

DOCKETED

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**Pacific Gas and Electric Comments Regarding the California Plug-In
Electric Vehicle Infrastructure Projections 2017-2025**

Additional submitted attachment is included below.

June 8, 2018

VIA ELECTRONIC FILING

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 17-ALT-01
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket 17-ALT-01: Pacific Gas and Electric Comments Regarding the California Plug-In Electric Vehicle Infrastructure Projections 2017-2025

On May 23, 2018, the California Energy Commission (CEC) held a workshop to present its recently-released Plug-In Electric Vehicle Infrastructure Projections and the EVI-Pro modeling that informed the analysis. This electric vehicle (EV) needs assessment improves on analysis performed by the CEC in 2014 and serves as a foundation for state activities that support the Governor's goal for California to have five million Zero Emission Vehicles (ZEV) on the road by 2030 and the state's 2025 infrastructure target laid out in Executive Order B-48-18. With nearly one-in-five American EV's fueled by our grid, PG&E is a critical partner in these activities, and appreciates the CEC's efforts to accelerate transportation electrification. PG&E offers the following comments on the staff report.

I. Summary

PG&E supports the CEC's much-awaited update of the statewide infrastructure analysis. Access to reliable charging infrastructure remains a clear barrier to increased EV adoption in California. The staff analysis points to a significant need for charging infrastructure across market sectors through 2025. PG&E looks forward to working with partners, including state agencies, to help deploy charging infrastructure to meet these needs.

Through its EV Charge Network program, PG&E has already embarked on a three-year effort to install 7,500 connected, level 2 charging stations at workplaces and multi-unit dwellings, two areas highlighted by the report. PG&E was recently authorized by the California Public Utilities Commission to make \$22 million of investments to deploy public Direct Current Fast Charging stations, in addition to more than \$236 million for fleet electrification. PG&E hopes to leverage the analysis performed for this report in implementation of these programs.

Given the importance of this analysis to the development of EV infrastructure in California, PG&E hopes that the CEC will regularly review and update the assumptions and results to consider the rapidly evolving mobility needs across the State.

II. Charger Technology Projections Should Reflect Driver Needs

In Table 4.1, staff detail expected growth in typical EV ranges and commensurate charging power level by 2025. While the expected growth in battery range, based on CARB projections, is reasonable, it is less likely that residential level 2 charging would improve significantly beyond the current 6.6 kW level as opposed to what the report shows with increases to 11.4kW. Overnight home charging at current levels can yield 120 or more electric miles, ample range to cover even a typical long commute. Charging at nearly twice this rate would be unnecessary

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for most customers and would likely trigger costly upgrades to home electric panels, deterring most customers from adopting this higher rate of charging. PG&E suggests the analysis consider drivers' decision-making process more holistically when estimating home charging power rates.

III. Aggregated Charging Electricity Loads

In Figures 4.3 and 4.4, the staff report displays statewide aggregated electricity loads for typical weekday and weekend charging, across sectors and charging technologies. In both load curves, the analysis appears to show "spikes" of DC Fast charging, occurring roughly twice hourly, with cyclical ramps of dozens of megawatts occurring. PG&E suggests that the authors review the load assumptions which contribute to these spikes and consider revisions that would lead to a smoother system-level aggregated load. While significant amounts of fast charging loads may be noticeable in this fashion at a more local distribution grid level, it is unlikely that a statewide, system-level load curve could see this type of intermittent spikiness as the fast charging load would be homogenized at such a scale.

IV. Managed Charging Loads

In the project results displayed on page 26, the authors note that the statewide "load profiles do not reflect consumer incentives or energy resources to manage charging load (such as time-variant pricing, solar generation, or energy storage)." This is a significant assumption, which has broad impacts on the resulting load curves. In PG&E's experience, EV owners have significantly higher rates of participation in time-of-use tariffs and those on PG&E's EV time-of-use rate respond overwhelmingly to the price signals to delay their charging until the off-peak, overnight hours. Further, all residential customers will be defaulting to time-of-use rates over the next few years and will be exposed to price signals encouraging them to charge at later hours. PG&E suggests that in future iterations of this analysis staff consider a more nuanced approach to managed charging. This applies today to residential charging and will likely become more important for workplace charging as well.

V. Conclusion

PG&E supports the undertaking of this statewide infrastructure assessment and hopes staff make plans to regularly review and update the assumptions and results based on quickly evolving EV markets and California's mobility needs. This research is critical to spurring growth in statewide charging infrastructure and accelerating EV adoption in pursuit of aggressive state climate goals.

Sincerely,

/s/

Wm. Spencer Olinek