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March 16, 2018

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**RE: Pacific Gas and Electric Comments in Response to the Air Resources Board's
March 2, 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) March 2, 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 strongly supports California's greenhouse gas (GHG) emission reduction goals and has been an active participant in California's GHG reduction programs since the inception of AB 32. PG&E has reached California's 2020 renewable energy goal of 33% three years ahead of schedule, and now delivers nearly 80 percent of its electricity from greenhouse-gas (GHG) free resources.¹ PG&E has also made a commitment to take actions that will help avoid 1 million tons of greenhouse gas emissions across PG&E's operations by 2022.

Cap-and-Trade plays a critical role in California's GHG reduction strategy and will be even more important as we move to make deeper, more ambitious GHG reductions from 2020 to 2030. AB 398 and BR 17-21 offer an opportunity to further refine this successful and world-leading, market-based emissions reduction program to ensure that Cap-and-Trade continues to be an effective and flexible mechanism to help California meet its goals.

PG&E provides comments in response to the March 2 workshop below, which are divided into the following sections:

¹ PG&E News Release. February 20, 2018

https://www.pge.com/en/about/newsroom/newsdetails/index.page?title=20180220_pge_clean_energy_deliveries_already_meet_future_goals

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I. “Overallocation”

PG&E largely agrees with ARB Staff’s thinking on “overallocation” as reflected in the March 2 workshop presentation. California is on track to achieve its 2020 GHG target and the Cap-and-Trade Program is working as intended. Its job is to fill any gap between cumulative emissions reductions achieved by complementary measures and the state’s cumulative GHG goals, as reflected in ARB’s adopted allowance budgets, and to do so cost-effectively. This gap has been small in the first phase of the program due to a combination of factors, including the recession and aggressive complementary policies, but is expected to grow over time as outlined in ARB’s 2030 Scoping Plan. Despite the Cap-and-Trade Program not having a major role in the current phase of the program, it is delivering GHG reductions via the floor price, which is sufficient to change some covered entity behavior (e.g., utilization of coal plants dedicated to California has been lower than expected from SB1368 compliance alone²), and via expenditure of auction revenue in the Greenhouse Gas Reduction Fund (GGRF). PG&E supports this increasing reliance on carbon pricing because it helps achieve the state’s GHG goals at least cost to our customers.

Any analysis of “overallocation” needs to consider the full scope of the Program, including at least its full 18 year length (2013-30), the effects of complementary policies, and linkage with

² Generation for California (and associated capacity factors) from coal plants contracted to California has gone down significantly since implementation of the Cap-and-Trade Program started in 2013; see Table 1: http://www.energy.ca.gov/renewables/tracking_progress/documents/current_expected_energy_from_coal.pdf

Quebec and Ontario. Available analyses³ generally project that cumulative allowance demand will exceed supply, including banked allowances, before 2030, which indicates that the Program is not “overallocated.” When allowance demand exceeds supply, allowance prices will increase, perhaps sharply. Permanent removal of allowances from the market restricts supply, bringing forward the date that allowance prices will increase. While cumulative in-state emissions will be lower, compliance costs and energy price impacts will be higher. With higher costs, households will face higher prices for many goods and services, and economic and emissions leakage may result.

In addition, California’s GHG goals continue post-2030 and significantly increase in ambition over time. With the Cap-and-Trade Program extended post-2030, allowances will be increasingly scarce over time. Therefore, banked allowances could be used post-2030 rather than in the 2021-30 phase of the Program.

Another important point is that the appearance of “overallocation” is not a design flaw that needs to be corrected, but an indication of California’s success at reducing GHG emissions ahead of schedule. While a portion of the observed GHG emissions reductions are due to the state’s many complementary policies, these policies also impose costs on Californians and should not be compounded by arbitrarily removing allowances from the Cap-and-Trade Program. PG&E agrees with ARB Staff that the program should seek to “avoid penalizing covered entities by making Program more stringent in response to early action to reduce GHGs or investments in allowances.”

Finally, Cap-and-Trade Program design already dynamically addresses any potential “overallocation” through its Auction Reserve Price. With this mechanism, allowances are withheld from the regular auctions temporarily (and are permanently moved to the Allowance Price Containment Reserve (APCR) after 24 months) when demand for allowances is low. This mechanism is sufficient to maintain compliance entity expectations for “steady, predictable, and increasing carbon price,” as desired by ARB Staff. Thus, PG&E does not believe that any additional action is needed. If ARB finds enough evidence to justify further action, any such actions should seek to minimize impacts on prior purchases (i.e., not de-valuing allowances or placing expirations on allowances).

II. Banking and Holding Limits

AB 398 directs ARB to establish allowance banking rules that discourage speculation, avoid financial windfalls, and consider the impact on complying entities and volatility in the market.

³ For example, see 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/>; BNEF <https://www.bnef.com/core/insights/17155>; and Borenstein et al <https://ei.haas.berkeley.edu/research/papers/WP281.pdf>

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, compliance instruments should not have expiration dates, and those in private accounts post-2020 should not be de-valued.

ARB should consider whether changes to the holding limit are necessary now that the Program extends beyond 2020. The extension of the Program creates the opportunity to evaluate whether or not the existing holding limit is flexible enough for the additional program period.

III. Establishing a Price Ceiling

The purpose of the price ceiling is to ensure allowance prices cannot rise to politically unacceptable levels that would jeopardize the program. This is particularly important for the Cap-and-Trade Program because allowance prices transparently flow through to energy prices including prices for gasoline, electricity, and natural gas that are salient to consumers. Importantly, the price ceiling in AB 398 is paired with a requirement to use revenue from any sales of price-ceiling instruments to achieve at least equivalent GHG emissions reductions, thereby maintaining environmental integrity. PG&E believes ARB Staff's proposed 2030 price ceiling range of \$81-\$150 (in 2015 dollars) is too high to ensure allowance prices do not rise to politically unacceptable levels and frustrates the Legislature's intent of creating a meaningful price ceiling.

AB 398 laid out six clear criteria for ARB to use in establishing the price ceiling, which ARB has helpfully quantified to the extent possible in Table 5 of its Preliminary Concepts paper. PG&E encourages ARB Staff to focus on these six criteria provided by the Legislature in establishing the price ceiling. These criteria give ARB plenty of room to choose reasonable values for the price ceiling. PG&E discourages ARB from considering voluntary corporate carbon pricing because these prices do not flow through to energy prices like allowance prices do and are therefore not relevant to determining a price ceiling for allowances (which do flow through to energy prices). PG&E is also concerned with ARB's use of a single voluntary carbon price from a single company, which may not even be used in the United States, to justify the high end of its price ceiling range. Similarly, we encourage ARB staff to look at the balance of prominent academic research on the Social Cost of Carbon (SCC) – not just one study – in evaluating the SCC. The US Government SCC work from 2016 is well vetted, based on three separate integrated assessment models, and has been used by ARB in its other proceedings such as the 2030 Scoping Plan. PG&E encourages ARB to continue using the 2016 US Government SCC work in estimating the SCC in this rulemaking.

PG&E supports a price ceiling in the ballpark of the current post-2020 APCR and that is greater than the SCC used in the 2030 Scoping Plan as identified in Table 5 of the Preliminary Concepts

paper. This roughly corresponds to a 2030 price ceiling range of \$60-\$80 per metric ton in 2015 dollars. PG&E believes such a range reasonably balances the six criteria established by the Legislature, leaves significant opportunity for allowances price to rise to encourage more costly abatement that will be needed for California to continue reducing GHG emissions, and is at the high end of plausible, politically acceptable allowance prices.

Price Ceiling Implementation

In terms of the mechanics of how the price ceiling will be implemented, PG&E recommends that sales at the Price Ceiling should be offered in a process similar to the Reserve Sale process (i.e., quarterly if the preceding auction-settlement price is greater than or equal to 60% of the ceiling price, and at least once a year prior to a compliance event).

With regard to the volume of instruments entities can buy at the price ceiling, PG&E recommends that the language, “if needed for compliance,” should be self-defined, with compliance entities determining their need since they will naturally seek to minimize the number of instruments they buy at the price ceiling. PG&E further recommends that these instruments go directly into the purchaser’s compliance account. PG&E does not recommend limiting entities to the amount needed to fulfill a compliance obligation, nor does PG&E support requiring an entity’s holding account to be empty of compliance instruments valid for surrender before being allowed to purchase instruments at the price ceiling. These requirements would add to ARB’s administrative burden and are unnecessary to maintain liquidity.

Price ceiling sales should be open to covered entities and opt-in covered entities in California and linked jurisdictions. Otherwise, at higher prices, more tradable instruments will transfer to linked jurisdictions, and California entities would end up purchasing more non-tradable instruments. Allowing broader participation could avoid this market segregation between tradable and non-tradable instruments.

IV. 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.

Types of Eligible Reductions

Regarding the types of eligible emission reductions, PG&E recommends that by default ARB can purchase Air Resources Board Offset Credits (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 REDD+ (reducing emissions from deforestation and forest degradation in developing countries, and fostering conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries) or other new protocols, these would also by default qualify as eligible reductions. Additionally, the one-way linkage mechanism adopted in 2017 whereby ARB may purchase compliance instruments from other jurisdictions could also provide access to eligible reductions, as long as the linkage were approved by ARB, and should also be eligible.

ARB should also establish a process for third parties such as registries, project developers and other parties to pre-qualify protocols or projects that could produce eligible reductions. For example, there are a number of voluntary offset protocols that could be used to reduce emissions outside of capped sectors. Because offset projects can take several months or years to develop, ARB should establish this pre-qualification process by January 1, 2020, to provide project developers enough time to start developing projects (if they are ever necessary). 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, including but not limited to compliance entities, project developers, marketers and non-governmental organizations (NGOs). ARB should be able to use multiple procurement methods to obtain eligible reductions from these parties, including:

1. "Dutch" auctions
 - a. The volume to be purchased would be established ahead of time by ARB and all bidders offer in supply, and the settlement price determined using the lowest price required for ARB to purchase all requested volumes.
 - b. Any eligible reduction is equally valued so that ARB is not presupposing winning projects or instruments.
 - c. ARB could set the maximum price as the price ceiling
2. Request For Offers (RFOs)
3. Bilateral contracts
4. Exchanges

ARB could also be bound by specific timelines to fulfill the environmental integrity provision. For example, ARB could require that procurement of eligible reductions must occur within two years of the sale of additional metric tons, and that all the reductions needed to maintain

environmental integrity be delivered within a certain number of years following the conclusion of the procurement process.

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.

V. Reserve Tiers (Price Containment Points)

PG&E recommends that the Reserve tiers (formerly known as price containment points) be set at prices $1/3$ and $2/3$ of the distance between the floor and ceiling prices. The table below illustrates our price tier proposal using the APCR price as the ceiling price.

Reserve Tiers (2017\$/MT)	2021	2026	2030
<i>Ceiling Price (APCR price post-2020)</i>	\$74	\$79	\$83
1st Tier Ceiling price – $(2/3) \times (\text{price ceiling} - \text{price floor})$	\$36	\$40	\$45
2nd Tier Ceiling price – $(1/3) \times (\text{price ceiling} - \text{price floor})$	\$55	\$59	\$64

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 to help make the transition smoother. If the Reserve tiers are set too close together or too close to the price ceiling, they will be less effective at mitigating extreme price volatility. In addition, a lower first Reserve tier will provide earlier opportunity for cost containment and provide a signal sooner to compliance entities to prepare for higher prices.

Allowance price projections show either high allowance prices, or prices steadily increasing above the floor (e.g. Borenstein/Bushnell (2017), Bloomberg (2017), and ICIS (2017)) and effective cost containment is needed to avoid sharp price spikes and balance supply and demand in the market over time.

Reserve Tier Implementation

Similar to the above comments on the implementation of the price ceiling, PG&E recommends that Reserve sales be offered quarterly if the preceding auction settlement price is greater than or equal to 60% of the lowest Reserve tier price, and at least once a year prior to a compliance event.

PG&E also recommends that the language “if needed for compliance” be self-defined, that Reserve allowances go directly into the purchaser’s compliance account, and that Reserve Sales be open to covered entities and opt-in covered entities in California and linked jurisdictions.

VI. Allowance Budgets and Distribution of Allowances

PG&E recommends that the 52.4 MMT that ARB planned to add to the post-2020 Reserve be placed in the post-2020 Reserve tiers. Placing these allowances in the Reserve tiers would increase their effectiveness in mitigate rising allowance prices and help ease the transition to higher prices. Placing these allowances in the price ceiling would 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. Therefore, none of the 52.4 MMT should be placed in the price ceiling as long as price ceiling instruments are available at the price ceiling.

It would also not be appropriate to remove an additional 2% (23 MMT) of budget years 2026-2030 from the regular auctions in response to AB 398’s lowering of the offset usage limits. 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 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 allowance budgets. This is not at all analogous to the change in the offset usage limit from 4% to 8% to account for the removal of allowances to fill the APCR, which was intended to maintain relative stringency (i.e., by expanding offsets supply in response to fewer allowances being made available to the auctions) in the face of changes to the allowance budgets. In the current situation, 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. This is the opposite of the policy from 2010-11. If consistency with the 2010-11 approach were applied, ARB would be considering expanding the post-2020 allowance budgets to balance out the lower offset usage limit. 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.

VII. Natural Gas Allocation

PG&E believes that a decarbonized natural gas system has an important role to play in helping the state meet its climate goals, by capturing Short-Lived Climate Pollutants (SLCPs) and putting them to lower-emission, beneficial use. This transition to a decarbonized gas supply must begin now and PG&E is actively seeking creation of a program that would foster cost-effective procurement of RNG in California, with a goal of 5% of core natural gas use in the state to be served by RNG by 2030.

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 industrial applications.

To help enable this transition, PG&E believes it would be appropriate to return the post-2020 rate of allowance decline for the natural gas sector to its current, pre-2021 rate (~2% annual reduction) since RNG will impose higher costs on customers, similar to the additional costs for renewable resources in the electric sector. Therefore, maintaining the current, pre-2021 allowance decline for natural gas would strike parity with the electric sector methodology, which includes recognition of the cost burden from the Renewable Portfolio Standard program and other mandates. Exacerbating the cost burden on natural gas customers through the Cap-and-Trade Program while the sector makes the transition to more expensive RNG will hinder customer affordability and efforts to procure more RNG earlier.

Maintaining the current rate of allowance decline for the natural gas sector for the post-2020 period would align with BR 17-21 direction to ARB to ensure adequate customer protection as the state pursues strategies to decarbonize the natural gas system.

VIII. Offset Usage Limits

PG&E agrees with ARB's interpretation that for the period January 1, 2021, to December 31, 2025, inclusive, an entity may meet up to 2 percent of a compliance obligation by surrendering offsets that do not provide direct environmental benefits in the state without any obligation to procure or surrender an equivalent number of offsets that do provide direct environmental benefits in the state. Similarly, for compliance years from January 1, 2026, to December 31, 2030, an entity may meet up to 3 percent of a compliance obligation in this manner.

PG&E notes that the reduction of the 8 percent offsets usage limit and the further limitations on a portion of the limit for projects that provide direct environmental benefits in the state are not required to be applied to offset policies in linked jurisdictions. For linkage determinations, SB 1018 (2012) explicitly refers to the criteria established under AB 32 as the measures of offset program stringency. Specifically, offsets are required to be real, permanent, quantifiable, verifiable, enforceable, and in exceedance of reductions that are otherwise required by law or regulation or that are expected to occur under business-as-usual. Nowhere did lawmakers indicate that the proportion of offsets is to be considered in linkage decisions. Indeed, offsets usage is only one of many components of a Cap-and-Trade program that should be evaluated when evaluating new potential linkage partners or harmonization with existing linkage partners.

Because the decrease in the offset usage limit could result in higher compliance costs, PG&E would encourage ARB to consider additional amendments to the regulation's offsets provisions within this or subsequent proceedings, including narrowing the scope of grounds for invalidation, shortening the invalidation period such that all ARBOCs are CCO3s (California Carbon Offsets with a 3-year invalidation period) without a second verification, and approving additional offset protocols.

IX. Interpreting “Direct Environmental Benefits in the state” (DEBS)

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 of California,” or DEBS. As ARB is well aware, the atmosphere is a global sink, and greenhouse gas emissions anywhere in the world have direct and indirect impacts on California. While PG&E notes that isolating California’s program with the DEBS provision is counterproductive to most effectively addressing climate change, we support ARB’s initial framework as described on pages 17-18 of the Discussion Draft. PG&E has been, and remains, a strong proponent of offsets as real, additional, quantifiable, and verifiable GHG emission reductions. Not only do they provide a benefit to the atmosphere from uncapped sectors like agriculture and forestry, but in some cases these emission reductions can be achieved at lower cost than other GHG emission reductions, reducing the overall cost of the Cap-and-Trade Program and thereby its economic impact on California consumers.

To simplify compliance and reduce administrative burden, PG&E recommends that offset projects physically located within the state of California should automatically earn designation as a DEBS project, both for past and future ARBOC issuances. Projects that are not geographically located within the state but that provide clear reduction or avoidance of any pollutant that could have an adverse impact on the air or waters of the state should not be arbitrarily labeled as failing to provide a direct environmental benefit. Offset projects in neighboring states, for example, likely benefit California air quality and watersheds, which do not stop at state lines.

ARB should also consider ways to recognize the direct environmental benefits 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, clearly meeting the spirit of this provision.

X. Legacy Contracts

PG&E does not agree with the proposed provisions that would re-insert allowance allocations for a Legacy Contract Generator without an Industrial Counterparty, and recommends that ARB remove them. PG&E understands that Staff seeks to: (1) encourage renegotiation of Legacy Contracts, and (2) determine if post-2020 allocation is necessary and appropriate, as noted in the Workshop presentation at page 5. 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.

Importantly, PG&E does not believe that Panoche Energy Center (“Panoche”) is a Legacy Contract Generator without an Industrial Counterparty because Panoche is not a party to a Legacy Contract. The Regulation defines Legacy Contracts in relevant part as “. . . contracts

executed prior to September 1, 2016 which govern the sale of electricity and/or thermal output ***and do not provide for the recovery of the costs associated with this (Cap-and-Trade) regulation.***⁴ 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. Put simply, 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 these comments. PG&E respectfully urges the ARB to review the arbitrators’ decision carefully to avoid compensating Panoche for GHG costs a second time.

XI. Use of Allowance Value for Utilities

ARB Staff has proposed specific language in the Preliminary Discussion Draft that restricts electric and natural gas utilities from using allocated allowance proceeds for activities other than as described. This list of activities does not provide for natural gas specific measures such as renewable natural gas or near-zero emission vehicles. PG&E feels that this language is overly prescriptive and predominately considers uses applicable to the electric sector. For example, switching to natural gas use can lead to a reduction in GHG emissions if switching from a higher polluting source (such as diesel) and should be eligible.

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. PG&E appreciates ARB’s efforts to provide greater clarity on the allowable uses of revenue from allowances directly allocated to utilities, and recommends broadening the language to include allowable uses of the funds for any and all GHG reducing strategies and programs, inclusive of procurement of renewable gas and funding renewable gas infrastructure.

XII. Transportation Electrification

The decarbonization of the transportation sector through the use of alternative fuel vehicles is a critical component of the Scoping Plan’s strategy to reach California’s 2030 goals. PG&E has a distinct role as a catalyst of California’s clean-energy and clean-transportation future. Our strategies include promoting electric vehicles through the construction of 7,500 charging stations, as well as “make ready” fleet charging and DC fast chargers pursuant to SB 350, which supports a goal of 2 million electric vehicles in our service territory by 2030. 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

⁴ Regulation, Section 98802 (a)(204) (emphasis added).

needed. PG&E will be providing more detailed recommendations to support this effort in follow-up to these comments.

XIII. Voluntary Renewable Energy Program Provisions

ARB established the voluntary renewable electricity program (VREP) as part of its Cap-and-Trade Regulation to enable the voluntary renewable market to continue to make a credible claim that voluntary renewables result in GHG emissions reductions that are additional to ARB's regulatory requirements under the Cap-and-Trade Program. PG&E participates in ARB's VREP as part of implementing our voluntary Solar Choice program⁵. One critical design feature of the VREP is the assumed avoided emissions rate, which ARB uses to determine how many allowances to retire and its calculation of avoided emissions. This assumed avoided emissions rate needs to be reasonably accurate to fulfill the purpose of the program and for participants, in following ARB's VREP guidance, to provide accurate information regarding avoided GHG emissions to participating customers.

Currently, ARB uses the rate for unspecified electricity imports (0.428 tonnes/MWh) as the avoided emissions rate for VREP. While this rate has been reasonable for use historically⁶, California's electricity system is undergoing significant changes – most importantly, large increases in generation from renewables – that will shift the marginal resources in California and the associated marginal emissions rates. Fortunately, California agencies are already looking at this issue for other purposes and there is an opportunity for ARB to leverage that work in updating its avoided emissions rate for VREP in this rulemaking.

For example, ARB is currently working to develop GHG emissions standards for fuel cells that are based on an estimate of average annual marginal emissions in California based on the California Public Utilities Commission-adopted 2017 Avoided Cost Calculator (ACC). The ACC forecasts a significant decline in the marginal emissions rate of roughly 30% over the next 5 years. PG&E recommends ARB make use of this existing work on marginal GHG emissions rates for electricity to update the VREP avoided emissions rate as part of this rulemaking. In this manner, ARB can help ensure the continued effectiveness of the VREP in matching avoided electricity GHG emissions to allowance retirement and supporting credible statewide avoided GHG emissions claims.

XIV. CAISO EIM Proposal

PG&E appreciates the ongoing efforts of the California Independent System Operator (CAISO) and ARB to enhance GHG emissions accounting in the Energy Imbalance Market (EIM). The

⁵ See: https://www.pge.com/en_US/for-our-business-partners/floating-pages/community-solar-choice/community-solar-choice.page?WT.mc_id=Vanity_rfo-communitysolarchoice

⁶ For example, the latest eGRID non-baseload CO2 emissions rate (using 2016 data) for California is 0.4 tonnes/MWh. See: <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid>

EIM has created a larger market for California renewables, provided renewable energy to California when imports are needed, and has helped make renewables more competitive in California's neighboring states.

Changes ultimately implemented by the CAISO must consider several critical objectives; for example, the approach must be operationally feasible, preserve market functionality, result in proper price signals, and facilitate the dispatch of renewable resources to meet load to the greatest extent possible. Developing an approach that appropriately balances key criteria is a significant challenge, and PG&E encourages the CAISO and ARB to continue soliciting external input and facilitating robust dialogue among stakeholders.

PG&E is generally supportive of the direction outlined in the CAISO's recent Second Revised Draft Final Proposal. Though it requires additional study and refinement, PG&E is optimistic that the new design brings the CAISO closer to a solution that will meet ARB and CAISO goals. PG&E submitted more detailed comments⁷ to the CAISO on potential enhancements or areas for further examination, and looks forward to working with the CAISO and other stakeholders to continue improving upon the proposal's promising foundation.

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/

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Expert Representative, State Agency Relations
Pacific Gas and Electric

⁷ PG&E Comments. March 1, 2018. <http://www.caiso.com/Documents/PG-EComments-EIMGHGEnhancements-SecondRevisedDraftFinalProposal.pdf>