July 30, 2021

Mr. Mark L. Johnson, Executive Director and Secretary
Washington Utilities and Transportation Commission
621 Woodland Square Loop SE
Lacey, WA 98503

Re: Docket Number UE-210191: Puget Sound Energy Transportation Electrification Plan – 2021 through 2026

Dear Mr. Johnson:

EV.ENERGY CORP ("ev.energy") appreciates the opportunity to provide comments on Puget Sound Energy's ("PSE") Transportation Electrification Plan for 2021 through 2026 (the "TEP"). PSE has invested significant time and effort into this holistic strategy that will push Washington further down the path towards its clean energy goals by electrifying the transportation sector. We support PSE's broad efforts to further evolve its existing electric vehicle ("EV") program offerings, specifically its existing Up & Go Electric program, and believe that the TEP – with the three modifications suggested below – will help PSE achieve its stated goal of "planning for and managing electric loads" (TEP, p. 32).

KEY RECOMMENDATIONS:

1. Test and incorporate direct load management products into the Up & Go Electric residential single-family program;

2. Accelerate the timescale for the second phase of the Up & Go program; and

3. Expand the budget allocated for residential managed charging to match PSE's needs and ambitions in this sector.

Ev.energy is a leading software platform for managed EV charging with a deep and experienced understanding of managed charging programs. Operating across all 50 U.S. states, we provide an end-to-end solution for utilities to directly control residential EV load through a suite of APIs that connect to both vehicles and Electric Vehicle Supply Equipment ("EVSEs"), covering over 90% of PSE's EV customers based on recent data from the Washington Department of Transportation.

On the utility integration end, we can obtain one or multiple signals from PSE such as static time-of-use pricing, localized load feeds from a distributed energy resource management system ("DERMS") platform, system-wide demand-response dispatches, and/or renewable energy generation forecasts—and use these signals to schedule and turn on/off EV charging in order to optimize load at the network and local levels.

Over 80% of EV drivers on our platform adhere to managed charging each day, which we achieve through an award-winning mobile app that can be white-labelled to the utility and provides the customer with transparency and control over their EV charging schedule, consumption/costs, battery level and health, and the ability to opt out of managed charging events if needed.

In summary, our managed charging software helps utilities to realize:

- *Reliable load shifting*. We are consistently shifting as much as 97% of EV load to off-peak hours with Madison Gas & Electric;
- *Meaningful demand response ("DR") curtailment*. By maximizing customer participation in DR programs and events we are able to deliver an average of 1.4 kW of load reduction per EV to the Electric Reliability Council Of Texas's Emergency Response Service;
- *Renewable generation alignment*. We are aligning ~50% of the average California customer's EV charging with intermittent renewable generation through the GridShift program with Silicon Valley Clean Energy, reducing the carbon intensity of the electricity used to charge by as much as 70%;
- *Customer savings*. We've been proven to reduce Time-Of-Use customers' energy bills by automatically charging their EVs off-peak, saving Ameren Missouri customers $132/year on average, and PG&E customers $320/year on average.

DETAILED RECOMMENDATIONS:

1. <u>We encourage PSE to test and incorporate direct load management products into the Up & Go Electric residential single-family program</u>.

In the first phase of the Up & Go Electric Residential Off-Peak program, PSE found that "results are promising and indicate that customers do respond to program incentives that encourage shifts in charging times" (TEP, p. 57). By these indications, the current Up & Go Electric program – a passive managed charging program – has taken a great first step towards enabling load management by encouraging customers to charge outside of peak windows through price signals. However, as PSE recognizes, there can be limitations to this passive managed charging approach, noting that "price signals alone may not be sufficient in mitigating EV charging impacts on PSE's electric distribution system" (TEP Addendum, p. 8). Based on PSE's forecasting, this problem is likely to become more acute as EVs proliferate and add more unmanaged EV charging demand (and subsequently greater system impacts and forecasted ratepayer costs) to the grid (TEP, p. 58). Indeed, California utilities have begun to see and grapple with the impacts of a "rebound timer peak" as a result of passive, TOU-driven managed charging[1].

We applaud PSE for committing to explore direct load management options, as outlined on page 8 of the TEP Addendum, in light of these impending challenges. Incorporating direct load management – also called active managed charging – delivers the following benefits to customers and the grid:

a. Dynamically optimizes EV loads against real-time grid conditions;

[1] See "Utilities and Electric Vehicles: The Case for Managed Charging," available at https://sepapower.org/resource/ev-managed-charging/

b. Can be technology-agnostic and does not require PSE or its customers to purchase additional hardware; and,
c. Maximizes customer savings through "set-it-and-forget-it" features.

A. Active managed charging dynamically optimizes EV loads against real-time grid conditions:

Active managed charging engages customers (typically via a vendor) to optimize their EV charging on the grid based on utility signals. For example, with active managed charging PSE could identify local areas of grid congestion and initiate a targeted response to its third-party managed EV charging vendor, as ev.energy has done for Ameren Missouri[2]. During the event, the vendor curtails and/or shifts EV charging for a subset of customers in the area of grid congestion (e.g. along the same 12 kV feeder). The vendor simultaneously communicates the event to customers, while ensuring their vehicles are sufficiently charged before their departure times, and rewards customers through on- or off-bill incentives. Active managed charging can provide greater load shifting and load reduction potential because of the real-time integration between PSE, the third-party vendor, and the EV driver.

Our experience is that customers often prefer participating in active managed charging over other managed charging programs due to the automated nature of the enabling technology along with the additional incentives and rewards, making it a win-win solution: the customer has a better charging experience, and the utility has more control over EV load. In its TEP, PSE notes that two of its goals with the TEP programs is to act as a coordinator and manage the forecasted load increases associated with EVs through pricing signals and structures (TEP, p. 32). This can most effectively be done in real time through active managed charging, and we encourage PSE to seek to evolve its current program offering accordingly.

B. Active managed charging can be technology-agnostic and does not require PSE or its customers to purchase additional hardware:

Another powerful benefit of active managed charging can be that it does not necessarily need to force the utility to make a technology choice between using vehicle telematics or EVSEs. In its TEP Addendum, PSE discusses the methods for measuring EV load response through a variety of tools, including telematics, sub-meters or pre-programmed EVSEs (TEP Addendum, p. 8). Ev.energy, as well as other companies with offerings in the managed-charging sector, offers platforms that support vehicle telematics *and* EVSEs. With the platforms available today, PSE would not be forced to choose between one of those solutions, and customers can participate without the additional cost and complication of an EVSE if they wish.

In this way, companies like ev.energy maximize customer potential eligibility by being technology-agnostic. We strongly encourage PSE to take a similar technology-agnostic approach by avoiding the requirement of specific technology (such as EVSEs) to participate in a load management program. EVSEs can enable active managed charging, but so can non-hardware telematics and networked Level 1 chargers at a fraction of the price. Focusing only on customers

[2] The EPRI-verified report is available at https://skipsolabs-epri.s3.amazonaws.com/uploads/content/44bf0c2a83c23c767aa6ef08548c268bb68864ba.pdf

with Level 2 EVSEs risks precluding thousands of EV drivers from also providing grid services through their Level 1 home charging set-ups.

Programs that are technology-agnostic address an important equity angle as well – for example, data that ev.energy and its California partners have analyzed from CalEnviroScreen suggests that customers using Level 1 chargers tend to be lower-income due to household wiring constraints that prevent Level 2 installation. A telematics-based solution would be better-suited to enabling these customers to participate in active managed charging. Regardless, there is no technological reason why a Level 1 EVSE could not also participate in managed charging as long as it were networked; in fact, ev.energy is working on bringing a networked Level 1 charging cable to market later this year which could be used to include customers whose vehicles do not enable telematics hardware devices or whose households do not support Level 2 charging.

C. Active managed charging maximizes customer savings through "set-it-and-forget-it" features:

PSE's proposal to require customers to enroll in load management services like the Up & Go Electric program, if not limited to just customers with pre-programmed EVSEs, can empower all customers to automatically charge off-peak and save money when coupled with an enabling active load-management platform. "Set-it-and-forget-it" solutions like ev.energy's platform enable the customer to automatically participate in programs like Up & Go, while still providing the customer with control to opt-out of managed charging temporarily when needed. Automated time-of-use-optimized charging has been proven to save customers money with minimal customer effort: for example $11/month for Ameren Missouri customers.[3] Indeed, the Smart Electric Power Alliance ("SEPA") has noted that active managed charging programs drive both improved results *and* customer satisfaction.[4]

2. PSE should accelerate the timescale of the Up & Go Electric program to Phase 1.

The current Up & Go Electric home charging pilot has clearly proven the benefits of managed charging. PSE reported observations of "rapid customer enrollment" and data that suggested "performance-based payment incentives are driving off-peak charging behavior," (TEP, p. 31). However, the pilot is now closed to new enrollees, and the TEP does not seem to propose its expansion until Phase 2 in 2022. There is no need to keep the pilot at its current size or delay the next phase of the Up & Go Electric program, especially given the benefits of managed charging mentioned above, the projected future growth of EVs (PSE estimates that over 200,000 EVs will be in PSE's service territory by 2030 (TEP, p. 7)), and that the technology to deliver active load management across both vehicles and EVSEs already exists and is being used by utilities today.

While active managed charging technology is already available in the market, it still takes time to scale up these programs. Delaying the Up & Go Electric residential second phase launch by a year or two will likely prevent full scaling until 2025, at which point EV loads could represent

[3] Ibid.
[4] See "EV Managed Charging: Lessons from Utility Pilot Programs," available at https://sepapower.org/knowledge/ev-managed-charging-lessons-from-utility-pilot-programs/.

more than 500,000 MWh (TEP, p. 54). For these reasons, we encourage PSE to accelerate the expansion of the Up & Go Electric program to late 2021 or early 2022.

3. We propose that PSE expand the budget allocated for residential managed charging to match PSE's ambitions in this sector .

PSE has set ambitious goals in the residential EV sector for testing new technologies, expanding its Up & Go Electric program, and managing EV electric loads. PSE also cites in its TEP that 68% of its residential customers plan to buy or lease an EV and corresponding to this forecasted EV growth, PSE estimates that associated system costs with residential EV charging demand if the EV charging goes unmanaged is $46.8 million from light-duty vehicles alone. The majority of demand-related costs are projected to be attributable to single-family residences with EVs. If unmitigated, those costs could end up being passed directly to ratepayers.

However, in its TEP, PSE allocates only between $5.5M and $8.5M for residential single-family programs – roughly 7.5% of the total budget. We propose that PSE be permitted to expand its budget to at least double the proposed size. An increased budget more commensurate with the costs of unmanaged EV charging in that sector will significantly reduce the forecasted costs of unmanaged charging that would otherwise be borne by the distribution system and ratepayers. A budget of up to $19M would also bring the budget for residential single-family programs more in-line with the separate budgets for public charging and multi-family programs, whose contributions to forecasted costs due to unmanaged charging are much less than the forecasted costs from single-family homes. The increased budget additionally provides more headroom for PSE to grow its Up & Go Electric residential program as the demand for electric vehicles continues to expand.

CONCLUSION:

Ev.energy thanks the Commission, PSE, and all other parties for thoughtful consideration of its comments. We support PSE's TEP, and in particular its intentions to bring active managed charging to PSE customers. We encourage the Commission to permit PSE to adopt the recommendations made by ev.energy in order to maximize the efficacy of the Up & Go Electric program and meet the stated goals of PSE. Please contact me with any questions, and we look forward to engaging with all stakeholders on the PSE TEP.

Sincerely,

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