January 9, 2018

Case No. 18-2660-INV
-Via Electronic Filing-

Ms. Judith C. Whitney, Clerk
Vermont Public Utility Commission
112 State Street
Montpelier, VT 05620

RE: Comments of Greenlots in Response to Commission Questions on Transportation Funds

Dear Clerk Whitney,

Greenlots submits these comments in response to the Vermont Public Utility Commission's ("the Commission") December 20, 2018 Information Request for comments on a set of questions related to transportation funds in Vermont.

Greenlots is a leading provider of electric vehicle ("EV") charging software and services committed to accelerating transportation electrification in Vermont. The Greenlots network supports a significant percentage of the direct current fast charging ("DCFC") infrastructure in North America, and an increasing percentage of the Level 2 infrastructure. Greenlots' smart charging solutions are built around an open standards-based focus on future-proofing while helping site hosts, utilities, and grid operators manage dynamic EV charging loads and respond to local and system conditions.

There is a clear need to identify a sustainable path forward for the collection of needed transportation revenues. In general, vehicles are becoming more efficient (the SAFE Vehicles Proposed Rule[1] notwithstanding), so the challenge of funding for transportation infrastructure extends beyond the currently narrow but growing over time circumstance of declining gas tax revenue due to increased EV adoption. In fact, the contribution of electric vehicles to this trend is very small compared to other societal and behavioral changes, including those that are a direct result of state policy. As such, while EVs are easily associated with this challenge, this issue and long-term funding measures should be considered holistically. Consideration should be given to a changing vehicle fleet, which is increasingly efficient and electric, and offer equal treatment for vehicle types, while being mindful of historically inadequate tax revenue as a primary funding mechanism. '

Furthermore, Vermont has now joined with other Transportation Climate Initiative (TCI) states to develop a regional funding mechanism for clean transportation (cap and invest), but that will be a long-term funding opportunity and will require legislation in each of the states wishing to adopt such a policy. As such, this program should be a key consideration in the broader effort of defining a sustainable path forward for future transportation infrastructure funding.

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.

[1] https://www.epa.gov/regulations-emissions-vehicles-and-engines/safer-affordable-fuel-efficient-safe-vehicles-proposed

The vehicle fleet is changing, and driving behavior is also changing. Vehicles are getting more efficient, and EV adoption is on the rise. More drivers are opting to not own a car, or to use car sharing for a greater percentage of vehicle trips. While this is happening more slowly in Vermont than in more urban jurisdictions, this trend in behavior and fleet makeup – all that use state transportation infrastructure – including EV drivers, will need to pay their fair share toward infrastructure. Additionally, thinking about this issue narrowly through the lens of how it has historically been treated and addressed will likely not result in fair and sustainable policy and funding.

There are a few important considerations, chief of which will be to ensure that fees are not implemented regressively. A flat fee applied across a given vehicle class or type (say EVs) will in effect penalize drivers who drive less. This also creates an incentive to drive more, use a greater percentage of the roads, while still only contributing the same amount of money. Furthermore, a flat fee would disproportionately impact low-income drivers, and frustrate broader state and regional policy and goals. A more equitable solution is needed.

Another option would be to impose taxes on EV charging, which could then be collected on utility bills. This could either be paid by the driver or site host, and the tax revenues could be aggregated by the utility which would then be paid to the state. This would create a patchwork for implementation, including potentially two separate taxation methods for internal combustion engine vehicles and EVs. Plug-in hybrid electric vehicles (PHEVs) would also be taxed twice by two different entities. This is not an elegant solution, and could require other entities beside the state to effectively become a taxation authorities or faciliatators. As such, it may be better to have all fees collected through one system across vehicle types.

Greenlots suggest that transportation fees could best be tracked (and potentially paid) through on-board vehicle telematics, which would allow for a vehicle mile travelled ("VMT") fee or road usage fees. This type of fee structure would enable accurate accounting for road usage. This type of system could be applied for all vehicle types and classes (including EVs), and would incentivize drivers to reduce VMT. While this system can be applied equally, it would require some level of government monitoring of driving behavior. This could raise privacy concerns, which could potentially be mitigated through anonymization of data, use of third-party contractors, and other features to ensure that the government does not have access to tracking vehicle whereabouts or personally identifiable information. This approach should also be mindful of different vehicle weights that may have more or less actual impact on road or infrastructure wear. In taking a VMT approach, there remains a strong argument for potentially approaching different fuel types differently to take into account environmental and societal externalities. Greenlots assumes this will be a strong component of Vermont's approach to the legislation necessary to fulfill the TCI cap and invest commitment.

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, a road usage fee or appropriately geographically associable VMT with some of the additional elements mentioned above would account for the amount of transportation infrastructure usage or impacts the driver would have on Vermont roads.

It is helpful to consider Oregon's pilot program to shift from a gas tax to road usage fees. Oregon conducted an analysis to identify the appropriate tax levels, which incorporate all aspects of road damage into a 'Highway Cost Allocation Study'[2]– weight, weather, and traction devices. Vermont could conduct a similar study, which could ensure that usage and impacts are accounted for.

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

No, a usage fee can be applied such that economic and geographical equity are preserved. People in rural areas may travel greater distances than those in urban areas, and often lack access to public transportation or multi-modal systems. Researchers at Oregon State University (OSU) published the results of a study on the road usage charge, and found that "the increase for rural regions is less than the statewide average while regions with more urban areas will pay slightly more than the statewide average." A Vermont-specific study should be implemented to understand different driving behaviors and how implementation of a road usage fee could impact rural communities.

Because drivers are charged only for miles driven, the impact across the socioeconomic spectrum will likely be as equitable as a traditional gas tax approach.

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?

Yes, the revenue source will be susceptible to fluctuations over time which change with driving behavior, however the VMT rate can be increased or decreased accordingly. It will also be beneficial to have redundancy in the system, such as a regional cap and trade program for the transportation sector. Transportation emissions reductions is an overall objective and therefore revenue even from a cap and trade program will inevitably decrease over time as emissions reduce in the region. However, the timeframe for such a program (and subsequent emissions reductions) is likely to be well within the frame for long-term funding needs.

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

Yes, this program could be phased in over time. That is the current approach taken in Oregon, and could likely be applicable in Vermont. In Oregon, drivers opted to participate in the program and a cap was set for the initial number of participants. An analysis of how a phase-in could work, and possible revenue implications, could be explored in a study. There are many ways that this could be phased in, however there will likely be challenges to streamline systems implementation. We believe that the more quickly this approach is phased in, the more quickly the infrastructure fund would trend towards longer term sustainability, but recognize that any voluntary program or phase-in may necessarily result in lost revenue to incentivize participation.

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.

[2] https://www.oregon.gov/das/OEA/Pages/hcas.aspx

No, EVs and fossil-fueled vehicles would be treated the same under a road usage fee but as mentioned above, if environmental and or societal externalities are taken into account – as they would seem to be under the TCI direction, vehicles would likely be treated differently than fossil-fueled vehicles.

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

A per kWh fee on EV charging could be designed to accurately measure road impacts for battery electric vehicles ("BEVs"). However, owners of PHEVs would be taxed both at the pump and on EV charging though that could likely be set up to be appropriately equitable based on actual fuel usage. Fossil-fueled vehicles would also be treated differently even if a per kWh fee were an appropriate approximation of a traditional gas tax.

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 for EVs is simple, and would require only an annual payment. However, BEVs and PHEVs would need to be treated differently (e.g., a PHEV driver would be charged an annual fee as well as a gasoline tax). However, the method by which these annual registration fees are assessed are fraught with calculation questions and issues. Primarily, and as was discussed earlier, annual registration fees are regressive and do not actually reduce VMTs. We don't have a ready solution for how these fees could be designed such that they do not disproportionately impact low income drivers or low VMT drivers.

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?

N/A

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.

A special purchase and use tax on EVs would have similar issues when compared with an annual registration fee. It is not linked to actual road usage or driving behavior, and would therefore not help achieve the transportation fund policy objectives. Additionally, it would directly work against state policy and the promotion of electric vehicle adoption. The structure of a special purchase and use tax will determine whether such a tax is regressive (and how regressive it is).

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?

N/A

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.

A fee based on VMT would be the best solution for Vermont. All vehicles could be treated appropriately, including internal combustion engine vehicles, BEVs, and PHEVs. This fee would reduce emissions and provide an incentive to reduce VMT. This could be the most equitable system that would accurately account for road usage. However, such a system would likely require vehicle tracking and monitoring of vehicle behavior.

Greenlots recommends that Vermont look to Oregon for implementation, and to potentially consider conducting an analysis of different fee structures and then to phase in adoption. It may be worthwhile to consider subsidizing implementation of monitoring systems for low-income drivers, to ensure that the equipment is not a burden for implementation. It may also be worthwhile and efficient to work with other states on such an initiative.

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?

Yes, this fee should be applied to all vehicles in lieu of a gas tax assuming there is another element that takes into account environmental and societal externalities. This fee should be calculated based on a state-specific modeling analysis, that incorporates various types of vehicles, vehicle weight classes, and driving behavior. Greenlots recommends looking to Oregon's study conducted for this very purpose.[3]

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 amount charged should vary based on the size and/or type of EV. Vehicles use the road differently, and greater vehicle weight classes cause more wear and tear on the roads. As such, it is necessary and appropriate to charge different vehicles at a different rate based on weight class, impacts, and other factors. This could easily be implemented for all the different funding methods proposed.

Conclusion

Greenlots appreciates the work that the Commission has invested into this process, and the opportunity to offer these comments regarding sustainable and equitable collection of transportation infrastructure funds. We look forward to continued participation in this investigation and digging more deeply into the relevant issues to best be able to support transportation electrification and advanced mobility in Vermont.

Respectfully submitted,

[3] https://www.oregon.gov/das/OEA/Documents/2017report.pdf

Thomas Ashley
VP, Policy