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January 9, 2019

Judith Whitney, Clerk  
Vermont Public Utility Commission  
112 State Street  
Montpelier, VT 05602

**Re: Case No. 18-2660-INV Investigation into promoting the ownership and use of electric vehicles in the State of Vermont**

Dear Ms. Whitney,

Plug In America appreciates the opportunity to contribute to Vermont's investigation of the issues surrounding the ownership and use of electric vehicles (EVs). Please accept for filing the Comments of Plug In America in response to the Commission's *Information Request Re: Transportation Funds* dated December 20, 2018.

Best regards,

A handwritten signature in cursive script that reads "Pete O'Connor".

Pete O'Connor  
Policy Specialist  
Plug In America



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STATE OF VERMONT  
PUBLIC UTILITY COMMISSION

Case No. 18-2660-INV

Investigation into promoting the ownership and use of electric vehicles in the State of Vermont	Filed: January 9, 2019
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On behalf of the nearly one million plug-in electric vehicle (PEV) drivers we represent, Plug In America would like to thank you for this opportunity to provide feedback on the questions from the VT PUC, case No. 18-2660-INV. Plug In America is the nation's leading independent consumer voice for accelerating the use of PEVs in the United States to consumers, policymakers, auto manufacturers and others. Formed as a non-profit in 2008, Plug In America provides practical, objective information collected from our coalition of plug-in vehicle drivers through public outreach and education, policy work and a range of technical advisory services. Our expertise represents the world's deepest pool of experience of driving and living with plug-in vehicles.<sup>1</sup>

*Transportation Funds*

1. Describe your preferred method for generating revenue from users of EVs in Vermont, including how any charges would be calculated, collected, and tendered to the State. Please list the pros and cons associated with your preferred method.

We recognize that electric vehicles will need to contribute to the maintenance of roadways. However, at present they account for a miniscule portion of transportation funding shortfalls. Much more significant is the lack of indexing of gasoline taxes to inflation. As well, the improving fuel economy of conventional vehicles, while commendable, has contributed to this shortfall.

Owners of electric vehicles already pay taxes on their "fuel" – electricity. In addition, they pay sales taxes on the vehicles, and electric vehicles at present have somewhat higher purchase prices than conventional vehicles.

As electric vehicles come to represent a larger fraction of vehicles on the road, it will become more important to ensure they are paying for roadway maintenance. To this end, we do support the eventual development of a road usage charge program.

Any road usage charge program should be kept simple and easy to understand. Distance and vehicle weight are likely the two most critical factors that contribute to road wear and the need to build new road. The criteria for determining the annual fees under a road usage charge program should be as follows: total electric miles driven, total gas miles driven and weight.

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<sup>1</sup> More information available at: [www.pluginamerica.org](http://www.pluginamerica.org)



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In terms of the vehicle miles driven (distance), more total electric miles driven should result in a lower overall fee compared to total gas miles driven. The final formula for the charge would therefore take into account the clean air quality benefits from PEVs. Battery electric vehicles (BEVs) produce zero tailpipe emissions, and plug-in hybrid electric vehicles (PHEVs) produce less than their gasoline counterparts. The miles driven can easily be taken from the odometer on each vehicle, regardless if the vehicle is a BEV, PHEV or a gas vehicle. A road usage charge policy including these two criteria will fairly assess fees based on which citizens are using the roads the most, and reward those citizens who are also providing clean air benefits by driving PEVs.

The weight of any vehicle that exceeds 10,000 pounds is also an important criteria for a road usage charge formula. Vehicles above this weight limit are generally considered medium and heavy-duty vehicles, not light-duty passenger vehicles. The medium and heavy-duty vehicles, regardless if the vehicle is a PEV or not, will cause more road damage over time compared to lighter vehicles. There are "threshold effects," meaning that the damage to roads from vehicles is not a linear function of weight, but is much greater at higher weights.

Such road usage charge programs are currently being studied in Oregon, Washington, California and other states as well. See more at: [http://www.dot.ca.gov/road\\_charge/resources/final-report/docs/summary.pdf](http://www.dot.ca.gov/road_charge/resources/final-report/docs/summary.pdf), <https://www.oregon.gov/ODOT/Programs/Pages/OREGO.aspx>, and <https://waroadusagecharge.org/>. It should be noted that most of these programs are still in the pilot phase or analysis phase, and no formal final program has been determined.

2. Does your preferred method account for the amount of transportation infrastructure usage or impacts the driver of an EV would have on Vermont's roads? If so, explain how such usage and/or impacts are accounted for. If not, explain why your method is appropriate.

Yes, our proposed method takes vehicle miles into account.

3. Does your preferred method raise concerns regarding economic or geographical equity among those who would be contributing to the revenue source?

To no greater extent than a gasoline tax. Residents in rural areas that need to drive more will pay more in road usage charges. The state could mitigate this if it chose by reducing the charge per mile over a certain threshold.

4. Is the revenue source sustainable or is it subject to fluctuations over time? If it is subject to fluctuations over time, is it easily adjustable to account for such fluctuations?

This revenue source is sustainable even if the transportation system changes to feature greater use of ride-sharing and car-sharing services. A funding mechanism based on vehicle registration fees would see diminishing revenue in such a case.

The precise levels of the road usage fees (by mile and by weight) can be adjusted as needed.

5. Can your preferred method be phased in over time? If so, what are the revenue implications from such a phase in?



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This method could be phased in, ramping up until it reaches a level sufficient for road maintenance. However, it should be applied to all vehicles simultaneously to avoid perceptions of unfairness.

6. Does your preferred method treat EVs differently than fossil-fueled vehicles? If so, explain how it treats them differently and why the differing treatment is warranted.

Yes, our method suggests a lower per-mile fee for electric vehicle miles due to the lower levels of pollutant emissions (particularly important in Vermont with its very low-emission electricity system).

7. Please list the pros and cons of a per kWh fee assessed on EV charging.

Since most charging occurs at home, a per-kWh fee on EV charging could require a separate meter for determining which electricity consumption was for the EV. This could be avoided through submetering, relying on the meters embedded in EVSE or the vehicles.

A per-kWh fee is not as precise as a weight-based metric for assessing the impact of vehicles on the roads even though heavier vehicles will generally use more kWh per mile.

8. Please list the pros and cons of an annual registration fee for EVs in lieu of a per kWh fee assessed during charging.

An annual registration fee does not properly account for roadway usage.

Furthermore, plug-in hybrid electric vehicles (PHEVs), which represent a majority of the EVs registered in Vermont, may have most of their annual travel in electric mode, most in gasoline mode, or an even split. It is important to distinguish between those that are basically functioning like EVs and those that are basically functioning like internal combustion engine (ICE) vehicles.

Finally, registration fees as a source of revenue may become unsustainable in a future with more car-sharing and ride-sharing programs.

9. If your preferred method uses an annual registration fee in lieu of a per kWh fee, should this approach also be applied to all vehicles in lieu of existing gas taxes? If no, why not? If yes, what level of annual registration fee would be required to adequately fund Vermont's transportation infrastructure?

Our approach does not use an annual registration fee.

10. Please list the pros and cons of a special purchase and use tax on EVs in lieu of a per kWh fee while charging or an annual registration fee.

We do not support a special purchase and use tax. If the state wishes to encourage EV adoption, it should not discourage it with punitive fees.

11. If your preferred method uses a special purchase and use tax fee in lieu of a per kWh fee or annual registration fee, should this approach also be applied to all vehicles in lieu of existing gas taxes? If no, why not? If yes, what level of purchase and use tax would be required to adequately fund Vermont's transportation infrastructure?

We do not support a special purchase and use tax.



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12. Please list the pros and cons of a fee based on vehicle miles travelled. Please include in your response a description of how such a fee system would be implemented.

As the transportation sector changes with the acceleration of PEVs, ridesharing services and autonomous vehicles, a policy on vehicle miles travelled (VMT) should be adopted by the state. This VMT policy should then replace existing registration fees. It should account for gasoline miles traveled, electric miles traveled, and vehicle weight.

When a vehicle's registration is renewed, the owner will enter the previous year's mileage for each mode. This will determine the registration fee, which will be collected by the Department of Motor Vehicles.

13. If your preferred method uses a vehicle miles travelled fee in lieu of a special purchase and use tax, a per kWh fee, or annual registration fee, should this approach also be applied to all vehicles in lieu of existing gas taxes? If no, why not? If yes, what level of vehicle miles travelled fee would be required to adequately fund Vermont's transportation infrastructure?

The road usage fees could begin low (such that the total registration fee is only modestly increased) and then ramped up. We take no position on the existing gas taxes.

14. Please state whether a per-kWh charge, annual registration fee, special purchase and use tax, or vehicle miles travelled fee should be varied based on the size or type of EV. Please explain.

The fee should be higher for heavier vehicles due to their greater impacts on road maintenance. It is our understanding that there are threshold effects above 10,000 lbs, and so the fees for vehicles of this size should be significantly larger. The per-mile fees for a 12,000-lb vehicle should be *more* than three times the fees for a 4,000-lb vehicle. We would suggest consultation with the Department of Transportation.

15. What is the status of Vermont's transportation revenues with respect to infrastructure needs at this time?

Vermont's transportation revenues, like those of most states, are inadequate with respect to infrastructure needs.

16. Are revenues from the current gasoline tax falling to the point where it is necessary to find an immediate or near-term substitute for or addition to the gas tax?

The revenues from gasoline tax are falling *relative to the costs of road maintenance and construction*. We do suggest moving quickly on finding near-term substitutes or additions.

17. Are there other considerations that these questions do not reflect, and if so, what are they?

We have no further comments at this time.