

April 30, 2009

Ms. Mary Nichols, Chairman
Mr. James Goldstene, Executive Officer
CALIFORNIA AIR RESOURCES BOARD
1001 "T" Street
Sacramento, CA 95814-2828

**Re: Pacific Gas and Electric Company's Comments on the California Air
Resource Board's Staff's March 23, 2009 Overview of a California Cap-and-
Trade Market**

Dear Chairman Nichols and Executive Officer Goldstene:

Pacific Gas and Electric Company ("PG&E") welcomes the opportunity to provide these comments on the California Air Resources Board Staff's ("ARB") presentation at the March 23, 2009 workshop on a California cap-and-trade market for emissions of greenhouse gases ("GHG").

I. INTRODUCTION

PG&E is committed to working with the ARB, other State agencies and concerned stakeholders to make AB 32 a success and a model for emerging regional and national GHG reduction programs. We commend ARB Staff for their efforts in analyzing the design and enforcement options for a California cap-and-trade market for allowances to emit GHG.

PG&E supports ARB's plan to bring outside experts to address issues in designing a cap-and-trade market. As noted in the Scoping Plan (p. 35):

"ARB anticipates creation of a series of focused working groups that include participation by ... prominent academics with expertise in cap-and-trade issues ..."

Given the specialized nature of cap-and-trade markets, particularly auction design and market oversight, it seems appropriate to build as much as possible on existing knowledge, while recognizing the importance of details specific to the California situation.

Section II provides PG&E's comments on market design. Section III provides PG&E's comments on enforcement for the proposed cap-and-trade program.



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II. COMMENTS ON MARKET DESIGN

At the March 23rd Workshop, Staff listed eight “common objectives”, with the caution that there may be some tradeoffs between them. The eight objectives are:

1. Promote open access
2. Ensure fairness and transparency
3. Minimize administrative and transaction costs
4. Promote economic efficiency
5. Prevent manipulative behavior
6. Reveal market valuation of allowances
7. Minimize price volatility
8. Promote allowance market liquidity

PG&E provides the following comments on a few of the specific objectives that ARB is considering in the design of an auction. Additionally, PG&E proposes that ARB consider “provide appropriate price signal” as the ninth design objective, as noted below.

A. Ensure Fairness and Transparency

As a market-transparency measure, PG&E suggests that ARB and its sister agencies identify a government entity to be charged with preparation and release of a quarterly or estimate of GHG emissions within the capped sectors. For the electricity sector, an entity with access to confidential, real time data from electricity control centers, as well as public data from federal agencies, natural gas pipelines, etc., would be able to develop a reasonably accurate daily estimate of aggregate GHG emissions, without revealing any confidential information. Posting a quarterly update of a rolling annual sum of CO₂ emissions might improve auction participation and reduce day-to-day variability in the GHG allowance price by providing a solid information base to all market participants.

B. Promote Economic Efficiency

Economic efficiency is the primary rationale for selecting a cap-and-trade program, rather than exclusive reliance on specific command-and-control mandates. In the interest of economic efficiency, PG&E supports third-party participation in allowance and offset markets. Third parties, by serving as intermediaries and market-makers, are important factors in market



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liquidity. PG&E also supports appropriate trading rules and market monitoring. Trading rules and monitoring practices used by the Commodity Futures Trading Commission and the Federal Energy Regulatory Commission may provide useful templates.

C. Prevent Manipulative Behavior

Maintaining reasonable prices for GHG allowances is essential to protect complying entities, California consumers and the State's economy from unanticipated challenges. Allowance prices will be passed through to retail electricity rates for electricity consumers, including PG&E's customers.

As proposed, the structure of the allowance market has limited flexibility, especially during the first compliance period (2012-2014). The inflexibility stems from the relationship between the supply and price of GHG emission allowances, and the relationship between the demand and price of GHG emission allowances. The supply-vs-price line, shown as a solid line in Schematic 1, is vertical, because regulators currently do not plan to increase the supply of allowances if the allowance price is high.

Emission offsets, if available and fungible with allowances, would add supply. At progressively higher allowance prices, more offset projects would become cost-effective alternatives to purchasing allowances. Consequently, the amount of offsets would increase with price. The combined supply of allowances/offsets would therefore increase with price, creating a line that tilts toward the upper right, as shown by the dotted line in Schematic 1.

PG&E supports unlimited use of offsets that meet stringent criteria for quality. However, current plans at the Western Climate Initiative, which the ARB has adopted in its Scoping Plan, limit use of offsets to 49% of the emission reductions below a business-as-usual baseline. During the first compliance period it amounts to a very small share of the emissions covered in the cap-and-trade market. For example, if the 2013 cap is set at 1% below the 2012 emissions level, then this policy implies that the offset quantity would be severely limited to 0.49% of the cap level in 2013.^{1/}

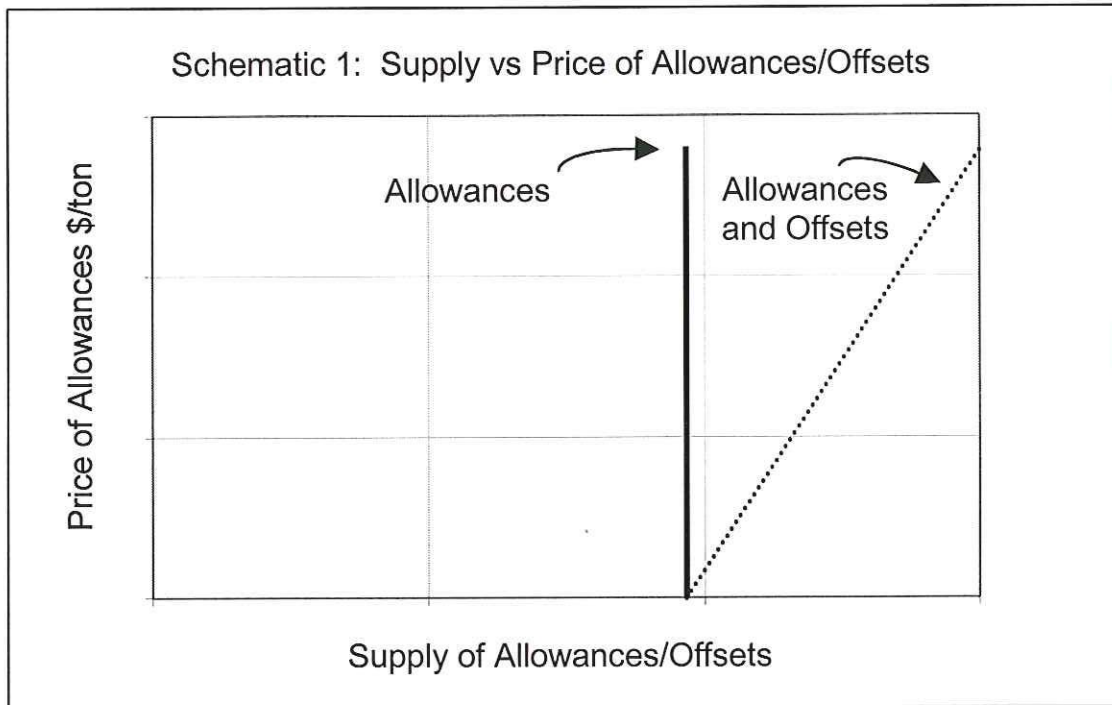
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^{1/} For example, suppose that business-as-usual emissions are 100 tons, but regulators decide that emissions should be capped at 99 tons, and therefore issue 99 allowances. In that case, the planned emission reduction is one ton, the limit on offsets is 49% of that one ton, or 0.49 tons.



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The demand-vs-price line for allowances (see Schematic 2) has nearly vertical sections in the first compliance period (2012-2014). Zero-GHG electricity supplies, such as hydro, wind, and solar power, have low or zero variable costs, and are already used as much as possible under the industry’s standard “economic dispatch”. The demand-vs-price line slopes upward to the left, though only slightly, due to price-induced conservation of electricity. Rising allowance prices would increase operating costs for fossil-fueled power plants, leading to higher retail electricity rates, thereby causing consumers to use less electricity. Lower electricity demand, in turn, would cause utilities to reduce generation or purchases from the marginal, fossil-fueled power plants, thereby reducing demand for GHG emission allowances.

The demand-vs-price line includes a segment that is less steep, to indicate gas-for-coal substitution. Gas-for-coal substitution is an option for entities that own coal-fired power plants. An entity that owns a share of a coal plant, for example, could curtail the coal-based electricity, which would otherwise require about 1 allowance per MWh of electricity, and substitute more-expensive electricity from a natural-gas-fueled plant that requires only 0.4 allowances per MWh. The cost, price, and extent of gas-for-coal substitution are uncertain, partly because costs to



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amend take-or-pay coal-supply contracts and joint-ownership agreements are not publicly available.^{2/}

The demand-vs-price line in Schematic 2 has two steep sections, representing price-induced conservation of electricity that reduces demand for allowances, and the less-steep section indicating gas-for-coal substitution.



The supply and demand lines are combined in Schematic 3. They intersect at a spot that indicates the market price of allowances (on the vertical axis).

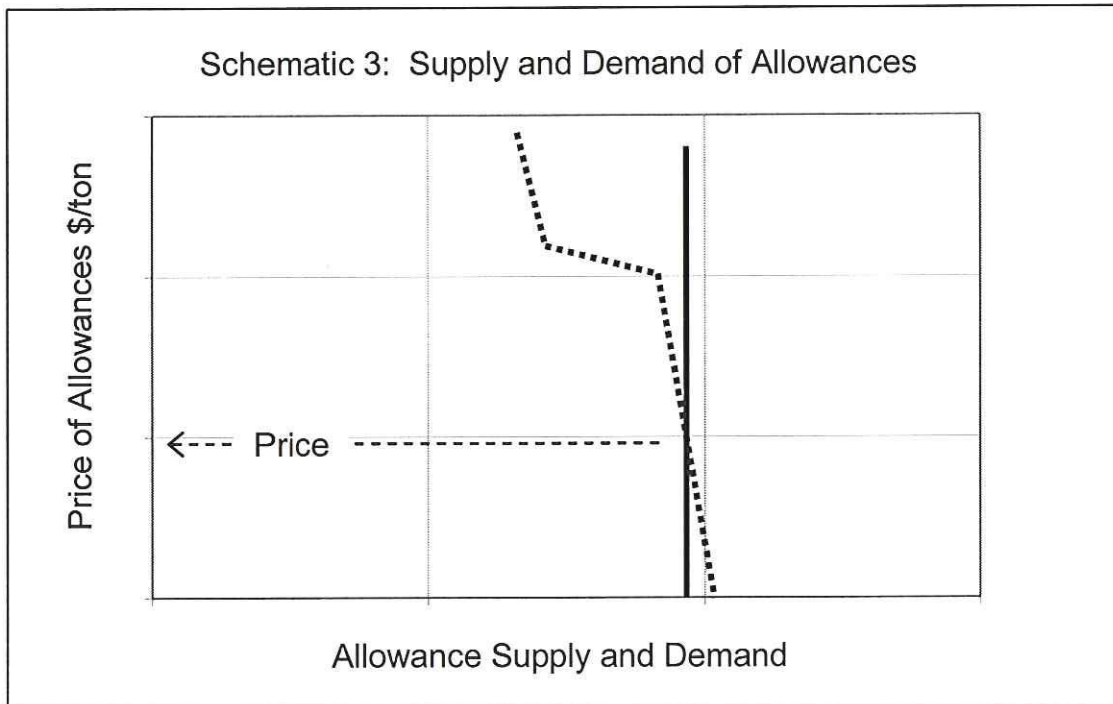
Schematic 3 shows both supply and demand, and suggests the potential for volatile allowance prices. A change in allowance supply or demand corresponds to a sideways shift of one line in Schematic 3. Due to the steepness of both lines, a small sideways shift in either line causes a significant vertical change in their intersection point. Specifically, a small decrease in

^{2/} Cost and price may not be identical: An entity that substitutes gas for coal would presumably sell freed-up allowances at the market price, which will be equal to or greater than its cost.



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the supply of allowances in the market, or a small increase in demand, could cause a large change in the allowance price.



Schematics 1-3 raise a concern for excessive allowance-price volatility, but are inconclusive because they omit the industrial sector, which is planned for inclusion in California's cap-and-trade program from the outset. California industries' demand-vs-price line is unclear. Ideally, it would slope backward even more than the electricity-sector line shown in Schematic 2. However, the slope will depend on regulatory decisions regarding the extent of free allowance allocations, and limitations on the use of such free allowances.

One method to address excessive allowance-price volatility is stringent regulatory control of the allowance market, including limits on each entity's purchases and sales, and other restrictions. This approach could have negative effects on liquidity in the allowance market and introduce inefficiencies in the wholesale electricity market.

PG&E's preferred method to address excessive allowance-price volatility is to change the slope of the demand or supply line or both. There are various means to do so, including the following:



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- Allow unlimited use of high-quality offsets. Offsets, if available and fungible with allowances, would make the supply of allowances + offsets slope to the right in Schematic 3. In that case, a small change in the supply of allowances + offsets, or a small change in demand, would produce a small change in price.
- Adopt a consumer-protection mechanism. Such a mechanism could limit the allowance-price increase from a small decrease in allowance supply, or increase in allowance demand, while maintaining long-term GHG emission reductions. In Schematic 3, a cost-compliance mechanism would add a horizontal or nearly horizontal segment to the supply line. At the federal level, to “limit ... price spikes and volatility, especially in the early years of the program,” the United States Climate Action Partnership endorsed a consumer-protection mechanism, specifically, a strategic offset and allowance reserve pool.^{3/}

D. Reveal Market Valuation of Allowances

PG&E supports this ARB objective. Knowledge about the demand for allowances is dispersed, and some entities know more than others. All market participants, for example, know that some entities can reduce their need for GHG emission allowances by gas-for-coal substitution (as shown in Schematic 2). All market participants can estimate a minimum cost per ton for that substitution based on fuel prices and typical GHG emission rates. The entities that own coal-fired power plants, however, have better information than anyone else regarding their actual costs of gas-for-coal substitution, including any costs that would be imposed to amend take-or-pay coal contracts or shared-ownership agreements.

This asymmetry in knowledge about the demand for allowances suggests an auction design that, in Staff’s words, “provide[s] greater amount of information on bidders’ valuation” of allowances. PG&E does not suggest this factor should solely determine the auction structure, merely that PG&E agrees with Staff that it deserves consideration.

^{3/} “A Blueprint for Legislative Action”, United States Climate Action Partnership, January 2009, p. 8, available at http://www.us-cap.org/pdf/USCAP_Blueprint.pdf. (USCAP includes many industrial firms and NGOs, as well as PG&E. The members are listed at: <http://www.us-cap.org/about/members.asp>)



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Although PG&E is not supporting a specific auction design at this time, the extensive academic literature on auction design contains numerous warnings such as these:

- “Considerable experience in the sale of assets by governments has led to the conclusion that careful attention to auction design can be critical to an auction’s success in achieving the goals specified for the auction.”^{4/}
- “Notable fiascoes in auctioning ... show that everything depends on the details of the context. Auction design is not ‘one size fits all’.”^{5/}

Some parties have suggested that the Regional Greenhouse Gas Initiative’s auction mechanism may be appropriate for California. PG&E takes no position on that suggestion at this time, but notes that the supply line in the RGGI program differs from that proposed for California: RGGI has “trigger prices” above which complying entities are allowed progressively greater use of offsets.

E. Provide Appropriate Price Signal

PG&E suggests that ARB add a ninth objective, namely, sending a price signal that will encourage investment in GHG-reducing equipment. This is implicit in the ARB’s work, but making it explicit may be helpful. The United States Climate Action Partnership, in its Blueprint for (federal) Legislative Action, stresses this objective:

“Price expectations help drive technology innovation and deployment. ... Congress should direct a reserve price for the auction of allowances to be set at a level that helps to avoid [allowance] prices that are too low to encourage long-term capital investments in low- and no-carbon technologies.”^{6/}

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^{4/} Holt et al., “Auction Design for Selling CO₂ Emission Allowances Under the Regional Greenhouse Gas Initiative”, October 2007, p. 11.

^{5/} Klemperer, “Auctions: Theory and Practice” Princeton University Press (2004), page 3-1.

^{6/} “A Blueprint for Legislative Action”, p. 8.



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III. ENFORCEMENT

At the March 23rd Workshop, Staff listed the following six “potential goals for enforcement”:

- Level Playing Field
- Enforceability
- Simplicity
- Clarity
- Transparency
- Fair and Consistent Penalties

PG&E supports these goals, and suggests one more: “Protection from Unexpected Price Impacts”. PG&E is concerned about the possibility of an event near the end of a compliance period that unexpectedly increases demand for allowances. For example, a dry October-December period, in the third year of the three-year compliance period, would impair hydroelectric generation and increase demand for electricity from other sources. Because GHG-free electricity sources such as wind and solar power are used as much as possible under typical operation, there is no reserve of GHG-free electricity to call on. The reduced hydroelectric generation would cause greater production of fossil-fueled electricity to meet customers’ electricity demand. This situation could lead to a narrow market with GHG allowance prices based on scarcity. To avoid such situations, PG&E urges that ARB recognize, either through regulation or agency enforcement policy, that liability should not be imposed under AB 32 in the event of extraordinary circumstances beyond the control of complying entities.

Some might argue that California should not get into such a tight situation in the first place. In other words, entities with GHG compliance obligations should hold more allowances than they expect to need, as a safeguard against contingencies such as a drought near the end of a compliance period. However, holding excess allowances would raise allowance prices, wholesale electricity prices, and retail electricity rates. It might be difficult for market monitors to distinguish between prudent and speculative holding of excess allowances.

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Thank you for the opportunity to submit these comments. We look forward to working constructively with ARB, other state agencies, concerned stakeholders, and members of the public to tackle the challenge of global climate change and to ensure the successful implementation of AB 32.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'John W. Busterud', written over a large, stylized blue circular scribble.

John W. Busterud

JWB:kp:bd

cc: Mr. Kevin Kennedy, Chief of Program Evaluation Branch – Office of Climate Change
Mr. Ray Olsson, Air Pollution Specialist – Office of Climate Change