January 24th, 2023

Via Electronic Filing

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
400 North Street
Harrisburg, PA 17120

RE: Petition to Initiate a Proceeding to Issue a Policy Statement on Electric Utility Rate Design for Electric Vehicle Charging, Docket No. P-2022-3030743

Dear Ms. Chiavetta:

In its December 1, 2022 Order ("Order"), the Pennsylvania Public Utilities Commission ("Commission") directed the Commission's Bureau of Technical Utility Services ("Bureau") to convene a working group to discuss electric vehicle ("EV") charging rate design. The Bureau convened the working group in a Secretarial Letter dated December 1, 2022, and also invited interested parties to provide written comments on the issues presented in the December 1, 2022 Order and in the individual written statements of Ralph V. Yanora and Kathryn L. Zerfuss.

Electrify America, the largest open direct current fast charging ("DCFC") network in the United States, is investing more than $2 billion over 10 years in Zero Emission Vehicle infrastructure, education and access. To date, Electrify America has built a coast-to-coast network of public DCFC stations across approximately 800 locations and 3500 individual DC fast chargers in total. Electrify America currently operates 21 public DCFC stations with 86 DC fast chargers in Pennsylvania, and has 9 more DCFC stations currently under development within the state.

The Commission's Order and the Bureau's commencement of the working group is a welcome step towards addressing the rate design barrier for public DCFC stations in Pennsylvania. Electrify America appreciates the Commission's willingness to set expedited working group milestones in its order,[1] and submits this comment to provide process suggestions for the Bureau's consideration in organizing and conducting the working group. Electrify America also submits this comment to respond to Commissioner Yanora's questions that are pertinent to the public EV charging segment.

I. Fostering Collaborative Rate Design Discussions

The Bureau is charged with guiding the working group through collaborative discussions on EV rate design topics for the different EV charging segments. (Order, p. 23). Electrify America offers the following recommendations with respect to the public DCFC segment.

[1] The Order directs the working group to submit its recommendation to the Commission by March 31, 2023 and the Bureau must prepare an order by June 1, 2023 along with the Law Bureau.

- **Electrify America encourages the Bureau to consider organizing working group discussions around the different charging segments.** Rate design for public DCFC stations merits targeted discussions separate from the other EV charging segments for several reasons laid out in the April 11, 2023 Initial Joint Comments of the electric vehicle service providers ("EVSPs"), which includes Electrify America, ChargePoint, Tesla and EVgo. Generally speaking, each EV charging segment – residential, commercial, workplace, fleets, and public DCFC – has unique and distinct needs stemming from different dwell times, use cases, consumer expectations, and equity concerns.[2] The public DCFC charging segment requires a rate design solution to addresses the outsized impact of demand charges. Unlike other charging segments, it is not a suitable candidate for managed charging due to the inelastic nature of the load.[3]

- **Given the tight timeline for the working group, the Bureau should consider encouraging stakeholders to collaborate outside of scheduled working group meetings.** For instance, the Bureau could encourage sub working groups for charging segments who would report out progress and recommendations for consideration by the full working group, as directed by the Bureau. At a minimum, Electrify America proposes the establishment of a sub-working group for the public DCFC segment. Membership should be open to any stakeholder interested in developing a policy statement for the public DCFC segment. Members must commit to sending a representative to all scheduled sub-working group meetings. Electrify America proposes that the sub-working group for public DCFC accomplish the following:

  - This sub-working group should meet a minimum of three times by March 10, 2023.
    - At the first meeting, stakeholders will have an opportunity to briefly present recommended elements for inclusion into a rate design policy statement for public DCFC stations, and respond to questions on their presentation.
    - At the second meeting, stakeholders participating in the sub-working group will work together to identify the most probable areas of consensus and areas of disagreement regarding the frameworks proposed in the first meeting.
    - At the third meeting, stakeholders will finalize consensus areas, areas of disagreement, and recommendations to the larger working group. The sub-working group will present recommendations to the larger working group, at the direction of the Bureau.
  - To promote efficiency in the sub-working group, similarly situated stakeholders should work together to present joint proposals at the first meeting. They should also work together

[2] Joint Initial Comments of Electrify America, ChargePoint, Tesla and EVgo ("EVSP Joint Initial Comments"), p. 2 (April 11, 2022); see also EVSP Joint Reply Comment, p. 3 (May 11, 2022) (noting the respective comments of the Office of the Consumer Advocate and DEP/DOT that recognized the value in investigating rate design issues by charging segment).
[3] EVSP Joint Initial Comments, pages 2-3.

outside of the formal sub-working group meetings in order to establish consensus amongst themselves to the greatest extent practicable.

The Bureau could appoint a facilitator for the sub-working group, or the working group could designate a facilitator(s). Electrify America proposes that the sub-working group meet the week of February 6, February 20 and March 6.

- **To the extent possible, the Bureau should establish clear goals to facilitate the working group's expeditious consideration of rate design, particularly for the public DCFC segment.** An imminent need to address the demand charge barrier for public DCFC stations exists given the challenge demand charges pose to station economics, the upcoming expiration of the Pennsylvania Electric Company's ("PECO") Electric Vehicle DCFC Pilot Rider in June of 2024, and the need for permanent alternative rate designs for EV charging throughout PA. DCFC stations often have lead times for development of well over a year between site selection and commissioning,[4] and demand charge barriers can and do impact development decisions and allocators of capital for different segments. The EVSPs pointed out that, the ability of the Commission to address the demand charge barrier for much needed public DCFC stations in a timely manner now will materially impact the level of available infrastructure that is available by mid-decade.[5] The Bureau should set up a process that encourages stakeholders to work towards a common goal that will be most helpful to the Commission's expedited adoption of a policy statement on the Public DCFC Segment, *i.e.*, development of a cohesive policy statement for each individual charging segment.

The working group will ideally be in a position to recommend a cohesive policy statement or policy options on rate design for the public DCFC segment that the Commission can adopt in an Order by the June 1, 2023 deadline. This would then enable the Electric Distribution Companies (EDCs) to develop proposed EV rates, for filing, review and implementation.

II. Responses to Selected Questions Posed in the Statement of Commissioner Ralph V. Yanora[6]

A. General Questions

1. Should the Commission adopt minimum filing requirements for EV rate design proposals?

More than one rate design framework can be deployed to address the barrier posed by traditional demand based rate designs. The key characteristic is stable unit costs over a range of load factors. For further details on rate design frameworks, see the response to question 19.

In the policy statement emanating from this proceeding, the Commission should provide enough guidance on rate design so that the EDCs can make compliance filings that the Commission can efficiently review and approve. Providing clear guidance and parameters regarding rate design

[4] Id, p. 2.
[5] Id.
[6] Questions regarding residential rates are omitted.

objectives is important to avoid protracted and redundant Commission proceedings for each EDC over the specific types of rate design that should be adopted. Consolidation of EDC EV rate design filings into one proceeding is important for administrative efficiency.

2. What goals should the Commission focus on in reviewing EDC proposals for EV rates?

The goals that the Commission should focus on when reviewing EDC proposals will vary depending on the applicable charging segment. For the public DCFC station segment, the Commission should focus on addressing the demand charge barrier imposed by traditional rate structures to ensure continued station deployment and operational sustainability. Alternative rate designs should provide for stable unit costs over a range of load factors and may be revenue neutral to otherwise applicable parent rates at reference load factors. As noted above in Section I, the public DCFC charging segment requires a specific rate design solution to addresses the outsized nature of demand charges assessed on public DCFC stations where demand charges can account for nearly 90% of EDC costs at stations with low load factors per the findings of a study conducted by the Great Plains Institute.[7]

3. Should the EV charging rates be designed as part of the rate otherwise charged to the customer (e.g., a "whole-home" rate), or designed as a standalone EV rate, which requires a separate meter and billing?

Please see the response to question 18 below for rate design options for public DCFC stations.

4. Should the rates as designed be default or opt in? Should EV-specific rates be required for those customers participating in other approved EDC EV programs?

Generally speaking, rates for the public DCFC charging segment should not be mandatory. Public DCFC stations should have the opportunity to analyze their rate options and to make a business decision on which rate to select based on the characteristics of the EV charging load. For instance, fleets that charge at night may be able to take service behind the customers' existing meter as nighttime use may not contribute incremental demand.

5. Should the EV-specific rates vary by season (summer, winter)?

Please see the response to question 18 below for rate design options for public DCFC stations.

6. What opportunities are there for managed charging, and what role should EDC rates play in managed charging?

Opportunities for managed charging vary greatly by charging segment and use case. Public DCFC loads are inelastic. Drivers using public DCFC stations are typically on the go drivers that require on demand charging and consequently cannot schedule their charging session around TOU rates or other

[7] McFarlane, D., et al, "Overcoming Barriers to Expanding Fast Charging Infrastructure in the Midcontinent Region," Great Plains Institute, available at https://www.betterenergy.org/wp-content/uploads/2019/08/GPI_DCFC-Analysis.pdf (July 2019).

managed charging tools since they need to charge to continue their journeys. Other EV charging segments such as fleets may have greater flexibility to participate in managed charging.

7. How should rate design for supply and distribution be aligned (if at all)?

As noted in the joint reply comments of the EVSPs, rate designs for EV charging must be viewed on a holistic basis, inclusive of all components such as distribution, transmission, and supply.[8] All of the PA EDCs are located in the PJM electric market. Nearly all commercial customers with demands in excess of 100 kW are subject to PJM capacity demand charges applied based on customer usage during the five highest peak load hours occurring on different days from the prior summer. These charges can lead to high levels of volatility in supply costs for DCFC stations on a year over year basis and on an annual basis within a portfolio of stations. DCFC stations must remain available to EV drivers throughout the summer months and station operators have little control over EV driver visits during potential peak load intervals, which are only known in hindsight.

In PA, there is also a wide variety of rate structures employed by EDCs to recover the costs of Transmission service in the PJM market. Rate structures for recovery of transmission costs in default service supply products vary from non-coincident peak demand charges (PECO), fully volumetric charges (PPL), and a mix of volumetric charges and capacity demand charges based on rate class (First Energy utilities). Default service supply options that recover transmission charges on a volumetric basis are preferred because they reduce year over year volatility in costs and increase the ability to forecast EV charging station operating costs.

8. How can EV charging be aligned with renewable energy production?

The ability of EV charging loads to align with renewable energy production is highly variable by EV charging segment and use case. Periods of high renewable energy production often correlate with low wholesale power prices in the PJM market. To the extent that EV charging customers have exposure to market prices, the price signal embedded in the cost of wholesale power may provide an incentive for this alignment. In cases where intervals of high renewable energy output conflict with peak time of use periods used to determine demand charges, there may be a conflict between distribution rate designs and the public policy objective of incentivizing EV charging loads to consume excess renewable energy production.

The Commission should refrain from relying solely on storage and solar as a solution to address rate design barriers While these solutions may be workable for certain sites, real estate, permitting, and capital constraints may limit the size of such systems or preclude their placement altogether. Electrify America has extensive experience co-locating energy storage with EV charging stations[9] and has found that battery storage systems can be somewhat useful in mitigating the worst impacts of demand charges, but are not sufficient to serve as a widespread managed charging solution due to the limited capacity of battery storage relative to the overall demands experienced by a mature DCFC station site. Siting constraints also limit the ability of collocated solar to mitigate demand charges. The new

[8] EVSP Joint Reply Comments, p. 4.

[9] Press Release "Electrify America Unveils Its First Application of Megawatt-Level Energy Storage to Enhance Customer Experience" 10/19/2022 Available at https://media.electrifyamerica.com/en-us/releases/199

Federal NEVI guidance requires a minimum of 600 kW of EV station charging power.[10] As typical solar panels produce around 150 Watts per square meter, powering a site of this size would require approximately 4,000 square meters of solar panels, equivalent to roughly an acre of land, which substantially exceeds the generation that can be integrated at a typical site.[11]

9. Should eligibility to participate in EDC-offered EV incentive programs be tied to utilization of EV-specific rates?

Determination of whether to participate in EDC-offered EV incentive programs like make-ready programs remains a business decision that requires careful consideration by an EVSP. That business decision should remain with the EVSP. Requiring participation in incentive programs as a prerequisite to obtaining access to an alternative demand charge rate will act as a barrier to access to that rate. This counterproductive result would inhibit the goal of implementing an alternative demand charge rate that removes barriers to deployment and operation of public DCFC stations.

10. How should low-income and equity considerations be considered for EV-specific rate design?

In the Joint Initial Comments of the EVSPs, Electrify America, ChargePoint, Tesla and EVgo identified the inequity for residents of multi-unit dwellings ("MUDs"). They explained that public DCFC helps to enable the transition to EV ownership for residents of multi-unit dwellings, including apartment buildings, condos, and other residences without easy access to home charging. This includes locations where building out additional access to L2 charging on site may be challenging in the near term. While more than 80% of all charging sessions happen at home,[12] in urban areas there is greater difficulty charging because urban households are more than twice as likely as suburban households to be located in MUDs.[13] To that point, a recent study by DOE's National Renewable Energy Lab indicates that only "33% of the current light duty vehicle stock in the United States is parked close to electrical access."[14] In many instances, these drivers may rely on public stations where they can charge quickly and affordably. Demand charges are the largest differentiating factor between effective electricity rates billed by the EDC to residential and to commercial EV customer accounts. This inequity imposes greater costs on Pennsylvanians who depend on public charging stations, such as those who reside in MUDs, than on those who can charge at home. These costs must

[10] See, U.S. Department of Transportation, Federal Highway Administration, The National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance, p. 12 (February 10, 2022). Available at: https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/nominations/90d_nevi_formula_program_guidance.pdf.

[11] 600 kW = 0.150 Watts/sq meter * 4,000 sq. meters.

[12] Hurlbut D., et al., "Electric Vehicle Charging Implications for Utility Ratemaking in Colorado," National Renewable Energy Laboratory, available at https://www.nrel.gov/docs/fy19osti/73303.pdf (accessed on May 19, 2021).

[13] In fact, 37% of urban households and 16% of suburban households reside in MUDs. See Mortgage Bankers Association, "MBA Chart of Week: Distribution of Housing Types, Race and Ethnicity (Urban Areas and U.S.)," available at https://newslink.mba.org/mba-newslinks/2017/october/mba-newslink-monday-10-2-17/mba-chart-of-week-distribution-of-housing-types-race-and-ethnicity-urban-areas-and-u-s/ (Oct. 2, 2017).

[14] Ge, Y., Simeone, C., Duvall A., and Wood E., "There's No Place Like Home: Residential Parking, Electrical Access, and Implications for the Future of Electric Vehicle Charging Infrastructure," National Renewable Energy Laboratory, available at https://www.nrel.gov/docs/fy22osti/81065.pdf (October 2021).

be reformed to enable sustainable private sector investment in stations serving MUD residents and ensure compliance with the equity directive of the PURPA amendments."[15]

B. Commercial, Industrial and Public Charging Rate Questions

18. What types of rate design are optimal for commercial and industrial EV charging?

The table below summarizes several rate designs options that have achieved the goal of enabling sustainable commercial EV charging operations in other states.

Table 1: Summary of Selected Alternative Rate Designs

Rate Design	Description
Fully Volumetric Rate	The revenue requirement for a rate class is recovered through volumetric charges. (e.g., Southern California Edison's TOU-8 tariff, DTE Energy's GS-3 tariff, and Rocky Mountain Power Utah's Schedule 6A tariff)
Low Load Factor Rate Variants	A variation on a rate schedule for low load factor customers (typically < 20%) where demand charges are reduced and usage charges are increased relative to the parent rate. (e.g., National Grid Massachusetts Rate G-3, Eversource CT and Avangrid CT commercial EV rates approved Dec'22)
Demand Limiters	A rate feature where demand charges are limited for low load factor accounts based on a minimum monthly hours of use or ratio of kW to kWh. (e.g., Xcel Energy Minnesota's General Service A-14 tariff)
Unit Cost Limiters	A calculation method where charges are based on the published tariff, but not to exceed a pre-defined unit cost threshold. (e.g., Dayton Power & Light Tariff D19)
Reduced Demand Charges	Demand charges are reduced to only recover local customer specific facilities-related costs (e.g., transformers), while shared distribution and generation and transmission charges are recovered volumetrically.
Hours of Use Tiered Charges	A rate structure where usage is grouped into tiers based on the load factor. Low load factor accounts would have usage priced in higher cost tiers and omit a demand charge. (e.g., Georgia Power Rate PLM)

Broadly, rate designs that can result in high-cost volatility on a month-to-month basis should be avoided for DCFC loads. Examples of such rates include mandatory Critical Peak Pricing ("CPP"), extreme time-of-use pricing differentials with a very high cost for seasonal peak period usage or those with coincident peak demand charges. DCFC station operators are typically unable to pass volatile costs through to EV drivers due to Information Technology (IT) system constraints[16] and to manage EV driver perceptions of what constitutes a fair rate for EV charging. Due to the inelastic nature of DCFC loads, such as an in-transit EV driver who needs to charge in order to continue their journey, pass through of elevated costs for CPP events may lead to perceptions of price gouging which could degrade the EV driver experience and inhibit EV adoption.

[15] EVSP Joint Initial Comments, p. 4.
[16] Electrify America operates EV charging stations in over 200 utility service areas which all have unique rate designs. As a result, instituting real time pricing or Critical Peak Pricing events on a per station basis is not practical.

19. Should the EDCs require a specific separate rate for direct current fast charge ("DCFC") stations? If so, should the rate designs recognize issues related to demand charges and station economics in periods of low utilization?

Rates for public DCFC stations may be separate rates or variants of a parent rate. At the present time, there is insufficient available data to inform the creation of separate rate classes consisting solely of EV charging load. Including EV charging load within a parent rate class is preferable in the nascent stages of EV adoption when data may not be available to ensure a separate stand alone rate is just and reasonable. The propriety of creating one or more standalone rate classes for EV charging loads should only be investigated once there are robust and multi-year datasets of EV charging load to determine if EV charging loads have unique load patterns that drive material differences in the cost of service. At the present time, sufficient data does not exist to conduct this analysis.

20. Should the Commission consider specific separate tariffs for workplace, fleet, or electrified mass transit?

As suggested in the discussions above, each charging segment is very different and the public DCFC segment will have different rate design needs than other charging segments. The public DCFC segment will require the adoption of separate tariff to address the demand charge barrier.

Respectfully submitted,

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