Testimony to the House Committee on Transportation

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I. Overview

My testimony today will cover several topics:

1. An EV incentive program for low- and moderate-income Vermonters.

2. Fees for the use of EV charging stations owned or controlled by the State.

3. The transportation nexus to Vermont's climate and energy strategies:
    a. Comprehensive Energy Plan.
    b. Vermont Climate Action Commission.

4. The EV charging network in Vermont.
    a. State goals for highway corridor fast charging.
    b. VW EVSE Grant Program.

For each topic, I will provide an overview, and then leave time for questions and answers before moving to the next topic. I am of course also open to taking questions as I go in addition to at the end of each topic.

II. An EV incentive program for low- and moderate-income Vermonters

A. Reasons for an EV Incentive Program

The draft section of the Transportation Bill relating to an EV Purchase and Lease Incentive Program contains proposed findings as well as the basic elements of the Program.

One of the biggest barriers to EV adoption is the upfront cost of the vehicle. Purchase incentives are an effective means of overcoming this barrier. Purchase incentives are linked to increased sales of EVs, and consumers who take advantage of incentives report that incentives played an important part in their decisions to enter the EV market.

In its final report, the Vermont Climate Action Commission recommended building an EV point-of-sale customer incentive for EVs. Governor Scott has taken up this recommendation and called for a $1.5M EV purchase and lease incentive program in his budget address. VTrans, with the assistance of ANR and PSD, put together the basic elements of a program and drafted the proposed legislation provided to this Committee.

Many Vermonters lease rather than own their vehicles, and many Vermonters who purchase vehicles purchase used vehicles. The proposed Program therefore covers both new and used EVs and well as both purchases and leases.

The proposed Program is designed to benefit low- and moderate-income Vermonters in order to help ensure that all income strata and all regions of Vermont start to enjoy the benefits of vehicle electrification as quickly as possible. Transportation energy burdens are particularly high for rural, low-income Vermonters. The incentive, combined with the lower fueling and maintenance costs of EVs, could significantly lessen transportation cost burdens for Vermonters.

In addition to directly benefiting the consumers who take advantage of the incentives, this Program will function as education and outreach to a broad segment of Vermont society. A central task in electrifying Vermont's fleet as quickly as possible is to bring EVs to rural areas and to all income levels. Vehicle electrification is not going to work unless it works for everyone. EV owners tend to be very satisfied with their vehicles. This Program will help get the word around about EVs and help move Vermont to a renewable transportation system.

B. Elements of an EV Incentive Program

Either VTrans or the PSD will be chiefly responsible for establishing and administering the new EV Incentive Program, with whichever agency does not take the lead and ANR providing cooperation and support to the lead agency.

The agencies will coordinate marketing for this this new incentive program with existing and new distribution utility EV and EVSE purchase incentives.

In addition, part of the Incentive Program involves recruiting utilities to provide a Level 2 home charger to be offered in conjunction with the EV purchase incentive. The distribution utilities would provide the L2 chargers as part of their responsibilities under Tier 3 of Vermont's Renewable Energy Standard. Tier 3 requires utilities to help Vermonters reduce their use of fossil fuels for heating and transportation.

As the Program would be structured, incentives of $2,500 would be available to households with income levels between 100% and 140% of the State's most recent Median Household Income (MHI) level. MHI is about $58,000. Additional incentives of up to twice that amount would be available to households below Vermont's MHI. This approach could translate into two or three hundred grants over the course of the Program.

Vehicles with a Base Manufacturer's Suggested Retail Price (MSRP) of $35,000 or less would be eligible for the incentive.

The Program would run for two years from the date the State makes the first incentive payment available, or until the available funds are fully obligated, with available incentives spread evenly across each year to the extent possible.

Funding shall be available on a first-come, first-serve basis in each year of the Program.

Subject to state procurement requirements, the lead agency may retain Drive Electric Vermont as a consultant to assist with marketing, program development, and administration. Up to $75,000 of program funding would be set aside for this purpose.

C. Questions/Discussion about an EV Incentive Program

III. Fees for the Use of State-Owned or -Controlled EV Charging Stations

A. Overview of a Proposed Section of the Transportation Bill Relating to Agency Fees for the Use of EVSE

Currently, agencies cannot charge the public fees that are not specifically authorized by law. VTrans, ANR, PSD, and BGS have collaboratively drafted a proposed section of the Transportation Bill that would authorize state agencies to charge a fee for the use of state-owned or -controlled EV charging equipment. (The handout shows the proposed legislation, which is more current than language originally inserted into the Transportation Bill.)

VTrans has purchased two battery EVs—a Nissan Leaf and a Chevy Bolt—and VTrans plans to purchase additional EVs going forward. VTrans has installed a L2 station at the Dill Building in Berlin and plans to install a DCFC station at its

garage in White River Junction. VTrans will most likely purchase additional EVSE to keep its growing electric fleet charged.

VTrans would like to make its charging stations available to its employees to charge their own vehicles and to members of the public visiting VTrans facilities. However, to do so, VTrans needs to be able to charge a fee to help recover its costs. This section of the Transportation Bill would enable VTrans and all other agencies to do that. Other agencies have their own fleets, and BGS runs the state motor pool, which includes EVs and EVSE and which will continue to electrify.

Other situations may arise where a state agency may need to charge a fee for the use of EV charging equipment. Although state agencies are not planning to enter into the EV charging business, an agency may at times need to take over a public charging station. For example, Washington Electric Coop installed and currently runs the charging station at the Middlesex Park & Ride, but under the agreement between WEC and the State, that equipment will soon belong to VTrans. VTrans will need to be able to charge for the use of this equipment unless and until VTrans finds another third party to operate it.

Other scenarios could arise where VTrans or another agency enters into a public-private partnership with a third-party providing EV charging on state land, with the State owning the EVSE at the end of the lease.

In the near term, VTrans and other agencies may not realistically be able to fully recover their costs from the use of their EVSE by their employees or the public. Full cost recovery may require charging prices to be set unreasonably high. The proposed legislation allows for the changing economics around EVSE by allowing the agencies to charge below cost, at cost, or at the regional market rate. It could be difficult for state agencies to determine exactly what their costs would be in some situations. The regional market rate would act as a kind of cap on charging fees by the State and could be determined by looking at prices set by publicly available charging stations in the area.

By not limiting state agencies to charging their costs and by not requiring the agencies to go through a review process every time they want to change their charging fees, the proposed legislation would treat EV charging fees differently from other authorized fees. People have no choice when it comes to permits, transcripts, and other matters that fee statutes address. Linking fees to costs and requiring changes in fees to undergo legislative review for these matters is therefore appropriate. However, the State does not have a monopoly over EV charging—if people do not like an agency's price for a charge, they can charge elsewhere. It

makes sense to afford state agencies some discretion for how much they charge for the use of their chargers so the agencies can set prices at the level they determine will best advance vehicle electrification while also covering their costs to the extent practicable.

B. Questions/Discussion about Fees for Using State-Owned or -Controlled EVSE

IV. The transportation nexus to the Vermont's climate and energy strategies: the Vermont Comprehensive Energy Plan and the recommendations of the Vermont Climate Action Commission

A. Comprehensive Energy Plan

As required by Vermont law, PSD updated the State's comprehensive energy plan in 2016. Updates are required every six years, so the next update is due by 2022. The CEP advances multiple policies to move the State toward renewable energy and establishes a target of 90 percent renewable energy over all sectors by 2050, along with interim milestones and sector-specific goals.

As the CEP points out, the transportation sector is the State's largest source of greenhouse gas emissions, responsible for almost half the State's total. The transportation sector also emits more greenhouse gases than any other on a national level. While Vermont and many other jurisdictions are seeing cleaner sources of electrical power—as hydroelectric, solar, wind, and natural gas replace coal-fired power plants—motor vehicle emissions of greenhouse gases have been increasing with population and economic growth. As of 2015, greenhouse gas emissions in Vermont were 16% above 1990 levels and 10% above 2013 levels.

The CEP establishes a goal 10% renewable transportation by 2025 and at least 80% by 2050. To get there, the CEP recommends four main strategies:

1) Smart growth, also known as smart land use planning, to advance the State's overall planning goal of compact centers surrounded by rural countryside;

2) transportation demand management, which means moving people away from single-occupancy vehicles (SOVs) through alternatives like bike/ped, public transit, carpooling, and telework;

3) using renewable biofuels to power heavy-duty vehicles; and

4) increasing the efficiency of light-duty vehicles while rapidly moving toward an electrified passenger-vehicle fleet.

Using biofuels to power heavy-duty vehicles is not making much progress in Vermont, and the rapid advances in EV technology call into question whether biofuels represent a needed interim technology or whether policy initiatives should focus on moving the heavy-duty fleet directly to battery technology. Certain biofuels, like ethanol, do not reduce greenhouse gases and have harmful environmental side effects, like water pollution.

Smart Growth is a complicated subject. Suffice it to say that about three-quarters of the development in Vermont does not go through Act 250, and a patchwork of local planning, zoning, and enforcement does not always capture the rest. The extensive discussions around Act 250 that can be expected in the Legislature this year and probably next year may address some of Vermont's land-use challenges.

VTrans has been working on transportation demand management for decades. VTrans increasingly incorporates complete streets (bike/ped) into its projects, and VTrans puts significant resources into passenger and freight rail and public transit. In addition, VTrans runs the Go Vermont commuter program and funds a robust network of state and municipal park and ride facilities. These efforts remain important and worthwhile but will not translate into rapid progress toward meeting the Vermont's targets for renewable transportation.

The electrification of passenger vehicles can potentially move the State's toward sustainable transportation faster than any other strategy. To accelerate vehicle electrification, VTrans and other Vermont agencies are working on several policy initiatives, many of which are the subject of my testimony today.

The CEP's goal of 10% renewable transportation by 2025 translates into about 50,000 EVs (10% of the passenger fleet) on the road by that date. As of right now, Vermont has only about 2,600 EVs on the road today, and EVs in Vermont are just 3.5% of new passenger vehicle registrations. Vermont is not yet on track to meet its transportation-electrification targets. VTrans, through a contract with the University of Vermont Transportation Research Center, biennially issues a Transportation Energy Profile, which provides grater details about the progress Vermont is making toward the transportation climate and energy goals of the CEP.

The motor vehicle market is undergoing a dramatic shift toward electrification. And while it is safe to say that transportation electrification is coming fast, it is also safe

to say that this transformation is not coming fast enough to meet the science-based transportation climate and energy targets of Vermont and many other jurisdictions. Public policy is needed to move the market until market forces can take over. Meeting Vermont's transportation-electrification targets will help make Vermont attractive to employers, workers, and tourists and will help grow Vermont's economy by keeping transportation energy expenditures in-state. And even though Vermont is falling short of its EV goals, Vermont is near the head of the class on a per capita basis compared to other U.S. states.

B. Vermont Climate Action Commission

The Vermont Climate Action Commission recognized that transportation is the leading energy driver in the State and made numerous recommendations for reducing greenhouse gas emissions from the transportation sector. These recommendations fall into two main categories: One is continued work on transportation demand management. The other is accelerating the pace of vehicle electrification.

Regarding vehicle electrification, the Report made twelve specific recommendations:

Rec. 8: Provide a state-funded EV purchase incentive that applies to new and used EVs, with incentives targeting rural and low to moderate income Vermonters.

Rec. 9: Strengthen the used EV market.

Rec. 10: Work with auto dealers to collect and publicize deals on EVs, and use the Drive Electric Vermont website to generate sales leads for EV dealers.

Rec. 11: Implement the recommendations of VTrans' fast-charging corridor study to provide DCFC within 30 miles of all Vermonters.

Rec. 12: Develop and execute a strategy for deployment of VW settlement funds for EV charging.

Rec. 13: Conduct the research and analysis needed to support the PUC investigation of issues relating to the charging of EVs under Act 158 of 2018.

Rec. 14: Leverage and enhance DEV to maximize the impact of education and outreach campaigns and stakeholder engagement to build awareness and encourage purchase consideration for EVs.

Rec. 15: Implement ride-and-drive events to give Vermonters a chance to test drive or experience EVs in person.

Rec. 16: Work collaboratively with auto dealers on developing and deploying strategies to effectively engage customers who are interested in purchasing an EV and to make the sale.

Rec. 17: Make EVs available through traditional car rental, car share, taxi, or ride-hailing service to provide drivers ready access to an EV at low cost and with no ownership or lease commitment.

Rec. 18: Use VW settlement funds to jumpstart a transition from diesel to electric transit and school buses.

Rec. 19: Investigate and utilize grant funding and finance strategies to help overcome the high upfront costs of electric transit buses.

VTrans and other agencies are already at work on several of these strategies:

For example, we have already discussed the basic structure of an incentive program for inclusion in this year's Transportation Bill.

A grant program for charging infrastructure (VW EVSE Grant Program) is in place and underway, and I will talk to you more about that in a few minutes. Also, ANR is leading an interagency team to administer the rest of Vermont's share of the national VW settlement funds and is starting that effort with a pilot project for electric transit and school buses. ANR is committed to using all the national VW settlement funds on vehicle electrification and none on replacing or converting older diesel vehicles with newer diesel technology.

Deputy Commissioner Riley Allen from PSD is scheduled to talk to you more about the PUC workshop on EVs, rate design, and strategies for addressing the challenge of demand charges for EV fast-charging stations. As required by last year's Transportation Bill, the PUC is tackling several issues with the aim of improving the regulatory environment around EVs and EV charging. An interagency team, including VTrans, has been working with the PUC and other stakeholders.

VTrans is using other sources of federal funding to bring two full-size electric transit buses and two cutaway shuttle buses to Vermont. The full-size buses are expected to begin service late next summer, and the cutaways are scheduled to arrive the following summer.

Finally, in its preliminary report, the Climate Action Commission recommended a market-based cap and invest system for the transportation sector. Governor Scott has committed Vermont to work with other jurisdictions in the Northeast and Mid-Atlantic regions of the U.S. through the Transportation and Climate Initiative to develop cap and invest program by the end of this year. At that time, the States will decide whether to adopt the program. ANR Deputy Secretary Peter Walke will speak with you Friday morning about that.

To sum up this part of my testimony, vehicle electrification is a key strategy for meeting the State's climate and energy goals for transportation. The State is not on target to meet these goals. However, Vermont is actively working on a breadth of initiatives for accelerating vehicle electrification.

C. Questions/Discussion about the transportation nexus to the Vermont's climate and energy strategies

V. An EV charging network in Vermont

A. State goals for highway corridor fast charging

In 2017, VTrans consultants completed a report on Electric Vehicle DC Fast Charging on Vermont Highway Corridors. The report identified seven sites that, if equipped with fast charging, would put a publicly available fast charger within 30 miles of nearly every address in Vermont and form the backbone of a statewide highway corridor fast charging network. Each of the report's proposed sites is near an interstate exchange and was screened for proximate phase-3 power, site amenities, 24-7 access, and willing site hosts. A multiagency team, with ANR in the lead, identified a handful of additional general locations along major Vermont highways for DCFC development. (See handout map of Preliminary EVSE Priority Locations for Review.)

VTrans' state strategic plan for 2018-2023 includes a goal for electric vehicle infrastructure among only five major goals in the plan. The vehicle-electrification goal specifically aims to ensure that every Vermont household is within 30 miles of

an EV fast charging station. A fast charging network is an essential part of alleviating consumer anxiety about entering the EV market.

B. VW EVSE Grant Program

VW settlement funds can be used to help develop a highway corridor fast charging network in Vermont. Vermont's share under Appendix D of the national VW settlement is $18.7M. Under the terms of the settlement, Vermont is entitled to dedicate up to $15% of that amount, or $2.8M, to passenger vehicle charging equipment. The remaining amount, as noted, will go to replacing heavier duty vehicles, including transit and school buses, with electric technology, along with the associated charging infrastructure to go with those vehicles.

ANR has delegated responsibility for administering the VW passenger vehicle charging infrastructure grant program to ACCD, with the support of an interagency team that includes VTrans, ANR, BGS, and DOH.

ACCD has just awarded funds in the first grant round. Funding for the first round was capped at $400,000, and applicants requested over $1.6M. Funding went to nine different towns and organizations across the State. Most of the funding supported one DCFC and the rest went to L2. Although the grant materials included a link to VTrans' highway corridor fast charging report, no applications were received for any of these sites. After administrative costs, $2M of funding is left for additional passenger vehicle EVSE grants.

The agencies are considering a carve-out for DCFC in future grant rounds. However, it may be beneficial to wait for the PUC to address rate design, including demand charges, before taking this step. Possibly $1.2M to $1.5M may be needed to build out a basic fast charging network in the State. Because of low traffic volumes, fast chargers may not be profitable for some time, even without demand charges. VTrans has set aside an additional $300,000 for EV charging, probably for park and rides. These state funds may be available to help build out a fast charging network through public-private partnerships.

Under Appendix C of the nationwide VW settlement, VW's subsidiary, Electrify America, must invest about $2B on L2 and DCFC and education and outreach. None of that money has to be invested in Vermont, and so far, Electrify America has invested elsewhere due to Vermont's relatively low traffic volumes. Electrify America, which is aiming to profit from its investments over the long run, may invest in Vermont in future investment cycles. However, even when Electrify

America concludes its ten-year investment program, it will have met less than 10% of the nation's charging needs.

The U.S. Department of Energy's Alternative Fuels Data Center EVI- Pro lite projection tool estimates how much EV charging is needed at state and city levels based on projected consumer demand. For 50,000 EVs, which is Vermont's 2025 goal, EVI-Pro Lite projects that 190 DCFC stations will be necessary. Vermont currently has fewer than 30, and these are not strategically distributed.

C. Questions/Discussion about the EV charging network in Vermont.

VI. Conclusions

This year's Transportation Bill may include important provisions to help accelerate vehicle electrification in Vermont. These provisions could include an EV purchase and lease incentive, authorization for the State to charge the public or its employees for the use of its EVSE, and possibly additional provisions addressing the jurisdiction of the PUC over charging stations, rate design and demand charges, and highway user fees for EVs. These are all important initiatives that merit the Committee's carful consideration. Thank you for your attention.