

DOCKETED

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PG&E Comments on August 23 DAWG EV Forecast Meeting

Additional submitted attachment is included below.

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DOCKET 17-IEPR-05**California Energy Commission
Dockets Office, MS-4
Docket No. 17-IEPR-05
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket 17-IEPR-05: Pacific Gas and Electric Company Comments on the August 23, 2017 Demand Analysis Working Group Meeting on the California Energy Commission's Plug-in Electric Vehicle Forecast

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the August 23, 2017 Demand Analysis Working Group (DAWG) meeting on the Plug-in Electric Vehicle (PEV) Forecast hosted by the California Energy Commission (CEC). PG&E's key points in response to the day's discussion include:

- PG&E commends the CEC's model enhancements related to the PEV forecast and requests continued information on any revisions made to the forecast inputs and scenarios before the forecast is finalized;
- The forecast should include greater variation between the Mid and High scenarios; and
- Assumptions regarding battery prices, vehicle prices, vehicle classes, and customer preferences should be updated for the final PEV forecast scenarios.

I. The Electric Vehicle Forecast Should Include Greater Variation Between the Mid and High Scenarios, and the CEC Should Provide Additional Information on the Results From Model Calibration and Stakeholders' Recommended Forecast Revisions.

PG&E commends the CEC's demand forecasting office for developing a detailed model that takes into account many dynamics of consumer choice (such as consumer preference survey data, economic conditions, fuel prices and projected technology developments¹) which will have effects on the level of electric vehicle (EV) adoption in California. PG&E also appreciated learning more about the PEV forecast model and inputs during the DAWG meeting thanks to Staff's detailed presentations.

¹ http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-03/TN220504_20170802T083706_PEV_Forecasting_Approach.pdf

PG&E recommends that the CEC consider greater variability between the Mid and High scenarios for the PEV forecasts. Currently, both scenarios use the same inputs for many of the model variables specifically relating to PEVs, including vehicle price, range, fuel economy, and customer preference. In order for the High scenario to be useful, it should include more aggressive input assumptions that truly reflect accelerated PEV adoption in California. Below, PG&E proposes some of the input variables that should be considered for the High case in the sections below.

Additionally, PG&E requests that the CEC provide additional information on the forecast results from the calibration process (i.e. the updated 2017 forecast data) and any input updates implemented as a result of recent stakeholder feedback through additional staff workshops or future DAWG meetings. PG&E appreciated the August 23, 2017 DAWG meeting discussion on the calibration process, but would like additional detail on the revised results of the preliminary forecast given that not all graphs presented at the workshop included the most recently calibrated results. PG&E would also like to see the impact on the forecast results of any revised inputs to the Low, Mid, and High scenarios that occur as a result of this stakeholder process in order to provide additional and more thorough feedback on the PEV forecast. Furthermore, PG&E would like greater explanation on the differences between this 2017 forecast and the 2015 PEV forecast. A better understanding of the differences from the 2015 forecast, as well as clarity on the effect of any input changes, is necessary for PG&E to provide thorough feedback on the 2017 PEV forecast before it is finalized. PG&E appreciates the opportunity for continued involvement with the PEV forecast and PG&E staff are prepared and willing to continue working with CEC staff through additional DAWG meetings or other engagement opportunities as needed.

II. The Vehicle Price Input Should Reflect the Projected Price for Consumers and Include Price Parity with Conventional Vehicles by 2030 in the High Case.

Currently, the variable for vehicle price in the PEV forecast is directly tied to the CEC's projected battery costs. This results in the assumption that vehicle prices will increase in the near-term due to increasing battery sizes. PG&E recommends that the PEV forecast instead distinguish between the vehicle cost (which is largely dependent on battery cost) and the vehicle price as paid by the consumer. Manufacturers may set their PEV price based on a variety of factors, such as meeting statewide regulations or obtaining PEV market share, rather than simply based on vehicle cost. Further, battery energy densities are expected to increase which may make the correlation between increasing vehicle range and battery capacity requirement non-linear. PG&E recommends that the vehicle price in the model represent the price paid by the consumer, and therefore base the input on factors other than the cost of the battery pack.

To the extent that vehicle price is dependent on battery price in the model, PG&E recommends that the CEC use the Bloomberg forecast for battery prices (the case labeled 'Bloomberg Forecast – Learning Curves') for the Mid case, and the CEC's 'Mid case' battery price forecast for the Low case.

In addition to basing battery price inputs on the Bloomberg analysis, PG&E also recommends that the High scenario consider PEV price parity (or lower) with conventional

vehicles by 2030, if not sooner. Bloomberg predicts the following years for EVs to reach price parity²:

Segment	Year of Price Parity
Small	2027
Medium	2026
Large	2026
SUV	2026

This was used as the vehicle price input assumption in the High scenario of the 2015 PEV forecast, and PG&E recommends that it be used in the 2017 High case as well.

III. The Vehicle-Class Parameter Should Assume that Plug-in Electric Vehicle Options Will be Available in All Vehicle Classes, and Customer Preference for Electric Vehicles Should Increase Over Time.

PG&E recommends that the vehicle class input in the High case include PEVs in all vehicle classes. The availability of PEVs across vehicle classes is constantly increasing and the PEV forecast should consider potential availability through 2030, rather than only what is known today. Therefore, the High case should have PEV models introduced in all vehicle classes at some point during the forecast timeline. The Mid case should, at a minimum, include available plug-in hybrid electric vehicle (PHEV) models in all vehicle classes and potentially include battery electric vehicle (BEV) models in all classes as well.

PG&E appreciated the discussion at the DAWG meeting regarding customer preference. PG&E recommends that the customer preference input, which indicates a customer's preference for a PEV over a conventional vehicle (all else equal), should increase over time in both the Mid and High cases. This variable can take into account the increasing general awareness of (and interest in) PEVs, as well as statewide efforts and goals that contribute to more rapid market changes.

IV. The CEC Should Include Another Scenario to Demonstrate Conditions Necessary to Meet the California Air Resources Board's Mobile Source Strategy Goals

In addition to the Low, Mid, and High cases in the final 2017 PEV forecast, the CEC should also use its model to develop a scenario that meets the goals described in the Mobile Source Strategy and 2030 Scoping Plan established by the California Air Resources Board (ARB).^{3,4} This scenario can be separate from the final PEV forecast scenarios in the Integrated Energy Policy Report (IEPR) and only used as a trajectory to demonstrate what conditions are necessary to meet 4.2 million zero-emission and plug-in hybrid electric vehicles in California by

² Bloomberg New Energy Finance, "When Will EVs be Cheaper Than Conventional Vehicles" Report, Apr 2017

³ ARB, 2016 Mobile Source Strategy, <https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrsrc.pdf>

⁴ ARB, The 2017 Climate Change Scoping Plan Update, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf

2030. This scenario would help stakeholders understand the feasibility of this target and other statewide goals and what conditions need to be met in order to achieve this goal.

V. Conclusion

PG&E appreciates the opportunity to comment on the August 23, 2017 DAWG meeting regarding the Plug-in Electric Vehicle Forecast and looks forward to continued participation in this important work.

Sincerely,

/s/

Wm. Spencer Olinek