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Mr. Samuel Wade
Branch Chief, Transportation Fuels Branch
California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

RE: Pacific Gas and Electric Comments Proposed Amendments to the Low Carbon Fuel Standard Regulation

Pacific Gas and Electric Company (PG&E) appreciates this opportunity to provide feedback in response to the Air Resources Board's (ARB) release of Modified Text for the Proposed Amendments to the Low Carbon Fuel Standard (LCFS) Regulation on June 20, 2018. PG&E continues to strongly support California's greenhouse gas (GHG) emission reduction goals as established in Assembly Bill 32 and Senate Bill 32. Maintaining a well-designed LCFS program that advances low-carbon fuels will play a key role in achieving the state's 2030 greenhouse gas emissions reduction targets. We believe that the increased use of electricity, conventional and renewable natural gas, and hydrogen as fuels is critical for the success of the LCFS program.

PG&E and other utilities are in a unique position to offer broad solutions to our customers, including our brand-neutral 'Clean Fuel Rebate' program that returns LCFS credit revenue to residential electric vehicle (EV) owners, EV infrastructure programs like the EV Charge Network program for workplaces and multi-unit dwellings, and recently approved EV programs like the 'FleetReady' and 'DC Fast Charge' that will build infrastructure for light- and heavier-duty vehicles. Additionally, our existing natural gas infrastructure provides access to renewable and conventional natural gas to support low and near-zero emission vehicles.

PG&E is providing comments on several important elements of the program below. These comments are divided into the following sections:
I. Capacity Crediting Programs
II. Residential EV Charging
III. Smart Charging Lookup Table Pathways
IV. Third-party Verification Requirements
V. Biomethane Temporary and Tier Lookup Tables

VI. Fueling Supply Equipment Registration for Separately Metered EVs
VII. Credit Transactions

I. Capacity Credits for Publicly Accessible Refueling Infrastructure

PG&E recognizes the need for publicly accessible zero-emission vehicle infrastructure, and the challenges associated with making investments in alternative fuel stations at this early phase of the market. Increasing the number of DC fast chargers and hydrogen (H2) stations will help accelerate the market for both fuel cell and battery-electric technologies, and make refueling more accessible to California residents who do not currently have access to home charging or a nearby hydrogen station.

ARB Staff's proposal for capacity crediting programs for DC fast chargers and H2 stations is an innovative approach to incentivize additional clean transportation infrastructure. Given that it is a significant departure from the traditional LCFS crediting program however, PG&E recommends that ARB and stakeholders carefully monitor the effects of these new capacity crediting programs on the overall LCFS market.

II. Residential EV Charging

PG&E continues to support the electrical distribution utility (EDU) as the credit generator for the base credits from residential EV charging. PG&E disagrees with the current proposal in draft language §95483(c)(2) that owners of EV charging equipment at multi-family residences will generate the LCFS credits from multi-family residential EV charging, instead of the EDU. This change would reduce the residential EV charging credits generated by EDUs, and thus negatively impact the EDUs' ability to administer programs funded by LCFS credits from residential EV charging to benefit all EV drivers.

Under the current regulation, EDUs receive credits from residential EV charging, including charging from both single-family residences and multi-family residences, and use the proceeds from these credits to benefit EV drivers. The credit calculation for non-metered residential EV charging is based on the count of EVs in each utility's territory and does not distinguish between single-family or multi-family residences. Per direction from ARB at the April 27 Board hearing on LCFS, the utilities are currently discussing ways in which to create a statewide, point-of-purchase EV incentive funded by the revenue from these residential EV charging credits. If residential EV charging credits from multi-family residences were no longer given to the EDUs, the credit revenue available to fund this point-of-purchase incentive could be significantly lower. Furthermore, the point-of-purchase incentive should be available to all Californians from all residence types, and therefore multi-family residential EV charging credits should be handled consistently with single-family residential credits.

PG&E recommends that the EDUs continue to generate all residential EV charging base credits, from both single-family and multi-family charging, such that the credits are handled consistently regardless of residence type and can contribute to the statewide point-of-purchase EV incentive program currently under discussion.

III. Smart Charging Lookup Table Pathway

PG&E continues to support ARB's inclusion of Smart Charging Lookup Table Pathways. However, consistent with our previous comments, we recommend that ARB address two important issues to prevent the incentive for EV charging and electrolytic hydrogen load to shift to times when their impact on GHG emissions is worse than if a California grid-average value were used:

a) Smart charging carbon intensities (CI) should accurately reflect actual curtailment and marginal heat rates, and

b) Smart charging carbon intensities should align with EV Charging Rates.

a) PG&E remains concerned that the proposed smart charging CIs do not accurately reflect curtailment and marginal heat rates, and mischaracterize the electricity CI at certain times in the table. Specifically, the simplified curtailment data source currently used in the table does not distinguish between periods of local curtailment, where EV charging and electrolytic hydrogen load outside the local curtailment pocket result in increased GHG emissions, and periods of system curtailment, where EV charging and electrolytic hydrogen load result in zero marginal GHG emissions. The current curtailment data over-estimates the impact of curtailment on marginal GHG emissions, and under-estimates the marginal emissions during the middle of the day, when local curtailment is most prevalent.

At the same time, the smart charging CIs do not accurately reflect the differences between marginal heat rates of thermal generation (and therefore the CI of electricity) at different times of the day and different seasons. For example, during the middle of the day (9 AM-3 PM) and the middle of the night (midnight-6 AM), efficient combined cycle generators are typically running, so the CI of electricity should be low even when renewables are not being curtailed. In contrast, during the late afternoon and evening (4 PM-9 PM), less efficient 'peaker plants' may be running, so the CI of electricity is typically higher. This is in alignment with current or proposed time-of-use (TOU) rates for the investor-owned utilities (IOUs), which have a peak period between 4 and 9 PM based primarily on marginal generation costs and driven by these heat rate factors. The ARB proposed 4 PM-9PM CIs are actually lower than midnight-6 AM CIs, and if implemented would incent EV charging during the most emissions-intensive time period.

We recommend that ARB consider adopting the methodology for calculating marginal GHG emissions described in the 2016 Itron/E3 Self-Generating Incentive Program (SGIP) Evaluation Study[1], or alternatively the similar methodology employed in the updated Avoided Cost

[1] Available at http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442454964

Calculator (ACC Model)[2] to calculate the marginal emissions impact of EV charging and electrolytic hydrogen production.

The Itron methodology was used in all three IOUs 2018 Rate Design Window (RDW) applications to model the impact of default rates on GHG emissions and is also being used by the GHG Signal Working Group that was established by CPUC Ruling 12-11-005[3]. The Itron methodology calculates marginal GHG emissions from actual real-time prices in the California Independent System Operator (CAISO) energy market. The calculation of marginal GHG emissions is expected to be updated once a quarter as part of the process pursuant to this Working Group, which could support ARB's quarterly updates to the smart charging Pathway CIs.

PG&E's alternate suggestion, the ACC Model, has been used in many cost-effectiveness proceedings to calculate the benefits of demand-side resources based on generation costs and avoided greenhouse gases, and was most recently updated in the Integrated Distributed Energy Resources (IDER) proceeding (R. 14-10-003). The methodology used in the ACC Model is almost identical to the Itron methodology, except that it uses day-ahead instead of real-time prices and is updated less frequently.

b) PG&E reiterates its concern that the smart charging pathway CIs listed in Table 7-2 do not align with the TOU periods established in the IOUs EV charging rates. To support consistency between times with the lowest CIs and times with the lowest rates, we suggest that ARB compare the smart charging pathway CIs with the TOU periods in the utilities' EV rates whenever the CIs are updated.

IV. Third-party Verification Requirements

PG&E supports ARB's proposal to improve the quality and accuracy of the LCFS program by requiring third-party verification. However, PG&E remains concerned that some of the Tier 1 and 2 fuel pathways applicants may require additional time to ensure that adequate operational and instrument controls are installed and maintained to ensure compliance with the LCFS regulation. We are also concerned that the risks and enforcement consequences for not meeting the standards established in the regulation may serve as a deterrent to entry for some credit generators. An unintended consequence of reduced participation would be a reduction in the number of credits available, which in turn would put pressure on the state's ability to achieve its CI reduction target and annual benchmarks.

In order to balance a need for a robust LCFS program and encourage sufficient market liquidity, we recommend that ARB retain the requirement for third-party verification starting in 2021 for 2020 data and implement *§ 95495. Authority to Suspend, Revoke, or Modify, or Invalidate* starting in 2023 for 2022 data. This will allow both regulated entities and verifiers the time

[2] Available at http://www.cpuc.ca.gov/General.aspx?id=5267
[3] Available at http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M202/K276/202276301.PDF

needed to meet the detailed requirements of this complex regulation and ensure sufficient liquidity in the LCFS credit market.

V. Biomethane Temporary and Tier Lookup Tables

PG&E supports renewable natural gas as a transportation fuel for customers whose transportation needs are not met by zero emission technologies today. Additionally, we support the state's effort to limit emissions of short-lived climate pollutants. As such, we are supportive of ARB's inclusion of a Tier 1 Simplified CI calculator for biomethane from Anaerobic Digestion of Dairy and Swine Manure and other pathways for renewable natural gas. This will encourage renewable natural gas suppliers in the state to opt-in to the LCFS program, generate credits, and increase market liquidity.

VI. Fueling Supply Equipment Registration for Separately Metered EVs

PG&E recommends that ARB clarify the Fueling Supply Equipment (FSE) registration requirements for metered EVs when reported by the EDUs for generating base residential EV charging credits.

In the draft regulation text, *§95483.2(b)(8)(B)(4)* indicates that FSE registration for metered residential EVs should include the Vehicle Identification Number (VIN) for the vehicle expected to charge at the residence (and the serial number of the charging equipment if off-vehicle meter data is used for the reporting), but notes that this information is optional when reporting metered electricity for base credits. However, it is unclear if all other FSE registration information, which includes name and address of the FSE owner, is also optional for metered EVs when reporting electricity for base credits. PG&E recommends that ARB clarify the FSE registration requirements for EDUs reporting from metered EVs for generating base credits.

Furthermore, when clarified by ARB in the draft regulation text, PG&E recommends that FSE registration for metered EVs should not include name and address of the metered EV customer, or any other private customer information, when reporting for base credits. PG&E recommends using the current approach, as this does not disclose private customer information and does not risk any double counting since this would be for base credits only, which are designated to the EDU.

VII. Credit Transactions

PG&E recommends that ARB clarify in the regulation how the Credit Seller and Credit Buyer should coordinate on initiating and completing the transfer request in the Credit Transfer Form (CTF) provided in the LRT-CBTS, as described in *§95487(b)(1)(C-D).* In ARB's existing regulation paper, the responsibilities from the Credit Seller to the Credit Buyer are explicit on the handoff between releasing the credit transfer and confirming the credit transfer. While the proposed timing on the transfer and confirmation is going to change in the new regulation, by stating that "the Seller and the Buyer must initiate and complete the transfer request" (Type 1) or "must report the following" (Type 2) leaves confusion and duplicative responsibilities. This

could also lead to unnecessary corrections requests which requiring the Executive Officer to review and approve that could be avoided. ARB should provide clear instructions (similar to the existing regulation) on how the responsibilities should transition from Seller to Buyer to complete the transaction.

PG&E also recommends that ARB clarify if there are consequences if there is a deviation from the "date" on all deliveries are anticipated to be completed by both Seller and Buyer (*§95487(b)(1)(D)(5)*). The current LRT-CBTS tool only allows the Seller to "submit" after they have completed the transfer entry. Alternatively ARB could add a "save" functionality in the LRT-CBTS tool that allows the party to go back and update the date of completion during the 10-day entry window, before the entry is formally submitted.

Conclusion

PG&E continues to support the Low Carbon Fuel Standard as a program that will help the state meet its aggressive environmental goals while maintaining a healthy economy. We look forward to working with ARB staff to further refine the draft LCFS amendments.

Please feel free to contact me if you have any questions or concerns.

Sincerely,

/s/

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Pacific Gas and Electric