

To: Ms. Rajinder Sahota  
November 4, 2016  
Page 1



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**November 4, 2016**

Ms. Rajinder Sahota  
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California Air Resources Board  
1001 I Street  
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**Re: Pacific Gas and Electric Company's Comments on the Air Resources Board's Proposed Modifications to the 2016 Cap-and-Trade Amendments**

Dear Ms. Sahota:

Pacific Gas and Electric Company (PG&E) appreciates this opportunity to comment on the Air Resources Board's (ARB's) proposed modifications to the 2016 regulatory amendments to the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms (Cap-and-Trade or Program) Regulation as presented at the workshop held October 21, 2016.

**INTRODUCTION**

PG&E continues to support Cap-and-Trade as a key climate program that will allow California to achieve its ambitious environmental goals while maintaining a vibrant economy. PG&E offers the following comments on staff's proposed changes from the October 21, 2016 workshop:

- I. **Cap-and-Trade is well-designed and is working for Californians and the environment.**
  - A. The Cap-and-Trade Program is fundamentally well-designed, and capped greenhouse gas (GHG) emissions are declining and will be reduced at stationary sources.
  - B. While it is critical that California remain vigilant as to any potential negative health impacts that could result from regulating GHGs, California's existing stringent air toxics regulations remain the most effective way to protect community health.
  - C. Offsets help reduce GHG emissions and keep GHG compliance costs affordable for customers.

D. ARB should maintain program design features that support a program that is sustainable in the long-term.

**II. Electric distribution utility allocation should provide equitable protections and reasonable carbon cost transition for California customers.**

A. Maintaining a reasonable allocation to electric distribution utilities (EDUs) is a critical component of a broader strategy to ensure equitable carbon cost impacts for California households.

B. The allowance allocation proposal should be modified as follows: 1) to recognize low carbon-intensive utilities with a broader definition of cost exposure; 2) to include a cap adjustment factor or an Renewables Procurement Standard (RPS) ramp up, but not both; 3) to accurately represent RPS in context of sales, not load, consistent with the RPS Program; 4) to remove consideration of additional achievable energy efficiency (AAEE); 5) to adjust for the potential retirement of Diablo Canyon Power Plant.

**III. Gas allowance allocation should maintain planned consignment and cap adjustment factors.**

A. The natural gas sector is fundamentally different from the electric sector, and therefore should be treated differently.

B. The current transition to full carbon cost of natural gas over a fifteen year period strikes the right balance.

**IV. PG&E Supports Reasonable Measures in Support of Market Transparency:** So long as data is appropriately anonymized, PG&E supports the timely release of market data to support market transparency. However, PG&E notes that other, more effective means of preventing market manipulation should be prioritized including establishing a lower Allowance Price Containment Reserve (APCR) price as a disincentive to withholding.

**V. Solutions for Secondary Emissions Accounting Should Not Jeopardize the Benefits of the Energy Imbalance Market:** An appropriate solution to account for secondary emissions in the California Independent System Operator (CAISO) Energy Imbalance Market (EIM) should not jeopardize the benefits of the EIM. More study may be necessary for the problem to be fully defined and to find a solution that balances accurate accounting with potential negative effects on the EIM and California customers.

## **I. PROGRAM DESIGN: CAP-AND-TRADE IS WELL-DESIGNED AND WORKING FOR CALIFORNIANS AND THE ENVIRONMENT**

### **A. The Cap-and-Trade Program is Fundamentally Well-Designed and California is on Track to Meet the 2020 Target**

The Cap-and-Trade program benefits Californians and the environment by ensuring reductions in greenhouse gas emissions over time while providing covered entities with flexible compliance options, helping maintain a vibrant economy. After years of public discussion and regulatory adjustments, the Program is generally well-designed and is achieving its lawfully mandated goal of greenhouse gas emissions reductions.

ARB has documented that the total GHG emissions from covered sources for the Program's first two-year compliance period were significantly lower than the ARB-determined GHG emissions cap,<sup>1</sup> and California is on track to meet the 2020 target of reducing GHG emissions to 1990 levels.<sup>2</sup> ARB has proposed new annual emissions caps for post-2020 in line with Senate Bill (SB) 32's mandate that California achieve a reduction of 40 percent below 1990 emissions by 2030, which require further, significant reductions in covered GHG emissions including direct GHG reductions at stationary sources like power plants and refineries. Cap-and-Trade is on the right track.

Some stakeholders have expressed concern that GHG emissions in certain sectors have seen a net increase since the start of the program. However, the fact that California is still on track to meet its 2020 goals despite these short-term upticks in emissions shows that Cap-and-Trade is performing as planned rather than signaling that the Program is flawed. While the longer-term GHG emissions trajectory is downward and in-line with Assembly Bill (AB) 32 and SB 32's goals, year-to-year variation in GHG emissions is to be expected. As ARB's own Market Simulation Group has demonstrated, there is significant uncertainty in the underlying business-

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<sup>1</sup> Total emissions for 2013-2014 were 291.2 Million Metric Tons (MMT) of carbon dioxide equivalent (CO<sub>2</sub>e). The Emissions limit for the same period was 322.5 MMT CO<sub>2</sub>e. See the full 2013-2014 compliance report at <https://www.arb.ca.gov/cc/capandtrade/2013-2014compliance/2013-2014compliance.pdf>

<sup>2</sup> ARB's Scoping Plan homepage: <https://www.arb.ca.gov/cc/scopingplan/scopingplan.htm> (See Section "What is the Status of AB 32 implementation")

as-usual (BAU) forecast of GHG emissions due to uncertainty in BAU economic growth and activity rates and the influence of other complex real-world factors. Accordingly, it is not unusual that GHG emission levels will deviate from a straight line decline.

Cap-and-Trade includes design elements like allowance banking and multi-year compliance periods specifically to provide flexibility that allows entities to comply economically while the Program still achieves the goal of overall GHG emission reductions over time.

The story of recent GHG emissions trends in the electric sector is one example of the strength of the Cap-and-Trade Program. In 2011, above-average rainfall allowed for significantly more hydroelectric generation than in 2014 and 2015, which were drought years.<sup>3</sup> Taking the most conservative estimate and assuming that all reduced hydroelectric generation was replaced by generation from natural gas plants, approximately 10 MMT CO<sub>2</sub>e more emissions would have been emitted in 2014 and 2015. Similarly, the loss of the San Onofre Nuclear Generating Station (SONGS) plant in 2012, if backfilled entirely by natural gas generation, would have led to 7 MMT CO<sub>2</sub>e in increased annual emissions from natural gas generation. These discrete events experienced by the power sector largely explain the observed increase in GHG emissions from the sector over the period from 2011-2014 (a relatively short time frame in a program that may eventually extend to 2050).

That power sector entities were still able to comply with Cap-and-Trade during this period while the State is still on track to meet its overall emissions reduction goal by 2020 reflects the fundamental soundness of the Program.

## **B. Regulations That Address Criteria Pollutants Directly Will Reduce These Pollutants**

A fundamental element of the Cap-and-Trade Program since its inception is the stipulation that measures to reduce GHGs in California should not adversely impact local air quality. The Cap-and-Trade Adaptive Management Process, currently in development, is dedicated to studying this potential issue.

During this regulatory update to the Cap-and-Trade Program, environmental justice (EJ) advocates have expressed legitimate concerns regarding ambient concentrations of criteria and toxic air pollutants that affect community health in many areas of the state, particularly in economically disadvantaged communities. Many of the communities represented by EJ advocates are also home to PG&E customers.

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<sup>3</sup> Historical data available at [http://www.energy.ca.gov/almanac/electricity\\_data/electricity\\_generation.html](http://www.energy.ca.gov/almanac/electricity_data/electricity_generation.html)

PG&E believes that the most effective solutions to the legitimate concerns of EJ communities with regard to criteria pollutants and toxics will continue to be California's existing, stringent regulatory programs specifically designed to address these issues. These programs have significantly improved air quality in California over the past 40 years, and ARB and the local air quality management districts continue to work to improve the quality of air in the State. While more remains to be done for the health of our communities, overhauling the design of Cap-and-Trade, ARB's long-term GHG reduction program, is likely to result in little or no incremental improvement to air quality, and will likely compromise the primary objective of the Program.

Focusing on criteria and toxic emissions directly, rather than overhauling Cap-and-Trade, enables easier identification of the key drivers of air quality problems. In many cases, the key drivers of GHG emissions are different sources than those affecting air quality. For example, ARB's most recent statewide data on criteria emissions shows fuel combustion from electric utilities as responsible for one percent of NO<sub>x</sub> emissions and 1.2 percent of PM<sub>2.5</sub> emissions. In contrast, in-state electric power generation represented over 11 percent of statewide GHG emissions in 2012. This demonstrates that carbon emissions are not necessarily a proxy for identifying key criteria pollutant emissions sources.

A continued focus on direct criteria emissions sources is critical to driving better air and health outcomes for Californians. It bears repeating that the primary sources of NO<sub>x</sub> and PM<sub>2.5</sub> in the State are wildfires and transportation, respectively, and that NO<sub>x</sub> and PM<sub>2.5</sub> emissions have both stayed flat or declined since 2011.<sup>4</sup> Moreover, electric generation facilities that emit GHGs are already subject to local air quality management district regulations which limit criteria pollutant emissions. These limits must be met regardless of a facility's compliance with the Cap-and-Trade Program. Cap-and-Trade is the right tool for achieving substantial, long-term GHG reductions; there are other long-established regulatory tools better-suited for addressing California's very real air quality and health concerns.

### **C. Offsets Help Reduce GHG Emissions and Keep Costs Affordable for Customers**

The offset credit usage limit is currently set at eight percent of a covered entity's total compliance obligation. This usage limit should not be lowered post-2020, for a number of reasons.

For one, offsets represent a real environmental benefit. ARB has set up a strict regime to ensure that offset credits represent a real, quantifiable, enforceable, verifiable, additional, and

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<sup>4</sup> Historical and projected emissions data available at: <https://www.arb.ca.gov/app/emsinv/fcemssumcat2013.php>

permanent GHG reduction. Offsets reduce GHG emissions while providing important co-benefits. An example of one such offset project is the Yurok Tribe Sustainable Forest Project, an Improved Forest Management project at the mouth of the Klamath River in California. In addition to reducing GHG emissions and providing a cost-effective way for California businesses to meet their Cap-and-Trade obligation, the revenue generated through the offsets sales enables the Yurok Tribe to improve wildlife habitat and forest health, conserve salmon habitat, expand forestry staff, preserve their culture and acquire land in their ancestral territory.<sup>5</sup> Improved forest health provides additional benefits, such as preventing wildfires, which in turn reduces criteria pollutant emissions leading to better air quality and community health in the state.

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.

In summary, offsets are an important part of the Cap-and-Trade Program that result in direct environmental benefits while also benefitting California businesses and consumers as well as utility customers by maintaining affordable program costs. Reducing the offset usage limit would likely result in increased customer costs without any environmental benefit.

#### **D. Program Features Must Continue to Support a Sustainable Program**

One new program feature proposed by ARB staff for the post-2020 time frame is the retirement of unsold state-owned allowances between 2020 and 2021. This is unnecessary given that, as ARB staff have recognized, the Program “already includes a self-regulating mechanism for periods when allowance demand is low.”<sup>6</sup> These existing mechanisms should be allowed to work and further steps to reduce supply and prop up demand should not be taken until current legislative and legal uncertainty in the future of the Program is resolved.<sup>7</sup> Tightening the supply of allowances, as proposed, treats the symptom of short-term reduced demand but does not

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<sup>5</sup> <https://www.arb.ca.gov/newsrel/newsrelease.php?id=597>

<sup>6</sup> October 21, 2016 Cap-and-Trade Regulation Amendments Workshop Staff Presentation, Slide 17

address the underlying problem, market uncertainty, and could affect the affordability and sustainability of the program once that external uncertainty is resolved. If retirement of state-owned allowances is considered, PG&E supports staff's proposal to analyze the cost of such changes.

An alternative approach to addressing unsold allowances would be for ARB to raise the holding limit for compliance entities. The current compliance entity holding limit is based on an assumed program end date of 2020 and should be updated to reflect program continuation through 2030. This would increase demand in the market while allowing compliance entities to plan for compliance in the future Program, or hedge their commodity exposure. Hedging is an important means to control costs. For entities with large obligations, the holding limit, particularly in the outer years, is too small to adequately hedge.

As the staff proposal mentioned above would further tighten the Cap-and-Trade Program at the same time as the state pursues a much deeper, ambitious emissions reduction trajectory, PG&E reiterates the suggestion that ARB should incorporate program design features before 2021 that ensure post-2020 allowance prices cannot exceed a maximum level deemed acceptable by ARB. This could be done by developing a mechanism to refill the Allowance Price Containment Reserve (APCR) if it is depleted. ARB has already proposed limited borrowing from future budgets through 2050 to refill the APCR as a buffer, but a firm price ceiling, as described in PG&E's previous comments, would improve the economic sustainability of the Program.<sup>8</sup>

It is in the interest of all Californians to avoid the potential for skyrocketing, unsustainable program costs that would lead to high prices for customers and could lead to negative environmental outcomes if the Program were to be suspended.

## **II. ELECTRIC DISTRIBUTION UTILITY ALLOCATION SHOULD ENSURE EQUITABLE PROTECTIONS AND REASONABLE CARBON COST TRANSITION FOR CALIFORNIA CUSTOMERS**

### **A. Maintaining a Reasonable Allocation to EDUs is a Critical Component of a Broader Strategy to Ensure Equitable Carbon Cost Impacts for California Households**

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<sup>8</sup> Pacific Gas and Electric Company. RE: April 5, 2016 Cost Containment Workshop. April 22, 2016.  
<https://www.arb.ca.gov/lists/com-attach/6-sectorbased3-ws-BXVXNIYyVVIQNQVq.pdf>

Allowance allocation is one of the primary mechanisms for addressing distributional concerns associated with the costs of cap-and-trade programs. In particular, independent analysts<sup>9</sup> and low-income household advocates<sup>10</sup> have recognized lump-sum rebates of allowance value as a way to ensure low-income households are not inequitably impacted when carbon costs are imposed on household costs.

California is implementing such a lump-sum rebate in investor-owned utility (IOU) service territories via the semi-annual climate credit,<sup>11</sup> which is made possible by ARB's allowance allocation to electric distribution utilities (EDUs). Fortunately, the lump sum credits appear to be working as intended.<sup>12</sup>

However, it is important to recognize that ARB's decisions regarding post-2020 allocation provision to IOU EDUs like PG&E are effectively also decisions regarding the size of post-2020 lump-sum climate credits. As such, we are disappointed with the proposed significant decrease (roughly 70 percent) in allowance allocation for EDUs from 2020-2030, which would directly reduce the Climate Credit provided to customers. ARB staff should make several changes, identified below, to the proposed EDU allocation provisions and continue to work with the Joint Utility Group in advance of staff's next allocation proposal. Maintaining a reasonable allocation to EDUs is a critical component of a broader strategy to ensure equitable impacts for California households.

## **B. Suggested Modifications to ARB's Allocation Methodology**

PG&E suggest the following changes to ARB's allocation methodology. As a start, ARB staff should adopt a broader definition of cost exposure, and not one that only considers fossil emissions. The current emissions-centric approach results in significant allowance reductions from 2020 to 2021 for all utilities, but particularly sharp reductions for cleaner utilities with lower carbon intensive portfolios such as PG&E. Cost exposure related to assembling a clean portfolio and complying with AB 32 is not narrowly defined to purchasing allowances, and this fact should be recognized by the ARB's allowance allocation method.

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<sup>9</sup> Congressional Budget Office: [https://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/89xx/doc8946/04-25-cap\\_trade.pdf](https://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/89xx/doc8946/04-25-cap_trade.pdf)

<sup>10</sup> Center on Budget and Policy Priorities: <http://www.cbpp.org/research/climate-change/the-design-and-implementation-of-policies-to-protect-low-income-households>

<sup>11</sup> <http://www.cpuc.ca.gov/climatecredit/>

<sup>12</sup> UCLA Luskin Center for Innovation: <http://innovation.luskin.ucla.edu/sites/default/files/FINAL%20CAP%20AND%20TRADE%20REPORT.pdf>



In addition, ARB staff should simplify the allowance allocation calculation by focusing on a single year (like 2020) instead of the 10-year period through 2030, as ARB staff had proposed in its March 29, 2016 workshop.<sup>13</sup> In addition to simplicity, this type of approach has the benefit of not applying both an aggressive cap-adjustment factor and a large increase in RPS generation quantities, which both reduce allocation. A calculation that utilizes the cap adjustment factor or an increasing RPS quantity is more appropriate than utilizing both.

PG&E suggests ARB staff make two changes to its representation of the RPS program in the allocation calculations. First, the denominator used to calculate compliance with the State's RPS program is retail sales and not load (at the generation level).<sup>14</sup> Accordingly, ARB staff should calculate RPS generation levels based on retail sales and not based on load to accurately reflect the quantity of renewable generation associated with a particular RPS percentage. Second, the allowable level of Category 3 Renewable Energy Credit procurement should be excluded from the calculation of RPS generation because this quantity of allowable RPS procurement does not provide zero-emissions resources from a Cap-and-Trade cost burden perspective.<sup>15</sup>

Allowance allocation is most reasonably calculated using loads without additional achievable energy efficiency (AAEE). As the California Energy Commission (CEC) notes, AAEE savings are associated with programs that are neither finalized nor funded, even if the CEC believes they are reasonably expected to occur.<sup>16</sup> This uncertainty should be removed from the allocation calculation.

Additionally, linking allocation quantities to AAEE also creates perverse incentives for EDUs seeking to protect their customers from higher costs through allowance allocation while also being asked to aggressively expand energy efficiency by the state.

PG&E continues to support ARB staff's original proposal<sup>17</sup> to make allocation adjustments to account for major changes to electricity resources such as coal plant divestiture and the availability of nuclear resources. For PG&E's service territory, such an adjustment is relevant in the next decade given the expiration of the current Nuclear Regulatory Commission operating licenses for Diablo Canyon Power Plant's (DCPP) two units in 2024 and 2025, PG&E and other parties' Joint Proposal for the Orderly Replacement of Diablo Canyon Power Plant (Joint

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<sup>13</sup> March 29, 2016 Post-2020 Emissions Caps and Allocation Workshop Staff Presentation

<sup>14</sup> See: [http://www.cpuc.ca.gov/rps\\_homepage/](http://www.cpuc.ca.gov/rps_homepage/)

<sup>15</sup> See: [http://www.cpuc.ca.gov/RPS\\_Procurement\\_Rules\\_33/](http://www.cpuc.ca.gov/RPS_Procurement_Rules_33/)

<sup>16</sup> See: <http://www.energy.ca.gov/2013publications/CEC-200-2013-005/CEC-200-2013-005-SD.pdf>

<sup>17</sup> March 29, 2016 Post-2020 Emissions Caps and Allocation Workshop Staff Presentation

Proposal),<sup>18</sup> and the CPUC's latest Assumptions and Scenarios Ruling<sup>19</sup> for the CAISO 2016-17 Transmission Planning Process and Future Commission Proceedings which uses a default assumption that DCCP Units will be retired in 2024 and 2025.

Accordingly, the proposed retirement of Diablo Canyon and the associated removal of a significant amount of zero-emissions power from the PG&E EDU portfolio should be accounted for in PG&E's allowance calculation. ARB staff's assumption in the proposed allowance allocation methodology is that the balance of load not met by solid fuel and zero-emission power is met by natural gas. The ARB should apply this approach as it relates to the replacement of Diablo Canyon to send a consistent signal in support of voluntary over-compliance with California's energy efficiency and renewable energy policies and to mitigate costs for households in PG&E's EDU service territory consistent with ARB's policy of customer cost protection.

Finally, we continue to encourage ARB and other state agencies to work to develop an approach for allocating allowances to EDUs associated with electrification.

### **III. GAS ALLOWANCE ALLOCATION SHOULD MAINTAIN PLANNED CONSIGNMENT AND CAP ADJUSTMENT FACTORS**

PG&E supports ARB's proposal for continuing the current allocation methodology for natural gas suppliers, based on the 2011 emissions baseline.<sup>20</sup> However, PG&E is concerned with the sharp increase in cost impacts to customers (including low-income customers) from Staff's proposals for an accelerated cap adjustment factor (CAF) and accelerated consignment. In addition, given the dearth of options for alternatives to natural gas, or technologies to reduce its use compared to those available in the electricity sector, Staff's stated goal to create equity between EDUs and natural gas suppliers is premature. PG&E recommends maintaining the existing annual decline of the cap adjustment factor (~2%), maintaining the existing annual consignment increase (5%), and increasing the availability of offsets for natural gas. These recommendations are more fully explained below.

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<sup>18</sup> See : [www.pge.com/jointproposal](http://www.pge.com/jointproposal)

<sup>19</sup> See: <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=11673>

<sup>20</sup> Section § 95893 - Allocation to Natural Gas Suppliers for Protection of Natural Gas Ratepayers, Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms

## **A. The Natural Gas Sector Is Fundamentally Different From the Electric Sector, and Therefore Should Be Treated Differently**

The Initial Statement of Reasons (ISOR) supporting the draft Cap-and-Trade amendments, as well as materials shared at the October 21<sup>st</sup> workshop, cite equity between natural gas suppliers and EDUs as a reason to accelerate consignment for natural gas. However, this fails to recognize important differences between the natural gas sector and the electric sector:

**1. Different Renewables Markets** - The renewables market for natural gas is miniscule when compared to the level of renewable resources available to the electric sector; the variety of alternatives, availability of supply and maturity of the markets vary greatly. For example, with respect to maturity of the market - when the 20% RPS was enacted in 2002, 11% of PG&E's electric deliveries were already from RPS-qualifying sources. In contrast, PG&E currently procures 0% of gas for delivery through its pipelines from renewable sources. While PG&E continues to actively work with developers to execute affordable interconnection projects, no projects have been implemented yet and development of new sources is slow.

Unlike the sun or the wind, the feedstocks for renewable natural gas (RNG) are finite, and existing volumes are fully subscribed. The cost of RNG is also several magnitudes higher than the cost of conventional natural gas. In addition, RNG faces constraints such as high costs and complexity of gas conditioning for varying feedstocks, new technologies for converting feedstocks that haven't been proven at scale yet, and gas quality issues. Other barriers to development include high start-up costs, interconnection difficulties due to geographic diversity, high transportation costs and siting delays – all of which demonstrate the nascent state of the RNG market in comparison to the electric renewables market. Without substantial incentives, credits or other policy measures to buy down the cost of RNG and overcome barriers to entry, the market will be difficult to develop. It is important to note that the development cycle for projects is much longer than the timeframe between now and 2021 when Staff's proposed changes would go into effect.

**2. Different Assessment of Compliance Obligations** – For the natural gas sector, the compliance obligation is levied directly on the gas utility based on deliveries to non-capped customers, compared to the generator or first deliverer in the electric sector. Electric IOUs and other utilities are required to consign allowances in order to prevent market advantage over generators and others in the electricity market. However, natural gas utilities are the same entities that will be buying back the allowances they consign to the auctions, so the same risks do not apply.

Additionally, publicly owned utilities in the electric sector are currently allowed to choose whether to consign or surrender their allowances.<sup>21</sup> These differences will persist regardless of the level of consignment for natural gas utilities, so reaching 100% consignment sooner will not lead to full parity within the Cap-and-Trade Program.

**3. Different Opportunities for Efficiencies** – Unlike the electric sector, where constantly improving technologies have afforded ever-increasing energy-efficiency savings through new light bulbs, pump motors, window films and more, opportunities for natural gas efficiency are far fewer given the already high efficiency of natural gas systems. In addition, the variety of purposes electricity is used for offer many opportunities for conservation, while natural gas is predominantly used to combust and produce heat, providing very limited options for conservation.

**4. Different Elasticities of Demand** - PG&E believes that increasing consignment requirements is not an effective lever to increase conservation or efficiency for natural gas. Historically, natural gas demand from residential, small commercial, and small industrial customers has not been highly responsive to retail price signals.<sup>22</sup> PG&E has observed this lack of a statistical relationship between changes in price and demand from smaller customers and reflects this in forward-looking demand forecasts, such as those used for the California Gas Report. Direct incentives for promoting efficiency or conservation may work more effectively.

Given all these differences between the electric sector and the natural gas sector, accelerating consignment to achieve “equity” would in fact be inequitable since the natural gas sector does not have the same breadth of alternatives available for customers to seek.

## **B. The Current Transition to a Full Carbon Cost Strikes the Right Balance**

The impact of the proposals to double the annual rate of decline for the CAF and sharply accelerate the consignment requirement will negatively impact customers. PG&E’s recommendations are based on our support of carbon reduction approaches that customers will embrace, while maintaining affordable customer rates.

**1. Existing Decline of Cap Adjustment Factor Should be Maintained** – The purpose of allocating direct allowances is to mitigate cost impacts to customers while achieving GHG

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<sup>21</sup> Sec. 95892(b) Transfer to Utility Accounts, Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms

<sup>22</sup> Bernstein, M.A., Griffin, J. “Regional Differences in the Price-Elasticity of Demand for Energy”, National Renewable Energy Laboratory, February 2006 <<http://www.nrel.gov/docs/fy06osti/39512.pdf>>

emission reductions. Reducing direct allowances will increase cost pass-through and decrease the sale of those allowances to generate Climate Credits for residential customers (including low-income CARE customers). Table 1 below shows that Staff's proposed CAF is estimated to provide significantly smaller climate credit revenues than under the existing regulations.

**Table 1: Estimated Annual Residential Climate Credit & Compliance Costs for PG&E in 2030<sup>23</sup>**

CAF and Consignment Scenario	Residential Climate Credit	Annual Compliance Cost
Current Regulations <sup>24</sup>	\$81	\$54
Staff Proposal <sup>25</sup>	\$60	\$54

## ***2. Existing Pace of Consignment Requirement Increase Should be Maintained***

Staff's proposal at the October 21<sup>st</sup> workshop to jump directly from 50% consignment in 2020 to 100% consignment in 2021 is unnecessarily extreme. Staff has not provided any support for making such a precipitous increase as opposed to more moderate options, other than expressing the general desire to create equity between sectors and incentivize GHG reductions. As argued above, the differences between the natural gas and the electric sector at this stage mean that a more gradual approach is warranted and other policy options to incentivize RNG development will be more effective to promote GHG reductions.

Table 2 below provides estimated compliance cost comparisons for two scenarios in 2021: 1) continuation of current consignment and CAF rates and 2) Staff's accelerated consignment and CAF rates. Table 2 illustrates that the proposed changes would increase average annual compliance costs for residential, small and large commercial customers by 54% to 75% compared to the current regulations.

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<sup>23</sup> All values shown in real 2016 dollars; scenarios assume a low GHG allowance price derived from the auction floor price in 2016 escalated by 5% a year and adjusted for 2% inflation.

<sup>24</sup> Current regulations = a 5% increase in consignment per year and the current cap adjustment factor decline

<sup>25</sup> Staff proposal = 100% consignment in 2021 and post-2020 cap adjustment factors for "Standard" sectors presented in slide 47 of the Staff Presentation at the October 21<sup>st</sup> Workshop.

**Table 2: Sample Rate Impacts for PG&E in 2021<sup>26</sup>**

	<b>Current Regulations<sup>27</sup></b>	<b>Proposed Changes<sup>28</sup></b>
Total Compliance Cost (\$ Millions)	\$156	\$280
Compliance Cost per Therm	\$0.06	\$0.09
<b>Average Annual Compliance Cost Per Customer</b>		
Residential	\$21	\$37 (54%)
Small Commercial	\$179	\$313 (75%)
Large Commercial	\$17,900	\$31,323 (75%)

***3. The Offset Limit Should be Raised Beyond 8% for Natural Gas***

Even if all of the constraints limiting the development of the RNG market can be overcome in the next few years, new RNG projects will still take years to be developed and become operational. In the meantime, GHG compliance costs will continue to increase post-2020 (regardless of which CAF or consignment options are used). In the post-2020 timeframe, offsets will be a critically important cost-containment tool for natural gas suppliers to meet their compliance obligation on behalf of their customers. As stated above, given the nascent RNG market and the lack of technologies for energy efficiency, the natural gas sector is in a different situation than electric and needs access to other compliance alternatives. Raising the offset limit above 8% for the natural gas sector would help protect customers when compliance costs start increasing, while still providing GHG reductions.

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<sup>26</sup> All values shown in real 2016 dollars; scenarios assume a low GHG allowance price derived from the auction floor price in 2016 escalated by 5% a year and adjusted for 2% inflation.

<sup>27</sup> Current regulations = a 5% increase in consignment per year and the current cap adjustment factor decline

<sup>28</sup> Staff proposal = 100% consignment in 2021 and post-2020 cap adjustment factors for “Standard” sectors presented in slide 47 of the Staff Presentation at the October 21<sup>st</sup> Workshop

A more moderate annual decline in the CAF (~2% annually), the existing consignment increase (5% annually), and access to more offsets would still introduce a growing price signal while allowing the natural gas sector to develop more options for alternatives and protect customers from unnecessary costs. PG&E looks forward to continuing to work with ARB to meet our common goals of reducing GHG emissions while protecting natural gas customers.

#### **IV. MARKET DATA TRANSPARENCY: PROVIDE PUBLIC ASSURANCE WHILE MAINTAINING A FAIR MARKET**

PG&E supports a fair, fraud-free, and transparent Cap-and-Trade market. To this end, ARB currently makes available a great deal of information associated with the Cap-and-Trade program. These data include:

- Quarterly CITSS Registrant Reports
- Quarterly Auction Summary Results Reports
- Annual Compliance Reports
- Annual summary of transfer reports
- Quarterly Compliance Instrument Reports
- Other data related to Cap-and-Trade including GHG emissions reporting and California Climate Investment fund proceeds and investments

PG&E supports the timely release of anonymized data, including entity positions, as a means to increase market transparency. When calculating entity positions, PG&E suggests using a 3-year compliance period obligation. It is important to use a reasonable time period when calculating the obligation so that legitimate hedging activities are not misinterpreted as withholding.

The Emissions Market Advisory Committee (EMAC) referenced in the staff presentation suggests publishing anonymized entity positions as a means to increase the difficulty and cost of market manipulation through withholding.<sup>29</sup> Given some of the complexities of calculating entity positions (e.g., time horizon of obligation, forecasting future year obligations based on previous years, differences in hedging strategies among entities), publication of anonymized positions may not be the most effective way to prevent market manipulation. Instead, ARB should establish a lower APCR price floor as a disincentive against withholding. A lower APCR price

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<sup>29</sup> EMAC. Information Release on Allowance Holdings in the Greenhouse Gas Emissions Cap-and-Trade Market. February, 2014. Pages 1 and 4. Available here: [https://www.arb.ca.gov/cc/capandtrade/emissionsmarketassessment/information\\_release\\_2014feb\\_rev.pdf](https://www.arb.ca.gov/cc/capandtrade/emissionsmarketassessment/information_release_2014feb_rev.pdf)

floor would not only serve as a soft price cap to limit potential gains from a withholding strategy but would also provide some cost containment assurance for covered entities.

**V. CAISO EIM SECONDARY EMISSIONS EFFECT: AN APPROPRIATE SOLUTION SHOULD NOT JEOPARDIZE THE BENEFITS OF THE EIM**

As presented at the ARB workshop on October 21, ARB and CAISO continue to work toward an approach to account for secondary emissions in the EIM. Any such approach must weigh the magnitude of the secondary emissions problem against the solution's cost and potential to result in negative, unintended consequences.

PG&E is a proud supporter of California emission reduction goals, and views the EIM as an important tool for reducing GHG emissions. The EIM market helps avoid renewables curtailment in CAISO, provides a larger market for California-generated clean energy, and can provide clean energy to displace emitting resources in and outside of California. As such, PG&E is particularly concerned about ARB and CAISO striking a suitable balance between appropriately accounting for GHG emissions resulting from serving California load and maintaining a robust EIM. Any approach to capturing secondary emissions must preserve price signals and resulting dispatch orders that encourage participation in the EIM.

CAISO has demonstrated that EIM dispatch lowered overall EIM emissions over a six month period, and used increased export of California-generated renewable energy to displace high-emitting resources outside of California.<sup>30</sup> California contributes to emissions reductions across the EIM footprint, and so an evaluation of California emissions impact should consider those reductions alongside any emissions caused by serving California load. Increasing import costs for California without recognizing the emissions benefits of California exports may diminish the benefits to California of EIM participation and raise questions about the value of a multi-state balancing authority area. A solution to address secondary emissions should not jeopardize achievement of full societal, market, and emissions benefits of a multi-state construct.

PG&E recently submitted comments to the CAISO regarding technical solutions for accounting for secondary emissions which are included as an appendix below. As expressed in said comments, additional study of the secondary emissions problem is warranted so that the problem can be adequately defined and addressed with minimal disruption to the market.

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<sup>30</sup> [https://www.caiso.com/Documents/EIMGreenhouseGasCounter-FactualComparison-PreliminaryResults\\_Jan-Jun\\_2016\\_.PDF](https://www.caiso.com/Documents/EIMGreenhouseGasCounter-FactualComparison-PreliminaryResults_Jan-Jun_2016_.PDF)



To: Ms. Rajinder Sahota

November 4, 2016

Page 17

## **VI. CONCLUSION**

In 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. PG&E hopes that the ARB will seriously consider the suggestions made herein, and looks forward to continuing to collaborate as changes are made to prepare the Cap-and-Trade Program to meet the state's 2030 goals.

Sincerely,

/s/

Mark Krausse  
Senior Director  
Pacific Gas and Electric Company

CC: Richard Corey  
Edie Chang  
Steve Cliff  
Mary-Jane Coombs  
Jason Gray  
Bill Knox

## Appendix A

### **Comments of Pacific Gas and Electric Company on the Regional Integration California Greenhouse Gas Compliance Stakeholder Technical Workshop**

<b>Submitted by</b>	<b>Company</b>	<b>Date Submitted</b>
<i>Hannah Kaye hannah.kaye@pge.com; (415) 973-8237</i>	<i>Pacific Gas and Electric Company</i>	<i>November 1, 2016</i>

#### **Introduction**

Pacific Gas and Electric Company (PG&E) was pleased to participate in an October 13, 2016 stakeholder workshop as part of the California Independent System Operator (CAISO) Regional Integration California Greenhouse Gas (GHG) Compliance initiative. PG&E encourages the CAISO to continue facilitating such workshops, which provide valuable opportunities to convene stakeholder perspectives around highly complex issues. PG&E also commends the CAISO for its ongoing collaboration with the California Air Resources Board (CARB), which informed the workshop and will continue to guide the development of GHG accounting methods in the EIM and a multi-state balancing authority area.

#### **Comments**

PG&E joins the CAISO, CARB, and many other stakeholders in seeking to understand the overall impact of the EIM on GHG emissions. One piece of the EIM emissions puzzle is secondary dispatch, and PG&E urges the CAISO and CARB to work with stakeholders to develop a clear and complete picture of this issue. PG&E is hesitant to endorse a solution prior to more fully understanding the secondary dispatch emissions problem. The suitability of a solution will depend on the magnitude of the problem weighed against the solution's cost and potential to drive unintended consequences. Clarity around the problem is essential in order to design a solution that achieves secondary emissions goals while maintaining market, societal, emissions reduction, and other policy objectives. Secondary dispatch is a complex issue, and PG&E looks forward to addressing it through ongoing collaboration with the CAISO, as well as CARB and other stakeholders.

**Prior to discussing specific options, PG&E notes that a precise definition of emissions from secondary dispatch is needed in order to develop any suitable approach.**

Developing an accurate approach to capturing secondary emissions requires a precise definition of what dispatch actions will be defined as secondary dispatch, and the circumstances under which emissions caused by secondary dispatch would require the surrender of CARB

allowances. Criteria and considerations for designing and evaluating potential solutions will depend on the definitions adopted by CARB and the CAISO.

In its most recent presentation to stakeholders, CARB stated that, “Secondary dispatch illustrates the potential backfill effect of higher emitting resources to serve EIM load when the optimization attributes lower emitting resources to serve California load.”<sup>31</sup> The CARB presentation further notes that secondary dispatch is neither defined in the EIM tariff nor observable by market participants.<sup>32</sup> Further defining secondary dispatch and the circumstances in which such emissions should be captured is an essential prerequisite to understanding the scope and magnitude of the issue, and designing a reasonable and implementable approach to addressing it.

**In addition to providing clear definitions, the CAISO should also consider implications of any proposed secondary dispatch solution on the EIM.**

The CAISO stakeholder workshop focused on approaches to accounting for secondary dispatch emissions in the EIM, with the understanding that an adopted approach would need to be scalable in a multi-state balancing authority. PG&E appreciates that, ultimately, the method selected to capture secondary emissions will have to balance the goals of accuracy and precision with the realities of technical limitations and the need to reliably operate the grid. The CAISO and CARB must also evaluate whether the proposed solution is likely to advance the overall emissions reduction goals of the EIM and, in the future, a multi-state balancing authority area.

PG&E is a proud supporter of California emissions reduction goals, and views the EIM as an important tool for reducing GHG emissions. The EIM market helps avoid renewables curtailment in CAISO, provides a larger market for California-generated clean energy, and can provide clean energy to displace emitting resources in and outside of California. As such, PG&E is particularly concerned about the CAISO striking a suitable balance between appropriately accounting for GHG emissions resulting from serving California load and maintaining a robust EIM. Any approach to capturing secondary emissions must preserve price signals and resulting dispatch orders that encourage participation in the EIM market.

CAISO has demonstrated that EIM dispatch lowered overall EIM emissions, and used increased export of California-generated renewable energy to displace high-emitting resources outside of California, such as coal-fired plants.<sup>33</sup> California contributes to emissions reduction across the EIM footprint, and so an evaluation of California emissions impact should consider those

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<sup>31</sup> <https://www.arb.ca.gov/cc/capandtrade/meetings/20161021/oct-21-workshop-slides.pdf>, slide 5

<sup>32</sup> <https://www.arb.ca.gov/cc/capandtrade/meetings/20161021/oct-21-workshop-slides.pdf>, slide 5

<sup>33</sup> [https://www.caiso.com/Documents/EIMGreenhouseGasCounter-FactualComparison-PreliminaryResults\\_Jan-Jun\\_2016\\_.pdf](https://www.caiso.com/Documents/EIMGreenhouseGasCounter-FactualComparison-PreliminaryResults_Jan-Jun_2016_.pdf)

reductions alongside any emissions caused by serving California load. Increasing import costs for California without recognizing the emissions benefits of California exports may diminish the benefits to California of EIM participation and raise questions about the value of a multi-state balancing authority area. A solution to address secondary emissions should not jeopardize achievement of full societal, market, and emissions benefits of a multi-state construct.

**At this time, PG&E is unable to support all of the conclusions reached by the CAISO during the stakeholder workshop.**

The CAISO presented three options during the stakeholder workshop, and suggested that only one, Option 3<sup>34</sup>, is currently feasible.

- PG&E is not convinced that Option 1<sup>35</sup>, which considers net emissions over a defined period of time, could not serve as a basis for an acceptable solution. Capturing the value of clean energy imports and exports from and to California is a worthwhile exercise for determining the contribution of EIM to emissions reduction.
- PG&E agrees with the CAISO that Option 2 should not be considered, as it is not currently feasible to implement.
- PG&E finds that Option 3, a hurdle rate, is more feasible than Option 2, but introduces risks that must be weighed carefully against the presumed benefits in developing a method to calculate the hurdle rate.

Regardless of the approach ultimately adopted, the CAISO will need to allocate the compliance obligation from secondary dispatch. The selected solution must appropriately assign the compliance obligation and cost burden for those emissions, and ensure that cost allocation does not disrupt the EIM's economic dispatch of energy resources.

Option 1

EIM actions may cause increased emissions from secondary dispatch in EIM Entities to support imports into California in some periods, while reducing emissions in EIM Entities during other periods by exporting clean power to displace emitting generation. The proposed Option 1 would determine net emissions across a defined period of time and, if emissions were found to be greater than those captured by EIM resource attribution, CARB instruments would be retired.

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<sup>34</sup> See slides related to Option 3 in stakeholder workshop presentation <http://www.caiso.com/Documents/UpdatedAgenda-Presentation-RegionalIntegrationCaliforniaGreenhouseGasCompliance-TechnicalWorkshop.pdf>.

<sup>35</sup> See slides related to Option 1 in stakeholder workshop presentation <http://www.caiso.com/Documents/UpdatedAgenda-Presentation-RegionalIntegrationCaliforniaGreenhouseGasCompliance-TechnicalWorkshop.pdf>.

At this time, CAISO staff is not considering an Option 1 approach. PG&E believes that further exploration of secondary emissions occurring in EIM, over a longer period of time than is currently available, is warranted. Studying the emissions from secondary dispatch caused by imports into California as well as emissions reductions resulting from export of clean energy from California will provide CARB and other stakeholders with additional data to determine the scope of the secondary emissions issue and whether netting might be appropriate to consider in a solution. In a six month analysis, CAISO showed that EIM dispatch lowered overall emissions in the EIM footprint. Looking at the findings from a longer period of time will provide more data on how secondary dispatch emissions might be addressed appropriately and with minimal disruption to the market.

Option 1 is an out-of-market solution. The additional emissions not considered by EIM would be calculated after the market has run and any costs for emissions would not be considered in the EIM. PG&E does caution that an out-of-market solution carries risk of being uneconomic and inefficient depending upon the costs of the out-of-market actions. A solution based on Option 1 should not be adopted without first evaluating the magnitude of net secondary emissions observed over the course of at least a year. Findings from this initial study period will help to determine whether the secondary dispatch solution lends itself better to a market design change (which also carries costs and risk) or another approach.

### Option 2

PG&E shares the CAISO concern that running a dispatch to find optimal base schedules, followed by running the EIM market in real-time, may not be technically possible.<sup>36</sup> PG&E is also concerned that developing an optimization model that limits import from a resource to its incremental dispatch, may involve formulation changes that could greatly increase computational requirements. PG&E joins the CAISO in concluding that such a computationally-intensive mechanism requires further study, and that attempting to adopt such an approach in the real time market today would create risks for market operations and reliable dispatch.

### Option 3

Given the complexity of the problem, technical limitations, and outstanding questions, PG&E recognizes that a hurdle rate may suffice as a reasonable approximation of the emissions impacts of secondary dispatch. The hurdle rate would have to reflect market conditions, and not be an administrative rate set far in advance of the EIM. Without a defined hurdle rate, or process for determining one, PG&E is not yet able to offer a more thorough evaluation.

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<sup>36</sup> See slides related to Option 2 in stakeholder workshop presentation:  
<http://www.caiso.com/Documents/UpdatedAgenda-Presentation-RegionalIntegrationCaliforniaGreenhouseGasCompliance-TechnicalWorkshop.pdf>.