

The Florida Senate
BILL ANALYSIS AND FISCAL IMPACT STATEMENT

(This document is based on the provisions contained in the legislation as of the latest date listed below.)

Prepared By: The Professional Staff of the Committee on Transportation

BILL: CS/SB 384
 INTRODUCER: Senator Brandes
 SUBJECT: Electric and Hybrid Vehicles
 DATE: December 5, 2017 REVISED: _____

	ANALYST	STAFF DIRECTOR	REFERENCE	ACTION
1.	Price	Miller	TR	Fav/CS
2.			ATD	
3.			AP	

I. Summary:

CS/SB 384 requires the Florida Transportation Commission (FTC) to review all funding sources for transportation infrastructure and maintenance projects and to prepare a report containing, at a minimum, an assessment of the effect of projected electric and hybrid vehicle use on future revenues from existing taxes on certain nonelectric vehicles. The review must occur when the FTC, in consultation with the Florida Department of Highway Safety and Motor Vehicles (DHSMV), determines that electric and hybrid vehicles make up two percent or more of the total number of registered vehicles in this state. The bill also requires the FTC, in consultation with the Florida Division of Emergency Management (FDEM), to make an assessment of transportation infrastructure with respect to emergency evacuations and electric vehicles, including the availability of electric vehicle charging stations in this state.

The bill requires the report to include recommendations to the Legislature relating to transportation funding for certain maintenance and improvements and requires the report to be submitted by September 1 of the year immediately after the year in which the FTC determines that electric and hybrid vehicles make up two percent or more of the total number of vehicles registered in Florida. The FTC is authorized to complete the review and report before the two-percent threshold is reached if the FTC determines that earlier completion is appropriate to maintain a financially stable long-term transportation work program.

Lastly, the bill revises planning requirements related to autonomous technology and electric vehicles to be considered as part of each metropolitan planning organization’s development of the long-range transportation plan.

The FTC will incur unknown expenses associated with determining when EVs make up two percent of vehicle registrations, with assessing transportation revenue impacts and emergency evacuation infrastructure for electric vehicles, and with preparing the required report. The

DHSMV expects the bill to have no impact on expenditures. The FDEM may incur unknown expenses associated with its participation in the emergency evacuation assessment.

II. Present Situation:

Electric Vehicles

Electric vehicles (EVs) have been in existence for some time. EVs offer a readily available and cleaner fuel source, with higher fuel efficiency and improved air quality. Increasing interest in EV use is driven by higher gas prices and greenhouse gas emission concerns, but their relative high cost compared to conventional fuel-powered vehicles and their relative limited range have restricted the commercial viability of EVs.¹ However, advancements in EV-related technology are continuing, EV manufacturing is rising, and EV prices have been dropping.²

According to the Federal Highway Administration (FHWA), most EVs have a range of 60 to 120 miles on a single charge, and almost 99% of household trips are under 60 miles. In addition, 83% of total daily vehicle miles traveled (VMT) per driver is under 60 miles, and 95% is under 120 miles.³ The FHWA concludes that “most drivers would have the ability to meet most of their transportation needs without having to stop and recharge their EV battery during their travel day.”⁴ Nonetheless, the successful adoption of EV use is “heavily dependent on the accessibility of charging stations.”⁵

Types of EVs and Charging Equipment

The U.S. Department of Energy’s Alternative Fuels Data Center (AFDC) uses the term, “electric-drive vehicles,” to collectively refer to hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), and all-electric vehicles (AEVs). According to the AFDC:

- HEVs are primarily powered by an internal combustion engine that runs on conventional or alternative fuel and an electric motor that uses energy stored in a battery. The battery is charged through regenerative braking and by the internal combustion engine and is not plugged in to charge.
- PHEVs are powered by an internal combustion engine that can run on conventional or alternative fuel and an electric motor that uses energy stored in a battery. The vehicle can be plugged in to an electric power source to charge the battery. Some can travel more than 70 miles on electricity alone, and all can operate solely on gasoline (similar to a conventional hybrid).

¹ See the Federal Highway Administration’s *FHWA NHTS Brief, Electric Vehicle Feasibility*, July 2016, pp. 1-2, available at: <http://nhts.ornl.gov/briefs/EVFeasibility20160701.pdf>. Last visited November 17, 2017.

² *Id.* at p. 2.

³ This conclusion is drawn from the FHWA’s 2009 National Household Travel Survey. The FHWA periodically conducts the survey to collect data for household members and for each day of the year and uses the data to understand trends in national trips and miles of travel by mode, purpose, and time-of-day for use in policy, planning, and safety. The FHWA advises, “Similar travel trends have been confirmed in the preliminary 2016 NHTS pilot results.” *Supra* note 1 at p. 1.

⁴ *Supra* note 1 at p. 2.

⁵ *Id.*

- AEVs use a battery to store the electric energy that powers the motor. AEV batteries are charged by plugging the vehicle in to an electric power source.⁶

EV charging equipment is classified based on the rate at which the equipment charges the EV batteries. Charging times vary, depending on the depletion level of the battery, how much energy the battery holds, the type of battery, and the type of supply equipment.⁷ According to the AFDC, charging times can range from less than 20 minutes to 20 hours or more, depending on the identified factors.⁸ Potential driving distance ranges from:

- Two to five miles of range per one hour of charging for AC Level 1 supply equipment;
- Ten to twenty miles per one hour of charging for AC Level 2 supply equipment; and
- Sixty to eighty miles per twenty minutes of charging for DC fast charging supply equipment.⁹

Other charging options are under development.¹⁰

Florida law currently defines two types of vehicles powered, in whole or in part, by electricity:

- Section 320.01(36), F.S., defines “electric vehicle” for purposes of vehicle registration under Chapter 320, F.S., to mean “a motor vehicle that is powered by an electric motor that draws current from rechargeable storage batteries, fuel cells, or other sources of electrical current.”
- Section 316.0741, F.S., defines “hybrid vehicle” for purposes of use of high-occupancy-vehicle lanes, as a motor vehicle:
 - That draws propulsion energy from onboard sources of stored energy which are both an internal combustion or heat engine using combustible fuel and a rechargeable energy-storage system;
 - That, in the case of a passenger automobile or light truck, has received a certificate of conformity under the Clean Air Act...and meets or exceeds the equivalent qualifying California standards for a low-emission vehicle;¹¹ and
 - That, in the case of a tri-vehicle,¹² is an inherently low-emission vehicle.

⁶ See the AFDC’s website available at: <https://www.afdc.energy.gov/vehicles/electric.html>. (Last visited November 20, 2017.)

⁷ See the AFDC’s website available at: https://www.afdc.energy.gov/fuels/electricity_infrastructure.html. (Last visited November 20, 2017.)

⁸ *Id.*

⁹ *Supra* note 7.

¹⁰ *Id.*

¹¹ For detailed information on California’s Low-Emission Vehicle Program, see the California Air Resources Board website available at: <https://www.arb.ca.gov/msprog/levprog/levprog.htm>. (Last visited December 1, 2017.)

¹² Defined in s. 316.003(93), F.S., to mean a three-wheeled passenger vehicle that is designed to operate with three wheels in contact with the ground; has a minimum unladen weight of 900 pounds; has a single, completely enclosed occupant compartment; is produced in a minimum quantity of 300 in any calendar year; is capable of a speed greater than 60 mph on level ground; and is equipped with seats certified by the manufacturer to meet a certain federal motor vehicle safety standard, a steering wheel used to maneuver the vehicle, a propulsion unit located forward or aft of the enclosed occupant compartment, a seat belt for each vehicle occupant meeting a certain federal motor vehicle safety standard, a windshield and an appropriate windshield wiper and washer system certified by the manufacturer to meet certain federal motor vehicle safety standards, and a vehicle structure certified by the manufacturer to meet certain federal standards.

Impact of EVs on Transportation Funding/Prior Studies

Taxes on gas and diesel fuel are a primary source of revenue for both the federal highway fund and the State Transportation Trust Fund.¹³ Transportation funding has generally experienced a continuing shortfall attributed to static federal gas tax rates, more fuel efficient vehicles, and increasing transportation construction and maintenance costs.¹⁴

Annual fuel tax revenues at both the state and federal levels are directly based on the number of gallons of gasoline and diesel fuel consumed. Because AEVs are not powered by gasoline or diesel, and because HEVs and PHEVs use less gasoline or diesel fuel than a conventional vehicle with only an internal combustion engine, an increase in the number of EVs operating in Florida results in less revenue being raised from fuel taxes for comparable vehicle miles traveled.

Research reveals a limited number of studies specifically focused on the impact of EVs on fuel tax revenues. Of the most recent, a 2015 study conducted by the University of Central Florida acknowledges the increasing national EV sales trend for the five-year period prior to the study but concludes:

Of course, despite the increase, electric and plug-in electric vehicles still represent a small portion of the US auto market. With total vehicles sales for 2014 coming in at around 16.5 million, EVs made up less than 1% of total sales.¹⁵

The study further concludes that EVs, for now and in the near future, will have only a small impact on gas tax revenues but notes a University of Texas study on EV market share suggesting that by 2050, over 50% of gas tax funds may be lost.¹⁶ The authors highlight the importance of understanding that “the rate at which revenue declines depends on many factors... The relationship among these factors is complex and continued investigation is warranted to better understand vehicle fleet mix, fuel economy, and fuel tax revenue.”¹⁷

According to the study, a number of states are exploring or implementing revenue generating alternatives, both to increase transportation funding in general and also to prepare for revenue reduction due to increased EV sales. These alternatives include a fee based on the number of miles a given vehicle travels,¹⁸ as well as increased direct taxes and surcharges on EV purchases.¹⁹

¹³ See the Florida Department of Transportation’s *Florida’s Transportation Tax Sources, A Primer*, January 2017, at p. 4, for a listing of federal and state transportation tax sources and rates for calendar year 2017, available at:

<http://www.fdot.gov/comptroller/pdf/GAO/RevManagement/Tax%20Primer.pdf>. (Last visited November 22, 2017.)

¹⁴ See the U.S. Department of Energy National Renewable Energy Laboratory’s *Primer on Motor Fuel Excise Taxes and the Role of Alternative Fuels and Energy Efficient Vehicles*, August 2015, at p. 7, available at:

https://www.afdc.energy.gov/uploads/publication/motor_fuel_tax_primer.pdf. (Last visited November 30, 2017.)

¹⁵ See the Electric Vehicle Transportation Center’s *Implications of Electric Vehicles on Gasoline Tax Revenues*, December 2015, at p. 8 available at: <http://www.fsec.ucf.edu/en/publications/pdf/FSEC-CR-2011-15.pdf>, (Last visited November 28, 2017.)

¹⁶ *Id.* at p. 12.

¹⁷ *Id.*

¹⁸ Known as VMT (vehicle miles traveled) and MBUF (mileage-based user fee). Fees are assessed based on the actual amount of road use, not on fuel consumption.

¹⁹ *Supra* note 14.

EV-Related Incentives and Disincentives

Incentives to purchase EVs currently exist at the federal, state, and local levels. A federal tax credit of up to \$7,500 is available for certain plug-in EVs. According to the Internal Revenue Service:

For vehicles acquired after December 31, 2009, the credit is equal to \$2,500 plus, for a vehicle which draws propulsion energy from a battery with at least 5 kilowatt hours of capacity, \$417, plus an additional \$417 for each kilowatt hour of battery capacity in excess of 5 kilowatt hours. The total amount of the credit allowed for a vehicle is limited to \$7,500.²⁰

In Florida, a number of EV-related incentives are currently available, including the following:

- Section 163.08, F.S., authorizes a property owner to apply to a local government for funding of, or to enter into a financing agreement with the local government to finance, installation of electric vehicle charging equipment on the owner's property, subject to local government ordinance or resolution.
- Section 212.055, F.S., authorizes local governments to use proceeds from the infrastructure surtax to provide loans, grants, or rebates to residential or commercial property owners who make energy efficiency improvements to their property, including, but not limited to, installation of electric vehicle charging equipment, if the local government ordinance authorizing such use is approved by referendum.
- Certain hybrid vehicles and inherently low-emission vehicles may use a high-occupancy vehicle lane (HOV lane)²¹ regardless of occupancy, and such vehicles may use any HOV lane re-designated as HOV toll lanes or express lanes without paying a toll as provided in s. 316.0741, F.S.

In addition, other entities at the local level offer EV incentives. The National Conference of State Legislatures (NCSL) reports that, through June 30 of this year or until funds were depleted,²² Duke Energy and Orlando Utilities Commission customers and employees were eligible for a \$10,000 rebate for the purchase of a new, all-electric, 2017 Nissan Leaf at participating dealerships; and the Jacksonville Electric Authority offers rebates for PHEVs with a battery less than 15 kilowatt hours in capacity to receive \$500, and PHEVs with larger battery capacity are eligible for \$1,000.²³

²⁰ See the Internal Revenue Service website for additional details, available at: <https://www.irs.gov/businesses/plug-in-electric-vehicle-credit-irc-30-and-irc-30d>. (Last visited November 27, 2017.)

²¹ Generally, a high-occupancy vehicle lane is a lane designated for use by vehicles in which there is more than one occupant. Section 316.0741(1)(a), F.S.

²² The AFDC reports this rebate expired on July 1 of this year. See the AFDC website available at: https://www.afdc.energy.gov/laws/laws_expired?jurisdiction=FL. (Last visited November 27, 2017.)

²³ See the NCSL's website for additional details on available incentives related to EVs, available at: <http://www.ncsl.org/research/energy/state-electric-vehicle-incentives-state-chart.aspx#other>. (Last visited November 27, 2017.)

Such incentives may, on the one hand, contribute to the increasing trend in EV sales identified by the FHWA.²⁴ On the other hand, state action may act as a disincentive and result in reduced EV sales. For example, in 2015, the Georgia General Assembly repealed “one of the nation’s most generous state tax credits for electric cars.” The Assembly also voted to impose a \$200 annual registration fee on owners of some plug-in hybrids and all zero-emissions vehicles to make up for the lost fuel taxes. EV sales then experienced a sharp reduction, a result attributed to the repealed credit and imposed fee.²⁵

EV Registration in Florida

The license tax for EVs is the same as that for a vehicle that is not electrically powered.²⁶ The exact number of EVs registered in Florida is somewhat unclear. Under the DHSMV’s current vehicle registration system programming, “fuel type” classification is an optional field and therefore the precise number of EVs registered is unknown.²⁷

The DHSMV analyzed vehicle identification numbers (VINs) in its motor vehicle registration database using available software and estimated that of the 16.2 million vehicles with VINs that could be analyzed, 16,116 EVs are registered in Florida, or about 0.1 percent.²⁸ A review of the DHSMV’s analysis of this bill suggests that the 16,116 EVs are actually the number of AEVs registered in Florida and does not include HEVs or PHEVs. Based on the DHSMV’s analysis, of the 16.2 million vehicles with VINs that could be analyzed, approximately 247,131 EVs, including AEVs, HEVs, and PHEVs, are registered in Florida, or about 1.53 percent.²⁹

Emergency Evacuation

The Florida Division of Emergency Management (FDEM) is responsible for maintaining a comprehensive statewide program of emergency management. Among the FDEM’s duties is a requirement to prepare a state comprehensive emergency management plan containing provisions that will ensure the state is prepared for emergencies and minor, major, and catastrophic disasters.³⁰ As part of the plan, the FDEM must include an evacuation component including specific regional and interregional planning provisions and promoting intergovernmental coordination of evacuation activities. Among other items, this part of the plan must establish strategies for ensuring sufficient, reasonably priced fueling locations along evacuation routes.³¹ A review of available documents and information on the FDEM’s website³²

²⁴ *Supra* note 1.

²⁵ See the article *Electric car sales hit the brakes as tax credit axed and fee added*, November 2, 2015, available at: <http://www.politifact.com/georgia/statements/2015/nov/02/don-francis/electric-car-sales-hit-brakes-tax-credit-axed-and-/>. (Last visited November 22, 2017.)

²⁶ Section 320.08001, F.S. Registration fees differ based on factors such as the type of vehicle, its weight, the license plate chosen, and whether the registration period is one or two years.

²⁷ The DHSMV also advises a system change is underway to make “fuel type” a mandatory field. See the email from DHSMV staff dated September 22, 2017. (On file in the Senate Transportation Committee.)

²⁸ See the DHSMV’s SB 384 bill analysis at p. 5. (On file in the Senate Transportation Committee.)

²⁹ *Id.*

³⁰ Section 252.35(2)(a), F.S.

³¹ *Id.*

³² The FDEM’s Florida Disaster website is available at: <http://www.floridadisaster.org/index.asp>. (Last visited November 28, 2017.)

did not identify an assessment of electric vehicle charging stations for the purpose of emergency evacuations.

Section 377.815, F.S., authorizes, but does not require, the Florida Department of Agriculture and Consumer Services to post information on its website relating to alternative fueling stations or electric vehicle charging stations that are available for public use in this state. However, the authorization is not specific to emergency evacuation. The Department's website³³ does contain a link to the AFDC website with information related to alternative fuels and advanced vehicles by state, including Florida.

According to the AFDC, 882 electric vehicle charging stations (1,979 outlets) are currently available in the State of Florida, excluding private stations.³⁴ The DHSMV notes that no EV charging stations within Florida's transportation infrastructure are specifically designated for use during emergency evacuations.³⁵

Metropolitan Planning Organizations/Long Range Transportation Plans

Metropolitan planning organizations (MPOs) are intended to "be involved in the planning and programming of transportation facilities, including, but not limited to, airports, intercity and high-speed rail lines, seaports, and intermodal facilities, to the extent permitted by state or federal law."³⁶ Each MPO, in cooperation with the Florida Department of Transportation, is required to develop a long-range transportation plan,³⁷ an annually updated transportation improvement program,³⁸ and an annual unified planning work program.³⁹

With respect to the long-range transportation plan and among other requirements, each MPO's plan must address at least a 20-year planning horizon. Section 339.175(7), F.S., requires each long-range plan to:

- Identify transportation facilities that will function as an integrated metropolitan transportation system, giving emphasis to those that serve national, statewide, or regional functions;⁴⁰
- Include a financial plan demonstrating how the long-range plan can be implemented, indicating resources reasonably expected to be available to carry it out;⁴¹ and
- Assess capital investment and other measures to ensure preservation of the existing metropolitan transportation system and make the most efficient use of existing transportation facilities to relieve vehicular congestion, improve safety, and maximize the mobility of people and goods.⁴²

³³ See the Florida Department of Agriculture and Consumer Services website available at:

<http://www.freshfromflorida.com/Energy/Florida-Energy-Clearinghouse/Transportation>. (Last visited November 28, 2017.)

³⁴ See the AFDC's website available at: https://www.afdc.energy.gov/fuels/electricity_locations.html, including a map and a download spreadsheet of locations and related information. (Last visited November 27, 2017.)

³⁵ *Supra* note 26 at p. 5.

³⁶ Section 339.175(6), F.S. See also 23 U.S.C. 134.

³⁷ See s. 339.175(7), F.S.

³⁸ See s. 339.175(8), F.S.

³⁹ See s. 339.175(9), F.S.

⁴⁰ Section 339.175(7)(a), F.S.

⁴¹ Section 339.175(7)(b), F.S.

⁴² Section 339.175(7)(c)1. and 2., F.S.

In making the capital investment assessment, each MPO is currently required to consider infrastructure and technological improvements necessary to accommodate advances in vehicle technology, such as autonomous technology and other developments.

III. Effect of Proposed Changes:

The bill requires the FTC to review all revenue sources for transportation infrastructure and maintenance projects and assess the effect of projected electric and hybrid vehicle use on future revenue from existing taxes, fees, and surcharges; make an assessment of transportation infrastructure with respect to emergency evacuations and electric vehicles; and prepare a report containing certain recommendations at the specified time. The bill also revises requirements to be considered as part of each M.P.O.'s development of the long-range transportation plan.

Section 1 creates an undesignated section of Florida Law requiring the FTC to review all sources of revenue for transportation infrastructure and maintenance projects and prepare a report to the Governor and the Legislature when the FTC determines that electric vehicles, as defined in s. 320.01(36), F.S., and hybrid vehicles, as defined in s. 316.0741, F.S., make up two percent or more of the total number of vehicles registered in this state.

The FTC, in consultation with the DHSMV, is authorized to use commercially available data that the commission deems reliable to support its determination and report. In consultation with the FDEM, the FTC is also required to assess transportation infrastructure with respect to emergency evacuations and emergency vehicles, including, but not limited to, the availability of electric vehicle charging stations in this state.

At a minimum, the report must assess the effect of projected electric and hybrid vehicle use in this state on future revenue from existing taxes, fees, and surcharges related to nonelectric, private-use motorcycles, mopeds, automobiles, tri-vehicles, and trucks. The report must include recommendations to the Legislature to:

- Ensure continued funding for necessary maintenance that provides for adequate levels of service on existing transportation infrastructure;
- Accomplish improvements and capacity projects on transportation infrastructure which meet the demand from projected population and economic growth; and
- Accomplish necessary improvements to transportation infrastructure that would support emergency evacuations by users of electric vehicles.

The bill requires the report to be submitted to the Governor and the Legislature by September 1 of the year immediately after the year in which the FTC determines that electric and hybrid vehicles make up two percent or more of the total number of vehicles registered in this state. The FTC is authorized to complete the review and report before the two-percent threshold is reached if the FTC determines that earlier completion is appropriate to maintain a financially stable long-term transportation work program.

Section 2 amends s. 339.175(7)(c)2., F.S., requiring each MPO to consider *the increased use of autonomous technology and electric vehicles*, and other developments, when making its capital investment assessment as part of development of its long-range transportation plan.

Section 3 provides the bill takes effect July 1, 2018.

IV. Constitutional Issues:

A. Municipality/County Mandates Restrictions:

None.

B. Public Records/Open Meetings Issues:

None.

C. Trust Funds Restrictions:

None.

V. Fiscal Impact Statement:

A. Tax/Fee Issues:

None.

B. Private Sector Impact:

None.

C. Government Sector Impact:

The FTC will incur unknown expenses associated with:

- Determining when EVs make up two percent of vehicle registrations;
- Assessing transportation revenue impacts of EV registrations;
- Assessing infrastructure related to emergency evacuations for EVs; and
- Preparing the report required by the bill.

The DHSMV expects the bill to have no impact on expenditures.

The FDEM may incur unknown expenses associated with its participation in the emergency evacuation assessment.

VI. Technical Deficiencies:

None.

VII. Related Issues:

None.

VIII. Statutes Affected:

This bill creates an undesignated section of Florida Law.

This bill amends the following section of the Florida Statutes: 339.175.

IX. Additional Information:**A. Committee Substitute – Statement of Changes:**

(Summarizing differences between the Committee Substitute and the prior version of the bill.)

CS by Transportation on December 5, 2017:

The CS incorporates an amendment to clarify that in determining when the two-percent threshold percentage of electric vehicles reaches two percent or more of the total number of vehicles registered in Florida, hybrid vehicles are to be included in the calculation.

The amendment also authorizes the FTC to undertake and complete the review before the two-percent threshold is reached if the FTC determines that earlier completion is appropriate to maintain a financially stable long-term transportation work program.

B. Amendments:

None.