Final Report

Florida Electric Vehicle Fee Assessment

Prepared for:

Drive Electric Florida (DEF)

Prepared by:

Alexander Kolpakov
Center for Urban Transportation Research
University of South Florida

March 2023

Table of Contents

Acronyms and Abbreviations

CAFE	Corporate Average Fuel Economy
CPI	Consumer Price Index
EV	Electric vehicle
FDOT	Florida Department of Transportation
FLHSMV	Florida Department of Highway Safety and Motor Vehicles
ICE	Internal combustion engine
kWh	Kilowatt-hour
LD	Light-duty
MPG	Miles per gallon
MBUF	Mileage-based user fee
PHEV	Plug-in hybrid electric vehicle
RUC	Road user charge
SCETS	State Comprehensive Enhanced Transportation System
STTF	State Transportation Trust Fund
VMT	Vehicle miles traveled

Executive Summary

Transportation infrastructure in the United States is funded through gas taxes that are assessed on a per-gallon basis on motor fuels and paid by consumers at the pump at the time of fuel purchase. During the past decade, taxes from motor fuels have been insufficient to cover associated transportation and highway construction costs. Improvements in vehicle fuel efficiency, the introduction of hybrid and battery electric vehicles, stagnant federal gas rates, and increased construction and materials costs have all contributed to challenges with maintaining and developing transportation infrastructure. The increased adoption of electric vehicles (EVs) and hybrid-electric vehicles continues to negatively affect transportation revenue given that drivers of these vehicles pay less (or no) gas tax. Yet, it is estimated that only 13% of Florida's projected transportation revenue loss through 2030 can be attributed to EVs. Traditional transportation funding model, based on gas taxes, is mainly eroded by continued improvement in conventional vehicles' fuel economy.

Partly to address funding shortfalls and partly to ensure that all transportation users pay their fair share for the use of transportation infrastructure, as of this report, 31 states have implemented annual fees for hybrid-electric and fully electric vehicles, ranging anywhere from $50 to $200 per year. The State of Florida, however, does not currently charge a fee for electric vehicles or plug-in hybrids. The current study presents an analysis that can inform the implementation of an EV fee if the State considers that approach. The amount of a potential EV fee is based on the estimated amount of fuel taxes paid annually by an average conventional motor vehicle in Florida, focusing primarily on light-duty passenger vehicles.

As of 2023, the total gas tax rate in Florida is 53.6–59.6 cents per gallon, including 18.4 cents per gallon federal taxes, 25.2 cents per gallon state taxes, and 10–16 cents per gallon local taxes. The total tax rate for diesel fuel in Florida is 60.5 cents per gallon, including 24.4 cents per gallon federal taxes, 25.1 cents per gallon state taxes, and 11 cents per gallon local taxes. While the state portion of fuel taxes is annually adjusted to inflation, federal fuel tax rate is not. As a result, the purchasing power of federal fuel taxes has been eroding over time. In FY-2022, fuel taxes accounted for 55% of funds deposited in Florida's State Transportation Trust Fund (STTF). Other sources of funding for STTF include motor vehicle license and registration fees, documentary stamp taxes, local option tax distributions, rental car surcharges, and other taxes and fees. It is worth noting that adjusting tax rates to the Consumer Price Index (CPI) preserves the purchasing power of tax dollars collected through state fuel taxes but does not address growth in vehicle fuel efficiency, resulting in lower fuel consumption per mile.

The amount of motor fuel sold (and taxed) in Florida has been relatively flat during the period of 2008–2013 and then saw a modest growth from 2015 through 2019, followed by a decline in 2020 and 2021 caused by the COVID-19 pandemic. Fuel sales have since recovered from the effects of the pandemic and returned to modest growth. From 2008 to 2021, the total gallons of motor fuel, including gasoline and diesel, sold in Florida grew by 5.6%. However, during the same time, the vehicle miles traveled (VMT) in Florida grew by 9.9%. As the population of Florida and average fuel efficiency of vehicles continue to increase, the growth in VMT outpaces the growth in fuel sales, putting a strain on the state's transportation infrastructure.

Florida has the second largest EV fleet in the country, behind only California, and the number of EVs continues to grow at a fast rate. Historically, the number of EV and plug-in hybrid electric vehicle (PHEV)

registrations in Florida doubled roughly every two years. As of the end of 2022, there were 144,898 EVs and 41,956 PHEVs registered in Florida, for a total of 186,854 plug-in vehicles. Despite the fast growth of EVs, they still represent less than 1.0% of the total 15.1 million motor vehicles registered in the state.

The data indicate that an average vehicle in Florida is estimated to drive 14,404 miles per year. Additionally, the current analysis estimates that an average light-duty (LD) vehicle in Florida consumes 355 gallons of motor fuel per year, based on the adopted corporate average fuel efficiency standard for 2024 vehicle models (40.6 mpg).

Assuming that an average LD vehicle runs on gasoline, it is estimated that an average internal combustion engine (ICE) owner in Florida pays approximately $65.28 in federal fuel taxes per year, $89.40 in state fuel taxes per year, and $35.48 to $56.75 in local taxes per year. These estimates show that an average ICE owner contributes $124.88–$146.17 per year to state and local fuel taxes. These numbers can be viewed as estimated amounts of annual gas tax revenue loss to state transportation trust fund due to one electric vehicle on the road in Florida. With the current number of registered EVs in Florida, the state is losing $16.9–$19.8 million annually in fuel tax revenue, including $12.1 million in state taxes and $4.8–$7.7 million in local taxes. While this number is currently relatively small compared to the overall fuel tax collections, it is projected to grow rapidly as the number of EVs continues to grow.

If Florida were to implement an annual EV fee, covering gas tax revenue loss to STTF (excluding federal taxes), it could consider a fee in the range of **$125 to $146** per vehicle per year. This is an amount equivalent to what an average conventional light-duty vehicle in Florida would pay in a year in state and local fuel taxes.

The current study recommends implementing a single flat fee for all light-duty EVs, regardless of weight. Differences in weight between vehicles are already addressed by registration fees that vary depending on the weight bracket.

The current study assumes that a typical light-duty PHEV in Florida will use approximately half the amount of gasoline used by a typical ICE vehicle, and thus will pay approximately half the amount of gas taxes contributed by a typical conventional vehicle. If the State of Florida decides to implement an annual fee for PHEVs to recoup the loss in state and local taxes (excluding federal fuel taxes), it could consider a PHEV fee in the range of **$62–$73** per vehicle per year.

Introduction

The Florida Department of Transportation (FDOT) uses the State Transportation Trust Fund (STTF) to account for and administer funding to maintain the state highway system and other transportation projects (FDOT 2023). The STTF relies on state taxes and fees, including fuel taxes and motor vehicle registration fees, to supply revenue. Motor fuels, including gasoline and diesel, are subject to local, state, and federal taxes. In 2022, fuel taxes accounted for approximately 55% ($2.6 billion) of the STTF's total annual deposited funds ($4.7 million in total) (FDOT 2023).

During the past decade, taxes from motor fuels have been insufficient to cover associated transportation and highway construction costs (USGAO 2022). Improvements in vehicle fuel efficiency, the introduction of hybrid and battery electric vehicles, stagnant federal gas rates, and increased construction and materials costs have all contributed to shortfalls in transportation revenue (Schleith 2015).

As electric vehicle (EV) adoption continues to increase, a number of states have imposed additional annual fees for plug-in vehicles ranging from $45 to $225. These fees are typically in addition to the regularly imposed motor vehicle registration fees. The methodologies for determining the fee amount varies considerably by state.

The State of Florida, as of report publication, has not enacted a fee for plug-in electric vehicles. In 2021, Florida Senate Bill 140 proposed enacting additional fees for electric vehicles by implementing a license tax and imposing an additional fee for plug-in hybrid electric vehicles; this bill failed to pass appropriations.

The current analysis estimates fuel taxes paid annually by an average motor vehicle in Florida to suggest an appropriate EV fee that would be equivalent to the gas tax revenue loss resulting from untaxed fuel (electricity) use. The analysis focuses only on fuel tax implications of electric vehicles and does not consider environmental benefits of these technologies. The analysis presented in the current study is intended to provide resources to decision makers in case the State of Florida considers implementing EV fees.

Following a brief discussion of the methodology used, the report presents the three tasks performed for this analysis. Task 1 reviewed state EV fees and approaches to reduce gas tax shortfalls on state transportation revenues. Task 2 assessed the current impacts of EVs on Florida's transportation revenue. Finally, Task 3 provides recommendations for a Florida EV annual fee.

Methodology

The EV fee calculation presented in the current analysis is based on the estimated amount of fuel taxes paid by an average conventional light-duty vehicle in Florida. The analysis first estimates the average miles driven per vehicle per year by dividing statewide vehicle miles traveled (reported by FDOT) by the number of registered motor vehicles in Florida (reported by Florida Department of Highway Safety and Motor Vehicles). Dividing the average number of miles driven per vehicle per year by the average fuel efficiency of the fleet allows estimation of the number of gallons of fuel purchased/consumed annually by an average vehicle in Florida. Researchers did not have access to the data that would have allowed estimating the average fuel efficiency of Florida's vehicle fleet. Therefore, for the purposes of fuel consumption estimates, the current research uses Corporate Average Fuel Economy (CAFE) standards for 2024 vehicle models, required under 2022 final rule. While CAFE standards may not reflect the average fuel economy of older vehicles on Florida roads, it certainly is more relevant to electric vehicles that are typically newer models with higher-than-average fuel economy.

Applying federal, state, and local tax rates to estimated gallons of fuel consumed allows estimation of the amount of fuel taxes paid by an average internal combustion engine (ICE) vehicle per year. Since the current analysis focuses primarily on light-duty (LD) vehicles, the key assumption is that an average vehicle is run on gasoline. Therefore, estimates of fuel taxes are based on gasoline tax rates rather than diesel. Also, since different counties in Florida apply different fuel taxes (sometimes not taking advantage of the maximum rates allowable by the State), local taxes are presented in the form of a range. For simplicity, the range only indicates minimum and maximum values that can be employed at the local level and no attempt was made to assess the shape of distribution of local tax rates within that range.

Plug-in hybrid electric vehicles (PHEVs) are assumed to drive half the time on electricity and half the time on gasoline, thus consuming half the amount of gasoline of a conventional LD vehicle. Therefore, PHEVs are assumed to generate half the gas tax revenue associated with a typical ICE vehicle.

Task 1: Review of State EV Fees and Approaches to Reduce Gas Tax Shortfalls on State Transportation Revenues

States rely on fuel tax revenue to support transportation infrastructure projects. Given recent shortfalls in gas tax revenue, states have been considering and implementing alternative methods to address this shortfall. The increased adoption of alternative fuel, electric, and hybrid-electric vehicles present additional challenges with revenue loss given that drivers of these vehicles pay less (or no) gas tax. States supporting EV adoption as a strategy to meet decarbonization and clean transportation goals are tasked with identifying and implementing mechanisms to fund state transportation projects. As of this report, 31 states have addressed this issue by implementing additional fees for hybrid-electric and fully electric vehicles. Some states have looked to alternatives such as road user fees or excise taxes on electricity sold to EV owners at commercial charging stations. This section presents an overview of the alternative approaches that states are using to collect revenue for hybrid and electric vehicles.

Electric Vehicle Annual Fees

At present, 31 states have imposed additional annual fees for electric vehicles (see Table 1). Fees range from $45 to $225 for light-duty all-electric vehicles. The specifics on the formula to determine fee rates vary significantly among states. Eighteen states differentiate between full battery electric vehicles and those that operate on a combination of electricity and gasoline, and they structure their fees accordingly. For those states that differentiate between hybrid and battery electric vehicles, "electric vehicle" tends to be defined as a vehicle powered only by electricity, whereas a "hybrid vehicle" refers to a vehicle with a propulsion system that runs on both gaseous fuels and electricity. Some states distinguish between a plug-in hybrid electric vehicle (PHEV) and conventional hybrid. For example, Ohio defines "plug-in electric motor vehicles" as those that are fully electric and plug-in hybrid electric vehicles, whereas a "hybrid vehicle" refers to a vehicle with a hybrid propulsion system, including an internal combustion engine (ICE) and stored electricity (Igleheart 2022).

Table 1 – EV Annual Fee by State*

State	Annual Fee ($)	Description	Statute
Alabama	$200/$100	$200 fee for EVs; $100 for PHEVs. Starting 2023, fee will increase $3 every four years. May be reduced by federal fee or surcharges if those fees are used for highway transportation purposes.	Ala. Code § 40-12-242 /HB 2 (2019)
Arkansas	$200/$100	$200 fee for EVs; $100 for PHEVs.	Ark. Stat. Ann. § 27-14-614 /SB 336 (2019)
California	$100	Annual increases indexed to Consumer Price Index (CPI).	Cal. Veh. Code § 9250.6/SB 1 (2017)
Colorado	$50	Applies to battery electric and hybrid electric vehicles.	Colo. Rev. Stat. § 42-3-304(25)(a)/HB 1110 (2013)
Georgia	$200	For non-commercial alternative fuel vehicles. Fees adjusted on annual basis.	Ga. Code Ann. § 40-2-151(19)(A)(i)/HB 170 (2015)
Hawaii	$50	Fee for electric vehicles.	Hawaii Rev. Stat. § 249-31/SB 409 (2019)
Idaho	$140/$75	$140 fee applied to EVs; $75 for PHEVs.	Idaho Code § 49-457/HB 312 (2015)/ HB 20 (2017)

State	Annual Fee ($)	Description	Statute
Illinois	$100	Fee for electric vehicles.	625 ILCS 5 3-805/SB 1939 (2019)
Indiana	$150/$50	$150 applied to EVs; $50 for PHEVs.	Ind. Code Ann. § 9-18.1-5-12/HB 1002 (2017)
Iowa	$130/$65	As of 2022, fee increased to $130 for EVs and $65 for PHEVs.	SF 767 (2019)
Kansas	$100/$50*	$100 is the total annual registration fee for EVs and $50 is the total annual registration fee for PHEVs.	Kan. Rev. Stat. § 8-143; HB 2214 (2019)
Louisiana	$110/$60	$110 for EVs; $60 for PHEVs, effective on January 1, 2023.	Louisiana HB 1031/ La. Stat. tit. 32 § 461
Michigan	$135/$235 $47.50/$117.50	$135 for EVs under 8,000 lbs. and $235 for EVs over 8,000 lbs. Hybrid owners pay $47.50 and PHEV owners pay $117.50. Fees are indexed to the state gas tax and would rise incrementally if increased.	Mich. Comp. Laws Ann. § 257.801(7)/ HB 4736 (2015)
Minnesota	$75	Fee for electric vehicles.	Minn. Stat. Ann. § 168.013/HF 3 (2017)
Mississippi	$150/$75	$150 fee for EVs; $75 for hybrids. As of July 1, 2021, fees are indexed to the inflation rate.	Miss. Code Ann. § 27-19-21; 23/HB 1
Missouri	$75/$37.50	$75 for EVs; $37.50 for hybrids.	Mo. Ann. Stat. § 142.869/SB 619 (1998)
Nebraska	$75	$75 fee imposed for alternative fuel vehicles not otherwise taxed under motor fuels laws.	Neb. Rev. Stat. § 60-3,191/LB 289 (2011)
North Carolina	$140	$140 additional annual fee for plug-in electric vehicles, referring to an on-road electric vehicle powered by a rechargeable battery with a capacity of at least 4 kilowatt-hours (kWh).	N.C. Gen. Stat. § 20-87(13)/SB 402 (2013)/ HB 97 (2015)
North Dakota	$120/$50	$120 for EVs; $50 for PHEVs.	N.D. Cent. Code § 39-04-19.2/SB 2061 (2019)
Ohio	$200/$100	$200 fee for plug-in electric motor vehicles, including full EVs and PHEVs; $100 fee for hybrid motor vehicles.	Ohio Rev. Code § 4503.10/HB 62 (2019)
Oklahoma	$110–$2,250 / $82–$1,687	Fee based on propulsion type and vehicle weight. <6,000 lbs. – $110 for EV / $82 for PHEV 6,000–10,000 lbs. – $158 for EV / $118 for PHEV 10,000–26,000 lbs. – $363 for EV / $272 for PHEV >26,000 lbs. – $2,250 for EV / $1,687 for PHEV	Title 68 Sec. 6501-6509
Oregon	$110	$110 for EVs. EV owners can choose to participate in the state's road usage charge program (OReGO) instead of paying the annual fee.	Rev. Stat. § 319.885; 890/HB 2017 (2017)
South Carolina	$120/$60	Biennial fee of $120 for EVs and $60 for hybrids. Hybrids refer to those vehicles powered by motor fuel and any non-motor fuel.	S.C. Code Ann. § 56-3-645/HB 3516 (2017)
South Dakota	$50	$50 for EVs.	HB 1053

State	Annual Fee ($)	Description	Statute
Tennessee	$100	$100 for EVs.	Tenn. Code Ann. § 55-4-116/HB 534 (2017
Utah	$20–$120	$120 for all-electric or other non-motor fuel powered vehicles; $52 for PHEVs; $20 for hybrids. Fees are indexed to the CPI. EV owners can participate in the state's road usage charge program instead of paying the annual fee.	Utah Code § 41-1a-1206/SB 136 (2018)
Virginia	$50–$64	$64 fee for alternative fuel vehicles or electric motor vehicles, excluding conventional hybrids. This fee can decrease to $50 if fee revenues are not used for transportation projects.	Va. Code § 58.1-2249(b)/SB 127 (2014)
Washington	$225	$150 for EVs. $75 additional Hybrid Vehicle Transportation Electrification fee to fund charging stations.	Wash. Rev. Code § 46.17.323/HB 2042 (2019)
West Virginia	$200/$100	$200 for EVs; $100 for vehicles operating on a combination of electricity and motor fuels.	W. Va. Code § 17A-10-3c/SB 1006 (2017)
Wisconsin	$100/$75	$100 for EVs; $75 for PHEVs and hybrids.	Wis. Stat. Ann. § 341.25/Act 59 § 1895M (2017); Act 9 § 1987 (2019)
Wyoming	$200*	$200 total annual fee for plug-in electric vehicles.	Wyo. Stat. § 31-3-102(a)(xxiii)/HB 9 (2015)/ HB 2 (2016)/HB 166 (2019)

**The fees listed are in addition to regularly imposed vehicle registration fees by each state with the exceptions of Kansas and Wyoming, which reflect a total of all vehicle registration fees.*

Source: (Igleheart 2022)

Alternative Approaches to Address Gas Tax Revenue Decline

As a response to increased shortfalls in gas tax revenue, states have initiated legislation to increase transportation revenue through various strategies.

Per Kilowatt-Hour Excise Tax at Commercial EV Charging Stations

Some states have considered or adopted per kilowatt-hour (kWh) excise taxes on electricity sold or used to supply power electric vehicles as a way to make up for the gas tax lost on alternative fuel powered vehicles. In 2019, seven states (Oklahoma, Iowa, Minnesota, Kansas, Kentucky, Mississippi, and Nevada) proposed legislation to implement a per kilowatt-hour excise tax on electric power sold at EV charging stations as a mechanism to make up for shortfalls in revenue from the gas tax. As of 2023, four states (Iowa, Pennsylvania, Kentucky, and Oklahoma) have enacted such legislation.

Iowa passed legislation mandating that as of July 1, 2023, electricity sold at locations outside of a residence are required to pay an excise tax of $0.026 per kWh of electricity. Pennsylvania enacted an alternative fuels tax in 1997 that applied to all alternative fuels based on a gasoline gallon equivalence. At present, the state imposes a $0.0183 kWh excise fee on electricity used to power electric vehicles (Pennsylvania Department of Revenue n.d.).

Kentucky has implemented an EV charging station tax fee of $0.03 per kWh through a combination of excise tax and surtax. The tax is added onto the kWh selling price as determined by the station operator, who is required to report total kWh distributed and tax collected to the Kentucky Department of

Revenue. As of January 1, 2024, the kWh tax rate will be adjusted annually to match the National Highway Construction Cost Index 2.0 (Alternative Fuels Data Center n.d.).

In Oklahoma, as of January 1, 2024, public EV charging stations will be required to pay a tax of $0.03 per kWh (Alternative Fuels Data Center n.d.a). The revenue collected from this tax will be put into the Driving on Road Infrastructure with Vehicles of Electricity (DRIVE) Revolving Fund. Residents are permitted to apply EV charging station tax payments as income tax credits, up to five years (Alternative Fuels Data Center n.d.a).

Kansas is also considering deploying an excise tax on electricity sold at commercial charging stations. House Bill 2004 proposes a $0.03 per kWh tax on electricity used to charging plug-in vehicles. Commerical station owners would be required to forward the state tax collected to the Kansas Department of Revenue.

Critics of the EV charging station tax suggest that these taxes disproportionately target EV drivers who rely on public or shared charging stations as opposed to recharging at residential locations. Additionally, concerns have been raised over methods for implementing an electric power excise tax, how taxes would be collected, and the distribution of revenues (Transportation Investment Advocacy Center 2022).

Mileage-based User Fees / Road User Charges

A mileage-based user fee (MBUF) system or road user charges (RUCs) have been proposed to help offset losses and ensure the sustainability of transportation funding. Drivers would pay fees determined on the number of miles driven. These fees can be collected in various ways, including using a GPS-based system, paying directly at the pump, or a prepaid system (USGAO 2022). Proponents of road user fees state that these fees support a “user pays” system for funding highway transportation projects by charging fees that are based on actual road use (USGAO 2022).

Since 2016, the U.S. Department of Transportation has issued grant funding to 13 states to demonstrate a mileage-based user fee system through the Surface Transportation System Funding Alternatives program. Since then, a number of states have investigated the feasibility of RUCs and demonstrated pilot programs, including California, Colorado, Delaware, Hawaii, Minnesota, Oregon, Pennsylvania, Utah, and Washington (Atkinson 2019), and more than 20 states have initiated interest in exploring MBUF options. These pilot programs and studies have investigated a number of different issues related to the feasibility of MBUFs, including issues related to privacy and cybersecurity, data security, administration charges, capturing mileage from out-of-state drivers, projected impacts to both rural and urban areas, equity, integration with tolling, value-pricing, variable rates, integration with automated vehicles, and addressing transportation network companies (Utah Department of Transportation 2021).

Oregon and Utah have both since implemented mileage fee systems are actively collecting revenue.

OReGO

In 2013, Oregon passed Senate Bill 810, which was the nation’s first road usage charge for personal vehicles (Oregon Department of Transportation n.d.). The volunteer-based pay-per-mile OReGo program was created as a response to diminishing tax returns. Participants pay $0.19 per mile, and the revenue collected is put into the State Highway Fund. OreGo has its own account management system, which allows users to select a mileage reporting option, and then fees are determined based on reported miles. This option is offered as a way to reduce higher registration fees.

The Oregon Department of Transportation imposes registration fees every two years after vehicles are initially registered. When new vehicles are registered, that initial fee is good for the first four years.

Table 2 – Oregon Vehicle Registration Fees

Passenger vehicles		
Fuel economy	**Four years**	**Two years**
40+ mpg not in OReGO	$304	$152
40+ mpg enrolled in OReGO	$172	$86
Electric not in OReGO	$612	$306
Electric enrolled in OReGO	$172	$86

Utah Road Usage Charge Program

The Utah Department of Transportation and Division of Motor Vehicles established a per-mile fee as a mechanism for EV and hybrid drivers to pay for roadway maintenance and construction as an alternative to paying an annual alternative fuel vehicle fee.

Utah's Road Usage Charge (RUC) program is voluntary, participants are exempt from the annual alternative fuel vehicle fee, and fees collected through the program are capped at the total amount that the user would have paid in annual fees. The RUC program charges 1 cent per mile until it reaches the total equivalent of the flat fee imposed through the state's annual EV flat fee. Participants in the RUC program install an OBD reporting device and download a smartphone app through which vehicle miles traveled (VMT) are tracked and reported (Utah Department of Transportation n.d.). At the end of 2020, Utah reported 3,648 enrolled drivers, including 1,469 EVs, 446 plug-in hybrids, and 1,773 gas hybrids (Utah Department of Transportation 2021).

Task 2: Assess Current Impacts of Electric Vehicles on Florida's Transportation Revenue

Transportation infrastructure in the United States is primarily funded through motor fuel taxes and other transportation-related fees. Fuel taxes can be imposed by different levels of government. Federal gas taxes that are collected from each qualified gallon of gasoline and diesel sold are deposited into the federal Highway Trust Fund and then distributed to states through a formula. State fuel taxes, collected in Florida, are deposited into the State Transportation Trust Fund (STTF) that is used to fund transportation projects in the state. State taxes and fees, along with federal aid, are the primary funding sources of Florida's Department of Transportation (FDOT) work program. Florida legislature also allows counties to impose their own taxes on highway fuel in addition to the state fees.

Fuel Tax Rates

As of 2023, the total gas tax rate in Florida is 53.6–59.6 cents per gallon, including 18.4 cents per gallon federal taxes, 25.2 cents state taxes, and 10–16 cents per gallon local taxes (FDOT 2023). Since different counties impose different tax rates for motor fuel, local taxes are presented in the form of a range. Figure 1 shows a more detailed breakdown of Florida gas tax rates.

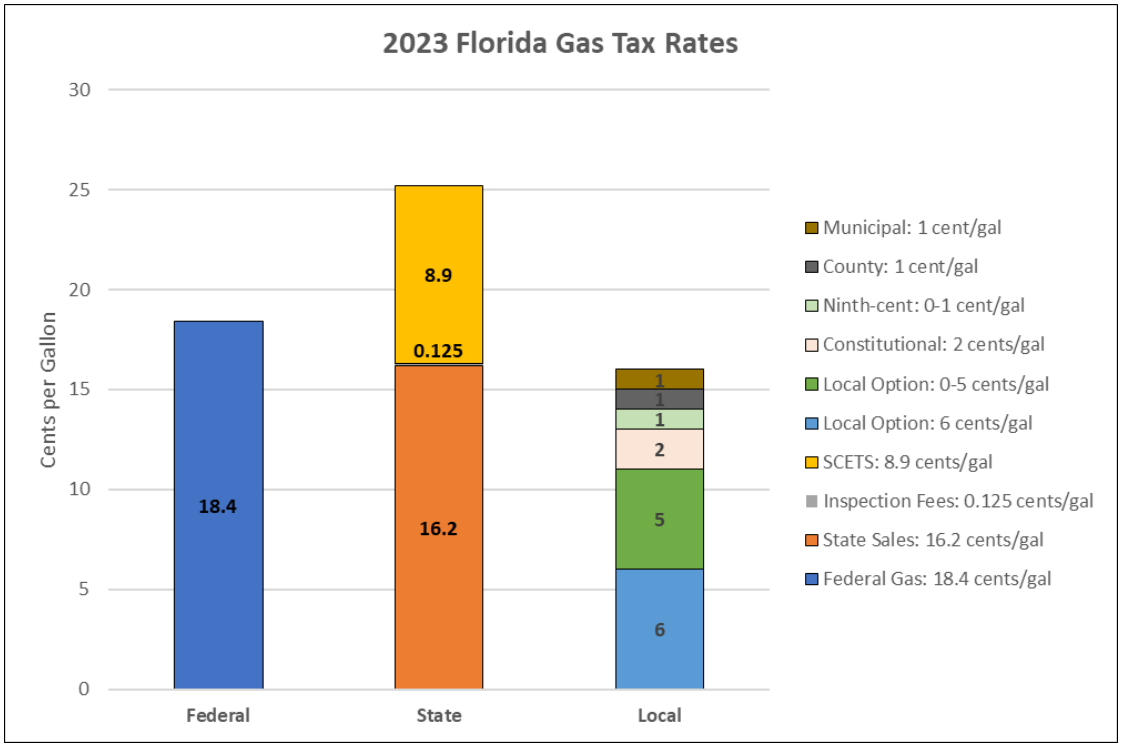

Figure 1 – Florida Motor Fuel Tax Rates

The total tax rate for diesel fuel in Florida is 60.5 cents per gallon, including 24.4 cents per gallon federal taxes, 25.1 cents per gallon state taxes, and 11 cents per gallon local taxes (FDOT 2023). Figure 2 shows a more detailed breakdown of Florida diesel tax rates.

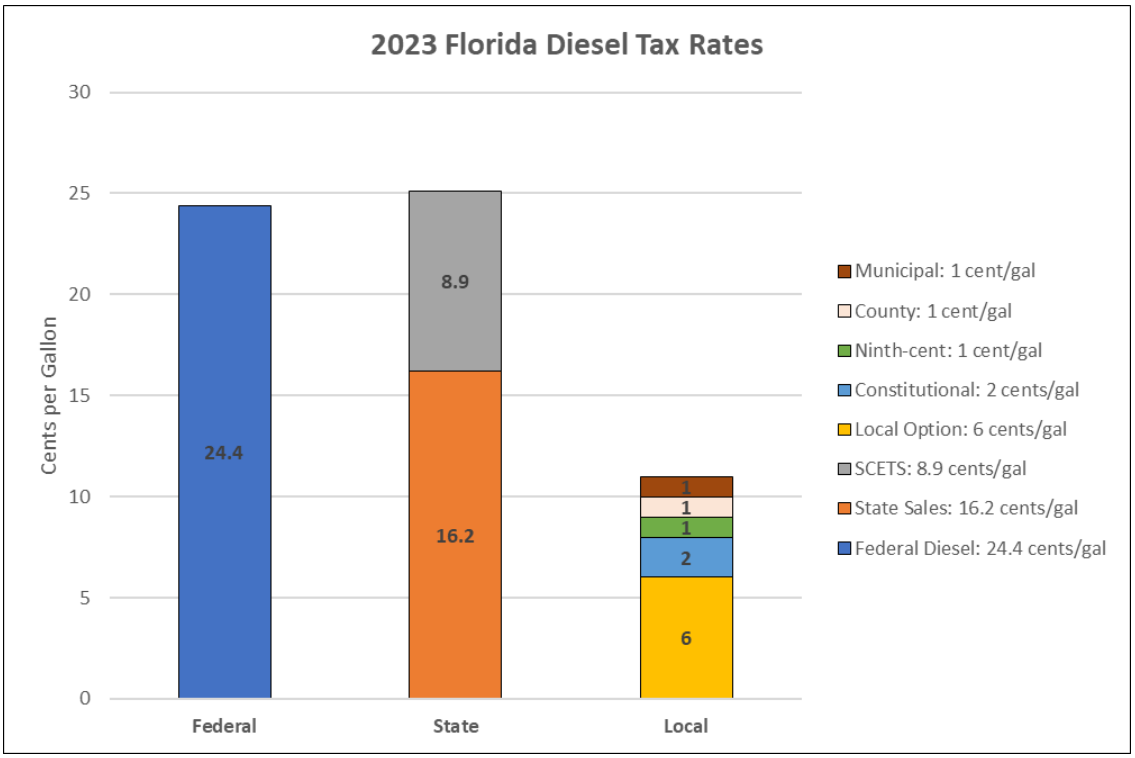

Figure 2 – Florida Diesel Fuel Tax Rates

Table 2 summarizes the total gasoline and diesel fuel tax rates in Florida.

Table 2 – 2023 Florida Fuel Tax Rates (cents/gallon)

Level of Taxes	Gasoline	Diesel
Federal	18.4	24.4
State	25.2	25.1
Local	10 - 16	11
Total Tax Rate	**53.6–59.6**	**60.5**

Every year, the state portion of fuel taxes is adjusted to inflation using the Consumer Price Index (CPI). For example, the gas tax rate increased from 23.4 cents/gallon in 2022 to 25.2 cents/gallon in 2023 (FDOT 2023). At the same time, the federal fuel tax rate is not periodically adjusted. Therefore, the purchasing power of federal fuel taxes has been eroding over time. Additionally, the state of Florida does not have direct control over federal fuel tax rates and the amount of federal taxes that are distributed to the state.

State Gas Tax Revenues

While gas taxes are not the only source of revenue for funding transportation projects in Florida, they are certainly a major contributor to the State Transportation Trust Fund. In FY-2022, fuel taxes accounted for 55% of the funds deposited in STTF. Other sources of funding include motor vehicle license and registration fees, documentary stamp taxes, local option tax distributions, rental car surcharges, and other taxes and fees.

The amount of motor fuel sold (and taxed) in Florida was relatively flat during the period 2008–2013 and then saw a modest growth from 2015 through 2019, followed by a decline in 2020 and 2021 caused by COVID-19 pandemic. Fuel sales have since recovered from the effects of the pandemic and returned to modest growth. From 2008 to 2021, the total gallons of motor fuel, including gasoline and diesel, sold in Florida grew by 5.6% (FDR n.d.). During the same period, vehicle miles traveled (VMT) in Florida increased by 9.9% (FDOT n.d.).

The increase in gallons of fuel used/sold in the state is moderated by the increasing fuel efficiency of motor vehicles. While there are still plenty of older and relatively fuel-inefficient cars on the road, newer vehicles that enter the market typically have higher fuel efficiency than the average vehicle on the road. As the population of Florida and the average fuel efficiency of vehicles continue to grow, the growth in VMT outpaces the growth in fuel sales, putting a strain on the state's transportation infrastructure funded through fuel taxes.

Figure 3 summarizes the historic volume of motor fuel consumption in Florida since 2008, while Figure 4 displays the growth in VMT during the same period.

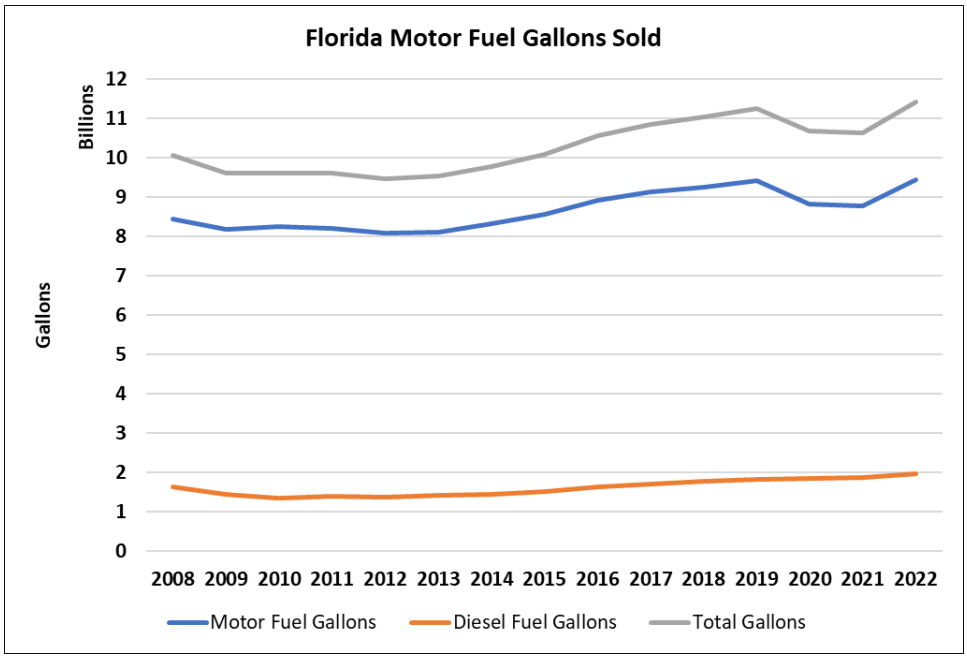

Figure 3 – Gallons of Motor Fuel Sold in Florida

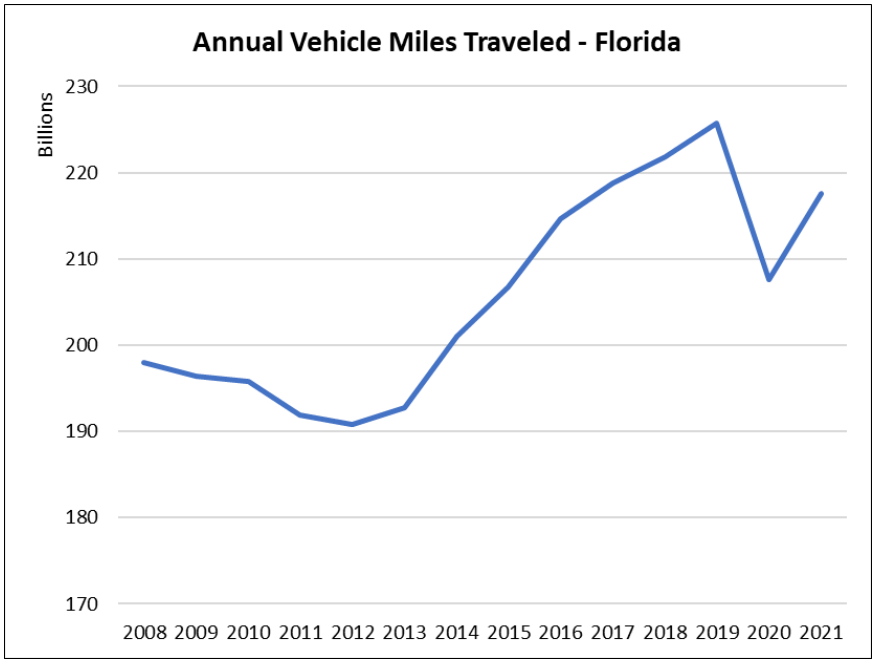

Figure 4 – Florida Annual Vehicle Miles Traveled

Since state and local fuel taxes are adjusted to CPI, the data indicate a modest increase in fuel tax revenue collection in Florida. Additionally, diesel consumption continues a consistent growth. Since diesel fuel is taxed at a higher rate than gasoline, increased diesel usage brings additional revenue to the state. Figure 5 summarizes the tax receipts from different types of state and local fuel taxes, excluding aviation fuel tax (FDR n.d.). Aviation fuel taxes were excluded from the analysis since the current study focuses only on surface transportation vehicles.

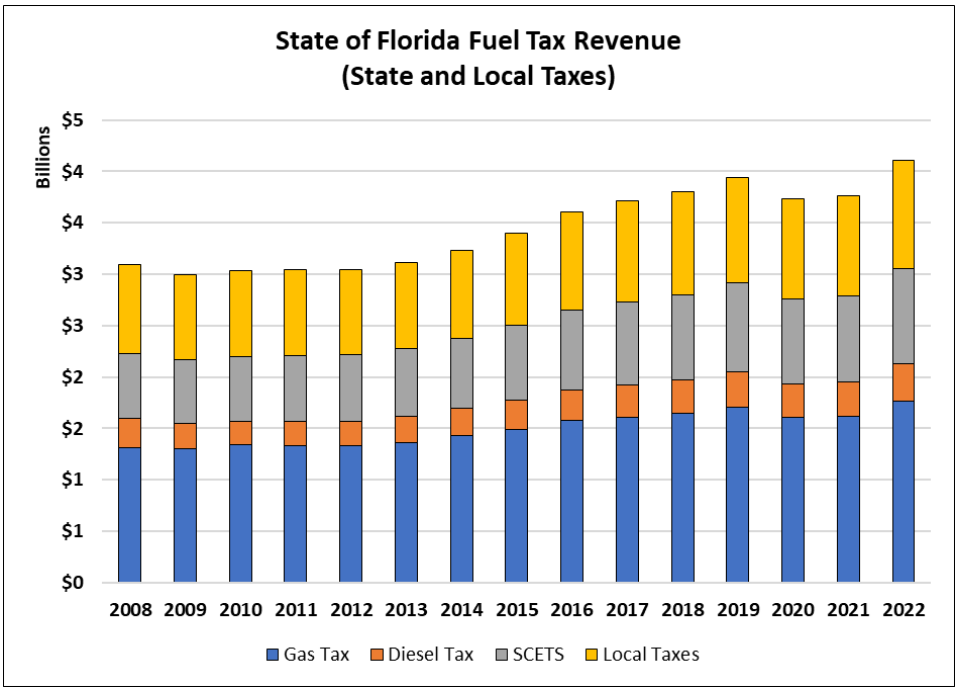

Figure 5 – Florida State and Local Fuel Tax Collections (Excluding Aviation Fuel)

It is worth noting that adjusting tax rates to CPI preserves the purchasing power of tax dollars collected through state fuel taxes but does not address the growth in vehicle fuel efficiency, resulting in a lower fuel consumption per mile. Additionally, unlike state taxes, federal fuel taxes have not been adjusted to inflation in a long time and continue to lose purchasing power every year. This became particularly problematic recently, given the high inflation rates that have been observed. At the same time, a recent study by Alliance for Transportation Electrification and Drive Electric Florida estimates, that of the $288 million transportation funding gap projected in Florida from 2019 through 2030, only $37 million (13 percent) can be attributed to electric vehicles (ATE & DEF, 2022). The biggest contributor to losses in transportation funding is continued growth in vehicle fuel economy of conventional vehicles.

Florida EV Registrations Data

Florida has the second largest EV fleet in the country, behind only California, and the number of EVs continues to increase at a fast rate. Historically, the number of EV and PHEV registrations in Florida has doubled roughly every two years. As of the end of 2022, there were 144,898 EVs and 41,956 PHEVs registered in Florida, for a total of 186,854 plug-in vehicles (FLHSMV n.d.a). Figure 5 summarizes the historic growth in the number of EVs and PHEVs registered in Florida from 2017 through 2022.

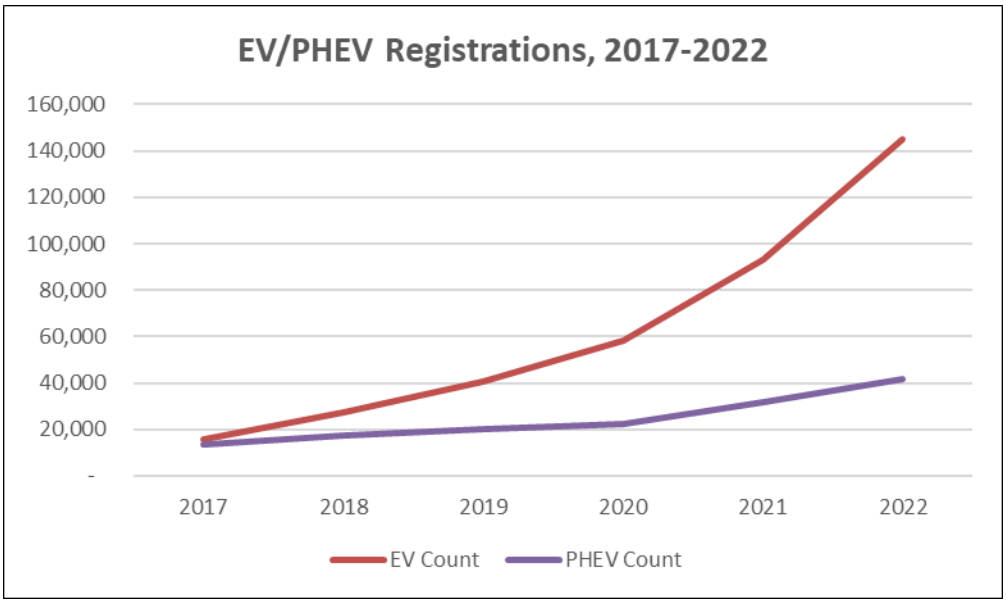

Figure 5 – Number of EVs/PHEVs in Florida

Despite the fast growth of EVs, they still represent less than 1.0% of the total 15.1 million motor vehicles registered in the state. If EVs continue to grow at the same rate, there will be about 226,000 EVs in Florida by the end of 2023, which will still represent approximately 1.5% of all vehicles registered in the state.

Fuel Usage by Typical ICE

The data on vehicle miles traveled in Florida and the number of registered vehicles in the state allows estimation of the average annual distance driven by Florida vehicles. Table 3 summarizes the data used for estimating the average miles driven per vehicle.

Table 3 – Data for Estimating Miles Driven per Vehicle in Florida

Data Name	Value	Source
Annual Florida VMT (2021)	217,566,376,710	FDOT n.d.
Motor Vehicles Registered in Florida (2022)	15,104,896	FLHSMV n.d.b
Estimated Average Miles Driven per Vehicles	**14,404**	**Calculated from Data**

The data indicate that an average vehicle in Florida is estimated to drive 14,404 miles per year. While the data on VMT and vehicle registrations include electric vehicles, they do not skew the results given a relatively small number of EVs compared to ICE vehicles. Therefore, the calculated number for miles driven is believed to be a reasonably accurate estimate of the average miles driven by conventional vehicles (ICE).

The accurate estimation of the average fuel efficiency of vehicles in Florida is rather complicated and requires extensive data on statewide fleet composition. The current analysis instead relies on Corporate Average Fuel Economy (CAFE) standards for light-duty vehicles of the 2024 model year. CAFE standards are established by the National Highways Traffic Safety Administration (NHTSA) and are set separately for light-duty vehicles and medium- and heavy-duty vehicles. The fuel efficiency standards for 2024 are summarized in Table 4 (NHTSA 2022).

Table 4 – CAFE Standards for LD Vehicles

Fleet	2024 Model Year
Passenger Cars	49.2 mpg
Light Trucks	35.1 mpg
Overall Fleet	**40.6 mpg**

The current analysis uses a fuel economy standard for the overall fleet (40.6 mpg) to calculate gallons of fuel consumed by an average conventional vehicle in Florida. The researchers recognize that the real average fuel efficiency of the vehicles on Florida's roads is likely lower. However, the use of CAFE standards can be justified by the fact that EVs are typically newer models and have better-than-average fuel efficiency, which is more comparable to the newest ICE models rather than the average vehicle on Florida roads.

Using the above data, it is estimated that an average vehicle on Florida's roads consumes **355** gallons of motor fuel per year.

While there are some light-duty vehicles that run on diesel fuel, their number is relatively small. Diesel is essentially prevalent in the heavy-duty sector. For this analysis, an average light-duty ICE is assumed to run on gasoline, given that the current analysis focuses mainly on light-duty vehicles. All estimates of fuel taxes lost from EVs presented in this study are based on gasoline taxes rather than on diesel.

Gas Tax Revenue Losses per EV

Assuming that a typical light-duty internal combustion engine vehicle consumes 355 gallons of gasoline per year and applying current gasoline fuel tax rates, it is possible to estimate the approximate amount

of fuel taxes paid by each conventional vehicle owner per year. Table 5 summarizes the estimated fuel taxes paid annually by average ICE owners.

Table 5 – Estimated Annual Fuel Taxes Paid by Vehicle Owners in Florida

Gas Tax	Federal	State	Minimum Local	Maximum Local
Annual Gas Tax Paid	$65.28	$89.40	$35.48	$56.76
Total State and Local Taxes			**$124.88**	**$146.17**

Given that state officials do not have direct control over federal fuel tax rates, as well as the amount of federal taxes distributed to the state of Florida from the Federal Highway Trust Fund, current analysis focuses primarily on the state and local portion of the fuel taxes, that that can be controlled by the state of Florida officials.

The data indicate that an average ICE owner in Florida pays approximately $89.40 in state fuel taxes per year, and $35.48 to $56.75 in local taxes per year. The exact amount of local taxes depends on the county where the vehicle is registered since different counties have slightly different tax rates for fuel. These estimates show that an average ICE owner contributes **$124.88–$146.17** per year to state and local fuel taxes. These numbers can be viewed as estimated amounts of annual gas tax revenue loss to STTF due to one electric vehicle on the road in Florida.

With the current number of registered EVs in Florida (144,898 as of the end of 2022), the state is losing $16.9–$19.8 million annually in state fuel tax revenue, including $12.1 million in state taxes and $4.8–$7.7 million in local taxes. While this number is currently relatively small compared to the overall fuel tax collections, it is projected to increase rapidly as the number of EVs continues to grow. Historically, the number of EVs registered in Florida doubled roughly every two years. If that trend continues, gas tax revenue losses associated with EV usage in the state are also expected to double every two years.

Task 3: Recommendations for a Florida Electric Vehicle Annual Fee

Florida currently does not have an annual fee assessed on electric vehicles registered in the state. While EVs use transportation infrastructure (roads) in the same way as conventional cars, EV owners do not contribute to the gas taxes that are used to maintain and build roads since these vehicles do not purchase/consume gasoline. While the number of EVs is relatively low (currently less than 1% of all registered cars in Florida), gas tax revenue losses remain rather small. However, as the number of EVs continues to grow, the issue of lost gas tax revenue will become more pressing in the medium- to long-term. Additionally, the issues of fairness in sharing the funding burden of transportation infrastructure between all users often comes into play during public debate. For electric vehicles to pay their fair share of transportation infrastructure upkeep and development, states may impose an annual fee on EV owners in the amount equivalent to what an average conventional vehicle would contribute to gas taxes.

The federal gas taxes collected in the state are deposited into the Federal Highway Trust Fund and are eventually distributed back to the states through a formula. However, there is no guarantee that a state will receive the same mount from the Highway Trust Fund that it deposited there. Since state officials have no control over the amount of fuel taxes distributed to the state from Federal Highway Trust Fund, it is suggested to base potential EV fee only on the amount of gas taxes that are collected and kept within the state trust fund. This would include state and local taxes and exclude federal gas taxes.

If Florida were to implement an annual EV fee, covering the loss in state and local gas taxes (excluding federal fuel taxes), it could consider a fee in the range of **$125 to $146** per vehicle per year. This is an amount equivalent to what an average conventional light-duty vehicle in Florida would pay annually in state and local fuel taxes.

It is recommended to implement a single flat fee for all light-duty EVs regardless of weight. While EVs are typically heavier than their conventional counterparts, Florida already imposes different motor vehicle registration fees for different weight brackets. For LD automobiles, the brackets are: (1) up to 2,499 pounds, (2) 2,500–3,499 pounds, and (3) 2,500 pounds or more (FLHSMV n.d.c). When the added weight of a battery pushes EV models into a higher weight bracket, such vehicles will pay respectively higher registration fees, accounting for additional damage to the roads. However, if the vehicle remains in the same weight bracket for registration purposes, there is no rationale for imposing a higher EV fee. Therefore, the current study recommends implementing a single flat fee for all light-duty EVs.

Plug-in hybrid electric vehicles have an internal combustion engine and an electric motor powered by a small battery that can be recharged from an external power source. Depending on the model, PHEVs can drive solely on battery power for 30–50 miles and once the battery is depleted, the vehicle switches seamlessly to its conventional ICE fueled by gasoline. Depending on trip distances and travel patterns, PHEVs can drive mostly on electricity, gasoline, or a combination of both. Unlike EVs, PHEV drivers still purchase gasoline and contribute to gas taxes, although they are expected to consume less petroleum fuel than conventional ICEs. It is difficult to accurately estimate what is the typical share of electric versus gasoline driving for PHEVs in Florida. Some national studies suggest an average utility factor (the portion of miles driven on an electric motor versus miles driven on a combustion engine) of a typical PHEV of approximately 50%. For this study, it is assumed that a typical light-duty PHEV in Florida will use

approximately half the amount of gasoline used by a typical ICE vehicle and therefore pay approximately half the amount of gas taxes that a conventional vehicle contributes.

If the State of Florida decides to implement an annual fee for PHEVs, that would account for lost state and local tax revenue (excluding federal fuel taxes), the recommended amount could be in the range of **$62 to $73** per vehicle.

References

Alliance for Transportation Electrification, Drive Electric Florida (ATE & DEF), "Florida's Highways Funding Gap", June 2022. Accessed Jan 25, 2023. https://evtransportationalliance.org/wp-content/uploads/2022/06/Florida-Highway-Funding-Gap-FINAL.pdf

Alternative Fuels Data Center. n.d. "Kentucky Laws and Incentives." Accessed February 10, 2023. https://afdc.energy.gov/laws/all?state=KY#:~:text=EV%20charging%20station%20owners%20and,charged%20by%20the%20station%20operator

Alternative Fuels Data Center. n.d.a. "Oklahoma Law and Incentives." Accessed February 10, 2023. https://afdc.energy.gov/laws/all?state=OK#:~:text=Statutes%2068%2D6511)-,Electric%20Vehicle%20(EV)%20Charging%20Station%20Tax,charging%20stations%20at%20private%20residences

Atkinson, Robert D. 2019. *A Policymaker's Guide to Road User Charges*. Information Technology & Innovation Foundation. https://www2.itif.org/2019-policymakers-guide-road-user-charges.pdf

FLHSMV (Florida Department of Highway Safety and Motor Vehicles). n.d.a. Vehicle Registration Data.

FLHSMV (Florida Department of Highway Safety and Motor Vehicles). n.d.b. Vehicle and Vessel Reports and Statistics. Accessed February 15, 2023. https://www.flhsmv.gov/pdf/vehicle-vesselreports/fy-21-22-renewals.pdf

FLHSMV (Florida Department of Highway Safety and Motor Vehicles). n.d.c. Motor Vehicle Registration Fees. Accessed February 23, 2023. https://www.flhsmv.gov/fees/

FDR (Florida Department of Revenue). n.d. Certified Fuel Gallons Report. Accessed February 14, 2023. https://floridarevenue.com/DataPortal/Pages/TaxResearch.aspx

FDOT (Florida Department of Transportation). n.d. Public Road Mileage and Travel Report. Accessed February 10, 2023. https://www.fdot.gov/statistics/mileage-rpts/default.shtm

FDOT (Florida Department of Transportation). 2023. *Florida's Transportation Tax Sources: A Primer 2023*. Tallahassee, FL: Office of Work Program and Budget. https://fdotewp1.dot.state.fl.us/FMSupportApps/Documents/pra/Primer.pdf

Igleheart, Austin. "Special Fees on Plug-In Hybrid and Electric Vehicles." National Conference of State Legislatures, July 26, 2022. https://www.ncsl.org/energy/special-fees-on-plug-in-hybrid-and-electric-vehicles#:~:text=%24100%20total%20annual%20registration%20fee,plug%2Din%20electric%20hybrid%20vehicles

NHTSA (National Highway Traffic Safety Administration). "Corporate Average Fuel Economy Standards for Model Years 2024–2026 Passenger Cars and Light Trucks." Final Rule, May 2, 2022. https://www.govinfo.gov/content/pkg/FR-2022-05-02/pdf/2022-07200.pdf

Oregon Department of Transportation. n.d. "OReGo helps preserve and improve Oregon roads." Accessed February 8, 2023. https://www.myorego.org/

Pennsylvania Department of Revenue. n.d. “Alternative Fuels Tax.” Accessed February 10, 2023. https://www.revenue.pa.gov/TaxTypes/MAFT/AltFuelsTax/Pages/default.aspx

Schleith, Kevin. 2015. *Implications of Electric Vehicles on Gasoline Tax Revenues*. Florida Solar Energy Center, Electric Vehicle Transportation Center Report No. FSEC-CR-2011-15. http://www.fsec.ucf.edu/en/publications/pdf/FSEC-CR-2011-15.pdf

Transportation Investment Advocacy Center. 2022. *Electric Vehicle Excise Tax Model Language.* American Road & Transportation Builders Association. https://transportationinvestment.org/wp-content/uploads/2022/05/2022_Electric_Vehicle_Excise_Tax_Model_Language-2.pdf

USGAO (United States Government Accountability Office). 2022. *Highway Trust Fund: Federal Highway Administration Should Develop and Apply Criteria to Assess How Pilot Projects Could Inform Expanded Use of Mileage Fee Systems.* Report to Congressional Committees GAO-22-104299. https://www.gao.gov/assets/gao-22-104299.pdf

Utah Department of Transportation. 2021. *Utah Road Usage Charge Report: As Required by Senate Bill 150.* Prepared by Jacobs Engineering Group, Inc. https://le.utah.gov/interim/2021/pdf/00002250.pdf

Utah Department of Transportation. n.d. “Welcome to Utah’s Road Usage Charge Program.” Accessed February 10, 2023. https://roadusagecharge.utah.gov/