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January 22, 2024

Via Electronic Filing

Rosemary Chiavaetta, Secretary  
Pennsylvania Public Utility Commission  
Commonwealth Keystone Building  
400 North Street  
Harrisburg, PA 17120

**Re: Docket No. M-2023-3040755 – Electric Utility Rate Design for Electric Vehicle Charging; Comments of Weave Grid, Inc. on the Commission’s proposed Electric Vehicle Rate Design Policy Statement**

Dear Secretary Chiavetta,

I am writing today to provide Weave Grid, Inc.’s (“WeaveGrid”) comments in response to the proposed Electric Vehicle (“EV”) Rate Design Policy Statement (“Policy Statement”) issued by the Pennsylvania Public Utility Commission (“Commission”) on November 15, 2023.

## **I. Introduction**

WeaveGrid is a software company that helps utilities support increased EV adoption through greater understanding of customer charging behaviors, managed charging programs, and distribution-level optimization. WeaveGrid’s technology leverages utility and charging data, including the embedded vehicle telematics—data, controls, and communication systems—and the charging equipment to transform unpredictable and disaggregated EV charging loads into a cohesive network of controllable grid resources. We also support utilities in engaging their EV customers with personalized messages, insights, and notifications via the web,

email, and text messages. WeaveGrid is a market leader in providing these solutions, which we are deploying in utility programs across the United States.

As an initial matter, WeaveGrid is supportive of the Commission’s Policy Statement, as it addresses the urgent need for electric distribution companies (“EDCs”) to plan and prepare for the impacts that EVs will have on their distribution systems. In particular, as Chairman Defrank points out, “EVs present[s] both a challenge and opportunity for regulators and utilities.”<sup>1</sup> Implementing strategies to integrate EVs will allow the EDCs to utilize new technologies to better accommodate the demand profiles that EVs present, as these new technologies can support utility incentives that drive “increased network capacity utilization of the distribution system.”<sup>2</sup> In addition to the general framework of the Policy Statement, WeaveGrid provides the following recommendations for the Commission to consider as the EDCs and default service providers (“DSPs”) develop and propose EV rates:

- **The Commission should address the potential financial burdens associated with participating in EV rates by allowing for EV and electric vehicle supply equipment (“EVSE”) submetering of EV charging load; and**
- **The Commission should incorporate in the Policy Statement a recommendation to the EDCs to implement more sophisticated approaches to EV-focused distribution system optimization based on the charging data and insights gained through EV rates.**

## **II. The Commission should encourage the use of EV and EVSE submetering to reduce the upfront costs of participation in EV rates.**

In its order proposing the Policy Statement, the Commission notes that it “concur[s] with the comments from the informal working group concerning EV rates promoting fairness and equity,” emphasizes that the EDCs’ proposed rates should limit undue cross-subsidization between customers, and recommends limiting the impacts of EV rates on low-income customers and disadvantaged communities.<sup>3</sup> Further, the Policy Statement stresses that “distribution and default service

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<sup>1</sup> Docket No. M-2023-3040755, Electric Utility Rate Design for Electric Vehicle Charging, Motion of Chairman Stephen M. DeFrank at 1 (October 19, 2023).

<sup>2</sup> *Id.*

<sup>3</sup> Docket No. M-2023-3040755, Proposed Policy Statement Order at 12 (November 15, 2023).

generation electric-vehicle charging rates should not discriminate against certain types of electric vehicles or drivers, and should not create undue financial burdens for low-income customers or disadvantaged communities.”<sup>4</sup> While cross-subsidization is a concern with the implementation of any rate, the Commission should consider another interpretation of equity and fairness as it develops the Policy Statement – providing an equitable and fair path to participation in EV rates.

As WeaveGrid noted in its comments to the EV Charging Rate Design Working Group, separately metering EV charging is not a new consideration in Commission proceedings regarding the implementation of EV rates.<sup>5</sup> In Docket No. M-2015-2518883, a collaboration of stakeholders<sup>6</sup> submitted a report titled “Driving Transportation Electrification Forward in Pennsylvania: Considerations for Effective Transportation Electrification Ratemaking” (“TE Report”) in which submetering considerations for EV rates were discussed.<sup>7</sup> The TE Report explains that “EV-only rates require a second revenue-grade meter or the use of submetering technology to record electricity use that is specifically attributable to EV charging.”<sup>8</sup> However, the installation costs of a second meter can be prohibitive and require thousands of dollars in upfront customer investments just to enroll in EV rates.<sup>9</sup>

These significant upfront costs can limit enrollment in EV rates. Without meaningful participation, the stated purpose of these rates – incentivizing increased capacity utilization of the distribution system – cannot be realized. Other states, including Maryland and Minnesota, have implemented utility programs

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<sup>4</sup> Docket No. M-2023-3040755, Proposed Policy Statement Order, Annex A (“Policy Statement”) at 2 (November 15, 2023).

<sup>5</sup> See EV Charging Rate Design Working Group, Comments of Weave Grid Inc. at 7 (March 8, 2023).

<sup>6</sup> Natural Resources Defense Council (NRDC), BYD Heavy Industries, CALSTART, Clean Air Council, EVBox, EVgo, Pennsylvania Solar Energy Industries Association, Philadelphia Solar Energy Association, Plug-In America, Siemens, and Sierra Club.

<sup>7</sup> Docket No. M-2015-2518883, Joint Comments of Natural Resources Defense Council (NRDC), BYD Heavy Industries, CALSTART, Clean Air Council, EVBox, EVgo, Pennsylvania Solar Energy Industries Association, Philadelphia Solar Energy Association, Plug-In America, Siemens, and Sierra Club *citing* Driving Transportation Electrification Forward in Pennsylvania: Considerations for Effective Transportation Electrification Ratemaking (October 15, 2018) (report available at: <http://www.synapse-energy.com/sites/default/files/PA-EV-Rates-Report-18-021.pdf>).

<sup>8</sup> Synapse Energy Economics, Inc., Driving Transportation Electrification Forward in Pennsylvania: Considerations for Effective Transportation Electrification Ratemaking at 17 (September 26, 2018).

<sup>9</sup> Docket No. E002/M-15-111 and E002/M-17-817, Residential Electric Vehicle Charging Tariff Northern States Power Company d/b/a Xcel Energy Minnesota (May 31, 2019). Compliance Filing at 11-13.

incorporating alternatives to second meters for EV load.<sup>10</sup> In Maryland, Baltimore Gas and Electric (“BGE”) proposed an EV time of use (“TOU”) rate and included a request to waive certain Maryland regulations and American National Standards Institute requirements for submetering accuracy, specifically, American National Standard for Electric Meters —Code for Electricity Metering, ANSI C12.1—2001,101, to allow for EVSEs and telematics to measure and bill for EV charging.<sup>11</sup> The Commission approved these waivers, and the Commission recently extended BGE’s EV TOU program, finding that it successfully demonstrated success in continually enrolling new customers and helped support Maryland’s transportation electrification goals.<sup>12</sup>

In Minnesota, Xcel Energy sought to expand its Residential EV Service Pilot implemented in 2018 which allowed residential EV customers to use alternative technologies to traditional meters to measure EV-specific consumption.<sup>13</sup> Xcel Energy found that pilot participants saved an average of \$2,000 in upfront metering and charger installation costs, charged 96% off-peak, and thereby limited the overall impact that EV charging had on system peaks.<sup>14</sup> In both programs, the driving force behind regulatory approval of EV and EVSE submetering was cost, as each of the commissions identified the savings that could be realized by EV customers when not required to install a second meter to measure EV-specific charging load.<sup>15</sup>

WeaveGrid proposes that the Commission revise the Policy Statement to encourage the EDCs to develop equitable access to the benefits of EV rates, rather than focusing mainly on limiting cross-subsidization. As noted above, WeaveGrid is supportive of considering and avoiding cross-subsidization as EV rates are proposed and implemented. However, cost-effective access to EV rates should be prioritized

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<sup>10</sup> Case No. 9478, In the Matter of the Petition of the Electric Vehicle Working Group for Implementation of a Statewide Electric Vehicle Portfolio, Electric Vehicle Work Group Statewide Electric Vehicle Portfolio Proposal (January 19, 2018).

<sup>11</sup> *Id.*

<sup>12</sup> Case No. 9478, Order Regarding BGE’s Electric Vehicle Program Phase II Proposal at 4 (December 29, 2023).

<sup>13</sup> See Docket M-19-559, Petition of Northern States Power Company d/b/a Xcel Energy for Approval of an Electric Vehicle Home Service Program, Initial Petition (August 30, 2019).

<sup>14</sup> *Id.*

<sup>15</sup> See Case No. 9478, Order at 51 (January 14, 2019) (The Public Service Commission of Maryland approved BGE’s EV program, including the waiver to utilize EVSEs and EVs as submeters, finding that submetering would avoid unnecessary costs associated with an additional AMI meter and would cost-effectively enable EV-specific rate design and load management programs.)

to the same extent as minimizing cross-subsidization to ensure that EV rates reach participation targets and provide the grid benefits they are designed to provide.

### **III. The Commission Should Encourage the EDCs to use the Data Gained from EV Rates to Inform Future Distribution Optimization Strategies**

WeaveGrid is supportive of the Policy Statement’s focus on the impacts of EVs on the distribution system.<sup>16</sup> As Chairman DeFrank notes, different EDCs are situated differently, and have “varying demographics, grid characteristics, and demand profiles.”<sup>17</sup> Accordingly, as the EDCs implement EV rates, the Policy Statement should be updated to encourage EDCs to utilize the data and insights gathered from EV rate participants to inform future EV-related or distribution system optimization initiatives.

In a scenario where EDCs do not go beyond rate-focused approaches to managing EVs, they can face multiple challenges. The first is cost, as utilities may have to make significant investments in the distribution system to accommodate increasing EV load. One study estimates that the costs required to support nonoptimized EV load on the distribution system could be more than four times higher than generation and transmission combined.<sup>18</sup> Given that lead times for building distribution infrastructure can be one to four years, and lead times for building substation and transmission infrastructure can be four to eight years, regulatory decisions made today will have significant impacts on grid operations as EV adoption continues to accelerate.<sup>19</sup> Proactive planning decisions should be made now to avoid the significant upgrade costs associated with the distribution system impacts of unmanaged EV charging.<sup>20</sup>

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<sup>16</sup> Policy Statement at 1.

<sup>17</sup> Motion of Chairman Stephen M. DeFrank at 1.

<sup>18</sup> Sahoo, A., K. Mistry, and T. Baker. Boston Consulting Group (BCG). The Costs of Revving up the Grid for Electric Vehicles, December 2019, <https://www.bcg.com/publications/2019/costs-revving-upthe-grid-for-electric-vehicles>.

<sup>19</sup> National Grid and Hitachi Energy, “The Road to Transportation Decarbonization: Readyng the Grid for Electric Fleets,” at 32 (September 2023) (“A typical electric distribution project could take 1-4 years to design, construct, and place in service. If there needs to be substation or transmission-level work, that timeline could be up to 8 years...Even if broad impacts do not materialize until the early 2030s, we must start planning the needed infrastructure now. In some areas, we may already be behind schedule”).

<sup>20</sup> Kevala. 2023. CPUC Electrification Impacts Study Part 1: Bottom-Up Load Forecasting and System-Level Electrification Impacts Cost Estimates. San Francisco, CA. <https://www.kevala.com/resources/electrification-impacts-study-part-1>. (Kevala’s study found that

The second challenge of a rates-only approach is timer peaks. This occurs when customers on an EV rate mainly charge at the beginning of the off-peak period, creating an artificial peak on the distribution system. As noted by the Energy Systems Integration Group in a recent publication on grid planning related to EVs:

“Time-of-use (TOU) rates with load optimization can simultaneously address bulk system and distribution constraints. If we only focus on bulk system needs with rate designs, EV charging may all start at the beginning of the off-peak period and overwhelm the distribution equipment...We can instead stagger charging and get the bulk system benefits of TOU without overwhelming the distribution system.”<sup>21</sup>

There are a variety of managed charging approaches that utilize distribution-focused technology tools to provide a significant reduction in distribution upgrade costs as EV adoption accelerates.<sup>22</sup> One is BGE’s Smart Charge Management Program, which optimizes EV charging based on “the customer’s electric rate; PJM price signals; weather patterns in the region; and energy demand by substation and feeder.”<sup>23</sup> Portland General Electric Company’s (“PGE”) Residential EV Smart Charging Pilot Program represents a different approach. PGE manages EV charging schedules against its EV TOU rates to shift unmanaged EV load away from existing peak periods.<sup>24</sup> Even in situations where EDCs do not implement a managed charging program, distribution system planners can utilize charging data gleaned from EV rates “as a tool...to evaluate the efficacy of smart charging to address grid needs.”<sup>25</sup> Regardless of the managed charging approach the EDCs

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unmanaged EV charging, in conjunction with the electrification of other loads, could lead to over \$50 billion in distribution upgrades in California by 2035).

<sup>21</sup> Energy Systems Integration Group. 2023. Charging Ahead: *Grid Planning for Vehicle Electrification. A Report of the Grid Planning for Vehicle Electrification Task Force*. Reston, VA. <https://www.esig.energy/grid-planning-for-vehicle-electrification> (“ESIG Report”).

<sup>22</sup> NYSERDA Report Number 22-13. Prepared by Resource Innovations, San Francisco, CA. Available at: <https://www.nyseda.ny.gov/About/Publications/Research-and-Development-Technical-Reports/Transportation-Reports>.

<sup>23</sup> Case No. 9478, Electric Vehicle Program Phase II Proposal of Baltimore Gas and Electric Company at 3 (May 24, 2023).

<sup>24</sup> M. Mills, M. Obi, K. Cody, K. Garton, A. M. Wisser and S. Nabahani, "Utility Planning for Distribution-Optimized Electric Vehicle Charging: A Case Study in the United States Pacific Northwest," in IEEE Power and Energy Magazine, vol. 21, no. 6, pp. 48-55, Nov.-Dec. 2023, doi: 10.1109/MPE.2023.3308243.

<sup>25</sup> ESIG Report at 20-21.

choose to take, utilizing the data gained by EV rates or a managed charging program can be instructive for grid planning purposes, and the Policy Statement should be revised to better align EV-focused initiatives with distribution system benefits.

#### **IV. Conclusion**

WeaveGrid appreciates the opportunity to provide comments on these important issues. Please contact the undersigned should have any questions or require any additional information. Thank you.

Respectfully submitted,

WEAVE GRID, INC.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Bright', with a horizontal line extending to the right.

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