



BEFORE THE PUBLIC UTILITY COMMISSION OF OREGON

UM 1810

In the Matter of

PacifiCorp

Application for Transportation

Electrification Programs

REPLY TESTIMONY OF

FORTH (FORMERLY KNOWN AS DRIVE OREGON)

May 24, 2017

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DRIVE OREGON)

1. INTRODUCTION

My name is Jeff Allen. My title is Executive Director of Forth, which was formerly known as Drive Oregon. My business address is 1732 NW Quimby Street, Suite 240, Portland OR 97209. My qualifications include a BA with High Honors from the University of Michigan and a Master of Public Policy Degree from UC Berkeley. I have worked in the energy and environmental field for over 25 years, including ten years as Executive Director of the Oregon Environmental Council, and I currently serve on the board of directors of PECE.

I have served as Executive Director of Forth (which was originally known as Drive Oregon) since 2011. Forth is a non-profit trade association working to accelerate the growth of the electric and "smart" mobility industry and promote greater adoption of these technologies. Forth has over 120 members representing automakers, EVSE suppliers, industry partners, utilities, local governments, nonprofits and many other stakeholders within the transportation electrification "ecosystem." (A complete membership list is included as Forth Exhibit 101.) Forth is recognized as a global leader on electric mobility issues; has designed and implemented several leading demonstration and pilot projects; has been the nation's leading recruiter of workplace charging

partners through the USDOE Workplace Charging Challenge for three years running; and organizes the nation's leading annual conference on the subject, the EV Roadmap Conference. I have been invited to speak on transportation electrification issues in multiple states, several European countries, and as far away as South Korea and Kuwait. Forth was actively involved in the passage of SB 1547 in 2016, which recognized the important role for electric utilities in advancing transportation electrification. We have been in active communication with PacifiCorp as it developed its proposed programs, and have worked to involve and inform our members as well.

We support this proposal and encourage the Commission to approve it. Our testimony covers the following areas:

1. A brief discussion of SB 1547 and its mandate that utilities accelerate transportation electrification.
2. A comparison of PacifiCorp's proposal to those by other utilities, emphasizing its modest size and pilot nature.
3. A specific analysis of the Public Charging Pilot.
4. A specific analysis of the Outreach and Education Pilot.
5. A specific analysis of the Demonstration and Development Pilot.

2. SB 1547 Requires a Focus on Transportation Electrification

It is worthwhile to revisit the findings of Section 20 of SB 1547. We note that the Legislative Assembly found, among other things, that transportation electrification is "...necessary" and "...requires that electric companies increase access to the use of electricity as a transportation fuel." The clear language of SB 1547 requires utilities to submit plans "...for programs to accelerate transportation electrification." There are a number of provisions elsewhere in the

statute that the Commission is directed to consider when reviewing these plans, most notably six specific criteria; but ***the fundamental, primary purpose of these plans should be to accelerate transportation electrification.*** As the Commission reviews this proposal, the focus should be on its ability to achieve that goal. Other factors, including the six outlined criteria (grid impacts, innovation, prudence, etc.) should be considered as secondary evaluation criteria to help shape the best possible plan to accelerate transportation electrification. However, just as 1547 mandated phasing out the use of coal and increasing the use of renewable energy, the legislation clearly mandates that utilities work to accelerate transportation electrification.

Oregon is one of nine states that adopted California's ZEV Mandate, which requires rapidly increased sales of electric vehicles within a very short timeframe. In 2013, Oregon's Governor joined the governors of seven other ZEV states to sign a Memorandum of Understanding that sets the goal of having 3.3 million electric vehicles on collective roads by 2025. Oregon's share is over 140,000 vehicles, which would require a minimum of 14,000 to 26,000 Level 2 workplace and public chargers according to the National Renewable Energy Laboratory 2014 Assessment.¹ Oregon is currently only about 10% of the way to these targets. PacifiCorp's service territory lags even further behind, as the company amply documents in its proposal.

3. PacifiCorp Proposal is Quite Modest

In this context, PacifiCorp has proposed a modest portfolio of pilot projects. Other utilities across the country have proposed thousands of charging stations. Even a smaller utility like Avista is planning for more stations than PacifiCorp. The utility's proposed total cost of approximately \$4.64 million is also modest compared to other utility plans around the country.

¹ National Renewable Energy Laboratory, *California Statewide Plug-In Electric Vehicle Infrastructure Assessment*, May, 2014; Needed infrastructure based on NREL assessment scaled from 1 million PEVs to 140,000 PEVs.

We understand the utility's desire to move cautiously, given that this is new legislative authority. However, we do not believe this plan does enough to meet the statutory goals in SB 1547 to "accelerate transportation electrification" and "increase access to the use of electricity as a transportation fuel." These pilots will not put us on a path to 140,000 electric vehicles by 2025. We hope and expect that this initial filing will be followed fairly soon by updates proposing additional and expanded programs to accelerate transportation electrification.

4. Public Charging Pilot Meets Regional Need

PacifiCorp proposes to install seven "pods" of fast chargers within its service territory, and we support this proposed \$1.9 million pilot. PacifiCorp's service territory clearly needs more charging infrastructure, as is well documented in their filing. In particular, while major highway corridors are receiving limited attention, options are limited for residents in communities outside the Portland metropolitan region.

We agree with PacifiCorp's finding that highly visible dual standard multiport fast charging is the most critical form of EVSE to accelerate transportation electrification. The current Electric Avenue developed by Portland General Electric has become a model for the country. We know from this experience and others, such as the West Coast Electric Highway, that high visibility, clearly priced fast charging with multiple ports helps drive sales and encourage EV owners to drive more electric miles. This model is now being replicated by Electrify America as part of their national infrastructure investment in key corridors, and elsewhere around the country. We believe that PacifiCorp's proposal will create a much needed, highly visible, backbone of fast charging that will help drive rapidly increasing electric vehicle sales in the region. Our previous research and analysis highlights the importance of DC fast charging and the need for additional

such charging. In fact, we have previously presented papers on the importance and impact of such fast charging at international conferences in Montreal and Brussels.²

We note that significant increases in fast charging are particularly critical to support car sharing services such as BMW ReachNow that want to expand the number of electric vehicles in their fleet; taxi services; and transportation network companies such as Uber and Lyft. In fact, we recently announced a partnership with PGE and Uber to dramatically expand EV use by Uber drivers – but that expansion depends in large part on expanded fast charging. Carshare and rideshare vehicles must remain in operation for as many hours as possible to be profitable. If such services are going to expand to PacifiCorp's more rural service territory in coming years, fast charging will be critical.

We understand that concerns have been raised about utility ownership of charging infrastructure. However, we support PacifiCorp's ownership and operation proposal within the context of this proposal. As outlined in the enclosed letter signed by several of our charging company members (Included as Forth Exhibit 102) there are many good reasons to support this proposal. Most notably, creating a highly visible backbone of fast charging will help drive and support increased electric vehicle sales, which will ultimately be critical to the business model for all EVSE providers. Furthermore, the utility's plans for an open and competitive RFP process ensures innovation, competition, and customer choice. We also believe that PacifiCorp's largely rural service territory makes the market case for charging more challenging, while also making fast charging more critical for longer distance travel.

As PacifiCorp develops its future pricing tariffs for DCFC, we encourage the utility to work closely with its selected vendor to set prices that encourage use of the equipment without

² See e.g. *Expanding the Fast Charging Network*, presented at EVS29 Symposium, Montréal, Québec, Canada, June 19-22, 2016.

undercutting other market participants. We also caution that the use of peak pricing should be cautious and carefully evaluated, particularly for DCFC. In more urban settings, users may choose DCFC for convenience or because they live in apartments, and have some flexibility. However, in many cases, particularly along corridors, drivers must use fast charging to enable longer trips. In most cases, we predict drivers will have limited flexibility and will simply be forced to pay higher time of use rates. This will negatively impact the economics of driving electric without producing grid benefits. We suggest PacifiCorp carefully monitor and evaluate any such pricing systems; emphasize peak pricing for Level 2 charging, not DCFC; and consider alternatives such as backup energy storage at fast charging pods.

5. Outreach and Education Pilot Will Accelerate Transportation Electrification

PacifiCorp rightly points out that lack of awareness is a major barrier to electric vehicle adoption, even in California and in urban Portland. For example, consumer focus groups conducted annually by FORTH at our EV Roadmap Conference graphically demonstrates the awareness gap, and multiple surveys have confirmed it. We agree with PacifiCorp that outreach and education is one of the most impactful and cost-effective strategies to accelerate transportation electrification. For example, the Plug-In Electric Vehicle Collaborative has supported a number of ride and drive events in California and has found between 9% and 15% of participants went on to purchase or lease an electric vehicle. (See letter of support, FORTH Attachment 103). Automakers also agree that ride and drive events and other consumer engagement efforts are critical. (See letter of support, FORTH Attachment 104). Just as energy efficiency and “Blue Sky” programs also benefit from extensive community outreach and education efforts, so too will transportation electrification; we support this proposed \$1.1 million pilot.

We look forward to partnering with PacifiCorp through our own Go FORTH Electric Showcase project, funded by a three year grant of \$1 million from the US Department of Energy. However,

it is important to note that our work is not a substitute for utility engagement in this space, any more than efforts by solar or energy efficiency nonprofits obviate the need for utility investment in those areas. In particular, the Showcase project was planned assuming that utilities and other partners in the region would provide a minimum 1:1 match, would cover an increasing share of program costs over time, and would be able to fully support the effort financially by the end of three years when USDOE funding ends. Equally important, utilities like PacifiCorp have a unique relationship as a “trusted advisor” to their customers, who rely on the utility for credible information about electricity rates, technology, and benefits.

We also support the company’s work to make consumers aware of the benefits of charging off-peak. However, we want to caution that such efforts should be simple, voluntary, and incentive-based. Electric vehicles are already a more complicated and intimidating choice for many drivers, and we need to avoid making that problem worse.

6. Demonstration and Development Pilot Encourages Innovation

Forth agrees with PacifiCorp that the transportation electrification market is rapidly evolving, and that this rapid change is constantly creating new opportunities. For example, the Hacienda CDC project we developed with utility support would not have been possible two years ago, before the ready availability of used electric vehicles and peer to peer carsharing applications. New vehicle and charging technologies are entering the market regularly, from transit buses to school buses to heavy equipment such as garbage trucks. With this in mind, we find the utility’s proposal for a \$1.7 million Demonstration and Development Pilot particularly innovative and worthy of support. We would suggest that the utility refine its project selection criteria – for example by adding a point scoring system – and provide even greater emphasis on innovation and service to underserved communities as it does so. We would also suggest that PacifiCorp clarify that a multi-unit dwelling, such as an apartment building, could qualify as

“nonresidential” in the context of this program. However, we can support these clarifications happening later and in consultation with the grant management consultant chosen by PacifiCorp, as the utility suggests.

We have some suggestions and concerns about eligible costs and expenses for the grant program, however. First, while we understand the reasoning behind limiting grants to “hard” costs for charging equipment, these costs are often a small part of overall project management and implementation. In the case of the Hacienda project, for example, EVSE purchase and installation will amount to perhaps 10-20% of the project budget. We believe that project management, promotion, evaluation, vehicles, etc., are likely to be larger costs. Furthermore, if the utility pays only for EVSE, not 100% of those costs, it may reduce incentives to make efficient EVSE purchase and installation decisions. One approach to increase flexibility may be for PacifiCorp to set a maximum grant amount equivalent to the projected EVSE cost, but not require funds be earmarked for equipment. We also suggest that grants do not require matching funds, but that match be used as a rating factor in application review. If match is considered, we strongly encourage the utility to allow staff time and other “soft” and in-kind costs to be counted toward this match.

We note PUC staff's suggestion that grants require applicants to return the value of Clean Fuels Program credits to PacifiCorp. We believe this could be a substantial administrative burden for applicants, or could unduly complicate overall project planning and financial relationships with third party companies providing and managing EVSE, and are unlikely to create major returns for utility customers, particularly over the proposed pilot period. The Clean Fuels Program is early and credit values have not been established. We suggest that the company ask about use and disposition of Clean Fuels Program credits as part of its evaluation of project financials, but

not require their redirection to the utility. The pilot should yield information that would help determine whether to adjust this requirement in the future.

LIST OF EXHIBITS

FORTH 101	List of Forth members
FORTH 102	Letter signed by multiple EVSE companies
FORTH 103	Letter from Plug-In Electric Vehicle Collaborative
FORTH 104	Letter from General Motors
FORTH 105	Letter from Center for Sustainable Energy



UM 1810 REPLY TESTIMONY OF FORTH (FORMERLY KNOWN AS DRIVE OREGON)

FORTH 101



Forth Members

ABB Inc.
Advanced Energy
Alliance of Automobile Manufacturers
America Honda Motor Co.
AMTEK Research
Apparent Energy, Inc.
Arcimoto LLC
Atlas Public Policy
Atomic Auto
BMW of North America
Brammo
Brazell & Company
Burns & McDonnell
BYD
CarCharging Group
Cascade Systems Technology
Case Forensics Corporation
Center for Sustainable Energy
ChargeHub
ChargePoint
City of Ashland
City of Hillsboro
City of Portland
CleanFuture
Clean Power Research
CLEAResult
Columbia River Public Utility District
Commuter Cars
Cynergy E-Bikes
D+R International
Efacec
Electric Vehicle Options, LLC
Electrification Coalition
Eluminocity U.S., Inc.
Emerald People's Utility District

EMI Consulting
Energy Systems Group, Oregon State University
College of Engineering
Enhabit
Eugene Water & Electric Board (EWEB)
EV 4 Oregon
EV Connect
EVgo
EV Supercars
EVSE LLC
Fiat Chrysler Automobiles LLC
FleetCarma
Ford Motor Company
Gabel Associates
General Motors
Greenlots
Hawthorne Auto Clinic
IBEW Local 48
Jaguar Land Rover
KersTech Vehicle Systems
Linn-Benton CC
Mahindra GenZe
Mast Collaborative
McCoy Russell LLP
Mentor Graphics Corporation
Mercedes-Benz
Nissan North America
Northwest Energy Efficiency Alliance (NEEA)
OnTo Technology
OpConnect, LLC
Oregon Automobile Dealers Association
Oregon Department of Administrative Services,
Fleeting & Parking
Oregon Electric Vehicle Association (OEVA)
Ornelas Enterprises

P3 Group
Pacific Power
PlugShare / Recargo
Portland Development Commission
Portland General Electric
Premium-USA
Railplane Inc.
ReachNow
Research Into Action
Rinehart Motion Systems
SemaConnect Inc.
Sierra Club – Oregon Chapter
Shorepower Technologies
Tacoma Power
Telefonix
Thorn Run Partners
Toyota
Trimet
Uber Technologies
Volkswagen Group of America
Workhorse

Reciprocal Members

CALSTART
Central Lincoln PUD
CleanTech Alliance (WA)
Climate Solutions
Environment Oregon
Lane Regional Air Protection Agency
Natural Resources Defense Council (NRDC)
Northwest Environmental Business Oregon
NW Energy Coalition
Oregon Department of Environmental Quality
Oregon Entrepreneurs Network
Oregon Environmental Council
Oregon Society of Automotive Engineers (SAE)

Oregon Solar Energy Industries Association
Plug In America
Smart Grid Northwest
Solar Oregon
Westside Transportation Alliance



UM 1810 REPLY TESTIMONY OF FORTH (FORMERLY KNOWN AS DRIVE OREGON)

FORTH 102



May 24, 2017

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

Re: UM 1810 PacifiCorp Transportation Electrification Plan

Dear Commissioners:

As you know, Forth, recently Drive Oregon, represents member companies that produce and manage electric vehicle charging and service equipment (EVSE). We are writing in support of PacifiCorp's proposed Transportation Electrification Plan under UM 1810 and the fundamental purpose of the plan to accelerate transportation electrification.

A big problem facing the electric vehicle market today, is that most consumers don't know these vehicles exist. Electric utilities have a long history of educating their customers about the benefits of electric appliances, and experience has shown that an actively engaged utility will help accelerate electric vehicle sales. The modest proposal highlights the importance of DC fast charging and the need for additional such charging.

In particular, we want to address concerns about PacifiCorp's proposal to own EVSE at a limited number of publicly available locations as they propose to construct up to seven charging "pods" with configurations similar to Portland General Electric's Electric Avenue. We understand that PacifiCorp will first identify suitable sites in the public right-of-way (e.g., curbside) to enhance visibility and convenience for drivers and to establish partnerships with local governments. If suitable locations cannot be identified, then PacifiCorp will investigate opportunities to site the charging "pods" on its own property.

We support PacifiCorp's ownership and operation proposal within the context of the proposal for a number of reasons:

1. The most important factor in our industry's success and continued innovation is the number of electric vehicles on the road. We believe that PacifiCorp's proposal to partner with local governments via their existing franchise agreements will create increased visibility and a much-needed backbone of fast charging that will help drive electric vehicle sales in the PacifiCorp territory.
2. PacifiCorp is proposing an open and competitive RFP process that will ensure innovation, competition, and customer choice.

3. As PacifiCorp develops its future pricing for DCFC, we encourage the utility to work closely with its selected vendor to set prices that encourage use of the equipment without undercutting other market participants.
4. It is critically important that the region provide a reliable foundation of fast charging in its largely rural service territory to support growing electric vehicle adoption in the region as well as longer distance travel.

PacifiCorp brings a unique set of partnerships, skills and patience to the market that will help grow the business for all competitors. We ask that Forth make these arguments on our behalf before the Public Utility Commission of Oregon, and we would be happy to provide additional information or insight as the process moves forward.

Sincerely,

Michael Rockwood,
General Manager
Eluminocity

Jordan Ramer
President
EV Connect

Heather Flanagan
Marketing Manager
ABB Inc.

Dexter Turner
President & CEO
OpConnect, LLC

Eric Smith
NorthWest, Hawaii, BC Regional Manager
SemaConnect

Phil Carlin
Executive Vice President
Control Module Inc. (parent company of EVSE LLC)

Marc Voorhoeve
Western Regional Manager – EV Chargers
Efacec USA, Inc.

Jeff Kim
President & CEO
Shorepower Technologies

Thomas Ashley
Vice President, Policy
Greenlots



UM 1810 REPLY TESTIMONY OF FORTH (FORMERLY KNOWN AS DRIVE OREGON)

FORTH 103



UM 1810 REPLY TESTIMONY OF FORTH (FORMERLY KNOWN AS DRIVE OREGON)

FORTH 104



May 24, 2017

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

Re: UM 1810 PacifiCorp Transportation Electrification Program Application

Commission:

General Motors (GM) supports Forth's (formerly Drive Oregon) comments regarding UM 1810 PacifiCorp's Transportation Electrification Plan as we continue to work with Oregon as one of nine states that adopted California's ZEV mandate, which requires rapidly increased sales of electric vehicles (EVs) within a very short timeframe.

GM has a strong commitment to transportation electrification and new mobility systems. GM is a leader in the commercialization of low and zero-emission technologies, as evident with the introduction of the Chevrolet Bolt EV, a long-range and affordable vehicle and the Chevrolet Volt, the best-selling plug-in EV on the road. Our commitment includes working closely with stakeholders, including electric utilities, to ensure a successful, integrated system.

While a more ambitious proposal could have been provided, GM believes PacifiCorp's proposal meets the fundamental purpose of the plan, to accelerate transportation electrification. Looking ahead, transportation electrification has the potential to provide widespread benefits for the grid, and active engagement by the utilities can help capture these benefits for all customers. This initial plan is one step in that direction.

- **GM supports PacifiCorp's Outreach and Education Pilot:** Many consumers are still unfamiliar with electric vehicle technology, charging systems and costs. We agree with PacifiCorp that outreach and education is an important strategy to accelerate transportation electrification. PacifiCorp is well-positioned to communicate with customers about electric vehicles, charging, and related issues. Technical assistance for non-residential customers considering the installation of charging infrastructure is also a natural role for the utility.
- **GM sees value in encouraging innovation:** At this early stage in the market, demonstrations and experimentation are needed to drive innovation, find new solutions, and collect valuable data. PacifiCorp's Demonstration and Development pilot can facilitate this. We generally agree with Forth's specific recommendations around project criteria, multi-unit dwellings, and Clean Fuels Program credits. There are many promising opportunities. For example, programs that seek to innovate and serve underserved communities, such as Forth's Hacienda CDC project, which highlight used electric vehicles and peer-to-peer car-sharing applications can be important opportunities to learn and expand the market. Through our mobility brand, Maven, GM



is also working on a variety of promising shared-used models that enable public infrastructure and could support vehicle-grid integration.

- **GM reinforces the need for more charging within PacifiCorp's service territory.** GM supports PacifiCorp's \$1.9M proposal to install seven "pods" of fast chargers within its service territory. Charging infrastructure is a critical enabler for transportation electrification. A complete network requires charging access at home, workplace, and public locations. PacifiCorp's fast charge "pod" proposal are an important piece of this overall system that should help enable long-distance travel and change customer perceptions.

The above plan is one of many needed steps that Oregon can take to help meet its ambitious requirements for electric vehicle sales. Additional consumer-facing policies and programs are needed to encourage consumer adoption and GM is committed to continuing to work with stakeholders to create and implement such programs. GM encourages the Commission to approve PacifiCorp's proposed plan as it aligns with the goals and complementary investments to establish a long-term sustainable EV market.

Sincerely,

A handwritten signature in black ink, appearing to read "Alexander Keros".

ALEXANDER KEROS, Manager, Public Policy
General Motors LLC
300 Renaissance Center, Detroit, MI 48225
313-665-2583
alexander.keros@gm.com



UM 1810 REPLY TESTIMONY OF FORTH (FORMERLY KNOWN AS DRIVE OREGON)

FORTH 105



May 23, 2017

Public Utility Commission of Oregon
P.O. Box 1088
Salem, OR 97308-1088

RE: Docket No. UM 1810 – PacifiCorp Transportation Electrification Outreach and Education Pilot Program

Dear Chair Hardie,

On behalf of the Center for Sustainable Energy® (CSE; energycenter.org), we are pleased to provide this letter of support for PacifiCorp's (d/b/a Pacific Power) Transportation Electrification Outreach and Education Pilot Program, which is one component of the company's initial efforts to accelerate transportation electrification in its Oregon service area.

CSE is a 501(c)(3) nonprofit, mission-driven organization whose goals are to transform and advance the market for clean and sustainable energy. As the administrator for electric vehicle (EV) rebate programs in four states – California, Massachusetts, Connecticut, and New York – CSE has an in-depth understanding of the value that outreach and consumer engagement events have on developing EV markets. CSE has been employing these strategies in each of the markets we support, and our outreach has been directed at both consumers and dealers. A key component of our educational activities is hosting free "Ride and Drive" events where consumers can test-drive EVs to familiarize themselves with this technology. CSE has found that "Ride and Drive" events are crucial in garnering vehicle sales.

In addition to the state programs, CSE also spearheaded the Experience Electric promotional campaign – in partnership with government and nonprofit organizations – in the San Francisco Bay Area to raise awareness of the many benefits of and incentives for driving EVs. By incorporating customer surveys into campaign events, we were able to measure the positive impact that test-drives have on perceptions of EVs. Post-test drive, approximately 70% of the survey respondents indicated that they were more likely to buy an EV¹. In addition, 11% purchased or leased an EV within a few months of their Experience Electric test drive.² Of this group, 76% stated that the test drive impacted their decision to purchase or lease an EV³.

CSE knows firsthand that consumer education and engagement are critical in supporting EV uptake and transportation electrification, and we are glad to see that Pacific Power is including a proposal that

¹ Experience Electric #Thebetterride: Campaign Report, April 2016, https://energycenter.org/sites/default/files/docs/nav/transportation/experience-electric/MTC_EXEL_Final_Report.pdf, (May 22, 2017).

² Ibid.

³ Ibid.



May 23, 2017

prioritizes consumer engagement and outreach. The proposal has the central components needed to effectively drive the market, including direct communication with consumers, online tools and resources, and partnership at community events. We look forward to the implementation of this pilot program and the impact it will have on customer awareness of vehicle electrification options.

CSE thanks you for your consideration of our comments.

Respectfully Submitted,



Sachu Constantine
Director of Policy
Center for Sustainable Energy®



Hanna Grene, LEED AP+
Associate Director, Government Affairs
Center for Sustainable Energy®

cc: Commissioner Stephen Bloom
Commissioner Megan Decker
Natasha Siores, Manager, Regulatory Affairs, Pacific Power
R. Bryce Dalley, Vice President, Regulation, Pacific Power