BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

Docket No. UM 2033

In the Matter of	
PORTLAND GENERAL ELECTRIC COMPANY	) COMMENTS OF) TESLA, INC.)

2019 Transportation Electrification Plan

Pursuant to Chief Administrative Law Judge Nolan Moser's Ruling issued on October 30, 2019, Tesla, Inc. (Tesla) submits these intervenor comments to the Public Utility Commission of Oregon (Commission) regarding Portland General Electric Company's (PGE) 2019 Transportation Electrification Plan.

I. Introduction

On September 30, 2019 PGE filed a comprehensive Transportation Electrification Plan, which "outlines the pathway to support customers in electrifying their vehicles and partnering with them to more efficiently integrate renewables onto the system." Furthermore, the Plan is intended to align with achieving Oregon's targets of having 250,000 electric vehicles (EVs) on the roads by 2025 and reducing greenhouse gas (GHG) emissions by 75% from 1990 levels. PGE's Plan intends to focus on three key areas: 1) rates, 2) infrastructure, and 3) programs.

Tesla commends PGE for its comprehensive assessment of what is needed to electrify the transportation sector in Oregon over the next several years and identifying specific areas of investment need it can address. In particular, the analysis of the existing charging infrastructure landscape in PGE's service territory, as well as the transportation electrification (TE) outlook for what is on the horizon and long term considerations, is helpful in understanding how PGE can

best support charging infrastructure and EV deployment in Oregon along with other stakeholders and partners. Without this comprehensive long-term vision, it would be difficult to provide feedback on the Plan.

Given its expertise as both a manufacturer of EVs and the deployment of its expansive charging infrastructure network, Tesla focuses its comments on the following areas of the Plan:

- **Current Charging Landscape** – Direct Current Fast Charging (DCFC) site design, standard connectors and the discussion regarding Tesla's network.
- **Fleet/Business Customer Support** - Best practices for working with customers and EV-ready building codes for new construction.
- **EV Rates** – Business and fleet customer needs.
- **Make-Ready Infrastructure** – Supporting multifamily, workplace and public sites.
- **Electric Truck Charging Sandbox –** Consideration for longer timelines and different use case applications.

Prior to providing feedback on each of these categories below, it is important to note that Tesla brings a unique perspective to the transportation electrification discussion. Tesla's mission is to accelerate the world's transition to sustainable energy including creating a mass-market, affordable EV, the Model 3, and representing a large portion of the EV market in Oregon. Creating a seamless and convenient charging experience is key to enabling mass market EV adoption because it ensures people do not need to compromise to drive electric. Since the Tesla Supercharger networks' initial development in 2012, Tesla has gathered valuable experience over the past eight years about the challenges and barriers to deploying, owning and operating DCFC infrastructure. Globally, the Supercharger network now includes over 1,600 locations

with approximately 14,500 Superchargers and we continue to expand to meet customer demand. At the same time, Tesla continues to innovate on how to provide a reliable network with a seamless customer experience. Therefore, we believe that Tesla can help share this expertise with the Commission and other stakeholders as it evaluates PGEs Transportation Electrification Plan and continue to serve as a technical expert as a private network operator based on our lessons learned and innovation in this space.

II. Current Charging Landscape

Per OAR 860-087-0020 PGE dedicates a section of its Plan to discussing the current market conditions including the charging landscape. In this context, PGE raises a number of potential barriers with DCFC site design as EV adoption increases such as queuing, up-time, size, and access. For instance, PGE notes that "of the charging stations deployed, not all chargers serve all vehicles…there are two primary types of EV plug that EVs and chargers can connect to: CHAdeMO and SAE Combo."[1] Additionally, "most of the public quick chargers in our service area today have only a CHAdeMO or Tesla connector, meaning they can only serve a limited portion of all EVs."[2] While Tesla recognizes that publicly funded charging stations should aim to provide access to all EVs, this is difficult to achieve in today's DCFC landscape given there are three DCFC connector types, the third being Tesla's. Therefore, no matter what technology is used for DCFC, it would serve a certain subset of EVs since there is no fast charger that works for all EVs. Enabling creative strategies such as co-location of various charging providers and connector types at sites, and leveraging funds for the make-ready portion of the sites along with

[1] PGE 2019 Transportation Electrification Plan, p. 33.
[2] *Ibid.*

private investment in actual chargers can help solve this challenge in the near term and ensure the infrastructure that is deployed is compatible with the vehicles being purchased by drivers.

In terms of station site design, PGE points out that "most have just one or two quick charging stations at each site. If those stations are in use, or if they are blocked by a non-electric vehicle or out of service for any reason, the customer cannot charge their EV as needed."[3] Site design is dependent on many factors including space constraints, application (urban or corridor), service cost, and amenities among other items. It is important to deploy enough chargers at a site to satisfy customer demand on peak travel days to ensure a good customer experience, and to provide redundancy in case of an equipment outage. For these reasons, Tesla typically deploys at least eight DCFCs at each location. However, it is difficult to conclude that this is the best site design for all DCFC sites and EVs at this time. PGE should work with DCFC providers to figure out optimal site design, including number of chargers, utilizing various siting characteristics and should also consider mixed-use sites that may have a combination of Level 2 and DCFCs.

As part of the current market conditions PGE highlights residential annual average charging profiles based on vehicle type (Figure 9).[4] Based on the data provided in the Plan, it is unclear how PGE obtained the information on vehicle type and how many vehicles this assessment included. PGE notes that Teslas can accept a higher rate of charge for Level 2, which likely assumes that many Tesla owners are using the Tesla wall connector rather than some other Level 2 equipment or the mobile connector. PGE also notes that this will be important to monitor as home EVSE charging equipment speeds increase. While Tesla agrees it is worthwhile monitoring home charging impact, this phenomenon is not specific to Tesla and should be

[3] *Ibid,* p.34.
[4] *Ibid,* p.36.

evaluated in the context of battery ranges increasing for EVs generally. It is unlikely, however, that home charging would start to rely on extremely fast charging speeds given that vehicles will be parked overnight if charging at home for several hours and because there may not be sufficient electrical panel space available to accommodate higher charging levels without an upgrade. At the same time, price signals such as time of use rates can also help shift charging loads to off-peak times along with scheduled charging so that not all vehicles begin charging at the same time once-plugged in.

III. Fleet/Business Customer Support

PGE highlights that it originally launched support services including technical assistance for business customers considering charging infrastructure or EV fleets in 2018 and plans to continue to expand this program going forward. Among other best practices, PGE also offers EV service providers, who themselves are business customers, a single point of contact to support service connection efforts for new sites.[5] This level of assistance is extremely beneficial to business customers like Tesla that are deploying infrastructure and we recommend that PGE continue to focus on this area.

PGE also mentions opportunities to help builders and communities with EV-ready design for new construction. Tesla agrees that making new construction, especially multifamily housing, EV-ready is critically important and much more cost effective than retrofits being done today to incorporate charging infrastructure at existing sites. PGE's support in this effort is important to help drive down long term infrastructure costs that can benefit all customers. Additionally, Tesla

[5] *Ibid*, p.100.

looks forward to learning more about PGE's engagement in helping meet the Governor's goals outlined in Executive Order 17-21 to establish EV-ready building codes by 2022.[6]

IV. EV Rates

PGE currently has rate schedule 38 available for DCFC customers, however, this is limited to sites at or under 200kW. It notes that this cap may limit DCFC deployment and "as individual charging stations can use as much as 350 kW, we must contemplate rate designs that encourage investment, but do not punish businesses for making early investments in infrastructure before utilization is sufficient to cover a demand charge."[7] Tesla agrees that continuing to evaluate rate options for DCFC customers, beyond schedule 38 or potentially modifying it, is important to better meet the current profiles of DCFC commercial customers. A number of utilities across the country have now implemented or are in the process of implementing commercial EV rate options that can serve as an example for PGE as it considers new or modified rate designs in 2020-2021.[8] In its participation in these rates discussions in other states, Tesla has provided its expertise as a large commercial customer and charging operator with a variety of DCFC site designs. Through this engagement, we have identified several principles that must be considered when developing new commercial EV rates include providing optionality and stability, being technology agnostic, evaluating new and existing stations, and focusing on different customer applications, among other items. Tesla looks forward to working with PGE and other stakeholders to help determine which rate options may best meet commercial EV customer needs in its service territory while striving for designs that are cost based, revenue neutral.

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[6] *Ibid,* p.103.
[7] *Ibid,* p.122.
[8] Southern California Edison, NV Energy, Eversource, Pacific Power, PECO, Con Edison, Pacific Gas and Electric all have established nonresidential EV rates.

V. Make-Ready Infrastructure

Traditionally, utility investment in infrastructure has gone up to the utility meter but not extended on the customer side of the meter. Make-ready infrastructure, on the other hand, expands beyond the utility meter up to the actual charging station. PGE notes that "delivering power to the point of delivery is necessary to ensure reliable supply of electricity to our customers' vehicles" providing one rationale as to why utility investment should expand beyond the meter.[9] Investment in make-ready infrastructure by utilities can build out one of their core competencies which is based on development of traditional service connections. Given the cost incurred upfront to develop make-ready infrastructure and the potential returns via increased electricity sales that can benefit all ratepayers, utilities have a natural role to play in supporting this build out.

VI. Electric Truck Charging Sandbox

While the primary focus on initial infrastructure programs should continue to be on light-duty vehicle electrification, PGE is right to start considering medium and heavy-duty vehicle electrification and associated infrastructure impact. PGE notes that this "sandbox" concept includes "exploring opportunities to better familiarize ourselves with the technical requirements and customer needs regarding electric truck charging infrastructure" with a potential initial project in 2020.[10] Given the various charging power levels and use case applications that will likely be associated with heavy-duty electrification and the potential longer lead times for infrastructure development in providing service connections for these higher power sites, Tesla

[9] *Ibid*, p.125.
[10] *Ibid,* p.136.

supports initial explorations by PGE to better understand the medium and heavy-duty electric truck space.

VII. Conclusion

Tesla thanks the Commission for the opportunity provide feedback on PGE's 2019 Transportation Electrification Plan. Utilities like PGE have a role to play in investment in charging infrastructure programs including make-ready infrastructure, rates and other advisory service capabilities. As indicated by PGE, in order to fill infrastructure deployment gaps and meet Oregon's EV targets, utilities will need to support infrastructure investment in the near term, which can in turn provide benefits to all ratepayers. PGE "estimates that in 2020, passenger EVs will contribute over $5 million in customer value by increasing revenue in excess of the cost of that energy and capacity… in turn putting downward pressure on customer prices."[11] Tesla looks forward to continuing to share its knowledge and expertise with the Commission, PGE and other stakeholders as a leader in developing a private charging infrastructure network that can help enable mass electrification.

Respectfully submitted on December 6, 2019,

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[11] *Ibid,* p.11.