ORDER NO. 17 172

ITEM NO. 3

PUBLIC UTILITY COMMISSION OF OREGON
STAFF REPORT
PUBLIC MEETING DATE: May 16, 2017

REGULAR X **CONSENT** ____ **EFFECTIVE DATE** **June 1, 2017**

DATE: May 8, 2017

TO: Public Utility Commission

FROM: Max St. Brown MSB

THROUGH: Jason Eisdorfer and Marc Hellman

SUBJECT: PACIFIC POWER: (Docket No. ADV 485/Advice No. 16-020) Schedule 45 – Public DC Fast Charger Delivery Service Optional Transitional Rate.

STAFF RECOMMENDATION:

Staff recommends the Commission approve Pacific Power's (PAC or Company) proposed Schedule 45 and Schedule 745 tariffs, as described in PAC's April 14, 2017 Advice Filing 16-020 replacement sheets, effective for service on and after June 1, 2017.

DISCUSSION:

Issue

Whether the Commission should approve PAC's new Schedule 45/745 and accompanying rates.

Applicable Rule or Law

The Company's filing involves tariff sheets governed by ORS 757.205, ORS 757.210, and OAR 860-022-0025. The Commission reviews tariffs filed under ORS 757.205 and 757.210 to determine whether they are fair, just, and reasonable. OAR 860-022-0025 provides that utilities may make tariff changes by filing an entirely new tariff or by filing revised sheets that refer to the tariff sheets on file. Filings that make any change in rates, tolls, charges, rules, or regulations must be filed with the Commission at least 30 days before the effective date of the changes. ORS 757.220. Upon receipt of a proposed tariff by a utility, the Commission may approve the tariff or suspend it for

further investigation to determine whether the rate or schedule is fair, just and reasonable.

Background

On December 27, 2016, PAC filed this advice filing with the Commission for approval of a new schedule, Schedule 45/745, and accompanying rates. PAC explains in its initial filing that the purpose of this particular tariff is to accelerate transportation electrification by offering a new, optional transitional rate for electric vehicle direct current (DC) fast chargers. "The tariff is intended to complement Pacific Power's proposed transportation electrification pilot program proposals [consistent with the directive of SB 1547's Transportation Electrification Programs Section 20] but is not a necessary component of the pilot program proposals."[1] Proposed Schedule 45 is applicable only to nonresidential customers offering public DC fast charging service for electric vehicles, for example, to PAC customers that are "site hosts" such as ChargePoint Inc. (ChargePoint).[2] Additionally, in order to be eligible for the tariff, customers must be separately metered and have a load size less than one MW.[3]

Individually metered DC fast chargers would typically currently be served under Schedule 28, General Service 31 to 200 kW.[4] The proposed Schedule 45/475 replaces a portion of the demand charges in Schedule 28 with on-peak energy charges. At PAC's public stakeholder workshops following SB 1547, "various parties indicated that demand charges are a significant impediment to maintaining and expanding the development of public DC fast charging stations at current utilization levels."[5] In response to stakeholder input, PAC has proposed new Schedule 45/475, which would result in lower bills for DC fast charger hosts – sometimes savings greater than 59 percent off of current rates.[6] The lower bills result from moving a portion of demand charges into on-peak energy charges instead. PAC proposed that each year the demand charge discount be reduced by 10 percent, until after 9 years, all customers have transitioned back onto Schedule 28 rates.[7]

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[1] See Appendix A in PAC'se initial application in UM 1810 at 1. Available at: http://edocs.puc.state.or.us/efdocs/HAA/um1810haa152559.pdf
[2] Schedule 745 parallels Schedule 45 but is for nonresidential customers who receive electricity from an Electric Service Supplier.
[3] See PAC's initial Advice No. 16-020 filing at 2-3.
[4] *Id.* at 4.
[5] See PAC's initial Advice No. 16-020 filing at 3.
[6] See PAC's replacement sheets for Advice No. 16-020 filed on April 14, 2017 at 3. Available at: http://edocs.puc.state.or.us/efdocs/UAB/adv485uab161812.pdf. Where $254 ÷ $427 = 59 percent.
[7] *Id.* at 2.

After reviewing PAC's initial filing, Staff had several questions. Staff issued thirteen IRs and held informal discussions with the Company regarding Staff's questions about the filing and concerns with the structure of the tariff. As a result of Staff's questions and concerns, PAC filed a revised tariff in this docket on April 14, 2017. Staff reached out to ChargePoint to see if it had any concerns with the revised tariff or if it supported the revisions. ChargePoint indicated that it preferred PAC's former proposed tariff and might oppose the revised tariff. After learning this information, Staff asked the Company to extend the requested effective date of the supplemental filing (revised tariff) to allow ample time for ChargePoint to file supplemental written comments and also to ensure that ChargePoint could attend the regular public meeting at which the tariff would be discussed.

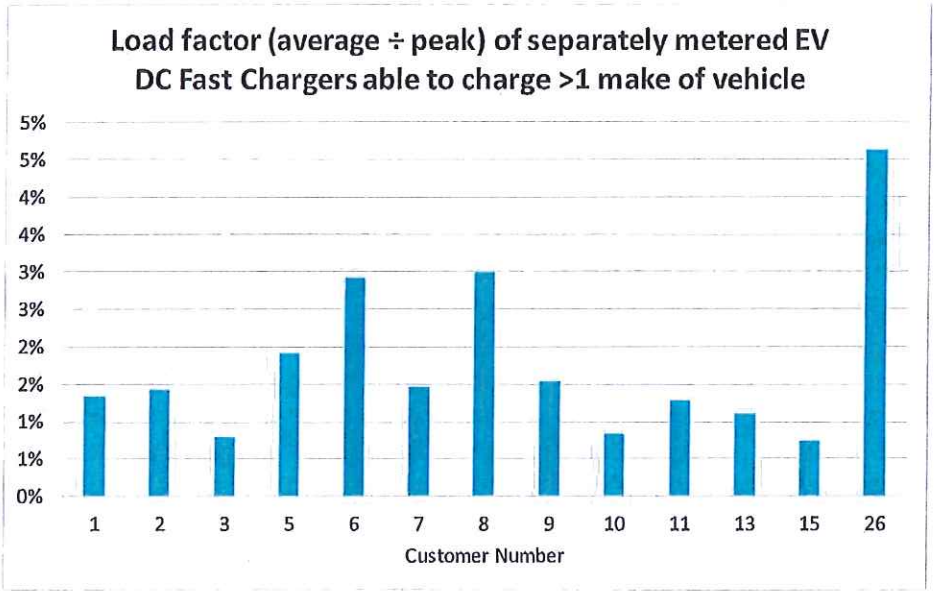
Analysis

Staff had two primary concerns with PAC's initial filing, both of which have been addressed by PAC. First, Staff was concerned with the removal of demand charges because Staff believes that demand charges are an equitable method to recover costs associated with demand. However, this concern has been alleviated by the April 14, 2017, supplemental filing in which the tariff transitions into the full Schedule 28 demand charge over 9 years. Second, Staff was concerned with the transparency of the tariff, namely whether the tariff described the rate discount being offered to PAC customers offering DC fast charging service. PAC alleviated this concern by filing replacement sheets on April 14, 2017, that explicitly indicate, in the tariff language, the percentage of the transition discounts and the length of time that these discounts will be offered.[8]

By way of background, the existing Schedule 28, approved by the Commission on January, 1, 2014, is designed to recover revenue requirement. Because the proposed Schedule 45/745 offers a discount to Schedule 28, there will be an under recovery of revenue requirement, assuming no changes in usage or number of customers occur. At this point in time, PAC is not requesting to collect the reduction in annual revenue resulting from customers switching from Schedule 28 to 45/745; in other words, PAC will absorb it for the time being. However, "the Company would anticipate incorporating the reduction in revenue resulting from customer participation in proposed Schedule 45 into the results of the Company's next general rate case filing."[9] Thus, Staff believes that the level of subsidization of Schedule 45/745 by all of PAC's customers, including non-electric vehicle-owning ratepayers, is a relevant issue and attempted to approach.

[8] See PAC's replacement sheets for Advice No. 16-020 filed on April 14, 2017, at 2. Available at: http://edocs.puc.state.or.us/efdocs/UAB/adv485uab161812.pdf
[9] This information was gained from PAC's response to Staff IR 12.

this advice filing with the goal of accelerating transportation electrification, but ensuring that the transitional rate was reasonable and would be eliminated over time.[10] For example, because of the low utilization of DC fast chargers, demand charges[11] can result in high bills for DC fast chargers despite low energy usage. An important distinction is that this rate is for owners of DC fast chargers—to be clear, there is no guarantee that any savings resulting from the Schedule 45 discount would actually be passed on to electric vehicle owners using the charging station. The figure below shows the December 2016 load factor (average usage ÷ peak usage) of the 13 customers PAC identified as eligible for its new schedule proposed in this advice filing:[12]



In the figure above, all customers have a load factor below five percent and an average load factor of 1.77 percent. This means that on average, each charging station was used for less than half an hour per day during December 2016. Comparatively, an average Schedule 28 customer had a 2015 load factor of over 40 percent.[13] This indicates that while DC fast chargers have peak demands comparable to an average large nonresidential general service customer, they have much less average usage.

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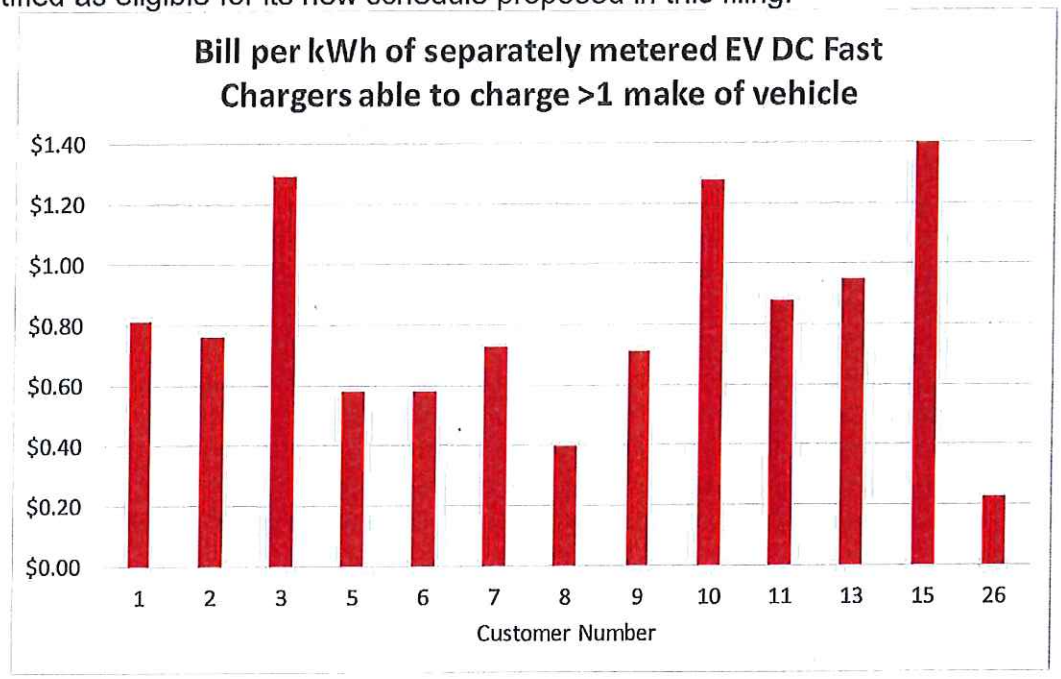
[10] However, Staff notes that approved tariffs are subject to review and revision in a general rate case.
[11] For PAC, "Demand represents the greatest amount of energy used in 15-minute intervals during a billing cycle." See PacificPower.net, "Understanding Your Electricity Charges: What is a Demand Charge." Available at: https://www.pacificpower.net/bus/ayu/uyec.html
[12] See PAC's response to Staff IR 5 for load factor data.
[13] Id at Exhibit A. Where (186,012 ÷ (24*365÷12)) ÷ 614.2 = 41.5 percent.

The figure below shows the December 2016 bill per kWh of the 13 customers PAC identified as eligible for its new schedule proposed in this filing:[14]



In the figure above, some customers paid over a $1 per kWh. By comparison, the 2015 commercial and industrial average revenue per kWh was $0.0857.[15] DC fast chargers have a poor business case when they are paying high per-kWh rates because, holding revenue constant, profit is inversely related to production costs.

ChargePoint's Position

ChargePoint filled two sets of comments in this docket and made recommendations to the Commission in its second set of comments filed on May 4, 2017. ChargePoint recommends replacing the nine-year glide path to Schedule 28 in PAC's April 14, 2017, replacement sheets with a glide path based on the actual utilization of a DC fast charger and removing the 200 meters participation limit.[16] ChargePoint recommends a glide path based on utilization because after nine years some DC fast chargers might still have low utilization, specifically "some highway corridor sites may have low utilization for several years, even as EV adoption increases, due to the location of that highway,"

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[14] See PAC's response to Staff IR 5 for the billing and usage data.
[15] See the 2015 Oregon Utility Statistics book at 19.
[16] See ChargePoint's supplementary comments filed on May 4, 2017, at 6. Available at: http://edocs.puc.state.or.us/efdocs/HAC/adv485hac16245/745.pdf

and "these sites ... may face very high demand charges ... if they only experience a few on-peak charging sessions each month."[17] ChargePoint is opposed to the 200 meters participation limit and indicates that PAC has not offered a reason for the limit.[18]

Staff's Position
Staff believes this filing will help accelerate private market investment in transportation electrification infrastructure development. From this program, the Company will gain valuable information about DC fast chargers. Specifically, every three years PAC will provide a report to the Commission describing lessons learned from the program, including information gained about the prices DC fast charger site hosts are charging electric vehicle owners. Additionally, every year PAC will provide the Commission with a list of the number, type, and location of participating DC fast chargers as well as counterfactual standard rate bills for those customers.[19] Staff suspects that the Company's revised tariff filing meets the goal of accelerating transportation electrification consistent with the SB 1547 directive, while simultaneously protecting other ratepayers, but believes that ChargePoint's recommendations do not for two main reasons discussed below: protecting ratepayers and encouraging cost-saving technologies.

Protecting ratepayers
As compared to its original application, PAC's April 14 replacement sheets limit participation to 200 meters on a first-come, first served basis.[20] Each meter could charge more than one electric vehicle (up to 1 MW). An approximate maximum annual value of the revenue shortfall attributable to Schedule 45/745 can be computed by multiplying the $254 monthly bill savings identified by PAC by 12 months and 200 meters to arrive at $609,600 per year.[21] 200 meters is a quantity that allows a significant increase in participation beyond the 13 existing eligible customers. Staff believes that PAC's participation limit is an important ratepayer protection and recommends against ChargePoint's recommendation to remove the participation limit because it could spread an *indeterminate* amount of revenue shortfall onto other customers. As an additional route to protect ratepayers from increasing risks and costs, Staff supports PAC's plan to provide a triannual report with "recommendations for changes to the schedule, if needed [and] a request for continuance of offering, if needed."[22]

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[17] *Id.* at 3.
[18] *Id.* at 5.
[19] See PAC's replacement sheets for Advice No. 16-020 filed on April 14, 2017, at 3.
[20] *Id.* at 2.
[21] *Id.* at 3. Where $427 minus $173 = $254.
[22] Ibid

Encouraging cost-saving technologies
ChargePoint's supplementary comments included an attached report from Rocky Mountain Institute titled "EVgo Fleet and Tariff Analysis." That report ends with suggestions for further study, including whether DC fast chargers could be paired with on-site supplementary battery storage to shave peak demands.[23] With this is mind, it is useful to consider the appropriate demand charge for DC fast chargers.

Demand charges are designed to recover the marginal cost of capacity. One way to achieve economic efficiency is by setting prices at marginal costs. If prices are set above (below) marginal cost, there will be under (over) consumption from an economic efficiency standpoint. PAC's Schedule 45/745 offers a discount to the demand charge such that its price is below its marginal cost. This means that we can expect an *economically inefficient* overconsumption of capacity. Further, the incentives to conserve capacity, such as through an on-site battery, are greatly diminished because in Schedule 45/475 the demand charge that could be avoided through the use of a battery is discounted.

In order to avoid disincentives against investments in battery technology for an indeterminate amount of time, Staff concludes that Charge Point's recommendation against a glide path based on time is inappropriate.[24] Cost saving technologies are already employed in other utilities' service territories, for example, two DC fast chargers with batteries are located in Redwoods City, CA.[25]

Conclusion

Staff supports PAC's April 14, 2017, application for a DC fast charger tariff because it will likely help to accelerate transportation electrification by expanding charging infrastructure early, but also protects ratepayers and limits disincentives to adopt cost-saving technologies such as batteries. Additionally, PAC's application appears well-suited to meet stakeholder needs; for example, a 2016 survey found that "85 percent [of survey respondents] think the current charging network is inadequate ... and 74 percent say charging takes too long."[26] PAC's revised proposal for Schedule 45/745 addresses

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[23] See Attachment A of ChargePoint's supplementary comments filed on May 4, 2017, at 23.
[24] See ChargePoint's supplementary comments filed on May 4, 2017, at 6.
[25] See Jeff St. John, "How EV Chargers and Energy Storage Can Make Good Grid Partners," Greentech Media, July 21, 2015, at 1. Included as Attachment A to this memo and available at: https://www.greentechmedia.com/articles/read/how-ev-chargers-and-energy-storage-can-make-good-grid-partners
[26] See Tony Markovich, "Study: 60 Percent of U.S. Drivers Haven't Heard of –Or Know Little About-Electric Cars," Car and Driver blog, December 30, 2016. Available at: http://blog.caranddriver.com/study-60-percent-of-u-s-drivers-havent-heard-of-or-know-little-about-electric-cars/

this concern by lowering the cost of operating DC fast chargers, especially in remote rural areas, which will potentially incentivize the expansion of the charging network. The Company has reviewed this memo and has stated no objections.

PROPOSED COMMISSION MOTION:

Approve PAC's proposed Schedule 45 and 745 tariffs, as described in the April 14, 2017, Advice filing 16-020 replacement sheets, effective with service on and after June 1, 2017.

Attachment A

ENERGY STORAGE

How EV Chargers and Energy Storage Can Make Good Grid Partners

ChargePoint and Green Charge link batteries and public EV chargers to limit demand charges and make loads more flexible.

by Jeff St. John
(https://www.greentechmedia.com/authors/Jeff+St.+John
July 21, 2015

Plug-in electric vehicles could be a major challenge or a major resource, according to the utilities plotting ways to turn EV charging stations into smart (http://greencharge.net/solutions/ev-charging/), grid-responsive resources. But the first steps toward making EV charging an asset may come not from fancy vehicle-to-grid (V2G) policies and programs, but from the demand charges that penalize utility customers for spikes in their electricity consumption.

EV chargers are one new electric load that can potentially create big new spikes in demand, which is putting pressure on EV charging station hosts to do something about their impact on the grid. And behind-the-meter batteries could be a useful solution to that problem.

That's what ChargePoint and Green Charge Networks say, at least. The two startups announced Tuesday that they're teaming up, with ChargePoint offering its EV charging station network customers a quick solution to demand charges via Green Charge's energy storage systems.

The two have already been running in tandem for months in Redwood City, Calif., where they've backed up five EV chargers, including two DC-powered fast chargers, with batteries that have helped reduce the city's demand charges to the tune of about $7,000 per year, said Green Charge CEO Vic Shao.