PACIFIC POWER
A DIVISION OF PACIFICORP

825 NE Multnomah, Suite 2000
Portland, Oregon 97232

December 13, 2017

VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY

Public Utility Commission of Oregon
201 High Street SE, Suite 100
Salem, OR 97301-3398

Attn: Filing Center

RE: UM 1810 —PacifiCorp's Motion to Admit Pre-Filed Testimony and Exhibits

PacifiCorp d/b/a Pacific Power encloses for filing in the above-referenced docket its Motion to Admit Pre-Filed Testimony and Exhibits.

If you have questions about this filing, please contact Natasha Siores, Manager, Regulatory Affairs, at (503) 813-6583.

Sincerely,

Etta Lockey
Vice President, Regulation

Enclosures

CERTIFICATE OF SERVICE

I certify that I served a true and correct copy of PacifiCorp's **Motion to Admit Pre-Filed Testimony and Exhibits** on the parties listed below via electronic mail and/or or overnight delivery in compliance with OAR 860-001-0180.

Service List
UM 1810

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Dated this 13th day of December, 2017.

Katie Savarin
Coordinator, Regulatory Operations

BEFORE THE PUBLIC UTILITY COMMISSION OF OREGON

UM 1810

In the Matter of PACIFICORP, d/b/a PACIFIC POWER Application for Transportation Electrification Programs.	**MOTION TO ADMIT TESTIMONY AND EXHIBITS**

In accordance with OAR 860-001-0420 and 860-001-0480, PacifiCorp d/b/a Pacific Power moves for the following pre-filed testimony and exhibits to be admitted into the record in this proceeding: Eli Morris (PAC/100, PAC/101, PAC/300, PAC/301, PAC/302 and PAC/303) and Robert Meredith (PAC/200 and PAC/201).

In addition, PacifiCorp and ChargePoint previously reached an agreement regarding the admissibility of certain exhibits. ChargePoint does not object to PacifiCorp moving to admit the following exhibits into the record in this proceeding:

Exhibit	Description
PAC/400	ChargePoint Response to PacifiCorp DR 2
PAC/401	ChargePoint Response to PacifiCorp DR 3
PAC/402	ChargePoint Response to PacifiCorp DR 4
PAC/403	ChargePoint Response to PacifiCorp DR 5
PAC/404	ChargePoint Response to PacifiCorp DR 6
PAC/405	ChargePoint Response to PacifiCorp DR 7
PAC/406	ChargePoint Response to PacifiCorp DR 8
PAC/407	ChargePoint Response to PacifiCorp DR 9
PAC/408	ChargePoint Response to PacifiCorp DR 10
PAC/409	ChargePoint Response to PacifiCorp DR 11
PAC/410	ChargePoint Response to PacifiCorp DR 12
PAC/411	ChargePoint Response to PacifiCorp DR 13

PAC/412	ChargePoint Response to PacifiCorp DR 14
PAC/413	ChargePoint Response to PacifiCorp DR 15
PAC/414	ChargePoint Response to PacifiCorp DR 16
PAC/415	ChargePoint Response to PacifiCorp DR 17

This motion is supported by the affidavits of Eli Morris and Robert Meredith attesting that their pre-filed testimony and exhibits are true and correct.

Respectfully submitted this 13th day of December, 2017

*s/ Dustin T. Till*_____
Dustin T. Till
Senior Counsel
PacifiCorp
Counsel for PacifiCorp
825 NE Multnomah St. Suite 1800
Portland, OR 97232
Direct: (503) 813-6589
E-mail: Dustin.Till@pacificorp.com

BEFORE THE PUBLIC UTILITY COMMISSION OF OREGON

UM 1810

In the Matter of PACIFICORP, d/b/a PACIFIC POWER Application for Transportation Electrification Programs.	**AFFIDAVIT OF ELI MORRIS**

I, ELI MORRIS, declare under penalty of perjury under the laws of the State of Oregon:

1. My name is Eli Morris. I am employed by PacifiCorp as Program Manager, Customer Solutions.
2. I am the same Eli Morris who previously filed testimony and an exhibit on behalf of PacifiCorp in this matter (PAC/100, PAC/101, PAC/300, PAC/301, PAC/302 and PAC/303).
3. My pre-filed testimony and exhibit are true and accurate. If I were asked the same questions today, my answers would be the same.

I hereby declare that the above statement is true to the best of my knowledge and belief, and that I understand it is made for use as evidence and is subject to penalty for perjury.

SIGNED this 12th day of December, 2017, at Portland, Oregon.

Signed: Eli Morris

Subscribed and sworn to before me this 12th day of December, 2017.

Signed: Anne Kohls

Printed: Anne Kohls

My Commission Expires: September 17, 2021

Official Stamp
Anne Kohls
Notary Public - Oregon
Commission No. 966746
My Commission Expires September 17, 2021

BEFORE THE PUBLIC UTILITY COMMISSION OF OREGON

UM 1810

In the Matter of PACIFICORP, d/b/a PACIFIC POWER Application for Transportation Electrification Programs.	**AFFIDAVIT OF ROBERT MEREDITH**

I, ROBERT MEREDITH, declare under penalty of perjury under the laws of the State of Oregon:

1. My name is Robert Meredith. I am employed by PacifiCorp as Manager, Pricing and Cost of Service.
2. I am the same Robert Meredith who previously filed testimony and an exhibit on behalf of PacifiCorp in this matter (PAC/200 and PAC 201).
3. My pre-filed testimony and exhibit are true and accurate. If I were asked the same questions today, my answers would be the same.

I hereby declare that the above statement is true to the best of my knowledge and belief, and that I understand it is made for use as evidence and is subject to penalty for perjury.

SIGNED this 12 day of December, 2017, at Portland, Oregon.

Signed: _____

Subscribed and sworn to before me this 12th day of December, 2017.

Signed: Patty Deas

Printed: PATTY DEAS

My Commission Expires: 3-12-19

OFFICIAL STAMP
PATRICIA ANN DEAS
NOTARY PUBLIC-OREGON
COMMISSION NO. 937208
MY COMMISSION EXPIRES MARCH 12, 2019

Docket No. UM 1810
Exhibit PAC/400

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 2

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-2. Please produce a copy of Ms. Anne Smart's current curriculum vitae.

Response:

Please see PAC-2 Attachment A, attached to these responses.

Sponsor: Anne Smart
Date: October 20, 2017

Anne Smart

408-858-5076

PROFESSIONAL EXPERIENCE

ChargePoint
Vice President, Public Policy - North America 11/2016 - Present
Director, Government Relations and Regulatory Affairs 07/2014 - 11/2016

- Manages government relations and regulatory affairs for the world's largest network of electric vehicle charging stations.

The Alliance for Solar Choice
Executive Director 05/2013 – 07/2014

- Established national advocacy organization for the rooftop solar industry on behalf of member companies and founders SolarCity, Sunrun, Sungevity, and others.
- Managed and coordinated large team of accountants, attorneys, associates, campaign consultants, and lobbyists.

Silicon Valley Leadership Group
Director of Energy 03/2011 – 05/2013
Associate Director, Energy and Environment 08/2009 – 03/2011

- Led federal and California state policy advocacy for well-respected trade association of more than 375 member companies.

Delaware State Senate 09/2008 – 06/2009
Energy and Transit Policy Fellow

- Developed legislation for the world's first vehicle-to-grid (V2G) law and the state's first Energy Efficiency Resource Standard.

Center for Energy and Environmental Policy 08/2007 - 06/2009
Research Associate

Office of U.S. Representative Wayne Gilchrest 05/2004 – 08/2004
District Office Assistant

EDUCATION

Master of Energy and Environmental Policy 2009
University of Delaware, Newark, Delaware

Bachelor of Arts in Public Administration 2007
Bachelor of Philosophy in Environmental Studies
Miami University, Oxford, Ohio
Graduated Cum Laude with Distinction

Docket No. UM 1810
Exhibit PAC/401

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 3

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-3. Please identify every utility commission or other regulatory proceeding, regardless of the state, in which Mr. Packard has testified regarding policies and programs relating to electric vehicle charging equipment and services. For each proceeding identified in response to this data request, please produce:

a. Copies of all written testimony Mr. Packard submitted;
b. Copies of transcripts of all hearings in which Mr. Packard testified; and
c. Copies of all orders or final decisions issued in such proceedings.

Response:

ChargePoint objects to subpart b of PAC-3. ChargePoint does not have in its possession the transcripts of the California Public Utilities Commission Docket No. A. 17-01-020, in which Mr. Packard testified. Responding to this request would require ChargePoint to incur significant costs to purchase transcripts of the hearings in which Mr. Packard testified, and it is prejudicial and unfairly burdensome to require ChargePoint to incur such costs.

ChargePoint further objects to subpart b of PAC-3 with respect to OPUC Docket UM 1811. ChargePoint incurred significant cost to purchase a copy of the hearing transcript in Docket UM 1811, a cost that was split among other parties who were interested in receiving a copy of the transcript. Pacific Power is a party to Docket UM 1811 but did not, to the best of ChargePoint's knowledge, share in the cost of purchasing the transcript. If Pacific Power did share in the cost of the transcript, then Pacific Power already has a copy of this document. If Pacific Power did not share in the cost of the transcript, it is prejudicial and fundamentally unfair for Pacific Power to use the discovery process to obtain a copy a transcript rather than paying for it.

Notwithstanding and without waiving the above objections, ChargePoint responds as follows:

Mr. Packard has testified before the California Public Utilities Commission in Docket No. A. 17-01-020. Mr. Packard has also testified before the Oregon Public Utility Commission in Docket No. UM 1811.

a. Mr. Packard's written testimony that he submitted in the above-mentioned proceedings is attached hereto as PAC-3 Attachments A through F.
b. See objections.
c. As of the date of this response, there have been no final decisions or orders issued in the above-mentioned proceedings.

Sponsor: David Packard
Sponsor of Objection: Scott Dunbar
Date: October 20, 2017

Docket No: A.17-01-020
A.17-01-021
A.17-01-022
(consolidated)

Exhibit No: __CP-1_____

Date: July 25, 2017 (Revised September 29, 2017)

Witness: Dave Packard

Prepared Testimony of Dave Packard on behalf of ChargePoint, Inc.

Regarding

Fast Charge Infrastructure and Rates

Errata – Clean Version

TABLE OF CONTENTS

1. Introduction and Background

Q. Please state your name and business address.

A. My name is Dave Packard. My business address is ChargePoint, 254 East Hacienda Avenue, Campbell, CA 95008.

Q. By whom are you employed and in what capacity?

A. I am the Vice President of Utility Solutions for ChargePoint, Inc. In my current role, I advise a team of Directors who work with electric utilities and other key stakeholders in Europe and North America on electric vehicle (EV) market infrastructure engagement and investment, and support the development of policies and programs to accelerate the adoption of EVs and EV charging equipment and services.

Q. Please describe your background, experience and expertise.

A. I have been working in the electric vehicle market since 1993, and have been deeply involved in the evolution of standards and policy around EV infrastructure. Prior to joining ChargePoint, I was founder and President of ClipperCreek, a company that designed, developed and manufactured electric vehicle supply equipment (EVSE). Before ClipperCreek, I was Vice President of EVI, an infrastructure company that served the nascent EV infrastructure market through 2003.

I hold a Master of Science degree in civil engineering and a Bachelor of Science degree from the University of Massachusetts.

Q. On whose behalf are you presenting testimony?

A. I am testifying on behalf of ChargePoint, Inc.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to discuss the proposed Pacific Gas and Electric Company (PG&E) Fast Charge Program. The Fast Charge Program is one of two PG&E standard review proposals proposed in Application 17-01-022. I will discuss the reasons that ChargePoint generally supports PG&E's proposal. I will also identify areas in which there is a lack of sufficient detail in PG&E's proposal to enable parties to understand how the proposed program will operate. I will provide specific recommendations to facilitate incorporation of "lessons learned" from implementation of the previous round of utility EV infrastructure programs, and I will briefly address the need for a PG&E rate that mitigates the impact of demand charges on customers providing EV fast charging service in PG&E's service territory.

Q. Please describe ChargePoint's interest in the proposed Fast Charge Program.

A. This proposal is of interest to ChargePoint for several reasons. As a provider of DC fast charging (DCFC) solutions in PG&E's service territory, we want to ensure that the program enables participating site hosts the freedom to select DCFC equipment and network services and to implement effective pricing and load management strategies. As a supporter of SB 350's goal of promoting cost effective utility investments, we understand the need for utility participation in programs aimed at expanding DCFC throughout California. This proposal seems well designed to meet that need, but it will be important to clarify program terms and establish a process to incorporate lessons learned from other utility programs in order to ensure the success of this program.

Q. What is ChargePoint's business model?

A. The ChargePoint business model is to engineer, manufacture, and sell the equipment and network services necessary for EV charging station owners to provide effective charging services

to drivers that visit their properties. ChargePoint sells charging solutions to individuals and to commercial "site hosts" such as employers, businesses, cities, fleet operators, and public agencies. The commercial site host sets the price for EV drivers that use the charging station on their property, as well as any other relevant conditions of use. We sell the network services that enable the site host to manage its charging infrastructure using cloud-based software tools, and merchant services to support billing functions.

Q. What are the products and services that ChargePoint offers to the market?

A. ChargePoint offers a complete line of Level 2 (L2) and DCFC products and services, including the CT4000 family of Level 2 charging stations, ChargePoint Home, ChargePoint Multi-Family, ChargePoint Fleet and both 24 kW and 50 kW DC Fast Charging stations. ChargePoint also recently unveiled its CPE250 and Express Plus platform. ChargePoint Express Plus is a platform solution that includes modular building blocks – a Power Cube, Power Modules and Stations – that can be configured to meet requirements at any site and scale incrementally as demand for charging increases. Every station in the Express Plus system is capable of charging from 50 kilowatts (kW) to 400 kW and supports charging voltages ranging from 200 volts (V) to 1000 V. Thus, the system can charge both the 400 V cars and 750 V buses available on the market today, and the 800 V cars expected in the future. All of ChargePoint's products are UL certified, meet national standards and feature an embedded utility-grade meter.

For drivers, ChargePoint provides a unified mobile and web application for all aspects of their public, workplace, and home EV charging. ChargePoint drivers have access to real time information, payment and support services through the information available on the screen of the charging station, in their mobile app, via email and text notifications, or on the ChargePoint website. ChargePoint also provides services to drivers, free of charge, that enable them to easily

find and access the EV charging infrastructure provided by station owners through a mobile app, in-vehicle navigation and our website. We operate a call center that is available to drivers 24 hours a day, seven days a week to support EV driver and site host queries.

For site hosts, ChargePoint provides subscriptions to our cloud-based platform. This provides the station host with everything needed to manage EV charging operations, including online management tools for data analysis, billing and payment processing, load management, and access control. We connect stations to ChargePoint over a secure, payment card industry (PCI) compliant cellular data network allowing station owners to manage all their charging operations from a single dashboard.

Maintenance and customer service are a priority for our company. ChargePoint offers a comprehensive set of support services for both EV drivers and station hosts, including 24/7/365 call center support for drivers, parts and on-site labor warranty, site qualification, installation and validation services, and call center support for site host specific questions.

ChargePoint is committed to the goal of providing customers with a choice of charging station hardware from multiple manufacturers. Through the ChargePoint OnRamp Program, we provide engineering and technical resources to other manufacturers, and certify their charging equipment to be compatible with our network.

Q. Where does ChargePoint operate?

A. ChargePoint operates worldwide, and currently has charging spots with stations in 48 out of 50 states in the US, including over 20,000 ports in California. These include DCFC locations throughout the state.

Q. Does ChargePoint support utility infrastructure programs to enable deployment of DC fast charging stations?

A. Yes. Utility programs can provide an important contribution to expanding DC fast charging. It is our experience that the most efficient and effective way that utilities can support the rapid expansion of public EVSE, including DCFCs, is to provide a base level of assistance in the form of rebates or make ready infrastructure, while enabling customer choice and a reasonable level of investment in the EVSE and related services by the site host. Including site host choice of provider and charging equipment, together with an appropriate level of financial contribution stretches the value of ratepayer funds, encourages the private market to develop and update equipment and services in response to customer needs, leverages private capital, and mitigates the risk of stranded costs. At the same time, we recognize the need to differentiate the level of customer contribution to ensure that transportation electrification goals are achieved across all customer segments, and particularly in disadvantaged communities.

Q. Are there other ways that electric utilities can support the expansion of DC fast charging stations?

A. Yes. Electric utilities can support and encourage private investment in DCFC by adopting rates designed specifically for EV fast charging loads and locations. Conventional commercial rates that include high demand charges present a financial obstacle to development of DC fast charging facilities. Conventional rates can also be challenging for commercial medium/heavy duty EV sectors such as transit, where the user cannot easily time charging to coincide with off-peak TOU periods.

Q. How are demand charges relevant to the operation of DC fast chargers and what are alternative ways to design EV rates?

A. Demand charges are rate components that reflect peak customer usage. Unfortunately, DCFC stations may have a relatively low load factor with sporadic instances of very high energy

use. This results in disproportionately high demand charges, with inadequate offsetting opportunities to earn revenue from users. An otherwise interested and eligible site host may decide not to invest in DCFC if there is a significant cost exposure.

ChargePoint supports the development of alternative rate structures for DCFC charging stations. There are several options to consider that would still allow utilities to recover all costs while at the same time encouraging sites to operate fast chargers. Examples include:

- The utility could replace or pair the demand charge with higher volumetric pricing to provide greater certainty for charging station operators with low utilization. This rate could be scaled based on utilization or load factor as charging behavior changes over time with increased EV adoption.
- The utility could put the charging stations on a separate meter in order to use a unique EV rate designed to reflect charging needs.
- The utility could develop a pilot rate specifically designed for DCFC or fleet operators. Such a pilot rate might, for example, eliminate or lower non-coincident demand charges, but include a coincident system peak demand charge and TOU periods that encourage charging during times of the day that support the integration of renewable energy.
- The utility could consider pricing signals to the station operators, such as time-of-use or critical peak pricing, without added demand charges.
- The utility could factor in the overall EV load from all vehicles in its service territory and the benefits of TE to the grid in considering whether rate reform is revenue neutral. With increased EV adoption utility load will increase, which could lead to greater grid benefits in the future.

Q. Can DCFC programs be coordinated to ensure strategic deployment?

A. DCFC stations fill a specific need in the market by enabling longer-distance travel and addressing range anxiety concerns that may inhibit widespread expansion of transportation electrification (TE). For this reason, and because DC fast charging is typically more costly to site, construct, and operate than lower voltage public EV charging, it makes sense for utilities, public agencies, EV service providers (EVSPs) and other stakeholders to actively coordinate the siting of DC fast charging stations in travel corridors.

Q. Is ChargePoint participating in other utility EV infrastructure programs?

A. Yes, ChargePoint is participating in all three of the California IOU EV infrastructure programs. We are also participating in many other utility programs -- in California and in other jurisdictions.

Q. Has this experience provided insight into program design and implementation that may be useful as the Commission considers this round of SB 350 applications?

A. Definitely. Even though some of the utility programs are only in the initial stages of implementation we have extensive lessons learned from working with a diverse range of utilities and program designs. This experience, and that of other providers, site hosts, and representatives of disadvantaged communities can be leveraged to improve the next and future generations of EV infrastructure programs. We discuss specific "lessons learned" and offer recommendations for PG&E's Fast Charge Program below.

2. Summary of PG&E's Proposed Fast Charge Program

Q. Please briefly describe PG&E's Fast Charge Program proposal.

A. On January 20, 2017, PG&E filed an Application for Approval of its Senate Bill 350 Transportation Electrification Program. That application included a proposal for a five-year Fast Charge Program to deploy make-ready infrastructure at up to 52 sites to enable up to 234 DC fast chargers.[1] PG&E will use its EPIC DCFC siting project results and consultation with local and municipal siting authorities to coordinate siting and reduce costs and grid impacts of the program.[2] PG&E will accept applications within its service territory and, if site conditions meet

[1] PG&E Testimony p. 4-1.
[2] Id. p. 4-8.

PG&E's specifications, PG&E will design, install, own, and operate the make-ready infrastructure for the DCFC site, in coordination with the site host and/or EVSP.[3]

The DCFC station will be owned and operated by the site host, an EVSP, or other entity.[4] All chargers must use either CHAdeMO and/or CCS charging connector standards, and have at least one of each per site.[5] The site host and/or EVSP will have flexibility to set pricing to drivers. PG&E will provide a rebate of up to $25,000 per charger in disadvantaged communities. Data, reporting, and confidentiality requirements will be consistent with the requirements in PG&E's and other utilities' Phase 1 EV infrastructure programs.[6] Operations and maintenance will be the responsibility of the site host and/or the EVSP.[7]

Q. How will the Fast Charge program account for developments in technology and customer demand?

A. For purposes of forecasting the cost of the Fast Charge Program, PG&E has assumed that its program will support a range of DCFC technologies, including 50 kW, 150 kW and 350 kW fast charge stations.[8] PG&E testifies that its program will be flexible to meet the needs of site hosts and charging network developers.[9] PG&E assumes deployment of 8-12 sites per year, but acknowledges the need to adjust its assumptions to reflect the size and pace of market demand.[10]

[3] Id.
[4] Id. p. 4-9.
[5] Id. p. 4-10.
[6] Id.
[7] Id. p. 4-11.
[8] Id.
[9] Id.
[10] Id. p. 4-12.

3. Evaluating The Fast Charge Program For Consistency With Statutory And Regulatory Requirements

Q. What requirements will the Commission consider in reviewing the PG&E Fast Charge Program?

A. On September 14, 2016 Assigned Commissioner Peterman issued a Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to Senate Bill 350 (September 14, 2016 ACR) in Rulemaking 13-11-007. This ruling identifies the statutory and regulatory requirements applicable to each of the SB 350 TE applications, and the criteria for approval of the utility proposals.

Briefly, the TE applications must meet the objectives, legislative findings and declarations as defined by SB 350 and related requirements in Public Utilities Code sections 740.3, 740.8 and 740.12. These statutory requirements are summarized on pages 14-15 of the September 14, 2016 ACR. In addition, the TE applications must seek to conform to additional guidelines identified on pages 15-16 of the September 14, 2016 ACR. These guidelines require proposals to:

- Fit with the CPUC and IOU core competencies and capabilities.
- Address the multiple goals of widespread TE.
- Consider Commissioner-identified priority projects.
- Align with local, regional and broader state policies.
- Promote driver, customer and worker safety.
- Seek to leverage non-utility funding.
- Identify a Vehicle-Grid Integration Communication Standard.
- Consider utility incentives or other regulatory mechanisms.
- Propose two to five year pilots and programs with a selection of 1-year pilots for priority review.
- Provide anonymous and aggregated data for evaluation.

Q. Does the proposed Fast Charge Program meet the applicable statutory and regulatory requirements?

A. We believe that the proposed Fast Charge Program clearly meets the applicable statutory and regulatory criteria in its general focus and program design. However, PG&E describes its program in broad terms, and in some areas the application and testimony lack the detail necessary for the Commission to determine whether the Fast Charge Program will meet the requirements set forth in the September 14, 2016 ACR.

Q. Please discuss your conclusion that the proposed Fast Charge Program is generally consistent with statutory and regulatory requirements.

A. As discussed above and in PG&E's testimony, deployment of DC fast charging infrastructure is one important element in addressing the goal of widespread transportation electrification. However, as PG&E notes, there are already other program initiatives underway that will likely result in deployment of DCFC stations in PG&E's territory during the same timeframe. PG&E states that its program is designed to support and complement these other efforts, and that PG&E intends to take a flexible approach to siting DCFC infrastructure in order to meet identified needs. Assuming PG&E implements its program consistent with these assurances, the program can contribute effectively to accelerating the widespread deployment of TE.

By structuring its Fast Charge Program to support utility ownership and operation of make ready infrastructure, PG&E has taken an important step toward ensuring that it will not unfairly compete with nonutility enterprises. ChargePoint strongly supports this aspect of PG&E's program design. By focusing its attention and resources on providing the make ready infrastructure, PG&E is supporting the growing, competitive marketplace of companies developing innovative DC fast chargers and services. This approach will also leverage private

investment by assisting site hosts with the significant up front cost of the make ready infrastructure, while requiring them to invest private capital in the charging stations, network services and maintenance. It will also assist participants in disadvantaged communities by providing a rebate for purchase of EVSE. For these reasons, we believe that PG&E's program structure meets the statutory requirements of avoiding unfair competition, minimizing overall costs and maximizing overall benefits, and leveraging non-utility investment. It also fits well with PG&E's core competencies and capabilities.

Q. Does the proposed Fast Charge Program meet the SB 350 requirements to "stimulate innovation and competition" and "enable consumer options in charging equipment and services"?

A. As discussed above, PG&E's make ready program design goes a long way toward meeting these statutory requirements. By providing utility-side infrastructure and allowing site hosts the freedom to select the charging station and network provider, PG&E's program will help stimulate innovation and competition, and enable customer choice. Other program elements will also contribute to satisfying the requirements of SB 350. ChargePoint is particularly pleased to see that PG&E has focused its program requirements on standard connectors, authorized a variety of DCFC power levels, and explicitly recognized that DC technologies are evolving.

However, beyond these basic specifications (50 kW minimum power level, standard connectors) PG&E's testimony does not provide detail regarding what, if any, requirements will be applicable to the site host's selection, operation, and maintenance of DCFC equipment, and whether the requirements will be different for DAC customers receiving rebates for the purchase of DC fast chargers. To address this and avoid any issues in implementation, the Commission should clarify that an eligible site host may purchase any DCFC that meets PG&E's foundational requirements for minimum 50 kW power level and standard CHAdeMO/CCS charging

connectors, plus any applicable federal, state or local standards for safety, public access, accessibility and interoperability. PG&E implies that each DCFC location will be connected to a network service provider, but this requirement should be stated explicitly. The process for acceptance of equipment and providers should be streamlined and straightforward. We discuss below additional recommendations for creating an efficient, customer-friendly experience for program participants.

Q. Will site hosts have operational control of the charging stations?

A. Based on PG&E's program description, it appears that site hosts (or third party EVSPs acting on their behalf) will be free to operate the DC fast chargers and set pricing to drivers. This should be made more explicit, particularly with respect to pricing.

PG&E's testimony states on page 4-9 that the site host (or EVSP) will be responsible for the "safe, reliable, and affordable" operation of the charging equipment. There is no explanation of what PG&E means by "affordable." On page 4-10 PG&E states clearly that the site host or EVSP may set pricing to drivers. However this is followed by the statement that PG&E will "work with site hosts and/or EVSPs throughout the program to ensure that end-use pricing is consistent with § 740.12(a)(1)(G) and (H), providing the opportunity for drivers to access electricity that is less costly than gasoline." Again, the intent underlying this statement is unclear.

ChargePoint strongly supports PG&E's proposal to allow the site host (or EVSP) to set pricing. This is a critical element to ensure that the charging experience for drivers aligns with the location-specific needs of the site and the site host, and to ensure efficient station utilization. It also reflects Public Utilities Code section 216(i), which exempts EV charging from utility rate regulation, and this Commission's clarification in Decision 10-07-044 that utilities may set the

rate for electricity sold to the site host or EVSP, but not the rate charged to the driver by the charging station operator.[11]

We assume that PG&E's statement that it intends to "work with" site hosts and EVSPs to ensure compliance with SB 350 is not meant to contradict or qualify the previous statement supporting the site host's or EVSP's discretion to set pricing to drivers. However, to avoid ambiguity, the Commission should explicitly state in the final decision adopting PG&E's program that site hosts may set pricing to the driver at sites participating in the Fast Charge Program.

ChargePoint appreciates and supports PG&E's intent to "work with fast charging equipment and network providers to identify opportunities to leverage fast charging infrastructure for grid benefits and demand management."[12] Ensuring that every customer is aware of all available load management opportunities (including new rates and DR programs as they evolve) should be part of PG&E's ongoing support for this program. However, since PG&E's program description does not explain what this process will entail, the Commission should explicitly clarify that ultimately the customer will determine how best to leverage its investment in DCFC charging for the benefit of the grid. Otherwise, risk-averse participants may be reluctant to sign up.

Q. Has PG&E included a proposal for EV rate design improvements in its application?

A. No. Unlike SCE and SDG&E, PG&E did not include consideration of EV rate design in its portfolio of SB 350 proposals. The September 14, 2016 ACR recognized that demand charges may create a disincentive to use electricity as a transportation fuel, and included rate design reform to address this problem on the list of priority project areas of particular interest to

[11] See D.10-07-044 p. 27.
[12] PG&E Testimony p. 4-11.

the Commission.[13] Instead of developing a rate proposal, PG&E testifies that it expects that rate changes proposed in its 2017 General Rate Case (GRC) Phase II will "be a benefit to commercial customers who operate EVs and charge those vehicles in a manner that manages costs associated with peak times."[14]

Q. Does PG&E's reference to GRC rate design address the Commission's interest in EV rate proposals as part of SB 350 applications?

A. It does not. The September 14, 2016 ACR very clearly invited the utilities to put effort into developing rate proposals to address current disincentives to widespread transportation electrification. While these new EV rates may need to be coordinated with GRC rate cases, simply relying on generic rate design is not responsive to this very specific issue. PG&E can do more to address the disincentive that demand charges pose to investment in DCFC, which will be key to ensuring the success of the Fast Charge Program. Specifically, ChargePoint believes that addressing this issue through the SB 350 process will lead to greater participation and input on appropriate rate designs from the EV stakeholders that are already engaged in this and related proceedings, and may not regularly engage in GRC proceedings. As discussed above, PG&E could explore a variety of approaches for developing EV rates for PG&E customers providing DC fast charge service.

Q. Does the proposed Fast Charge Program leverage the results of previous pilots?

A. PG&E has considered and leveraged the results of some completed pilots. For example, PG&E discusses its intention to use tools and best practices developed in its recently completed EPIC 1.25 project for DCFC siting.[15] This is a good start, but ChargePoint also sees a need to leverage experience to date in the ongoing implementation of the Phase 1 pilots. While PG&E's

[13] September 14, 2016 ACR p. 20.
[14] See PG&E Testimony, Attachment A to Ch.1, p.3; p. 2-4, fn. 2.
[15] PG&E Testimony p. 4-8.

Phase 1 workplace/MUD program is different from the Fast Charge Program in the targeted customer segment and in program design, PG&E has indicated that it intends to coordinate the two programs and use Phase 1 processes in implementing this project. Therefore, it will be very important to review and consider "lessons learned" from the Phase 1 project prior to beginning implementation of the proposed Fast Charge Program, rather than waiting for program review at the conclusion of the Phase 1 project. We identify some specific recommendations below.

4. ChargePoint Recommendations

Q. Does ChargePoint have a position on PG&E's proposed Fast Charge Program?

A. Yes. ChargePoint largely supports the Fast Charge Program, and believes it serves as a valuable model for cost-effectively addressing the need for expanded fast charge access in PG&E territory. Since the proposed timing of PG&E's project will coincide with other programs supporting DCFC deployment, ongoing coordination in siting and planning will be essential. PG&E should also consult with representatives of disadvantaged communities.

Q. Does ChargePoint propose any modifications to the PG&E Fast Charge Program?

A. ChargePoint does not recommend specific modifications in program design, but believes that in certain areas PG&E's project description lacks specificity and/or relies solely on a general reference to PG&E's Phase 1 EV Infrastructure Program, which is only in an early stage of implementation. The Commission can address this by clarifying certain matters in the decision adopting PG&E's program, and by ordering a workshop and advice filing to ensure that the details of PG&E's program are clear prior to implementation. The workshop will also facilitate discussion of "lessons learned" from the Phase 1 pilots as applied to the adopted Fast Charge Program.

Q. What aspects of PG&E's proposal require clarification in the final decision?

A. Clarification would be helpful on several points, discussed above. We specifically ask the Commission to find that:

- Participating site hosts may purchase DCFC and network services from any provider that meets basic program requirements, which will be publicized and available from the outset of the program:
  - 50 kW+ power level
  - standard CHAdeMO/CCS charging connectors
  - compliant with all applicable national, state and local standards for safety, public access, accessibility and interoperability
  - subject to warranty and service contract
  - networked and capable of participation in DR or peak pricing programs
- Participating site hosts (and EVSEs) may set pricing to driver.

Q. How can the Commission ensure a smooth and streamlined implementation process?

A. From our experience with the Phase 1 programs, ChargePoint has learned two key lessons regarding implementation.

First, all of the program requirements and details need to be clearly identified and provided up front by the utility. As a prospective provider of EVSE and network services, we have experienced delays and sometimes confusion during the Phase 1 project implementation processes, in part because technical requirements were not communicated clearly and consistently. We understand that this was largely because the Phase 1 programs involved new technologies, new program designs, and a new role for the utility. We have all been "learning by doing," which can be challenging and time consuming for customers, providers, and the utility.

To avoid repeating this experience in Phase 2, all of the program requirements applicable to providers and site hosts need to be spelled out in detail from the start in project description

documents. By requirements applicable to providers I mean: standards for EVSE hardware and software, communications interface, data collection methods, methods of handling data communication issues, station activation, billing, branding, licensing, etc. By requirements applicable to site hosts I mean: site requirements, credit requirements, easement and access terms and conditions, rate and billing restrictions, load management requirements, limits on or options available to integrate on-site generation or other smart technologies, etc. Further, participants should be provided a clear buy-out clause that will allow them to exit the program if they move or sell the subject property. Many issues can be avoided if every prospective provider and customer is on notice of what the program requirements are from the outset.

Second, the application process needs to be simplified and streamlined to the extent possible for participating site hosts. Again, this is something we have learned from experience. If a program establishes unrealistic deadlines for submitting paperwork, or if the timeframe for procurement of EVSE does not comport with the needs of customer decision making, customers will decline to participate or drop out. If a customer does not have a clear understanding of rate restrictions and likely bill impacts before signing up, there is a risk that customers will withdraw from the program or be disappointed later in the process. If there is not a clear point of contact arrangement between utility, customer, and provider, communications can become confused. The solution to all of these challenges is to troubleshoot the process, streamline, and implement solutions from the lessons learned.

Q. Do you have specific recommendations to incorporate these recommendations into implementation of the PG&E Fast Charge Program?

A. Yes. We have three specific recommendations.

First, the Commission should schedule a staff-facilitated workshop focused on the Fast Charge Program within 30 days of issuance of the final decision. In preparation for this

workshop, PG&E should prepare a summary of project requirements and a detailed process outline. Obviously, the outline should be based on PG&E's proposal and any changes ordered by the Commission in the final decision, but it should also provide detail not included in the application and testimony. The agenda should allow time for parties (including staff from other agencies involved in DCFC deployment) to discuss and offer suggestions on the requirements and outline at the workshop (or in written comments afterward), and PG&E should take into consideration input from workshop participants and guidance (if any) from the Commission in finalizing its implementation plan. This workshop will contribute to the quality of the program by enabling informal discussion of PG&E's plans and lessons learned before PG&E formally initiates implementation.

Second, PG&E should be required to submit a project compliance advice filing within a reasonable period (30-90 days) following the workshop that will include: a detailed project description and timeline for implementation, specific requirements applicable to equipment and service providers and participating site hosts, a detailed data collection and review process, draft application form and draft contracts. The compliance filing should be stand alone and not include cross references to PG&E's (or other utilities') infrastructure program or requirements. While we understand that some aspects of the project (i.e. site selection) cannot be identified in the compliance filing, providing a detailed program description and relevant documents up front will go a long way toward informing and streamlining the process.

Third, PG&E should establish a program advisory council (PAC) for this project and hold regular meetings to discuss project implementation. PAC meetings may be coordinated with the other program PAC meetings, but since different parties (and party representatives) are involved in various projects there should be a clearly designated time and place for discussion of each

project. The PAC should include market participants to ensure that project experience is brought to bear on the discussion and recommendations of the group.

Q. How can PG&E address the need for a redesigned EV public charging rate?

A. The Commission should order PG&E to develop a new public charging rate to complement its proposed Fast Charge Program within one year of the effective date of the final decision. This is a reasonable timeframe and ensures that there will still be a meaningful impact within the program life of the Fast Charge Program. ChargePoint appreciates the collaboration underway between PG&E and others to determine optimal rate designs for supporting TE goals and objectives, and we look forward to seeing a proposal from PG&E.

Q. Does this complete your testimony?

A. Yes it does.

Docket No: A.17-01-020
A.17-01-021
A.17-01-022
(consolidated)

Exhibit No: ___CP-3_____

Date: August 7, 2017 (Revised September 29, 2017)

Witness: Dave Packard

Prepared Testimony of Dave Packard on behalf of ChargePoint, Inc.

Regarding

Residential Charging Infrastructure and Rates

Errata – Clean Version

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1. Introduction and Background.

Q. Please state your name and business address.

A. My name is Dave Packard. My business address is ChargePoint, 254 East Hacienda Avenue, Campbell, CA 95008.

Q. By whom are you employed and in what capacity?

A. I am the Vice President of Utility Solutions for ChargePoint, Inc. In my current role, I advise a team of Directors who work with electric utilities and other key stakeholders in Europe and North America on electric vehicle (EV) market infrastructure engagement and investment, and support the development of policies and programs to accelerate the adoption of EVs and EV charging equipment and services.

Q. Please describe your background, experience and expertise.

A. I have been working in the electric vehicle market since 1993, and have been deeply involved in the evolution of standards and policy around EV infrastructure. Prior to joining ChargePoint, I was founder and President of ClipperCreek, a company that designed, developed and manufactured electric vehicle supply equipment (EVSE). Before ClipperCreek, I was Vice President of EVI, an infrastructure company that served the nascent EV infrastructure market through 2003.

I hold a Master of Science degree in civil engineering and a Bachelor of Science degree from the University of Massachusetts.

Q. On whose behalf are you presenting testimony?

A. I am testifying on behalf of ChargePoint, Inc.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to discuss the San Diego Gas & Electric Company (SDG&E) Residential Charging Program and the related proposal for a Residential Grid Integrated Rate (GIR) that would be applicable to participants in the proposed Residential Charging Program. I will provide background information on residential charging equipment and services, and models for effective utility programs in this sector. I will discuss ChargePoint's general support for utility involvement in promoting the installation of networked Level 2 charging stations at single-family residences and small multi-family dwellings. I will discuss the reasons that ChargePoint does not support the proposed structure of SDG&E's Residential Charging Program, and suggest an alternative rebate program structure that is more consistent with applicable statutory and regulatory requirements, less costly, less complex, and less likely to harm competition in this market. I will also offer suggestions regarding the residential rate proposal.

Q. Please describe ChargePoint's interest in the SDG&E Residential Charging Program and Rate.

A. ChargePoint is interested in SDG&E's proposed residential infrastructure program and rate because we view residential EV charging as a crucial customer sector. A well-designed, cost-effective program to encourage residential utility customers to install controllable Level 2 chargers can help ensure that residential charging is managed for the benefit of the driver and the grid. As a supporter of SB 350's goals and objectives, and as a provider of charging solutions to the residential sector, ChargePoint hopes to see well-structured utility infrastructure programs succeed in California. We also see rate design as a critical area for utility initiative and Commission action.

Q. What is ChargePoint's business model?

A. The ChargePoint business model is to engineer, manufacture, and sell the equipment and network services necessary for EV charging station owners to provide effective charging services for EVs that charge at their properties. ChargePoint sells charging solutions to individuals and families via our Home product line, and to commercial site hosts such as employers, businesses, cities, fleet operators, and public agencies via our commercial products. We sell the network services that enable the individual or site host to manage the charging infrastructure using cloud-based software tools, and merchant services to support billing functions. We also provide design, engineering, construction and support services directly to customers or through a network of qualified partners.

Q. What are the products and services that ChargePoint offers to the market?

A. ChargePoint offers a complete line of Level 2 (L2) and DCFC products and services, including Level 2 charging stations for commercial and residential, and DC Fast Charging stations. ChargePoint provides subscription-based network services for commercial, multi-family and fleet applications. ChargePoint also recently unveiled its CPE250 and Express Plus platform. ChargePoint Express Plus is a platform solution that includes modular building blocks – a Power Cube, Power Modules and Stations – that can be configured to meet requirements at any site and scale incrementally from 50kW to 450kW as demand for charging increases. All of ChargePoint's products are UL certified, meet national standards and feature an embedded meter.

For EV drivers, ChargePoint provides a unified mobile and web application for all aspects of their public, workplace, and home EV charging. ChargePoint drivers have access to real time information, payment and support services through the information available on the

screen of the charging station, in their mobile app, via email and text notifications, or on the ChargePoint website. Maintenance and customer service are a priority for our company. ChargePoint offers a comprehensive set of support services, including 24/7/365 call center support for EV drivers, warranty protection, site qualification, and design, construction, installation and validation services.

Q. Where does ChargePoint operate?

A. ChargePoint operates worldwide, and currently has charging spots with stations in 48 out of 50 states in the US, including over 20,000 ports in California.

Q. Is ChargePoint participating in other utility EV infrastructure programs?

A. Yes, ChargePoint is currently participating in all three of the California Phase 1 investor-owned utility (IOU) EV infrastructure programs. We are also participating in EPIC projects and many other utility programs -- in California and in other jurisdictions.

Q. Has this experience provided insight into program design and implementation that may be useful as the Commission considers this round of SB 350 applications?

A. Definitely. Even though some of the utility programs are only in early stages of implementation, we are learning a lot from working with diverse utilities and program designs. By carefully examining what is working in other programs, we can offer the Commission suggestions for improvements in program design and implementation, and ways to take advantage of lessons learned to date.

2. Discussion of residential EV charging and models for utility involvement in the residential sector.

A. EV charging equipment and services in the residential sector.

Q. Please describe the type of EV charging equipment and services that are available for single family homes and small (2-4 unit) multi-unit residential locations.

A. As described in SDG&E's testimony, most EVs come with a Level 1 EVSE that plugs into a standard 120-volt outlet.[1] However, many EV drivers prefer to install a 240-volt Level 2 charger because it provides a much faster charge and other features.

As one example, ChargePoint's Level 2 Home charging station is available in plug and hardwire versions, with charging speeds of 32A or 16A. It comes with 12 foot, 18 foot, or 25 foot cord lengths. The station can be installed indoors or outdoors, is UL listed, and is backed by a 3-year warranty. The Home station comes with a standard J1772 connector, which can charge any EV on the road, and is ENERGY STAR certified.

Our Home station pairs with ChargePoint's mobile app and updates automatically with the latest software upgrades over WiFi. EV owners can use the mobile app to remote start, schedule and set charging reminders as well as see all of their residential, public and workplace charging with a single ChargePoint account. They can also see details on energy use and how many miles added based on the car model. The mobile app will also recommend the best time to charge based on utility rate schedules.

Q. How are EV chargers installed at single family and small multi-family residences?

A. Installation requirements vary, depending on whether stations are plug-in or hardwired. The ChargePoint Home station requires a dedicated 20 amp or 40 amp connection. The plug-in station is installed indoors and can be removed and relocated if the EV owner moves. A licensed electrician can install the right outlet and mount the station. The hardwired station can go indoors or outdoors and must be installed by a licensed electrician. ChargePoint does not perform installations, but partners with QMerit, a company that matches customers with local installation partners for our Home charging station. The EV owner can request a quote online through our partner's website, choose an installer and schedule the installation. The installer

[1] SDG&E Testimony, Ch. 4, RS-8.

installs the station consistent with all applicable requirements, and plugs it in to ensure that everything works.

The time and cost of installation can differ, based on whether a panel upgrade is required, and other factors such as the distance and complexity of conduit run from charger to the panel, the existing electrical wiring, and requirements of the permitting process in a particular locality. Based on information from our installers we estimate that approximately 80 percent of installs are relatively simple and inexpensive, with a minority being more involved due to electrical upgrade requirements and local permitting processes.

Q. Is there a competitive market providing consumers options for residential EV equipment and services?

A. Yes. As SDG&E's testimony notes, a wide variety of Level 2 charging stations are available on the consumer market, offering a variety of capabilities. Companies employ a variety of business models, and offer a range of service offerings. We expect the market to remain healthy, and continue growing and innovating.

B. Managing EV charging loads in the single family and small MUD residential sector.

Q. Is it important to expand access to smart, connected EV charging infrastructure at single-family and small multi-unit dwellings?

A. Yes. Studies and surveys show that the majority of EV charging occurs at home.[2] With increasing numbers of EVs on the road and more drivers charging EVs at home, it will become increasingly important to manage home charging to minimize impacts on the grid, and optimize charging to coincide with periods of peak renewable generation. ChargePoint believes that

[2] See, e.g. National Renewable Energy Laboratory, *California Statewide Plug-In Electric Vehicle Infrastructure Assessment* (2014) (http://www.energy.ca.gov/2014publications/CEC-600-2014-003/CEC-600-2014-003.pdf), p.27.

expansion of managed Level 2 residential charging will serve the interests of EV drivers, ratepayers, utilities and grid operators.

Q. What are the capabilities of smart, connected residential EVSE?

A. As described above, smart EV chargers can manage customer EV charging activity in many ways. A connected Level 2 charger can provide load management and scheduled charging, incorporate two-way communication, modulate charging in response to customer preferences, rates, or real time signals, and enable participation in demand response programs. The options and opportunities are expanding, which means it is important to support deployment of smart, connected Level 2 chargers, while at the same time taking care to avoid program terms that could prevent customers from optimizing their use of this flexible resource under current or future rate or demand response (DR) program options.

Q. Can price signals influence EV charging behavior?

A. Yes. There is good evidence that residential customers respond to time-of-use EV rate signals.[3] The vast majority of residential customers prefer to "set it and forget it" in managing their EV charging, and simple TOU rates make it easy and convenient for them to do so. For this reason, ChargePoint has consistently supported adoption of EV TOU rates, including for residential customers. EV charging technology has been designed to enable customers to program EV charging in response to rate signals.

Q. Is it necessary to put a customer's whole house on an EV rate in order to shape EV charging behavior?

A. No. Whole house TOU or VGI rates are not the only way to use rates to influence EV charging behavior. It is also possible to influence EV charging behavior through the implementation of EV-only TOU rates. EV-only TOU rates can be a more precise means of

[3] See SCE Testimony in support of A.17-01-021, p.31, fn.74.

incentivizing charging behaviors than a whole-house TOU rate, and are similarly effective. For some residential customers, separately metering EV load is important to avoid unintended consequences. For example, multi-generation families, stay-at-home parents, telecommuters and others that unavoidably have home electricity usage that cannot be managed to EV TOU or VGI rate signals may require the option to keep the home on a tiered residential rate. Separate metering of residential EV load may also be the best choice for some families with net metered PV systems or home energy management systems. The key is to offer rate options so that EV drivers can reduce the cost of EV charging in response to rate signals in the way that works best for their particular situation.

Q. Is the installation of an additional utility meter at the residential customer premises the only way to successfully implement an EV-only TOU or VGI rate?

A. No. The installation of an additional utility meter is not the only way to successfully implement EV-only rates. The cost and inconvenience of separate utility meters can be avoided without sacrificing the benefits of separately metering EV load. ChargePoint, among other charging solution providers, provides an embedded meter as part of the residential charging station. These meters are capable of providing both cumulative and interval level data for the electricity dispensed to an electric vehicle at an accuracy of +/- 1% or better. This data is easily accessible to utilities through both our network operating system portal as well as through application programing interfaces. The Commission is currently in Phase 2 of submetering pilots that will lead to development of submetering protocols to advance and enable the capabilities of embedded EVSE submeters.

Q. How can a smart, connected residential Level 2 charging station participate in demand response?

A. A residential charging station like ChargePoint's Home product, with cloud services provided by the network service provider, enables load management and demand response of the allowable power level in real time. The allowable power levels can be completely shed, partially shed on a percentage basis of the actual load, or a lower power level ceiling can be set. This load management event can be scheduled to expire after a period of time, returning to the equipment normal maximum power output, or the event can be immediately rescinded at any time. These demand response events can be programmed to occur for individual charging ports or through aggregation. Using standardized communications, smart chargers can interface with utilities and with third parties. The Commission is still at a relatively early stage of establishing policies that will enable EV participation in DR programs, but it is reasonable to expect that residential EV charging will be a DR resource in the future, with multiple options for customers to participate and benefit.

C. Creating an effective utility program to support for expanding managed EV charging infrastructure in the single family and small MUD residential sector.

Q. Does ChargePoint believe that utilities have a role to play in accelerating widespread transportation electrification in California?

A. Yes. ChargePoint supports SB 350, and we believe that well-structured utility programs can play a very important role in accelerating widespread transportation electrification. Utilities are uniquely positioned to assist with education, outreach, and program administration functions. The utility's role should be clearly defined and relate to its core strengths and competencies. Each utility program should be tailored to the particular customer sector, and designed to achieve

the objectives of SB 350 cost-effectively and consistent with all applicable statutory and regulatory requirements.

Q. How can utilities help accelerate deployment of smart Level 2 charging infrastructure in the single family and small multi-family residential sector?

A. The most effective utility program design for the residential sector is a simple, straightforward rebate program. The rebate is a ratepayer-funded incentive to help cover the customer cost of purchasing and installing a networked Level 2 charging station. The rebate amount may depend on the program budget, the local estimated cost of chargers and installation, or other policy considerations such as providing larger rebates for lower-income customers.

Q. Why is a rebate program the best approach for the residential sector?

A. There are several reasons we believe a rebate program design is generally the best choice for supporting widespread deployment of smart charging stations in the residential sector. First, a residential rebate program is simple and straightforward to administer. There is value in simplicity. The simpler the program, the less time it takes to progress from Commission approval to implementation so the benefits of the program can be achieved sooner rather than later.

Second, rebate programs facilitate widespread customer participation because the structure, requirements and incentives are familiar and easy for customers to understand. Rebate programs also enable the utility to avoid program requirements (such as easements) that may raise legal concerns or discourage participation.

Third, rebate programs are less costly than alternative program designs. Programs that involve the utility in constructing make ready infrastructure, hiring installation contractors, and owning and managing EV charging stations add capital costs and expenses. Since residential charging generally consists of a 240-volt Level 2 charger and some simple installation by a

qualified electrician, the expense of utility involvement in ownership is not reasonable or justified. Rebate programs are a good, cost-effective fit for the residential sector because the utility gets the value of the EV, visibility from data and the manageable load, without the need to construct, own and operate the charging infrastructure in residences. In other words, the utility gets the same value for less effort and cost compared to the more resource intensive programs. As an added benefit of the rebate approach, most utilities already have experience in administering rebates for other customer home appliances and energy efficiency investments. The utility can rely on this existing program administration structure, personnel and institutional experience in creating a cost-effective home EV charging rebate program. This foundation is particularly valuable in California, as our investor-owned utilities have years of experience in successfully administering a variety of customer rebate programs, including energy efficiency programs that offer rebates for customers to install energy efficient and load managing technologies in their homes.

Last but not least, rebate programs facilitate competition. A program that allows the residential customer to select EVSE from any qualified provider creates a good environment for market growth, technical innovation and competition on price, product features and service. A program that allows the residential customer to select a qualified, licensed installer from their own community is enabling customer choice, creating local jobs, and supporting small and minority and women-owned businesses in disadvantaged communities.

Q. Can you provide an example of a residential EV rebate program?

A. Yes. Here in California the Charge Up L.A.! program sponsored by the Los Angeles Department of Water and Power (LADWP) is an example.[4] This program provides a $500

[4] Information regarding the LADWP Charge Up LA! Program is available on the LADWP website: https://www.ladwp.com/ladwp/faces/wcnav_externalId/r-sm-rp-ev?_adf.ctrl-

rebate to help customers purchase a new residential Level 2 charging station that meets basic requirements (SAE J1772 charging plug, UL or other qualified testing lab listing). The installation must be performed by a licensed electrician, in compliance with local codes and permitting and inspection requirements. An additional $250 bonus is offered to customers who install a dedicated service and meter to enable participation in a TOU rate. Residential rebate programs have been used in other states.

3. Summary of the SDG&E Residential Charging Program and Residential Rate proposal.

Q. Please briefly describe the proposed SDG&E Residential Charging Program.

A. On January 20, 2017, SDG&E submitted an Application for Authority to Implement Priority Review and Standard Review Proposals to Accelerate Widespread Transportation Electrification. The application included a proposed Residential Charging Program and a new Residential Grid Integrated Rate proposal.

For the Residential Charging Program, SDG&E proposes a program to install up to 90,000 Level 2 charging stations at single family and small multi-unit (2-4 unit) residential locations.[5] The initial period of the program, from approval through 2019, would be spent "fully establishing partnerships through a request for proposal (RFP) process and customer outreach." Customer enrollment would commence in 2020 and extend through 2025 with "increasing

state=15nbmwha35_4&_afrLoop=493203479130155&_afrWindowMode=0&_afrWindowId=9j2qpjdwb_1#%40%3F_afrWindowId%3D9j2qpjdwb_1%26_afrLoop%3D493203479130155%26_afrWindowMode%3D0%26_adf.ctrl-state%3D9j2qpjdwb_47.

[5] SDG&E Testimony Chapter 4, RS-1 through RS-5.

enrollments and installations in the later years of the program."[6] Installations will extend into 2026, with a goal of completion by December 31, 2026.[7]

All of the residential charging stations will be owned, installed, maintained and operated by SDG&E.[8] SDG&E's RFP will involve a utility-developed list of specifications and "scoring criteria" and a "sealed bid" process to select EVSE vendors.[9] SDG&E will contract with IBEW-affiliated contractors for installations.[10] SDG&E will apparently purchase and supply the EVSE to customers at no charge, but apply a cap on installation costs.[11] Every participating residential customer will be required to switch to the new whole-house Residential GIR proposed by SDG&E in this proceeding.[12] SDG&E would reserve 20% of the program's enrollment to customers living in DACs.[13] SDG&E would use the Program Advisory Council (PAC) established for its Phase 1 workplace/MUD program for all of its SB 350 programs, including the Residential Charging Program.[14]

Q. Please briefly describe the SDG&E Residential Rate proposal.

A. The proposed new Residential GIR is described in Chapter 5 of SDG&E's Testimony. The Residential GIR is one of three new grid integrated rates proposed for adoption along with SDG&E's SB 350 program proposals.

[6] Id. RS-11.
[7] Id. RS-12. SDG&E states more generally at RS-21 that if the program progresses more slowly than estimated "SDG&E can extend the program enrollment past 2025."
[8] Id. RS-1.
[9] Id. RS-24-25.
[10] Id. RS-15.
[11] Id. RS-6. The cap will be $1000 for customers residing in single family homes, $1,125 for customers residing in 2-4 unit MUDs, and $1,500 for customers residing in disadvantaged communities (DACs).
[12] Id. RS-1.
[13] Id. RS-16.
[14] Id. Chapter 2, LB-40.

The proposed GIRs consist of three components, a grid integration charge (GIC), hourly base rate, and "dynamic adders."[15] The GIC is a fixed monthly charge for recovery of customer costs and 80% of distribution-demand costs. It is based on a customer's maximum annual demand during any period except the super-off peak period.[16] The Hourly Base Rate for recovery of all other utility costs is based on the "class average rates of each respective class of customer" and California Independent System Operator (CAISO) day-ahead hourly prices.[17] The Dynamic Adders are a critical peak pricing signal applied to the top 150 system hours and provided to customers on a day-ahead basis for the recovery of 50% of generation capacity related costs, and a circuit-level critical peak pricing signal applied to the top 200 circuit hours and provided to customers on a day-ahead basis for the recovery of 20% of distribution demand-related costs.[18] For the residential rate only SDG&E proposes to include a "fixed monthly incentive which in Year 1 provides a 25% reduction in the GIC and will be phased out by Year 5…."[19] As noted above, the proposed Residential GIR will be mandatory for all customers receiving EVSE through the proposed SDG&E Residential Charging Program, and will be applied to the customer's entire premises.

Q. Has the Commission previously approved an SDG&E EV infrastructure program and VGI pilot rate?

A. Yes. On February 4, 2016, the Commission issued Decision 16-01-045 authorizing a $45 million "Power Your Drive" infrastructure program and VGI rate for the deployment of up to 3,500 utility-owned EV charging ports at workplace and multi-unit dwelling locations.

Q. What is the status of that program?

[15] Id. Chapter 5, CF-13.
[16] Id. CF-14.
[17] Id. CF-14-15.
[18] Id. CF-15. For additional detail on these rate components, see Id. pp. 15-24.
[19] Id. CF-24.

A. SDG&E's "Power Your Drive" program is still at an early stage of implementation. To our knowledge, SDG&E has only recently begun construction of EV make ready facilities and installation of charging stations for that program.

4. Evaluating the SDG&E Residential Charging Program and Rate for Consistency with Statutory and Regulatory Requirements.

Q. What requirements will the Commission consider in reviewing the SDG&E proposals?

A. On September 14, 2016 Assigned Commissioner Peterman issued a Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to Senate Bill 350 (September 14, 2016 ACR) in Rulemaking 13-11-007. This ruling identifies the statutory and regulatory requirements applicable to each of the SB 350 TE applications, and the criteria for approval of the utility proposals.

Briefly, the TE applications must meet the objectives, legislative findings and declarations as defined by SB 350 and related requirements in Public Utilities Code sections 740.3, 740.8 and 740.12. These statutory requirements are summarized on pages 14-15 of the September 14, 2016 ACR. In addition, the TE applications must seek to conform to additional guidelines identified on pages 15-16 of the September 14, 2016 ACR. These guidelines require proposals to:

- Fit with the CPUC and IOU core competencies and capabilities.
- Address the multiple goals of widespread TE.
- Consider Commissioner-identified priority projects.
- Align with local, regional and broader state policies.
- Promote driver, customer and worker safety.
- Seek to leverage non-utility funding.
- Identify a Vehicle-Grid Integration Communication Standard.
- Consider utility incentives or other regulatory mechanisms.
- Propose two to five year pilots and programs with a selection of one-year pilots for priority review.

- Provide anonymous and aggregated data for evaluation.

Q. Does the proposed SDG&E Residential Charging Program meet the applicable statutory and regulatory requirements?

A. No. SDG&E's proposed Residential Charging Program does not meet the requirements cited above, and it should not be approved without significant modifications. There are a number of issues. The proposed program will result in unfair utility competition with non-utility enterprises in violation of Public Utilities Code section 740.3. The proposed program is not designed to stimulate innovation and competition, does not enable consumer options in charging equipment and services, and will not attract private capital investments or leverage non-utility funding. The proposed program does not seek to minimize overall costs and maximize overall benefits. The program does not fit with SDG&E's core competencies and capabilities. And the program is not limited to five years as required by the September 14, 2016 ACR.

Q. Please explain your concerns regarding the proposed program's impacts on competition and customer choice.

A. SDG&E proposes to procure, own and operate 90,000 residential charging stations. According to SDG&E, this would constitute 75 percent of the 120,309 vehicles needed to reach SDG&E's share of the ZEV Action plan goals for 2025.[20] As SDG&E intends to offer free charging stations and highly subsidized installation to its program participants, the program would essentially define the residential market in SDG&E territory. Any company not chosen in SDG&E's RFP, or that desires to sell EVSE to residential customers outside of the program instead of being a utility vendor would be competing with "free" which is, by definition, not competition at all.

[20] SDG&E Testimony, Ch.4, RS-7.

In Decisions 11-07-029 and 14-12-079 the Commission established a "balancing test" that requires utilities to balance the benefits of PEV charging infrastructure ownership against the competitive limitation that may result from that ownership.[21] SDG&E's balancing test analysis for the proposed program consists of two paragraphs of testimony in which SDG&E describes the program as "modest in scope" and vaguely speculates that that the program will help "grow the market" and "encourage competition."[22] Elsewhere in its testimony, SDG&E identifies the benefits of utility ownership as "customer experience, installation safety standards, rate alignment with dynamic grid conditions, and stranded asset mitigation."[23] However, none of these benefits are actually associated with utility ownership. All are also attributes of any well-designed residential rebate program. Therefore, SDG&E fails the balancing test.

SDG&E's program would not "enable consumer options in charging equipment and services" as required under SB 350. Customers would not have the option to purchase EVSE, services and installation from any qualified provider. Instead, SDG&E would apparently select EVSE suppliers through a complicated utility vetting, scoring, and "sealed bid" procurement process.[24] Similarly, SDG&E will not allow customers to select a local licensed and certified electrician to install the EVSE. SDG&E will hand pick contract installers according to an undisclosed process.[25]

Q. Why do you conclude that SDG&E's proposal will not minimize overall costs and maximize overall benefits?

A. We believe SDG&E's proposal does not minimize overall costs because SDG&E has deliberately chosen to focus only on its preferred utility own/operate business model. As

[21] D.14-12-079 p.5.
[22] SDG&E Testimony, Ch.2, LB22-23.
[23] Id. Ch.4, RS-23.
[24] Id. RS-24-25.
[25] Id. RS-15.

discussed above, there are other program designs such as the rebate model that are clearly less costly to ratepayers and much more appropriate for widespread expansion of residential EVSE. Under SDG&E's proposal SDG&E ratepayers will be responsible for the ratebased cost (including a rate of return on capital) for 90,000 residential chargers. That is entirely unnecessary to achieve the primary goal of expanding connected Level 2 charging infrastructure in the residential sector.

SDG&E's singular focus on the utility own/operate model similarly has resulted in the program's failure to maximize overall benefits. Some benefits identified in SDG&E's application – e.g. compliance with safety and permitting standards, expansion of smart charging capabilities, avoiding stranded assets – may be accomplished in SDG&E's program but have nothing to do with program design since they could also be accomplished in a rebate program. However, other benefits such as enabling competition, innovation, and private investment will not and cannot be maximized under SDG&E's program design. As discussed below, on balance there are much better options.

Q. Why does SDG&E's proposed program not fit within SDG&E's core competencies and capabilities?

A. SDG&E is justifiably proud that it has been recognized as a "customer champion" and demonstrably competent to provide its customers with all of their gas and electrical needs.[26] SDG&E's core competencies are delivering safe, reliable, affordable and clean electricity to utility customers and managing effective customer rebate programs.[27] SDG&E's core competencies do not encompass ownership and installation of in-home technologies such as charging stations. To reference the aforementioned energy efficiency programs, the equivalent would be the utility owning your thermostat, HVAC unit, or dual-pane windows. To our

[26] SDG&E Testimony, Ch. 4 RS-17.
[27] See, e.g. https://www.sdge.com/residential/easy-and-affordable-ways-save/easy-ways-save.

knowledge there is no residential EV charging program anywhere in the United States that resembles what SDG&E is proposing.

There is also a significant concern that the proposal would strain SDG&E's capabilities. As noted above, SDG&E has only just begun to launch a very large and ambitious workplace/MUD EV infrastructure program and a new VGI rate pilot for participants of that program. For this reason alone, as well as the other reasons discussed above, it would make sense for the Commission to reject SDG&E's proposal as not within the utility's core competencies and capabilities, and instead authorize a simple, easy to administer customer rebate program similar to the portfolio of energy efficiency programs it already administers.

Q. Is the proposed Residential Charging Program a five-year program?

A. No, it is not. As described, the program would commence in 2018 and involve installations through December 31, 2026. At the least, that is a seven and one-half year program, and an even longer-term program if the utility's ongoing operation and maintenance obligations are taken into consideration.

Q. Is the proposed Residential Rate consistent with applicable statutory and regulatory requirements?

A. No. We have four concerns with SDG&E's proposed Residential GIR. First, the rate design is too complex. There is no reason to assume that residential customers will understand the rate, how to respond to it, or its potential impact on their electric bills. ChargePoint supports EV TOU rates and pilots to test customer response to VGI rates. However, imposing this very complicated, untested rate on 90,000 residential customers is inappropriate.

Second, the GIC component of the proposed GIR is punitive and counterproductive. This is a ratcheted demand charge that could severely penalize a customer for usage during a single hour of the year, and raise the customer's bill instead of providing an opportunity to lower it. By

design the GIC would offer little incentive for the customer to reduce demand below the annual peak, and could signal to the customer that there is no point in trying to charge off peak or in response to other rate signals. SDG&E's proposal to base the Residential GIC on hourly demand rather than 15 minute interval and the phased GIC do not adequately address the problems this rate could create for customers.

Third, SDG&E's proposal to require all participants in the proposed Residential Charging Program to participate in the whole-house Residential GIR as a mandatory requirement of the program is inappropriate and discriminates against customers that have home loads that cannot be moved to the super off-peak period or managed to the Residential GIR rate signals. It also would undermine the Commission's interest in supporting and promoting demand response programs. Locking 90,000 residential customers in a single whole house GIR rate is entirely inconsistent with customer choice and the Commission's commitment to exploring new approaches and options for customer participation in grid management. It is concerning that SDG&E did not consider the obvious alternative of testing the rate through a pilot or at least making it optional.

Fourth, SDG&E has completely disregarded the Commission's instruction in the September 14, 2016 ACR to leverage submetering technologies and consider the benefits of vehicle-specific submetering in designing EV rate proposals.[28]

5. ChargePoint Recommendations.

Q. Does ChargePoint have a position on the proposed SDG&E Residential Charging Program?

A. Yes. ChargePoint supports the objective of creating a program to deploy more smart, connected Level 2 chargers at residential locations. However, SDG&E's program design does

[28] September 14, 2016 ACR p.20-21.

not comport with the many of the applicable statutory and regulatory requirements, and so ChargePoint strongly opposes adoption in its current form.

Q. Could the SDG&E Residential Charging Proposal be redesigned?

A. Yes. As discussed above, SDG&E's Residential Charging Proposal can and should be redesigned as a simple, straightforward rebate program.

Q. How should the SDG&E rebate program be structured?

A. We suggest that the SDG&E Residential Rebate Program be structured along the following lines:

- Five year program term.
- Two tier rebate for customers located in and outside of DACs, available to all eligible SDG&E customers, including customers served by CCAs.
- Customer qualifications: Residential SDG&E customer or resident of household served by SDG&E, proof of purchase of a qualified Level 2 charging station permitted and installed by a licensed electrician within SDG&E's territory at the residence of a person who owns or leases an EV registered at the same address.
- Equipment and installation requirements: New, unused Level 2 (240-volt) charging station with SAE J1772 charging plug, listed by a nationally recognized testing laboratory, network connected such that the utility or third party can remotely control and collect billing data, installed by a licensed electrician in compliance with local codes, permitting and inspection requirements.

ChargePoint further recommends that the Commission retain SDG&E's commitment to a 20% target for participation by customers located in DACs. To make the program a success for disadvantaged communities, SDG&E should be further instructed (in coordination with representatives of groups representing disadvantaged communities) to develop an education and outreach program and installer training program focused on DAC residents.

The program should include a program advisory council (PAC) and reporting requirements. If the PAC is combined with other programs, the meetings need to be organized to facilitate participation by stakeholders that have an interest in only one program.

Q. The above is similar to the LADWP Charge Up LA! Program. Is that your model?

A. We think the LADWP Charge Up LA! Program is a good starting place. The Commission should look at this and other rebate program structures in deciding what will work best for the SDG&E Residential Rebate Program. SDG&E may have ideas for improving on other EV rebate models, for optimizing education and outreach, or for coordinating the program with its existing rebate programs. ChargePoint and other participants in the LADWP rebate program and other rebate programs should be provided an opportunity to share lessons learned and make recommendations to make the SDG&E Residential rebate program a success.

Q. Do you have any recommendations regarding the process for implementing this program?

A. Yes. Since adoption of this proposal will require a modified proposal from SDG&E, we recommend that the Commission schedule a workshop 30-60 days after the issuance date of the final decision. Discussion at that workshop should focus on identifying and addressing program design issues, and discussing lessons learned from the Phase 1 EV infrastructure programs and other EV infrastructure programs, particularly other rebate programs. Notice of the workshop should go to the DR rulemaking service list as well as the EV proceedings to ensure that program requirements are consistent with the expectations and rules applicable to relevant DR programs.

After the workshop, SDG&E should have a reasonable period of time to prepare and submit a detailed program implementation plan and related materials for an SDG&E Residential Rebate Program.

Q. Does ChargePoint have a position on the SDG&E Residential GIR?

A. Yes. Our primary recommendation is to reject the proposal. It is too complex for residential customers, and likely to result in negative rate impacts. However, the SDG&E Rebate Program recommended in this testimony should include education and outreach and program incentives to encourage residential customer participation in available EV TOU rates and other managed charging program opportunities that may be available in the future. If the Commission wants to pursue the SDG&E Residential GIR proposal, it should be redesigned to eliminate the GIC and it should be optional. Alternatively, the Commission may want to instruct SDG&E to pursue this proposal as a pilot.

Q. Does this complete your testimony?

A. Yes it does.

Docket No: A.17-01-020
A.17-01-021
A.17-01-022
(consolidated)

Exhibit No: ___CP-2_____

Date: August 1, 2017 (Revised September 29, 2017)

Witness: Dave Packard

Prepared Testimony of Dave Packard on behalf of ChargePoint, Inc.
Regarding
Medium/Heavy Duty and Fleet Charging Infrastructure
and Commercial Rates

ERRATA – Clean Version

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1. Introduction and Background.

Q. Please state your name and business address.

A. My name is Dave Packard. My business address is ChargePoint, 254 East Hacienda Avenue, Campbell, CA 95008.

Q. By whom are you employed and in what capacity?

A. I am the Vice President of Utility Solutions for ChargePoint, Inc. In my current role, I advise a team of Directors who work with electric utilities and other key stakeholders in Europe and North America on electric vehicle (EV) market infrastructure engagement and investment, and support the development of policies and programs to accelerate the adoption of EVs and EV charging equipment and services.

Q. Please describe your background, experience and expertise.

A. I have been working in the electric vehicle market since 1993, and have been deeply involved in the evolution of standards and policy around EV infrastructure. Prior to joining ChargePoint, I was founder and President of Clipper Creek, a company that designed, developed and manufactured electric vehicle supply equipment (EVSE). Before Clipper Creek, I was Vice President of EVI, an infrastructure company that served the nascent EV infrastructure market through 2003.

I hold a Master of Science degree in civil engineering and a Bachelor of Science degree from the University of Massachusetts.

Q. On whose behalf are you presenting testimony?

A. I am testifying on behalf of ChargePoint, Inc.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to discuss the standard review medium/heavy duty (MD/HD) and fleet charging infrastructure and commercial rates proposed in these consolidated application proceedings. Specifically I address below: 1) the Southern California Edison Company (SCE) standard review MD/HD Vehicle Charging Infrastructure Program; 2) the Pacific Gas and Electric Company (PG&E) standard review FleetReady Program; and 3) the SCE Commercial EV Rate proposal.

Q. Please describe ChargePoint's interest in these MD/HD and fleet charging infrastructure and commercial rate proposals.

A. ChargePoint is interested in the SCE and PG&E MD/HD and fleet programs because they mark an important step forward in sectors that the utilities' EV infrastructure programs have not yet addressed. As a supporter of SB 350's goals and objectives, and as a provider of charging solutions to the MD/HD and fleet sectors, ChargePoint hopes to see well-structured utility infrastructure programs succeed in California. We also see rate design as a critical area for utility initiative and Commission action.

Q. What is ChargePoint's business model?

A. The ChargePoint business model is to engineer, manufacture, and sell the equipment and network services necessary for EV charging station owners to provide effective charging services for EVs that charge at their properties. ChargePoint sells charging solutions to individuals and to commercial site hosts such as employers, businesses, cities, fleet operators, and public agencies. The commercial site host determines relevant conditions of use and (if relevant) the pricing to third party EV drivers/users. We sell the network services that enable the site host to manage its charging infrastructure using cloud-based software tools, and merchant services to support billing functions, as well as integration with various fleet management systems. We also provide

design engineering, construction and support services directly to customers or through a network of qualified partners.

Q. What are the products and services that ChargePoint offers to the market?

A. ChargePoint offers a complete line of Level 2 (L2) and DCFC products and services, including the CT4000 family of Level 2 charging stations, ChargePoint Home, ChargePoint Multi-Family, ChargePoint Fleet and both 24 kW and 50 kW DC Fast Charging stations. ChargePoint also recently unveiled its CPE250 and Express Plus platform. ChargePoint Express Plus is a platform solution that includes modular building blocks – a Power Cube, Power Modules and Stations – that can be configured to meet requirements at any site and scale incrementally as demand for charging increases. Every station in the Express Plus system is capable of charging from 50 kilowatts (kW) to 400 kW and supports charging voltages ranging from 200 volts (V) to 1000 V. Thus, the system can charge both the 400 V cars and 750 V buses available on the market today, and the 800 V cars expected in the future. All of ChargePoint's products are UL certified, meet national standards and feature an embedded meter.

To support the networked operation of this EV charging equipment, ChargePoint provides site hosts a variety of supporting services. For example, ChargePoint provides subscriptions to our cloud-based platform. This provides the station host with everything needed to manage EV charging operations, including online management tools for data analysis, load management, scheduled charging (e.g. in response to user needs, pricing, grid signals) and access control. We connect stations to ChargePoint over a secure cellular or wifi data network allowing station owners to manage all their charging operations from a single dashboard. ChargePoint is working with MD/HD fleet operators to tailor charging solutions to customer needs and the nature of the location, routes, charging times, grid management needs, and to track the charging

on customer-owned stations as well as those owned by others along the fleet routes. Furthermore, the ChargePoint network interfaces with third party telematics, fleet cards and fleet management software to enable a seamless transition to EVs without any disruption to existing operations.

Maintenance and customer service are a priority for our company. ChargePoint offers a comprehensive set of support services for both EV users and station hosts, including 24/7/365 call center support for EV drivers, call center support for EV site hosts and fleet managers/operators, a one-year warranty, an optional additional warranty for parts and on-site labor, site qualification, and design, construction, installation and validation services. These services are available to customers using our products for MD/HD and fleet charging.

Q. Where does ChargePoint operate?

A. ChargePoint operates worldwide, and currently has charging spots with stations in 48 out of 50 states in the US, including over 20,000 ports in California.

Q. Does ChargePoint support the SCE and PG&E MD/HD and fleet programs?

A. Yes, we support the MD/HD and fleet programs. Consideration of the MD/HD and fleet charging infrastructure programs proposed by SCE and PG&E in this proceeding marks a very important step in California's effort to accelerate widespread transportation electrification (TE). First, the timing for a larger-scale utility infrastructure initiative is opportune, as these sectors use electric vehicles and charging technologies that are increasingly commercialized and available on the market. As discussed in the utilities' applications, private and public users of MD/HD vehicles and fleet operators are interested in conversion from fossil-fueled to electric vehicles.[1] Since MD/HD vehicles are large contributors of greenhouse gases and criteria pollutants (often

[1] See PG&E Testimony pp. 2-2, 2-3; SCE Testimony pp. 46, 49, 53 (citing Union of Concerned Scientists and Greenlining Institute, *Delivering Opportunity: How Electric Buses and Trucks Can Create Jobs and Improve Public Health Benefits* (Oct. 2016).

in proximity to disadvantaged communities), programs targeting this sector can offer significant benefits to environmental quality and public health.

Q. Does ChargePoint support proposals for commercial EV rate reform?

A. Yes. The SCE commercial rate proposal is timely. As noted in the order instituting rulemaking in this proceeding and in the September 14, 2016 ACR, "a long-term solution is needed to resolve the issues related to the elements of tariffs applicable to the operations of electric transit fleets throughout the state."[2] We believe that rates designed to mitigate the impact of demand charges on fleet operators, combined with smart EV charging technologies and managed charging, can accelerate the expansion of TE in this sector while enabling efficient integration of vehicles with the grid.

Q. Is ChargePoint participating in other utility EV infrastructure programs?

A. Yes, ChargePoint is currently participating in all three of the California Phase 1 IOU EV infrastructure programs. We are also participating in EPIC projects and many other utility programs -- in California and in other jurisdictions.

Q. Has this experience provided insight into program design and implementation that may be useful as the Commission considers this round of SB 350 applications?

A. Definitely. Even though some of the California Phase 1 programs are only in the initial stages of implementation we already have learned important lessons from working with a diverse range of utilities and program designs. This experience, and that of other providers, site hosts, and representatives of disadvantaged communities, can be leveraged to improve the priority and standard review projects proposed in this round of applications, and future generations of EV infrastructure programs. We discuss specific "lessons learned" and offer recommendations for the SCE and PG&E MD/HD and fleet infrastructure programs below.

[2] September 14, 2016 ACR at 20, citing Order Instituting Rulemaking (November 14, 2013) p. 9.

2. Summary of the Standard Review Medium/Heavy Duty and Fleet Charging Infrastructure and Commercial Rate Proposals.

Q. Please briefly describe the proposed SCE MD/HD Vehicle Charging Infrastructure Program.

A. On January 20, 2017, SCE filed an Application for Approval of its 2017 Transportation Electrification Proposals. That application includes a proposal for a MD/HD Vehicle Charging Infrastructure Program, described on pages 51-60 of SCE's testimony. Briefly, SCE proposes a five year program to accelerate customer investment in MD/HD charging by covering the cost of the electrical make ready infrastructure, providing a rebate on the charging equipment and installation, and providing help with planning and deployment in a manner that manages potential grid impacts.[3] Eligible customers will meet site requirements, commit to investment in qualified charging equipment, participate in an eligible TOU rate, and agree to participate in the program for five years, including maintaining the charging equipment in working order.[4] The program will serve customers using Class 2-8 trucks, cargo handling equipment, transport refrigeration units, ground support equipment, and buses.[5] SCE proposes to follow the "base cost" methodology used in its Charge Ready program to set rebate amounts.[6]

Eligible equipment must meet established technical standards and energy efficiency recommendations and be listed by a nationally recognized testing laboratory.[7] SCE will form an advisory board with customers and industry stakeholders to provide input, guidance and

[3] SCE Testimony p. 54.
[4] Id. pp. 54-55.
[5] Id. p. 55, Appendix C.
[6] Id. p. 52. SCE testifies that it will establish a request for information (RFI) process and establish a separate base cost based on "model that provides the best value within each charging equipment category." Id.
[7] Id. p. 55. For segments where no available equipment meets established standards, SCE will evaluate the equipment on a case-by-case basis for program eligibility, but will not provide a rebate for the cost of purchasing and installing the charging equipment. Id.

suggestions on execution and improvement of the program.[8] SCE will provide quarterly status reports on customer satisfaction, processes, costs, post-deployment impacts and lessons learned.[9]

Q. Please briefly describe the PG&E FleetReady Program.

A. On January 20, 2017, PG&E filed an Application for Approval of its Senate Bill 350 Transportation Electrification Program. The application includes a proposal for a five-year FleetReady Program, described in Chapter 3 of PG&E's testimony. Briefly, the program would include education and outreach to customers and industry participants, and offer eligible customers make ready infrastructure for non-light-duty EVs that commit to near-term conversion of their vehicles and equipment to TE.[10] The program will provide targeted incentives and rebates to businesses that adopt TE for non-light-duty vehicles in disadvantaged communities and for public transit and school buses.[11] Specifically, customers in disadvantaged communities will receive a rebate of 75% of the estimated cost of the charger, and public transit and school bus operators will receive a rebate of $15,000.[12]

The program will target MD/HD trucks, buses, ground support equipment, port cargo handling, transport refrigeration units, truck stop electrification, Class 1 forklifts and other non-light-duty vehicles.[13] The program estimates 700 make ready installations for budgeting purposes, but the actual number of installations will depend on demand, location, and costs.[14] Eligible customers will commit to near-term procurement of EVs and procurement, and maintenance of qualified charging equipment. Where possible PG&E will collect data including

[8] Id. p. 56.
[9] Id. pp. 56-57.
[10] PG&E Testimony p. 3-2.
[11] Id.
[12] Id. pp. 3-34 through 3-36.
[13] Id. p. 3-5.
[14] Id. p. 3-4.

utilization by site, kWh usage by price, other usage data, charging load profiles, and load impacts.[15]

Q. Please briefly describe the SCE Commercial Rate proposal.

A. SCE is proposing three new commercial EV TOU rates: TOU-EV-7, for customers with monthly maximum demand of 20 kW and under, TOU-EV-8, for customers with monthly maximum demand of 21 kW to 500 kW, TOU-EV-9, for customers with monthly maximum demand above 500 kW.[16] The rates are structured to provide a five-year introductory period during which the rate will primarily recover costs through volumetric energy charges instead of demand charges. After the five-year introductory period, SCE will introduce demand charges and phase them in over a five-year intermediate period. At the end of the tenth year, the rate schedules will reflect stable demand charges that will be lower than what new EV customers would pay on their otherwise applicable (non-EV) commercial rates today.[17]

The new rates will be available to both existing and new EV customers operating all types of electric vehicles, including transit buses, drayage, vocational, short-haul fleets, port applications, ground equipment, and truck stop applications.[18] The five year introductory period will commence and end at the same time for all eligible customers, i.e. will not be vintaged for customers subscribing during later years.[19]

[15] Id. p. 3-10.
[16] SCE Testimony p. 62.
[17] Id. p. 61.
[18] Id. pp. 62-63.
[19] Id. p. 63.

Q. Do the SCE and PG&E proposals specify particular charging technologies to serve the MD/HD and fleet vehicles?

A. No. It appears that both PG&E and SCE intend to accommodate the EV and infrastructure needs of the customer.[20] The utilities have provided a general description of charging technologies, and PG&E has enumerated "expected characteristics" of charging equipment for purposes of discussing the program budget.[21] However, the information provided appears to be somewhat incomplete and dated, and does not discuss some newer generation MD/HD charging equipment and technologies that are coming out now, or expected to become available in the relatively near future. We expect to see continuous innovation in these customer segments throughout the term of the programs.

3. Evaluating the MD/HD and Fleet Charging Infrastructure and Commercial Rate Proposals for Consistency with Statutory and Regulatory Requirements.

Q. What requirements will the Commission consider in reviewing these proposals?

A. On September 14, 2016 Assigned Commissioner Peterman issued a Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to Senate Bill 350 (September 14, 2016 ACR) in Rulemaking 13-11-007. This ruling identifies the statutory and regulatory requirements applicable to each of the SB 350 TE applications, and the criteria for approval of the utility proposals.

Briefly, the TE applications must meet the objectives, legislative findings and declarations as defined by SB 350 and related requirements in Public Utilities Code sections 740.3, 740.8 and 740.12. These statutory requirements are summarized on pages 14-15 of the September 14, 2016 ACR. In addition, the TE applications must seek to conform to additional

[20] See, e.g. PG&E Testimony p. 3-27; SCE Testimony p. 55.
[21] See e.g. PG&E Testimony p. 3-28.

guidelines identified on pages 15-16 of the September 14, 2016 ACR. These guidelines require proposals to:

- Fit with the CPUC and IOU core competencies and capabilities.
- Address the multiple goals of widespread TE.
- Consider Commissioner-identified priority projects.
- Align with local, regional and broader state policies.
- Promote driver, customer and worker safety.
- Seek to leverage non-utility funding.
- Identify a Vehicle-Grid Integration Communication Standard.
- Consider utility incentives or other regulatory mechanisms.
- Propose two to five year pilots and programs with a selection of one-year pilots for priority review.
- Provide anonymous and aggregated data for evaluation.

Q. Do the MD/HD and fleet infrastructure programs proposed by SCE and PG&E, and SCE's proposed commercial EV rates meet the applicable statutory and regulatory requirements?

A. We believe that the SCE and PG&E MD/HD and fleet infrastructure proposals clearly meet the applicable statutory and regulatory criteria in their general focus and program design. Therefore, our testimony on the infrastructure programs focuses on clarifying some important program design elements, and suggesting improvements to the implementation process that will ensure that the programs enable customer choice of charging equipment, support competitive markets and ongoing innovation in charging equipment and services, and take advantage of lessons learned in implementing other EV infrastructure programs.

We likewise believe that the SCE commercial rate proposal is generally consistent with SB 350 and responsive to the Commission's instruction regarding the development of new EV rates, although it will need to be reviewed over time.

Q. Please discuss your conclusion that the SCE and PG&E infrastructure proposals are generally consistent with statutory and regulatory requirements.

A. Focusing on the MD/HD and fleet sectors will help accelerate transportation electrification. All transportation segments need to be electrified in order to achieve the state's environmental goals, but since MD/HD vehicles contribute disproportionately to NOx and particle pollution, this sector is particularly important.[22]

By structuring their MD/HD and fleet programs to support utility ownership and operation of make ready infrastructure, while allowing customers to select, own and operate the charging equipment, SCE and PG&E have taken an important step toward ensuring that they will not unfairly compete with nonutility enterprises. ChargePoint strongly supports this aspect of both utilities' program design. This approach fits well with the utilities' core competencies. It also leverages other sources of capital, including private investment, by assisting customers with the significant up front cost of the make ready infrastructure, while requiring an appropriate level of customer contribution toward the charging stations, network services and maintenance.

We are pleased that both SCE and PG&E have included additional rebates for customers located in disadvantaged communities and (in the case of the PG&E program) for public transit and school buses. This additional targeted support is important because ratepayer-supported programs should allocate funding where it is most needed, and where it can have the greatest impact.

For the reasons discussed above, we believe that the SCE and PG&E make ready programs for the MD/HD and fleet sectors meets the statutory requirements of avoiding unfair competition, minimizing overall costs and maximizing overall benefits, and leveraging non-utility investment. They also fit well with the utilities' core competencies and capabilities, and

[22] See SCE Testimony p. 22.

address a priority area of interest identified in the September 14, 2016 Assigned Commissioner's Ruling.

Q. Will the MD/HD and fleet proposals "stimulate innovation and competition" and "enable consumer options in charging equipment and services"?

A. As discussed above, make ready and rebate programs create a more open environment that enables market entry by smaller companies, optimizes participation, and encourages collaboration and innovation to address customers' needs and preferences. We believe this will be particularly important in the MD/HD and fleet sectors, which are just beginning to emerge and expand. By helping grow the market for charging equipment and services in the various MD/HD/fleet customer sectors, the Commission will create opportunities for innovation and competition. This is true regardless of whether there are only a few or many companies competing in the market to provide the charging equipment in a particular customer sector. In reviewing the SCE and PG&E program proposals, we find some references to equipment qualification requirements and process. However, there is not enough detail to determine that the projects will facilitate participation by all qualified providers of charging equipment and services. Clarification and instruction by the Commission in this regard will be necessary.

Q. What aspects of the SCE MD/HD Vehicle Charging Infrastructure Program require clarification or modification?

A. First, additional detail is needed in order to understand SCE's process for qualifying equipment and services. SCE states that it will establish an RFI process for qualifying vendors and charging equipment that "meet SCE's requirements."[23] However these requirements are not enumerated in sufficient detail. SCE only states that charging equipment must meet "various technical standards and energy efficiency recommendations (e.g. SAE Standards J1772, J2894,

[23] SCE Testimony p. 52.

J2836, and J2847[]; Title 20) and be listed by a nationally recognized testing laboratory."[24] ChargePoint has no objection to these requirements (assuming they are applicable to the specific equipment). However, it is not clear whether SCE requirements will more specifically address connector standards, proprietary versus non-proprietary equipment, communications and data management, warranty requirements, etc. SCE implies, but has not stated explicitly, that each participating customer will be free to choose equipment and services from any eligible provider.

Second, SCE's intention to "follow the base cost methodology developed for the Charge Ready Pilot Program to set the rebate amounts" raises a number of questions.[25] The range of MD/HD vehicles and charging technologies covered by this program is very broad, and will be expanding and changing during the period covered by SCE's proposed program. The proposal to "identify various charging equipment categories" and to set the base cost according to "the model that provides the best value within each charging equipment category" seems very complex and leaves many important questions unanswered. How will equipment be categorized? Will SCE include proprietary technologies in determining categorization and "best value"? Will the categories and "best value" determinations be updated over the five year program to reflect evolution in technologies and pricing? Will the "best value" determination include consideration of whether equipment is networked and whether it offers data management functions? Whether it offers efficiencies such as being usable by multiple categories of MD/HD vehicles at a single site? SCE encountered significant complexities in trying to use pricing from the initial RFI to set a fair and accurate "base cost" for the Level 1 and 2 charging stations covered by its Phase 1 program. These complexities will be multiplied in the proposed program, which suggests that it might make sense to consider a simpler approach.

[24] Id. p. 55.
[25] Id. p. 52.

Third, SCE's testimony does not discuss whether or how SCE will prioritize siting MD/HD in disadvantaged communities, or for the benefit of disadvantaged community residents. While it is understood that electrifying vehicles in the MD/HD sectors will provide benefits to disadvantaged communities generally, it is not clear how the proposed project will identify and achieve specific targets for infrastructure deployment and related employment and training benefits.

Fourth, SCE's testimony does not show whether or how SCE will incorporate learnings from the Phase 1 program into the Phase 2 program initially or over time.

Q. What aspects of the PG&E FleetReady Program require clarification or modification?

First, as in the case of the SCE program, it would be useful to understand what requirements will apply to EV charging equipment. ChargePoint appreciates that the customer eligibility requirements seem straightforward, and PG&E seems to be leaving selection of EV charging technology up to the participating customer, which is appropriate and necessary. However, any threshold requirements that may contribute to or limit participation by providers of EV equipment and services in the relevant markets should be identified up front so that they can be evaluated by the Commission.

Second, as discussed above with respect to SCE's program, PG&E does not adequately describe whether or how it will prioritize siting in disadvantaged communities or ensure that the program results in employment and training opportunities for disadvantaged community residents. PG&E also does not discuss whether it will establish a participant advisory council (PAC) for this program, or the PAC's structure or responsibilities, assuming it is established.

Third, PG&E's testimony does not discuss how learnings from the Phase 1 program will be incorporated into the Phase 2 program initially or over time.

Q. Why do you conclude that the SCE commercial rate proposal is consistent with applicable statutory and regulatory requirements?

A. ChargePoint has not performed a detailed analysis of the proposed SCE rate design. However, based on SCE's description we believe the proposal represents a good effort to pilot a commercial EV rate that recovers revenue requirement through volumetric charges rather than demand charges, at least for the initial five year period. We are concerned that the proposal to phase in demand charges in the sixth through tenth year could create issues for customers that sign up for the rate in the later years of the demand charge exemption period (i.e. years three to five), or that do not have the ability to adapt. We are also concerned that ten years is a long time to lock in a rate design. It is reasonable to anticipate that the calculation of benefits associated with TE may change over that ten year period, which will affect the determination of whether the rate is revenue neutral as designed and applied. We are also likely to see innovations and improvements in commercial EV rate design over the next ten years. The Commission should acknowledge these variables, and require periodic review of the rate design and its impact on customers.

Q. Do you have any other observations regarding commercial rate design?

A. Yes. We are disappointed that PG&E did not include consideration of EV rate design in its portfolio of SB 350 proposals. The September 14, 2016 ACR recognized that demand charges may create a disincentive to use electricity as a transportation fuel, especially for electric transit fleets, and included rate design reform to address this problem on the list of priority project areas of particular interest to the Commission.[26] As discussed in our testimony on PG&E's Fast Charging Proposal, ChargePoint believes that PG&E should have proposed public

[26] September 14, 2016 ACR p. 20.

and commercial EV charging rates in this proceeding instead of relying on generic rate designs offered in the 2017 General Rate Case.

4. ChargePoint Recommendations.

Q. Does ChargePoint recommend that the Commission approve the SCE MD/HD Vehicle Charging Infrastructure and PG&E FleetReady Programs?

A. Yes. ChargePoint largely supports the proposed SCE and PG&E programs and recommends that the Commission approve them. However, in the areas discussed above we believe that the project descriptions lack specificity. The Commission can address this by providing appropriate clarification in the final decision, and by ordering a workshop and advice filing to ensure that program details are clear prior to implementation. This will also facilitate discussion of lessons learned from the Phase 1 pilots by the utilities, industry, and other stakeholders, as applied specifically to the adopted Phase 2 MD/HD and fleet programs. We have also identified some minor modifications that will improve the proposed programs. Our substantive and procedural recommendations regarding the MD/HD and fleet proposals are outlined below. We may offer additional recommendations after reviewing the opening testimony of other stakeholders.

Q. Does ChargePoint recommend approval of the SCE commercial rate proposal?

A. Yes. ChargePoint recommends approval of the SCE commercial rate proposal on the condition that it be reviewed regularly for consistency with its primary purpose, which is to promote transportation electrification in California. Our specific substantive and procedural recommendations regarding the SCE commercial rate proposal are outlined below. We may offer additional recommendations after reviewing the opening testimony of other stakeholders.

Q. What specific program changes do you recommend?

A. With respect to the SCE MD/HD Vehicle Charging Infrastructure Program, we have the following recommendations:

- SCE should establish a simple schedule of rebates based on average cost, by technology category, in place of the proposed "base cost methodology." This approach (which is used by PG&E in establishing rebates for customers in disadvantaged communities), is simpler and more transparent than the approach proposed in SCE's testimony.[27] SCE should prepare the list of proposed rebates for discussion in the implementation workshop (described below) and include the final list in its implementation plan (also described below). SCE can update or adjust the list by advice filing if necessary during the course of the program.
- SCE should establish specific targets for locating MD/HD infrastructure within disadvantaged communities and for ensuring the prioritization of projects benefiting DACs.
- SCE should provide additional information regarding program requirements in a detailed implementation plan filing (described below) to facilitate a smooth and streamlined process.

With respect to PG&E's FleetReady Program, we have the following recommendations:

- PG&E should establish specific targets for locating MD/HD infrastructure within disadvantaged communities and for ensuring the prioritization of projects benefiting DACs.

[27] PG&E's proposal is described on page 3-34 of PG&E's Testimony.

- PG&E should establish a program advisory council that includes all interested stakeholders and Commission staff to provide input, guidance and suggestions on the execution and improvement of the program.
- PG&E should provide additional information regarding program requirements in a detailed implementation plan filing (described below) to facilitate a smooth and streamlined process.

With respect to SCE's commercial EV rate proposal we have the following recommendations:

- The Commission's approval of the SCE commercial EV rate proposal should be conditioned on requirements for data collection and semi-annual review.
- The Commission should review SCE's commercial EV rate every two years to ensure that it is achieving the intended purposes and to consider any appropriate modifications or updates. This rate review could be coordinated with review of other utility EV rates, and should include an opportunity for input from any interested party.

Q. How can the Commission ensure a smooth and streamlined implementation process?

A. From our experience with the California Phase 1 programs and other programs for supporting the expansion of EVs and EV charging infrastructure, ChargePoint has learned two key lessons regarding implementation.

First, all of the program requirements and details, including engineering, data transmission format, and marketing labeling, need to be clearly identified and provided up front by the utility. As a prospective provider of EV charging equipment and network services, we have experienced delays and sometimes confusion during the Phase 1 project implementation processes, in part because technical requirements were not communicated clearly and consistently. We understand that this was largely because the Phase 1 programs involved new

technologies, new program designs, and a new role for the utility. We have all been "learning by doing," which can be challenging and time consuming for customers, providers, and the utility.

To avoid repeating this experience in Phase 2, the program requirements applicable to charging equipment, service providers, and participating customers need to be articulated to the extent possible in project description documents. By requirements applicable to providers I mean: standards for EV charging hardware and software, communications interface, data collection methods, methods of handling data communication issues, station activation, billing, branding, licensing, etc.

By requirements applicable to participating customers I mean: site requirements, credit requirements, easement and access terms and conditions, rate and billing restrictions, load management requirements, limits on or options available to integrate on-site generation or other smart technologies, etc. Again, many issues can be avoided if every prospective provider and customer is on notice of the program requirements from the outset.

We fully recognize that these programs cover numerous categories of vehicles and equipment, and that specifications may be provided at a different level of detail than in the Phase 1 program. We also appreciate that both SCE and PG&E have indicated that they intend to work with providers and customers to address site and technology specific challenges. But where utility program requirements can be identified from the outset they should be.

Second, the application process needs to be simplified and streamlined to the extent possible for participating customers. Again, this is something we have learned from experience. If a program establishes unrealistic deadlines for submitting paperwork, or if the timeframe for procurement of charging equipment does not comport with the needs of customer decision making, customers will decline to participate or drop out. If a customer does not have a clear

understanding of rate requirements, restrictions, and likely bill impacts before signing up, there is a risk that the customer will withdraw its application or be disappointed later in the process. If there is not a clear point of contact arrangement between utility, customer, and provider, communications can become confused. The solution to all of these challenges is to troubleshoot the process, streamline, and implement solutions from the lessons learned.

Q. Do you have specific procedural recommendations regarding the implementation of the MD/HD and fleet infrastructure programs?

A. Yes. We offer the following procedural recommendations.

First, the Commission should schedule a staff-facilitated workshop focused on the MD/HD and fleet infrastructure programs within 30 days of issuance of the final decision adopting the SCE and PG&E proposals. In preparation for this workshop, SCE and PG&E should prepare a summary of each project's requirements and a detailed implementation plan. The proposed requirements and draft implementation plan should be based on the utility's proposal and any changes ordered by the Commission in the final decision, but it should also provide detail not included in the application and testimony. The agenda should allow time for parties to discuss and offer suggestions at the workshop (or in written comments afterward), and the utilities should take into consideration input from workshop participants and guidance (if any) from the Commission in finalizing their implementation plan.

This workshop will contribute to the quality of the program by enabling informal discussion of the plans and lessons learned before SCE and PG&E formally initiate implementation. It will also enable a useful discussion of some common elements of both programs (e.g. the categorization of vehicles and EVSE, approach to administering rebates, approach to optimizing benefits to DACs, coordination with other agencies, etc.) and perhaps

enable the utilities to avoid inconsistencies in program requirements that could confuse providers and customers.

Second, SCE and PG&E should be required to submit a project compliance advice filing within a reasonable period (30-90 days) following the workshop that will include: a detailed project description and timeline for implementation, specific requirements applicable to equipment and service providers and participating site hosts, a detailed data collection and review process, draft application form and draft contracts. The compliance filing should be stand alone and not include cross references to other infrastructure programs or requirements. While we understand that the utilities will probably not be able to provide every detail (particularly for the less developed customer segments) in the compliance filing, having a detailed program description and relevant documents up front will go a long way toward informing and streamlining the process.

Q. How can PG&E address the need for a redesigned commercial EV charging rate?

A. The Commission should order PG&E to develop a new commercial EV charging rate to complement its proposed Fleet Ready Program within one year of the effective date of the final decision. This is a reasonable timeframe and ensures that there will still be a meaningful impact within the program life of the Fleet Ready Program. ChargePoint appreciates the collaboration underway between PG&E and others to determine optimal rate designs for supporting TE goals and objectives, and we look forward to seeing a proposal from PG&E.

Q. Does this complete your testimony?

A. Yes it does.

Docket No: A.17-01-020
A.17-01-021
A.17-01-022
(consolidated)

Exhibit No: __CP-4_____

Date: September 5, 2017 (Revised September 29, 2017)

Witnesses: Dave Packard
Anne Smart

Prepared Rebuttal Testimony of Dave Packard and Anne Smart on behalf of ChargePoint, Inc.

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1. Introduction (Witness: Anne Smart)

Q. Did ChargePoint serve opening testimony in this proceeding?

A. Yes. ChargePoint served opening testimony by Dave Packard, ChargePoint's Vice President for Utility Relations, in this proceeding. Mr. Packard's experience and qualifications are summarized in his previous testimony.

Q. Please describe Ms. Smart's experience and qualifications

A. Anne Smart is the Vice President of Public Policy for ChargePoint. In this role, she manages state and local government relations and regulatory affairs for North America. Before joining ChargePoint, Anne was the Executive Director of The Alliance for Solar Choice (TASC), a rooftop solar advocacy group founded by SolarCity, Sunrun, and Sungevity. She was also previously the Director of Energy at the Silicon Valley Leadership Group. She has a Master of Energy and Environmental Policy degree from the University of Delaware and Bachelor degrees in Public Administration and Environmental Studies from Miami University. Anne has provided testimony in electric vehicle (EV) charging utility cases before the California Public Utilities Commission, the Oregon Public Utilities Commission, the Kansas Corporation Commission, the Missouri Public Service Commission, and the Washington Utilities and Transportation Commission. She has also participated in the development of legislation on utility policy for EV charging in Washington, California, Oregon, Massachusetts, and Utah.

Q. What is the purpose of this rebuttal testimony?

A. The purpose of this rebuttal testimony is to respond to opening testimony filed by parties to this proceeding.

Q. Please briefly summarize ChargePoint's rebuttal testimony.

A. This rebuttal testimony discusses the following points:

- The Commission should not prescribe or limit the power level or capabilities of DC fast chargers (DCFCs) in the PG&E DCFC Project. Customers should be allowed to select from the full range of qualified charging equipment and services.
- The Commission should establish allocations and requirements to ensure that the adopted Medium/Heavy Duty (MD/HD) programs benefit residents and businesses in disadvantaged communities (DACs)
- The Commission should consider proposals for ratebasing rebates in the SCE MD/HD programs, and consider proposals for the same or other utility incentive structures in the SDG&E residential rebate program proposed by ChargePoint and others.
- The Commission should consider allowing participants in MD/HD programs to use existing service connections as long as doing so is consistent with other programs goals and requirements.
- The SDG&E residential charging project should be approved as a rebate program, because SDG&E has not justified its proposed program design, and the modifications suggested by NRDC et al. do not address the major flaws in SDG&E's proposal.
- As discussed in the opening testimony of ORA, TURN and ChargePoint, a rebate program makes sense for the residential sector and will be more cost effective and less anticompetitive than alternatives.
- Given SDG&E's experience in administering other rebate programs, and incorporating best practices and lessons learned from the prior EV pilots and other

rebate programs, the SDG&E residential rebate program can be a model for California and others.

2. Fast Charging Infrastructure and Rates (Witness: Anne Smart)

Q. **Is DC fast charging a necessary component of California's effort to accelerate widespread transportation electrification?**

A. Yes. DC fast charging is an important part of the overall strategy to support the transition from conventional gasoline vehicles to clean electric cars, trucks and buses. For this reason, ChargePoint supports PG&E's proposal to include a DCFC Project as part of its Senate Bill 350 (SB 350) portfolio. We are pleased to see that, notwithstanding differences of opinion regarding scope and size, all of the parties submitting opening testimony agree that some form of PG&E's proposed DCFC make ready program should be adopted.[1]

Q. Should the Commission prescribe or categorically restrict the power level of DCFCs as an eligibility requirement for PG&E's Fast Charge Program?

A. No. The Commission should not exclude either high power or low power DCFCs from eligibility, or to dictate that particular power levels or technologies be favored in PG&E's program, as some parties have proposed.[2] Instead, the Commission should allow DCFC project developers and site hosts to select the qualified DCFC technologies that are most appropriate for the location as long as they use standard non-proprietary connectors.

Q. Why should the Commission reject proposals to exclude or favor high or lower power DCFCs?

[1] See TURN Opening Testimony p.2; ORA Opening Testimony p.2; Small Business Utility Advocates Opening Testimony p.2; Opening Testimony of Green Power Institute and Community Environmental Council (GPI/CEC) p.3; Opening Testimony of Natural Resources Defense Council, Plug In America, Coalition of California Utility Employees, Sierra Club, Greenlining Institute, Union of Concerned Scientists, and Alliance of Automobile Manufacturers (NRDC et al.) p.1.

[2] *See* ORA Opening Testimony pp.7-8 (recommending exclusion of 350 kW chargers); GPI/CEC Opening Testimony p.10 (recommending a mix of "predominantly" 50 kW and 24 kW DCFCs).

A. The Commission should avoid favoring or excluding DCFCs on the basis of power level because at this time there is no justification for doing so. Concerns that high power DCFCs exceed the charging capacity of existing vehicles is misplaced, since the power level of the DCFC need not "match" the EV. The industry generally and the DCFC market specifically are currently in a period of transition and innovation, as new higher power chargers emerge and existing lower power charger technologies continue to meet the needs of drivers at many locations. For this reason PG&E's program should simply authorize each site to tailor the deployment of qualified DCFC to the anticipated needs of the drivers.

Q. Is PG&E's proposal to include 350 kW DCFCs premature?

A. No, it is not. ChargePoint does not agree with ORA that 350 kW charging stations are premature or functional only as a "research platform."[3] As discussed in ChargePoint's opening testimony, the ChargePoint Express Plus platform can charge from 50 to 400 kW and supports a range of charging voltages.[4] A charger's ability to deliver power exceeding the on-board capacity of a vehicle does not mean that the vehicle cannot use the charger. And a higher capacity EV can still charge at a 50 kW charging station. The introduction of higher power DCFCs is a new development, but it is an expected advancement of the technology, not a research platform. TURN correctly observes that improvements in both battery capacity and charger power are changing customer expectations, and infrastructure programs need to accept and plan for this technological evolution.[5]

[3] ORA Opening Testimony p.7.
[4] ChargePoint Opening Testimony p.3.
[5] *See* TURN Opening Testimony p.5.

3. Medium/Heavy Duty and Fleet Charging Infrastructure and Commercial EV Rates (Witness: Anne Smart)

Q. Do parties support the PG&E and SCE Medium/Heavy Duty (MDHD) and Fleet charging proposals?

A. Yes. While parties offer different recommendations regarding the scope, phasing and details of these MD/HD programs, most agree that the Commission should focus on this sector.[6]

Q. Does ChargePoint support recommendations to allocate a portion of the SCE and PG&E programs to locations within disadvantaged communities?

A. Yes. We agree with TURN and ORA that the Commission should establish a specific allocation of MD/HD program resources to DACs.[7] We also support ORA's inclusion of businesses that may be located outside of DACs but primarily serve locations within DACs.[8]

Q. Should the Commission consider rate-basing rebates as proposed by SCE?

A. The September 14, 2016, Assigned Commissioner's Ruling encouraged utilities to look for "creative solutions" to finding incentives for undertaking TE projects and investments.[9] Treating rebates as regulatory assets is not by any means the only "creative solution" but it is an approach that deserves consideration. For this reason, ChargePoint does not agree with parties opposing SCE's request.[10] We encourage the Commission to consider SCE's proposal on its merits, and to continue looking at ways to support

[6] ORA Opening Testimony p.3; TURN Opening Testimony (Borden) p.3; CALSTART Opening Testimony p.13; Tesla Opening Testimony p.1; Santa Clara Valley Transportation Authority (VTA) p.4; NRDC et al. Opening Testimony p.1.
[7] TURN Opening Testimony (Borden) p.22; ORA Opening Testimony pp. 1-5 (PG&E) and 2-7 (SCE).
[8] ORA Opening Testimony p.2-7.
[9] *Assigned Commissioner's Ruling Regarding the Filing of the Transportation Electrification Applications Pursuant to Senate Bill 350* (R.13-11-007), September 14, 2016, p.31.
[10] GPI/CEC Opening Testimony p.13; Clean Energy Fuels Corp. Opening Testimony pp.3-4.

reasonable cost recovery mechanisms that reward utility efforts toward "minimizing the financial impact on utility ratepayers and encouraging competition in the TE marketplace."[11]

Q. Does ChargePoint have a position on the issue of whether or not to require a separate service connection in MD/HD programs?

A. Yes. ChargePoint supports Tesla's recommendation to allow eligible MD/HD customers to use an existing service connection. For some customers (for example, a customer that may already have EV charging load on a service connection), a new service connection may not be necessary, and utilizing an existing service connection may help to avoided added project costs.

4. Residential Charging Infrastructure and Rates (Witness: Dave Packard)

Q. Is there support for allowing SDG&E to establish a residential charging program?

A. Yes, there is broad support among the parties submitting opening testimony in this proceeding for the inclusion of residential charging among the standard review SB 350 projects. The main question at issue is program design.

Q. Please explain.

A. SDG&E has proposed a residential program that is designed around SDG&E's preferred "utility ownership model" in which the utility procures, owns, operates and maintains the customer charging station in the same or similar manner to other utility equipment. One group of parties supports SDG&E's proposal, with some minor changes.[12] Other parties, including ORA, TURN, and ChargePoint, take the position that there is no need or justification for SDG&E's unprecedented proposal to own and operate nearly one

[11] Id.
[12] *See* Opening Testimony of NRDC et al.

hundred thousand home EV charging stations. These parties testify that a rebate program would be more appropriate and cost effective for this customer segment.[13] It is important to note that parties on both sides of this disagreement over program design share the goals of encouraging the deployment of smart EV infrastructure at residential locations, particularly in disadvantaged communities. The crucial question is how best to do that, in view of the requirements and guidance provided by SB 350, the September 14, 2016, ACR, and the Commission's other relevant precedents and policies.

Q. Does testimony presented in support of SDG&E's proposal provide a reasonable basis for approving it?

A. No, it does not. Mr. Baumhefner's testimony on behalf of a group of parties supporting a revised version of SDG&E's proposal does not address the fundamental flaws discussed in the testimony of TURN, ORA and ChargePoint. Instead, NRDC, et. al., offer the same justification that SDG&E relies on – that utility "turnkey" projects are cost justified and preferable to other program design options, such as make ready and rebates.

Q. Please explain.

A. First, Mr. Baumhefner offers an anecdote from his own experience installing a Level 2 charging station in his garage.[14] While this anecdote may be relevant as the Commission considers details of program design, it does not justify adoption of SDG&E's proposal. We could provide competing accounts of customers that have had a more satisfying experience purchasing and installing a Level 2 residential charging station. We do not do so here, because the Commission does not (and should not) make policy decisions involving hundreds of millions of ratepayer dollars on the basis of anecdotes.

[13] *See* Opening Testimony of ORA; Opening Testimony of TURN, Opening Testimony of ChargePoint.
[14] NRDC et al. Opening Testimony pp. 11-13.

Q. Do you agree with NRDC that the experience to date in implementing the Phase 1 SCE and SDG&E EV infrastructure programs justifies adoption of a modified version of SDG&E's proposed program design?

A. No, we do not. The second basis offered in Mr. Baumhefner's testimony for supporting SDG&E's program design is an allegation that "early data" from the implementation of the utility light-duty pilots supports SDG&E's "turnkey" utility ownership model over the make-ready model adopted by the Commission for the SCE and PG&E programs.[15] This testimony is both misleading and speculative. Mr. Baumhefner's comparison of the rate of deployment at multi-unit dwellings (MUDs) in the SCE Charge Ready pilot and a 30 percent *target* for MUD installations in SDG&E's Power Your Drive program do not suggest a customer preference for utility ownership of EV charging stations or provide a basis for adopting SDG&E's proposal to own and operate thousands of single-family residential EV chargers.

However, looking at the SCE and SDG&E pilots is useful. Both were approved in January 2016. SCE's program is already fully subscribed and has installed just over 300 of the 1300 ports that will be deployed. SDG&E's program is only starting up now, and has installed only a few ports at test locations. The only data that has been made public, at both SDG&E's and SCE's PAC meetings, is related to the percentage of each segment that indicated an interest in the program by filling out an initial interest form. There is no direct evidence to suggest that the actual installation percentages will correlate to the interest list. Many things can cause an interested party to drop out of the process, including having a less than ideal site, financial reasons, or the inability to comply with the program requirements. One thing we can reasonably conclude from this comparison

[15] NRDC et al. Opening Testimony pp. 13-14.

is that SCE's make-ready program has been more successful at meeting implementation targets on time than the SDG&E utility own/operate pilot.

Q. Should implementation issues encountered so far in the Phase 1 programs be considered in designing the next generation of utility programs?

A. Certainly. As we discussed in opening testimony, lessons learned in implementing earlier programs should inform the Commission's consideration of program design in later programs. The SCE implementation issues discussed on page 14 of Mr. Baumhefner's testimony actually provide some very useful evidence supporting our recommendation to structure the SDG&E residential project as a simple rebate program.[16]

Looking at the list, issues around participants' inability to meet unrealistic utility deadlines will be addressed by establishing a simple list of rebate eligibility requirements. A rebate program would not include a complicated "base cost" analysis that leads customers to expect they can purchase desired EVSE at a particular cost. Instead, there would be a flat rebate amount. The customer can look for a charging station at that cost, or buy one with more features at a higher price. There will be no "changes in decision makers" because the rebate program will not involve complex multi-step involvement with the utility program administrators. The customer will apply for the rebate, provide documentation as required, and receive the rebate check or bill credit. There will be no "delays in the procurement process" because there will not be a procurement process. If there is a "change in vendor quotes" the customer can simply purchase a charging station from a different provider because the utility will not be mediating the transaction between vendor and consumer. Qualified providers of Level 2 charging stations will compete on price and features. That is good for consumers and will drive the market forward.

[16] NRDC et al. Opening Testimony, p.14, lines 4-10.

In summary, a rebate program could, by design, completely avoid the specific make-ready program implementation issues discussed in NRDC's testimony. Also, the Commission has committed to trying out different program designs to see what works. One model that has not been proposed or tested yet is rebates. We believe the residential sector would offer a good opportunity to pilot this approach.

Q. Should the Commission look to existing rebate programs as models?

A. Certainly. In approving a rebate structure for SDG&E's program, the Commission can instruct SDG&E to look to other programs, but it will be important to tailor the rebate program to the Commission's expectations and goals. The only criticism of rebate programs offered in the opening testimony of the NRDC parties seems focused on size, scope and customer outreach in the Los Angeles Department of Water and Power (LADWP) program and a rebate program in Indiana.[17] We anticipate that the SDG&E program would be larger in scope and involve a well-coordinated and wide-reaching education and outreach effort to ensure robust participation. Current rebate programs, and new rebate programs under development in other states will provide a foundation for program design, but SDG&E should be encouraged to improve on these models. For example, a $24 million rebate program proposed by National Grid is currently under consideration by the Massachusetts Department of Public Utilities.[18] Earlier this week, AEP Ohio reached a settlement agreement that turned their originally-proposed program to own and operate EVSE into a $10 million rebate-based program.[19] The AEP Ohio

[17] Id.
[18] Massachusetts Department of Public Utilities Docket No. 17-13
[19] Press Release, AEP Ohio and Numerous Parties Reach Agreement Offering Customer Rate Stability Through 2024, AEP Ohio. (August 28, 2017). Available here: https://www.aepohio.com/info/news/viewRelease.aspx?releaseID=2317.

settlement is supported by the Natural Resources Defense Council, Sierra Club, the Environmental Law and Policy Center, the Electric Vehicle Charging Association, and AEP Ohio. Additionally, the Utah Public Service Commission recently approved a settlement between Rocky Mountain Power and multiple parties for a rebate program.[20] We strongly believe, from experience with a variety of programs, that simple is better. But that does not mean that we ignore existing models or lessons learned. Rebates programs have long been recognized as a well-established, cost-effective method of moving large-scale consumer investment in smart technologies. SDG&E should build on its own prior experience administering robust energy efficiency and customer generation rebate programs, use available models for EV rebate programs as a starting point, and design a program that can be a model for other utilities in California and for the rest of the country.[21] [22]

Q. Does ChargePoint support including an incentive mechanism in the SDG&E rebate program?

A. Both ORA and TURN have discussed approaches to utility incentives.[23] The September 14, 2016, Assigned Commissioner's Ruling clearly invited such proposals.[24]

[20] Rocky Mountain Power: Utah Public Service Commission Docket No. 16-035-36: RMP STEP Phase III.

[21] For example, SDG&E's *Energy Upgrade California Home Upgrade* program "provides assistance and incentives for home improvement projects that can increase energy efficiency and make homes more comfortable. The program rewards a comprehensive, whole-home approach, which includes improvements such as heating, air-conditioning, and water heating. This makes homes more comfortable while lowering utility bills. Managed locally by San Diego Gas & Electric® (SDG&E®), and supported by the California Public Utilities Commission in collaboration with the California Energy Commission, Home Upgrades are provided by participating Home Performance Contractors." (https://www.sdge.com/save-money/energy-upgrade-california-home-upgrade)

[22] SDG&E rebates for energy-efficient appliances (https://www.sdge.com/residential/easy-and-affordable-ways-save/easy-ways-save)

[23] *See* ORA Opening Testimony pp. 1-9 to 1-10; TURN Opening Testimony pp.20-21.

[24] September 14, 2016 ACR at 29-31.

ChargePoint believes that a utility incentive mechanism could be part of SDG&E's residential rebate program, and supports consideration of the ORA and TURN proposals.

5. Conclusion

Q. Does this conclude your testimony?

A. Yes.

BEFORE THE PUBLIC UTILITY COMMISSION

OF THE STATE OF OREGON

IN THE MATTER OF PORTLAND	**)**	
GENERAL ELECTRIC'S	**)**	
APPLICATION FOR	**)**	**DOCKET NO. UM 1811**
TRANSPORTATION	**)**	
ELECTRIFICATION PROGRAMS	**)**	

CHARGEPOINT EXHIBIT 100

REPLY TESTIMONY OF DAVID PACKARD

April 24, 2017

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I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

Q: Please state your name.

A: My name is David Packard.

Q: By whom are you employed and in what position?

A: I am the Vice President of Utility Solutions at ChargePoint, Inc.

Q: Have you previously filed testimony before the Oregon Public Utility Commission?

A: No, I have not.

Q: Please describe your qualifications, including your background, experience, and expertise.

A: In my current role, I advise a team of Directors who work with electric utilities and other key stakeholders in Europe and North America on electric vehicle market infrastructure engagement and investment, and support the development of policies and programs to accelerate the adoption of EVs and EV charging equipment and services.

I have been working in the electric vehicle market since 1993 and have been highly involved in the evolution of standards and policy around EV infrastructure. Prior to joining ChargePoint, I was founder and President of ClipperCreek, a company that designed, developed and manufactured Electric Vehicle Supply Equipment (EVSE). Before ClipperCreek, I was Vice President of EVI, an infrastructure company that served the nascent EV infrastructure market through 2003.

I hold a Master of Science in Civil Engineering and a Bachelor of Science degree from the University of Massachusetts. My statement of qualifications is attached as ChargePoint/101 following my reply testimony.

Q: Please describe ChargePoint and ChargePoint's previous involvement in transportation electrification efforts in Oregon.

A: ChargePoint designs, develops, and deploys home and commercial Level 2 ("L2") and DC Fast Charging ("DCFC") electric vehicle charging stations, software applications, data analytics, and related customer and driver services aimed at creating a robust, scalable, and grid-friendly EV charging ecosystem. Using ChargePoint products and services, our customers operate more than 34,000 Level 2 and DC fast charging locations, including 496 in Oregon. These charging locations have enabled more than 23 million charges and more than 545 million electric-fueled miles.

ChargePoint was the first company globally to launch and deploy a network in support of EV charging, and is dedicated to providing a constant stream of innovation and advancements. ChargePoint has more than 30 patents awarded to date. ChargePoint was recently awarded Electrek's Best of CES 2017 award for Best EV accessory. ChargePoint was included on the CNBC Class of 2014 "Disrupter 50" list of innovative companies, an honor shared with Uber, SpaceX, Dropbox, and Airbnb. The United Nations Framework Convention on Climate Change honored ChargePoint with a Momentum for Change award at the annual Conference of Parties ("COP21") in Paris, France in December of 2015. ChargePoint was one of 16 Lighthouse Activities[1] selected for its innovative and scalable approach to tackling climate change, and one of only two companies highlighted from the United States. ChargePoint received this award for its partnership program with BMW and Volkswagen to create Express Charging Corridors along both coasts of the United States.[2]

[1] http://unfccc.int/files/press/press_releases_advisories/application/pdf/mfc_press_release-2015_lighthouse_activities.pdf
[2] http://www.chargepoint.com/news/2015/0122/

Q: What is the purpose of your Reply Testimony?

A: The purpose of my testimony is to address the proposal from Portland General Electric (PGE), as presented by witnesses Spak and Goodspeed, to install and own electric vehicle (EV) charging infrastructure using ratepayer funding. This proceeding is of interest to ChargePoint because it will determine the role of a regulated monopoly utility in the competitive EV charging market, including the ability to offer products and services at no cost to charging station site hosts and potentially own and operate equipment on customers' premises.

The Commission's decision on this proposed program will significantly impact the future of the EV charging market in Oregon. In our view, PGE's proposal to use ratepayer money to own and operate charging stations could slow rather than accelerate adoption of EVs in the near and long term in Oregon. We feel that PGE could have a much bigger impact on the market and help accelerate growth of EV charging infrastructure if it adopts a different program design.

In addition to these concerns, I also briefly explain why ChargePoint opposes the TOU smart charging pilot and the TriMet pilot as proposed, and provide recommendations for how these pilots could be redesigned to be more effective and more likely to achieve PGE's stated goals.

Q: Please summarize your recommendations for the Commission.

A: I recommend that the Commission:

- Direct PGE to modify its proposal to own and operate its own charging stations and to develop its own proprietary network for its proposed Electric Avenue expansion in a

way that will stimulate innovation, competition, and customer choice in the market for EV charging equipment;

- Encourage PGE to redesign its community charging infrastructure pilot in such a way that PGE would provide rebates or other financial incentives to charging station site hosts to choose the charging equipment that best suits their needs from a list of pre-qualified equipment;
- Encourage PGE to work with industry on the on-going development of an updated American open-source standard, and not require the OCPP 1.6 standard;
- Recommend that PGE design an "EV-only" TOU pilot using metering already embedded in smart chargers, rather than a "whole-house" TOU pilot;
- Recommend that PGE redesign its proposed pilot program with TriMet such that PGE would not own and operate any charging equipment, but would instead provide financial support for TriMet to have the choice in charging equipment and the ability to choose who will own and operate the stations.

II. ELECTRIC AVENUE NETWORK EXPANSION

Q: What will you discuss in this section of your testimony?

A: In this section of my testimony, I will discuss PGE's proposal to expand its existing Electric Avenue Network from its one currently existing station located at its headquarters to six additional stations around its service territory and to integrate existing charging stations that PGE operates into PGE's proprietary network.[3] Rather than empowering charging station site hosts to choose the charging station that best fits their needs, PGE proposes to

[3] Testimony of Spak and Goodspeed, p. 14, ll. 5-9.

issue an RFP and provide only one option (presumably the cheapest option).[4] Because PGE's one-size-fits-all offering will stifle – rather than promote – innovation, competition, and customer choice, ChargePoint opposes PGE's proposal to own its own charging station network.

Q: Why does ChargePoint oppose PGE's proposal to expand its Electric Avenue Network?

A: ChargePoint agrees with PGE that additional EV charging stations are needed in PGE's service territory but the current program design for PGE's plan will slow rather than expedite the expansion of charging stations in and around Portland. As proposed, PGE's program employs a traditional utility RFP process that will limit customer choice by selecting one technology to be deployed. This prohibits competition in the market since those vendors not chosen to be in the program will now have to compete against technology subsidized with ratepayer funding. This procurement process also increases investment risk for the utility by "locking in" whatever technology is selected in the RFP. Instead, utility programs should qualify and incentivize the capabilities and characteristics of end-use technologies to accelerate access to tools that create grid benefits. Then customers, rather than the utility alone, should choose from a list of qualified technologies rather than being presented with the single winner of the RFP process. This process better replicates a competitive marketplace and enables multiple companies to continue to compete in PGE's service territory.

While PGE would benefit from its proposed own-and-operate model for EV chargers, ratepayers and the market would benefit more from a robust and competitive

[4] *Id*. p. 17, ll. 3-4.

market that would provide them with access to the latest advancements in charging technologies and services. Technology is advancing too quickly for utilities to keep up with, and, a utility procurement through an RFP process would lock in a technology available today for a decade or more. Whatever technology is selected through the RFP process will have a product feature set that was selected for the EV driver by the utility (which has very little experience in the EV industry). Locking in a technology that the utility has chosen without regard for EV drivers' needs and preferences increases ratepayers' risk that the investment will be stranded and limits the potential grid benefits of EV charging. In other words, the Electric Avenue program as proposed would have a negative impact on competition, innovation, and customer choice. The program is unlikely to scale effectively and will not contribute to a sustainable EV market in PGE's service territory.

PGE states that it will pre-wire the Electric Avenue locations to accommodate the higher power charging capabilities that are anticipated to be available with new vehicle models that have been introduced by auto manufacturers.[5] However, it states equipment will be "replaced with higher powered equipment as needed over time," which appears to be a total waste of ratepayer funds.[6] This admission of the expected obsolescence of the equipment PGE is planning to install indicates that ratepayers will bear an unnecessary risk through PGE's investment in these stations. It would be better for ratepayers and better for EV drivers for site hosts, EV service providers, and/or private investors to bear this risk, because they could decide when and if it is financially beneficial to install higher power

[5] PGE Application for Transportation Electrification Programs (Application), p. 52.
[6] *Id.*

equipment, or to initially install equipment that is future-proofed (and can be upgraded at minimal costs).

Q: Do you believe that the proposed Electric Avenue expansion will stimulate innovation, competition, and customer choice with respect to EVSE, as required by SB 1547?[7]

A: No. The entrance of a regulated monopoly into the EV charging market in the manner proposed by PGE would have a chilling effect on innovation. Competitive EVSE providers attempting to sell equipment and services to site hosts for a market-based price would be unable to compete directly with PGE and its ratepayer-funded program, because PGE will be giving away equipment and services at no cost to the site host. Competitive EVSE providers would begin designing their products to meet utility-defined product specifications in the RFP-based program, rather than innovating to meet the needs of private site hosts and EV drivers. Instead of harnessing the innovative capacity of the competitive EVSE market – which is much bigger than PGE's service territory – Oregon's EV charging infrastructure will be limited to the imagination of a utility procurement process.

Again, utility programs should not pick and choose behind-the-meter end-use technologies through the same RFP processes by which they procure commodities at the lowest possible cost. Charging station equipment and services are not commodities and customers will not benefit from this "race to the bottom" approach. An RFP will effectively prohibit competition in the market and limit the availability of innovative products and thus limit innovation. Charging station site hosts are in the best position to choose the type of

[7] SB 1547, Section 20(2)(d) and 20(4)(f).

charging station that will be located on their property, and PGE should not be making this choice for them, regardless of ownership structure.

Q: Why do you believe that charging station site hosts, rather than PGE, should choose the charging station located on their property?

Charging station site hosts have their own unique preferences regarding the hardware and services related to EV charging. The Yale Center for Business and the Environment reviewed a range of EV charging equipment and business models and concluded that "[n]o 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."[8] The wide range of choices in the market for EV charging goods and services is a strength, indicating that this quickly evolving market is meeting the varied needs of its wide range of consumers.

Site hosts can and should be able to tailor options for station fees, driver authentication, accessibility, payment collection and other transaction capabilities, advertising, and managing an array of data (e.g., energy, station usage, and environmental benefits) to best fit their unique needs. 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.

Another critical set of choices that site hosts benefit from are those around pricing and access controls. There is an inherent link between the site itself and the behavior of the

[8] Yale Center for Business and the Environment, 2015, "Financing Electric Vehicle Markets in New York and Other States" page 6.

drivers that park there. When site hosts have the ability to communicate to EV drivers charging on their premise through innovative apps and product offerings, site hosts can best manage their property to ensure higher utilization of the charging assets and support their core businesses. For example, a big-box retailer may want to offer free charging for the first hour to incentive customers to shop at the store, but charge a much higher rate starting at the second hour to motivate customers to move their vehicles and make the charging station available to another customer. 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 charge cost-recovery fees in order to avoid giving away charging services at taxpayer expense. Some sites offer these services for free, some include them in rent, some charge pay-per-use fees, and some are designed to elicit desired driver behavior and lead to the highest utilization of the charging asset.

Charging station site-hosts should be permitted to choose the type of charging station and fee structure that best fits their needs. PGE's proposal severs the link between the site host and the EV driver by eliminating the site host's control over the station affixed to their property.

Q: What does PGE say in its Application and supporting testimony regarding innovation, competition, and customer choice?

A: PGE claims that the purpose of expanding the Electric Avenue Network is to "assist PGE in determining how customers use visible public charging, how visible charging infrastructure impacts customer attitudes toward purchasing electric vehicles, and how customer usage patterns can be integrated with [its] distribution system."[9] Additionally,

[9] Testimony of Spak and Goodspeed, p. 18, ll. 5-8.

PGE states that, "With over 50 DCQCs in the Portland metropolitan statistical area, the expansion of six new community charging stations is not expected to saturate the market."[10]

PGE also states that it will develop pricing to "avoid undercutting the market-based pricing offered by other providers."[11] What PGE does not understand is that driver pricing is dynamic and competition in the EVSE market is not just based on pricing to EV drivers. Site hosts should have the option to examine multiple pricing options to support their business and clients (i.e., drivers). It will be unnecessarily burdensome for PGE to file a new tariff every time pricing changes in its sampling of other DCFC locations.

Q: Do you believe that competing on the price charged to drivers is the type of competition that the legislature wanted to protect when it required transportation electrification programs to stimulate competition in SB 1547?

A: No. The history behind the competition provision in SB 1547, which was initially adopted by the Senate Committee on Business and Transportation as an amendment to HB 4036 (A-Engrossed), indicates that legislators and advocates alike viewed the competition requirement as a mechanism to promote a competitive electric vehicle charging market. Testimony in public hearings on HB 4036 prior to adoption of the amendment including the competition provision reveals significant concern among advocates that the legislation, in its original form, would have threatened competition in the sale and operation of electric vehicle charging infrastructure.[12] The history behind HB 4036 suggests that the intent of the competition provision was to safeguard a competitive electric vehicle charging station

[10] *Id*. at p. 18, l. 8 – p. 19, l. 2.
[11] *Id*. at p. 19, ll. 4-6.
[12] Meeting materials and exhibits submitted as a part of the public hearing on HB 4036 are available at: https://olis.leg.state.or.us/liz/2016R1/Measures/Exhibits/HB4036

marketplace that fosters consumer choice and innovation among multiple providers. There is no indication that the competition provision was intended as a blessing for the utilities to expand their business models and participate in the competitive market themselves.

Q: What effect do you believe an expanded Electric Avenue would have on the market for EVSE in PGE's service territory?

A. An expansion of the Electric Avenue Network will have a significant and negative impact on Oregon's competitive EV charging market, especially within the City of Portland. The Portland Metro area currently has about 28 public DCFC charging stations across 13 different sites according to the US Department of Energy's Alternative Fueling Station Locator.[13] PGE has proposed to add six new ratepayer-subsidized Electric Avenue charging sites with four DCFC chargers each, for a total of 24 new DCFCs.[14] If approved, this program would increase the number of charging sites by nearly 50 percent and nearly double the number of DCFCs. The scale of this program could flood the competitive EV charging market, and the impacts of this investment would necessarily spill over beyond the borders of PGE's service territory.

Q. Is there currently a competitive EV charging market in PGE's service territory?

A. Yes. ChargePoint has over 250 charging stations in PGE's service territory. According to the DOE's Alt Fuels Station Locator, there are 9 networks in the area including ChargePoint, AeroVironment, Blink, EVgo, GE WattStation, Greenlots, OpConnect, SemaCharge, and Tesla. Volkswagen has also committed to investing funds into the Portland metropolitan area as part of its National Zero Emission Vehicle Investment

[13] Available at: http://www.afdc.energy.gov/locator/stations/
[14] PGE Application for Transportation Electrification Programs, March 15, 2017, p. 51.

Plan[15] as required by Appendix C to the 2.0-Liter Partial Consent Decree entered by the U.S. District Court for the Northern District of California on October 25, 2016.

Q. Does ChargePoint have plans to install DC fast chargers in PGE's service territory without ratepayer funding?

A. Yes. As a private company, ChargePoint is not able to disclose all of its investment plans. That said, the outcome of this case will determine whether or not we as a company decide to install our fast chargers in PGE's service territory over the next few years. If PGE has the ability to offer site hosts free charging stations, it will have a substantial impact on our consideration to make investments in Oregon and whether we consider other markets that are more competitive.

Q: Isn't increasing the number of charging station sites and the number of available DCFCs a good thing?

A: ChargePoint supports increasing the number of charging station sites and the number of DCFCs available in Oregon, but this growth will not be sustainable in PGE's service territory if PGE is using ratepayer money to own and operate its own sites. Site hosts may be reluctant to invest in charging stations to support their own customers' and employees' needs if there is a utility program offering "free" stations. Competitive EVSE providers may then exit the Oregon market, because it is difficult to compete against "free" charging stations from the utility. PGE could more effectively contribute to sustainable growth in the number of charging stations by supporting the robust competitive market for EVSE that already exists in its service territory.

[15] https://www.epa.gov/sites/production/files/2017-04/documents/nationalzevinvestmentplan.pdf

Q: What is PGE's stated justification for owning and operating its own charging stations through an expanded Electric Avenue?

A: In its application, PGE states that it is necessary to own and operate the stations because "publicly-available fast charging is a nascent market and the availability and accessibility of charging may be impacted by the stability of the Electric Vehicle Supply Equipment (EVSE) provider."[16] PGE also indicates that it is necessary for it to own and operate its own charging station network in order to study the effects of EV charging on its system.[17]

Q: Is it necessary for PGE to own and operate the Electric Avenue expansion in order for its transportation electrification efforts to be successful or to study the effects of EV charging on its system?

A: No. PGE seems to believe that because the EVSE industry is somewhat nascent that it is therefore unstable and will not be able to succeed unless the utility itself makes a large purchase of EVSE through an RFP process. On the contrary, it would be preferable for PGE's ratepayers for PGE not to create a new business model for itself and instead to support the EVSE industry in doing what the industry already does best: deploying EVSE infrastructure.

PGE also does not need to own charging stations in order to study the effects of EV charging on its system. PGE's program could allow site hosts to own and operate the EVSE while working with these site hosts and EVSE network service providers to collect the necessary data on the effects EV charging on its system.

[16] Testimony of Spak and Goodspeed, p. 16, l. 22 – p. 17, l. 2.
[17] See *id*. at p. 18, ll. 5-8.

ChargePoint agrees that additional charging stations are critical to accelerating transportation electrification in Oregon, and agrees that more charging stations would be good for PGE's ratepayers. However, that does not mean that PGE, as a regulated utility with access to ratepayer funds, should be allowed to enter the competitive EVSE market and establish a new network by providing charging stations and charging services itself. While PGE undoubtedly has a role to play in accelerating transportation electrification in its service territory, there is absolutely no reason for PGE to own and operate charging stations itself.

Q: What do you see as the appropriate and most effective role for utilities in transportation electrification efforts in Oregon?

A: PGE is well-positioned to support transportation electrification efforts within its service territory and will play an essential role in these efforts. Utilities can help to address some of the obstacles currently preventing wider deployment of networked EV charging equipment, especially at multi-unit dwelling (MUD) locations and in underserved communities. For example, the utilities could provide the "make-ready" infrastructure (including any distribution line, transformer, or other "in front of the meter" upgrades necessary the make a site ready for EVSE equipment installation) or rebates at MUD locations and then provide a financial incentive to landlords and/or tenants for the purchase of the EVSE equipment. This approach helps to address the inherent landlord-tenant split incentive barrier, where it may be cost prohibitive for a tenant to install a charger stations at an MUD because the landlord is not willing to cover the installation costs.

The Commission should authorize PGE to undertake strategic, risk-averse activities and cost-effective ratepayer-funded utility infrastructure investments that will help

accelerate expansion of EV charging and EV adoption in Oregon. In doing this, the utilities' role should be clearly defined and relate to the utilities' core strengths and competencies, such as building distribution facilities. At the same time, the Commission should preclude utilities from engaging in anticompetitive activities and from making unjustified and unnecessary expenditures of ratepayer money. In other words, the Commission should not allow PGE to directly provide services that can be provided more effectively by the existing competitive EVSE market, and at lower risk to ratepayers.

Utilities can play a role by providing rebates and other programmatic incentives for qualified EV charging equipment, similar to the way that PGE works with Energy Trust of Oregon to provide rebates and other incentives for energy efficiency. Rebates and technical assistance are an effective way to make it easier and less expensive for homeowners, businesses, property managers, and employers to deploy EV charging equipment. Rebate programs can also be an effective way for utilities to maintain visibility into unplanned EV load growth by having access to the data on the charging infrastructure being deployed within their service territory. I provide more details later in my testimony on the type of rebate program that I believe would best meet the requirements of SB 1547, and be in the best interest of EV drivers, ratepayers, and PGE itself.

Utilities do not need to and should not be permitted to leverage ratepayer funds to take over the role currently played by competitive businesses selling EV charging equipment and services. Utilities likewise should not undermine the role of site hosts by dictating the terms under which site hosts will offer EV charging services. Site hosts can and should be allowed to make these investment decisions on their own. A competitive EV charging market is the best means of achieving Oregon's aspirations for economic growth,

jobs, technology leadership, sustainable transportation, and address the challenge of climate change through transportation electrification.

Utilities also have a role in supporting customer education for those considering EV choices or purchasing EV charging stations. We would recommend that these efforts leverage ratepayers' dollars in way that supports market competition and promotoes customer choice. Utilities should be allowed to make use of their relationship with their customers to provide general information and to direct interested customers to more detailed resources. Utilities can serve as a potential trusted resource to their customers and they should remain vendor- and technology-neutral in all recommendations. Utilities are experts in electricity, and they should leverage the expertise of the existing competitive industry in the EV and EVSE marketplaces.

Q: Are there any advantages to having PGE own and operate the proposed Electric Avenue expansion from a driver's perspective?

. A: No. PGE's proposal eliminates the site host's control of the station and disregards the link between the site and the behavior of the drivers that park there. PGE's proposal also does not take into consideration different charging profiles, driver needs, and site host involvement. Publically accessible charging stations will serve as the "gas station" equivalent for EV drivers, and therefore site hosts should have the option to control pricing for the drivers based on the profile of drivers and length of charging sessions needed at that site. A one-size-fits-all model for technology features and pricing is not the best approach for ensuring site host participation in this program. Additionally, commuters and visitors need to be able to take advantage of EV charging in PGE's territory without being negatively impacted by a fixed per-use charge just because they are not customers of PGE.

Q: Would PGE be more likely to achieve its goals for the proposed Electric Avenue expansion and the goals of transportation electrification generally if it owned and operated charging stations?

A: No, there is no reason to think that PGE's proposed own-and-operate model for the Electric Avenue expansion will be more effective at accelerating transportation electrification than another model, such as the rebate model I suggested earlier. In fact, given that this would largely be a new business venture for PGE (other than its one existing station at its headquarters, where drivers can charge for free), I would consider PGE's proposed own-and-operate model to be a risky use of ratepayer funds. PGE is very good at providing the utility services that only it can provide within its service territory, but there is no reason to think it will be good at building and managing a network of EV charging stations. PGE and its ratepayers would be much better served by relying on the already existing expertise of competitive EVSE providers, who have experience working around the country.

Q: If PGE did not own or operate its own charging stations, is there a danger that charging station operators would start gouging drivers?

A: No. There seems to be a concern that, unless EV charging services are rate-regulated – in the way that electric and gas utility service is rate regulated – or provided by a rate-regulated utility, competitive providers will start gouging customers. However, this concern overlooks the fact that, even though EV charging involves the delivery of electricity to a vehicle, EV charging is not a utility service. EV charging is a service offered by a variety of competitive providers and site hosts who, as discussed earlier, need flexibility to best determine the charging needs of the EV drivers most likely to visit a particular charging location.

EV charging is also much more than just delivering electricity to a vehicle; it involves software and smartphone applications to help drivers find charging stations, inform drivers when a charging station is available, help drivers plan long-distance road trips, and countless other value-adds that competitive EVSE providers are continually innovating. If EV charging is treated as nothing more than a utility service, as PGE seems to want to do through its Electric Avenue proposal, PGE's customers will lose out on these innovations and valuable services.

PGE states that "Our vision is that if a customer needs to charge her car to reach her destination, she ought to be able to dependably go to an Electric Avenue site to 'fuel up.'"[18] As seen by the congestion at many Tesla Superchargers,[19] installing more stations funded by rate payers is not the way to solve this problem. Working with suppliers who have developed driver applications to allow drivers to see what stations are available, and to reserve a time to charge their vehicle, is a much more effective way to ensure drivers that they will be able to charge their vehicle when needed. The competitive EVSE industry is already providing these types of valuable solutions, whereas PGE does not even seem to understand what problems need to be solved.

Q: Doesn't SB 1547 specifically allow PGE to invest directly in EV charging and related infrastructure?

A: Yes, I am not an attorney, but my understanding of SB 1547 is that it contemplates that a utility's proposal for a transportation electrification program "may include prudent investments in or customer rebates for electric vehicle charging and related

[18] Application, p. 51.
[19] http://www.greencarreports.com/news/1101675_tesla-supercharger-congestion-worsens-in-peak-travel-periods

infrastructure."[20] However, just because PGE has a right to propose its own-and-operate model does not mean that the proposal is prudent or in the best interest of ratepayers. As I have discussed extensively in this testimony, PGE's own-and-operate proposal for Electric Avenue also will not "stimulate innovation, competition and customer choice in electric vehicle charging and related infrastructure and services," which it is required to do under SB 1547.[21] In my opinion, it would be much easier for PGE to demonstrate that that a rebate program is prudent and in the best interest of its ratepayers, and therefore eligible for cost-recovery.

Q: Please describe in more detail the type of rebate program that you believe that PGE should offer instead of its proposed Electric Avenue own-and-operate model.

A: PGE should consider an alternative program design in which PGE would provide a direct financial incentive to site hosts for the purchase and installation of the qualified EVSE equipment of their choice. PGE can qualify equipment to meet functional capabilities and provide a list of qualified charging stations to its customers and potential site hosts to simplify the learning curve associated with buying, and refueling, an EV. A rebate 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.

ChargePoint recommends that PGE develop a rebate program that provides a simple financial transaction that is easy to implement and creates value to the utility by providing visibility into unplanned EV load growth. This proposal would lower the total cost of ownership of an EV, creating an incentive for utility customers and helping

[20] SB 1547, Section 20(3).
[21] SB 1547, Section 20(4)(f).

accelerate adoption. This rebate structure could very effectively be expanded and tailored to incentivize increased deployment of workplace charging, which is the other primary location for EV drivers to charge their vehicles, and expand grid benefits while limiting the costs and risks associated with PGE owning and operating charging stations. Also, a rebate program will promote – rather than stifle – innovation, competition, and customer choice in the EV charging market.

Q: Do you expect that a rebate program would have as big of an impact on accelerating transportation electrification as PGE's proposed Electric Avenue expansion?

A: I believe that a rebate program, using the same amount of money that PGE plans to spend, would lead to significantly more charging stations than PGE's proposed six Electric Avenue stations. By leveraging private capital from site hosts to share the costs of each station that is installed, a rebate program would have significantly greater reach than the Electric Avenue proposal. In ChargePoint's experience, having site hosts share the costs of a charging station is important to ensure that the charging stations meet the needs of drivers that visit the location where the stations are installed, and that the stations are sited in an optimal location. When site hosts have "skin in the game," charging stations tend to be more fully utilized and offer the most value to drivers and site hosts.

Q: How would PGE recover its costs for a public charging pilot if it did not own the charging stations itself?

A: PGE's Electric Avenue proposal is not a cost-based program. By that, I mean that the revenues that PGE projects it will receive from EV drivers for charging services will not

cover all of PGE's costs of providing the program.[22] Program costs that are not recovered from EV drivers will be recovered from ratepayers. In other words, ratepayers would subsidize a major portion of the costs of Electric Avenue as proposed. As I discussed earlier, these funds may be at risk if the Electric Avenue program is not successful.

Since PGE will not be covering the costs of its Electric Avenue expansion using program revenues anyway, there is no financial justification for PGE owning the charging stations in the first place. Rather than using these ratepayer subsidies to invest in hardware that PGE will own, it would be more effective and less risky for these funds to be used for rebates for site hosts to install the charging equipment of their choice, as I have described. It would also be much easier and more straightforward for the Commission to approve PGE to recover any money spent on qualified rebates, rather than allow PGE to invest in its own hardware and make a prudency determination later on.

Q: SB 1547 says that a utility may earn "a return of and a return on an investment" made by a utility as a part of its transportation electrification programs. If PGE were only providing rebates to site hosts, how would it earn "a return of and a return on" its program expenditures?[23]

A: PGE could recover the costs of providing rebates and administering the rebate program through a deferral, which is what PGE has proposed in its application. Essentially, the Commission would be making a prudency determination in advance by approving PGE to provide rebates of a specified amount to customers and site hosts for qualified charging equipment. PGE would begin recovering its costs through rates later, after a rate case.

[22] Application, p. 60 ("We estimate the total cost of the pilot to be $4.1M and expect it to generate $3.5M in revenues from subscriptions and usage charges (10-yr NPV)").
[23] SB 1547, Section 20(5)(a)(A).

The Commission could also approve PGE to earn its authorized rate of return on the value of the rebates that it has provided to customers, similar to the way in which it earns a return on investments in rate base. Again, I am not an attorney, but SB 1547 seems to contemplate a utility earning a return on its transportation electrification programs "in a manner that is similar to the recovery of distribution system investments."[24] I see no reason why PGE should not be incentivized to offer a robust rebate program by earning a reasonable return on the value of these rebates.

In addition, as I discussed earlier, PGE has an important role to play in any transportation electrification program by providing the make-ready infrastructure that is often needed to install a new charging station. Providing the make-ready is an activity within the core competencies of a utility and is very similar to other investments that PGE makes in its distribution system. As with other distribution system investments, PGE should be allowed to earn a reasonable return on its investments in the make-ready infrastructure that will be crucial to any successful transportation electrification program.

ChargePoint believes that PGE should be incentivized to offer a robust transportation electrification program and rewarded through a return on investment if the program is successful. As I have just discussed, PGE does not need to own and operate its own network of charging stations in order to earn a return on its investments in transportation electrification efforts. A rebate program such as I have described would be in the best interest of EV drivers and PGE's ratepayers, and could also be structured to be in PGE's best interests from an investment perspective, as well.

[24] *Id*. at 20(5)(a)(B).

Q: What is your opinion of PGE's proposal to use the OCPP 1.6 standard?

A: ChargePoint understands the need for open communication protocols. However, we would recommend that PGE's proposal not mandate the use the OCPP 1.6 standard. There are several reasons why it is not in the best interest of PGE, EVSE vendors, drivers, or site hosts to mandate that specific standard for EV equipment through its program. OCPP is a European standard developed to provide interoperability of networks and hardware in Europe. However, OCPP is not a standard accepted in the U.S. by the industry or developed by a U.S. standards development organization. OCPP has not evolved over the last few years, leaving new advancements in technology and driver interaction outside of the standard. For example, there is a lack of support for load management and demand response capabilities within the OCPP 1.6 standard. Competing standards are being developed in the U.S., under traditional U.S. standards organizations, and PGE should work with the industry on the development of this open standard.

Since there are now several ongoing efforts in regards to development of an open standard, it would seem best to seek or require an open standard for communication between charging stations and their management system rather than allow PGE to choose a winner, which is premature this point in time. A critical requirement is for any standard in this area to be developed in an ANSI-recognized Standards Development Organization (SDO), since only such an SDO can ensure the openness, lack of dominance, balance, IP protection, and coordination and harmonization that vendors need to participant and deliver the needed open standards.

Q: What do you recommend?

A: I recommend that the Commission direct PGE to modify its proposal to expand its Electric Avenue program because the program as currently designed would not stimulate innovation, competition, or customer choice. In fact, I expect that this proposed program would reduce innovation and hamper the competitive EVSE market, to the detriment of PGE's ratepayers and EV drivers. Since PGE would be procuring all of the charging stations from a single provider through an RFP without regard to the needs of the drivers that might visit those stations, the Electric Avenue expansion will undoubtedly reduce, rather than promote, customer choice.

I recommend that the Commission provide guidance to PGE for a transportation electrification that would actually promote innovation, competition, and customer choice, such as the charging station rebate model that I described above. The Commission should find that a utility own-and-operate model for EV charging stations is also an unnecessarily risky use of ratepayer funds and an inappropriate encroachment of the monopoly utility business into a competitive market.

The Commission should instruct PGE that any transportation electrification program must meet all of the statutory criteria of SB 1547, and encourage PGE to file a new application for a transportation electrification program that meets these criteria and is consistent with its role as a monopoly utility.

III. SMART CHARGING AND TOU RATES PILOTS

Q: What will you address in this section of your testimony?

A: In this section of my testimony, I will discuss PGE's proposal to create a research and development pilot that will focus on demand response opportunities associated with

residential charging so that PGE can explore customer impacts and achievable curtailment from residential charging.

Q: Based on your experience, what do you believe is the most effective way to structure a residential TOU rate for EV drivers?

A. Incentivizing charging behavior to take place during off-peak periods through TOU rates can lead to increased utilization of utility assets and avoid the need for additional capacity and grid infrastructure. The TOU rate proposed by PGE would affect the whole house and is one means of incentivizing charging behavior. However, the disadvantage of a "whole-house" TOU rate is that it requires a customer to manage all of the loads on their premises, thereby significantly reducing the number of willing participants. With a whole-house TOU rate, it is also difficult or impossible for the utility to isolate the effect of the TOU rate on EV charging, since customers who can do so will likely manage other loads in response to the TOU rates.

EV loads by themselves are often the largest in the premises; however, they are also one of the most flexible in terms of the ability to time-shift and could benefit from a targeted TOU rate to effectively incentivize behavior. "EV-only" TOU rates can be a more precise means of incentivizing charging behaviors than a whole-house TOU rate, and are similarly effective at incentivizing behavior once adopted.

Q: Please explain how PGE could design an EV-only residential TOU rate pilot.

A: The successful implementation of an EV-only TOU rate hinges on being able to accurately measure the energy usage that is solely attributable to charging an EV. This can be achieved through the installation of an additional utility meter, but the upfront costs of secondary meters can be a significant barrier to enrolling customers. However, the additional costs

and barriers associated with EV-only TOU rates can be avoided and overcome by leveraging the embedded metrology within connected EV charging stations.

ChargePoint recommends that PGE consider pursuing a pilot to test deployment of smart L2 charging stations with embedded metering capabilities. This residential smart charging pilot could confirm the accuracy of the embedded metering and explore different methods to educate and engage with customers. The pilot could also consider testing managed charging or demand response capabilities. PGE should consider how the embedded metrology within connected EV charging stations can allow for residential customers in Oregon to have access to an EV-only TOU rate while avoiding the additional cost of deploying new meters at every charging station.

IV. TRIMET PILOT

Q: What will you address in this section of your testimony?

A: In this section of my testimony, I will discuss PGE's proposal to install, own, and manage six electric bus charging stations (five 100-kW depot chargers and one 300-kW en-route charger) for use as part of a mass transit electrification pilot with TriMet.

Q: Do you believe the proposed Electric Mass Transit 2.0 pilot with Tri-Met will stimulate innovation, competition, and customer choice?

A: No. As with the proposed Electric Avenue Network expansion, PGE is proposing to own and operate the charging stations, which will stifle the competitive market for EVSE vendors in Oregon.

Q: Why do you believe that it is not appropriate for PGE to own and operate the bus chargers to be used by TriMet as a part of this pilot proposal?

A: While supporting the electrification of the city's public transportation fleet is admirable, especially considering the positive impact on disadvantaged communities, we see no reason why PGE needs burden its ratepayers with the risk of owning and operating the equipment used to charge these buses. As an alternative to the proposal, we would suggest that PGE fund the installation of the equipment and own and operate all of the utility infrastructure, and ensure that TriMet has the ability choose the charging equipment and network service provider, and decide whether they themselves or a third party would own and operate these stations in a way that is best suited to charge the buses it is purchasing. While this will leave PGE ratepayers some risk that TriMet might abandon its electric buses, it eliminates the risk to the ratepayers of changing technology and/or standards selected by TriMet or its vehicle supplier.

PGE may choose to offset some of TriMet's acquisition costs with a nominal rebate, so the overall financials of the program would not change, but PGE should leave the technology risk exposure to TriMet and its vehicle supplier.

Q: What do you recommend?

A: I recommend that the Commission direct PGE to redesign the TriMet pilot such that PGE will only own and operate utility infrastructure and TriMet would own and operate the actual charging stations that are installed through the program. TriMet should be allowed to select the type of chargers that are installed, with PGE providing financial support that can be recovered from ratepayers.

V. CONCLUSION AND RECOMMENDATIONS

Q: Please summarize your recommendations to the Commission.

A: I recommend that the Commission:

- Direct PGE to modify its proposal to own and operate its own charging stations and to develop its own proprietary network for its proposed Electric Avenue expansion in a way that will stimulate innovation, competition, and customer choice in the market for EV charging equipment;
- Encourage PGE to redesign its community charging infrastructure pilot in such a way that PGE would provide rebates or other financial incentives to charging station site hosts to choose the charging equipment that best suits their needs from a list of pre-qualified equipment;
- Encourage PGE to work with industry on the on-going development of an updated American open-source standard, and not require the OCPP 1.6 standard;
- Recommend that PGE design an "EV-only" TOU pilot using metering already embedded in smart chargers, rather than a "whole-house" TOU pilot;
- Recommend that PGE redesign its proposed pilot program with TriMet such that PGE would not own and operate any charging equipment, but would instead provide financial support for TriMet to have the choice in charging equipment and the ability to choose who will own and operate the stations.

Q: Does this conclude your Reply Testimony?

A: Yes.

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PLUG-IN VEHICLE INFRASTRUCTURE EXECUTIVE

Creative senior professional with outstanding industry experience and success in establishing relationships with utility, automaker and municipality stakeholders in the plug-in vehicle marketplace. Experience in recognizing and establishing success based channels and maximizing company exposure. Demonstrated track record of launching new companies and new products with exceptional sales growth and profitability. Strong technical / engineering background.

PROFESSIONAL EXPERIENCE

Vice President, Utility Solutions **ChargePoint, Inc.** **2014-present**
Campbell, CA
Developed a team of industry experts to work with utilities in North America and Europe to develop utility programs enabling the expansion of the electric vehicle market. Worked in conjunction with policy and legislative efforts to ensure subsequent utility investment worked with industry participants to complement the competitive market in developing scalable growth.

President, Founder **ClipperCreek, Inc.** **2006 - 2013**
Auburn, CA
Grew ClipperCreek into the EV Infrastructure market leader by working with regional representatives and distributors to grow market awareness and acceptance. Shaped product development to match the needs of the industry and the stakeholders including automakers and utilities. Drove profitable sales since the company's inception through multiple channels to provide balanced, stable revenues.

- Managed utility relationships and established 4 smart grid pilots to be conducted in 2013 and 2014;
- Established a successful partnership with Delphi to jointly supply automakers with EVSEs (the partnership currently supplies GM and BMW);
- Developed a nationwide network of industry expert representatives who established confidence and recognition in the ClipperCreek brand;
- Used Representative network to raise product awareness and drive sales online;
- Wrote and managed grants from The California Air Resources Board and the California Energy Commission;
- Along with the manufacturers representatives established a network of 25 industry specific and general distributors throughout North America;
- Worked directly with auto dealerships for both direct and referral sales;
- Managed development of marketing collateral including; product brochures, social media and industry show image.

VP Sales and Marketing **Electric Vehicle Infrastructure Inc** **1998 – 2005**
Auburn, CA
Full responsibility of Sales and Marketing of the company: Developed a nationwide distributorship made up of some of the countries largest utilities for sales and service of EVI's products. Developed product specifications for a complete line of EV charging safety devices.

VP Sales and Marketing **Advanced Charger Technology** **1994 –1998**
Norcross, GA
ACT develops and markets battery-charging products for wireless products.

Account Manager **Parametric Technology Corporation** **1993 - 1994**
Waltham, MA
A CAD/CAM company which develops and markets the software product Pro/ENGINEER.

Vice President **American Educators Financial Corporation** **1989 - 1993**
Troy, AL
Managed assets for a secondary market life insurer.

Regional President **Patten Corporation** **1987 - 1989**
North Adams, MA
A NYSE land development company with 43 offices located across the United States.

Senior Structures Engineer **Lockheed Corporation** **1982 - 1987**
Burbank, CA
Defense Contractor for development of the Trident Missile System.

Education **UNIVERSITY OF MASSACHUSETTS** **1976 - 1983**
Amherst, MA

Master of Science, Civil Engineering, 1983
Bachelor of Science, Mechanical Engineering, 1980

PUBLISHED PAPER

"Buried Concrete Pipe Embankment Installation Analysis:, by David L. Packard and Ernest T. Selig, Journal of Transportation Engineering, Volume 112 #6, November, 1986

OTHER

Board Member: St. Marys, GA Downtown Development Authority, Design Guidelines:
Board Member: Habitat for Humanity of Camden County,
Elder: First Presbyterian Church of St. Marys, GA,

BEFORE THE PUBLIC UTILITY COMMISSION

OF THE STATE OF OREGON

IN THE MATTER OF PORTLAND	**)**	
GENERAL ELECTRIC'S	**)**	
APPLICATION FOR	**)**	**DOCKET NO. UM 1811**
TRANSPORTATION	**)**	
ELECTRIFICATION PROGRAMS	**)**	

CHARGEPOINT EXHIBIT 200

TESTIMONY OPPOSING STIPULATION OF DAVID PACKARD

August 25, 2017

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I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

Q: Please state your name.

A: My name is David Packard.

Q: By whom are you employed and in what position?

A: I am the Vice President of Utility Solutions at ChargePoint, Inc.

Q: Have you previously filed testimony before the Oregon Public Utility Commission?

A: Yes, I filed Reply Testimony in this docket on April 24, 2017, and I filed Reply Testimony in Docket No. UM 1810 on May 24, 2017.

Q: Did your Reply Testimony in this docket include a description of your witness qualifications?

A: Yes, and I would like to incorporate that description here by reference.

Q: What is the purpose of your testimony?

A: The purpose of my testimony is to explain to the Commission why ChargePoint opposes PGE's proposed Electric Avenue program, as modified by the Stipulation filed by PGE and the Stipulating Parties. As the Stipulating Parties admit, the Electric Avenue program fails to meet the statutory criteria for transportation electrification programs established by the Legislative Assembly in Senate Bill (SB) 1547. Because it fails to meet the statutory criteria that it must meet, and because it would hamper rather than accelerate transportation electrification in PGE's service territory, it could never be approved as a full-fledged utility program. The Commission should therefore not approve it as a pilot program, either.

I recommend that the Commission deny the Electric Avenue program for failing to meet the statutory and rule criteria that it must meet. I further recommend that the

Commission provide guidance to PGE regarding the types of utility programs that would satisfy SB 1547's criteria that it would be interested in approving. To that end, I provide several examples of utility transportation electrification programs from around the country that would satisfy SB 1547's criteria and reflect an appropriate role for the utility.

II. ELECTRIC AVENUE FAILS TO MEET SB 1547'S CRITERIA

Q. What will you discuss in this section of your testimony?

A. In this section of my testimony, I will discuss Electric Avenue's failure to meet the criteria established by the Legislative Assembly in SB 1547 for evaluating PGE's proposed transportation electrification programs. I will also discuss the Legislative Assembly's stated intent in enacting Section 20 of SB 1547 and will demonstrate that Electric Avenue will fail to fulfill the intent of SB 1547.

Q: What criteria does SB 1547 establish for evaluating PGE's proposed Electric Avenue program?

A: SB 1547 establishes six criteria under which the Commission must evaluate any utility transportation electrification program. Of particular interest to ChargePoint, the Commission must consider whether Electric Avenue is "reasonably expected to stimulate innovation, competition and customer choice in electric vehicle charging and related infrastructure and services."[1] SB 1547 indicates that the Commission must make such a determination both when it decides whether or not to approve a program, and when it considers whether or not to allow a utility to recover the costs of the program.

[1] SB 1547, Section 20(4)(f).

A. Customer Choice

Q: Let's discuss innovation, competition, and customer choice in turn, starting with customer choice. What do the Stipulation and the Stipulating Parties' testimony say about customer choice?

A: Nothing – the phrase "customer choice" does not appear in the Stipulation or the supporting testimony.

Q: Why do you think the Stipulation and the supporting testimony does not address customer choice?

A: It does not surprise me that customer choice is not mentioned in the Stipulation or the supporting testimony because customer choice is not a feature of Electric Avenue (or the other proposed programs, but ChargePoint is not actively opposing those programs). PGE has proposed to procure charging stations for Electric Avenue through a Request for Proposals (RFP) process, in which the utility – and not customers – would be choosing the electric vehicle charging equipment and services. This proposal clearly violates SB 1547's requirement that customers be allowed to choose charging equipment and services.

Q: In your understanding, who is the "customer" that the Commission should be concerned with in order to ensure that a transportation electrification program stimulates customer choice?

A: In my opinion, the "customer" intended by the statute is the entity that hosts a charging station and allows drivers to charge their vehicles at the station. I provided many examples of such customers in my Reply Testimony, including big-box retailers, municipal governments, and the owners of multi-unit dwellings (MUDs). These entities

may offer a charging station to their shoppers, their constituents, or their tenants, but they are the ones paying the electric bill, so they are the customer-of-record. As I also explained in my Reply Testimony, it is crucial to allow charging station site-hosts to choose the charging station infrastructure and services that best meet the needs of the drivers they expect will use the charging station because the site-host – and not PGE – is best equipped to understand those drivers' needs and preferences. Electric Avenue would not allow charging station site-hosts any choice in charging station infrastructure or services, because PGE would make the choice for them through an RFP.

That said, it is also reasonable to interpret "customer choice" in SB 1547 to refer to EV drivers, because drivers are the ultimate end-users of charging stations. Even under this interpretation, however, Electric Avenue does not include any customer choice. Again, Electric Avenue would offer only one type of charging station and one type of network service that PGE would choose for drivers through its RFP process.

Q: Why do you consider customer choice to be so important?

A: In ChargePoint's extensive experience with publicly available charging station programs around the country and in Europe, customer choice is the linchpin that determines whether a program will be successful or not. Charging station site-hosts are generally well-equipped to determine the needs and preferences of the EV drivers who will use the charging station. Because EV drivers are typically the site-host's customers, tenants, or constituents, site-hosts are well positioned to make any changes, such as changes to pricing structure, that will optimize the charging station's utilization.

There is simply no reason to think that a utility would be effective at determining the needs of particular EV drivers, and regardless, different EV drivers have different

preferences. Customers (both site-hosts and EV drivers) will not enjoy the benefits of competition or innovation – the other two relevant criteria – if PGE locks-in a particular technology and prevents any customer choice through an RFP.

Q: What do you ultimately conclude regarding SB 1547's customer choice criterion with respect to Electric Avenue?

A: As the Stipulation and the Stipulating Parties' supporting testimony explicitly acknowledge by failing to mention the term, the Electric Avenue program would not involve any customer choice, much less stimulate customer choice as the Legislative Assembly intended and required. As a result, and as will be discussed in more detail later in my testimony, Electric Avenue can be expected to hamper transportation electrification in PGE's service territory, rather than accelerate it. In ChargePoint's view, Electric Avenue's failure to involve any aspect of customer choice is sufficient reason for the Commission to deny the program.

B. Competition

Q: An RFP is by nature a competitive process – why did you say earlier that an RFP will prevent customers from enjoying the benefits of competition?

A: An RFP will allow for exactly one opportunity for competition, which does not strike me as consistent with SB 1547's directive that PGE "stimulate" competition in the market. Moreover, in an RFP, bidders compete almost exclusively on the basis of cost, which means that competition will not lead to innovation or additional customer choices, as I will discuss next.

ChargePoint is also concerned that PGE apparently believes that it would stimulate competition in the EV charging market by entering that market with Electric

Avenue. PGE forgets that it would be entering that market with a massive advantage in the form of its captive ratepayer base. Adding PGE to the market will do much more to dampen competition than to stimulate it.

C. Innovation

Q: Why do you think that Electric Avenue will fail to promote innovation?

A: Utilities procure through an RFP process that is designed to minimize product features so that they can purchase at commodity pricing. RFPs do not provide for customer choice, nor do they stimulate innovation. Rather than allowing site hosts to select the product that best meets their needs, utility RFPs define the criteria to which vendors need to build their product, choose the solution with the lowest price, and then force this solution on the market.

Additionally, PGE, with its current one Electric Avenue installation, does not have the experience to define the necessary features for the network of DCFC stations it proposes to deploy in Oregon. PGE does not have the framework to be able to move quickly enough to redefine features and redeploy products, as is currently happening in the market. The products PGE would be installing, by its own admission, would likely be obsolete or very outdated when they are installed, because the new, higher range vehicles coming to market in 2019 and 2020 will have charge rates up to 150 kW – 3 times the speed of what PGE is proposing.

PGE is not the customer that "customer choice" in SB 1547 refers to, and "customer choice" was not intended to promote a process by which PGE defines and selects what it wants. Stimulating customer choice, as defined by the legislation, requires a process by which vendors sell products to end-use customers (i.e., site-hosts, not

utilities), who, with their variety of needs and desires help shape product features that will build the market into a sustainable industry. The vendors in EV charging industry has thousands of site-host customers who are helping shape the industry. The industry is constantly innovating to create exciting products that meet the unique needs and desires of site-hosts and the drivers that visit their stations. Oregon's DCFC deployment cannot be based on one utility's Electric Avenue installation in a busy downtown area being spread into an area wide model.

III. ELECTRIC AVENUE FAILS TO PROMOTE THE LEGISLATIVE ASSEMBLY'S GOALS FOR TRANSPORTATION ELECTRIFICATION

Q: What will you discuss in this section of your testimony?

A: In this section of my testimony, I will discuss the Legislative Assembly's stated intent behind Section 20 of SB 1547 with respect to Electric Avenue. Specifically, I will discuss the Legislative Assembly's vision that "Widespread transportation electrification should stimulate innovation and competition, provide consumers with increased options in the use of charging equipment and in procuring services from suppliers of electricity, attract private capital investments and create high quality jobs in this state."[2]

A. Increased options

Q: Let's discuss each of these criteria in turn. You've discussed above the reasons that you believe Electric Avenue will fail to stimulate innovation and competition. Would Electric Avenue provide consumers with increased options in the use of charging equipment?

[2] SB 1547, Section 20(2)(d).

A: No, it will not. As I have discussed, Electric Avenue would provide customers with only one option for charging equipment: namely, the equipment vendor that wins the RFP. It is difficult to see how such a result comports with the Legislative Assembly's intent to provide increased options.

B. Private capital investments

Q: Would Electric Avenue attract private capital investments in PGE's service territory?

A: No. The winner of the RFP to supply the equipment and network services for Electric Avenue will not be investing in PGE's service territory; rather, it will be making a large sale to PGE that will be paid for by PGE's ratepayers. In other words, the only investors in Electric Avenue will be PGE's ratepayers. I cannot imagine the ratepayer investment that PGE has proposed for Electric Avenue is the type of investment the Legislative Assembly had in mind when it stated that transportation electrification should encourage "private capital investments."

In fact, I would expect that Electric Avenue would actually discourage private capital investments in publicly available charging stations. If the Commission approves the Electric Avenue program contrary to ChargePoint's recommendations, prospective site-hosts who may be considering investing in publicly available charging stations would be much less likely to do so when they learned that PGE was providing charging stations for free (i.e., without any investment from site-hosts). Electric vehicle service equipment (EVSE) vendors would also be less likely to invest in their own publicly available charging stations when they learned that PGE was providing charging stations. If vendors learned that Electric Avenue did not even need to produce enough revenue to recover the

costs of the stations because any shortfall would be made up by ratepayers, vendors would be even less likely to invest in publicly available charging stations.

Q: Wouldn't Electric Avenue encourage private investment by encouraging more drivers to purchase EVs, thereby increasing demand for additional publicly available charging stations?

A: Increasing the number of EV drivers will increase demand for additional publicly available charging stations, but it is doubtful that private investment would materialize to meet that demand if the Commission approves the Electric Avenue program. The Stipulating Parties seem to believe that Electric Avenue would not have a major impact on the market for publicly available charging stations because it would involve "only" six charging pods. However, even with only six pods, the structure of Electric Avenue would teach the market PGE will provide ratepayer-funded charging stations, and that there is no reason or opportunity for private investment to participate in the market. Why would a convenience store invest in a charging station if PGE could install one down the road, especially if PGE did not even need to recover the cost of the charging station or the cost of the electricity? Similarly, why would an EVSE vendor invest in its own publicly available charging station if PGE could undercut the rates that the private company would need to charge by relying on ratepayer funding?

Private companies do not have captive ratepayers to rely on the way that PGE does, and I expect that few if any private companies would be interested in competing with PGE on such an uneven playing field. While Electric Avenue would result in several additional charging stations in the near-term, I expect that PGE's participation in the publicly available charging station market would severely distort and hamper the market

over the medium- and long-term, resulting either in far fewer charging stations or resulting in PGE taking over the entire market. Approving Electric Avenue would set the stage for a market that is dependent on ratepayer subsidies indefinitely.

Q: If the Commission were to approve Electric Avenue, would ChargePoint opt not to install publicly available charging stations in PGE's service territory?

A: As I stated in my Reply Testimony, as a private company, ChargePoint is not able to disclose all of its investment plans. That said, the outcome of this case will determine whether or not we as a company market our fast chargers in PGE's service territory over the next few years. If PGE has the ability to offer site-hosts free charging stations or charging stations located on rights-of-way that are subsidized by ratepayers, it will have a substantial impact on our consideration to make investments in Oregon and whether we consider other markets that are more competitive.

C. High-quality jobs

Q: Do you expect that Electric Avenue would help create high quality jobs in Oregon?

A: No, I do not see how it would. Electric Avenue would result in one large purchase of charging equipment and network services at the conclusion of the RFP. After the RFP is over, there would be little reason for EVSE vendors to continue participating in PGE's service territory because PGE would then dominate and control the market. EVSE vendors would have little reason to employ sales, marketing, or support personnel in PGE's service territory if the only opportunity to make a sale was to win an RFP.

By contrast, if PGE were to offer the type of transportation electrification program that ChargePoint has recommended, in which the utility provides rebates for charging equipment and network services or provides the make-ready infrastructure

needed for charging stations, I expect private investment and high-quality jobs would proliferate in Oregon. EVSE vendors would deploy teams of sales and marketing professionals to recruit prospective site-hosts, who would be excited by the possibility of attracting additional customers or providing a value-added service to tenants and constituents. If both parties to the transaction knew that PGE was willing to help reduce the upfront cost of charging stations through a rebate or willing to provide the crucial and complex make-ready infrastructure, it would be even more likely that a charging station would be deployed. This is the type of transportation electrification program that I believe the Legislative Assembly had in mind when it passed SB 1547. Only this type of program – in which the utility plays a supporting role in the market that only the utility can play, rather than competing directly in the market – can balance SB 1547's criteria and legislative intent.

IV. PGE CANNOT AVOID STATUTORY REQUIREMENTS BY LABELING ELECTRIC AVENUE AS A "PILOT" PROGRAM

Q: What will you discuss in this section of your testimony?

A: In this section of my testimony, I will discuss the fact that the Oregon Public Utilities Commission Staff (Staff), the Citizens' Utility Board (CUB), and the other Stipulating Parties have recommended that the Commission approve Electric Avenue because they have labeled it as a "pilot" program.

A. The Commission must consider SB 1547's criteria for pilot programs.

Q: What do the Stipulating Parties say about Electric Avenue being a pilot program?

A: With respect to each of PGE's transportation electrification programs, including Electric Avenue, the Stipulation states the following: "For the Stipulating Parties to support

approval of PGE's three Transportation Electrification programs as modified in this Stipulation, PGE agrees that the proposals are pilot programs only, meaning that the Stipulating Parties have not agreed that the TE proposals meet the six statutory criteria outlined in SB 1547, but rather, these TE programs may provide value as pilot programs."[3] The Stipulation defines "pilots" in the next sentence to mean that the programs are "time-limited, cost-limited, and … designed to produce specific learnings."[4]

Q: How do you interpret this statement from the Stipulation?

A: This statement indicates that at least some of the Stipulating Parties attach considerable importance to labeling PGE's proposed programs, including Electric Avenue, as pilot programs. Logically, I understand this statement to mean that at least some of the Stipulating Parties believe that the programs do not meet SB 1547's six statutory criteria and that they do not need to meet these criteria if they are considered pilots.

Q: What is your reaction to this position taken by the Stipulating Parties?

A: Frankly, I am disturbed that certain parties, particularly PGE, Staff, and CUB, would recommend that the Commission approve programs that they acknowledge do not meet the statutory criteria that the programs are supposed to meet. I am also concerned that the Stipulating Parties seem to believe that because the programs are "time-limited, cost-limited, and … designed to produce specific learnings," that SB 1547's criteria somehow do not apply or are not relevant.

ChargePoint was so perplexed by this position taken by the Stipulating Parties, that we followed up on the issue through discovery to Staff. Staff's response to ChargePoint's Data Request No. 4 to Staff is attached as ChargePoint Exhibit 103.

[3] Stipulation, ¶ 2.
[4] *Id*.

Q: What is your understanding of Staff's response to ChargePoint Data Request No. 4?

A: The response speaks for itself, but it confirmed my impression that Staff attaches significant importance to labeling PGE's proposed programs as pilots. That said, Staff declined to confirm that characterizing the programs as pilots changes the standard under which the Commission evaluates them, saying that it believes "the Commission has discretion to approve or deny any pilot program proposal."[5]

Q: Do you agree that the Commission has discretion to approve or deny any transportation electrification program proposal?

A: I agree that the Commission has significant discretion, but the Commission's discretion is not unfettered. I am not an attorney, but SB 1547 clearly states that "the Commission *shall* consider whether the investments and other expenditures" that PGE has proposed for its programs meet the six statutory criteria.[6] In other words, the Commission does not have discretion to ignore one of the statutory criteria simply because PGE and the Stipulating Parties have agreed that the programs are "pilots."

Q: What is your understanding of the Commission's discretion with respect to evaluating PGE's proposed transportation electrification programs, including Electric Avenue?

A: Frankly, I am surprised that Staff believes the Commission has discretion to approve "any" program, as it stated in the discovery response. In my understanding, the Commission can and should consider how much weight to give each of the six statutory criteria. The Commission also has the discretion to consider how reasonable it is to expect that a program will actually meet a particular criterion. However, I do not think

[5] Exhibit 103, ¶ c.
[6] SB 1547, Section 20(4).

that the Commission has the discretion to find that a particular criterion does not apply or does not need to be met at all. Otherwise, there would be no point in the Legislative Assembly establishing these criteria in the first place.

As I have discussed extensively in this testimony and in my Reply Testimony, and as ChargePoint explained in our Objections filed in this docket, Electric Avenue is not "reasonably expected to stimulate innovation, competition and customer choice in electric vehicle charging and related infrastructure and services." Significantly, the Stipulating Parties have not even tried to argue that Electric Avenue would stimulate customer choice in EV charging infrastructure and services, and they would not be able to do so because PGE – and not customers – would be choosing all infrastructure and services involved in Electric Avenue.

B. There is no reason to pilot a utility program that has no future viability.

Q: What is your understanding of the purpose of utility pilot programs generally?

A: My understanding is that generally a utility will pilot a program on a small scale or to a limited number of customers before rolling out the program on a large scale or offering it to all of its customers. Typically, the pilot will be designed in such a way that, if successful, the same program design can be offered as a full-fledged program. If the pilot is successful, the utility will typically seek to offer the same program on a large scale, or it may make minor modifications to the pilot program design before offering it to all of its customers. If a utility pilot program is unsuccessful, the utility typically goes back to the proverbial drawing board and designs a new pilot, rather than rolling out a full-fledged program that has not been piloted.

Q: What then is your understanding of the purpose of piloting the Electric Avenue program?

A: PGE seeks to pilot the Electric Avenue program because it hopes to offer a full-fledged version of Electric Avenue in the future. PGE stated in its Application that it intends to offer up to 19 total Electric Avenue charging pods if it considers the pilot to be successful, and confirmed through discovery that this is still its intention.[7]

An Electric Avenue program with 19 charging pods would not meet SB 1547's statutory criteria for the same reasons that the proposed pilot program with six charging pods does not meet the criteria. By the same token, even if characterizing Electric Avenue as a pilot somehow changed the standard under which the Commission evaluates it, there would be no point in piloting a program design that could not be approved as a full-fledged program.

Q: Do you believe there is any value in PGE exploring transportation electrification through Electric Avenue and sharing the results of its findings with the Commission and stakeholders?

A: No, I do not. The Stipulating Parties place great importance on the fact that PGE would report on its "learnings" from Electric Avenue as a reason to approve it as a pilot program. I am concerned that the Stipulating Parties believe that as long as Electric Avenue produces some learnings, ratepayers' money would be well-spent regardless of the result of the pilots. I am also concerned that the Stipulating Parties believe that other market participants, such as ChargePoint, will somehow benefit from these learnings.

[7] PGE's Application for Transportation Electrification Programs, filed March 17, 2017, page 59. See also PGE Response to ChargePoint DR 011, attached as Exhibit 1 to Objections to Stipulation and Request for Hearing of ChargePoint, Inc. PGE stated that it would consider up to 13 additional Electric Avenue pods, in addition to the six it proposed in its Application.

Q: Why do you have these concerns?

A: As I discussed earlier, PGE's participation in the market for publicly available charging stations through Electric Avenue would distort the market for years to come by teaching the market that there is no reason for anyone to invest in publicly available charging stations, because PGE will provide ratepayer-subsidized stations. Even PGE's proposed six charging pods would make the market dependent on ratepayer funds for years to come. As a result, any learnings that the Electric Avenue program produced would reflect the market distortions that PGE itself caused.

To put it another way, if the Commission were to approve Electric Avenue, it would be difficult if not impossible for private market participants to compete with PGE's ratepayer-funded Electric Avenue charging pods. In that case, I would expect that the primary "learning" PGE would report to the Commission would be that PGE's participation in the charging market is necessary because Electric Avenue would have crowded out all other market participants. Under the guise of studying the market for publicly available charging stations, Electric Avenue would allow PGE to begin dominating that market while it is still in its nascent stages.

C. Electric Avenue would be an imprudent and inefficient use of ratepayer funds.

Q: Allowing PGE to dominate the market for charging station infrastructure and services is clearly bad for ChargePoint, but how would it affect ratepayers?

A: I fully recognize that the Commission is under no obligation to protect private market participants like ChargePoint. However, the Commission is obligated to protect PGE's ratepayers, and Electric Avenue would be detrimental to ratepayers' interests and an imprudent use of ratepayer funds.

In my opinion, the most prudent use of ratepayer funds for transportation electrification would be to use those funds to stimulate a self-sustaining market for publicly available charging stations. As I have mentioned, Electric Avenue would likely require long-term ratepayer support, because PGE would crowd out other market participants. If PGE were to provide rebates or make-ready infrastructure on the other hand, it will be much easier for PGE (and by extension, PGE's ratepayers) to discontinue supporting the market when it matures because PGE will not own or be responsible for any hardware or network services.

It also makes little sense for ratepayers to foot the entire bill for public charging stations, as they would if Electric Avenue were approved. EVSE vendors such as ChargePoint have demonstrated that private businesses, multi-unit dwelling owners, and municipalities want to invest in publicly available charging stations for their customers, tenants, and constituents. These prospective site-hosts would be even more likely to make these investments if PGE chipped in some ratepayer money in the form of a rebate or make-ready infrastructure to reduce the upfront cost and reduce the logistical hurdles of installation. By leveraging private investment from site-hosts, I expect that the $2.6 million in ratepayer money that PGE proposes to spend on Electric Avenue could support double or triple the number of charging stations if it were deployed in the form of a rebate program or a make-ready program. Such a program structure would also further the Legislative Assembly's goal of attracting private capital investments through transportation electrification programs.

Q: Do you believe Electric Avenue would be a prudent use of ratepayer funds under the traditional regulatory prudence standard?

A: No. SB 1547 also requires that the Commission consider whether a transportation electrification program would be a prudent use of ratepayer funds. Under traditional regulatory standards, a utility investment is prudent if it is consistent with the actions of a cautious, reasonable utility and if the investment is likely to be used and useful to ratepayers over the course of its useful life. As mentioned, the public charging market is in its nascent stages and is generally considered to be highly risky. Non-utility players in that market are typically focused exclusively on EV charging infrastructure and services and are often backed by venture capitalists. While it is true that SB 1547 contemplates that PGE may participate in the transportation electrification market, it may only do so if its participation is consistent with cautious, prudent utility practices. PGE has failed to demonstrate that it can ensure its proposed investments in Electric Avenue on behalf of ratepayers would be prudent or that the assets it would purchase would remain used and useful for the life of the program.

Q: How would Electric Avenue affect EV drivers?

In addition to these financial concerns for ratepayers, the Commission should consider the interests of EV drivers in PGE's service territory, the vast majority of which are likely to be PGE's customers. The transportation electrification industry is developing rapidly, with new and exciting products and network services being introduced continually. If PGE were allowed to pursue Electric Avenue, PGE would lock-in one low-cost technology through an unimaginative RFP process for years to come. Rather than accelerating transportation electrification, would-be EV drivers might be so uninspired by the lack of options that they forego electric transportation options altogether.

V. PGE SHOULD LOOK TO NATIONAL EXAMPLES OF THE APPROPRIATE ROLE FOR UTILITY INVOLVEMENT IN TRANSPORTATION ELECTRIFICATION

Q: What positions have other public utility commissions around the country taken with regard to utility proposals to own-and-operate EV charging stations?

A: Utility commissions across the country have reviewed this very issue and have overwhelmingly favored a more measured utility involvement in the EV infrastructure industry, rather than allowing utilities to own-and-operate charging stations without any opportunity for customer choice.

The California Public Utilities Commission (CPUC) has ruled strongly against the elimination of customer choice. PG&E's "Charging Network" and SCE's "Charge Ready" program[8] are designed around utility make-ready investment and customer choice, allowing with multiple vendors to compete and provide options to customers. SCE's Charge Ready program was closed in roughly 8 months because it was so popular it quickly became fully subscribed. Even SDG&E's "Power Your Drive" program, while allowing utility ownership (to implement a creative rate tariff), still allows for customer choice and any vendor's product that meets the requirements of the program is able to participate. The CPUC in all these cases has ruled that utility procurement of a single solution for the market will eliminate customer choice and competition, and therefore would eliminate the innovation that is desperately needed to improve the driver experience and truly accelerate transportation electrification.

[8] SCE Charge Ready – California Public Utilities Commission A.14-10-014: Southern California Edison Charge Ready Pilot Program

The Utah Public Service Commission recently approved a rebate program[9] that will likely deploy hundreds of both L2 and DCFC stations across Rocky Mountain Power's service territory. Because it is a rebate program, customers can choose the charging stations that best fit their particular needs and the needs of the drivers likely to visit the station.

Make-ready and rebate programs to incent the EV infrastructure market have been filed by National Grid[10] and Eversource[11] in Massachusetts, and by PG&E[12] and SCE[13] in California as part of their SB350 filing.

The Missouri Public Service Commission (PSC) also ruled against a similar program[14] in Missouri, in which Ameren filed an application to own and operate a network of DCFC stations. Similarly KCP&L's request[15] to fund the deployment and ownership of a network of 1,000 L2 charge stations was rejected both by the Missouri PSC and the Kansas Corporation Commission.

[9] Rocky Mountain Power: Utah Public Service Commission Docket No. 16-035-36: RMP STEP Phase III.
[10] National Grid: Massachusetts Department of Public Utilities (DPUC) 17-13, Petition of Massachusetts Electric Company and Nantucket Electric Company, each d/b/a National Grid, for Approval of its Electric Vehicle Market Development Program, and of its Electric Vehicle Market Development Program Provision, pursuant to G.L. c. 164, §§ 76, 94, and Acts of 2016, c. 448.
[11] Eversource: Massachusetts Department of Public Utilities (DPU) 17-05, Petition of NSTAR Electric Company and Western Massachusetts Electric Company, each doing business as Eversource Energy, Pursuant to G.L. c. 164, § 94 and 220 C.M.R. § 5.00 et seq., for Approval of General Increases in Base Distribution Rates for Electric Service and Approval of a Performance Based Ratemaking Mechanism.
[12] Pacific Gas & Electric: California Public Utilities Commission A. 17-01-022: Application of PG&E for Approval of its Senate Bill 350 Transportation Electrification Program.
[13] Southern California Edison: California Public Utilities Commission A. 17-01-021: Application of SCE for Approval of its 2017 Transportation Electrification Proposals.
[14] Ameren - Missouri Public Service Commission File No. ET-2016-0246, In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval Of a Tariff Setting a Rate for Electric Vehicle Charging Stations.
[15] KCP&L – Missouri Public Service Commission File No. ER-2016-0285, In the Matter of Kansas City Power & Light Company's Request for Authority to Implement a General Rate Increase for Electric Service.

VI. CONCLUSION AND RECOMMENDATIONS

Q: Please summarize your recommendations to the Commission.

A: My recommendations are the same as the recommendations that ChargePoint made in our Objections to the Stipulation that we filed on July 12, 2017. ChargePoint recommends and requests that the Commission reject the Stipulation's request for approval of the Electric Avenue program. ChargePoint further recommends and requests that the Commission provide direction to PGE on the appropriate role of the utility in transportation electrification efforts to guide PGE's future applications for TE programs.

Specifically, the Commission should instruct PGE that any future TE application for public charging must allow customers (i.e., site-hosts) to choose the type of charging stations and network services that best fits their needs, consistent with SB 1547's mandate that PGE's TE programs stimulate innovation, competition, and customer choice. The Commission should also instruct PGE that any future TE application should not involve PGE competing directly in the public charging market against private companies. Instead, PGE should leverage private investment and play a role in the market that only the utility can play, such as by providing rebates or make-ready infrastructure to charging station site-hosts.

Q: Does this conclude your Testimony Opposing the Stipulation?

A: Yes.

Docket No. UM 1810
Exhibit PAC/402

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 4

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-4. Please identify every utility commission or other regulatory proceeding, regardless of the state, in which Ms. Smart has testified regarding policies and programs relating to electric vehicle charging equipment and services. For each proceeding identified in response to this data request, please produce:

a. Copies of all written testimony Ms. Smart submitted;
b. Copies of transcripts of all hearings in which Ms. Smart testified; and
c. Copies of all orders or final decisions issued in such proceedings.

Response:

ChargePoint objects to subpart b of PAC-4. ChargePoint does not have in its possession the transcripts of the California Public Utilities Commission Docket No. A. 17-01-020 and Missouri Public Service Commission Case No. ET-2016-0246, in which Ms. Smart testified. Responding to this request would require ChargePoint to incur significant costs to purchase transcripts of the hearings in which Ms. Smart testified, and it is prejudicial and unfairly burdensome to require ChargePoint to incur such costs.

ChargePoint further objects to subpart b of PAC-4 with respect to OPUC Docket UM 1811. ChargePoint incurred significant cost to purchase a copy of the hearing transcript in Docket UM 1811, a cost that was split among other parties who were interested in receiving a copy of the transcript. Pacific Power is a party to Docket UM 1811 but did not, to the best of ChargePoint's knowledge, share in the cost of purchasing the transcript. If Pacific Power did share in the cost of the transcript, then Pacific Power already has a copy of this document. If Pacific Power did not share in the cost of the transcript, it is prejudicial and fundamentally unfair for Pacific Power to use the discovery process to obtain a copy a transcript rather than paying for it.

Notwithstanding and without waiving the above objections, ChargePoint responds as follows:

Ms. Smart provided testimony in California Public Utilities Commission Docket No. A. 17-01-020.

Ms. Smart also provided testimony in UM 1811 before the Oregon Public Utility Commission.

Ms. Smart also provided testimony in Missouri Public Service Commission Case No. ET-2016-0246.

a. Please see PAC-3, Attachment D. Please also see PAC-4, Attachments A through C.
b. Please see objections.
c. See PAC-4, Attachment D. Final orders have not yet been issued in the other cases in which Ms. Smart has testified.

Sponsor: Anne Smart
Sponsor of Objections: Scott Dunbar
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/403

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 5

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-5. ChargePoint 200/Packard 7:15-16 states: "[PacifiCorp's public charging pilot] clearly violates SB 1547's requirement that customers be allowed to choose charging equipment and services." Is it ChargePoint's contention that the existence of a utility-owned public charging station would preclude electric vehicle drivers from using a non-utility public charging station? If the answer is "yes", please identify and produce copies of all evidence supporting that contention.

Response:

No.

Sponsor: David Packard
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/404

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 6

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-6. Please identify and produce all studies, workpapers, analyses, internal memorandum, or other documents supporting the statement at ChargePoint/200, Packard 9:6-7 that "customer choice is the linchpin that determines whether a [EV charging] program will be successful or not."

Response:

The referenced statement is based on Mr. Packard's expertise and his 19 years of experience in the EV charging industry. He explains his reasons for reaching this conclusion throughout ChargePoint/200.

Sponsor: David Packard
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/405

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 7

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-7. Please identify and produce all studies, workpapers, analyses, internal memorandum, or other documents supporting the statement at ChargePoint/200, Packard 9:7-9 that "programs that a incorporates customer choice is more likely to create a self-sustaining market that can thrive without the need for constant investments of ratepayer money."

Response:

ChargePoint objects to PAC-7 because it incorrectly quotes Mr. Packard's testimony. The complete sentence at the referenced page and line numbers reads as follows: "By 'successful,' I mean that a program that incorporates customer choice is more likely to create a self-sustaining market that can thrive without the need for constant investments of ratepayer money."

Based on this correction, ChargePoint responds as follows:

The referenced statement is based on Mr. Packard's expertise and his 19 years of experience in the EV charging industry. He explains his reasons for reaching this conclusion throughout ChargePoint/200.

Sponsor: David Packard
Sponsor of Objection: Scott Dunbar
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/406

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 8

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-8. Please define "self-sustaining market" as that term is used at ChargePoint/200, Packard 9:8. Please identify and produce all evidence supporting that definition.

Response:

The complete sentence at the referenced page and line number reads as follows: "By 'successful,' I mean that a program that incorporates customer choice is more likely to create a self-sustaining market that can thrive without the need for constant investments of ratepayer money." As indicated by the complete sentence, by "self-sustaining market," Mr. Packard is referring to a market that can thrive without the need for constant investments of ratepayer money.

Sponsor: David Packard
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/407

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 9

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-9. Regarding the statements at ChargePoint/200, Packard 9:4-9, please identify all "successful" programs where "customer choice [was] the linchpin that determine[d] whether [the] program was successful or not."

a. For each program identified, please provide all evidence demonstrating that customer choice was the sole factor contributing to success of the program.
b. For each program identified, please identify the scope of customer choice available to customers (i.e., multiple private vendors, private vendors and utility-owned options, etc.).

Response:

ChargePoint objects to PAC-9 because it mischaracterizes Mr. Packard's testimony.

Notwithstanding and without waiving the above objection, ChargePoint responds as follows:

Mr. Packard did not state that customer choice was the "sole factor contributing to the success" of any given program, but rather that customer choice is the most important factor in determining whether a program is successful or not.

Sponsor: David Packard
Sponsor of Objections: Scott Dunbar
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/408

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 10

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-10. Regarding the statements at ChargePoint/200, Packard 9:4-9, please identify every public charging program that did not meet ChargePoint's definition of "successful" due to the existence of utility-owned charging stations. For each program identified, please provide all evidence demonstrating that the existence of utility-owned charging stations cause other public charging programs to be unsuccessful.

Response:

The referenced statement is based on Mr. Packard's expertise and his 19 years of experience in the EV charging industry. He explains his reasons for reaching this conclusion throughout ChargePoint/200.

Sponsor: David Packard
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/409

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 11

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-11. ChargePoint/200, Packard/24:8-11 states "EVSE vendors such as ChargePoint have demonstrated that private businesses, multi-unit dwelling owners, and municipalities want to invest in publicly available charging stations for their customers, tenants, and constituents." Please identify the following for each city and town in Oregon:

a. The number of publicly available ChargePoint charging ports purchased, and the amount of investment in ChargePoint equipment (in dollars) made by each of the following: (i) private businesses; (ii) multi-unit dwelling owners; and (iii) municipalities or other government entities.
b. The total number of publicly available ChargePoint charging ports, separately for Level 2 and DC Fast Chargers, and the total investment (in dollars) by site hosts in ChargePoint equipment and services at these sites.
c. The number of pending requests for publicly available ChargePoint charging ports made by either private businesses; multi-unit dwelling owners and municipalities.

Response:

ChargePoint objects to PAC-11. This request seeks information that is confidential and proprietary to ChargePoint, the release of which would cause significant competitive harm to ChargePoint. Pacific Power seeks the Commission's authorization to begin competing with ChargePoint through its Public Charging program, and it is highly burdensome and prejudicial to require ChargePoint to provide confidential information to a potential competitor. ChargePoint further objects to PAC-11 because the confidential information that it seeks is protected by confidential customer agreements between ChargePoint and its customers, and ChargePoint could incur legal liabilities for breaching confidential customer agreements. ChargePoint further objects to PAC-11 because it seeks information that is not relevant to this proceeding.

Notwithstanding and without waiving the above objection, ChargePoint has 11 publicly available DC Fast Chargers and 181 publicly available Level 2 charging ports in Oregon.[1]

Sponsor: David Packard
Sponsor of Objection: Scott Dunbar
Date: October 20, 2017

[1] DOE Alt Fuels Database: http://bit.ly/2yub5CH

Docket No. UM 1810
Exhibit PAC/410

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 12

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-12. Please identify and produce all studies, workpapers, analyses, internal memorandum, or other documents supporting the statement at ChargePoint/200, Packard 10:14-15 that the proposed public charging pilot "can be expected to hamper transportation electrification in Pacific Power's service territory, rather than accelerate it."

Response:

The referenced statement is based on Mr. Packard's expertise and his 19 years of experience in the EV charging industry. He explains his reasons for reaching this conclusion throughout ChargePoint/200.

Sponsor: David Packard
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/411

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 13

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-13. Please identify and produce all studies, workpapers, analyses, internal memorandum, or other documents supporting the statement at ChargePoint/200, Packard 14:6-8 that "prospective site-hosts who may be considering investing in publicly available charging stations would be much less likely to do so when they learned that Pacific Power was providing charging stations …."

a. In your response, please identify specific instances where a prospective site host declined to develop a public charging station due to the existence of utility-owned charging stations.
b. Please identify and produce all workpapers, analyses, internal memorandum, or other documents relating to your response to subpart (a).

Response:

ChargePoint objects to PAC-13. This request seeks information related to ChargePoint's customers and potential customers. This information is confidential and proprietary to ChargePoint, the release of which would cause significant competitive harm to ChargePoint. ChargePoint further objects to PAC-13 because Pacific Power seeks the Commission's authorization to begin competing with ChargePoint through its Public Charging program, and it is highly burdensome and prejudicial to require ChargePoint to provide confidential information to a potential competitor.

Notwithstanding and without waiving the above objections, ChargePoint responds as follows:

The referenced statement is based on Mr. Packard's expertise and his 19 years of experience in the EV charging industry. He explains his reasons for reaching this conclusion throughout ChargePoint/200.

Sponsor: David Packard
Sponsor of Objections: Scott Dunbar
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/412

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 14

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-14. Please identify and produce all studies, workpapers, analyses, internal memorandum, or other documents supporting the statement at ChargePoint/200, Packard 14:9-12 that "[e]lectric vehicle service equipment (EVSE) vendors would also be less likely to invest in their own publicly available charging stations when they learned that Pacific Power was providing charging stations."

a. In your response, please identify specific instances where a EVSE declined to develop a public charging station due to the existence of utility-owned charging stations.
b. Please identify and produce all workpapers, analyses, internal memorandum, or other documents relating to your response to subpart (a).

Response:

ChargePoint objects to PAC-14. Because ChargePoint is an EVSE vendor, this request seeks information regarding ChargePoint's business and investment decisions. This information is confidential and proprietary to ChargePoint, the release of which would cause significant competitive harm to ChargePoint. Pacific Power seeks the Commission's authorization to begin competing with ChargePoint through its Public Charging program, and it is highly burdensome and prejudicial to require ChargePoint to provide confidential information to a potential competitor.

ChargePoint further objects to PAC-14 because ChargePoint does not have access to the confidential business and investment decisions of other EVSE vendors.

Notwithstanding and without waiving the above objections, ChargePoint responds as follows:

The referenced statement is based on Mr. Packard's expertise and his 19 years of experience in the EV charging industry. He explains his reasons for reaching this conclusion throughout ChargePoint/200.

Sponsor: David Packard
Sponsor of Objections: Scott Dunbar
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/413

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 15

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-15. Please identify and produce all studies, workpapers, analyses, internal memorandum, or other documents supporting the statement at ChargePoint/200, Packard 14:9-19-20 that "it is doubtful that private investment would materialize to meet [the demand for additional publicly available charging stations] if the Commission approves the Public Charging program."

Response:

The complete sentence quoted reads as follows: "Increasing the number of EV drivers will increase demand for additional publicly available charging stations, but it is doubtful that private investment would materialize to meet that demand if the Commission approves the Public Charging program."

The referenced statement is based on Mr. Packard's expertise and his 19 years of experience in the EV charging industry. He explains his reasons for reaching this conclusion throughout ChargePoint/200.

Sponsor: David Packard
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/414

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 16

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-16. ChargePoint/200, Packard/15 states that "Pacific Power's participation in the publicly available charging station market would severely distort and hamper the market over the medium- and long-term…."

a. Please identify all instances where the presence of utility-owned charging stations has "severely distort[ed] and hamper[ed] the [public charging] market over the medium- and long-term."

b. Please identify and produce all workpapers, analyses, internal memorandum, or other documents relating to your response to subpart (a).

Response:

The referenced statement is based on Mr. Packard's expertise and his 19 years of experience in the EV charging industry. He explains his reasons for reaching this conclusion throughout ChargePoint/200.

Sponsor: David Packard
Date: October 20, 2017

Docket No. UM 1810
Exhibit PAC/415

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

ChargePoint Response to PacifiCorp Data Request 17

December 2017

ChargePoint Data Request Responses to Pacific Power

PAC-17. Is it ChargePoint's contention that the existence of 28 DCFCs and seven Level 2 utility-owned chargers would cause Pacific Power to "dominate and control the [public charging] market" as that phrase is used at ChargePoint/200, Packard/17:14? If the answer is "yes", please identify and produce copies of all evidence supporting that contention.

Response:

The complete sentence quoted reads as follows: "After the RFP is over, there would be little reason for EVSE vendors to continue participating in Pacific Power's service territory because Pacific Power would then dominate and control the market."

As indicated in the complete sentence, it is ChargePoint's contention that Pacific Power would dominate and control the public charging market within Pacific Power's service territory if the Public Charging program were approved.

Sponsor: David Packard
Date: October 20, 2017