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November 21, 2016

Ms. Rajinder Sahota
Chief, Climate Change Program Planning & Management Branch
California Air Resources Board
1001 I Street
Sacramento, CA 95812-2828

Re: 2030 Target Draft Scoping Plan Workshop held November 7, 2016

Dear Ms. Sahota,

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the 2030 Target Scoping Plan workshop held November 7, 2016.

PG&E strongly supports California's clean energy goals, and is committed to partnering with the Air Resources Board (ARB) to chart a cost-effective and sustainable path to Senate Bill 32's goal of reducing greenhouse gas (GHG) emissions 40 percent below 1990 levels. In 2015, PG&E also supported Senate Bill 350, which serves as a roadmap for implementing many of the clean energy policies initiated by Governor Brown.

Our customers have invested and will continue to invest in the state's clean energy future. PG&E has made significant contributions to the state's progress in reducing GHG emissions through procuring renewable generation, funding energy efficiency incentives, supporting distributed energy resources, investing in key infrastructure projects and methane leak reduction technologies, and promoting the large-scale deployment of electric vehicle charging and natural gas fueling infrastructure. As a result of these endeavors, PG&E's current electric portfolio is more than 50 percent carbon free and our electricity GHG emissions rate is approximately one-third the national average.

Moving forward, we believe the best path to achieving the state's long-range environmental goals is through sustainable policies that result in cost-effective GHG emissions reductions throughout the state's economy. By achieving these goals in a way that manages costs for Californians, we can ensure that our state continues to make substantive progress and creates model programs others will want to follow.

With this in mind, we offer high-level comments on policies related to the Scoping Plan, specific comments on the proposed scenarios, and finally raise suggestions and questions related to modeling and sector-specific GHG targets.

I. High-Level Post-2020 Policy Comments

- **Well-designed Cap-and-Trade should continue post-2020 –** PG&E strongly supports the continuation of California's Cap-and-Trade Program to help meet the State's goal of deep GHG emissions reduction while maintaining a vibrant economy.[1] As a market-based mechanism, Cap-and-Trade provides flexibility in how and when compliance entities achieve GHG reductions, leading to optimized and cost-effective reduction activities. Moreover, Cap-and-Trade is a critical environmental backstop, ensuring that even if some Scoping Plan measures do not achieve expected reductions, the economy stays within the declining emissions cap. Cap-and-Trade is also the only carbon reduction approach that allows for broader environmental impact beyond California through linkage with other carbon markets.

- **The Low Carbon Fuel Standard should continue post-2020** – PG&E is an opt-in regulated party in the Low Carbon Fuel Standard (LCFS), and continues to support the successful implementation of the program. The LCFS has a significant role to play in helping meet California's 2030 GHG emission reduction target, and should continue post-2020 with an ambitious but sustainable and technically feasible 2030 carbon intensity goal. PG&E looks forward to further analysis and discussion of potential 2030 LCFS targets once the complete Draft Scoping Plan is released.

II. Detailed Comments on the Proposed Scoping Plan Scenarios

PG&E supports California's environmental goals and, as noted above, strongly supports well-designed and sustainable Cap-and-Trade and LCFS programs, as well as other existing complementary measures like the Renewables Portfolio Standard (RPS), to help achieve the 2030 GHG reduction goals.

With this in mind, PG&E would generally like to see the 2030 Target Scoping Plan rely more on the successful carbon market ARB carefully created and less on direct measures. Direct GHG emission-abatement measures within a system that has an upper limit (cap) on emissions will not necessarily change the total amount of emissions from within that system. Within a capped system, direct measures change only how the emission reductions are achieved, who pays for those reductions, and at what cost. Through the Scoping Plan, the agencies should clearly articulate the purpose and potential impacts (e.g., GHG reductions, cost, etc.) of each direct measure. Once these measures have achieved their goals, the agencies should also consider

[1] Pacific Gas and Electric Company's September 19, 2016 Comments on the Air Resources Board's Proposed Amendments to the Cap-and-Trade Regulation: https://www.arb.ca.gov/lists/com-attach/51-capandtrade16-VSVQMVQKU2VVDFQ3.pdf

sunsetting them and relying primarily on the market signal provided by the Cap-and-Trade Program.

Turning specifically to the proposals of the November 7th workshop, PG&E notes that all Scoping Plan options include either entirely new or enhanced versions of existing program measures. We look forward to providing additional input on the Scoping Plan scenarios after the Draft Scoping Plan is released, and more detail is available regarding the new and enhanced program measures. Having a detailed understanding of how a 20 percent refinery reduction might actually work, for example, is an important prerequisite to accurately evaluating its merits within and between Scoping Plan options.

A. PG&E Supports the Inclusion of Cap-and-Trade in the Draft Scoping Plan

Of the three policy scenarios presented at the November 7th workshop, PG&E recommends the "Draft Scoping Plan Policy Scenario" (Draft Scenario) as the scenario best suited for further study, incremental modification, and eventual adoption as the 2030 Scoping Plan. The Draft Scenario relies mainly on a suite of direct measures already in place in California supported by the existing Cap-and-Trade Program, and as such offers a number of advantages over the alternatives.

For one, by building on existing regulations, the Draft Scenario avoids increased administrative burden that would be required to develop and implement entirely new regulatory programs. Additionally, the existing policies are well developed, and already playing a role in achieving meaningful GHG emissions reductions.

Additionally, a major advantage of the Draft Scenario is its inclusion of Cap-and-Trade, a critical measure in California's effort to reach a 40 percent reduction in GHG emissions by 2030. By providing flexibility in how and when GHG reductions are achieved, the program helps ensure that reductions are achieved cost-effectively while still ensuring that GHG emissions stay under the cap. Cap-and-Trade also offers the opportunity for additional economic and environmental benefits through linkage with other carbon markets, and serves as a de facto environmental backstop should other program measures underperform.

Cap-and-Trade's value as a backstop is a merit worth repeating because of the uncertainty in GHG emissions forecasting that was highlighted by ARB's economic advisor at the workshop. Because of the inherent uncertainties involved in modeling, even ARB's business-as-usual forecasting could diverge widely from actual emissions going forward, meaning that direct measures designed to achieve proscribed amounts of GHG reductions, even if they perform as planned, could still result in the state not achieving its goals. Cap-and-Trade provides an emissions reduction backstop that dynamically drives the state towards its GHG reduction goals, which is a critical component in such a complex and uncertain future.

Finally, as the national political climate appears to be turning away from a focus on climate policy, California's climate leadership is more important than ever. The Cap-and-Trade Program will allow California to link to subnational jurisdictions' emerging carbon markets for an expanded environmental impact while enjoying the economic benefits of a larger and more efficient market. The 2030 Scoping Plan must include Cap-and-Trade as the pathway to accomplishing the most ambitious goal of AB 32, which is to "facilitate the development of integrated and cost-effective regional, national, and international greenhouse gas reduction programs."

Macroeconomic Impacts

Discussion of California's climate policies often use the term "cost-effective" without delving quantifiably into the actual costs. ARB has helpfully provided preliminary quantitative estimates of the macroeconomic impact of two of the three Scoping Plan scenarios, characterizing these impacts as fairly small relative to the size of the California economy.

PG&E cautions that the economic impacts as quantified by ARB, namely $7 to $20 billion in 2030, are actually quite significant. For comparison, the costs of the *national* Clean Power Plan were estimated by the U.S. Environmental Protection Agency (US EPA) to be $5 to $8 billion in 2030. All Scoping Plan alternatives involve major changes to California energy systems and other emitting sectors and per ARB's analysis, would result in significant Gross Domestic Product impacts relative to any other state or federal environmental policy.[2]

The significant economic impact engendered by these Scoping Plan options serves to highlight the need to choose the most cost-effective set of policies to ensure that California can achieve its environmental goals while maintaining a healthy economy. The most cost-effective set of Scoping Plan policies will certainly include market-based policies like Cap-and-Trade.

Specific Changes to the Cap-and-Trade Program

ARB's presentation on November 7 included reference to potential changes to the Cap-and-Trade Program on slide 35 that would limit the usage of offsets and remove a significant number of unsold allowances from the program between 2020 and 2021. As PG&E has previously commented, ARB should not limit the use of offsets post-2020; offsets help reduce GHG emissions and GHG compliance costs. For one, offsets represent a real environmental benefit. ARB has set up a strict regime to ensure that offset credits represent a real, quantifiable,

[2] November 7, 2016 2030 Target Scoping Plan Update Workshop, Preliminary Economic Analysis Presentation, Slide 57: https://www.arb.ca.gov/cc/scopingplan/meetings/110716/economicspresentation.pdf

enforceable, verifiable, additional, and permanent GHG reduction. Offsets also reduce GHG emissions while providing important co-benefits.

Second, offsets help keep GHG compliance costs affordable to customers as there may be compliance cost savings from purchasing offsets. This important cost-containment function will become even more important as the Cap-and-Trade Program becomes more stringent through 2030. Any consideration of reducing the offset limit must include a thorough analysis of the effects on the Cap-and-Trade market, compliance costs, and emissions. As part any such review, PG&E encourages ARB to present the results of scenarios with offset usage limits higher than eight percent as well as lower usage limits. A higher offset usage limit may be appropriate post-2020 as a cost-containment tool amidst an increasingly stringent program.

Regarding allocation, we would oppose the identified changes in allowance allocation to the extent that they could affect allocations that benefit customers of electric and gas distribution utilities. Such allocations are critically important for mitigating customer cost impacts and the identified changes would have a negligible effect on emissions reductions at electric and natural gas covered facilities.

Finally, as illustrated by ARB, Cap-and-Trade plays a supporting role in driving reductions under the Draft Scoping Plan scenario; ARB expects most of the reductions to be driven by program measures or known commitments.[3] In this context, it is uncertain if these modifications to the Cap-and-Trade Program will have meaningful impacts on the sources of GHG emissions reductions, and are likely to increase costs.

B. Alternative 1 – Direct Measures

The Alternative 1 Scoping Plan scenario proposes both new direct measures and enhancements to existing requirements in order to reach the 2030 goals in the absence of a market-based compliance mechanism. This scenario suffers relative to the Draft Scoping Plan Scenario in both its cost to the California economy - almost five times as expensive in 2030 as the cost of the Draft Scenario according to ARB analysis[4] - and its inability to guarantee the necessary level of GHG emissions reductions.

There is broad consensus among environmental economists that market-based mechanisms that put a price on GHG emissions provide the most cost-effective path to lowering those emissions.

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[3] November 7, 2016 2030 Target Scoping Plan Update Workshop, GHG Modeling Results Presentation, Slide 29: https://www.arb.ca.gov/cc/scopingplan/meetings/110716/scopingplanpresentation.pdf

[4] November 7, 2016 2030 Target Scoping Plan Update Workshop, Preliminary Economic Analysis Presentation, Slide 47: https://www.arb.ca.gov/cc/scopingplan/meetings/110716/economicspresentation.pdf

Market-based mechanisms are ideally suited to respond automatically to unexpected changes in the market (including technology development and costs) and provide rational incentives for compliance entities to invest in least-cost abatement opportunities in real-time. Alternative 1 includes no such flexible, market-based mechanism, and as such will inevitably be more expensive as entities work to comply on a prescribed timeline with administratively predetermined compliance requirements. The lack of compliance flexibility also increases the risk of GHG leakage as entities that could comply under Cap-and-Trade but cannot meet the prescribed requirements cost-effectively relocate out of state.

Additionally, direct measures can fail to achieve their expected emission reduction goals. In the absence of an economy-wide cap like that which exists under Cap-and-Trade, there is no backstop to ensure that the economy-wide emission goal is reached even if certain program measures fail to perform.

Finally, PG&E notes that Alternative 1 also lacks a mechanism for generating revenue that can be used for climate mitigation activities, like the Greenhouse Gas Reduction Fund that currently is funded by Cap-and-Trade and earmarked for climate mitigation projects, including projects in disadvantaged communities.

Increased Building Electrification

One of the new direct measures proposed in Alternative 1 is increased building electrification. Before developing programs aimed at promoting fuel switching, PG&E recommends that the state conduct research to better understand the life-cycle GHG reductions, cost-effectiveness, and other benefits of fuel switching. In addition, we suggest that the state explore scenarios in which the natural gas system is significantly decarbonized as an alternative to the electrification of natural gas end uses.

If detailed analysis and consideration of economy-wide low carbon pathways demonstrates that end use electrification is an appropriate tool, utility energy efficiency programs can offer a valuable framework for moving the market due to partnership, marketing, technical capabilities, etc. However, this would require changes to energy efficiency cost-effectiveness policy rules as well as changes to codes and standards. PG&E notes that the current application of the CPUC's three-pronged energy efficiency test may limit customers' ability to switch fuels. Specifically, current CPUC policy requires that all fuel switching projects/measures/programs complete and satisfy the following requirements (simplified here):

1. Must not increase source British Thermal Unit (BTU) consumption.
2. Must be cost-effective (by demonstrating a Total Resource Cost and Program Administrator Cost each greater than 1.0).
3. Must not adversely affect the environment.

While this test may prove necessary in some situations, it can also result in PG&E denying an incentive to a customer interested in switching fuels. This issue also impacts new construction programs because PG&E is required to perform this test when the baseline equipment is of a different fuel source. Again, this can result in failure to provide an incentive for more efficient equipment.

Renewable Natural Gas Requirements

Alternative 1 proposes a new mandate for renewable natural gas (RNG). While PG&E does not support Alternative 1 as a viable Scoping Plan option, PG&E would support efforts to study how RNG can be produced and delivered safely and cost-effectively to customers. We are very interested in partnering with the state and other stakeholders on pilot programs and strategies to bring down the costs of this fuel. Given the broader societal benefits of RNG, PG&E believes that the associated development costs should be funded through dedicated research, development, and demonstration programs. We would encourage the state to avoid any mandates that only apply to a subset of core gas customers. Instead, PG&E supports state funding for RNG projects through the Greenhouse Gas Reduction Fund (GGRF) or other sources. This could lower the costs of RNG and make it more competitive with current natural gas commodity costs, potentially leading to market development and adoption across the state.

RNG certainly has the potential to serve as a pathway for California to achieve its climate goals. However, a number of issues related to cost-effectiveness, technology, operations, and financing still need to be addressed on a significant scale. While PG&E ardently supports California's push towards a low carbon future, it firmly believes that the costs of such broad societal benefits should be borne by a society as whole and not just a subset of utility customers.

C. Alternative 2 – Carbon Tax

The Alternative 2 Scoping Plan scenario replaces Cap-and-Trade with a carbon tax. While a carbon tax is technically a "market-based mechanism," it does not offer the same degree of environmental certainty as cap-and-trade.

The primary advantage of a carbon tax relative to other carbon regulation regimes is that it provides a higher level of carbon price certainty. Once a tax is set, businesses have a reasonable expectation of their carbon costs, which can support low carbon investment.

However, it is difficult to set a carbon price that achieves the desired level of emission reductions. British Columbia, for example, has had a carbon tax of $30 per tonne in place since 2008. However, the most recent data available shows that taxed emissions have continued to rise

year-to-year from 2011-2014.[5] While the obvious solution in a situation like this might be to increase the carbon tax, such a move would likely face political opposition.

Finally, PG&E notes that ARB currently lacks legislative authority to develop a new carbon tax program, and gaining that authority would require a supermajority vote in California's legislature for such a program. It would be imprudent to make California's 2030 Scoping Plan and the goals it is designed to achieve contingent upon a yet unknown legislative outcome.

III. Modeling and Clarification of Sector-Specific Reductions

Enhanced Modeling for Improved Public Discussion

Given the importance of the Cap-and-Trade Program to California's current and post-2020 program, and California's leadership position on climate policy, PG&E wishes to see ARB develop more robust modeling tools to provide more in-depth environmental and economic insight into the program.

For example, the current modeling tools do not allow ARB to identify the likely sources of GHG reductions that would occur due to the Cap-and-Trade Program (or a carbon tax). This gap is clearly illustrated in the total emissions line on slides 32 and 33 and may bias stakeholders towards program measures that can be more easily quantified with ARB's existing tools.[6] This gap also deprives ARB and stakeholders from the main analytical basis for determining whether or not a program measure is cost-effective.

In addition, the current modeling tools do not allow ARB to endogenously determine the carbon price that, under a particular set of assumptions, it expects would be needed to achieve the 2030 GHG goals; this would be particularly helpful in evaluating Alternative 2, which includes an unspecified carbon tax.

Finally, the current modeling tools do not allow ARB to evaluate how potentially important changes to cap-and-trade design (such as offset limits or changes to allowance budgets) would affect allowance prices and total program costs. These are all important information gaps and ARB and stakeholders would benefit from modeling tools that addressed these gaps. We note that US EPA's work in this area may be a useful example. We encourage ARB to invest in

[5] British Columbia. Environmental Reporting BC: Sustainability. "Trends in Greenhouse Gas Emissions in B.C. (1990-2014): http://www.env.gov.bc.ca/soe/indicators/sustainability/ghg-emissions.html
[6] November 7, 2016 2030 Target Scoping Plan Update Workshop, GHG Modeling Results Presentation, Slides 32-33: https://www.arb.ca.gov/cc/scopingplan/meetings/110716/scopingplanpresentation.pdf

modeling resources that would remedy these analytical gaps, and lead to a more robust public discussion regarding the policy future of California.

Sector-Specific Emissions Reductions

We encourage ARB to clarify its intent regarding whether the modeled 2030 sector emission results on slide 32-33 should be interpreted as 2030 sector GHG targets per SB 350. In particular, we encourage ARB to clarify whether under the Draft Scoping Plan Scenario an individual sector's achievement of the 2030 GHG emissions levels on slide 32 is necessary for the state to achieve the statewide 2030 GHG target.

We note that ARB's own analysis (on slide 29)[7] suggests the Cap-and-Trade Program acts to fill any gap between the reductions achieved by other Scoping Plan measures and the reductions required to achieve California's GHG targets. This suggests to us that an individual sector's achievement of the 2030 GHG emissions levels on slide 32 is not necessary for the state to achieve the statewide 2030 GHG target as long as the Cap-and-Trade Program is in place. Instead, the sector emission levels on slide 32 are but one of many possible pathways to achieving the statewide 2030 GHG target.

IV. Conclusion

Climate change is a global problem that needs a global solution. California can and should provide leadership to create GHG reductions programs for the rest of the world to replicate. The development of a thorough and thoughtful 2030 Target Scoping Plan is crucial to putting our state on a path to meet the SB 32 goal of reducing GHG emissions in California to 40 percent below 1990 levels by 2030. Thank you for considering PG&E's feedback on the Target 2030 Scoping Plan Workshop.

Sincerely,

Mark Krausse
Senior Director
Pacific Gas and Electric Company

[7] Ibid. Slide 29