



December 19th, 2017

Department of Ecology, State of Washington

RE: Volkswagen Mitigation Trust D - Beneficiary Mitigation Plan

I am writing on behalf of Tesla to share our comments in response to the Department of Ecology, State of Washington's Beneficiary Mitigation Plan for Washington's allocation of the Volkswagen (VW) Mitigation Trust. It will be critical to utilize the \$112.7 million allocated to Washington under the VW settlement funds from Appendix D to maximize air quality benefits and help advance the state toward meeting its climate goals and Electric Vehicle (EV) goals of 50,000 EVs on the road by 2020¹. Replacing heavy-duty (HD) diesel trucks and investing in light-duty (LD), medium duty (MD) and HD Zero-Emission Vehicle (ZEV) charging infrastructure can help achieve this objective.

Tesla recognizes that all classes of ZEVs are important to meeting the Mitigation Plan's goals, yet given our expertise and products in the LD and HD electric vehicle (EV) market, our comments below focus primarily on LD and HD ZEVs. For instance, Tesla recently unveiled its Semi Truck, an all-electric Class 8 vehicle that consumes less than two kilowatt-hours of energy per mile and is capable of 500 miles of range.² Production is expected to begin in 2019 for the 500 mile range model.³ Beyond reducing NOx emissions, the Tesla Semi also includes enhanced safety features, low cost of ownership and superior performance relative to standard, class 8 vehicles.⁴

In general, Tesla supports the Mitigation Trust's primary purpose as specified under Appendix D to address past and future excess emissions of nitrogen oxides (NOx). Our comments below focus on providing several key principals and strategies for how the Beneficiary Mitigation Plan (BMP) can optimally allocate funds to maximize NOx reductions, in a cost-effective and equitable manner. These include:

1. Focus funds on replacement of diesel vehicles with ZEVs and investment in HD ZEV infrastructure first and foremost wherever feasible.
2. Provide funds as close as possible to point of sale under a first come, first served model.
3. Allocate the full 15% (~\$16.8 million) of eligible ZEV supply equipment funds for investment in LD charging infrastructure and include make-ready infrastructure rebates.
4. Focus LD ZEV infrastructure funds should on workplace and multi-unit dwellings (MUDs)
5. Coordinate with other state agencies

¹ <http://www.wsdot.wa.gov/NR/rdonlyres/28559EF4-CD9D-4CFA-9886-105A30FD58C4/0/WAEVActionPlanFebruary2015Print.pdf>

² Tesla. Available at: <https://www.tesla.com/semi/>.

³ *Ibid*

⁴ *Ibid*

Focus funds on replacement of diesel vehicles with HD ZEVs and investment in HD ZEV infrastructure first and foremost wherever feasible.

Appendix D outlines a number of different mitigation actions and expenditures that are eligible to receive funds under the BMP. HD EVs are also up to four times more efficient than diesel and natural gas engines and provide additional benefits relative to diesel and other near-zero vehicles that should be taken into consideration when finalizing the BMP.⁵ Beyond fuel efficiency, these benefits include reduced noise, lower overall maintenance cost, and no loss of energy during idling, which is especially relevant to port drayage applications, among other items.⁶

Replacement of Diesel Vehicles with HD ZEVs

Given the long term impact the BMP funds can have on reducing NOx and other emissions, we recommend focusing funds first and foremost on ZEVs whenever feasible to achieve maximum NOx reduction relative to replacement of other alternate fuel trucks and buses.⁷ This also aligns with the general strategy outlined in the Department of Ecology's Diesel Particulate Reduction Strategy⁸ Using the EPA Diesel Emissions Quantifier, replacement of Class 8 Long Haul Trucks (with trailer) provides much a greater NOx reduction (75%) over the lifetime of the vehicle relative to replacement of Class 7 buses.⁹ The VW Beneficiary Mitigation Plan toolkit developed by NASEO also indicates that Class 8 vehicle replacement provides greater NOx reduction relative to Class 7 transit vehicles¹⁰

The Department of Ecology has identified diesel exhaust as the toxic air pollutant most harmful to Washington's citizens, emitting NOx, fine particulate matter and GHGs¹¹ and reducing NOx emissions is critical for Washington to meet federal air quality standards for ozone in 2023 and 2031¹² Therefore, it is important that BMP funding target the remaining high NOx emitting fleet and further narrow the NOx reduction gap by replacing these vehicles with HD ZEVs wherever feasible.

Eligibility of HD ZEV charging infrastructure

Lastly, Tesla noted that although heavy-duty charging infrastructure is listed as an eligible expenditure under each section of the eligible truck replacement mitigation actions and expenditures, it has not been allocated funding under the current BMP.¹³ Tesla recommends that HD charging infrastructure be explicitly highlighted in the Dept. of Ecology's BMP, or allow for a higher rebate amount for vehicles that replace diesel vehicles, if HD charging infrastructure is also requested.

⁵ *Ibid*, p.2.

⁶ CARB, Advanced Clean Local Trucks Workshop (April 2017), slide 7. Available at: <https://www.arb.ca.gov/msprog/actruck/mtg/170425workshoppresentation.pdf>.

⁷ NASEO, VW Mitigation Plan Toolkit, Table 1. Available at: https://www.naseo.org/Data/Sites/1/03-27-17_naseo-vw-beneficiary-mitigation-plan-toolkit-final.pdf.

⁸ <https://fortress.wa.gov/ecy/publications/documents/0602022.pdf>

⁹ <https://www.epa.gov/cleandiesel/diesel-emissions-quantifier-deq> (The comparison was conducted using default values and a 2009 replacement date)

¹⁰ *Ibid*

¹¹ <http://www.ecy.wa.gov/programs/air/pdfs/FinalDraftVWMitigationPlan.pdf>

¹² <https://www.epa.gov/ozone-pollution/table-historical-ozone-national-ambient-air-quality-standards-naaqs>

¹³ Consent Decree Appendix D, p.3. Available at: https://www.arb.ca.gov/msprog/vw_info/vsi/vw-mititrust/documents/appendixd2.pdf.

Finally, we recommend including make-ready¹⁴ components of the charging infrastructure as eligible expenditures under this section of the BMP as it improves the business case for a fleet owner to transition to HD ZEVs if the make-ready charging infrastructure is accessible, thereby increasing adoption and further reducing overall NOx and GHG emissions.

Provide funds as close as possible to point of sale under a first come, first served model

Depending on the funding structure that is ultimately adopted by the BMP, we recommend that any incentive is offered as close as possible to the point of sale, which is broadly considered the most effective method of driving EV sales.¹⁵ An incentive closer to the point of sale can also help provide some certainty to the customer for availability of funding.¹⁶ Furthermore, to facilitate a seamless customer experience and ease of program administration, we support a first-come, first-serve project administration structure rather than a competitive bidding process.

Allocate the full 15% (~\$16.8 million) of eligible ZEV Supply Equipment funds for investment in LD charging infrastructure and include make-ready infrastructure rebates

A recent EV infrastructure study from the National Renewable Energy Laboratory (NREL) estimates that the state will require 16,800 Level-2 chargers and 1,370 Level-3 chargers to support the number of EVs predicted by 2030¹⁷ Tesla believes that these are conservative estimates and the actual need for charging infrastructure is greater.

Even when considering the on-going and additional investments in LD charging infrastructure being made by the investor-owned utilities (IOUs), other state programs such as the West Coast Electric Highway and the remaining VW settlement funds being deployed by Electrify America, it appears that the state is far from meeting the need. Washington DOT's 2015 action plan has also outlined key actions to strengthen the state's EV charging network and has identified barriers to mainstream EV adoptions such as the dearth of reliable public charging infrastructure and inability to charge in multi-unit dwellings¹⁸ Therefore, Tesla recommends that the BMP allocate the full possible 15% of the funding to LD charging infrastructure.

Appendix D provides several definitions that impact the development of the LD funding allocation under the BMP. Appendix D defines "'infrastructure' as the equipment used to enable the use of electric powered vehicles (e.g., electric vehicle charging station)."¹⁹ It also states that "each Beneficiary may use up to fifteen percent (15%) of its allocation of Trust Funds on the costs necessary for, and directly connected to, the acquisition, installation, operation and maintenance of new light duty zero emission vehicle supply equipment for projects as specified below."²⁰ While not

¹⁴ "Make-ready" includes the electrical infrastructure to support electric vehicle charging. Make-ready refers to the 'full circuit' infrastructure (i.e. panels, conduit, wiring) required for the EVSE to be connected up to but excluding the charging station itself.

¹⁵ "Cash at the time of purchase is by far the best financial incentive – over twice the value of a tax credit." Plug in America, *Evaluating Methods to Encourage Plug-in Electric Vehicle Adoption: A review of reports on PEV incentive effectiveness for California Utilities* (October 2016), p.13.

¹⁶ ICCT, Principles for Effective Electric Vehicle Design (June 2016), p. 6. Available at: http://www.theicct.org/sites/default/files/publications/ICCT_IZEV-incentives-comp_201606.pdf .

¹⁷ <https://www.nrel.gov/docs/fy17osti/69031.pdf>

¹⁸ <https://www.wsdot.wa.gov/NR/rdonlyres/28559EF4-CD9D-4CFA-9886-105A30FD58C4/0/WAEVActionPlanFebruary2015Print.pdf>

¹⁹ Consent Decree Appendix D, p.12. Available at: https://www.arb.ca.gov/msprog/vw_info/vsi/vw-mititrust/documents/appendixd2.pdf.

²⁰ Consent Decree Appendix D, p.8. Available at: https://www.arb.ca.gov/msprog/vw_info/vsi/vw-mititrust/documents/appendixd2.pdf

explicitly defined in Appendix D, we strongly encourage the BMP to include funding of Level-2 make-ready infrastructure, which includes wiring, conduit and subpanel installation, etc. given that these are often the greatest costs of installing EV charging stations.²¹

Limiting funding to the final charging connector (only), unless leveraging alternative funds for EV make-ready infrastructure, indirectly hinders an essential component of an EV-ready parking structure – the electrical capacity upgrade and wiring. Including EV make-ready infrastructure (not just the electric vehicle supply equipment (EVSEs)) as approved criteria for funding could substantively reduce barriers to EVSE deployment, particularly in multi-unit dwellings (MUDs). Thus, Tesla recommends funding focus on both make-ready infrastructure as well as EVSE.

Making funds available to support EV make-ready infrastructure in new and existing common parking areas could result in greater adoption of EVs by those residents who may be considering switching from a gasoline vehicle. Once a parking area or structure is EV make-ready, a relatively nominal amount of funds (<\$1000) are then required to purchase and connect an EVSE at each occupant parking space.

Different rebate amounts can be provided for make-ready and EVSE components as the make-ready infrastructure can often represent a significantly higher portion of the installation costs. A separate rebate for the EVSE-only would also allow customer preference of EVSE depending on their required application. To ensure funds are better applied, the Dept. of Ecology should also consider economies of scale to improve overall cost-effectiveness of funding disbursement and thus set a minimum EVSE port number requirement per project. Additionally, the choice of EVSE should be left up to the site owner so that they can choose what best suits their needs.

LD ZEV infrastructure funds should be focused on Workplace and Multi-Unit Dwellings

Appendix C of the VW settlement allocates \$800 million in California and more than \$1.2 billion nationally for ZEV charging infrastructure through Electrify America.²² Phase one of the investment plan is to spend 82% of the funds on a national Level-3 'Direct Current (DC) fast charging' network that covers almost every state, representing more than 2,500 DC fast chargers.²³ Future phases of the investment plans may target additional DC fast charging infrastructure. Additionally, Washington State Dept. of Transportation has a pilot program to invest \$1million in DC fast charging throughout Washington State²⁴. These initiatives will satisfy some of the long distance charging needs along major highway corridors in Washington; therefore Tesla urges the need for investment into more Level-2 home and workplace make-ready charging infrastructure, where more than 80% of EV charging occurs.²⁵

We, therefore, recommend that the Dept. of Ecology focus the 15% of LD ZEV charging infrastructure funds primarily on multi-unit dwellings and workplaces (Level-2 charging). In the context of MUDs, residents may not have access to any charging infrastructure nor have the ability to deploy such infrastructure to the extent that they do not own the physical property where the

²¹ Southern California Edison, Charge Ready Advisory Board Meeting Number 5(August 2017), Slide 11.

²² EPA, VW Clean Air Act Civil Settlement. Available at: <https://www.epa.gov/enforcement/volkswagen-clean-air-act-civil-settlement>.

²³ Electrify America, Investment Plan. Available at: <https://www.electrifyamerica.com/our-plan>.

²⁴ <https://www.wsdot.wa.gov/Funding/Partners/EVIB.htm>

²⁵ Idaho National Laboratory, Charging Behavior Revealed. Available at: <https://www.inl.gov/article/charging-behavior-revealed-large-national-studies-analyze-ev-infrastructure-needs/>.

charging infrastructure would need to be deployed. Even in instances where residents can deploy this infrastructure, the costs of retrofitting a single parking spot can be prohibitive. Notably, in many cases, standard parking lots in multi-unit residences and workplaces do not have either the electrical capacity needed to charge EVs, nor do they have the correct wiring to connect an EV charging post and connector (EVSE).

Therefore it is critical that LD ZEV infrastructure funds target MUDs to reduce cost barriers associated with electrical upgrades and EVSE installation. The costs for a make-ready MUD infrastructure projects can be minimized through economies of scale by enabling multiple make-ready parking spaces per garage, thereby reducing the per-space cost. The Charge Ready Program initiated by Southern California Edison (SCE) found that in the case of retrofitting a building with EV make-ready infrastructure, a five space project averaged approximately \$14,000 per space; however, a 25 space project resulted in a \$7,000 cost per space.²⁶

Specifically, Tesla recommends that LD ZEV infrastructure funds focus on upgrading the electrical capacity (i.e. adding panel breaker space) to support a minimum of 20% of total parking spaces, and install the necessary wiring to support as many additional spaces as possible, preferably up to 100% of spaces.

Coordination with other State Agencies should be undertaken

Coordination of investments between the various Washington agencies with similar EV infrastructure programs is critical to ensure funding is maximized and duplication does not occur. Additionally, it will be important for Dept. of Ecology staff from similar LD and HD ZEV funding programs to be closely integrated with the development of the BMP. The impact from the expenditures under Appendix D should be incremental to what is already being done in the state, particularly when it comes to the deployment of EV charging infrastructure. One mechanism that could be helpful in tracking funding is maintaining a central database accessible to all state agencies that details project and funding categories for charging infrastructure and ZEVs. In addition, an Advisory Committee could be established comprised of the state agencies including local air districts and stakeholders to provide on-going input on mitigation actions.

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Tesla appreciates the opportunity to provide feedback on the development of the BMP at this early stage of process and the level of transparency being provided by the Dept. of Ecology in designing this plan. As outlined above, Tesla provides several recommendations to help guide the implementation of the BMP. These include maximizing LD EV infrastructure investments, a ZEV centric strategy, replacement of heaviest NOx emitters, and coordination among state agencies.

We look forward to continuing engage in the development process and to reviewing the final BMP once available.

Sincerely,
Junaid Faruq
Sr. Charging Policy Engineer, Business Development and Policy
Tesla

²⁶ Southern California Edison, Charge Ready Advisory Board Meeting Number 5 (August 2017), Slide 11.