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May 10, 2018

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RE: Pacific Gas and Electric Comments in Response to the Air Resources Board's April 26, 2018 Workshop on Amendments to the Cap-and-Trade Regulation

Pacific Gas and Electric Company (PG&E) appreciates this opportunity to provide feedback in response to the Air Resources Board's (ARB) April 26, 2018 workshop regarding amendments to the Cap-and-Trade Regulation (Regulation) pursuant to Assembly Bill 398 (AB 398) and ARB Board Resolution 17-21 (BR 17-21).

PG&E continues to strongly support California's greenhouse gas (GHG) emission reduction goals as established in AB 32 and SB 32. Maintaining a well-designed Cap-and-Trade Program that is sufficiently flexible and responsive will be critical to our progress towards these goals as they increase in difficulty between 2020 and 2030. To this end, PG&E provides comments in response to the April 26th workshop on several important elements of the program below. These comments are divided into the following sections:

I. "Overallocation" and Post-2020 Caps
II. Allowance Budgets and Distribution of Removed Allowances
III. Price Ceiling
IV. Reserve Tiers (Price Containment Points)
V. Natural Gas Allocation
VI. Transportation Electrification
VII. CAISO Energy Imbalance Market Emissions
VIII. Direct Environmental Benefits of Offsets
IX. Maintaining Environmental Integrity with Price Ceiling Revenues
X. Use of Allowance Value
XI. Legacy Contracts
XII. Banking and Holding Limits

I. "Overallocation" and Post-2020 Caps

PG&E supports ARB Staff's analysis on "overallocation" as reflected in the April 26 workshop presentation and supporting material. The Cap-and-Trade Program is working as intended – filling the gap between cumulative emissions reductions achieved by complementary measures and the state's GHG goals, as reflected in ARB's adopted allowance budgets, and is doing so cost-effectively. Adjusting post-2020 caps to remove future access to allowances will lead to compliance costs higher than needed to achieve the 2030 target. Higher-than-necessary compliance costs will raise the cost burden on households, and increase the risk of economic and emissions leakage with no additional environmental benefit relative to the 2030 target.

PG&E agrees with Staff's analysis that uncertainty must be considered when assessing unused allowances and post-2020 caps. Broad macroeconomic trends, including population and economic growth, will significantly influence California's emissions over time. Allowances that are currently unused have the potential to be a crucial precaution against rapidly rising allowance prices if economic or population growth exceeds current forecasts, along with the other cost containment features outlined in AB 398.[1]

In addition, the conceivable limited availability of cost-effective abatement opportunities in California and linked jurisdictions could further reduce the number of unused allowances[2]. Given the large uncertainties involved, PG&E considers that the current mechanism to address low demand, transfer of unsold allowances to the Reserve after eight auctions, is a sufficient safeguard to avoid persistent low demand and the accumulation of unused allowances.

II. Allowance budgets and distribution of removed allowances

PG&E suggests that Staff revisit its proposed approach to remove an additional 23 million metric tons due to the offset usage limit change from four percent to six percent in 2026 per AB 398. As mentioned in PG&E's comments in response to the March 2 workshop, ARB's proposal is the opposite of its approach from 2010-2011. Back then, the change in the offset usage limit from 4% to 8% was made to account for the removal of allowances to fill the Allowance Price Containment Reserve (APCR), and was intended to maintain relative stringency (i.e., by expanding offset supply in response to fewer allowances being made available to the auctions) in the face of changes to the allowance budgets. In contrast, ARB established allowance budgets for the post-2020 Program in its 2017 rulemaking at a time when the offset usage limit for the program was 8%. The Legislature has since lowered the offset usage limit from 8% to 4% in 2021-25 and from 8% to 6% for 2026-30. In both 5 year periods, the offset usage limit is getting more restrictive relative to the policy in place when ARB originally established the post-2020

[1] See analyses from Brattle: http://files.brattle.com/files/11768_the_future_of_cap-and-trade_program_in_california_final_12.4.17.pdf; ICIS https://www.icis.com/energy/carbon-emissions/; and Borenstein et al https://ei.haas.berkeley.edu/research/papers/WP281.pdf

[2] BNEF https://www.bnef.com/core/insights/17155

allowance budgets. The Legislature has acted to increase the stringency of the Program, and in response, ARB is proposing to further increase the stringency by removing allowances from the post-2020 budgets. If consistency with the 2010-11 approach were applied, ARB would be proposing to expand the post-2020 allowance budgets to balance out the lower offset usage limit (lower compared to when the post-2020 budgets were set). At the very least, ARB should not exacerbate the Legislature's action to tighten the post-2020 program via offset usage limits with further actions to remove allowances from the post-2020 market.

PG&E continues to recommend that the 52.4 MMT that ARB planned to add to the post-2020 Reserve be placed in the post-2020 Reserve tiers. Some stakeholders recommend that these allowances either be permanently retired or placed in the price ceiling reserve. Retirement of allowances would restrict supply, leading to higher compliance costs and energy prices. With increased costs, households will face higher prices for many goods and services, and economic and emissions leakage may result.

Placing these allowances in the price ceiling reserve would also not support cost-containment since ARB is already working to adopt a hard price ceiling that would allow for the issuance of price ceiling instruments, which would serve the same purpose as having more allowances in the price ceiling reserve. Instead, placing these allowances in the Reserve tiers would increase their effectiveness to mitigate rising allowance prices and help ease the transition to higher prices, for both compliance entities and households.

III. Establishing a Price Ceiling

PG&E would like to re-emphasize that the purpose of the price ceiling is to ensure allowance prices cannot rise to politically unacceptable levels that would jeopardize the Program. Considering this, PG&E believes Staff's proposed 2030 price ceiling range of $81-$150 (in 2015 dollars) is too high to achieve the Legislature's intent for the price ceiling. PG&E encourages ARB to focus on the six clear criteria for establishing a price ceiling laid out in AB 398, which gives room to choose reasonable values for the price ceiling, rather than a single, voluntary corporate carbon price or Social Cost of Carbon (SCC) values from just one study. We encourage ARB to use the 2016 US Government SCC work, which is well-vetted and based on three separate integrated assessment models, in this rulemaking as it has in other proceedings.

PG&E supports a 2030 price ceiling range of $60-$80 per metric ton (in 2015 dollars) – which is in the ballpark of the current post-2020 APCR (with the same rate of increase - 5% plus the rate of inflation) and is greater than the SCC used in the 2030 Scoping plan. This range would allow for allowance prices to rise to address the costlier abatement that will be needed for California to continue reducing GHG emissions and reach its emissions reduction targets, and is at the high end of plausible, politically acceptable allowance prices.

Some stakeholders, in their comments on the March 2 ARB C&T Workshop, advocated for a price ceiling value at the high end of the $81 - $147 range or even well above $147. Not only would those high price ceiling values be politically unpalatable, but they would also lead to

significant consumer cost impacts. Additionally, it is important to be mindful of the impacts high ceiling prices would have on other linked jurisdictions or potential linkage partners. An unreasonably high ceiling price may discourage other jurisdictions from linkage due to potentially higher allowance prices and their impact on the economy and consumers.

Price Ceiling Implementation

PG&E would like to reiterate our comments on the price ceiling implementation mechanics made after the March 2 ARB C&T workshop. We recommend sales at the Price Ceiling should be offered in a process similar to the Reserve Sale process. There should be minimal restrictions on the volume of price ceiling instruments purchased; since they would be the highest cost instruments in the market, entities would naturally seek to limit the amount they purchase to just what is needed for compliance. The sale should be open to covered entities and opt-in entities in California and linked jurisdictions in order to avoid more tradable instruments transferring to linked jurisdictions.

IV. Establishing Reserve Tiers (Price Containment Points)

As stated in our previous comments, the Reserve Tiers should help temper the potential for sharp increases in allowance prices by making more allowances available at more moderate prices to compliance entities. PG&E refers ARB to our March 2 comments for our specific Reserve Tier proposal[3].

PG&E agrees with stakeholder comments that the Reserve Tier prices should be low enough to help protect customers before prices reach the ceiling and provide an early signal to compliance entities to prepare for higher prices, as well as give the Independent Emissions Market Advisory Committee time to evaluate and recommend possible corrections to the program, if needed. Effective cost containment is needed to avoid rapidly escalating allowance prices and balance supply and demand in the market over time.

Reserve Tier Implementation

PG&E continues to recommend that the Reserve Sales be offered quarterly if the preceding auction settlement price is greater than or equal to 60% of the lower Reserve Tier price, and at least once a year prior to a compliance event. Similar to the Price Ceiling implementation, the Reserve Sales should be open to covered entities and opt-in covered entities in California and linked jurisdictions. We also recommend that the allowances go directly into the purchaser's compliance account and that the language "if needed for compliance" be self-defined.

[3] PG&E Comments in Response to March 2, 2018 Cap-and-Trade Workshop: https://www.arb.ca.gov/lists/com-attach/47-ct-3-2-18-wkshp-ws-VWUBNFRkVzIFMgQ8.zip

V. Natural Gas Allocation

PG&E continues to urge ARB to return the post-2020 rate of allowance decline for the natural gas sector to its current, pre-2021 rate (~2% annual reduction) in acknowledgement of the higher costs Renewable Natural Gas (RNG) will impose on customers, similar to the additional costs for renewable resources in the electric sector. By maintaining the current, pre-2021 allowance decline for natural gas, ARB would strike parity with the electric sector methodology, which includes recognition of the cost burden from the Renewable Portfolio Standard program and other complementary policies.

As the natural gas sector seeks to decarbonize, RNG will have an important role to play in achieving the State's climate goals by providing a lower-emission, beneficial use for Short-Lived Climate Pollutants (SLCPs) that are currently being released directly into the atmosphere as methane, or flared. An increasingly decarbonized gas supply can enable near-term decarbonization of medium and heavy-duty transportation (which will also improve air quality), provide cleaner fuel for ongoing thermal electric generation (which supports integration of renewable resources), and provide cleaner fuel for customer end-uses, especially in difficult to electrify industrial applications.

Efforts in support of this transition are occurring now. PG&E and other stakeholders are actively engaged in pursuing the creation of a state-wide program that would foster cost-effective procurement of RNG in California. In addition, PG&E has filed an Advice Letter[4] with the California Public Utilities Commission (CPUC) in support of a Voluntary RNG Procurement Pilot that seeks to purchase RNG to meet the compressed natural gas (CNG) vehicle fuel demand from PG&E's 28 CNG stations. Per SB 1383, the CPUC's dairy pilot biomethane solicitation program is also underway and will approve at least five dairy biomethane projects for pipeline interconnection to investor-owned utilities in California by the end of 2018.

In light of these and future efforts to help decarbonize the natural gas system, PG&E believes it would be appropriate to maintain the current rate of decline into the post-2020 period for the natural gas sector in order to protect customers, as noted in BR 17-21.

VI. Transportation Electrification

PG&E appreciates ARB's continued focus on seeking methods to quantify transportation-related electric load growth emissions in order to evaluate electrical distribution utility allocation and adjust it as needed. We recommend that Staff reconsider the applicability of transportation electrification measurement methodologies, and associated data, currently used in the Low

[4] PG&E Advice Letter 3961-G: https://www.pge.com/tariffs/assets/pdf/adviceletter/GAS_3961-G.pdf

Carbon Fuel Standard (LCFS), particularly for electricity consumed by residential electric vehicle (EV) charging.

The unique circumstances for residential EV charging mean that quantifying emissions load growth equivalent to Mandatory Reporting Regulation standards is challenging and unrealistic. The LCFS generates tradeable financial assets, similar to allowances, based on a robust estimation methodology, and PG&E considers this approach appropriate for replication in the Cap-and-Trade Program. By putting an unduly high burden on quantifying transportation-related load growth, the ARB will be penalizing the use of alternative fuels under the Cap-and-Trade Program and potentially hindering the decarbonization of the transportation sector. PG&E would welcome the opportunity to engage with Staff further to develop this estimation methodology.

VII. CAISO EIM proposal

As PG&E understands ARB's proposal to capture the effects of GHG emissions from secondary dispatch in the Energy Imbalance Market (EIM), the proposed approach would:

- Limit import into California ascribed to a resource to the difference between the resource's maximum output and its base schedule
- Use the method that EIM currently uses to ascribe imports to resources based on GHG costs for the resources
- After EIM dispatches resources, ARB would work with CAISO to calculate any remaining GHG emissions caused by imports into California and assign the requirements for allowances to California parties buying energy from EIM.

Per PG&E's understanding of the proposal, the method of calculating the cost of GHG emissions from secondary dispatch would be done after EIM is run and would not affect the dispatch in EIM or the locational marginal price (LMP)s calculated by EIM. This addresses concerns raised by stakeholders regarding methods that were previously considered for addressing secondary dispatch, which could result in EIM energy prices that were not consistent with the EIM dispatch, and could lead to inappropriate bidding strategies to take advantage of the discrepancy and improperly increasing costs to participants.

PG&E looks forward to CAISO and ARB providing more detail on how the above calculations would be performed. The details would be needed to evaluate the impact of the proposed approach on market operations and the accuracy of the GHG emissions ascribed to secondary dispatch.

In EIM, the EIM Entities submit base schedules and EIM optimizes dispatch across all EIM Entities. The change in dispatch between the base schedules and the final EIM dispatch can results in changes in GHG emissions in the EIM Entities. Some of these changes in emissions will be captured by the GHG mechanism incorporated in EIM and assigned to resources that EIM deems to support imports into California. This will likely not capture all emissions resulting

from supporting imports into California. Per the April 26 workshop presentation, ARB is considering defining the remainder as the GHG emissions caused by secondary dispatch and assigning the responsibility for allowances for these emissions to California parties buying energy from EIM. However, PG&E would recommend that ARB evaluate such an approach carefully. Some of the remaining GHG emissions may arise from dispatch actions that EIM takes to serve load outside California and not to support imports into California. EIM not only adjusts dispatch in EIM Entities to serve imports into California, it also adjusts dispatch in EIM Entities to optimize dispatch within EIM Entities and energy transfers between EIM Entities. EIM may take such actions since the base schedules may not optimally serve loads either within an EIM Entity or across EIM Entities. California load serving entities should not be required to procure allowances to cover GHG Emissions resulting from actions that EIM takes to serve load outside California.

Another aspect of the proposed approach that should be reconsidered is that the method for assigning responsibility for allowances for GHG emissions from secondary dispatch will be done after the EIM market runs (as PG&E understands the proposal). This would achieve one goal of ARB: it would account for GHG emissions caused by serving load in California. However, this also has another effect. Since this accounting is done after the EIM is run, the cost of the required allowances cannot be considered in the EIM dispatch. This cost also cannot be incorporated in the LMPs calculated by EIM. If the cost for allowances for emissions from secondary dispatch were sufficiently high, it might be optimal to reduce imports into California or dispatch resources with higher energy prices but lower emissions. Calculating the emissions from secondary dispatch after EIM is run would not allow the market to see the costs and adjust dispatch to potentially reduce costs and lower emissions. We request that ARB consider this possible effect when making its final decision.

VIII. Interpreting "Direct Environmental Benefits"

AB 398 requires that a portion of the offsets surrendered for post-2020 compliance be sourced from projects that provide "direct environmental benefits in the state," or DEBS. PG&E supports ARB's adoption of the language from the statute on DEBS into the Regulation. PG&E interprets this language as not precluding projects out of state that may provide benefits in state. PG&E agrees with a number of other stakeholders who recommend that ARB establish criteria for offset projects to qualify as providing DEBS, such that offset developers have a clear understanding of what a qualifying project is and are not subject to a lengthy or subjective review regarding whether or not their project provides DEBS.

PG&E is concerned about how additional regulatory requirements for offsets may constrain offset supply, thus reducing their cost-containment and cost-saving benefits. Therefore, PG&E reiterates our recommendation that offset projects physically located within the state of California should automatically earn designation as a DEBS project, both for past and future Air Resources Board Offset Credit (ARBOC) issuances. PG&E also recommends that ARB adopt additional offset protocols to help supply offsets that meet the DEBS criteria, and consider ways

to recognize the DEBS that projects such as Ozone Depleting Substances (ODS) destruction provide. Some of these projects collect ODS in California, but destroy them in states with appropriate destruction facilities. These projects yield significant DEBS by reducing a harmful pollutant and avoiding the emissions of that pollutant in California, clearly meeting the spirit of this provision. Finally, PG&E again supports ARB's revision of the invalidation provisions to further narrow the types of activities or actions that could result in an invalidation and also urges ARB to consider updating its invalidation framework to align with the Ontario model

IX. Maintaining Environmental Integrity with Price Ceiling Revenues

AB 398 directs ARB to maintain environmental integrity by using the revenues from the sale of "additional metric tons" at the price ceiling to procure at least equivalent metric-ton reductions outside of the Program. The sale of these additional tons at the price ceiling indicates that further emissions reductions from capped sectors are more costly; as such, ARB should have discretion to procure a broad range of instruments and reductions from projects that meet the statutory criteria.

Three major design issues to consider in operationalizing this provision are 1) defining the types of emission reductions that are eligible for procurement; 2) identifying how ARB would procure these reductions; and 3) the disposition of any excess revenues if ARB procures equivalent metric ton reductions at costs lower than the price ceiling. PG&E refers ARB to its comments in response to the March 2 C&T workshop for details on these major design issues.

Types of Eligible Reductions

Regarding the types of eligible emission reductions, PG&E recommends that by default ARB can purchase ARBOCs and other Western Climate Initiative (WCI) Linked Jurisdictional Offsets to meet AB 398's equivalent reduction requirement. Also, if ARB expands the definition of ARBOCs to include international forestry offsets or other new protocols, these would also by default qualify as eligible reductions. Additionally, the one-way linkage mechanism adopted in 2017 could also provide access to eligible reductions.

ARB should also establish a process for third parties to pre-qualify protocols or projects that could produce eligible reductions. Because offset projects can take several months or years to develop, ARB should establish this pre-qualification process by January 1, 2020. Also, ARB should be required to issue a final ruling on protocol or project pre-qualification within one year (365 days) of submission of all required documentation.

ARB Procurement of Eligible Reductions

Any party should be able to sell eligible instruments to ARB, and ARB should be able to use multiple procurement methods to obtain eligible reductions from these parties.
ARB could also be bound by specific timelines to fulfill the environmental integrity provision. PG&E suggests that ARB should, if possible under its authority, further explore methodologies of either pre-procuring or pre-contracting or otherwise incenting third parties to generate eligible reductions, if, for example, prices reach the second price containment point.

Disposition of Excess Price Ceiling Revenues
ARB should seek to satisfy the environmental integrity provision in the most cost-effective way possible. If ARB is able to procure eligible reductions at prices lower than the price ceiling in order to maintain environmental integrity, PG&E suggests that any excess revenues be recycled back into the account used to maintain environmental integrity, or be directed to the Greenhouse Gas Reduction Fund to support emission reduction programs.

X. Use of Allowance Value

PG&E appreciates ARB's efforts to provide greater clarity on the allowable uses of revenue from allowances directly allocated to utilities, and reiterates our recommendation to broaden the language to include allowable uses of the funds for any and all GHG reducing strategies and programs, including procurement of RNG and funding RNG infrastructure. By limiting eligible GHG reduction approaches, ARB is "picking winners" and thus excluding other potentially viable emission reduction measures. Other solutions and technologies need to be encouraged and funded as a variety of GHG reduction approaches will benefit more customers who want to reduce GHG emissions. For example, we recommend expanding the list to include natural gas-specific measures such as RNG and near-zero emission vehicles.

XI. Legacy Contracts

PG&E reiterates its recommendation to remove the proposed provisions that would re-insert allowance allocations for a Legacy Contract Generator without an Industrial Counterparty. PG&E understands that Staff seeks to: (1) encourage renegotiation of Legacy Contracts, and (2) determine if post-2020 allocation is necessary and appropriate. It is PG&E's belief that those two actions fundamentally conflict: the ability to request and obtain a free allocation of allowances from ARB can hinder a meaningful and complete renegotiation of contracts to address GHG costs.

PG&E continues to assert that Panoche Energy Center ("Panoche") is not a Legacy Contract Generator without an Industrial Counterparty because Panoche is not a party to a Legacy Contract. As established through a six-month arbitration period and confirmed through an appeal process, the Power Purchase and Sale Agreement ("PPA") between Panoche and PG&E addresses terms and conditions governing GHG cost allocation. Therefore, Panoche is not a party to a Legacy Contract because the PPA provides for Panoche's recovery of Cap-and-Trade Program costs. Further detail concerning the directly relevant judgement is provided in Attachment 1 to PG&E's comments in response to the March 2 C&T Workshop.

PG&E also refutes Panoche's statements in their March 2 C&T Workshop Comments related to PG&E's actions, which are unsubstantiated and run counter to the public record, including CEC permits, CPUC proceedings and CAISO operational standards. As shown through the arbitration cited above, Panoche is fully responsible for any harm that results from Panoche's failure to

negotiate a reasonable compromise. PG&E respectfully urges the ARB to review the arbitrators' decision to avoid compensating Panoche for GHG costs a second time and avoid continuing to provide an incentive against fully renegotiated contracts.

XII. Banking and Holding Limits

PG&E concurs with ARB that sufficient evidence has not been provided to warrant a change to banking or holding limits for the post-2020 period. Therefore, current banking rules, which allow use of pre-2021 compliance instruments, including offset credits procured under existing protocols post-2021, should be maintained to support market continuity, allow compliance entities to adequately plan for their compliance obligations, maintain investment in high-quality offset projects, and avoid potential price volatility and market disruption. As such, PG&E reiterates its belief that compliance instruments should not have expiration dates, and those in private accounts post-2020 should not be de-valued.

Conclusion

PG&E continues to support Cap-and-Trade 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 Regulation in line with AB 398 and BR 17-21.

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

Sincerely,

/s/

Fariya Ali

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Pacific Gas and Electric