1 Tesla Road, Austin, TX 78725
www.tesla.com/contact

June 5, 2023

Submitted electronically via e-file on DMM

Honorable Michelle Phillips
Secretary State of New York Public Service Commission
Building Three Empire State Plaza
Albany, NY 12223-1350

RE: Case No. 23-E-0070 – Proceeding on Motion of the Commission to Address Barriers to Medium- and Heavy-Duty Electric Vehicle Charging Infrastructure.

Dear Secretary Phillips:

On April 20, 2023, the Commission filed an order instituting this proceeding and soliciting comments on the topic of medium- and heavy-duty electrification efforts as well as proactive planning. Tesla appreciates this opportunity to provide written comments.

Medium- and Heavy-Duty Vehicles:

1. What are the specific challenges to developing charging infrastructure for medium- and heavy-duty (MHD) vehicles?

The main challenge to developing MHD charging infrastructure is power capacity for charging fleet vehicles at depots as well as on-road, electrified truck stops. The additional challenge is how long it takes for utilities to upgrade grid capacity and deliver power for MHD charging. Unlike light-duty vehicle charging, there is no existing MHD infrastructure so publicly available infrastructure cannot be leveraged to deploy MHD trucks in the near-term.

If MHD vehicles are operating in long-haul applications, this could result in peakier charge loads than with other types of facilities. The Tesla Semi is currently capable of charging at speeds up to 1MW, which means a MHD charging site with several stations could go from zero to multiple megawatts of charging power in a relatively short power of time (less than 30 minutes).

Overnight charging for HD trucks is anticipated to be achieved using DC fast charging at a rate of 60 kW to 100 kW.

a. How do these challenges differ between electric utility service territories?

The challenges are fairly similar across utility service territories. There are specific challenges in highly urbanized environments due to grid constraints as well as in rural environments where high power charging is needed along corridor routes that may not have existing electrical infrastructure to deliver the amounts of power needed for MHD.

MHD charging also warrants an examination of utility rates across different utility service territories. In certain utility territories, existing DC fast charging utility rates could provide a solution but in all cases utility rates will be worth re-examining within the MHD context.

2. How do charging needs differ for school buses, transit buses, delivery trucks, garbage trucks, box trucks, stake trucks, transport refrigeration units, and other specialized equipment?

Tesla at this time is focused on charging for class 8 tractors. Depending on the truck's operational characteristics we can provide fast charging (750kW+), overnight charging at lower speeds, or a combination of both. Some customers run slip-seat operations where an operator goes out for an 8-hour shift, returns to the depot where the truck fast charges, and then another operator goes out for another shift. Others will run the truck all day and then have the truck charge overnight. Different MHD fleets will have different charging needs and as a result will focus on a different suite of solutions. The time-of-day that the vehicle has available for charging and the time duration within which it needs to be charged will determine the right combination of charging power levels.

Between existing DC fast charging and AC charging solutions, the main addition that will come to the charging space with MHD will be a higher power DC fast charger (1MW+) – versus light-duty vehicle charging which currently goes up to 350 kW.

a. What other types of MHD vehicles, if any, should be considered in this proceeding?

Tesla is currently focused on class 8 tractor charging specifically in the MHD context including short haul and regional trucking and would like to ensure that those vehicle types are considered in this proceeding.

3. What segments of MHD vehicles are likely to have broad electric model availability in the near-term and which segments are likely to electrify on a longer timeline?

The Tesla Semi is available today. In December 2022, Tesla began delivering its Class 8 Semi to customers in Modesto, CA and Sacramento, CA. These initial deliveries were of our long-range model which has a 500+ mile range. In deciding to focus on the class 8 regional trucking market for its first foray into the heavy-duty segment, Tesla focused on where it can be most effective at reducing harmful emissions at scale in support of our mission to accelerate the transition to sustainable energy. Electrifying regional trucking is financially viable today and as a result this sector of trucking is likely to advance more quickly than others given the existence of available vehicle models as well as business models. Trucks used in regional trucking travel more miles and haul heavier loads, and as a result offset more diesel use, resulting in greater emission reductions.

4. What locations or types of locations should be considered as potential hubs for MHD vehicle charging?

At or near the distribution facilities and depots where these trucks are currently operating or domiciled are the priority locations for MHD fleet electrification since the trucks will already be visiting these sites. As a secondary priority, some number of electrified truck stops will be needed to serve on-route charging for these vehicles and New York's designated alternative fuel corridors could be a good place to start.

a. What criteria should be considered when selecting locations for potential hubs upstate and downstate?

The ideal locations will be an overlap of available power capacity, driver amenities, and areas with a heavy amount of industrial activity where a charging hub is able to serve a large number of trucks that will already be visiting nearby facilities.

5. What considerations should Staff take regarding incentivizing infrastructure siting and MHD charging to mitigate impacts in Disadvantaged Communities overburdened by truck and bus traffic and pollution?

There is already an overlap between disadvantaged communities and industrial centers, so these communities inherently experience an outsized impact from truck and bus pollution. By electrifying the MHD sector the focus will naturally be on mitigating environmental impacts in these same communities due to the existing geographic correlation.

6. What considerations are important for stakeholder engagement concerning MHD electrification? Describe effective strategies to engage that can meet the needs of fleets with 6 vehicles or less.

Engaging directly with industry groups that represent smaller fleets, as well as talking to smaller fleet operators themselves, will help identify the best ways to serve these types of customers. A lot of smaller fleets rent their vehicles from larger fleets (e.g. Ryder, Penske, etc.) so talking to the larger fleets who rent vehicles to these smaller owner/operators would be a way to get another perspective on this same group of customers, additionally it could be a way to geographically target groups of customers for specific industrial areas – i.e. it could provide an opportunity to ask a larger fleet operator what smaller fleet customers it serves in a specific geographic area.

7. Identify barriers that exist in the current MHD Make-Ready Pilot Program that could be modified in a successor to the pilot.

It is important to keep the pilot program flexible for MHD fleets due to the developing nature of this sector. Tesla recommends removing all vehicle eligibility requirements in order to increase participation in the current MHD Make-Ready Pilot Program. Specifically, the existing requirement for participation in the Truck Voucher Incentive Program ("TVIP") in the Upstate Utility programs is challenging since it excludes customers who are unable to scrap older vehicles, or who do not have eligible vehicles for scrappage, even when those customers are interested in electrifying some of their fleet. Additionally, while there are on-going development efforts, there is not yet a standardized MHD charging connector so it is important that a specific connector requirement is not part of the program at this time.

a. Provide comments on how to address the barriers to building publicly accessible charging that serves MHD vehicles (e.g., highway truck stops).

Many of the barriers to building publicly accessible MHD charging are similar to those building fleet MHD charging. Right now, there are not good data sets to understand exactly how many chargers are needed at publicly accessible MHD sites. There are similar risks to the build out of light-duty electric vehicle charging infrastructure where low utilization of a charging station can lead to challenging financial operations and overutilization can lead to bad customer experience. In the case of commercial trucking, a customer waiting to charge is not just inconvenient, time spent waiting for charging can jeopardize their ability to run their business with certainty. Many truck operators currently fuel only at their private depots and would not be willing to rely on public fueling for efficiency and security reasons.

b. Provide comments on how to address the barriers to building private or limited access charging that serves MHD vehicles (e.g., depots, warehouses, and distribution centers).

Installing MHD charging can be extremely capital intensive for fleets and potentially long timelines for delivering power capacity to private charging locations can stall a fleet's adoption of electrified MHD vehicles.

8. Through the Make-Ready program, utilities offer fleet assessment services to help prepare for the transition to electric vehicles. What additional technical assistance is needed to support the transition to mass MHD electrification?

Utilities' main priority should remain providing clear and transparent assessments for delivering power capacity to MHD fleet locations for charging and accelerating the timelines for delivering that power however possible including proactive investments. The utilities technical assistance from both a cost and timeline perspective are needed for fleets to confidently make these investments in electric MHD vehicles.

<u>Proactive EV Infrastructure Planning and Investment:</u>

9. Discuss how proactive EV infrastructure planning differs for light-duty and MHD vehicle market segments?

Although similar to light-duty charging in many ways, due to the higher power levels needed for MHD charging, the planning and build timeline is expected to be longer. Therefore, it is important to begin planning earlier and make investments proactively due to the long timelines associated with upgrading grid capacity. Additionally, it is important to understand the intersection of light-duty and MHD charging infrastructure needs. As light-duty charging stations become larger to accommodate more vehicles, many of the proactive planning activities being considered for MHD charging infrastructure should be undertaken today in the light-duty charging context.

Light-duty vehicle electrification has many more stakeholders, so the application is more homogenized. In the industrial sector, there are fewer stakeholders, so it is important to get their direct feedback and understand their specific needs. Regionally, the needs for MHD charging should be tailored to the specific needs of the stakeholders in those areas. Fleets have a more diverse operational profile when compared with light-duty vehicles, which have largely similar charging patterns across customer types. Gathering regionally specific data from the major stakeholders in a certain area could be a good place to start the planning process.

10. How should proactive planning consider concurrent policy goals to reduce personal vehicle usage and increase the use of shared modes (including public transit)?

11. Discuss how battery energy storage systems and other distributed energy resources can be implemented in both short-term and long-term planning for electric vehicle charging needs across vehicle classes.

Although energy storage and solar power can be co-located with both light-duty and MHD charging stations, it is important that sufficient grid capacity is provided to not fully rely on localized assets. Time-of-use rate signals continue to be a good way to incentivize grid-beneficial charging behavior. Opportunities for overnight charging will be greater in certain MHD fleet applications where the fleet's usage naturally aligns with cars being parked overnight but will not be applicable to all MHD operational profiles. Distributed Energy Resources (DERs) should continue to be allowed and encouraged, but not required nor fully relied on to solve larger grid capacity issues.

a. Is vehicle-grid integration technology at a sufficient level of maturity to impact short-term planning considerations? If so, describe how; if not describe why not.

These are commercial trucks intended to be on the road and that is the main priority. Vehicle-grid integration is not at a sufficient level of maturity to impact short-term planning considerations. In the context of school buses which are expected to sit idle during certain seasons of the year, there may be a use-case specific application where there are not competing business priorities.

12. How can managed charging programs reduce upfront infrastructure needs?

High utilization of charging infrastructure and MHD vehicles will result in the best total cost of ownership for fleets so right sizing the equipment is key. In an overnight charging application, managed charging can mitigate grid loads. As these dynamics are better understood in the future with larger datasets available, there may be an opportunity to use load diversity calculations to safely minimize unnecessary grid upgrades.

13. What strategies can reduce the risk of future-proofed sites from becoming stranded assets if a fleet or other baseload user changes their operations or moves to a different site?

Electric MHD vehicles are long-term investments and fleet operators typically plan to operate an individual truck from 5 to 15 years. Fleet operators looking to electrify are doing so with long-term plans to permanently make

this part of their operations. Additionally, fleet operators are equally, if not more, concerned about stranded assets and as a result their concerns are aligned to ensure an equitable return is realized on these long-term investments.

a. In the Northeast, climate change is expected to increase the frequency and intensity of storms, especially extreme precipitation and extreme heat, and lead to more frequent high tide flooding. Should the impact of current and future climate vulnerabilities be addressed in the infrastructure planning process (e.g., sites that are in or are projected to be in the floodplain)? If so, how?

At this time, fleets are not necessarily taking these types of larger climactic changes into consideration and to make this a further requirement is likely to overcomplicate what is already a challenging transition that needs barriers reduced in the near-term.

14. What types of site locations and use cases should be prioritized for proactive future-proofing, and why?

All sites should be considered both in the near term and what their future capacity needs might be in the 5-year range. That does not mean that capacity needs to be installed at the same time, but utilities should be asking customers those questions around anticipated future needs to inform prudent financial decisions based on how charging sites may develop to meet the needs of electrified MHD fleet adoption.

15. What considerations should be taken into account when addressing future-proofing sites in disadvantaged communities?

As mentioned in response to Question #5, there is oftentimes an overlap between disadvantaged communities and industrial centers which makes these good locations for future-proofing consideration. It is worth considering if there are any specific environmental goals for these geographic areas as well as any electrification projections of fleet operators in these same areas, overlaying these correlated objectives may help right-size or anticipate future upgrade needs.

16. Are there alternative financing models for bringing new electric service to sites with additional capacity for future-proofing? Please describe.

“Charging as a service” is a business model that allows customers to size the infrastructure installed for what they need today while paying for that infrastructure at a flat $/kWh fueling cost that is inclusive of infrastructure. Charging as a service can be set up at a private fleet’s location or if a charging as a service provider is setting up an independent charging location, they may take into consideration the fueling needs of multiple fleets in a specific geographic area, maybe not all who have yet electrified.

Some companies are also leasing trucks and charging infrastructure at the same time as a package which is another alternative way of financing the charging infrastructure investment and defraying upfront costs.

Tesla appreciates the opportunity to provide comment on these issues, and the Commission’s consideration.

Respectfully submitted,

Bill Ehrlich

Bill Ehrlich
Senior Policy Advisor

June 5, 2023

Tesla, Inc.
3500 Deer Creek Rd
Palo Alto, CA 94304
651-324-9127
wehrlich@tesla.com