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**PG&E Comments on AB 2127 Workshop on EV Charging
Infrastructure Second Assessment Draft Report**

Additional submitted attachment is included below.



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California Energy Commission
Docket Number 19-AB-2127
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RE: Assembly Bill (AB) 2127 Assessment Workshop on Electric Vehicle Charging Infrastructure Second Assessment Staff Draft Report

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments in response to the California Energy Commission's (CEC) AB 2127 Staff Draft Report Workshop held on September 7, 2023.

PG&E encourages the CEC to explore a modified Gas Station model which targets urban areas of higher population density when prioritizing Direct Current Fast Charging (DCFC) for drivers without home charging.

PG&E acknowledges the challenges associated with deployment of EV charging infrastructure to serve residents in multi-family housing (MFH). A "Gas Station model", or similar model which emphasizes DCFC, is among viable solutions for increasing EV charging accessibility for MFH residents. In one study, 43% of surveyed MFH residents said public DCFC is their primary charging solution¹. In another study, 59% of surveyed MFH property owners and community managers reported they had no available budget for EV charging infrastructure installations². Altogether, more widespread deployment of public DCFC in locations that are accessible to MFH residents, combined with the higher power output and lower dwell times of DCFC, can create a customer experience that supports and accelerates EV adoption for those residents for whom public charging will be their primary charging solution.

Siting DCFC in higher population density areas also has the added benefit of higher utilization which can improve the unit economics of DCFC deployment. However, as the draft report recognizes³, single family home residents and those with access to Level 2 (L2) home charging will tend to use that as their primary charging solution. As such, the Gas Station model may overstate the need of DCFC for these residents, potentially resulting in unnecessary costs and grid planning challenges.

¹ UCLA Luskin School of Public Policy, Evaluating Multi-Unit Resident Charging Behavior at Direct Current Fast Chargers (2021)

² Ecology Action, Innovation in Electric Vehicle Charging for Multifamily Dwelling (2020)

³ CEC, Assembly bill 2127 Electric Vehicle Charging Infrastructure Assessment Draft Report p. 99

Ultimately, PG&E recommends utilizing a modified Gas Station model that would treat DCFC as the primary charging solution *only* for residents in urban, densely populated areas, (e.g. areas with a high proportion of MFH), who do not have access to home charging. The remaining residents would be modeled to treat public and workplace L2 as their primary charging solution. This additional granularity to the Gas Station model would strike a balance between meeting charging needs and cost.

PG&E recommends the CEC also consider additional factors in its review of various modeling scenarios and the magnitude of DCFC deployment.

There are tradeoffs to scenarios which model more DCFC. It is well understood that equipment and installation costs associated with DCFC deployment are higher than that of L2. Thus, it is prudent to ensure that modeling scenarios do not overstate the need for DCFC in situations where L2 would suffice. As the population of EV drivers that do not have access to home charging or otherwise rely on public DCFC for their primary charging increases, so does the importance of addressing critical, related equity considerations. Public DCFC is most always significantly more expensive than at-home charging, so in addition to convenience inequities, there are notable cost inequities that are compounded further by such residents often having a lower-income than those with access to at-home charging. An increase or renewed focus on gas station model DCFC implicates a heightened need for creative and more comprehensive solutions to address this equity challenge. Finally, it is important to consider that DCFC is not monolithic and that power levels can range from as low as 25 kW to upwards of 350 kW. When DCFC is co-located with community amenities such as shopping centers, and dwell time can be longer while still meeting driver needs, lower power level DCFC can provide a middle ground solution.

While deployment of L2 on-site EV charging at MFH is a challenge, new solutions and offerings continue to make progress on addressing these barriers. PG&E launched a Multifamily and Small Business Direct Install (MSDI) program in June 2023 to help address the barrier of cost. The MSDI program offers installation of L1 or L2 EV charging at no cost to property owners for eligible sites. Per-port costs for the MSDI program are projected to be close to 50% lower than MFH installations in other PG&E programs due to MSDI's emphasis on utilizing available panel capacity and load management. Innovative programs like MSDI make significant progress toward addressing barriers to MFH EV charging deployment. PG&E encourages the CEC to continue offering grant funding opportunities to further drive cost-per port down in support of MFH EV charging deployment. PG&E has also been exploring the marketplace for curbside L2 EV charging which could make charging more accessible to residents without access to home charging.

Should the Commission revise its modeling assumptions and projections as contemplated in this draft report, especially with respect to notable changes regarding the proportion of gas station model DCFC compared to Level 2 charging, it is important that these changes be reflected in other state forecasts, in particular the Integrated Energy Policy Report (IEPR). As utility planning is required to be centered around the IEPR forecast, and these changes potentially implicate significant downstream changes to grid planning and forecasting around grid impacts and upgrades, ensuring alignment in utility planning is essential.

PG&E agrees with the five key areas identified for widespread Vehicle Grid Integration (VGI) advancement.

The five key areas determined by the CEC in the draft report⁴ are consistent with PG&E's experiences in practice. PG&E provides additional comments for the CEC's consideration for the following key areas.

VGI Advancement 1: Compensation Structures

PG&E appreciates the CEC's acknowledgement that other grid signals, beyond rates, will have an important role to play in supporting widespread adoption of VGI. Rate design that is more reflective of dynamic grid conditions is fundamental to load shaping efforts, but VGI programs are a critical tool in the load management toolbox which complement rates.

VGI programs which may include utility signals, in addition to or complementary to, dynamic pricing, are advantageous in that they offer more design flexibility with respect to customer facing elements. For example, the draft report presents the opportunity around customer responsiveness to nonmonetary signals.⁵ VGI programs could be a sandbox to test the efficacies of such signals. Key to program design is the distillation of complex grid needs and solutions into a concise and understandable value proposition message to simplify customer engagement. The education and outreach that accompanies programs will improve customers' VGI understanding and help Californians grasp why it is needed and how they can participate as it becomes more widespread. From a utility perspective, VGI programs can be a more flexible tool that can be tailored to address grid needs where a dynamic rate may not be direct or mature enough at this time.

Compensation structures must also provide value to the host of other stakeholders within the VGI ecosystem, (e.g. EV automakers, charging providers, VGI aggregators), that are critical to enabling widespread VGI.

Finally, as customer participation in VGI offerings scale compensation structures must be mindful of and mitigate the potential for a single customer response being compensated for the same grid service more than once, such as from enrollment in multiple similar offerings. This consideration also extends to other Distributed Energy Resources (DERs) and DER programs that are available to customers (e.g. smart thermostat, battery storage, etc.).

VGI Advancement 2: Customer Products and Services

PG&E agrees with the need for more commercially available bidirectional chargers that can support V2X applications and supports the CEC's ongoing efforts related to the advancement of bidirectional products and their commercialization. PG&E's ongoing experience with implementation of our VGI Pilots⁶ have highlighted issues with the availability of bidirectional chargers, as well as their cost, as significant barriers.

PG&E also believes that there is a need to further understand and develop the extent of VGI or load management capabilities that DCFC can provide in light of scenarios which envision higher deployment of DCFC (e.g. Gas Station model). The customer experience and short dwell times are often cited as reasons why DCFC is not conducive to VGI; however, there may be other measures DCFC operators can employ beyond curtailment. The relatively recent advent of public

⁴ CEC, Assembly bill 2127 Electric Vehicle Charging Infrastructure Assessment Draft Report p. 72

⁵ Ibid p. 77

⁶ [PG&E's Vehicle to Everything Pilot Programs](#)

DCFC operators introducing TOU pricing⁷, introducing site-specific pricing⁸, and providing free charging during off-peak times⁹ are examples of such measures that can shape charging behavior. PG&E encourages the Commission and stakeholders to explore and further develop what may be possible in managing and shaping public DCFC loads to maximize system and customer benefits and mitigate grid integration costs and challenges.

VGI Advancement 3: Site-Level Readiness

PG&E strongly agrees that site-level readiness is a prerequisite to VGI and has identified this as among the principal problem statements to address within PG&E's R&D Strategy¹⁰. PG&E is developing a Distributed Energy Resource Management System (DERMS) which will have the capability to implement the concept of flexible service connection. A flexible service connection enables EVs that may not be able to interconnect due to capacity constraints, to proceed with interconnection. The DERMS has the ability to send signals to assist with managing the DER such that capacity constraints are not exceeded.

VGI Advancement 4: EV and Grid Planning Process

PG&E appreciates the advancements the CEC has made in its modeling efforts to incorporate load management as iterations of EVI-Pro and HEVI-LOAD have evolved. The modeling of managed and unmanaged use cases based on time-of-use rates has significant implications for the projected grid capacity needed to support new EV charging infrastructure. PG&E encourages the CEC's continued iteration on load management modeling with the inclusion of use cases which account for the charging impacts of bi-directional charging. While nascent today, PG&E anticipates that V2X applications will evolve into a significant tool within the load management toolbox. PG&E requests that the CEC consider publishing the underlying data to the various hourly load profiles that are referenced throughout the draft report, (e.g. Figures 19, 27, 28), for stakeholders to review.

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PG&E appreciates the opportunity to comment on the AB 2127 Assessment Workshop on Electric Vehicle Charging Infrastructure Second Assessment Staff Draft Report and looks forward to continuing to collaborate with the CEC. Please reach out to me if you have any questions.

Sincerely,

Josh Harmon
State Agency Relations

⁷ <https://www.evgo.com/pricing/tou/california/>

⁸ <https://insideevs.com/news/678257/electrify-america-raises-prices/>

⁹ <https://www.theverge.com/2021/12/21/22848149/tesla-free-supercharging-holiday-rush>

¹⁰ [PG&E R&D Strategy Report](#) (2023) p.81