BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

UM 1811

In the Matter of	)
	)
PORTLAND GENERAL ELECTRIC COMPANY,	)
	)
Application for Transportation Electrification Programs	)

DIRECT TESTIMONY OF

DR. ABDELLAH CHERKAOUI

ON BEHALF OF

THE ELECTRIC VEHICLE CHARGING ASSOCIATION

August 25, 2017

I. INTRODUCTION

Q Please state your name and address

A My name is Dr. Abdellah Cherkaoui. My business address is 155 De Haro St., San Francisco, California.

Q Please describe your background, experience, and expertise.

A I am Senior Vice President ("VP") of Government, Original Equipment Manufacturers ("OEMs") & Utilities Market Development at Volta Charging, LLC. In this role, I work directly with utilities, OEMs and federal, state and local governments as well as relevant public agencies to support the broad and effective development of electric vehicle charging infrastructure and accelerate the adoption of electric transportation. I am also a founding Board member, and former Policy Chair of the Electric Vehicle ("EV") Charging Association ("EVCA" or the "Association"), a not-for-profit organization that brings the collective experience and expertise of leading companies in the electric vehicle charging industry to policymakers, stakeholders and members of the public to promote the critical role of EV technology, infrastructure and services, and to advocate for policies that will expand clean transportation.

Prior to joining Volta, I provided independent advising and consultancy for the development of technology platforms for sustainable electric mobility and energy management in North America and Europe. From 2009 to 2012, I served on ChargePoint's European management team as CIO and VP in charge of technology and operations, overseeing product management and technical implementation of the ChargePoint network in Europe. I worked directly with municipalities and utilities to support their implementation of EV charging solutions. Prior to this, I held applied

research and academic positions at the University of California in Santa Cruz and at the University of Washington in Seattle.

I hold a Ph.D. degree from the University of Washington in Seattle and a Master's degree in engineering from the Rabat School of Mines in Morocco. I am also a Fulbright Doctoral Fellow and a NASA International Fellow.

Q On whose behalf are you testifying?

A I am testifying on behalf of the EVCA. I am currently the Secretary and Treasurer of the EVCA Board of Directors.

II. SUMMARY

Q What is the purpose of your testimony in this proceeding?

A The purpose of my testimony is to address the proposal from Portland General Electric Company ("PGE") for its transportation electrification programs ("Application"), which was filed with the Public Utility Commission of Oregon ("OPUC" or "Commission") December 27, 2016 (and revised on March 15, 2017), and which was docketed in UM 1811. Specifically, my testimony will address the Stipulation and Testimony in support of the Stipulation. The Stipulation was joined by PGE, Commission Staff, the Citizens' Utility Board of Oregon, the Oregon Department of Energy, Tesla, TriMet, Forth and Greenlots.

EVCA worries that PGE's current proposal may not promote EV development through competition, innovation, and customer choice. With this testimony, EVCA intends to highlight how the Stipulation contrasts with EVCA's principles of utility investment in electric vehicle charging infrastructure, focused on the foundation of the competitive market for charging equipment in Oregon. This testimony will show how the

Stipulation affects the competitive market for EV charging throughout Oregon, and articulate our concerns on the precedential impact. EVCA would like to offer recommendations for an alternative application design that fosters competitive market offerings and innovation, while enabling utility investment in the deployment of charging infrastructure. Finally, with this testimony EVCA requests it and all stakeholders be included in post-Stipulation approval discussions, and broader long-term strategy proceedings.

Q Please summarize your recommendation for the Commission.

A I recommend that the Commission directs PGE to modify its Application to own and operate public charging stations to align with the charging industry principles of EVCA. Under those principles, PGE would incent the development of a smart charging network in a way that will stimulate innovation, competition, and customer choice in the market for EV charging equipment and services. I recommend that, instead of PGE's proposed ownership model, a more successful EV program would use utility investment in the form of rebates for EV charging hardware, services, and installation that would encourage customer investment in competitive charging technologies. PGE's investment could be recovered as a regulatory asset.

Should the Commission disregard our recommendation for modifications, however, I recommend allowing EVCA and other stakeholders to inject their valuable insight in post-approval discussions regarding cost recovery and precedential impact. These meetings should not be restricted to the signatories of the Stipulation, as it would limit the potential for a more comprehensive strategy for this pilot program, and beyond.

III. EVCA AND THE EV MARKET

Q Please describe EVCA's membership and expertise in the EV charging market.

A EVCA is a not-for-profit organization comprised of member-companies representing a vast majority of the diverse competitive electric vehicle charging infrastructure market. EVCA's mission is to educate policymakers, stakeholders, and members of the public about the critical role of EV technology, infrastructure, and services. EVCA advocates for policies that will expand clean, electrified transportation.

EVCA's member organizations develop, manufacture, deploy, maintain electric vehicle charging infrastructure and manage data networks to support EV supply equipment, EV charging services for site hosts and for EV drivers.

Q What are examples of the products and services that EVCA's member-companies offer to the market?

A EVCA member companies span a wide spectrum of the various EV charging use cases, applications and value chain. Members provide energy storage infrastructure to offset EV charging consumption, and develop solar-powered battery storage. EVSE offered by members include product lines of home and commercial L2 and DCFC stations and services, which are designed for different applications and use cases, depending on the segment of the market served. For example, companies may offer L2 dual-port stations for public and workplace charging, and may offer a more compact product for residential uses. EVCA members have partnered with retailers, developers, and government sites to bring advanced energy and accessible EV charging to more drivers.

Q Where do EVCA member-companies operate?

A EVCA's membership has operations worldwide, with some members currently serving

charging stations in 48 out of 50 states in the US, including L2 and DC fast charging stations in Oregon.

Q Who are typical customers of EVCA's member-companies' charging stations?

A Customers include workplaces, governments, hotels, colleges and universities, hospitals, electric utilities and other energy companies, parking garages, airports, multifamily housing, auto dealerships and other businesses.

Q Should utility commissions be considering utility investment in EV charging infrastructure?

A Yes. EVCA believes that there is a need for commissions to consider the full range of roles for a regulated monopoly that will help support and encourage the near-term accelerated deployment of smart EV chargers, both in Oregon and nationwide. Investments should be thoughtful, deliberate, and risk averse to help develop a robust and sustainable EV market that promotes grid benefits for all ratepayers. EVCA believes that through its consideration of the various models for EV charging station deployment that involve utility investment, commissions can support near- and longer-term goals for wider EV adoption.

Q Should the utilities be playing a role in the EV charging market?

A Yes. EVCA believes that electric utilities are the indispensable party to facilitate the transition of the transportation sector to a sustainable electric-fueled future. The utilities' size, operational role in the distribution system, and expertise can help address some of the obstacles currently preventing wider deployment of networked EV charging equipment. The Commission should authorize strategic, risk averse activities and cost-effective ratepayer-funded infrastructure investments that will help accelerate expansion of EV charging and EV adoption. Critically, there are a number of successful market

models to support a utility role in EV infrastructure investment that do not involve utility ownership of customer-side equipment.

Q Can utility ownership and operation impede upon the competitive market?

A Yes. Utilities should not be permitted to leverage ratepayer funds to compete with businesses selling EV charging equipment and services. More specifically, utilities should not be able to offer a fully-subsidized product in an existing competitive market, as it may distort market forces. The competitive market for charging solutions is impacted when utilities do not provide site hosts with a choice of charging technologies most appropriate for their circumstances and/or provide only one charging solution for a large deployment throughout its service territory. This limits the ability for charging providers to compete and sell directly to utility customers, and additionally may result in a proprietary, closed network of stations.

Q Would utility ownership and operation of charging stations result in an administrative burden for the utility that is unique to the charging market?

A Yes. There are entire business lines and models in the competitive market to serve EV charging site hosts and customers. In entering this competitive space, utility companies would be required to go outside of their traditional roles, going behind-the-meter to effectively sell hardware products to consumers. In cases where utilities indicate that they will supply a networked solution, utilities may be required to maintain data collection infrastructure, a technical team to operate the network. In addition, utilities would be required to service and maintain all charging equipment over the life of the assets. Again, competitive EV charging suppliers currently serve these roles in markets nationwide.

Q Why do charging station site hosts invest in EV charging solutions available in the competitive market?

A EV charging station site hosts choose to invest in EV charging for a wide range of reasons, and each site host has its own reason for providing charging services. For many employers, it may be a low-cost benefit provided to employees to encourage adoption of clean transportation technologies that support corporate sustainability. Apartment building owners may provide charging as an amenity and will typically charge for the service as they do for a coin-operated laundry. Cities and counties may deploy charging stations to encourage low-emission driving and support local air quality, and they may charge cost-recovery fees in order to avoid giving away charging services at taxpayer expense.

Q Should a site host be required to actively manage on-site charging stations, or is a utility best equipped to operate charging stations on behalf of site hosts?

A Potential EV charging station site hosts should have the ability to choose any EV charging solution and service that best fits their needs and desired level of management. Some site hosts prefer to leverage specific tools offered by certain types of stations that fit their specific needs, but some site hosts prefer to have minimal involvement with the charger or its management after installation, and prefer a turnkey service. These site hosts typically have the choice to sign a preventative maintenance contract with third-party EV charging station vendors for the oversight and maintenance of the EV charging station and customer services. A utility program is not needed to meet these site hosts' needs. Furthermore, a one-size-fits all utility program will not be able to address the wide range of site host needs and wants.

Q Why is it important for site hosts to have a choice in the type of EV charging equipment and services?

A Site hosts have preferences regarding the hardware and services related to EV charging. Not a single technology or business model available today is exactly right for all charging scenarios. There are pros and cons to each alternative, depending on the location and the driver base that the charging station aims to serve. The range of choices in EV charging goods and services is a strength indicating that the quickly evolving market is meeting the varied needs of its wide range of consumers. Site hosts are able to tailor the particular options for station fees, driver authentication, accessibility, payment collection and other transaction capabilities, advertisement, and data management and output (e.g., energy, station usage, and environmental benefits). Site hosts are also the best suited to make choices about the number of charging stations needed on their site. This is especially true when site hosts participate in the purchase of the charging station, which will help ensure that charging stations are deployed efficiently and in places where they will get the most use. A critical aspect of EV charging is the management and important value of parking, which is under the control of and a valuable asset of the site host.

Q Why should site hosts have the ability to control pricing for the EV charging stations installed on their premises?

A EVCA strongly believes that EV charging station site hosts must be allowed to control siting, pricing, as well as access, to ensure that charging stations meet the needs of both EV charging site hosts and drivers. Empowering businesses with the flexibility to provide charging services at variable pricing enables site hosts to incent EV drivers to utilize charging equipment in the most effective and efficient ways, depending on the conditions at that site. Pricing for charging services can impact driver behavior and effectively serve

as a signal to EV drivers to stay at certain charging locations and leave those locations as a site host determines. With the ability to make decisions about EV charging stations and services, site hosts will be able to incorporate more efficient energy use on their property and thereby produce a beneficial load to the grid. Examples of site host pricing options may include: free charging sessions, fixed-rate per session, per kilowatt-hour pricing, fixed-rate by time, time-of-day pricing, and pricing with different policies by driver groups.

For example, retail site hosts may invest in charging stations and control pricing to attract new customers. Some retailers provide completely free charging at their own expense to attract customers for their core business. Other retailers will offer free charging for a set amount of time and charge a fee thereafter to ensure maximum utilization of the charging station, or offer free charging during certain hours to incent customers to come at those times. The site host is best suited to take site specific actions to ensure optimal use of the charging assets affixed to their property.

Q With services available in the competitive EV charging market, do utilities have to own and operate charging equipment to access data from smart charging stations?

A No. EVCA members currently offer networked stations that give access to critical data without the need for utilities to own stations. Member-companies may offer open application program interfaces ("APIs"), which allow for utilities to view and manage data from third-party owned charging stations in their service territories. This arrangement avoids the cost of ratepayer investment in hardware, and additionally avoids costs associated with administration and maintenance of a network, while providing all of the benefits of networked charging to utilities.

Q Does EVCA's position on utility ownership of charging stations vary among different charging technologies (i.e., residential, public level 2, and DC Fast)?

A No. EVCA's members believe that maintaining the competitive market and site host choice of technologies is critical to any utility investment in EV charging. This position applies to all levels of charging.

Q Are there any potential exceptions to limiting utility investment for ownership and operation of EV charging stations?

A Yes. Utilities may have a role in deploying charging infrastructure in segments of the market that may be underserved, specifically in disadvantaged communities. Those communities may benefit from utility investment in charging equipment, however, utility programs should maintain the core principle of site host choice in charging technology.

IV. STIPULATION

Q Does EVCA have a position on the Stipulation?

A Yes. EVCA opposes aspects of the Stipulation, as further discussed below. EVCA opposes the Stipulation on the basis that it may limit customer choice, not be ultimately cost effective to the ratepayer, and it could significantly stifle innovation and impact the competitive market.

Q Does the Stipulation acknowledge the role of site hosts in selecting technologies most appropriate for their properties?

A No. The Stipulation omits concepts of site host selection or customer choice. The Company will complete a vendor selection based on its own criteria. In the most robust EV markets, site hosts drive demand for charging stations, leading to the most efficient siting of charging infrastructure.

Q How would the Stipulation impact innovation in Oregon's EV charging market?

A The entrance of a regulated monopoly into the EV charging market in the manner

proposed in the Stipulation would set a precedent that could ultimately chill innovation should the program serve as a model for future expansion of EV charging infrastructure. Non-utility actors attempting to sell equipment and services for a market-based price would be unable to compete directly with PGE and its ratepayer-funded equipment, which will supply to the market at no cost. Non-utility actors would begin responding to utility-defined product specifications, rather than from EV market signals. Instead of harnessing the innovative capacity of the competitive market, Oregon will be limited to the specifications of a single utility procurement process. Technology is advancing rapidly in the EV charging space, and utility procurement processes are less efficient than the active competitive marketplace. Technologies selected through a utility procurement process may lock in that technology for many years and prevent the introduction of new, more innovative products and solutions as they become available.

Q In taking on the role of competitive market participants, would PGE assume administrative burdens specific to the charging industry?

A Yes. The competitive market currently provides support for a variety of functions to maintain EV charging infrastructure. Most significantly, in owning and operating networked charging stations, PGE would require network maintenance capabilities, a sales force to drive deployment, trained customer service for troubleshooting, and a team of experts to keep equipment up to date and functioning. This administrative burden may hamper the Company's ability to meet customer expectations for charging equipment.

Q Do you recommend the Commission's approval of the Stipulation as proposed?

A No. EVCA recommends the Commission approve a modified pilot program that aligns with the core principles of preserving the active competitive market in Oregon, supporting customer choice of charging solutions, and stimulating the EV charging

infrastructure deployment through programmatic utility incentives.

Q Do you have any recommendations for modifying the Stipulation?

A Yes. In keeping with the principles laid out above, I have recommendations for the Stipulation. The Association agrees that it is in Oregon's interest to accelerate the EV and EV charging infrastructure markets, but it must be done in a way that results in scalable and sustainable growth. An alternative proposal to the Stipulation can be summarized with the following points:

- **Utility Ownership**: PGE should not be permitted to own and operate public charging stations, but may be permitted to own and operate charging stations in disadvantaged communities.
- **Utility Investment and Rate Recovery**: PGE should be permitted to invest in rebate incentives for the hardware, services, and installation of charging infrastructure at a customer's site. The Commission should deem rebates for EV charging infrastructure as regulatory assets and permit PGE to recover costs and earn a rate of return.
- **Hardware Ownership and Customer Choice**: Site hosts should be empowered to choose among appropriate charging technologies for their sites and control charging tools and data associated with each technology. This includes siting, pricing, access controls, and type of charging,
- **Ongoing Education**: PGE should engage education and outreach on electricity as a transportation fuel to help drive awareness of EV technologies and market acceptance.

Q Explain the rebate-based approach to utility investment in charging stations.

A In a rebate model, utility investment is directed toward the hardware, services, and installation of charging infrastructure. In incenting hardware, services, and installation, a utility can decrease barriers for private investment in EV charging. For rapid deployment, make-ready work can be performed by a licensed electrician, as scheduled by a site host, and the utility may offset the costs of that installation. The utility rebate is considered a regulatory asset, as it enables a utility to access valuable data regarding grid reliability, load growth, and offers the potential for demand response.

Q Does the rebate model preserve customer choice and competition in EV charging markets?

A Yes. In this program design, utilities provide a direct financial incentive to site hosts for the installation of the qualified EV charging equipment of their choice. Since utility investment is directed to offset the costs of charging stations to customers, site hosts can choose, purchase, own, and operate charging stations on their properties. This arrangement allows for competitive market participants to continue to meet customer demands and serve the market, while also allowing utilities to invest in charging deployments without the risks of large-scale ownership and operation. Additionally, rebate programs may allow utilities to gain insights into the grid from networked charging, without building and maintaining the complex networking capabilities already offered in the competitive market. Overall, this program design reduces the cost barrier to EV adoption, allows the charging station site host to determine which equipment and services best meet their needs, and builds a sustainable EVSE marketplace.

Q Should the Commission approve the Stipulation, how should it take additional action to explore a longer-term vision for electric vehicle charging?

A Should the Commission approve this Stipulation, EVCA requests that all stakeholders be permitted to attend post-approval meetings involving the signatories of the Stipulation. Involving all stakeholders in discussions related specifically to this Stipulation is crucial, as these meetings will likely affect how Oregon develops its long-term strategy for EV charging infrastructure. Such a comprehensive review would allow the Commission to hear from a full range of industry perspectives, and subsequently make a well-rounded decision on how to proceed with cost recovery and precedential impact of the program. EVCA has been excluded from discussion up until this point, and request that we and other stakeholders' expertise is taken into account to develop a lasting strategy for expeditiously and efficiently deploying EV charging infrastructure.

Furthermore, the Commission should consider a broader proceeding to fully examine and determine the most scalable and sustainable approach to growing the EV and EV charging markets in Oregon. Stakeholders for this process should include, at a minimum, a range of policymakers and industry representatives from across the EV and EV charging ecosystem. This forum should provide for the following objectives:

- Determine whether the Commission should regulate the competitive market for electric vehicle charging services, and more specifically regulate the sale of EV charging equipment or services by non-utility providers. Several states have examined and granted a regulatory exemption for charging services.
- Implement EV-specific rate pilots to determine the applicability of innovative rate designs afforded by networked charging technologies, such as EV-only time-of-use rates;

- Engage in rate reform to lessen the barriers created by high operating costs of higher-powered charging equipment from demand charges through innovative cost recovery mechanisms;
- Expand development of equitable access to clean/electrified transportation; and,
- Prepare for higher rates of charging for the next generation of vehicles by implementing new internal processes for longer-term planning to incorporate EVs in utility strategic roadmaps.

V CONCLUSION

Q Does this conclude your testimony?

A Yes.