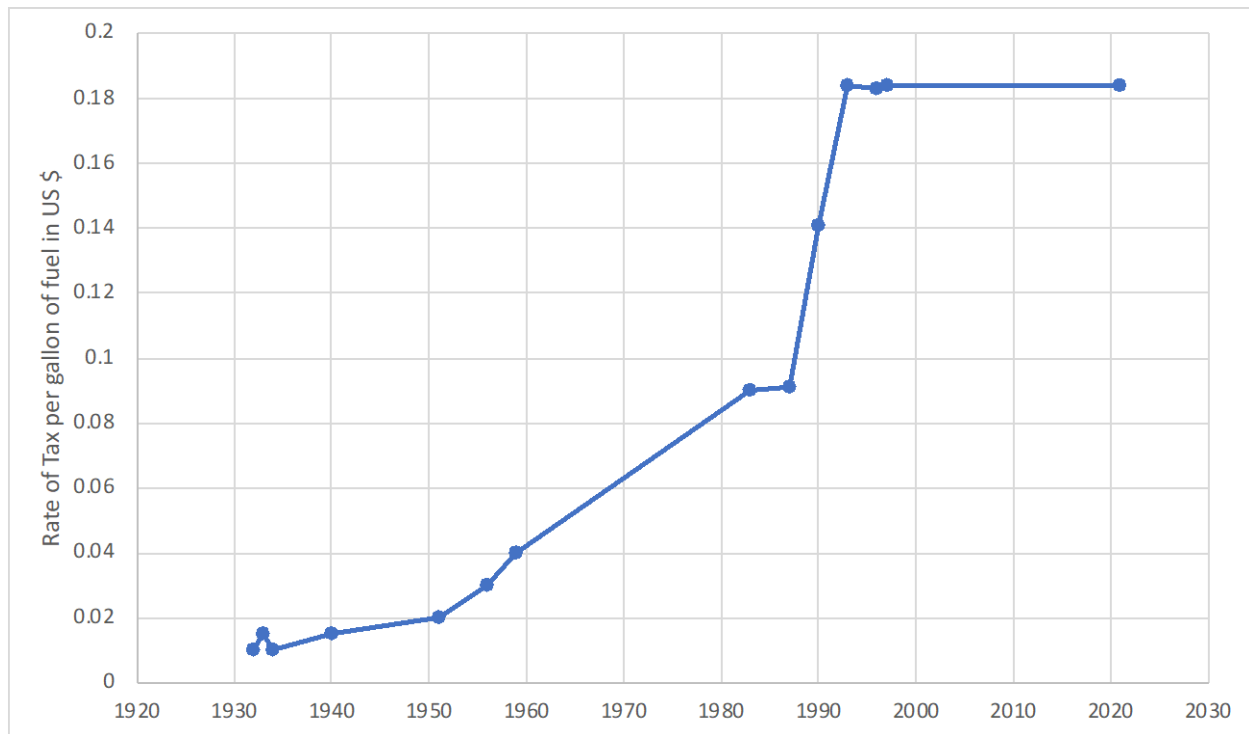


Figure #1.5: Federal gasoline fuel tax through the years. Source: Adapted from PBS.org (2021).

⁹ Section 617(a) of the Revenue Act of 1932

¹⁰ Gas cost about \$0.18 per gallon at this time..

In 1956, President Dwight Eisenhower signed into legislation the Federal Aid Highway Act of 1956,^{xxxiii} aka the National Interstate and Defense Highways Act, with an original authorization of \$25 billion.¹¹ At the same time, Congress enacted the Highway Revenue Act of 1956, which created the Highway Trust Fund for the direct purpose of funding the construction of an interstate highway system, and aiding in the finance of primary, secondary and urban routes. Throughout history, every time Congress has extended the Highway Trust Fund, it has also extended the federal excise tax on gasoline.^{xi}

The Highway Trust Fund has two accounts. One is for highways, and the other is for mass transit. As presented in Figure #1.6, the trust fund generates revenues collected through excise taxes on the sale of motor fuels, trucks and trailers, and truck tires; taxes on the use of certain kinds of vehicles; and interest credited to the fund. It has expenditures for designated spending on the various highway and mass transit programs through grants which in 2022 totaled \$52 billion mostly to state and local jurisdictions for capital projects and maintaining highways and roads^{xxxiv}. In 2022, the federal government spent \$52 billion on highways—an amount equal to 0.21% of gross domestic product (GDP)^{xv}.

¹¹ Roughly equivalent to \$193 billion US in 2022 dollars.

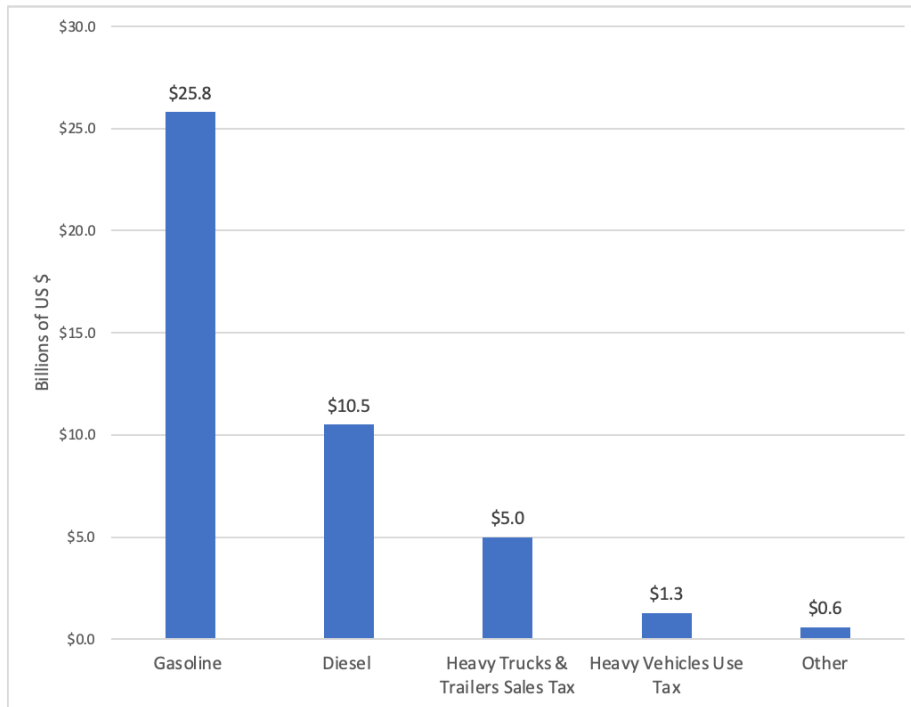


Figure #1.6: Sources of Highway Trust Fund Revenues for fiscal year 2020: Source: Congressional Budget Office.^{xxxv}

In the Congressional Budget Office (CBO) May 2023 baseline projections, revenues credited to the Highway Trust Fund in 2024 total \$47 billion, and outlays from the fund in that year exceed those revenues by about \$18 billion. What’s worrisome is that the CBO projects that both the highway and mass transit accounts of the **Highway Trust Fund will be exhausted in 2028** if the taxes that are currently credited to the trust fund remained in place and if funding for highway and transit programs increased annually at the rate of inflation. The CBO estimates that the shortfalls accumulated from 2024 to 2033 would total \$241 billion.^{xxxvi} One of the recommendations by CBO is to increase existing fuel taxes by \$0.15 per gallon in 2024. This recommendation is counter to the dynamics of the EV transition. The current authorization for federal highway programs expires Sept. 30, 2026.

1.4 State Fuel Tax

Because the federal government does not own highways, the responsibility to operate and maintain them falls to state and local governments with operations and maintenance (O&M) spending accounting for 57% of state and local governments’ spending on highways, net of federal grants, in 2022. This includes resurfacing, filling in cracks and potholes, signage, snow

removal and other related expenditures.^{xv} State and local governments spent more than three times as much as the federal government on highways in 2022—\$180 billion.^{xv}

As is presented in Section 2 of this report, the transition from ICE vehicles to EVs will have a direct impact on the current level of state revenues realized from point-of-sale fuel tax, as well as a number of related impacts to vehicle-related revenues.

Similar to the impacts to revenues, states and local jurisdictions will also be hit by a number of emerging expenditures that are not currently budgeted for nor in many cases anticipated. These range from transitioning state vehicle fleets to EVs as well as the costs associated with the deployment of EV charging stations for state vehicles and for the general public. This also includes the necessary upgrades to electricity transmission and distribution.

Additionally, EVs typically weigh more than gasoline-powered vehicles. For instance, the Ford F-150 Lightning weighs 35% more than the gas-powered Ford F-150 truck, which has been the best-selling vehicle in U.S. for forty two consecutive years..^{xxxvii}

The added weights of passenger cars, pickup trucks and large truck-tractors with trailers will undoubtedly increase O&M costs for states of our nation's roads, highways, and bridges. Section 3 of this report provides a detailed understanding of the increases that states will likely realize as a result of the EV transition.

Section 4 of this report provides insights on budget shortfall strategies, and Section 5 highlights approaches that different states are using to address these budget shortfalls. Finally, Section 6 provides some overarching recommendations that states can deploy.

SECTION 2

REVENUE IMPLICATIONS



2.0 REVENUE IMPLICATIONS

The primary source of revenues to states to support the nation’s highway and roads is from fuel excise taxes at point of sale based on a gallon of fuel sold. Because EVs do not run on fossil fuels, the electric transition presents a number of obvious and less obvious impacts to state and local jurisdiction revenues. Each of these, when considered in totality, can have a significant impact of the financial well-being of state budgets moving forward.^{xxxviii} To date, there has been a slow erosion of fuel tax revenues because of the increased fuel efficiency of new cars sold, as presented as Figure #2.1.

Perhaps the most important emerging variable in assessing revenue implications is the pace of the adoption of EVs by the general citizenry as well as businesses across the nation as discussed in Section 1.

2.1 Revenue Trends

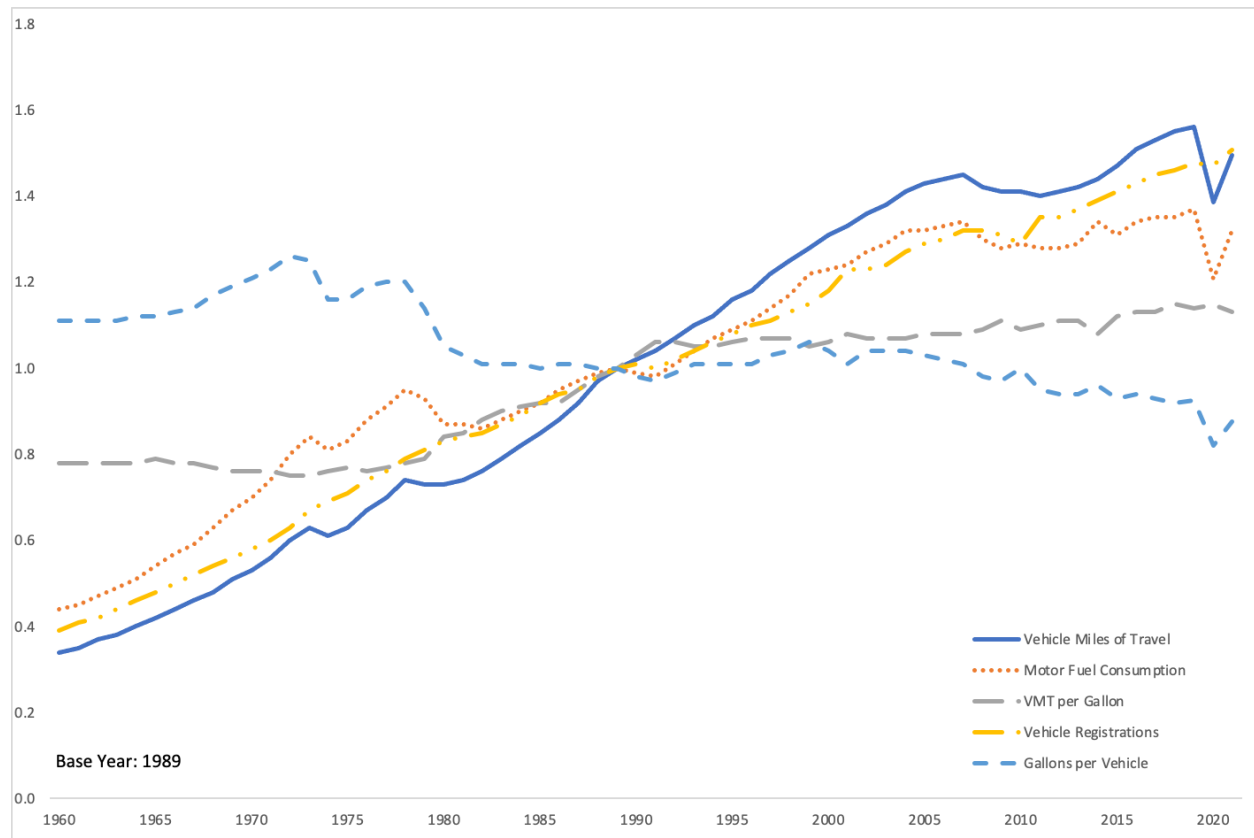


Figure #2.1: Vehicle registrations, fuel consumption and vehicle miles of travel as indices 1960-2021 in the United States. Source: FHWA (2023).^{xxxix}

Region and State	1977	1987	1997	2007	2017	2018	2019	2020	2021
United States	9,163,553	16,156,344	28,094,363	37,849,041	46,531,254	49,972,799	52,364,608	52,764,743	53,051,096
New England	532,846	823,152	1,639,393	1,696,690	1,830,887	1,895,445	1,936,010	1,792,965	1,721,573
Connecticut.....	159,159	251,981	587,797	439,673	484,479	487,327	497,860	472,732	469,851
Maine.....	55,293	97,278	155,917	232,650	252,370	250,468	256,634	242,580	231,938
Massachusetts.....	214,168	297,404	602,840	676,119	769,442	769,144	775,463	707,877	662,932
New Hampshire.....	40,279	83,615	110,758	129,182	152,086	183,366	127,200	118,900	117,200
Rhode Island.....	40,737	52,666	123,662	131,696	90,990	79,858	152,239	134,448	130,104
Vermont.....	23,210	40,208	58,419	87,370	81,020	125,282	126,614	116,428	109,548
Mideast	1,552,057	1,922,723	2,476,895	4,118,981	6,557,592	6,713,397	6,881,248	6,509,164	6,056,264
Delaware.....	29,805	77,664	102,388	117,484	129,487	131,864	142,807	136,824	124,842
District of Columbia.....	22,504	25,369	32,267	26,777	26,098	26,268	27,935	22,472	23,618
Maryland.....	188,720	328,335	613,840	753,988	1,078,313	1,084,195	1,140,220	1,076,207	1,025,338
New Jersey.....	292,913	343,542	464,676	561,519	532,878	458,892	500,197	487,883	386,173
New York.....	519,062	496,689	474,202	516,224	1,647,240	1,636,749	1,721,723	1,675,483	1,465,180
Pennsylvania.....	499,053	651,124	789,522	2,142,989	3,143,576	3,375,429	3,348,366	3,110,295	3,031,113
Great Lakes	1,662,727	2,933,532	4,919,094	6,272,527	6,515,968	7,435,851	7,554,369	8,244,050	9,055,898
Illinois.....	405,680	814,072	1,392,044	1,641,182	1,513,090	1,519,042	1,505,630	1,949,448	2,498,546
Indiana.....	262,607	397,254	617,109	880,874	854,536	1,420,135	1,475,212	1,449,067	1,545,637
Michigan.....	430,350	661,908	840,977	1,034,462	1,118,262	1,473,002	1,476,484	1,199,557	1,336,795
Ohio.....	393,258	641,771	1,374,989	1,719,809	1,985,084	1,912,897	1,980,513	2,542,279	2,550,950
Wisconsin.....	170,832	418,527	693,975	996,200	1,044,996	1,110,775	1,116,530	1,103,699	1,123,970
Plains	807,717	1,258,613	2,359,130	2,842,508	3,499,235	3,545,799	3,568,165	3,491,033	3,438,033
Iowa.....	133,108	252,041	385,652	447,484	674,603	671,937	665,799	670,179	673,571
Kansas.....	119,001	156,754	305,896	431,394	458,008	461,075	460,037	453,222	445,472
Minnesota.....	197,109	356,870	539,399	644,172	912,644	936,893	935,632	879,639	844,730
Missouri.....	204,591	215,212	650,184	736,652	720,849	717,894	725,588	708,455	696,002
Nebraska.....	87,935	161,842	278,581	320,509	354,234	373,889	391,897	397,341	415,141
North Dakota.....	29,777	55,441	104,270	138,813	189,718	196,649	199,322	193,763	173,157
South Dakota.....	36,196	60,453	95,148	123,484	189,179	187,462	189,890	188,434	189,960
Southeast	2,404,606	4,619,597	7,664,978	11,248,564	13,098,398	13,630,692	14,204,106	14,152,590	14,902,897
Alabama.....	187,985	296,587	517,483	644,606	683,090	742,095	710,270	888,371	990,799
Arkansas.....	119,348	206,838	351,771	462,077	487,526	492,954	496,140	542,952	588,229
Florida.....	384,330	971,016	1,965,602	3,145,524	3,540,230	3,614,594	3,771,913	3,637,307	3,700,648
Georgia.....	245,264	385,698	553,026	1,082,874	1,741,092	1,801,798	1,837,954	1,873,220	1,781,682
Kentucky.....	184,376	294,603	406,573	570,540	701,440	702,651	720,218	690,280	699,875
Louisiana.....	173,143	357,400	494,604	616,636	634,883	631,641	665,311	611,027	639,727
Mississippi.....	141,629	132,369	364,933	456,189	452,692	444,398	453,313	436,816	457,970
North Carolina.....	289,692	554,254	997,217	1,608,984	1,922,400	1,974,782	2,099,105	1,943,572	2,113,248
South Carolina.....	140,497	262,054	327,777	533,285	583,476	646,581	725,758	756,658	838,264
Tennessee.....	192,830	489,224	723,413	859,743	915,858	1,086,693	1,167,127	1,210,141	1,210,808
Virginia.....	265,149	507,905	734,541	918,849	1,051,806	1,072,947	1,113,574	1,134,973	1,482,105
West Virginia.....	80,363	161,649	228,038	349,257	383,905	419,558	443,423	427,273	399,542
Southwest	744,253	1,895,297	3,497,746	4,485,441	5,158,261	5,295,069	5,441,356	5,215,461	5,243,431
Arizona.....	111,507	309,534	529,458	768,914	856,495	869,183	885,012	880,342	844,828
New Mexico.....	64,802	107,684	237,185	243,757	242,627	230,303	239,515	230,303	230,303
Oklahoma.....	123,826	204,931	348,005	397,462	473,960	485,276	573,825	580,104	571,408
Texas.....	444,118	1,273,148	2,383,098	3,075,308	3,585,179	3,710,307	3,743,004	3,524,712	3,596,892
Rocky Mountain	273,408	622,128	1,141,997	1,581,595	1,853,491	1,968,266	2,007,317	1,901,424	1,944,109
Colorado.....	102,378	291,575	490,850	684,590	653,790	675,962	676,881	663,889	618,724
Idaho.....	44,925	82,227	211,528	231,894	353,548	362,234	376,941	375,532	405,050
Montana.....	43,958	85,490	175,418	210,693	231,065	258,958	261,331	260,531	274,353
Utah.....	54,671	127,378	216,992	382,381	500,948	557,490	571,499	482,527	534,738
Wyoming.....	27,476	35,458	47,209	72,037	114,140	113,622	120,665	118,945	111,244
Far West [1]	1,121,106	1,975,915	4,222,733	5,404,297	7,803,235	9,265,098	10,536,134	11,226,835	10,483,591
California.....	811,455	1,248,218	2,822,335	3,432,527	4,842,749	6,351,756	7,557,711	8,449,593	7,659,320
Nevada.....	36,913	118,545	284,172	411,604	592,236	628,330	656,827	625,493	652,204
Oregon.....	92,381	160,470	430,579	431,368	555,604	571,230	623,874	586,770	653,725
Washington.....	180,357	448,682	685,647	1,128,798	1,812,646	1,713,782	1,697,722	1,564,979	1,518,342
Alaska.....	20,607	32,117	35,624	39,303	45,944	47,149	57,392	62,024	56,561
Hawaii.....	44,226	73,270	136,773	159,135	168,243	176,032	178,511	169,197	148,738

Table #2.1: State and Local Motor Fuel Tax Revenue for Selected Years 1977-2021. Source: US Census (2023).^{x1}

2.2 Structure of Federal Fuel Tax

The federal excise tax rates are \$0.183 per gallon for gasoline and \$0.243 per gallon for diesel fuel. The Leaking Underground Storage Tank (LUST) Fund adds an additional \$0.001 per gallon federal fee—hence why many place the gasoline tax at \$0.184 per gallon.

Additionally, the 2022 Inflation Reduction Act reinstated the Hazardous Substance Superfund financing rate on domestic crude oil and imported petroleum products, which refinery operators and importers pay. These Superfund taxes include a \$0.09 per barrel (\$0.002 per gallon) Oil Spill Liability Trust Fund (OSLTF) tax and a \$0.164 per barrel (\$0.004 per gallon) Hazardous Substance Superfund tax. The Hazardous Substance Superfund tax rate, which had expired in 1995, was also reinstated, and the Superfund tax rate will now be adjusted annually to account for inflation. Both federal and state taxes are applied at the wholesale level in the product distribution stream. The businesses involved in these transactions pay the taxes, but the cost is passed on to the ultimate consumer as part of the market price for the product paid by us at the fuel pump.^{xli}

2.3 Structure of State Fuel Tax Revenues

In addition to the federal fuel tax, each state and the District of Columbia implement a separate but additional tax on gasoline and diesel fuels. The first U.S. state to implement a fuel tax was Oregon on Feb. 25, 1919,^{xlii} at \$0.01 per gallon. By 1932 every state and the District of Columbia had a form of a gas tax.

As presented in Tables #2.2a and #2.2b, in addition to the current \$0.184 per gallon federal tax on motor fuels, the separate state-specific fuel tax has a broad range and lack of uniformity. This includes at the low end of the fuel tax rate at \$0.0895 in Alaska to the highest charge of \$0.6812 in California. These rates include any state excise taxes on gas, plus any related taxes and fees that the consumer pays at the pump, such as applicable environmental or inspection fees excluding the addition of the federal tax rates.^{xliii} In 2021, state and local motor fuel taxes generated over \$53 billion in revenue, up from \$37.9 billion as recently as 2010.^{xliv}

Gasoline					Diesel				Notes
Federal	\$0.183	\$0.001	\$0.184	\$0.243	\$0.001	\$0.244	Leaking Underground Storage Tank (LUST) fee: \$0.001/gal.		
	Gasoline				Diesel				Notes
	State tax	Other taxes & Fees	Total State	Total State & Federal	State tax	Other taxes & Fees	Total State	State & Federal	
Average state tax	\$0.271	\$0.0603	\$0.3226	\$0.5066	\$0.287	\$0.0641	\$0.342	0.586	
California	0.579	0.1022	0.6812	0.8652	0.441	0.3672	0.8082	1.0522	2.25% state sales tax on gasoline, 9.0625% state sales tax on diesel (prepaid rates for these sales taxes: gasoline \$0.08/gal; diesel \$0.345/gal). Additional District sales taxes may apply. State Underground Storage Tank fee (all products): \$0.02/gal. Oil Spill Prevention and Administration (OPSA) Fee (all products): \$0.091 per barrel (\$0.0022/gal).
Illinois	0.454	0.211	0.665	0.849	0.529	0.211	0.74	0.984	"Part B", mandatory prepaid sales tax, aka "Tax Prepayment by Motor Fuel Retailers" (sales tax is 6.25%): \$0.20/gal for gasoline, gasohol, and diesel. For biodiesel (1 to 10% blends), the prepaid rate is \$0.20/gal. Underground Storage Tank tax: \$0.003/gal; Environmental Impact Fee: \$0.008/gal.
Pennsylvania	0.611	0.011	0.622	0.806	0.785		0.785	1.029	A variable rate is calculated annually and replaced the OCS and Liquid Fuels Tax (see PA Bulletin for updated rate info). Underground Storage Tank (UST) Fund fee (applies only to gasoline and diesel fuel into tanks at farms: \$0.011/gal. Most diesel fuel subject to the tank Capacity fee: \$0.0825/gal of UST capacity, paid annually. See PA Insurance Dept, Bureau of Special Funds, USTIF for UST fees.
Indiana	0.34	0.215	0.555	0.739	0.57	0.01	0.58	0.824	The Gasoline Use Tax (formerly the prepaid sales tax) is considered the equivalent of the 7 percent sales tax that would be collected by a retail merchant and replaces the obligation of the retail merchant to collect the sales tax on the sale of gasoline. The Gasoline Use Tax is calculated on a monthly basis (see Departmental Notices for new rates). The rate is \$0.205/gal, as of 7/1/23. A 7% sales tax on diesel fuel no longer applies. Oil Inspection fee: \$0.01/gal.
Washington	0.494	0.0342	0.5282	0.7122	0.494	0.0342	0.5282	0.7722	Oil Spill Administration Tax: \$0.04 per barrel (\$0.0009523/gal). Oil Spill Response tax: \$0.01/bbl (\$0.000238/gal). Hazardous Substance tax on petroleum products that can be measured on per-barrel basis: \$1.40/bbl (\$0.033/gal). "Border Zone Area Motor Fuel Tax" \$0.01/gal in counties bordering Canada. Petroleum Products Tax (PPT) reinstated as of 1/1/20: rate is based on the wholesale value of the petroleum product multiplied by .0015.
Michigan	0.286	0.191	0.477	0.661	0.286	0.223	0.509	0.753	The July 2023 Prepaid Sales Tax rates on fuels: gasoline \$0.181/gal; diesel fuel \$0.213/gal. The prepaid sales tax rates are calculated each month , see Revenue Administrative Bulletins (RABs) for current rates. Environmental protection regulatory fee: \$0.01/gal all products.
Maryland	0.31	0.1619	0.4719	0.6559	0.3175	0.1619	0.4794	0.7234	CPI component \$0.075/gal as of 7/1/23, Sales and Use Tax Equivalent rate (SUTE) component \$0.16/gal as of 7/1/23. Oil transfer Fee: \$0.08 per barrel (\$0.0019/gal) of oil transferred into the State. The tax on motor fuels was suspended for 30 days, from March 18, 2022 to April 16, 2022.
New Jersey	0.105	0.3095	0.4145	0.5985	0.135	0.3495	0.4845	0.7285	Petroleum Products Gross Receipts Tax - requires quarterly adjustment. As of 1/1/23: \$0.309/gal for gasoline, \$0.349/gal for diesel fuel. Spill Compensation and Control Act: \$0.023 per barrel (\$0.0005/gal) on all petroleum products.
North Carolina	0.405	0.0025	0.4075	0.5915	0.405	0.0025	0.4075	0.6515	Gasoline and Oil Inspection fee: \$0.0025/gal on all motor fuels.
Virginia	0.298	0.093	0.391	0.575	0.308	0.094	0.402	0.646	Storage tank fee: \$0.006/gal. The Motor Vehicle Fuels Sales Tax (MVST) (aka, Wholesale Sales Tax (WH)) rates: gasoline \$0.087/gal, diesel \$0.088/gal.
Ohio	0.385		0.385	0.569	0.47		0.47	0.714	Motor Vehicle Activity Tax (PAT): 0.65% on the gross receipts from the first sale, transfer, exchange, or other disposition of motor fuel in Ohio to a point outside of the distribution system.
Rhode Island	0.37	0.0112	0.3812	0.5652	0.37	0.0112	0.3812	0.6252	Environmental Protection Regulatory fee (EPRF): \$0.01/gal. Uniform Oil Response and Prevention (UORF) fee: \$0.05 cents per barrel (\$0.0012/gal).
Oregon	0.38		0.38	0.564	0.38		0.38	0.624	LOTS allowed and levied at the county and municipal levels. Petroleum load fee: \$10.00 per load (load = anything over 100 gals.)
Florida	0.04	0.333	0.373	0.557	0.04	0.3417	0.3817	0.6257	The listed gasoline rate does not include additional local option taxes above the statewide minimum of \$0.06/gal. See http://floridarevenue.com/taxes/Documents/17B05-03_chart.pdf for more information. Environmental taxes and other fees: Coastal Protection tax \$0.00048/gal; Water Quality tax \$0.00119/gal; Inland Protection tax \$0.01904/gal; Petroleum inspection fee \$0.00125/gal on gasoline, kerosene and No. 1 fuel oil. Total of these additional taxes and fees: \$0.02196/gal for gasoline, \$0.02071/gal for diesel. The Florida Motor Fuel Tax Relief Act of 2022, effective 10/1/2022 to 10/31/2022, reduces or suspends several components of the total tax on gasoline (does not apply to diesel fuel).
West Virginia	0.205	0.167	0.372	0.556	0.205	0.167	0.372	0.616	Excise tax \$0.205/gal, Consumers Sales and Service Tax: \$0.167/gal.
Utah	0.345	0.0065	0.3515	0.5355	0.345	0.0065	0.3515	0.5955	Environmental Assurance fee: \$0.0065/gal.
District of Columbia	0.235	0.107	0.342	0.526	0.235	0.107	0.342	0.586	Motor Vehicle Fuel Tax Surcharge/Local Transportation Surcharge: \$0.107/gal as of 10/1/22.
Montana	0.33	0.0075	0.3375	0.5215	0.2975	0.0075	0.305	0.549	Petroleum Storage Tank Cleanup fee : \$0.0075/gal on gasoline, diesel and fuel oil, aviation gasoline, and (non-military use) jet fuel.
Idaho	0.32	0.01	0.33	0.514	0.32	0.01	0.33	0.574	Petroleum Transfer Fee (all fuels): \$0.01/gal.
Wisconsin	0.309	0.02	0.329	0.513	0.309	0.02	0.329	0.573	Petroleum Inspection fee: \$0.02/gal.
Vermont	0.121	0.2042	0.3252	0.5092	0.28	0.04	0.32	0.564	Petroleum Distributor fee: \$0.01/gal. Motor Fuel Transportation Infrastructure Assessment (MFTIA) fee: gasoline \$0.0602/gal (7/1/2023-9/3/2023); diesel \$0.03/gal. Motor Fuel Tax Assessment (MFTA) applies to gasoline only (1/1/2023-3/31/2023): \$0.1340/gal.

Table 2.2a. 20 States and District of Columbia with the Highest Combined Federal and State Fuel Taxes for Gasoline as of July 2023. Source EIA, 2023.^{xlv}

	Gasoline				Diesel				Notes
	Excise	LUST Fee	Total	Total	Excise	LUST Fee	Total	Total	
Federal	\$0.183	\$0.001	\$0.184	\$0.243	\$0.001	\$0.244			Leaking Underground Storage Tank (LUST) fee: \$0.001/gal.
	Gasoline				Diesel				Notes
	State tax	Other taxes & Fees[2]	Total State[3]	Total State & Federal	State tax	Other taxes & Fees[2]	Total State[3]	Total State & Federal	
Average state tax	\$0.271	\$0.0603	\$0.3226	\$0.5066	\$0.287	\$0.0641	\$0.342	0.586	
Georgia[4]	0.312	0.0075	0.3195	0.5095	0.35	0.0075	0.3575	0.6015	Georgia Underground Storage Tank (GUST) fee on petro products: \$0.0075/gal. The average retail price used for the Prepaid Local Tax (TSPLOST) changed as of 1/1/16; for more information, see https://dor.georgia.gov/motor-fuel-rates . Suspension of state motor fuel excise tax on all taxable fuels, effective 3/1/2022 through 1/10/2023. The suspension does not apply to local sales or use taxes.
Maine	0.3	0.014	0.314	0.498	0.312	0.0067	0.3187	0.5627	Maine Coastal and Inland Surface Oil Clean-up Fund fee (no longer in effect after July 3, 2015): \$0.03 per barrel (\$0.0007/gal) for all crude oil and refined oil, including #6 fuel oil, #2 fuel oil, kerosene, gasoline, jet fuel, diesel fuel and liquid asphalt. Ground Water Oil Clean-up Fund fees: \$0.59 per barrel (\$0.0140476/gal) of gasoline; \$0.28 per barrel (\$0.0067/gal) of refined petroleum products and their by-products (other than gasoline and #6 fuel oil), including #2 fuel oil, kerosene, jet fuel and diesel fuel; and \$0.04 per barrel of #6 fuel oil. Petroleum Marketing Fund Fee: \$0.40 per 10,000 gallons of home heating oil and motor fuel oil.
Minnesota	0.285	0.021	0.306	0.49	0.285	0.021	0.306	0.55	Petroleum Tank Release Cleanup Fee (in effect April - July 2023): \$20 per 1,000 gallons (\$0.02/gal). Inspection fee: \$1 for every 1,000 gallons received (\$0.001/gal).
Kentucky	0.287	0.014	0.301	0.485	0.257	0.014	0.271	0.515	Petroleum Storage Tank Environmental Assurance Fee: \$0.014/gal. Rates are calculated quarterly on the average wholesale price of fuel. Beginning July 1, 2016, rates calculated and adjusted on an annual basis.
South Dakota	0.28	0.02	0.3	0.484	0.28	0.02	0.3	0.544	Tank Inspection Fee: \$0.02/gal.
Iowa	0.3		0.3	0.484	0.325		0.325	0.569	Rate for ethanol-blended (E15 or higher) gasoline: \$0.24/gal. Rate for B11 (or higher) diesel: \$0.301/gal. Environmental Protection Charge (EPC): Repealed as of 12/31/16 (\$0.01/gal on petroleum products). Ethanol Blended Gasoline E-15 or Higher is a new fuel group effective 7/1/20.
Nebraska	0.29	0.009	0.299	0.483	0.29	0.009	0.299	0.537	Petroleum Release Remedial Action fee: gasoline, gasohol, aviation gasoline, ethanol: \$0.009/gal; diesel, jet fuel, all others products: \$0.003/gal.
Alabama[4]	0.28	0.012	0.292	0.476	0.29	0.0195	0.3095	0.5535	Inspection Fee (applies to all gasoline): \$0.02/gal. The Inspection Fee only applies to diesel fuel that is not subject to excise. Storage Tank Trust Fund Charge: \$0.012/gal. Wholesale Oil License fee: \$0.0075/gal on diesel fuel only. Local option taxes permitted.
South Carolina[4]	0.28	0.0075	0.2875	0.4715	0.28	0.0075	0.2875	0.5315	Inspection Fee: \$0.0025/gal; Environmental Impact Fee: \$0.005/gal.
Tennessee	0.26	0.014	0.274	0.458	0.27	0.014	0.284	0.528	Special Privilege Tax: \$0.01/gal. Environmental Assurance fee: \$0.004/gal.
Massachusetts	0.24	0.032	0.272	0.456	0.24	0.032	0.272	0.516	Underground Storage Tank Petroleum Product Cleanup Fund Delivery fee: \$307.99 per 10k load (\$0.030799/gal). Underground Storage Tank fee: \$250 per year, per tank. Uniform Oil Response + Prevention fee: \$0.05/barrel (\$0.0012/gal), all products.
Colorado	0.22	0.0394	0.2594	0.4434	0.205	0.0694	0.2744	0.5184	Perfluoroalkyl and polyfluoroalkyl substances (PFAS) Fee: \$0.003125/gal (gasoline and diesel fuel). Bridge and Tunnel Impact (BTI) Fee: \$0.03/gal (diesel fuel only). Road Usage (RUF) Fee: \$0.03/gal (gasoline and diesel fuel). Environmental Response Surcharge (ERS): \$50 per tanker load (8000 gallons) or \$0.00625/gal (gasoline and diesel fuel).
Kansas	0.24	0.0103	0.2503	0.4343	0.26	0.0103	0.2703	0.5143	Environmental Assurance Fee: \$0.01/gal (back in effect 1/1/20). Petroleum Product Inspection Fee: 0.015 cents per barrel (bbl = 42 gal) or \$0.0003/gal.
Connecticut	0.25		0.25	0.434	0.29	0.202	0.492	0.736	Petroleum Products Gross Earnings tax (PPGET): 8.3% on first sale of gasoline in the state. The variable rate portion for diesel fuel: \$0.202/gal as of 7/1/23 (calculated as 8.1% of the average wholesale price for a 12-month period ending by June 15 each year). PPGET does not apply to products to be used as heating fuels or bunker fuels. The State tax on gasoline (only) was suspended from 4/1/2022 to 12/31/2022. It was incrementally reinstated in 2023 (\$0.05 each month) until fully restored on 5/1/2023.
Missouri[4]	0.245	0.0047	0.2497	0.4337	0.245	0.0047	0.2497	0.4937	Petroleum Inspection fee: \$0.035 per 50 gallons (\$0.0007/gal); Transport Load Fee \$32.00 per 8,000 gallons (\$0.004/gal).
Arkansas	0.246	0.003	0.249	0.433	0.284	0.003	0.287	0.531	Border Zone rates may apply (state excise rate will not be more than \$0.01/gal higher than the adjoining state's rate. See A.C.A. § 26-55-210 for details); Environmental Assurance fee: \$0.003/gal.
Wyoming	0.23	0.01	0.24	0.424	0.23	0.01	0.24	0.484	License Tax: \$0.01/gal.
New Hampshire	0.222	0.0163	0.2383	0.4223	0.222	0.0163	0.2383	0.4823	Oil Discharge and Disposal Cleanup Fund fee: \$0.015/gal on gasoline and diesel fuels, excluding heating fuels. Oil Pollution Control Fund fee: \$0.00125/gal on all petroleum products except LPG and natural gas.
Nevada[4]	0.23	0.0081	0.2381	0.4221	0.27	0.0075	0.2775	0.5215	Additional county and local option taxes on motor fuels add \$0.05 to \$0.10/gal (or more) to the state rate (County mandatory: \$0.01/gal; County Option: \$0.04-\$0.9/gal (or indexed rate)). Petroleum Products Inspection Fee: \$0.00055/gal on gasoline; Clean-up Fee on gasoline, No. 1 and No. 2 distillates: \$0.0075/gal.
North Dakota	0.23	0.0003	0.2303	0.4143	0.23	0.0003	0.2303	0.4743	Inspection fee: \$0.00025/gal on gasoline, kerosene, tractor fuel, heating oil, or diesel fuel.
Delaware	0.23		0.23	0.414	0.22		0.22	0.464	DE Hazardous Substance: 0.9% tax on gross receipts from the sales of petroleum or petroleum products.
Louisiana	0.2	0.0093	0.2093	0.3993	0.2	0.0093	0.2093	0.4533	State Inspection Fee (applies to all petroleum products): \$0.00125/gal. Motor Fuels Underground Storage Tank Trust Fund fee applies to gasoline, No. 1 diesel, No. 2 diesel, kerosene, and all aviation fuels (not to LPG): \$72 per 9000 gallon load (\$0.008/gal).
Oklahoma	0.19	0.01	0.2	0.384	0.19	0.01	0.2	0.444	Petroleum Storage Underground Tank Release fee: \$0.010/gal on gasoline, diesel fuel and blended fuel (gasohol, ethanol and fuel grade ethanol).
Texas	0.2		0.2	0.384	0.2		0.2	0.444	Petro products delivery fee varies on load size (applies to all petro products).
Arizona	0.18	0.01	0.19	0.374	0.18	0.01	0.19	0.434	"Use Class motor vehicle" diesel rate = \$0.26/gal; Storage Tank tax: \$0.01/gal.
New Mexico	0.17	0.0188	0.1888	0.3728	0.21	0.0188	0.2288	0.4728	Petroleum Products Loading fee: \$150 per 8000 gallon load on gasoline and special fuels (\$0.01875/gal). LOTS allowed, not in effect.
Hawaii[4]	0.16	0.025	0.185	0.369	0.16	0.025	0.185	0.429	In addition to State rates: Honolulu: \$0.165/gal; Maui: \$0.24/gal; Hawaii: \$0.23/gal; Kauai: \$0.17/gal. Environmental Response Tax \$0.025/gal.
New York[4]	0.08	0.1848	0.1848	0.3688	0.08	0.1668	0.1668	0.4108	Petroleum Business Tax (13-A) - requires annual adjustment (January 1, 2022: gasoline \$0.181/gal, diesel \$0.1635/gal). Petroleum Testing Fee (gasoline): \$0.0005/gal. Additional sales taxes apply: State Sales Tax: \$0.08/gal (\$0.0875/gal in the Metropolitan Commuter Transportation District (MCTD)); local sales taxes also apply (some counties levy this in a cents-per-gallon manner). Prepaid Sales Tax rates (see Publication 790, "Chart for Prepayment of Sales Tax on Motor Fuels"): \$0.180/gal, \$0.180/gal, \$0.170/gal for Regions 1, 2, 3, respectively. Oil Spill Prevention, Control, and Compensation License fee: \$0.0925/bbl plus a surcharge of \$0.0425/bbl, all petroleum products (\$0.003274/gal). Several state taxes applied to motor fuel/gasoline and on-highway diesel fuel were suspended, from 6/1/2022 through 12/31/2022: \$0.08/gal state excise tax (Article 12-A), the prepaid sales tax, and state sales and use taxes, and the additional \$0.0075 state sales and use tax imposed in the Metropolitan Commuter Transportation District (MCTD).
Mississippi[4]	0.18	0.004	0.184	0.368	0.18	0.004	0.184	0.428	Seawall Tax: \$0.03/gal (gasoline only) in effect in Harrison, Hancock, and Jackson Counties. Environmental Protection Fee: \$0.004/gal. Underground Storage Tank fee: \$100 per tank per year.
Alaska[5]	0.08	0.0095	0.0895	0.2735	0.08	0.0095	0.0895	0.3335	Refined Fuel Surcharge: \$0.0095/gal.

Table 2.2b. 30 States with Lowest Combined Federal and State Fuel Taxes for Gasoline as of July 2023. Source EIA, 2023.^{xxxiv}

1 This list includes rates of general application (including, but not limited to, excise taxes, environmental taxes, special taxes, and inspection fees), exclusive of county and local taxes. Rates are also exclusive of any state taxes based on gross or net receipts. The information included in this document is for general informational purposes only and should not be construed as legal, tax, or other advice. Contact the appropriate state agencies for official information or guidance about motor fuel taxes and fees. State rates in effect as of July 1, 2023. Sources: State and Territorial statutes and government agencies.

2 May include sales and/or use taxes, inspection fees, environmental fees, or other charges.

3 Average of Total State taxes may not equal the sum due to rounding.

4 Local option taxes (LOTS) are

It should be noted that state fuel tax rates are not constant and there are fluctuations based on factors such as state surplus budgets, temporary suspension of state fuel taxes, and recent issues relating to the COVID pandemic. For instance, Illinois briefly surpassed California as the state with the highest taxes (\$0.674/gal), while Connecticut temporarily overtook Alaska as the state with the lowest gasoline taxes (\$0.05/gal), although that low tax rate gradually increased through May 2023. This was a result of the surplus in Connecticut's Special Transportation Fund provided for an eight-month suspension of the state's gasoline tax in 2022. A phasing in of the tax by \$0.05/gal per month started in early 2023 until the full \$0.25/gal gasoline tax was restored by May 1, 2023.

According to the EIA,^{xlvi} several states increased their fuel tax rates in January 2023, and many states ended the fuel-tax holidays they implemented in 2022. For example, New York state taxes for both diesel and gasoline rose \$0.088/gal in January 2023 compared with July 2022. Other states, including Florida, Georgia, and Maryland, ended their suspensions of at least some part of their taxes on motor fuels during 2023.

2.4 Non-Fuel Tax Revenue Streams

While many rightly focus on the direct revenue implications associated with fuel tax revenues, it is important to understand that there are a number of non-fuel tax revenue implications associated with the transition to EVs.

2.4.1 Sales Tax at Gas Stations and Convenience Stores

According to the National Association of Convenience Stores (NACS) in their State of the Industry Report of 2022,^{xlvii} there are more than 150,000 convenience stores in the U.S. Almost 80% of them sell fuels, which account for over 70% of sales for an average store; in-store shopping for both merchandise and foods accounts for the bulk of the remaining sales. There are over 2.4 million people employed in the industry in the U.S.

Importantly, the industry generates over \$906 billion in sales annually and paid / collected over \$200 billion in taxes in 2022.

The states with the greatest number of convenience stores as of Dec. 31, 2022, were.^{xxxvi}

1	Texas	16,018
2	California	12,000
3	Florida	9,596
4	New York	7,917
5	Georgia	6,719
6	North Carolina	5,749
7	Ohio	5,673
8	Michigan	4,879
9	Pennsylvania	4,728
10	Illinois	4,666

2.4.2 Lottery Sales

Another state revenue stream with clear linkages to fuel sales are lottery sales. As recently as 2020, nearly 70% of total lottery sales nationwide were made at convenience stores,^{xlvi} which has a significant importance to states. According to the North American Association of State and Provincial Lotteries (NASPL) for fiscal 2023, traditional U.S. lottery sales grew 4.4% and for the first time exceeded \$100 billion, at \$102.3 billion.^{xlix}

The importance of the lottery can be highlighted by the state of Delaware where the lottery generates income for the state's general fund and can be used for various state expense needs. For the fiscal year that ended on June 30, 2022, the lottery contributed \$236 million to the general fund. **The Delaware Lottery remains the 5th-largest source of revenue for the state.**¹

Similarly, Mississippi's Department of Transportation indicates that \$80 million in lottery revenue was used in fiscal 2020 to pave 280 miles of state highways that had not received

maintenance in 30 years. They further estimate that 2,000 miles will be paved with the lottery revenue in primarily rural areas of the state that do not qualify for federal funding.^{li}

States that use lottery revenues for highways and transportation-related state expenditures and/or the state's general fund include:^{lii}

- Arizona
- Connecticut
- Delaware
- District of Columbia
- Indiana
- Iowa
- Kansas
- Louisiana
- Maine
- Maryland
- Massachusetts (via payments to cities and towns)
- Michigan
- Minnesota
- Montana
- Rhode Island
- South Dakota
- Washington
- Wyoming via cities, towns, and counties.

With fewer people needing to visit and spend at convenience stores in the future, there will be a corollary impact to states' revenues and ability to finance necessary expenditures. As presented in Table #2.3, the revenue from the lottery continues to rise, and thus greater dependence by states on those revenue streams. The table below provides a summary of lottery income.

State	1977	1987	1997	2007	2017	2021
United States	769,619	5,506,682	14,292,317	20,078,057	25,574,562	30,379,904
New York.....	120,762	655,871	1,618,031	2,609,017	3,691,105	3,276,837
California.....	--	686,573	897,936	1,320,111	2,270,015	2,807,338
Florida.....	--	--	937,785	1,410,744	1,822,777	2,437,986
Texas.....	--	--	1,233,122	1,265,699	1,820,087	2,256,834
Georgia.....	--	--	679,209	979,412	1,278,824	1,582,191
Massachusetts.....	80,730	430,416	765,167	963,345	1,417,289	1,536,886
Michigan.....	137,730	442,414	635,241	987,334	974,879	1,436,369
Pennsylvania.....	69,300	605,988	742,117	990,945	1,133,163	1,337,163
New Jersey.....	91,275	510,378	687,206	900,667	1,077,702	1,224,120
Illinois.....	60,849	574,332	634,253	839,399	1,023,846	1,118,333
North Carolina.....	--	--	--	347,950	675,684	1,010,476
Virginia.....	--	--	441,113	494,074	663,613	912,947
Ohio.....	76,793	436,104	1,132,467	781,070	905,953	896,078
Oregon.....	--	44,517	760,276	728,731	790,184	764,417
Maryland.....	81,271	357,497	491,877	538,113	589,151	757,969
South Carolina.....	--	--	--	318,036	434,109	652,105
Tennessee.....	--	--	--	330,801	412,562	527,365
West Virginia.....	--	36,655	90,974	704,121	487,038	513,077
Connecticut.....	29,336	212,670	321,009	323,575	391,989	487,512
Indiana.....	--	--	206,151	244,517	357,131	476,343
Missouri.....	--	85,888	170,270	293,444	332,078	439,014
Kentucky.....	--	--	187,652	240,118	296,457	428,273
Arizona.....	--	69,962	102,555	173,586	243,769	363,299
Wisconsin.....	--	--	164,872	166,536	205,895	294,023
Rhode Island.....	10,383	23,515	102,832	322,634	351,344	282,180
Washington.....	--	105,921	149,906	156,567	188,922	256,908
Louisiana.....	--	--	118,148	155,121	186,537	235,689
Colorado.....	--	49,334	124,870	155,300	173,090	216,899
Minnesota.....	--	--	125,024	115,215	166,460	216,708
South Dakota.....	--	--	103,086	126,720	123,893	177,127
Arkansas.....	--	--	--	--	117,397	156,056
New Hampshire.....	4,401	30,338	60,031	93,689	95,253	152,171
Mississippi.....	--	--	--	--	--	146,639
Delaware.....	3,266	18,388	170,440	383,355	188,274	145,236
Iowa.....	--	41,362	58,622	87,047	113,707	134,020
Oklahoma.....	--	--	--	85,681	78,161	123,057
Maine.....	3,523	23,999	64,093	66,674	76,552	95,738
Kansas.....	--	--	70,857	91,811	85,106	95,669
District of Columbia.....	--	53,620	90,275	95,495	74,265	91,894
Idaho.....	--	--	33,661	41,135	61,190	89,421
New Mexico.....	--	--	40,821	53,159	50,661	70,116
Nebraska.....	--	--	36,225	41,914	60,790	69,432
Vermont.....	--	10,940	31,729	32,194	35,229	42,983
Montana.....	--	--	12,414	12,683	29,548	20,008
North Dakota.....	--	--	--	10,318	12,037	12,765
Wyoming.....	--	--	--	--	10,846	12,233
Alabama.....	--	--	--	--	--	--
Alaska.....	--	--	--	--	--	--
Hawaii.....	--	--	--	--	--	--
Nevada.....	--	--	--	--	--	--
Utah.....	--	--	--	--	--	--

Table #2.3. Lottery Sales by State since 1977, Ranked by 2021 Largest Revenues. Source: Urban Brookings Tax Policy Center (2023).^{liii} Note: *Lottery revenue equals ticket sales minus prizes. Five states do not allow lottery sales as indicated in the table.*

2.4.3 Auto Mechanics and Parts

It is widely published that EVs have far fewer moving parts than conventional ICEs. According to Tesla, its electric motor has just one moving part, i.e., the rotor, as compared to hundreds of moving parts in a conventional car.^{liv} This is consistent with numerous articles that place the total number of moving parts for an average EV power train to be less than 20, compared with over 200 for internal combustion cars.^{lv}

Ultimately, while the costs of EV parts could be higher than conventional ICE parts, the frequency of needing to see a mechanic, let alone the elimination of required oil and filter changes, is expected to dramatically reduce maintenance costs for consumers, which in turn will reduce sales tax revenue to states. Depending on the state, this can include a sales tax of both parts and labor. As an example, South Carolina in 2022 imposes a sales and use tax on persons engaged in the business of selling tangible personal property at retail at a rate of 6% plus applicable local sales and use taxes,^{lvi} This would include but not be limited to items such as:

- automobile parts;
- tires;
- batteries;
- hoses; and
- fan belts

2.4.4 Property Taxes

Certainly, the traditional property use for the current-day gas station/convenience store will have to change moving forward as less fuel will be sold, and greater electric charging will be required. This will have implications with respect to property valuations and property taxes.

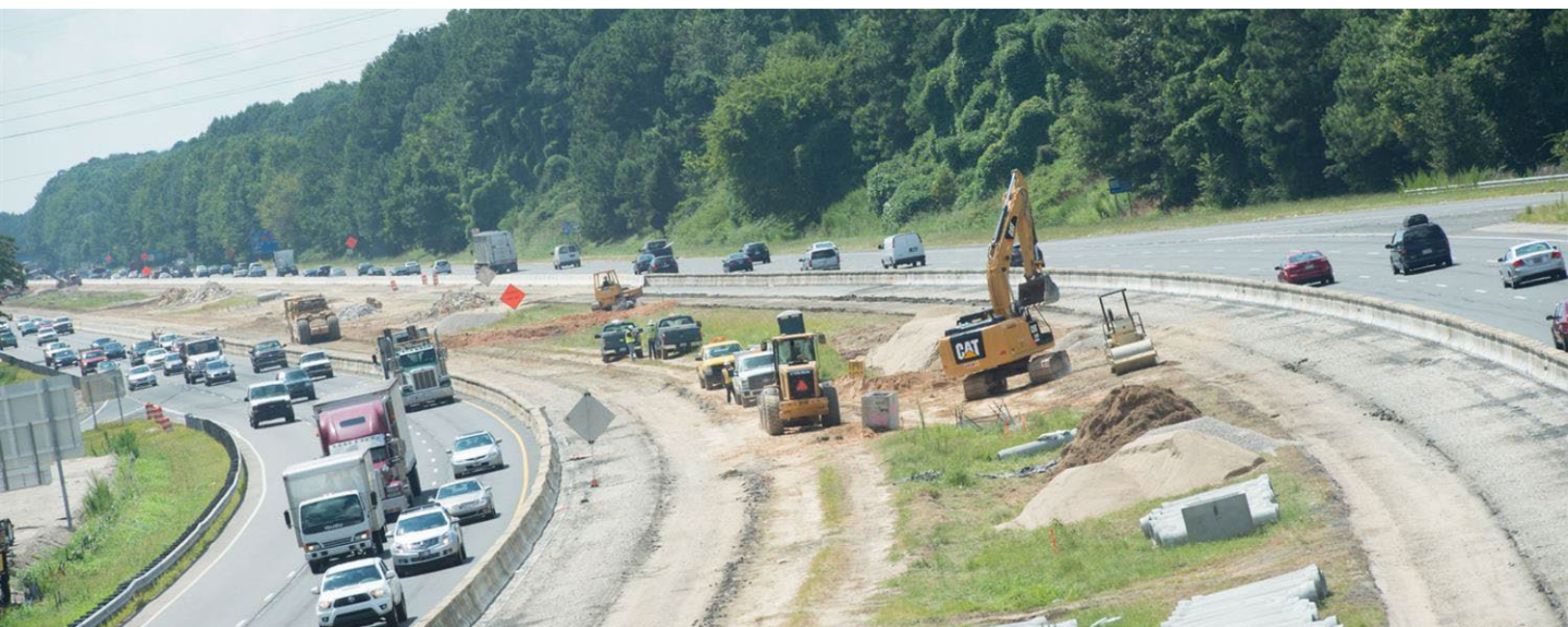
While the direct impacts from property tax revenue will affect local jurisdictions who levy the taxes on land and improvements, there will be some impacts for states.

State governments levied property taxes in 36 states in 2017, collecting \$16 billion in revenue, or 1% of their own-source general revenue.¹² Local governments collected \$509 billion from

¹² Own-source revenue excludes intergovernmental transfers.

property taxes in 2017, or nearly half of their own-source general revenue.^{lvii} There could be greater reliance by local jurisdictions from states to make up part of the property tax losses. It does need to be noted that convenience stores represent a small fraction of the total property tax revenues, and there are opportunities for redevelopment on these sites, especially in the more urban areas of the country.

SECTION 3 EXPENDITURE IMPLICATIONS



3.0 EXPENDITURE IMPLICATIONS

As presented in Table #3.1, the amount of money states spend per capita for the support of highways, roads, and bridges is significant and, is expected to significantly increase due to a number of emerging forces. In this section, we review current expenditures by states for developing and maintaining roads and highways then discuss how those expenditures may be impacted by the EV transition. The transition to EVs will not only impact state revenues, but also have implications for state and local expenditures. Increased expenditures resulting from the EV transition are presented in five distinct ways:



MAINTENANCE COSTS: Increased expenditures to maintain roads, bridges, and highways as a result of the increased weight of EVs.

ENERGY INFRASTRUCTURE: Increased expenditures to upgrade utilities to supply increased electricity demand for charging stations.



EV CHARGING STATIONS & FLEETS: Expenditures for installation and maintenance of EV charging stations and state-owned EVs including highway trucks and car fleets.



PERSONNEL & EQUIPMENT/SOFTWARE EXPENDITURES: Developing and managing new and alternative tax systems to offset loss of fuel tax revenues as well as training personnel for EV maintenance.



PUBLIC SAFETY & ENVIRONMENT: Near-term expenditures for new types of firefighting equipment to battle EV battery fires, potential for more severe accidents due to increased vehicle weights, and longer-term costs resulting from abandoned underground storage tanks (USTs).

Region and State	Total	Inter-governmental	Direct								Exhibit: Population [1] (Thousands)
			Total	Elementary and Secondary Education	Higher Education	Public Welfare	Health and Hospitals	Highways	Police	All Other	
United States	11,097	10	11,087	2,277	938	2,597	1,136	622	407	3,111	332,032
New England	11,793	1	11,792	2,706	783	2,898	609	588	356	3,851	15,122
Connecticut	10,456	–	10,456	2,855	970	1,062	818	596	361	3,795	3,623
Maine	10,191	–	10,191	2,279	608	3,077	358	813	256	2,799	1,377
Massachusetts	13,061	1	13,060	2,775	712	3,885	587	488	352	4,262	6,990
New Hampshire	9,477	–	9,477	2,380	685	2,201	211	573	350	3,076	1,388
Rhode Island	11,964	17	11,947	2,583	663	3,157	805	620	451	3,670	1,097
Vermont	13,678	–	13,678	2,944	1,285	3,195	739	1,138	437	3,941	647
Midwest	13,395	3	13,392	3,144	824	3,449	1,042	632	483	3,819	49,986
Delaware	12,638	1	12,637	2,300	1,572	3,135	662	800	392	3,776	1,005
District of Columbia	25,061	–	25,061	4,952	251	7,045	2,449	1,004	1,000	8,360	669
Maryland	11,714	–	11,714	2,475	1,152	2,736	571	488	510	3,781	6,175
New Jersey	11,267	2	11,265	2,956	711	2,396	573	468	455	3,706	9,260
New York	15,899	–	15,899	3,817	710	4,249	1,445	609	539	4,529	19,857
Pennsylvania	11,346	9	11,337	2,540	893	3,157	940	820	383	2,604	13,012
Great Lakes	10,297	1	10,296	2,182	860	2,578	897	608	350	2,821	47,182
Illinois	10,991	1	10,990	2,399	789	2,491	627	708	471	3,505	12,686
Indiana	9,809	0	9,809	1,774	967	2,674	1,108	562	251	2,473	6,814
Michigan	9,750	0	9,750	2,007	982	2,106	1,096	583	291	2,686	10,030
Ohio	10,275	1	10,274	2,331	692	2,976	940	511	333	2,491	11,764
Wisconsin	10,340	–	10,340	2,186	1,020	2,666	888	684	339	2,638	5,880
Plains	10,738	1	10,737	2,316	945	2,324	1,151	838	362	2,800	21,655
Iowa	11,477	–	11,477	2,369	1,153	2,401	1,687	984	296	2,586	3,198
Kansas	10,694	0	10,694	2,535	1,131	1,841	1,768	685	391	2,343	2,930
Minnesota	12,010	0	12,010	2,518	891	3,313	718	992	450	3,128	5,711
Missouri	8,970	3	8,967	1,882	623	1,788	1,341	466	339	2,528	6,170
Nebraska	10,784	–	10,784	2,707	1,285	1,927	606	959	283	3,016	1,964
North Dakota	13,689	–	13,689	2,616	1,585	2,271	584	1,740	354	4,538	770
South Dakota	9,656	–	9,656	1,995	848	1,950	364	1,353	274	2,873	896
Southeast	9,192	5	9,187	1,778	793	1,958	1,142	551	353	2,612	85,948
Alabama	9,366	–	9,366	1,758	1,194	1,588	1,813	505	287	2,220	5,050
Arkansas	9,049	0	9,049	1,882	963	2,617	663	725	241	1,958	3,028
Florida	8,816	–	8,816	1,503	561	1,524	945	556	485	3,243	21,828
Georgia	7,971	–	7,971	2,115	591	1,352	816	478	299	2,319	10,788
Kentucky	10,203	–	10,203	1,755	834	3,536	953	502	232	2,391	4,507
Louisiana	10,626	86	10,540	1,892	873	3,161	890	512	345	2,867	4,627
Mississippi	9,571	–	9,571	1,752	1,007	2,247	1,639	633	268	2,025	2,950
North Carolina	9,294	–	9,294	1,622	1,007	1,844	1,748	498	359	2,216	10,566
South Carolina	9,587	–	9,587	1,989	899	1,722	1,915	425	272	2,365	5,193
Tennessee	8,062	–	8,062	1,551	569	1,968	962	392	331	2,289	6,968
Virginia	10,501	0	10,501	2,210	1,020	2,273	951	796	336	2,915	8,657
West Virginia	10,313	–	10,313	1,878	981	3,053	532	979	263	2,628	1,786
Southwest	9,484	1	9,483	2,020	1,051	2,055	1,065	623	341	2,316	42,932
Arizona	8,716	–	8,716	1,381	960	2,881	343	405	399	2,347	7,265
New Mexico	12,505	–	12,505	1,947	1,291	3,953	1,169	597	355	3,193	2,117
Oklahoma	8,571	12	8,559	1,760	967	1,873	796	766	266	2,101	3,991
Texas	9,579	–	9,579	2,218	1,082	1,741	1,272	659	333	2,275	29,559
Rocky Mountain	10,678	1	10,677	2,033	1,177	1,948	1,057	721	350	3,392	12,740
Colorado	11,096	1	11,095	2,195	1,044	2,047	880	620	420	3,889	5,811
Idaho	8,067	–	8,067	1,404	640	1,977	685	682	281	2,397	1,904
Montana	9,981	–	9,981	1,993	988	2,503	551	913	338	2,774	1,106
Utah	10,539	0	10,539	1,920	1,718	1,639	1,335	758	267	2,903	3,339
Wyoming	17,193	18	17,175	3,193	1,665	1,577	3,404	1,281	383	5,672	579
Far West [2]	13,883	51	13,832	2,480	1,230	3,434	1,637	617	566	3,869	54,286
California	14,755	70	14,685	2,527	1,332	3,870	1,742	607	636	3,971	39,143
Nevada	8,284	6	8,279	1,664	553	1,541	643	669	466	2,744	3,146
Oregon	13,497	–	13,497	2,337	1,222	3,373	1,293	630	388	4,254	4,256
Washington	11,964	–	11,964	2,649	994	2,035	1,703	638	347	3,597	7,741
Alaska	18,719	–	18,719	3,448	864	3,615	1,504	1,775	552	6,961	734
Hawaii	12,307	0	12,306	1,556	851	2,511	891	673	400	5,424	1,447

Table #3.1. State and Local General Expenditures, Per Capita, FY 2021. Source: Tax Policy Center (2023).^{lviii}

3.1 Current State Expenditure Structures

In the most basic ways, state expenditures to support transportation can include:

- Interstates
- Other Freeways and Highways
- Principal, Arterial, Minor Arterial, Major and Minor Collectors, and
- Mass/Public Transportation Systems

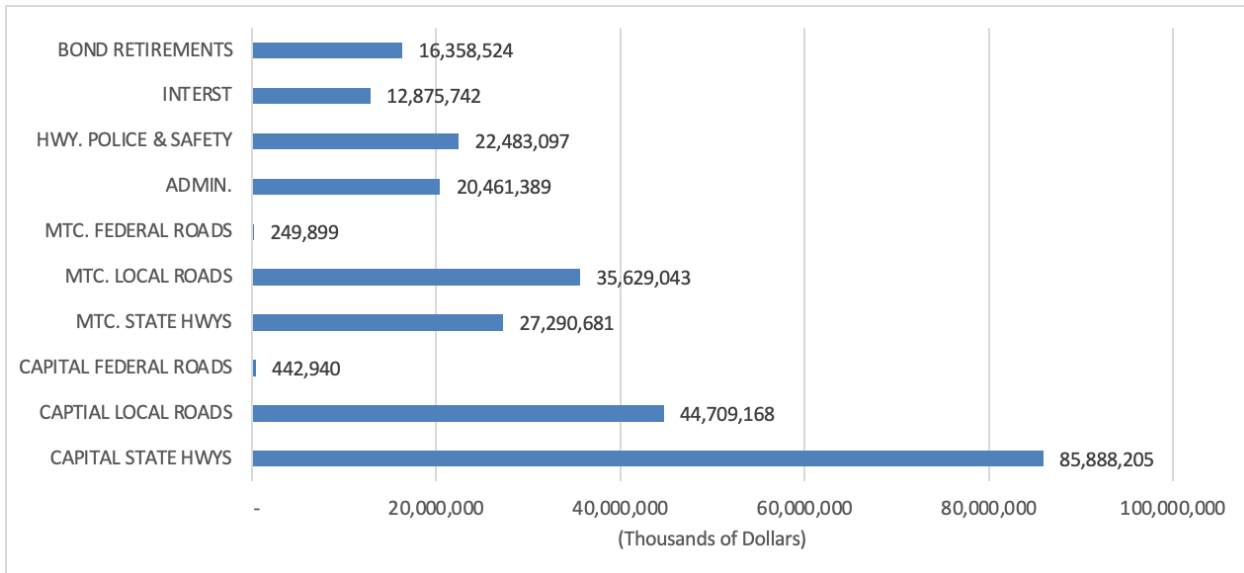
First, there is the need of revenues to support current “Capital Expenditures” including but not limited to:

1. Acquisition of Right-of-Way
2. Preliminary and Construction Engineering & Environmental Services
3. Highway, Road, and Street Construction
4. Highway, Road, and Street System Preservation
5. Acquiring Highway Equipment
6. Signage & Lighting
7. Buildings & Offices

Then, of course, revenues are necessary for ongoing current “maintenance” expenditures such as:

1. Paving and Pothole Repairs
2. Snow Removal
3. Lighting, Striping and Signage Maintenance
4. Administration & Personnel
5. Vehicle & Equipment Maintenance and Repairs
6. Highway Law Enforcement and Safety
7. Bond Retirement
8. Transfers to Local Governments

Figure #3.1 presents the total disbursements provided by the Federal Highway Administration^{xlix} for highways in 2021, with Figure #3.2 showing that 72% of all expenditures are for the capital requirements of both state highways and local roads as well as the maintenance of those roads and highways.



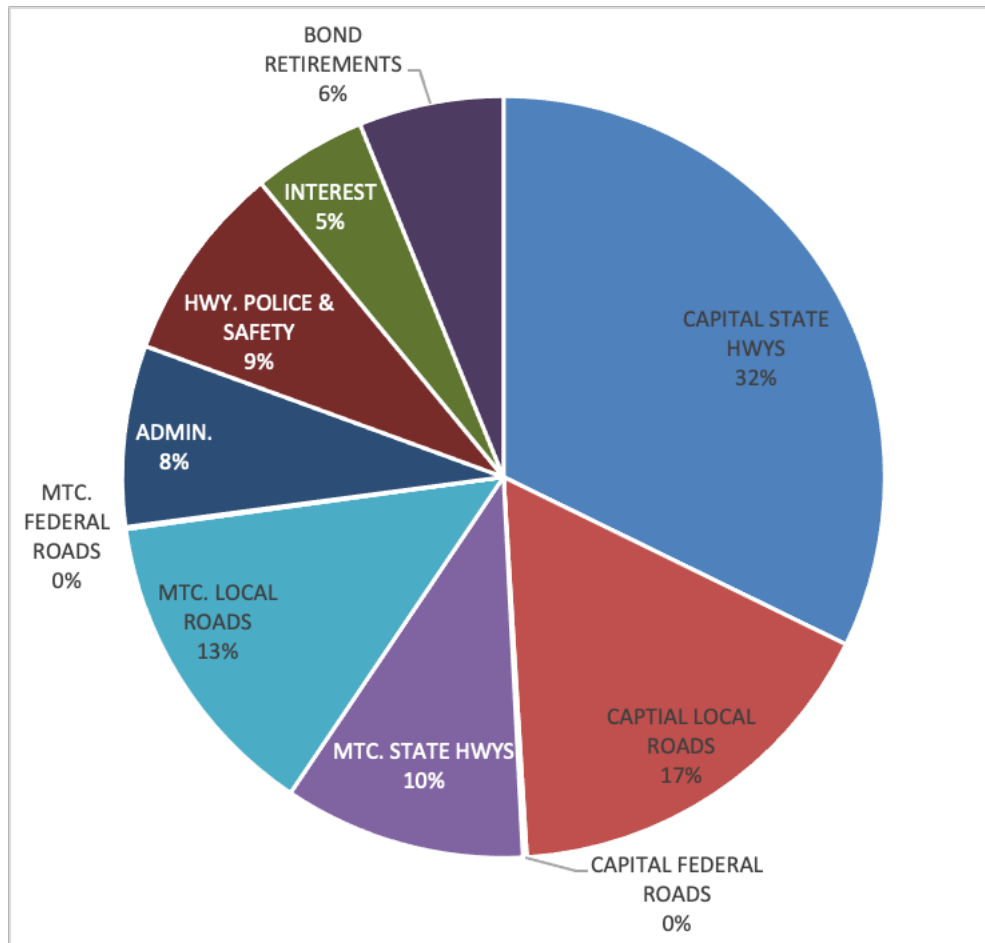
Figure# 3.1. Total disbursements for highways including capital, maintenance, administration, and bonding for all levels of government in 2021. Source: U.S. FHWA (2023).^{lix}

Maricopa County, Arizona is the nation’s fastest-growing county and the fourth-largest by population (over 4.5 million) and actually would be the 26th-largest state by population.^{lx} In 2019, a report prepared for the Maricopa Association of Governments on Arizona Roadway Maintenance Costs shows that the average annual per-lane maintenance costs (highways and bridges) per mile for the Arizona Department of Transportation in the county jumps from \$17,389 between 2015 and 2019 to \$74,667 between 2025 and 2029, due to the aging of the infrastructure, especially bridges and repaving road-quieting asphalt rubber-asphalt concrete friction course overlays.

The national average per-lane mile maintenance costs of \$67,248 in 2015 equals approximately \$72,043 in 2019 dollars.

The report goes on to state that **Maricopa County will likely need to move from an expansion-focused regional transportation investment strategy to a preservation-focused strategy.**^{lxi}

The research report for the county did not account for the added burden longer term of reduced fuel tax and increases for other highway EV investments, nor the potential added road impacts from the weights of EV trucks and passenger cars.



Figure# 3.2. Total disbursements for highways as a percentage for capital, maintenance, administration, and bonding for all levels of government in 2021. Source: U.S. FHWA (2023).^{lxii}

3.2 Current State of National Infrastructure & Expenditure Implications

Since 1998, the American Society of Civil Engineers (ASCE) has issued an annual Report Card for America’s Infrastructure. The most recent report which covers 2021, covers a variety of civil infrastructure topics including rail, energy, aviation, drinking water, solid waste, dams, etc. Relevant to this report are their grades at the national level and for each state on America’s roads and bridges.

Nationally, the ASCE gives the overall grade nationally for bridges a “C” and roads a “D.”^{lxiii} The report indicates that the total investment needs based on current trends from 2020 to 2029 for **surface transportation** are \$2.83 trillion with \$1.62 trillion funded and a funding gap of

\$1.22 trillion. This comes at a time where 40% of the nation’s roads system is now in poor or mediocre condition.¹³

Additionally, the report indicates that nearly **21,000 bridges** were found susceptible to overtopping or having their foundations undermined during extreme storm events.

Another way to understand the current state of our nation’s highways and roads is to evaluate pavement roughness. This is generally defined as an expression of irregularities in the pavement surface that adversely affect the ride quality of a vehicle, which also affect vehicle delay costs, fuel consumption, and maintenance costs.

Roughness is also referred to as “smoothness” although both terms refer to the same pavement qualities. One way the government measures the condition of highways and roads is the International Roughness Index (IRI) which is used by federal and state highway professionals as a standard to quantify road surface roughness. A continuous profile along the road is measured and analyzed to summarize qualities of pavement surface deviations that impact vehicle suspension movement.^{lxiv}

A general rule for understanding and grading IRI is:^{lxv}

- Good: IRI less than 95 inches/mile
- Fair: IRI between 95 and 170 inches/mile
- Poor: IRI greater than 170 inches/mile

Table #3.2 provides the latest national evaluation of reported IRI scores for “urban highways” in 2020 for each state as compiled by the Federal Highway Administration.^{lxvi}

¹³ See page 107 of the ASCE report.

STATE	INTERNATIONAL ROUGHNESS INDEX (IRI) (1)									
	INTERSTATE									
	NOT REPORTED (2)	< 60	60-94	95-119	120-144	145-170	171-194	195-220	> 220	Percent Reported at 95-170 (fair) and Above 170 (poor) road conditions
Hawaii	0	1	10	10	10	9	7	4	3	79%
District of Columbia	-	1	3	3	2	1	1	1	0	68%
Louisiana	10	122	95	53	49	46	23	14	12	48%
California	4	219	431	216	160	100	54	30	33	48%
Colorado	-	65	107	54	39	19	10	4	6	43%
Wisconsin	-	102	110	63	45	26	13	4	2	42%
Delaware	0	9	15	7	3	3	1	1	1	40%
New York	9	230	333	143	79	51	30	21	36	39%
Texas	4	385	551	236	144	83	34	14	10	36%
Michigan	3	132	304	91	53	40	22	15	15	35%
Wyoming	-	41	28	16	8	5	3	2	2	34%
Nebraska	-	19	28	12	5	2	2	1	0	31%
Nevada	-	84	30	20	17	7	3	1	1	29%
Iowa	-	54	72	23	12	8	3	3	3	29%
Oklahoma	2	98	105	35	17	13	7	4	5	28%
Arkansas	-	118	105	39	21	12	7	5	5	28%
West Virginia	1	100	69	18	15	12	7	4	10	28%
Indiana	0	222	132	60	35	22	10	5	6	28%
New Jersey	-	135	143	36	23	13	12	9	16	28%
Utah	-	76	108	35	18	10	4	2	1	27%
Pennsylvania	-	297	285	85	52	30	16	12	21	27%
U.S. Total Average	69	7,962	6,080	2,109	1,267	790	412	234	267	27%
Minnesota	-	102	140	43	18	12	6	2	2	26%
South Dakota	-	21	46	13	5	2	1	0	-	24%
Washington	-	138	118	39	18	12	5	3	2	24%
Maryland	0	136	121	29	15	11	6	6	11	23%
Illinois	-	382	340	80	55	39	22	10	13	23%
Ohio	3	436	279	90	53	30	19	11	12	23%
Virginia	-	168	234	62	27	16	8	4	2	23%
Kansas	1	129	56	23	13	6	4	2	1	21%
Kentucky	2	114	67	22	13	8	3	1	1	21%
Alabama	0	268	76	32	20	14	8	7	8	20%
New Mexico	-	83	42	11	8	6	3	1	2	20%
Alaska	0	38	25	8	4	2	1	0	1	19%
Mississippi	-	153	55	17	12	9	5	3	1	18%
Missouri	-	307	136	38	26	16	8	5	4	18%
Oregon	2	110	81	18	10	7	4	2	1	18%
South Carolina	-	171	84	25	14	7	2	1	0	16%
Arizona	8	135	71	19	10	5	3	1	1	16%
Connecticut	-	148	119	27	13	6	3	1	2	16%
North Carolina	13	440	221	64	25	12	9	4	5	15%
Georgia	-	439	163	53	29	15	6	2	2	15%
Florida	0	488	184	50	28	16	7	3	2	14%
Massachusetts	3	340	95	25	15	12	6	4	5	13%
North Dakota	-	31	22	5	2	0	0	0	0	13%
Idaho	1	53	27	5	3	2	1	-	0	13%
Tennessee	0	383	105	34	16	9	4	2	2	12%
Maine	-	55	22	6	2	2	1	0	0	12%
Rhode Island	-	29	17	3	1	1	1	0	0	12%
Montana	-	47	39	6	3	1	1	1	0	12%
Vermont	-	35	22	4	1	1	1	0	0	10%
New Hampshire	-	71	10	2	0	0	0	0	-	2%

Table #3.2. State Urban Highway IRI Scores for 2020. The lower IRI, the better the road/highway condition. Source: FHWA (2021).^{liv}

3.3 EV Impacts on Highway and Road Conditions

How might the transition to EVs further impact the safety and condition of America’s roads and highway, thus requiring potentially increased funding needs by states and local jurisdictions for their maintenance? One of the more significant impacts has to do with the comparative weights of EVs and ICE vehicles, as represented in Figure #3.3.

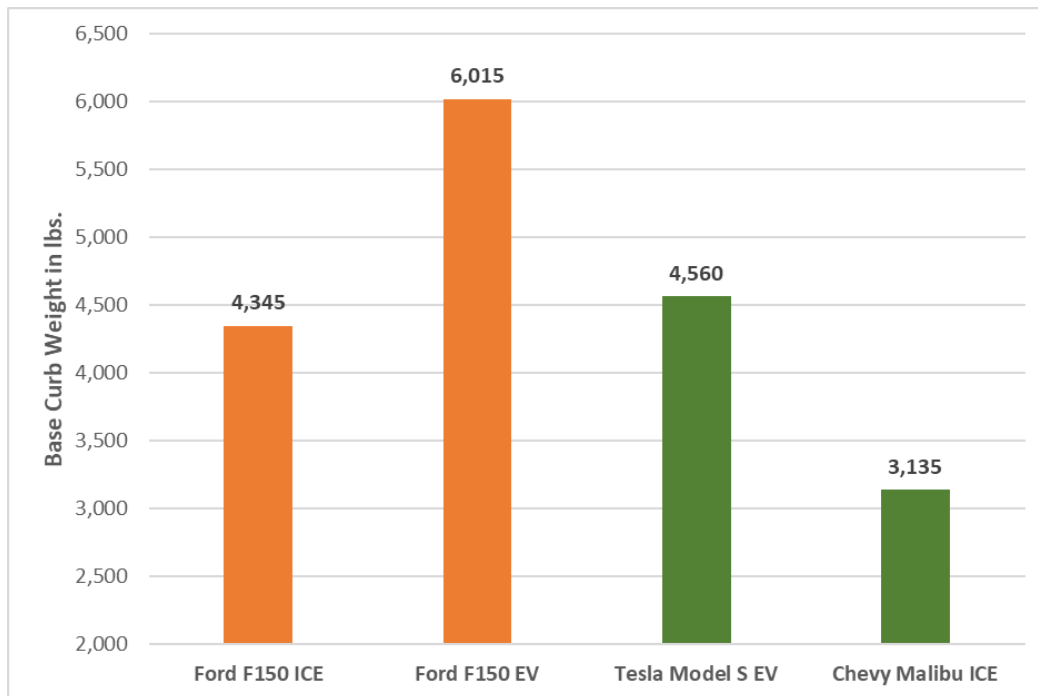


Figure #3.3. Examples of curb weight differences between (EV) pickup trucks and passenger cars compared with similar ICE vehicles. Sources: Ford (2023a, b)^{lxvii, lxviii}; CNET (2023)^{lxix, lxx}

On average, it is estimated that the weights of EV passenger cars, pickup trucks and over-the-road truck-tractors are generally 30% heavier than their current ICE counterparts. This is primarily due to the weight of the lithium batteries.^{lxxi} Over time the weights of EVs should come down as battery density increases. However, a 2023 peer-reviewed research paper from the United Kingdom paper finds that 20%-40% additional road wear will occur from EVs compared with ICE vehicles overwhelming from larger vehicles, not passenger cars which will have negligible road wear impacts.^{lxxii}

3.4 Underground Storage Tanks & Public Safety

Across the country there are approximately 542,000 underground storage tanks (USTs), which



primarily store petroleum substances.^{lxxiii} And, as of March 2023, there are more than 512,000 leaking underground storage tanks (LUST) sites, which are disproportionately located in underserved minority communities (53.3%) and can have significant adverse impacts to our nation’s drinking water supplies through migration of hazardous substances into aquifers.^{lxxiv}

Today, the average gas station and gas- serving convenience store includes two to three underground storage tanks of 10,000 to 20,000 gallons each.^{lxxv}

In 1986, a funding mechanism was put in place by Congress to address the growing problem of leaking underground storage tanks across the country under the provisions, Subtitle I of the Solid Waste Disposal Act known as the “**LUST Trust Fund.**” The fund is financed by a \$0.10 tax on each gallon of motor fuel sold across the country.^{lxxvi}

In 2023, the fund received approximately \$67 million with 90% of the funds directed by the Environmental Protection Agency (EPA) to states and tribes. At the state level, 35 states or territories have a form of a UST financial assurance fund that is used to reimburse LUST cleanup costs (see Figure #3.4). Six states have funds that no longer provide financial responsibility for UST owners but pay ongoing cleanups of releases where financial responsibility was assumed in the past, and nine states rely totally on the EPA privately funded financial responsibility mechanism.^{lxxvii, lxxviii}

3.5 Public Safety

As pointed out, EVs weigh up to 30% more than conventional vehicles. In 2023, the National Transportation Safety Board Chair Jennifer Homendy raised concerns of increased risks of injury and mortality arising from the increased weights and physics of EVs. There are currently not enough data points to make any conclusions, so the National Highway Traffic Safety Administration will be studying this potential.^{lxxx}

Additionally, first responders, especially fire departments, will need to be equipped with a new generation of firefighting tools specific to EV fires. Across the country, there is a car fire about every five minutes.^{lxxxi}

International studies from countries with higher EV market penetration than the United States have found **that EVs are less likely to catch fire than internal combustion vehicles.**^{lxxxii} Yet, **EV fires are more difficult to extinguish than gas fires.** The issue: Lithium ion batteries, which contain highly flammable electrolytes. When an EV catches fire, the battery's high voltage can create a phenomenon called thermal runaway, during which the battery pack overheats and ignites other cells, leading to an intense and prolonged fire.^{lxxxiii}

One Tesla car fire in Alabama in December 2023 saw firefighters use 36,000 gallons of water to extinguish the fire in over one hour.^{lxxxiv} In the Northern California city of Los Gatos, a Tesla caught fire three times in one day in 2018, requiring the Santa Clara Fire Department to spend in total 16 hours in fighting the re-igniting fire.^{lxxxv} Since then, various companies have developed specialized EV firefighting equipment.

In March 2024, Tempe, Arizona's Fire Medical Rescue Department became the first agency in the United States to deploy a new tool. The Coldcut Cobra System is a fire extinguisher with a high-pressure water lance that can penetrate the batteries, which are encased in steel under a vehicle's floorboard, and reduce expanding ignition of battery packs.^{lxxxvi} The manufacturer states that the tool can limit water usage to 200-300 gallons of water and extinguish in 5-10

minutes^{lxxxvii}. Other manufacturers of fire equipment are also placing tools onto the marketplace. Costs currently range from \$50,000 to \$100,000 per tool.¹⁴

3.6 EV Charging Infrastructure

The EV transition will necessitate states and local jurisdictions to install and/or provide through third-parties EV charging infrastructure for both government fleets as well as for the general public. While the majority of EV charging infrastructure will be through private companies, government will need to invest in charging for their own fleets and certain public locations.

There are three types of EV charging stations are presented in Figure #3.5.



Figure #3.5. The three types of electric vehicle charging stations. Source: The Dynamic Sustainability Lab @ Syracuse University.^{lxxxviii}

Level 1 chargers are mostly for personal use, such as at a residence, while Level 2 chargers comprise the largest number of chargers for public use across the country.

¹⁴ Personal communications with fire officials.

The U.S. Department of Energy (DOE) lists the following number of EV charging stations across the country as of Dec. 29, 2023:^{lxxxix}

- Level 1 chargers: 755 not including residential installations.
- Level 2 chargers: 120,025
- Level 3 chargers 37,457

The DOE published that the estimated costs for a Level 2 public charger are approximately \$3,500 for equipment and an additional \$2,600 for installation of a dual connector. This is a general national estimate and does not include specific utility upgrades to the site and at the site.^{xc}

In the near term, the Bipartisan Infrastructure Law enabled the creation of Joint Office of Energy and Transportation (Joint Office) which supports the deployment of the EV transition. The Joint Office is a collaboration between DOE and the U.S. Department of Transportation (DOT).

The program provides support through:^{xci}

- National Electric Vehicle Infrastructure Formula Program: This DOT program provides \$5 billion for states to build a national EV charging network with stations spaced no more than 50 miles apart and within 1 mile of the interstate exit or highway.
- Charging and Fueling Infrastructure Discretionary Grant Program: This program provides \$2.5 billion in grant funds to strategically deploy publicly accessible EV charging and alternative fueling infrastructure in communities where people live and work.

State Plans for EV Charging

To receive funding, states must submit detailed plans. The Federal Highway Administration reviews and ultimately can approve the state plans for EV charging infrastructure deployment. Table #3.3 provides an overview of approved state funding for fiscal 2022, fiscal 2023, and fiscal 2024 from the NEVI Formula Program, as well as how many miles of EV charging corridors are designated as ready or pending in each state through Round 6 of the Alternative Fuel Corridors program.

State	FY 2022 Funding	FY 2023 Funding	FY 2024 Funding	EV Charging Corridors
Alabama	\$11,738,801	\$16,892,267	\$16,892,384	1,002 miles
Alaska	\$7,758,240	\$11,164,195	\$11,164,272	354 miles
Arizona	\$11,320,762	\$16,290,704	\$16,290,816	1,158 miles
Arkansas	\$8,010,850	\$11,527,704	\$11,527,783	512 miles
California	\$56,789,406	\$81,720,595	\$81,721,161	7,082 miles
Colorado	\$8,368,277	\$12,042,045	\$12,042,129	3,039 miles
Connecticut	\$7,771,342	\$11,183,049	\$11,183,127	415 miles
Delaware	\$2,617,339	\$3,766,380	\$3,766,406	259 miles
District of Columbia	\$2,468,807	\$3,552,641	\$3,552,666	27 miles
Florida	\$29,315,442	\$42,185,251	\$42,185,543	6,244 miles
Georgia	\$19,978,342	\$28,749,059	\$28,749,258	1,523 miles
Hawaii	\$2,616,956	\$3,765,829	\$3,765,855	788 miles
Idaho	\$4,425,511	\$6,368,360	\$6,368,404	1,974 miles
Illinois	\$21,998,178	\$31,655,626	\$31,655,845	1,562 miles
Indiana	\$14,743,125	\$21,215,523	\$21,215,670	1,436 miles
Iowa	\$7,604,168	\$10,942,483	\$10,942,559	742 miles
Kansas	\$5,847,059	\$8,413,984	\$8,414,042	1,417 miles
Kentucky	\$10,280,470	\$14,793,712	\$14,793,815	1,469 miles
Louisiana	\$10,859,512	\$15,626,960	\$15,627,068	1,124 miles
Maine	\$2,856,158	\$4,110,043	\$4,110,072	1,105 miles
Maryland	\$9,298,080	\$13,380,042	\$13,380,134	1,139 miles
Massachusetts	\$9,397,238	\$13,522,732	\$13,522,825	851 miles
Michigan	\$16,290,764	\$23,442,593	\$23,442,756	2,167 miles
Minnesota	\$10,089,418	\$14,518,786	\$14,518,886	562 miles
Mississippi	\$7,483,268	\$10,768,508	\$10,768,582	817 miles
Missouri	\$14,647,722	\$21,078,237	\$21,078,383	1,184 miles
Montana	\$6,348,350	\$9,135,347	\$9,135,410	2,141 miles
Nebraska	\$4,472,243	\$6,435,608	\$6,435,652	480 miles
Nevada	\$5,618,414	\$8,084,961	\$8,085,017	2,446 miles
New Hampshire	\$2,556,450	\$3,678,760	\$3,678,786	682 miles
New Jersey	\$15,448,790	\$22,230,983	\$22,231,137	759 miles
New Mexico	\$5,681,977	\$8,176,429	\$8,176,486	2,128 miles
New York	\$25,971,644	\$37,373,488	\$37,373,747	2,034 miles
North Carolina	\$16,137,196	\$23,221,608	\$23,221,768	2,075 miles
North Dakota	\$3,841,352	\$5,527,749	\$5,527,787	570 miles
Ohio	\$20,739,853	\$29,844,883	\$29,845,089	1,867 miles
Oklahoma	\$9,812,934	\$14,120,923	\$14,121,021	1,955 miles
Oregon	\$7,733,679	\$11,128,851	\$11,128,928	2,452 miles
Pennsylvania	\$25,386,631	\$36,531,648	\$36,531,901	2,056 miles
Puerto Rico	\$2,020,490	\$2,915,577	\$2,909,472	212 miles
Rhode Island	\$3,383,835	\$4,869,376	\$4,869,410	44 miles
South Carolina	\$10,360,855	\$14,909,387	\$14,909,490	759 miles
South Dakota	\$4,363,463	\$6,279,072	\$6,279,116	678 miles
Tennessee	\$13,074,884	\$18,814,906	\$18,815,036	1,283 miles
Texas	\$60,356,706	\$86,853,980	\$86,854,582	3,615 miles
Utah	\$5,372,731	\$7,731,421	\$7,731,474	1,220 miles
Vermont	\$3,140,247	\$4,518,851	\$4,518,882	549 miles
Virginia	\$15,745,244	\$22,657,583	\$22,657,740	1,080 miles
Washington	\$10,489,110	\$15,093,948	\$15,094,052	1,258 miles
West Virginia	\$6,761,785	\$9,730,285	\$9,730,352	548 miles
Wisconsin	\$11,642,061	\$16,753,057	\$16,753,173	2,066 miles
Wyoming	\$3,963,841	\$5,704,011	\$5,704,051	911 miles

Table #3.3. State-Approved Plans for EV Charging From the NEVI Formula Program. Source: Joint Office of Energy and Transportation (2023).^{xcii}

SECTION 4

CASE STUDIES



4.0 CASE STUDIES

This report provides seven case studies of geographically diverse states with very different populations, politics, and socioeconomics. The states selected were done so to highlight different strategies being considered or implemented regarding budgetary impacts from the EV transition.

Specifically, the case studies presented include:

1. **California** (West Coast), the world's fifth-largest economy and the most populous U.S. state. The state is one of the few that has done preliminary studies on budgetary impacts.
2. **New York** (Northeast), the nation's fourth-most populous state, is unique with regard to the impacts to mass transit due to the distribution of state-derived fuel tax.
3. **Utah** (Rocky Mountains), 30th in population, has increased fuel tax in 2023 and also implemented a tax for nonresidential EV charging stations.
4. **Oregon** (Northwest), 27th in population, has been one of the leaders in examining the utility of a vehicle-miles traveled (VMT) tax to replace the fuel tax.
5. **Michigan** (Midwest), the 10th-largest state, which, like California, has been examining budgetary shortfalls and the impacts to its highway/road networks.
6. **Pennsylvania** (Northeast), the nation's fifth most-populous state, had its DOT undertake an alternative funding plan, which is highlighted below.
7. **Tennessee** (Southeast), the 15th-most populous state, created the Transportation Modernization Act of 2023 to begin to address the revenue gap.

STATE OF CALIFORNIA

Identifies Significant Future Highway Budget Deficits



Population estimate July 2023	38,965,193
State Budget 2024 ¹	\$310.8 billion ¹
Light-Duty EVs Registered (2022) <i>Not including plug-in hybrid electric vehicles (PHEV) or hybrid electric vehicles (HEV)</i>	903,600
State Fuel Tax – Gasoline	\$0.579/gallon
State Fuel Retail Tax on Gasoline	0.0225%
California's cap-and-trade program to lower greenhouse gas emissions	\$0.23/gallon
State's low-carbon fuel programs	\$0.18/gallon
State Battery EV Additional Annual Registration Fees (2022) Annual increases will be indexed to the consumer price index See: California Vehicle Code 9250.6.	\$100 annual fee for zero-emissions ZEVs starting in January 2021.
Underground gas storage fees	\$0.02/gallon
State and local sales taxes	Average 3.7%

California is one of the few states that has undertaken a detailed analysis of budget implications from the EV Transition. The Legislative Analyst’s Office (LAO) in December 2023 issued a report^{xciii} that examined how the state’s ZEV legislation would affect state transportation revenues and programs using inflation-adjusted dollars.

The **projected revenue declines** over the next decade based on the LAO findings are:

- State gasoline excise tax (\$5 billion or 64%),
- State diesel excise tax (\$290 million or 20%), and
- State diesel sales tax (\$420 million or 20%).

While some of these deficits will be offset by annual EV registration fees, the annual state transportation revenues are expected to decline by \$4.4 billion, or 31% over the next 10 years.

California’s highway maintenance and rehabilitation programs are funded primarily by state fuel taxes and therefore will face significant funding declines of \$1.5 billion (26%) over the next decade, from \$5.7 billion to \$4.2 billion.

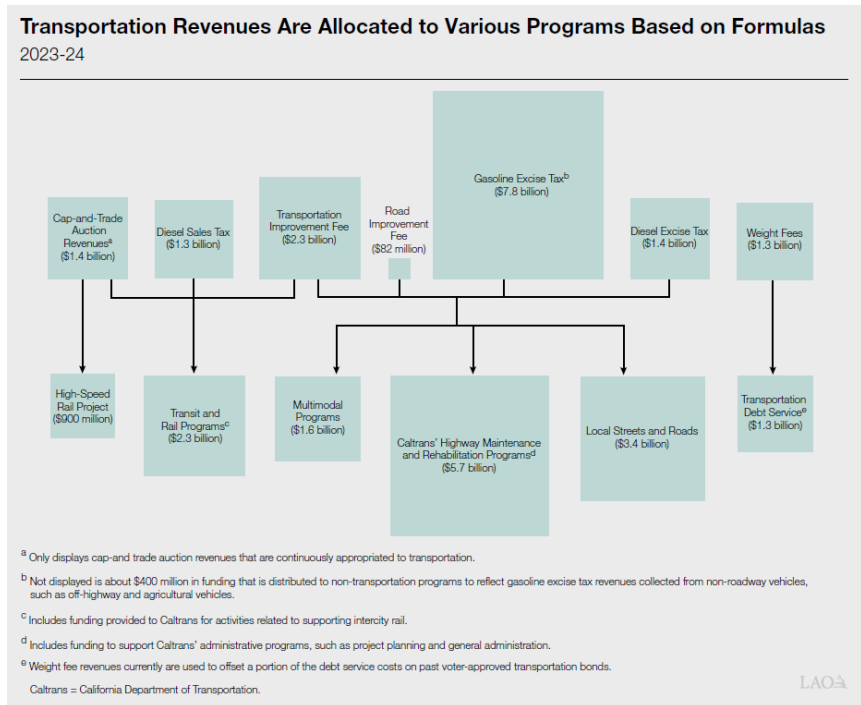


Figure #4.1. How California transportation revenues are allocated for 2023-2024. Source: California LAO.^{xciv}

STATE OF NEW YORK

EV Transitions Throughout State Will Impact Mass Transportation in the City



Population estimate July 2023	19,673,200
State Budget 2024 ¹	\$229 billion
Light-Duty EVs Registered (2022) <i>Not including PHEV or HEV</i>	84,700
State Fuel Tax effective Jan. 1, 2024– Gasoline	\$0.173/gallon
Road Diesel	\$0.1555
State & Local Fuel Retail Tax	On average pay 14 cents a gallon in sales tax
State Environmental Protection Fee	N/A
State Battery EV Additional Annual Registration Fees (2023)	N/A



New York offers a unique example of possible unintended consequences arising from the transition to EVs. This is because of how the distribution of fuel taxes are structured. As presented in Appendix D, **New York state uses the bulk of fuel tax—more than 84%—for mass transit.** Consequently, as residents in central and upstate New York transition to EVs, there will be less funds without an intervention to support mass transit, which is primarily located within the greater New York City area.



New York is one of four states that levies a weight-distance tax on commercial trucks/motor carriers known as the New York State Ton-Mile Tax (NYSTMT). This is part of the state’s Highway User Tax and is administered by the New York Department of Taxation and Finances. The rules for the NYSTMT are complex and include several exemptions, but generally all motor vehicles with a

loaded gross weight exceeding 18,000 pounds that either possess a New York state registration, **or operate on roads in New York**, are subject to the NYSTMT.

The tax rate varies but as a generalization runs from \$0.0084 per laden mile at 18,001 pounds up to \$0.0546 per laden mile up to 80,000 pounds.^{xcv}

All miles traveled on tolled New York highways may be excluded from the mileage calculation, as these miles are not subject to the NYSTMT. **The tax is self-reported** by motor carriers and independent drivers and the ability to enforce the law is limited, which makes **for very little risk for those who do not report or underreport their mileage, including out-of-state motor carriers**. A 2017 independent study by the American Transportation Research Institute examined this phenomenon and calculated that the estimated **revenue not collected in 2015 by the State of New York equaled \$55,683,504**.^{xcvi}

New York, similar to other East Coast states, is a good example of concerns of interoperability as a recent 2019 study indicated that 37% of the 11 million people employed in New York City come from either adjoining states New Jersey or Connecticut.^{xcvii} Hence, if the state were to undertake a VMT program, it may not be able to realize revenues from those using state and local roads without some form of toll or interoperability agreements.

STATE OF UTAH

State Develops One of the Nation's First Taxes on EV Charging



Population estimate July 2023	3,417,734
State Budget 2024 ¹	\$29.4 billion
Light-Duty EVs Registered (2022) <i>Not including PHEV or HEV</i>	28,000
State Fuel Tax effective Jan. 1, 2024–	\$0.365 per gallon
State & Local Fuel Retail Tax	N/A
State Environmental Assurance Fee	\$0.0065 per gallon
State All Electric EV Additional Annual Registration Fees (2023)	\$130.25
Optional All electric EV Road Usage Charge	\$0.01/mile but no more than the flat EV registration fee

On April 18, 2023, Utah Gov. Spencer Cox signed into law House Bill 301,^{xcviii} which was designed by its sponsor, Republican state Rep. Mike Schultz, to address rising fuel taxes and budget gaps from the EV transition. Utah residents experienced a 14% fuel tax increase in January 2023 because of an automatic increase of 4.5 cents to 36.4 cents per gallon for gas and diesel based upon a law enacted in 2015. The bill reduced the tax by 2 cents in July 2023 but has an escalator for future increases; hence, this is a temporary relief of the tax.

Importantly, the bill created a tax for EV charging stations (not for homes or at-work chargers) Specifically, it will impose a tax on electricity sold for EVs at a charging station or through a charging subscription. Resulting revenue will be deposited into the state transportation fund. A provision of the bill enables a charging station operator to keep 6% of taxes to cover collection costs.

The tax levied on Jan. 1, 2024, is imposed at a rate of 12.5% for a charging station operator that charges:

- (a) per kilowatt-hour as described in Subsection (4)(a);
- (b) per hour as described in Subsection (4)(a);
- (c) a subscription fee for charging services as described in Subsection (4)(b); or
- (d) a combination of (a) through (c).

STATE OF OREGON

A Pioneer in Pay Per Mile Tax



Population estimate July 2023	4,233,358
State Budget 2024 ¹	\$121.3 Billion
Light-Duty EVs Registered (2022) <i>Not including PHEV or HEV</i>	47,000
State Fuel Tax – Gasoline & Diesel effective Jan. 1, 2024	\$0.40 per gallon
Local Tax Rates	Range but up to \$0.06/gallon
State Environmental Protection Fee	\$0.01/gallon
State Battery EV Annual Registration Fees (2024) https://www.oregon.gov/odot/dmv/pages/fees/vehicle.aspx	\$316 or, enroll in OReGO, the registration fee is \$86 (doubled if new vehicle).
OReGO Program	\$0.19/mile

Since 2001, Oregon has been exploring the need to address the anticipated future declines in fuel tax revenues. The state Department of Transportation implemented the OReGO program,¹⁵ where drivers can sign up to volunteer for a program where they pay a fee for every mile they drive on public roads. OReGO participants pay 1.9 cents for each mile they drive on Oregon roads, which is deposited into the state highway fund for construction, maintenance, and preservation of roads and bridges. Participants sign up with an account manager,¹⁶ select a mileage reporting option, and receive a bill for reported miles.^{xix} The option is open to many vehicles, including ICE vehicles.

Oregonians with fuel-powered vehicles pay an automatic 38 cents per gallon fuel tax. OReGO participants receive a credit for fuel tax they pay. Fuel consumption is reported by their in-car device (GPS) or computed by the account manager based on average miles per gallon and miles driven.

¹⁵ <https://www.myorego.org/>

¹⁶ Emovis by DriveSync, ODOT by Emovis, and NextMove by Cintra.

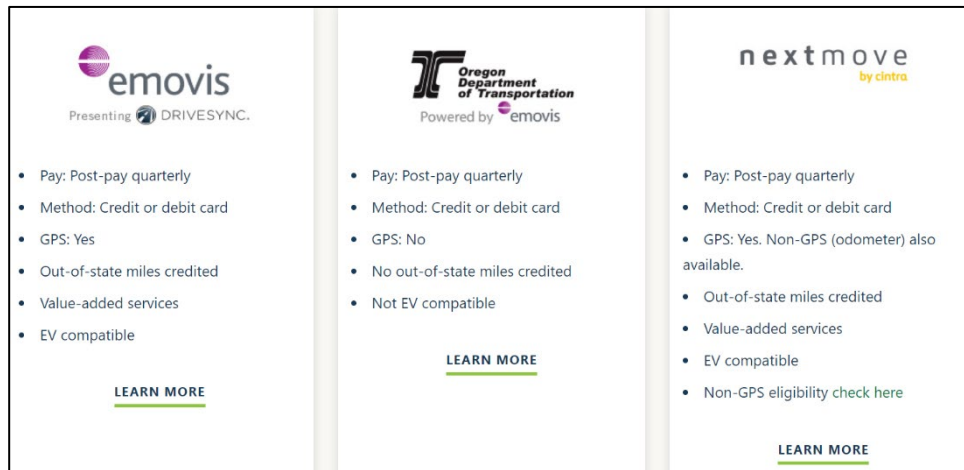


Figure # 4.2. Three different options for Oregon residents to opt in to the My OreGO program. Source: MyOreGO (2023).^c

For the GPS option, out-of-state miles are credited. By law, fuel tax credits cannot exceed road charges. The program currently is voluntary and isn't gaining much traction. About 700 people representing 2,100 vehicles have signed up as of January 2024..^{ci}

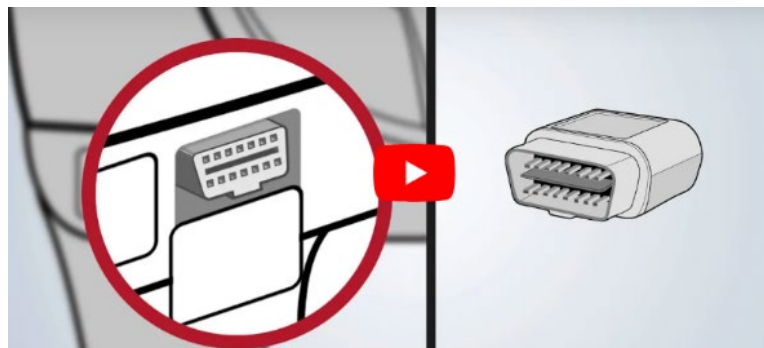


Figure #4.3. Telematics device, which interfaces with a vehicle through the OBDII port. This is a GPS odometer device that reports back via a cellular connection embedded in the device. Source: OreGO-NextMove (2023).^{cii}

STATE OF MICHIGAN

“Fix the Damn Roads”



Population estimate July 2023	10,037,261
State Budget 2024 ¹	\$81.7 billion
Light Duty EVs Registered (2022) <i>Not including PHEV or HEV</i>	33,100
State Fuel Tax – Gasoline and Diesel	\$0.286/gallon
State Fuel Retail Tax	0.06%
State Environmental Protection Fee	\$0.01/gallon
State Battery EV Additional Annual Registration Fees (2022)	
Less than or equal to 8,000 Gross Vehicle Weight (GVW)VW	\$140/year
Greater than 8,000 GVW	\$240/year

When current second-term Gov. Gretchen Whitmer ran for office in 2018, she ran on a platform to “Fix the Damn Roads.”^{ciii} Michigan has long had some of the worst roads in the country and the citizens of the state supported her vision in the polls. However, her ability to significantly move the needle has been stalled. A March 2023 study^{civ} commissioned by the Michigan Infrastructure and Transportation Association found that **the state needs up to \$3.9 billion more per year to fully fund road repairs,¹⁷ up from the \$2.2 billion annual gap projected in a 2016.** The report concludes that failing to fix and maintain existing roads before they deteriorate will increase road funding up to \$11 billion annually.

Currently, Michigan’s infrastructure is primarily funded by the fuel excise tax and a state 6% sales tax on fuels. Whitmer proposed early in her administration nearly tripling the state's gas tax by 45 cents to \$71.3 cents a gallon (the highest in the nation). This would have raised about \$2 billion per year for roads. The proposal never gained traction in the Legislature. A much more modest increase of 1.4 cents per gallon started in 2023 due to an automatic adjustment written into state law raising the state gasoline tax to 28.6 cents per gallon. The law dating back to her

¹⁷ The amount also includes funding needed for bridges, rail, and other transportation-related items.

predecessor requires the gas tax to increase each year at either 5% or the inflation rate—whichever is lower.

A separate 2022 report^{cv} found that, because Michigan’s main source of road funding comes from fuel taxes, the **state missed out on an estimated \$50 million from 2019 to 2021 from the EV transition** even though the state does charge an additional EV registration fee.

The dollar amount of the gap could be higher as this was based on a typical ICE vehicle driver in Michigan paying over \$400 in road taxes; an EV driver pays just 70-80% of that amount—between about \$262 and \$298 depending on the type of electric vehicle (e.g., BEV, PHEV, or HEV). Many ICE vehicle drivers, particularly those with pickups or SUVs, will pay more in gas taxes.

The report further states that if EV sales penetration reaches at least 15% and possibly 25% of new vehicle sales by 2030, the annual revenue shortfall in road funding because of Michigan’s transition to EVs will grow from 2019’s \$15 million deficit to one of \$67 million in 2030. **At 25% of new vehicle sales in 2030, the shortfall will be \$95 million annually** under current tax policies. **Cumulatively, by the year 2030, the road funding deficit in Michigan due to EV usage will be \$390 to \$470 million, under current policies.**

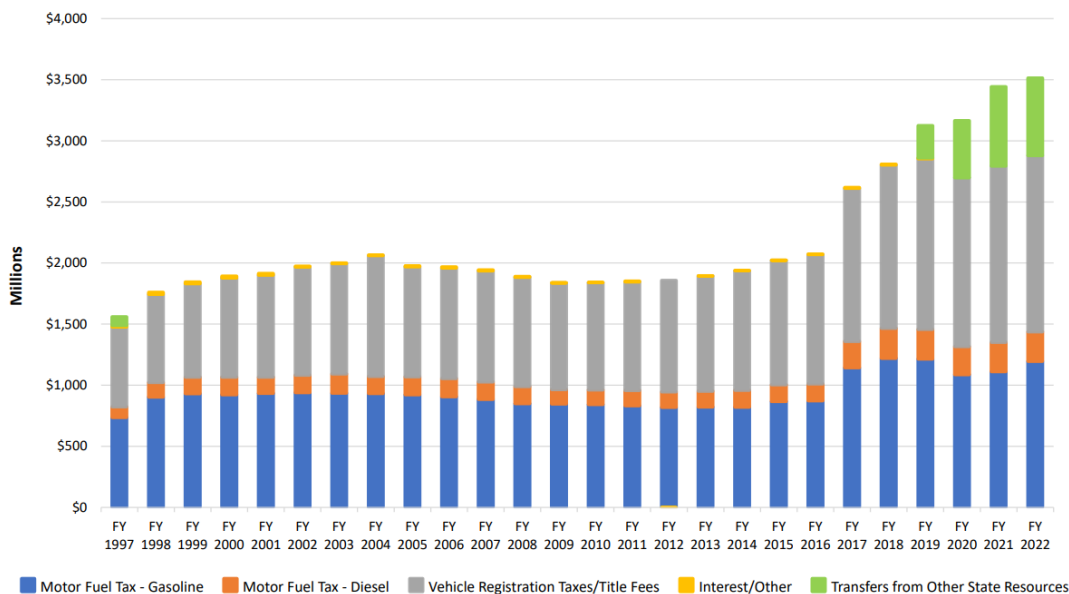


Figure #4.4. State of Michigan Motor Transportation Fund revenue by source 1997-2022. Source: State of Michigan (2022).^{cv}

To address these deficits, the state is considering piloting a VMT program. Specifically starting in fall of 2023, Michigan planned to spend more than \$5 million, of which \$2.6 million is derived from a federal grant, to survey 20,000 Michiganders regarding the potential impact of a road usage charge system.

At the same time, the state budget directs the Michigan Department of Transportation to apply for federal grant funding for a national "motor vehicle per-mile user fee pilot program" created through the \$1 trillion infrastructure bill signed by Biden in late 2021.^{cvii}

If awarded the grant, Michigan must use it "to establish a pilot program to determine the feasibility of road usage charges as a replacement for motor fuel taxes as a basis for transportation funding," according to the new state law.

At the same time of these looming budget shortfalls, the state is working to become a national leader in the EV transition by creating an "EV ecosystem." As an example, in September 2021, Whitmer announced an initiative to **develop the nation's first wireless charging infrastructure on a public road known as the Inductive Vehicle Charging Pilot**, which will create an electrified roadway system that enables vehicles to continuously charge while driving.^{cviii}

STATE OF PENNSYLVANIA



Population estimate July 2023	12,961,683
State Budget 2024 ¹	\$117.6 billion
Light-Duty EVs Registered (2022) <i>Not including PHEV or HEV</i>	47,400
State Fuel Tax – Gasoline & Gasohol Effective Jan. 1, 2024 https://www.revenue.pa.gov/Tax%20Rates/Pages/MFT%20Rates.aspx	\$0.576 /gallon
Diesel	\$0.741/gallon
State Fuel Retail Tax	0.06%
State Environmental Protection Fee	N/A
State Battery EV Registration (PROPOSED for 2024 SB 656) https://www.legis.state.pa.us/cfdocs/billInfo/billInfo.cfm?sYear=2023&sInd=0&body=S&type=B&bn=0656	\$290/year
Mileage-based user fee	Under evaluation

Seventy-five percent of the funding for Pennsylvania’s roads and highways come from the gas tax. With the third-highest number of state-maintained bridges and fifth-largest state-maintained roadway network,^{cix} the state faces a very unsustainable revenue stream to maintain transportation and mobility needs of its residents. In fact, according to the state’s Department of Transportation, as of 2022, 2,400 state-maintained bridges were rated in poor condition. The average bridge age is 50 years, and with a typical life span of approximately 75 years, the expected funding gap for highways and bridges is expected to reach \$12.6 billion by 2030.^{cx cxi}

Between March 2019 and March 2023, Pennsylvania observed a 362% increase of EVs registered in the state.^{cxii} To address the growing gap, in 2021 the state DOT prepared the *Alternative Funding: Planning and Environmental Linkages Study*,^{cxiii} which explored a variety of alternative funding sources including:

1. Sales Tax
 - a. While it explored a number of sales tax increases not directly related to transportation, it did recommend a motor vehicle sales tax increase from 6% to 6.5% that would generate an extra \$100 million to \$125 million per year.
2. Personal Income, Real Estate, and Property Tax
3. Fuel/Gas Tax
 - a. Increase by 10 cents per gallon, which would raise an additional \$250 million to \$350 million annually.
 - b. The also analyzed an additional increase to the Philadelphia Region Gasoline Sales Tax Levy 2% sales tax on gasoline, which would raise \$35 million to \$45 million annually.
4. Other Taxes and Fees
 - a. Includes a number of direct and indirect tax increases, including increasing vehicle registration fees (not specific to EVs), and a vehicle assessed value fee.
5. Road User Charges
 - a. Vehicle user's/owner's fee based on miles traveled annually at \$0.01 per mile, which could raise more than \$200 million annually.
6. Tolling
 - a. Varies by tolling locations.

More recently, the Legislature has proposed a special EV registration fee. Senate Bill 656, which was re-referred to appropriations in December of 2023, proposes a \$290 per year set fee for EVs, which would be the highest in the nation.^{cxiv} The state DOT has also recently looked at user mileage fee programs similar to those in Oregon and other states as another alternative funding mechanism. However, no detailed report exists on how cumulatively how all these programs would close the funding gap.

STATE OF TENNESSEE



Population estimate July 2023	7,126,489
State Budget 2024 ¹	\$55.6 billion
Light-Duty EV's Registered (2022) <i>Not including PHEV or HEV</i>	22,000
State Fuel Tax – Gasoline and Diesel	\$0.26/gallon
State Environmental Assurance Fee	\$0.004 per gallon
State Battery EV Additional Annual Registration Fees (2024) 2027 to 2028 www.tn.gov/content/dam/tn/revenue/documents/notices/titlereg/tr23-14.pdf	\$200/year \$274/year
Mileage-based user fee	N/A

In Tennessee, the estimated gas tax revenue and special petroleum collection for fiscal 2023 was \$939,080,000. Each cent in the tax equates to \$34.27 million per year. The revenue from the tax was allocated in the 2022-2023 budget in the following distribution:

- 10.2 cents, or \$347.95 million, goes to cities and counties.
- 0.8 cents, or \$26.7 million, goes to the state general fund.
- 16.4 cents, or \$564.5 million, goes to the Tennessee Department of Transportation (TDOT).

The \$564.5 million is included in TDOT's total state revenue of \$1,811,736,000 and is used in three basic ways to accomplish TDOT's mission:

- Resurfacing, bridges, major reconstruction, new construction, consultant contracts, right-of-way purchases, and to match federal funds
- Highway maintenance contracts
- Basic operating costs

The amount TDOT has for use each year is smaller because of TDOT's operational and maintenance cost increases each year.^{cxv}

As a state on the crossroads of Interstate 40, Tennessee is reliant on 30% to 40% of the revenues from fuel taxes coming from truckers and other out-of-state drivers.^{cxvi} This fact coupled with the continued push for greater fuel efficiency of ICEs is a cause of concern. Even if the state institutes fees for EVs registered in the state and/or added a motor vehicle registration (MVR)MVR, they would not be able to capture revenues from out-of-state drivers who use Tennessee bridges and roads.

Tennessee is also unusual in that it is just one of six states nationally that does not take on debt for road projects and the state currently has over \$34 Billion of transportation infrastructure needs.

In one effort to address the impending gap, the state passed the Transportation Modernization Act of 2023, Public Chapter 159 (2023), which increased the registration fee for EVs, and established a new registration fee for HEVs and PHEVs. **The electric and hybrid vehicle fee is in addition to the standard registration fee** and applies to both the initial registration and renewals.^{cxvii}

SECTION 5

POLICY STRATEGIES



5.0 BUDGET STRATEGIES

Our review as presented so far in this report indicates that very few states have undertaken either a high-level or detailed analysis and modeling of budget shortfalls resulting from the EV transition or, more importantly evaluated various necessary strategies to address surface transportation budget shortfalls.

5.1 Federal Strategies

At the federal level, the CBO put forward a few different options to Congress as recently as Oct. 18, 2023, including increasing both the existing 18.4 cents per gallon federal gasoline tax and 24.4 cents per gallon diesel tax by 15 cents per gallon in 2024 which indexing to inflation would increase revenues by \$250 billion more in revenues for the Highway Trust Fund between 2024-2023-eliminating the federal shortfall. The increase would be projected to raise \$250 billion more in highway trust fund revenues over the existing projections for the 2024-2033 baseline period. A negative implication would be a projected \$62 billion of reductions in payroll and income tax receipts. Additionally, the CBO estimates that, using data from 2022, an annual “federal” tax on EVs would not be effective to address the trust fund’s shortfall over the next 10 years due to the current (prior to 2024) penetration rate of EVs.^{cxviii}

5.2 State Strategies

5.2.1 Further Reduce Surface Transportation Funding

This does not offer a realistic solution due to having extensive negative impacts for the safety of drivers, as well as economic and productivity impacts for state economies and national security. Certainly, inefficiencies of state and local operations should be identified; however, that will not make a significant positive impact on budget shortfalls.

5.2.2 Transfer Money from the Treasury’s General Fund

It will take funding away from other important programs in the state and most likely would not cover the budgetary gaps over time.

5.2.3 An Annual Tax on EVs

As of the end of 2022, 33 states have enacted an annual EV registration fee on top of the basic state registration fee as presented in Figure #5.1, with the average being \$126.

Based on the most recent study (2019), the average fuel economy for all light vehicles on the road was 22.3 mpg and the average annual miles driven was 11,484 miles and based on average miles per gallon and miles driven, a person owning a gasoline vehicle in 2019 paid between \$141 and \$398 in fuel taxes, depending upon the state in which the fuel is purchased. When evaluating current and future budgetary gaps including impacts from out-of-state vehicles and trucks purchasing fuel in the state as well as additionalities such as sales tax and increased infrastructure and administrative costs, these annual EV registration fees do not keep pace. A fixed fee on EVs has also been called unfair in that it can disproportionately impact lower-income families. It also does not adjust for a ridesharing vehicle via apps such as Uber, which will have very high annual mileage and road usage versus a personal vehicle with far less usage.

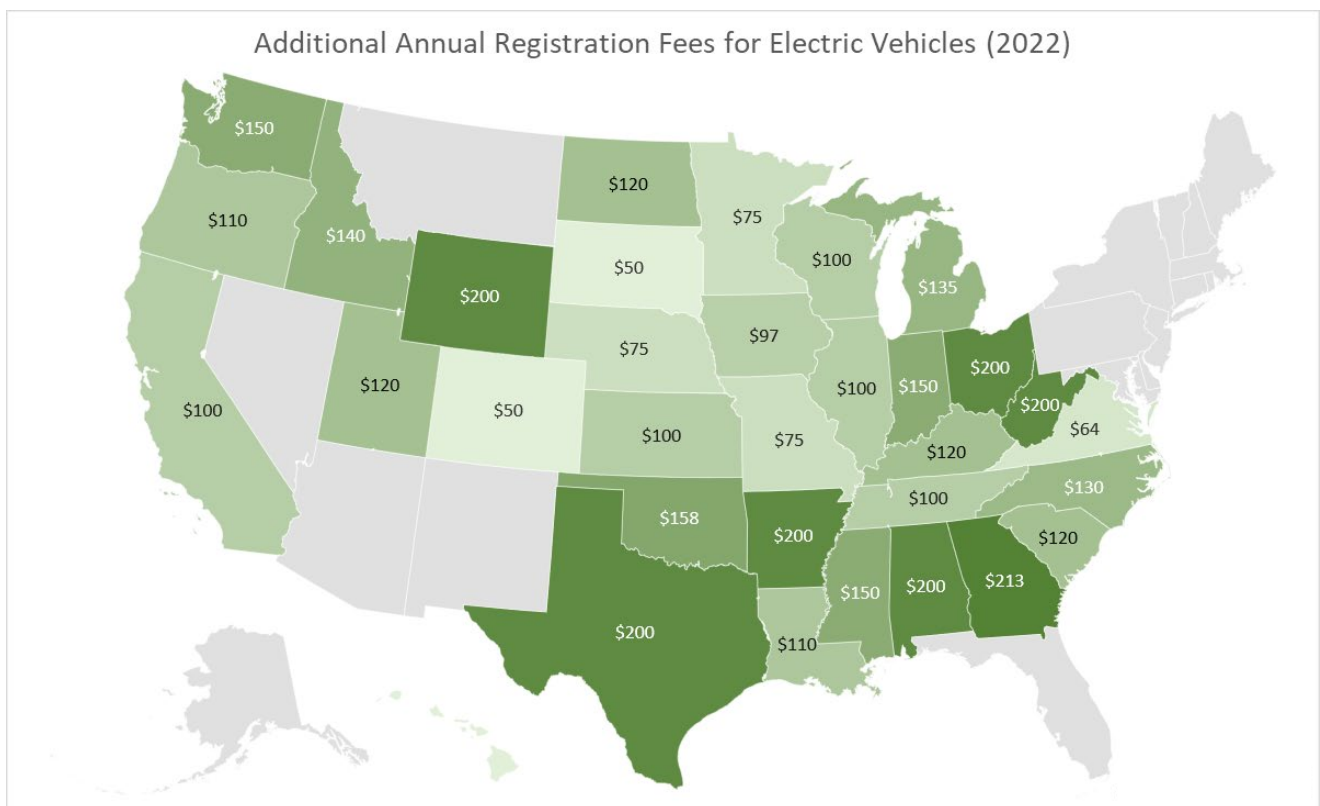


Figure #5.1. Additional annual registration fees for battery electric vehicles by state in 2022. Source: NCSL (2023).^{cxix} Note: There are various nuances to many of the state fees, such as fee variations by vehicle gross vehicle weight. For detailed documentation it is recommended to go to the referenced source site.

5.2.4 A Vehicle-Miles Traveled (VMT) Fee

In its simplest form, a VMT fee charges drivers of all types of cars, trucks, buses, and motorcycles for each mile of their use of a road or highway.

VMT is not a new idea and gained momentum in the early 2000s. Various states began pilot programs through the availability of grant funding from the federal Surface Transportation System Funding Alternatives (STSFSA) program—a Fixing America’s Surface Transportation (FAST) Act (2015) program that provided funding to state and regional entities interested in researching and piloting VMT fees—with grant recipients in California, Delaware, Hawaii, Kansas, Minnesota, Missouri, New Hampshire, Ohio, Oregon, Texas, Utah, Washington, and Wyoming. As presented in Section 4’s case studies, Oregon was the first state to pilot a VMT fee in 2006, followed by Minnesota in 2011. Oregon continued the first enacted (but optional) program in 2015. Three additional states have enacted a VMT for vehicles including Utah (see Section 4), Virginia, and Hawaii. None of these states have abandoned their gas taxes.

Because of interoperability concerns between states,¹⁸ two regional-level research and piloting entities exist in the United States: The Eastern Transportation Coalition (TETC) is a partnership of 18 states and D.C. and covers 40% of the U.S. population and 35% of the miles driven.¹⁹ RUC America serves mostly western states and Pennsylvania,²⁰ which is also part of the TETC.

At the federal level, there has been slow progress. The government was supposed to launch a pilot program funded with \$125 million designated in the Infrastructure Investment and Jobs Act (IIJA). The IIJA would replace the existing 2015 STSFSA program²¹.^{cxx}

However, as of April 2024, they the U.S. Department of Transportation’s Federal Highway Administration still has not formed a *Federal System Funding Alternative Advisory Board*. . The

¹⁸ Cooperation is needed between states to properly charge vehicle owners who traverse state lines.

¹⁹ <https://tetcoalition.org/about-us/>

²⁰ <https://www.rucwest.org/about/>

²¹ See: <https://www.fhwa.dot.gov/fastact/factsheets/surfttransfundaltfs.cfm>

call for nominations ran until Nov. 17, 2023.²² The DOT was supposed to have established the board by Feb. 13, 2022,²³ which it failed to accomplish.

5.2.4.1 VMT Drawbacks

One of the drawbacks of a VMT is that each state would need to create and operate a program to collect a VMT tax on both automobiles and commercial trucks. This includes capital costs for new equipment, but also ongoing administrative and enforcement costs that are likely to be higher than the costs to administer fuel taxes. Currently the fuel tax programs being implemented are being done at a relatively low cost because they are collected from a small number of firms. A VMT tax would be collected from car and truck owners and thus would have a share of its gross revenues offset by implementation and enforcement costs.

Another significant consideration is that a VMT is easier to implement for personal and local commercial vehicles registered in the given state. The **complexities arise for the use of state roads, highways and bridges by out-of-state automobile drivers and commercial trucks.**

Finally, while commercial truck drivers are used to being tracked by GPS, the average American might have initial concerns with a device in their vehicles tracking their movements to appropriately charge for mileage. Some of these concerns could be tempered by the ubiquitous usage of cellular phones which currently can track locations by GPS.

5.2.5 Commercial Vehicle VMT

In addition to passenger car VMT programs, **states need to evaluate how the electrification of commercial vehicles** (truck tractor-trailers) will affect diesel fuel tax revenues. The CBO considered the effects on revenues of several possible formulations of a VMT tax on commercial vehicles. One example, updated for 2022 truck traffic volumes, found that if a tax of 5 cents per mile traveled by trucks had been in place in 2022, it would have generated between \$5 billion and \$15 billion in revenues that year, depending on the types of trucks and roads that the tax

²² <https://www.federalregister.gov/documents/2023/10/03/2023-21745/request-for-nominations-for-the-federal-system-funding-alternative-advisory-board-to-the-federal>

²³ <https://afdc.energy.gov/laws/12737>

applied. If a per-mile tax had been applied to all commercial trucks (including box trucks and large pickup trucks) **on all roads**, not just highways, **each additional cent of tax would have generated \$3 billion that year.** ^{cxxi cxxii}

5.2.6 Increase and Expand Highway and Road Tolling

Another option would be for states to expand the volume of surface roads and highways as well as bridges that would charge a toll to use. This approach would also require substantial upfront capital expenditures for monitoring equipment, software as well as administrative costs for enforcement, collection, and overall program management. Additionally, this option would likely face constituent concerns and would take time for the rollout to equitably distribute revenue collection by road/highway use.

It would, however, capture road, highway, and bridge usage by out-of-state drivers of automobiles and trucks that otherwise might not be captured.

5.3 Policy Strategies

Strategy	Description	Trade-Offs	Adopters
Model Surface Transportation Budget Shortfalls	While it seems intuitive, most state governments have not undertaken detailed modeling of how the EV transition will impact both revenues through the loss of fuel tax as well as increased expenditures due to the infrastructure required to support the EV transition.		<ul style="list-style-type: none"> California Michigan Rhode Island New York All take different forms of depth.
Quantify Fuel Tax Revenues Derived From Out-of-State Automobiles and Truckers	All states should quantify the current percentage of fuel tax revenues obtained from nonresident vehicles. As detailed in this report, Tennessee provides a strong example of modeling this variable due to its importance as 30% to 40% of Tennessee's current fuel tax is paid by truckers and other out-of-state drivers.		
Road User Charge Road usage charging (RUC) is also referred to as <ul style="list-style-type: none"> distance-based user fees (DBUF), Vehicle-miles traveled tax (VMTT), Mileage-based user fees (MBUF).	<ul style="list-style-type: none"> Car owners are charged for their use of a road system based on how many miles they travel. On-board GPS unit placed in the vehicle to track miles or, Annual reporting of miles similar to annual safety inspection. 	<ul style="list-style-type: none"> Fairly easy to implement. Federal government is providing funding grants for state pilot projects. Requires developing a new administrative program including contracting with vendors, which establishes new state expenditures. Will require working with citizens who may be hesitant to have state/third party track movement of vehicles. Direct taxation on road usage Will not capture nonresident usage of state highways, roads, and bridges. 	The following states are piloting projects or have implemented programs: <ul style="list-style-type: none"> Washington California Colorado Delaware Hawaii Oregon Pennsylvania Minnesota
EV Annual Registration Fee	<ul style="list-style-type: none"> An annual charge for EVs and other ZEVs. Many times, this fee is in addition to an annual registration fee. 	<ul style="list-style-type: none"> Likely will not fully fund the revenue gaps from the EV transition and/or overall surface transportation budget gaps. Some constituents and policymakers view this as a means to deter EV registrations/ownership in their state. A flat registration fee does not account for varying weight of different types of EV vehicles and models. 	<ul style="list-style-type: none"> 33 states have some form of annual EV additional fees.

Increase Existing Fuel Tax	<ul style="list-style-type: none"> States would increase the state-specific gasoline/gasohol/diesel fuel taxes on top of the federal fuel taxes. 	<ul style="list-style-type: none"> Generally strong pushback from constituents. Over time, places greater financial burden on drivers of legacy ICE cars and trucks. Revenues would diminish as ICE vehicles continue to increase miles-per-gallon performance. 	
Electricity Sales Tax	<ul style="list-style-type: none"> Users of EV charging units would pay a tax on the electricity used. Measures road usage on the basis of units of electricity used. 	<ul style="list-style-type: none"> Does not cause privacy concerns found in a RUC program. Requires further research on efficient and cost-effective implementation. 	<ul style="list-style-type: none"> Georgia will require stations collect a tax for every 11 kilowatt-hours (effective January 2025). Iowa imposes a \$0.026 per-kWh tax on public EV charging stations. Kentucky imposes a tax of \$0.03/ kWh on EV power distributed. Montana imposes a tax of \$0.03 / kWh. Utah imposes a tax on retail sales at charging stations.
Dramatically Expand Tolling in States	<ul style="list-style-type: none"> Expand the number of miles of state highways and roads /bridges that will charge tolls. 	<ul style="list-style-type: none"> Technology is readily available. Would require capital investments for sensors. Would need to overcome driver and constituent concerns. 	<ul style="list-style-type: none"> N/A

Table #5-1. EV Budget Gap Strategies.

SECTION 6 APPENDICIES



(THOUSANDS OF DOLLARS)													
STATE	CAPITAL OUTLAY				MAINTENANCE AND SERVICES				ADMINISTRATION AND MISCELLANEOUS	HIGHWAY LAW ENFORCEMENT AND SAFETY	INTEREST	BOND RETIREMENT (2)	TOTAL DISBURSEMENTS
	STATE ADMINISTERED HIGHWAYS	LOCALLY ADMINISTERED ROADS	FEDERAL ROADS AND UNCLASSIFIED	TOTAL	STATE ADMINISTERED HIGHWAYS	LOCALLY ADMINISTERED ROADS	FEDERAL ROADS AND UNCLASSIFIED	TOTAL					
Alabama	1,353,775	203,637	-	1,357,412	59,733	453,602	-	513,335	573,009	319,134	16,632	85,878	2,865,400
Alaska	600,940	126,962	-	735,910	200,449	174,472	-	454,921	83,923	153,551	14,973	33,405	1,476,763
Arizona	1,084,251	680,107	-	1,764,358	156,927	548,889	-	705,816	417,984	191,286	189,981	299,463	3,567,888
Arkansas	1,025,919	280,448	-	1,306,367	202,786	353,465	-	556,251	286,797	284,182	42,583	100,021	2,556,201
California	5,166,858	4,731,224	-	9,898,082	2,697,634	3,916,536	-	6,613,570	694,100	4,618,333	1,235,236	546,065	23,595,386
Colorado	1,283,453	1,322,774	-	2,606,177	583,059	906,630	-	1,589,689	387,261	248,976	131,589	(53,820)	4,889,873
Connecticut	943,260	383,400	-	1,326,660	269,941	591,591	-	861,522	122,415	65,258	294,534	382,935	3,043,324
Delaware	497,435	5,441	-	502,876	437,064	20,987	-	458,051	390,749	142,341	61,502	169,202	1,724,721
Dist. of Col.	-	458,838	-	458,838	125,428	8,908	-	134,336	24,665	-	-	58,585	668,424
Florida	6,588,232	1,818,544	-	8,306,776	1,300,982	1,290,652	-	2,591,634	882,733	1,146,855	688,310	581,030	14,278,338
Georgia	1,782,623	741,621	-	2,524,244	683,891	395,964	-	1,079,855	413,091	468,126	45,073	182,151	4,622,836
Hawaii	266,020	175,784	-	441,804	58,570	85,636	-	144,206	108,444	46,549	60,513	87,936	889,452
Idaho	511,559	236,850	-	748,409	129,898	255,973	-	385,170	74,582	37,169	27,982	34,159	1,307,491
Illinois	4,239,202	769,280	-	5,008,486	888,147	1,332,843	-	2,220,990	728,296	1,132,639	379,629	597,787	10,067,807
Indiana	1,842,803	587,331	10	2,430,144	926,153	660,846	-	1,586,999	445,910	13,693	43,188	123,439	4,643,703
Iowa	1,224,020	618,391	-	1,842,321	285,942	785,858	-	1,071,800	176,422	147,058	5,448	129,344	3,352,394
Kansas	676,149	430,913	-	1,107,062	197,425	388,046	-	585,501	182,008	344,659	125,875	285,076	2,640,181
Kentucky	1,379,455	275,380	59	1,654,904	484,352	516,685	-	1,001,017	52,957	97,993	142,856	171,075	3,119,982
Louisiana	971,945	85,386	-	1,057,341	494,801	151,245	-	646,046	85,018	114,297	154,919	104,246	2,128,167
Maine	597,663	120,439	-	718,102	253,089	361,916	-	615,005	130,187	32,476	73,382	23,625	1,601,777
Maryland	1,580,609	670,688	-	2,251,297	297,688	403,724	-	701,392	885,142	504,103	297,226	480,155	4,429,315
Massachusetts	877,552	654,190	-	1,531,742	313,006	1,482,450	-	1,895,456	725,266	522,929	553,248	633,127	5,801,778
Michigan	1,505,939	2,401,609	-	3,907,627	415,428	1,289,361	-	1,704,789	238,596	263,636	65,636	383,581	6,493,865
Minnesota	1,265,830	1,473,827	-	2,739,657	572,643	1,838,384	-	2,411,027	352,356	512,161	127,393	218,996	5,561,590
Mississippi	689,563	208,551	-	898,114	115,318	323,776	-	439,094	73,030	47,217	68,647	145,539	1,673,641
Missouri	1,026,738	522,356	-	1,549,114	515,111	647,283	-	1,162,394	283,539	422,484	88,571	189,889	3,625,161
Montana	585,442	148,671	-	734,113	138,177	233,380	-	371,557	98,553	126,412	3,634	24,837	1,349,106
Nebraska	638,239	315,887	-	954,046	164,481	159,195	-	323,676	161,153	108,342	35,797	-	1,583,014
Nevada	486,705	645,547	-	1,132,252	175,074	78,133	-	253,207	493,581	142,060	185,332	88,838	2,295,270
New Hampshire	283,372	91,283	-	374,655	99,417	155,725	-	255,142	223,468	129,653	94,615	83,929	1,161,462
New Jersey	2,760,187	687,306	-	3,447,493	761,752	885,088	-	1,646,840	270,315	1,280,489	1,454,478	1,417,533	9,538,708
New Mexico	474,163	182,021	-	656,184	49,221	108,216	-	157,437	419,896	176,169	64,225	152,585	1,636,497
New York	4,274,851	4,472,373	-	8,747,224	2,123,549	2,579,126	-	4,702,675	1,370,105	644,875	1,448,224	2,120,212	19,033,315
North Carolina	4,538,684	418,596	-	4,957,280	775,541	301,709	-	1,077,250	418,708	378,746	199,118	583,521	7,554,623
North Dakota	372,599	335,379	-	707,978	30,814	165,393	-	196,207	40,559	40,850	22,578	11,061	1,019,233
Ohio	2,223,112	1,322,745	-	3,545,857	585,865	1,269,194	-	1,775,059	594,894	872,321	196,594	340,956	7,325,581
Oklahoma	1,491,475	296,796	-	1,788,271	759,705	360,300	-	1,120,005	406,363	295,034	131,313	182,288	3,933,274
Oregon	1,218,205	487,758	-	1,706,963	301,388	444,289	-	745,687	311,067	191,205	130,056	132,001	3,216,979
Pennsylvania	3,719,359	6,277,900	-	9,997,259	1,659,245	2,640,359	-	4,299,604	1,121,544	1,330,781	833,075	1,413,880	18,996,143
Rhode Island	482,173	43,802	-	525,975	119,949	26,582	-	146,451	45,039	39,585	25,772	90,623	793,445
South Carolina	2,109,887	781,937	-	2,891,844	440,414	353,334	-	793,748	140,587	99,788	33,985	46,246	4,085,388
South Dakota	445,520	220,014	-	665,534	89,347	208,644	-	297,991	131,373	104,884	1,341	23,643	1,224,586
Tennessee	1,369,145	282,947	26	1,652,118	383,889	352,819	-	736,708	357,787	129,883	8,765	10,645	2,815,206
Texas	11,374,193	4,153,347	-	15,527,540	2,107,446	3,569,816	-	5,677,262	815,338	1,678,432	2,343,982	1,685,758	27,640,394
Utah	1,160,963	252,629	-	1,413,592	299,291	278,822	-	578,113	182,582	138,557	83,347	331,620	2,667,731
Vermont	216,302	135,357	-	351,659	119,344	147,977	-	267,321	122,577	84,539	5,594	7,054	838,654
Virginia	1,782,628	424,489	1	2,217,128	1,519,246	828,662	-	2,347,908	644,871	1,020,880	259,817	342,237	6,832,761
Washington	1,801,997	1,268,212	-	3,062,209	1,019,178	794,683	-	1,813,871	977,572	447,929	33,749	743,270	7,018,600
West Virginia	1,383,312	44,885	-	1,428,197	544,886	147,325	-	692,251	125,517	261,906	65,077	58,434	2,641,382
Wisconsin	1,545,682	1,088,118	-	2,643,810	283,363	991,888	-	1,285,261	315,582	608,066	276,037	764,463	5,893,219
Wyoming	430,059	412,315	-	842,374	113,023	62,697	-	175,720	43,308	225,035	-	79	1,286,516
Undistributed	-	-	442,844	442,844	-	-	-	249,899	2,691,640	-	-	-	3,384,382
Total	85,888,285	44,789,168	442,940	131,040,313	27,280,681	35,629,043	249,899	63,169,623	28,461,389	22,483,097	12,875,742	16,388,524	286,388,687

Note: Disbursements are classified by the system on which expended, rather than by expending agencies, e.g., capital outlay on local rural roads includes expenditures from federal, state and local funds. Data includes estimates.

Appendix A: Total Disbursements for Highways for All Units of Government for 2020. Source: Federal Highway Administration. Highway Statistics Series^{cxxiii}

Appendix B: State Tax Collections Detailed Table (Abridged by Author): Nationally and by Individual States 2021.
 Source: U.S. Census Bureau (2023)^{cxxiv}

Tax Type	Item	United States	Alabama	Alaska	Arizona	Arkansas	California	Colorado	Connecticut	Delaware	DC	Florida	Georgia	Hawaii	Idaho
Total Taxes	T00	1,276,463,121	14,251,329	1,053,400	20,727,013	11,726,678	252,484,345	18,817,848	22,066,648	5,395,710	8,997,707	49,305,384	27,850,996	8,046,691	6,472,467
Property Taxes	T01	23,357,063	468,015	120,028	1,266,990	1,308,040	3,151,488	X	X	X	2,994,580	X	732,325	X	X
Sales and Gross Receipts Taxes	TA1	553,941,713	7,014,522	267,842	11,200,305	5,752,828	64,367,044	6,572,936	8,148,270	587,923	1,646,672	38,522,113	10,257,930	4,147,624	3,180,226
General Sales and Gross Receipts Taxes	T09	373,991,982	3,912,037	X	9,094,366	4,187,473	45,149,150	3,660,590	5,252,683	X	1,201,346	29,873,668	6,948,296	3,296,268	2,516,997
Selective Sales and Gross Receipts Taxes	TA2	179,949,731	3,102,485	267,842	2,105,939	1,565,355	19,217,894	2,912,346	2,895,587	587,923	445,326	8,648,445	3,309,634	851,356	663,229
Alcoholic Beverages Sales Tax	T10	7,561,699	272,021	41,126	89,138	68,024	411,969	53,433	79,109	32,719	6,197	338,642	227,872	45,178	10,980
Motor Fuels Sales Tax	T13	51,556,889	878,038	44,754	844,828	588,223	7,659,320	618,724	469,851	124,842	23,638	2,873,845	1,781,682	70,796	405,050
Motor Fuels Sales Tax as % of Total Taxes		4.04%	6.16%	4.25%	4.08%	5.02%	3.03%	3.29%	2.13%	2.31%	0.26%	5.83%	6.40%	0.88%	6.26%
Public Utilities Sales Tax	T15	12,180,579	663,891	4,361	22,226	X	652,621	X	256,751	45,518	167,152	1,682,256	X	125,221	1,961
Tobacco Products Sales Tax	T16	19,145,111	170,998	61,181	294,155	233,224	1,969,795	227,872	322,806	115,700	22,185	1,100,091	242,897	108,529	48,796
Other Selective Sales and Gross Receipts Taxes	T19	54,448,088	645,263	39,382	174,980	293,212	5,388,443	1,548,697	1,351,016	145,781	90,467	986,396	519,077	310,116	76,479
License Taxes	TA3	65,374,980	606,351	153,176	618,052	423,851	11,292,132	720,335	387,836	2,076,828	201,008	2,500,455	750,136	258,953	473,872
Income Taxes	TA4	596,421,713	6,043,093	124,987	7,438,706	4,085,598	172,421,856	11,524,577	12,866,247	2,483,094	3,506,270	3,407,190	15,971,641	3,546,116	2,809,422
Individual Income Taxes	T40	506,243,040	4,908,837	X	6,532,753	3,467,141	146,324,579	10,246,531	10,259,183	2,148,289	2,643,213	X	14,220,906	3,354,690	2,457,943
Corporations Net Income Taxes	T41	90,178,673	1,134,256	124,987	905,953	618,457	26,097,277	1,278,046	2,607,064	334,805	863,057	3,407,190	1,750,735	191,426	351,479

Tax Type	Item	Illinois	Indiana	Iowa	Kansas	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana
Total Taxes	T00	55,531,962	26,645,852	11,816,502	11,615,757	14,626,499	12,257,234	5,452,250	25,220,541	36,336,125	34,431,625	31,793,412	9,353,158	15,091,423	3,880,366
Property Taxes	T01	59,589	13,876	2,024	815,701	707,461	103,750	44,636	893,215	10,368	2,396,416	809,160	29,885	37,418	334,759
Sales and Gross Receipts Taxes	TA1	23,486,335	13,847,723	5,522,117	4,970,129	7,088,138	6,853,513	2,629,517	10,587,203	10,427,871	15,925,763	11,204,458	5,657,362	5,945,293	768,499
General Sales and Gross Receipts Taxes	T09	13,429,355	9,282,907	4,002,493	3,767,434	4,558,439	4,048,616	1,909,696	5,458,909	7,785,108	11,190,298	6,698,560	4,230,391	4,119,671	X
Selective Sales and Gross Receipts Taxes	TA2	10,056,980	4,564,816	1,519,624	1,202,695	2,529,699	2,804,897	719,821	5,128,294	2,642,763	4,735,465	4,505,898	1,426,971	1,825,622	768,499
Alcoholic Beverages Sales Tax	T10	312,101	58,542	29,798	148,735	174,267	79,279	18,461	38,941	93,206	235,383	101,472	45,761	46,316	46,484
Motor Fuels Sales Tax	T13	2,383,666	1,545,597	673,571	445,472	699,875	639,727	231,938	1,025,338	662,932	1,336,795	844,730	449,814	696,002	274,353
Motor Fuels Sales Tax as % of Total Taxes		4.29%	5.80%	5.70%	3.84%	4.78%	5.22%	4.25%	4.07%	1.82%	3.88%	2.66%	4.81%	4.61%	7.07%
Public Utilities Sales Tax	T15	1,276,429	207,932	78,826	312	81,185	9,250	21,732	144,260	X	38,425	95,402	1,874	X	41,015
Tobacco Products Sales Tax	T16	917,043	410,363	200,579	123,410	420,634	268,752	144,593	388,243	398,214	886,370	626,480	140,868	99,418	73,677
Other Selective Sales and Gross Receipts Taxes	T19	3,765,186	1,497,997	49,883	33,768	935,079	111,228	156,641	1,738,046	725,248	1,729,045	2,052,993	276,090	181,509	77,454
License Taxes	TA3	3,818,851	819,109	1,101,447	457,796	535,774	477,174	325,922	969,440	1,274,252	2,178,822	1,505,670	570,447	691,696	481,678
Income Taxes	TA4	27,600,197	11,964,087	5,060,175	5,344,578	6,138,893	4,520,855	2,359,590	12,026,945	23,356,481	13,495,663	17,593,996	3,065,829	8,402,368	2,157,888
Individual Income Taxes	T40	21,870,696	10,578,929	4,266,534	4,617,143	5,212,818	3,933,108	2,075,273	10,186,240	19,683,486	11,999,165	15,170,613	2,515,630	7,715,511	1,889,444
Corporations Net Income Taxes	T41	5,729,501	1,385,158	793,641	727,435	926,075	587,747	284,317	1,840,705	3,672,995	1,496,498	2,423,383	550,199	686,857	268,444

Tax Type	Item	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming
Total Taxes	T00	19,977,968	65,793,899	12,631,617	4,102,929	32,328,105	32,717,084	6,046,197	22,300,850	1,874,876
Property Taxes	T01	X	X	X	1,203,059	43,332	4,350,245	8,122	95,757	295,925
Sales and Gross Receipts Taxes	TA1	14,492,861	56,646,008	4,803,232	1,247,617	11,719,392	24,013,256	2,968,554	9,184,622	927,089
General Sales and Gross Receipts Taxes	T09	11,060,457	40,413,873	3,628,512	507,259	6,527,477	19,056,609	1,537,245	6,373,483	734,785
Selective Sales and Gross Receipts Taxes	TA2	3,432,404	16,232,135	1,174,720	740,358	5,191,915	4,956,647	1,431,309	2,811,139	192,304
Alcoholic Beverages Sales Tax	T10	210,708	1,267,217	17,880	12,035	295,471	472,949	17,304	73,778	2,238
Motor Fuels Sales Tax	T13	1,210,808	3,596,892	534,738	109,548	1,421,963	1,518,342	399,542	1,123,970	111,244
Motor Fuels Sales Tax as % of Total Taxes		6.06%	5.47%	4.23%	2.67%	4.40%	4.64%	6.61%	5.04%	5.93%
Public Utilities Sales Tax	T15	8,894	725,767	54,890	9,576	495,749	611,339	126,206	354,279	4,592
Tobacco Products Sales Tax	T16	242,926	1,397,304	106,633	77,473	287,856	386,660	171,187	604,097	21,553
Other Selective Sales and Gross Receipts Taxes	T19	625,892	6,522,826	294,584	468,383	2,134,314	1,282,554	568,575	428,437	3,364
License Taxes	TA3	2,333,130	4,058,458	371,684	143,501	995,094	2,072,634	196,902	1,340,711	212,497
Income Taxes	TA4	2,743,837	X	7,418,368	1,399,998	18,645,899	X	2,574,275	11,553,157	X
Individual Income Taxes	T40	179,379	X	6,672,695	1,233,157	17,066,596	X	2,253,788	9,035,988	X
Corporations Net Income Taxes	T41	2,564,458	X	745,673	166,841	1,579,303	X	320,487	2,517,169	X

Tax Type	Item	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota
Total Taxes	T00	6,960,988	10,416,344	3,317,286	43,683,029	7,528,261	93,503,736	34,716,787	3,908,672	34,909,388	11,299,244	17,782,462	49,634,346	4,344,340	13,286,248	2,149,543
Property Taxes	T01	123	386,450	401,407	5,166	114,185	X	X	5,207	X	X	25,127	40,395	3,864	78,975	X
Sales and Gross Receipts Taxes	TA1	3,040,622	8,392,630	1,043,942	17,871,986	3,848,402	27,164,353	14,568,680	1,426,888	22,148,518	4,975,670	2,365,830	24,475,645	2,131,988	6,119,790	1,783,982
General Sales and Gross Receipts Taxes	T09	2,382,381	6,179,597	X	12,803,267	2,971,970	15,612,861	9,717,598	919,915	14,393,197	3,116,195	X	13,717,681	1,334,931	4,154,363	1,273,575
Selective Sales and Gross Receipts Taxes	TA2	658,241	2,213,033	1,043,942	5,068,719	876,432	11,551,492	4,851,082	506,973	7,755,321	1,859,475	2,365,830	10,757,964	797,057	1,965,427	510,407
Alcoholic Beverages Sales Tax	T10	35,338	44,690	13,701	174,692	24,359	271,087	533,809	9,612	118,746	146,821	18,086	445,401	22,112	208,490	20,021
Motor Fuels Sales Tax	T13	415,141	351,627	171,513	386,173	255,868	1,465,180	2,113,248	173,157	2,524,431	571,408	619,333	3,031,113	130,104	838,264	189,881
Motor Fuels Sales Tax as % of Total Taxes		5.96%	3.38%	5.17%	0.88%	3.40%	1.57%	6.09%	4.43%	7.23%	5.06%	3.48%	6.11%	2.99%	6.31%	8.83%
Public Utilities Sales Tax	T15	53,973	37,518	40,436	935,252	34,757	792,610	233	53,465	1,036,909	47,701	18,564	994,326	93,449	28,258	3,236
Tobacco Products Sales Tax	T16	55,790	185,039	253,579	601,614	95,230	1,006,782	307,357	26,108	928,292	463,457	377,921	1,292,064	158,682	28,306	52,328
Other Selective Sales and Gross Receipts Taxes	T19	22,081	340,603	422,686	2,023,002	162,039	5,922,833	1,171,212	164,174	2,256,603	157,465	1,273,625	2,378,052	229,443	552,152	143,713
License Taxes	TA3	194,771	623,260	522,670	1,986,338	351,974	1,793,375	2,599,730	210,333	2,029,060	1,085,111	2,482,547	2,955,413	137,010	707,027	300,687
Income Taxes	TA4	3,701,819	X	1,136,978	22,793,255	1,351,634	59,950,819	17,423,701	604,162	10,668,765	4,368,893	12,480,427	20,023,246	2,015,621	6,196,557	53,960
Individual Income Taxes	T40	3,130,599	X	127,003	16,833,495	1,198,906	54,996,670	15,908,051	448,704	10,662,810	3,767,669	11,256,904	15,977,933	1,757,678	5,456,360	X
Corporations Net Income Taxes	T41	571,220	X	1,009,975	5,959,760	152,728	4,954,149	1,515,650	155,458	5,955	601,224	1,223,523	4,045,313	257,943	740,197	53,960

Appendix C: Public Road Length in the United States and By State for 2021. Source: Federal Highway Administration (2023).^{cxxv}

STATE	RURAL								URBAN								TOTAL
	INTERSTATE	OTHER FREEWAYS AND EXPRESSWAYS	OTHER PRINCIPAL ARTERIAL	OTHER MINOR ARTERIAL	MAJOR COLLECTOR	MINOR COLLECTOR	LOCAL	TOTAL	INTERSTATE	OTHER FREEWAYS AND EXPRESSWAYS	OTHER PRINCIPAL ARTERIAL	OTHER MINOR ARTERIAL	MAJOR COLLECTOR	MINOR COLLECTOR	LOCAL	TOTAL	
Alabama	571	-	2,051	3,947	12,297	5,924	45,389	70,178	433	33	1,294	2,378	3,625	219	22,017	29,999	100,177
Alaska	1,002	-	799	431	1,370	1,439	9,528	14,569	79	-	140	201	252	236	2,215	3,122	17,690
Arizona	916	19	1,263	2,186	3,336	2,970	32,470	43,160	252	251	855	2,539	2,812	2,667	22,248	31,623	74,783
Arkansas	496	72	1,877	3,063	11,817	6,749	58,057	82,129	272	97	632	1,828	2,173	240	11,961	17,203	99,332
California	1,208	408	3,396	6,271	12,489	7,685	43,484	74,942	1,248	1,488	6,697	10,556	12,834	223	69,313	102,358	177,300
Colorado	648	28	2,569	3,474	5,457	8,824	47,275	68,274	304	325	1,068	1,809	1,856	67	15,683	21,111	89,385
Connecticut	29	36	122	218	861	419	3,872	5,556	318	244	712	1,672	1,818	318	10,725	15,807	21,363
Delaware	-	36	104	90	395	256	2,004	2,885	41	32	210	224	412	69	2,671	3,659	6,544
District of Columbia	-	-	-	-	-	-	-	-	12	16	107	164	155	-	1,065	1,520	1,520
Florida	717	175	2,618	2,192	4,023	3,203	23,496	36,424	778	602	3,953	4,231	6,469	1,881	69,313	87,228	123,652
Georgia	538	-	2,431	4,662	11,659	6,706	49,080	75,078	709	174	2,352	4,814	3,712	729	38,132	50,623	125,701
Hawaii	-	-	78	258	220	82	1,025	1,663	55	34	269	192	263	190	1,850	2,852	4,515
Idaho	521	40	1,716	1,466	5,923	3,699	32,031	45,395	93	18	433	663	764	12	6,654	8,636	54,031
Illinois	1,243	48	2,363	4,786	11,628	4,716	71,409	96,194	942	118	2,889	4,193	4,847	1,553	35,261	49,803	145,997
Indiana	792	154	1,948	2,077	9,765	7,636	43,896	66,266	492	158	1,730	3,088	3,384	838	21,871	31,561	97,827
Iowa	611	-	3,426	3,911	14,259	15,995	63,797	101,999	176	-	923	1,678	1,351	0	8,750	12,879	114,878
Kansas	640	402	2,630	4,255	22,427	9,392	85,710	125,456	236	198	308	1,358	1,771	464	9,390	13,725	139,181
Kentucky	711	398	1,249	2,328	5,870	9,348	45,059	64,963	233	64	636	1,358	1,387	406	10,855	14,939	79,902
Louisiana	529	34	1,010	1,904	4,946	3,370	30,781	42,575	406	117	1,020	1,892	2,408	1,109	16,390	23,343	65,918
Maine	279	3	792	941	3,272	2,084	12,230	19,601	87	16	130	244	472	103	2,186	3,237	22,838
Maryland	142	69	322	713	1,303	1,701	9,193	13,443	336	308	1,025	1,580	1,853	545	13,416	19,063	32,507
Massachusetts	63	10	105	313	865	617	4,215	6,187	504	324	1,966	4,024	3,070	-	20,754	30,643	36,830
Michigan	562	343	2,130	4,887	16,378	4,240	55,447	83,987	676	354	2,363	4,943	3,923	126	25,671	38,057	122,044
Minnesota	588	34	3,469	6,612	15,717	12,047	80,482	118,948	325	220	627	2,491	2,383	1,706	16,162	23,914	142,862
Mississippi	578	-	1,784	3,754	11,939	2,303	44,075	64,433	253	64	963	1,094	1,581	10	9,125	13,082	77,514
Missouri	847	1,125	1,885	4,008	16,231	6,257	77,563	107,916	538	494	872	2,150	2,325	397	18,016	24,792	132,708
Montana	1,095	-	2,773	2,848	6,882	8,821	46,833	69,252	98	-	292	256	403	54	3,215	4,317	73,569
Nebraska	415	332	2,338	4,180	11,363	8,757	59,932	87,317	69	130	326	868	652	70	5,967	8,081	95,397
Nevada	457	-	1,519	726	2,259	2,406	29,348	36,715	162	55	379	893	49	1,201	7,738	10,477	47,191
New Hampshire	142	9	323	625	1,041	1,065	7,924	11,129	83	74	223	491	541	-	3,686	5,098	16,228
New Jersey	45	35	160	307	775	338	3,699	5,358	387	453	1,799	3,631	2,922	402	23,830	33,424	38,781
New Mexico	844	-	1,916	2,277	4,515	3,132	48,223	60,907	155	12	702	742	851	314	8,496	11,272	72,179
New York	806	184	2,106	2,845	5,642	9,294	43,400	64,276	939	815	3,179	5,510	5,532	260	33,892	50,126	114,402
North Carolina	565	422	1,634	3,058	7,490	6,023	46,739	65,931	798	454	2,004	3,443	3,372	474	31,598	42,143	108,074
North Dakota	510	-	2,946	2,527	12,148	-	67,362	85,493	61	-	207	313	338	-	1,999	2,919	88,412
Ohio	643	335	1,530	2,654	11,023	6,294	52,240	74,718	935	585	2,449	3,976	5,362	616	34,146	48,069	122,788
Oklahoma	649	15	2,249	2,675	21,050	3,004	66,523	96,166	283	203	1,177	2,263	1,552	137	13,510	19,126	115,293
Oregon	495	-	2,657	2,225	8,172	7,944	42,798	64,291	234	69	857	1,288	2,115	531	10,032	15,126	79,417
Pennsylvania	1,066	360	1,628	4,404	7,166	6,978	50,772	72,375	797	556	2,878	4,066	5,851	24	34,349	48,522	120,897
Rhode Island	18	11	97	72	172	152	841	1,363	52	81	343	340	542	35	3,267	4,661	6,025
South Carolina	546	46	1,541	2,985	10,011	2,027	37,608	54,765	304	82	1,076	1,771	2,816	79	18,306	24,435	79,200
South Dakota	591	291	2,591	2,961	12,462	6,127	52,997	78,019	88	15	134	447	341	-	2,245	3,270	81,289
Tennessee	645	26	1,912	2,847	4,964	9,647	44,310	64,350	179	199	1,959	2,548	2,545	1,030	23,151	31,969	96,319
Texas	2,003	129	8,953	9,967	35,198	14,805	136,544	207,599	1,464	1,426	5,731	8,540	16,149	1,131	80,113	114,554	322,153
Utah	685	12	1,191	1,293	3,243	3,477	26,372	36,272	253	64	670	681	1,119	563	9,286	12,636	48,908
Vermont	256	1	329	734	1,984	891	8,554	12,748	64	15	128	148	248	32	863	1,500	14,248
Virginia	593	98	1,643	3,601	7,442	4,953	30,362	48,693	526	359	1,349	2,279	2,569	765	19,119	26,965	75,658
Washington	429	612	1,313	2,068	8,090	6,225	36,063	54,800	335	423	1,444	2,783	2,753	266	16,624	24,627	79,427
West Virginia	319	0	1,039	1,343	5,535	2,156	21,756	32,148	236	14	406	721	900	61	4,351	6,689	38,837
Wisconsin	512	203	2,870	4,762	12,135	8,354	62,741	91,577	367	341	1,963	2,695	3,001	-	15,749	24,117	115,694
Wyoming	807	-	1,969	1,220	2,718	8,657	11,816	27,187	106	3	232	259	538	119	1,614	2,871	30,058
U.S. Total	29,367	6,555	91,365	133,950	407,923	259,186	2,007,322	2,935,666	19,152	12,158	66,033	112,353	130,961	22,274	888,843	1,251,773	4,187,440
Puerto Rico	54	2	66	256	334	194	3,779	4,686	231	52	372	897	1,103	35	12,587	15,278	19,964
Grand Total	29,421	6,556	91,431	134,206	408,257	259,379	2,011,101	2,940,352	19,383	12,210	66,405	113,250	132,064	22,309	901,430	1,267,051	4,207,403

APPENDIX D: Disposition of State Motor-Vehicle Fuel Tax Receipts for 2021. Source: FHWA (2023)

STATE	RECEIPTS AVAILABLE FOR DISTRIBUTION (1)	FOR COLLECTING MOTOR-FUEL TAXES AND FEES (2)	FOR NET FUNDS DISTRIBUTED (3)	FOR STATE ADMINISTERED HIGHWAYS (4)							FOR LOCAL ROADS AND STREETS				FOR MASS TRANSIT PURPOSES		TOTAL FOR GENERAL AND NON HIGHWAY PURPOSES				
				CAPITAL OUTLAY, MAINTENANCE AND ADMINISTRATION	HIGHWAY LAW ENFORCEMENT AND SAFETY	DEBT SERVICE	TOTAL FOR STATE ADMINISTERED HIGHWAYS	DIRECT EXPENDITURES BY STATE	TRANSFERS TO LOCAL GOVERNMENTS	TOTAL	FOR MASS TRANSIT PURPOSES	TOTAL									
Alabama	919,629	15,270	904,359	446,605	49.38%	114,793	12.69%	47,350	5.24%	608,748	67.31%	249,367	27.57%	-	0.00%	249,367	27.57%	30,491	3.37%	15,753	1.74%
Alaska 8/	28,236	-	28,236	22,725	80.48%	1,125	3.99%	-	0.00%	23,851	84.47%	-	0.00%	227	0.80%	227	0.80%	4,158	14.73%	-	0.00%
Arizona	730,306	-	730,306	5,926	0.81%	3,532	0.48%	65,048	8.91%	74,506	10.20%	38,046	5.21%	523,635	71.70%	561,681	76.91%	7,187	0.98%	86,932	11.90%
Arkansas	577,438	17,670	559,768	83,773	14.97%	57,262	10.23%	166,553	29.75%	307,588	54.95%	207,194	37.01%	-	0.00%	207,194	37.01%	12,750	2.28%	32,236	5.76%
California	7,446,847	46,330	7,400,517	2,750,829	37.17%	983,247	13.29%	-	0.00%	3,734,076	50.46%	85,273	1.15%	2,709,704	36.62%	2,794,977	37.77%	470,619	6.36%	400,845	5.42%
Colorado	659,177	2,209	656,968	455,041	69.26%	2,630	0.40%	38,017	5.79%	495,688	75.45%	43,966	6.69%	96,201	14.95%	142,167	21.64%	19,113	2.91%	-	0.00%
Connecticut	719,108	-	719,108	10,263	1.43%	11,268	1.57%	34,284	4.77%	55,815	7.76%	-	0.00%	57,203	7.95%	57,203	7.95%	486,571	67.65%	119,519	16.62%
Delaware	124,718	-	124,718	4,433	3.55%	32,969	26.46%	67,096	53.90%	104,528	83.81%	-	0.00%	-	0.00%	-	0.00%	20,190	16.19%	-	0.00%
Dist. of Col. (8)	23,638	-	23,638	4,905	20.75%	-	0.00%	12,311	52.08%	17,216	72.83%	44	0.19%	-	0.00%	44	0.19%	6,289	26.61%	89	0.38%
Florida	2,749,464	27,834	2,721,630	861,125	31.64%	230,641	8.47%	542,986	19.95%	1,634,752	60.07%	104,200	3.83%	230,162	8.46%	334,362	12.29%	290,972	10.69%	461,544	16.96%
Georgia	1,753,736	8,962	1,744,784	618,668	35.46%	276,999	15.86%	284,267	16.29%	1,179,934	67.63%	188,818	10.82%	262,703	15.06%	451,521	25.88%	19,207	1.10%	94,122	5.39%
Hawaii	67,674	-	67,674	38,712	57.20%	2,042	3.02%	13,120	19.39%	53,874	79.61%	-	0.00%	8,968	13.25%	-	0.00%	-	0.00%	4,832	7.14%
Idaho	367,579	4,805	362,774	79,681	21.94%	21,713	5.99%	43,713	12.05%	145,007	39.97%	41,564	11.46%	143,676	39.60%	185,240	51.06%	9,179	2.53%	23,348	6.44%
Illinois	2,444,543	417,536	2,027,007	829,451	40.92%	21,407	1.06%	402,868	19.88%	1,253,726	61.85%	115,951	5.72%	220,235	10.87%	336,196	16.59%	436,883	21.55%	202	0.01%
Indiana	1,568,910	-	1,568,910	987,873	62.97%	2,432	0.16%	79,340	5.06%	1,069,645	68.18%	60,239	3.84%	432,922	27.59%	493,161	31.43%	2,544	0.16%	3,560	0.23%
Iowa	657,196	-	657,196	305,269	46.45%	46,026	7.00%	-	0.00%	351,295	53.45%	-	0.00%	297,084	45.20%	297,084	45.20%	2,990	0.45%	6,427	0.98%
Kansas	461,598	-	461,598	31,291	6.78%	58,164	12.60%	34,791	7.54%	124,246	26.92%	93,980	20.36%	112,546	24.38%	206,526	44.74%	1,927	0.42%	128,899	27.92%
Kentucky	745,133	-	745,133	314,737	42.24%	37,331	5.01%	160,176	21.50%	512,244	68.75%	129,521	17.38%	-	0.00%	129,521	17.38%	65,130	8.74%	38,238	5.13%
Louisiana	612,213	-	612,213	263,551	43.05%	7,389	1.21%	170,528	27.85%	441,468	72.11%	7,397	1.21%	49,356	8.06%	56,753	9.27%	12,651	2.07%	101,341	16.55%
Maine	226,677	17,006	209,671	150,160	71.62%	13,109	6.23%	1,458	0.70%	164,727	78.56%	14,803	7.06%	-	0.00%	14,803	7.06%	3,133	1.49%	27,008	12.86%
Maryland	1,010,640	12,424	998,216	1,793	0.18%	13,559	1.36%	160,552	16.08%	175,904	17.62%	33,463	3.35%	108,931	10.91%	142,394	14.26%	606,169	60.73%	73,749	7.39%
Massachusetts	661,492	-	661,492	239,869	36.26%	932	0.14%	920	0.14%	241,721	36.54%	472	0.07%	211	0.03%	683	0.10%	305	0.05%	418,783	63.31%
Michigan	1,331,785	3,025	1,328,760	101,603	7.65%	25,010	1.88%	135,955	10.23%	262,568	19.76%	895,959	67.43%	15,867	1.19%	911,826	68.62%	154,366	11.62%	-	0.00%
Minnesota	840,319	2,273	838,046	5,424	0.65%	73,510	8.77%	62,355	7.44%	141,289	16.88%	-	0.00%	520,610	62.12%	520,610	62.12%	176,147	21.02%	-	0.00%
Mississippi	428,192	-	428,192	106,011	24.76%	14,089	3.29%	71,796	16.77%	191,895	44.82%	80,031	18.69%	117,377	27.41%	197,408	46.10%	1,564	0.37%	37,324	8.72%
Missouri	673,364	-	673,364	84,397	12.53%	130,213	19.34%	192,407	28.57%	407,017	60.45%	74,033	10.99%	189,703	28.17%	263,736	39.17%	2,611	0.39%	-	0.00%
Montana	263,174	-	263,174	81,764	32.30%	31,263	12.35%	1,916	0.76%	114,943	45.40%	-	0.00%	23,452	9.26%	23,452	9.26%	1,007	0.38%	113,772	44.94%
Nebraska	420,195	-	420,195	20,902	4.97%	12,545	2.99%	-	0.00%	33,447	7.96%	26,227	6.24%	343,044	81.64%	369,271	87.88%	16,581	3.95%	896	0.21%
Nevada	324,430	712	323,718	202,610	62.59%	71,946	22.22%	40,764	12.59%	315,320	97.41%	-	0.00%	-	0.00%	-	0.00%	8,269	2.55%	129	0.04%
New Hampshire	170,293	1,450	168,843	87,868	52.04%	171	0.10%	35,944	21.29%	123,983	73.43%	-	0.00%	34,277	20.30%	34,277	20.30%	8,332	4.93%	2,251	1.33%
New Jersey	434,363	-	434,363	2,968	0.68%	89,262	20.55%	11,716	2.70%	103,945	23.93%	338	0.08%	83,234	19.16%	83,572	19.24%	243,723	56.11%	3,122	0.72%
New Mexico	321,752	-	321,752	118,446	36.81%	569	0.18%	87,404	27.17%	206,419	64.15%	-	0.00%	27,786	8.64%	8,113	2.52%	79,434	24.69%		
New York	1,427,851	-	1,427,851	69	0.00%	1,319	0.09%	1,477	0.10%	2,865	0.20%	27,101	1.90%	153,050	10.72%	180,151	12.62%	1,205,249	84.41%	39,586	2.77%
North Carolina	2,158,690	11,466	2,147,224	1,432,327	66.71%	109,443	5.10%	278,621	12.98%	1,820,391	84.78%	-	0.00%	88,135	4.10%	88,135	4.10%	29,526	1.38%	209,172	9.74%
North Dakota	171,781	-	171,781	53,370	31.07%	17,019	9.91%	-	0.00%	70,389	40.98%	20,702	12.05%	60,243	35.07%	80,945	47.12%	11,059	6.44%	9,388	5.47%
Ohio	2,477,068	-	2,477,068	155,255	6.27%	373,131	15.06%	293,205	11.84%	821,591	33.17%	295,843	11.94%	1,245,668	50.29%	1,541,511	62.23%	77,582	3.13%	36,384	1.47%
Oklahoma	555,200	17,566	537,634	49,359	9.18%	95,137	17.70%	37,238	6.93%	181,734	33.80%	55,346	10.29%	-	0.00%	55,346	10.29%	-	0.00%	300,564	55.90%
Oregon	590,970	2,649	588,321	119,547	20.32%	27,128	4.61%	80,907	13.65%	226,982	38.58%	49,455	8.41%	256,513	43.60%	305,968	52.01%	30,093	5.12%	25,278	4.30%
Pennsylvania	3,483,081	14,702	3,468,379	946,821	27.30%	545,778	15.74%	174,268	5.02%	1,666,867	48.06%	126,513	3.65%	277,373	8.00%	403,886	11.64%	1,283,113	36.99%	114,513	3.30%
Rhode Island	140,709	-	140,709	25,135	17.86%	562	0.39%	28,282	20.10%	53,969	38.36%	8,759	6.22%	-	0.00%	8,759	6.22%	27,603	19.62%	50,378	35.80%
South Carolina	869,505	-	869,505	747,397	85.96%	-	0.00%	21,445	2.47%	768,842	88.42%	26,158	3.01%	45,963	5.29%	72,121	8.29%	16,011	1.84%	12,531	1.44%
South Dakota	190,815	3,963	186,852	48,382	25.89%	29,088	15.57%	-	0.00%	77,470	41.46%	89,433	47.88%	-	0.00%	89,433	47.88%	16,019	8.57%	3,930	2.10%
Tennessee	1,219,926	13,885	1,206,041	638,056	54.56%	10,060	0.83%	-	0.00%	668,116	55.40%	42,390	3.51%	291,961	24.21%	334,351	27.72%	-	0.00%	203,574	16.88%
Texas	3,492,602	38,132	3,454,470	277,477	8.03%	237,826	6.88%	540,392	15.64%	1,055,695	30.56%	128,457	3.72%	147,693	4.28%	276,150	7.99%	39,868	1.15%	2,082,757	60.29%
Utah	537,127	-	537,127	16,966	3.16%	13,547	2.52%	242,394	45.13%	272,907	50.81%	45,732	8.51%	190,552	35.48%	236,284	43.99%	9,772	1.82%	18,164	3.36%
Vermont	101,680	-	101,680	16,134	15.87%	20,478	20.14%	1,441	1.42%	38,053	37.42%	18,997	18.68%	11,411	11.22%	30,408	29.91%	10,511	10.34%	22,708	22.33%
Virginia	1,307,043	9,920	1,297,123	37,195	2.87%	37,596	2.90%	192,253	14.82%	267,044	20.59%	-	0.00%	529,278	40.80%	448,279	34.55%	52,522	4.05%		
Washington	1,469,549	8,263	1,461,286	119,669	8.19%	146,471	10.02%	233,816	16.00%	499,955	34.21%	78,312	5.36%	569,685	38.99%	647,997	44.34%	11,692	0.80%	301,641	20.64%
West Virginia	399,156	2,447	396,709	318,384	80.26%	14,720	3.71%	49,584	12.50%	382,688	96.47%	-	0.00%	-	0.00%	-	0.00%	14,021	3.53%	-	0.00%
Wisconsin	1,031,812	1,687	1,030,125	32,586	3.16%	42,745	4.15%	404,070	39.23%	479,401	46.54%	110,594	10.74%	287,206	27.88%	397,800	38.62%	78,447	7.62%	74,477	7.23%
Wyoming	115,200	1,772	113,428	54,006	47.61%	20,696	18.25%	-	0.00%	74,702	65.86%	-	0.00%	-	0.00%	-	0.00%	37,919	33.43%	807	0.71%
Total	51,493,584	703,948	50,789,636	14,426,708	28.40%	4,129,913	8.13%	5,544,428	10.92%	24,101,049	47.45%	3,614,688	7.12%	10,765,845	21.20%	14,380,533	28.31%	6,475,335	12.75%	5,832,719	11.48%

Appendix D. Notes

- 1) See table MF-1 for details of receipts. Differences between amounts shown and the adjusted net volume tax receipts shown on Table MF-1 are due to timing differences and funds in transit.
- (2) Includes some estimates.
- (3) The distributions shown include both specific dedications and the prorated share of motor-fuel tax distributions from common funds with multiple revenue sources.
- (4) Includes expenditures for county roads under state control.
- (5) Some allocations for local general purposes may have been used in part for highways.
- (6) Includes only allocations for specific nonhighway purposes.
- (7) Gross allocations of highway-user revenues to state general funds were reduced by appropriations for highways from state general funds. These amounts are included with allocations for state highway purposes.
- (8) In these states, most highway-user revenues are placed in the state general fund.
- (9) Amounts shown represent data reported for 2020.

APPENDIX E: Disposition of State Motor-Vehicle and Motor-Carrier Tax Receipts for 2021. Source: FHWA (2023)^{cxxvi}

STATE	RECEIPTS AVAILABLE FOR DISTRIBUTION	FOR COLLECTING MOTOR-VEHICLE AND MOTOR-CARRIER TAXES AND FEES (1)	NET FUNDS DISTRIBUTED (2)	FOR STATE ADMINISTERED HIGHWAYS (3)						FOR LOCAL ROADS AND STREETS						FOR MASS TRANSIT PURPOSES		TOTAL GENERAL & NON-HIGHWAY PURPOSES			
				CAPITAL OUTLAY, MAINTENANCE AND ADMINISTRATION		HIGHWAY LAW ENFORCEMENT AND SAFETY		DEBT SERVICE		TOTAL STATE ADMINISTERED HIGHWAYS		DIRECT EXPENDITURES BY STATE		TRANSFERS TO LOCAL GOVERNMENTS		TOTAL LOCAL ROADS AND STREETS					
Alabama	319,983	154,033	165,950	81,952	49.38%	21,064	12.69%	8,689	5.24%	111,705	67.31%	45,759	27.57%	-	-	45,759	27.57%	5,595	3.37%	2,891	1.74%
Alaska (7)	31,644	-	31,644	25,465	80.48%	1,262	3.99%	-	0.00%	26,728	84.46%	-	0.00%	255	0.81%	255	0.81%	4,660	14.73%	-	0.00%
Arizona	453,300	17,349	435,951	3,538	0.81%	2,109	0.48%	38,830	8.91%	44,477	10.20%	22,711	5.21%	312,581	71.70%	335,292	76.91%	4,290	0.98%	51,894	11.90%
Arkansas	191,765	-	191,765	28,699	14.97%	19,617	10.23%	57,057	29.75%	105,373	54.95%	70,980	37.01%	-	0.00%	70,980	37.01%	4,368	2.28%	11,044	5.76%
California	10,579,882	1,297,105	9,282,777	3,450,296	37.17%	1,233,261	13.29%	1	0.00%	4,683,558	50.46%	106,956	1.15%	3,398,712	36.62%	3,505,668	37.77%	590,285	6.36%	502,769	5.42%
Colorado	1,497,140	141,151	1,355,989	999,211	69.26%	5,428	0.40%	78,466	5.79%	1,023,105	75.45%	90,746	6.69%	202,686	14.95%	293,434	21.64%	39,448	2.91%	-	0.00%
Connecticut	421,808	-	421,808	6,020	1.43%	6,610	1.57%	20,110	4.77%	32,740	7.76%	-	0.00%	33,553	7.96%	33,553	7.96%	285,409	67.66%	70,105	16.62%
Delaware	213,866	-	213,866	7,600	3.55%	56,587	26.46%	115,056	53.80%	179,243	83.81%	-	0.00%	-	0.00%	179,243	83.81%	34,622	16.19%	-	0.00%
Dist. of Col. (7)	111,539	6,934	104,605	21,709	20.75%	-	0.00%	54,480	52.08%	76,189	72.83%	195	0.19%	-	0.00%	196	0.19%	27,829	26.60%	394	0.38%
Florida	2,251,835	-	2,251,835	712,482	31.64%	190,829	8.47%	449,258	19.95%	1,352,569	60.07%	86,213	3.83%	190,432	8.46%	276,645	12.29%	240,747	10.69%	381,874	16.96%
Georgia	392,907	306,065	86,842	30,792	35.46%	13,787	15.88%	14,149	16.29%	58,728	67.63%	9,398	10.82%	13,075	15.06%	22,473	25.88%	966	1.10%	4,685	5.39%
Hawaii	184,434	7,752	176,682	101,071	57.21%	5,330	3.02%	34,252	19.39%	140,653	79.61%	-	0.00%	23,412	13.25%	23,412	13.25%	-	0.00%	12,616	7.14%
Idaho	270,601	10,280	260,321	57,109	21.94%	15,581	5.99%	31,367	12.05%	104,057	39.97%	29,825	11.46%	103,099	39.50%	132,924	51.06%	6,587	2.53%	16,754	6.44%
Illinois	2,161,842	5,005	2,156,837	882,578	40.92%	22,779	1.06%	428,671	19.87%	1,334,028	61.85%	123,388	5.72%	234,341	10.87%	357,729	16.59%	464,865	21.56%	214	0.01%
Indiana	434,597	77,896	356,701	224,596	62.96%	563	0.16%	18,039	5.06%	243,188	68.18%	13,696	3.84%	98,427	27.59%	112,123	31.43%	579	0.16%	809	0.23%
Iowa	1,272,342	36,197	1,236,145	574,191	46.45%	86,573	7.00%	-	0.00%	660,764	53.45%	-	0.00%	558,796	45.20%	558,796	45.20%	4,495	0.36%	12,090	0.96%
Kansas	237,428	2,510	234,918	15,945	6.78%	29,639	12.60%	17,728	7.54%	63,312	26.92%	47,890	20.36%	57,350	24.38%	105,240	44.74%	962	0.42%	65,684	27.92%
Kentucky	906,469	-	906,469	382,880	42.24%	45,415	5.01%	194,858	21.50%	623,153	68.75%	157,565	17.38%	-	0.00%	157,565	17.38%	79,233	8.74%	46,518	5.13%
Louisiana	374,601	211,007	163,594	70,426	43.06%	1,974	1.21%	45,568	27.85%	117,968	72.11%	1,977	1.21%	13,189	8.06%	15,166	9.27%	3,380	2.07%	27,080	16.56%
Maine	141,877	17,850	124,027	88,825	71.62%	7,754	6.25%	863	0.70%	97,442	78.57%	8,757	7.06%	-	0.00%	8,757	7.06%	1,853	1.49%	15,976	12.88%
Maryland	1,402,813	16,016	1,386,797	2,493	0.18%	18,837	1.36%	223,051	16.06%	244,381	17.62%	46,490	3.35%	151,334	10.91%	197,824	14.26%	842,136	60.73%	102,458	7.39%
Massachusetts	622,770	-	622,770	225,824	36.26%	877	0.14%	867	0.14%	227,568	36.54%	445	0.07%	198	0.03%	643	0.10%	288	0.05%	394,268	63.31%
Michigan	1,529,975	95,241	1,434,734	109,707	7.65%	27,005	1.88%	146,797	10.23%	283,509	19.76%	967,415	67.43%	17,133	1.19%	984,548	68.62%	166,678	11.62%	-	0.00%
Minnesota	996,157	44,614	951,543	6,157	0.65%	83,466	8.77%	70,800	7.44%	160,423	16.86%	-	0.00%	591,117	62.12%	591,117	62.12%	200,003	21.02%	-	0.00%
Mississippi	217,313	3,000	214,313	53,060	24.76%	7,052	3.29%	35,935	16.77%	96,047	44.82%	40,056	18.69%	58,748	27.41%	96,804	46.10%	783	0.37%	18,681	8.72%
Missouri	359,111	-	359,111	45,009	12.53%	69,444	19.34%	102,612	28.57%	217,065	60.45%	39,482	10.99%	101,171	28.17%	140,653	39.17%	1,393	0.39%	-	0.00%
Montana	265,226	-	265,226	85,655	32.30%	32,752	12.35%	2,008	0.76%	120,415	45.40%	-	0.00%	24,568	9.26%	24,568	9.26%	1,055	0.40%	119,188	44.94%
Nebraska	134,283	24,829	109,454	5,444	4.97%	3,268	2.99%	-	0.00%	8,712	7.96%	6,832	6.24%	89,357	81.64%	96,189	87.88%	4,319	3.95%	233	0.21%
Nevada	359,588	84,371	275,217	172,254	62.56%	61,166	22.22%	34,656	12.59%	268,076	97.41%	-	0.00%	-	0.00%	-	0.00%	7,030	2.55%	110	0.04%
New Hampshire	88,259	-	88,259	45,931	52.04%	89	0.10%	18,789	21.29%	64,809	73.43%	-	0.00%	17,918	20.30%	17,918	20.30%	4,355	4.93%	1,177	1.33%
New Jersey (7)	1,296,041	-	1,296,041	8,860	0.68%	266,338	20.55%	34,958	2.70%	310,156	23.93%	1,007	0.08%	248,352	19.16%	249,359	19.24%	727,214	56.11%	9,315	0.72%
New Mexico	515,007	17,199	497,808	183,258	36.81%	880	0.16%	135,229	27.16%	319,367	64.15%	-	0.00%	42,991	8.64%	42,991	8.64%	12,551	2.52%	122,989	24.69%
New York	2,055,370	417,562	1,637,808	80	0.00%	1,514	0.09%	1,694	0.10%	3,288	0.20%	31,086	1.90%	175,555	10.72%	206,641	12.62%	1,382,473	84.41%	45,405	2.77%
North Carolina	1,083,720	-	1,083,720	722,901	66.71%	55,236	5.10%	140,622	12.98%	918,759	84.78%	-	0.00%	44,483	4.10%	44,483	4.10%	14,902	1.38%	105,571	9.74%
North Dakota	102,277	11,150	109,127	33,903	31.07%	10,811	9.91%	-	0.00%	44,714	40.97%	13,152	12.05%	38,271	35.07%	51,423	47.12%	7,026	6.44%	5,964	5.47%
Ohio	1,117,624	470,595	647,029	40,568	6.27%	97,465	15.06%	76,588	11.84%	214,611	33.17%	77,277	11.94%	325,378	50.29%	402,656	62.23%	20,264	3.13%	9,504	1.47%
Oklahoma	869,804	46,612	823,192	75,581	9.18%	145,667	17.70%	57,017	6.93%	278,265	33.80%	84,742	10.29%	-	0.00%	84,742	10.29%	-	0.00%	460,189	55.90%
Oregon	962,790	184,896	777,894	158,067	20.32%	35,869	4.61%	106,183	13.65%	300,119	38.58%	65,391	8.41%	339,168	43.60%	404,559	52.01%	39,791	5.12%	33,424	4.30%
Pennsylvania	1,357,643	216,841	1,140,802	311,423	27.30%	179,514	15.74%	57,320	5.02%	548,257	48.05%	41,612	3.65%	91,232	8.00%	132,844	11.64%	422,035	36.99%	37,665	3.30%
Rhode Island	114,426	14,669	99,757	17,821	17.86%	392	0.39%	20,050	20.10%	38,263	38.36%	6,210	6.23%	-	0.00%	6,210	6.23%	19,569	19.62%	35,716	35.80%
South Carolina	730,113	-	730,113	627,577	85.96%	-	0.00%	18,007	2.47%	645,584	88.42%	21,964	3.01%	38,595	5.29%	60,559	8.29%	13,445	1.84%	10,523	1.44%
South Dakota	18,004	13,203	4,801	1,242	25.87%	747	15.56%	-	0.00%	1,989	41.33%	2,298	47.87%	-	0.00%	2,298	47.87%	412	8.58%	101	2.10%
Tennessee	515,318	16,057	499,261	272,413	54.56%	4,165	0.83%	-	0.00%	276,578	55.40%	17,548	3.51%	120,862	24.21%	138,410	27.72%	-	0.00%	84,273	16.88%
Texas	6,970,979	-	6,970,979	569,942	8.18%	479,922	6.88%	1,090,490	15.64%	2,130,354	30.56%	259,220	3.72%	298,038	4.28%	567,258	7.99%	80,452	1.15%	4,202,918	60.29%
Utah	283,389	-	283,389	8,960	3.16%	7,148	2.52%	127,887	45.13%	143,985	50.81%	24,128	8.51%	100,838	35.48%	124,664	43.99%	5,155	1.82%	9,584	3.38%
Vermont	237,769	-	237,769	37,724	15.87%	47,887	20.14%	3,368	1.42%	88,979	37.42%	44,424	18.68%	26,685	11.22%	71,109	29.91%	24,578	10.34%	53,102	22.33%
Virginia	1,789,967	225,357	1,564,610	44,863	2.87%	45,349	2.90%	231,899	14.82%	322,111	20.59%	-	0.00%	638,423	40.80%	638,423	40.80%	540,721	34.56%	63,353	4.09%
Washington	1,202,421	119,058	1,083,363	88,718	8.19%	108,591	10.02%	173,946	16.00%	370,655											

SECTION 7

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