

DOCKET	
07-011P-1	
DATE	DEC 03 2007
RECD.	DEC 03 2007

DOCKET 07-011P-01
CALIFORNIA ENERGY COMMISSION
OPENING COMMENTS OF PACIFIC GAS AND
ELECTRIC COMPANY (U 39 E) ON TYPE AND
POINT OF REGULATION ISSUES UNDER AB 32

CHRISTOPHER J. WARNER

Pacific Gas and Electric Company
77 Beale Street
San Francisco, CA 94105
Telephone: (415) 973-6695
Facsimile: (415) 972-5220
E-Mail: CJW5@pge.com

Dated: December 3, 2007

Attorneys for
PACIFIC GAS AND ELECTRIC COMPANY

DOCKET 07-OHP-01
CALIFORNIA ENERGY COMMISSION
OPENING COMMENTS OF PACIFIC GAS AND
ELECTRIC COMPANY (U 39 E) ON TYPE AND
POINT OF REGULATION ISSUES UNDER AB 32

I. INTRODUCTION

Pursuant to the ruling of the Administrative Law Judges dated November 9, 2007 (ALJs' Ruling), Pacific Gas and Electric Company (PG&E) provides its opening comments on issues relating to the type and point of regulation under AB 32. PG&E's comments are provided in responses to the specific questions contained in the ALJs' Ruling.

II. EXECUTIVE SUMMARY OF PG&E'S OPENING COMMENTS ON TYPE AND POINT OF REGULATION FOR GREENHOUSE GAS EMISSIONS UNDER AB 32

In more detailed comments below, PG&E addresses the alternatives or variations on the First Seller and Load-Based Cap approaches identified in this ALJs Ruling. PG&E believes that the key variable to consider in assessing these alternatives is whether a national GHG system is likely to be implemented within the same general time frame as AB 32. PG&E believes the answer is yes, a national GHG system is likely to be in place in the same general time frame as implementation of AB 32, and therefore two of the alternatives listed in this ALJs Ruling (in-state only source-based, and programmatic implementation of AB 32 pending adoption of a national program) could be evaluated further for implementing AB 32 prior to the effective date of the national program. Although PG&E does not necessarily endorse either of these two alternatives

to a source-based or first seller approaches, which PG&E prefers, we do believe that either of the two alternatives may be significantly more efficient and effective than any load-based approach or other similar alternative listed in the ALJs Ruling.

III. RESPONSES TO SPECIFIC QUESTIONS

3.1. General

Q1. What do you view as the incremental benefits of a market-based system for GHG compliance, in the current California context?

PG&E Response: The benefits of implementing a well designed market-based compliance program in California now include: (1) cost effectiveness—the compliance flexibility afforded by the cap-and-trade approach will direct capital investment to the lowest cost control opportunities; (2) environmental integrity—the cap-and-trade approach sets a specific reduction target, providing a high degree of certainty that the AB 32 reduction goals will be met; and (3) momentum for federal action—momentum is building to pass federal cap-and-trade legislation and state actions will help to build this momentum, while providing learning opportunities for California companies.

Q2. Can a market-based system provide additional emissions reductions beyond existing policies and/or programs? If so, at what level? How much of such additional emission reductions could be achieved through expansion of existing policies and/or programs?

PG&E Response: A well-designed market-based system can achieve additional reductions beyond existing policies by establishing a market price for carbon, bringing in additional investment and thus encouraging a broader array of GHG emissions reduction strategies. Many experts conclude that market-based incentives and resulting investments will further advance GHG emissions abatement technology research and development and accelerate the introduction of leading edge carbon reduction technologies. Existing policies and programs are generally targeted at specific

strategies, such as energy efficiency and renewable energy, rather than encouraging all cost-effective abatement opportunities, and thus are likely to achieve fewer emissions reductions. The market based system is more likely to stimulate broader sector participation, including the transportation sector, encourage a broader set of actions within each sector, and facilitate cost-effective use of offsets. Market price signals established at the national and international levels provide the broadest impetus for low- and zero-carbon technologies.

3.2. Principles or Objectives to be Considered in Evaluating Design Options
Public Utilities Commission Staff proposes that the following principles or objectives be used to evaluate GHG program design options and to develop recommendations regarding a GHG regulatory approach. The objectives are not presented in any particular order.

- **Goal attainment:** Does the approach being considered have any particular advantages in terms of meeting overall emission reduction goals? For example, does the approach have any advantages to promoting energy efficiency, combined heat and power, or renewable energy?
- **Cost minimization:** Is the approach likely to minimize the total cost to end users of achieving a given GHG reduction target?
- **Compatibility with wholesale markets and the Market Redesign and Technology Upgrade:** What are the implications of the approach on efficient functioning of wholesale markets generally and the California Independent System Operator day-ahead and real-time markets?
- **Legal risk:** Is the approach at greater relative risk of being delayed or overturned in court?
- **Environmental Integrity:** Does the approach mitigate or allow contract shuffling and the leakage of emissions occurring outside of California as a result of efforts to reduce emissions in California?
- **Expandability:** Would the approach integrate easily into a broader regional or national program? A related consideration is the suitability of the approach as a model for a national or regional program.
- **Accuracy:** Does the approach support accuracy in reporting and, therefore, ensure that reported emission reductions are real?

• **Administrative Simplicity:** Does the approach promote greater simplicity for reporting entities, verifiers, and state agency staff? How easy will the program design be to administer?

Q3. Do you agree with this set of objectives? Are there other objectives or principles that you wish to see included? If so, please include your recommendations and reasoning. Finally, please rank the objectives above, and any additional factors you propose, in order of importance.

PG&E Response: PG&E generally agrees with the objectives listed above, with one important addition. PG&E recommends that ***“Technological innovation”*** be added as a key objective. As the State of California stated in its “Recommendations for Federal Climate Policy” provided to members of Congress and the Executive Branch, “New technologies are critical to successfully combating and coping with climate change and the use of technology-neutral performance standards and market mechanisms will give the private sector incentives to innovate while adding the flexibility to develop new markets for low-carbon energy supplies and products.”^{1/} Thus, a high priority of AB 32’s regulatory design should be its ability to incent and support technological innovations that can cost effectively speed the transition to a low-carbon economy throughout California.

In terms of priorities for these various objectives, as stated in its prior comments, PG&E recommends that three over-arching objectives should govern AB 32 implementation policies: ***“Goal attainment,” “Cost minimization, and “Expandability.”*** AB 32 should be designed to achieve long term sustained GHG emissions reductions in order to speed the transition to a low carbon economy, should mitigate the costs incurred by California consumers and businesses to achieve those

^{1/} Broad use of offsets will also provide added impetus for global technology transfer.

reductions, and should be easily expandable and scalable into a regional, national or international program. Achieving these objectives in a balanced, fair and administratively efficient manner should be the over-arching goal of AB 32 implementation, with all other objectives serving to support these overall objectives.

3.3. Load-Based Cap-and-Trade System Design

Under a load-based approach, the regulated entities would be the retail providers of electricity to California consumers. Retail providers would be required to surrender allowances for the GHG emissions associated with all power sold to end users in California. Generators would not have a compliance obligation under this system, except possibly for exported power, as discussed in more detail below.

Q4. With a load-based cap-and-trade system, should exports from in-state generation sources be included and accounted for under the cap? Why or why not? If so, how? For example, exports could be captured in a cap-and-trade system by regulating in-state sources that export, or by counting the emissions associated with exported power, without any compliance obligation on the exporter. There may be other options as well.

PG&E Response: A national source based system would avoid this problem. Under a Load Based Cap, exports from in-state generation sources would not be accounted for under the cap. However, under first seller and in-state source based approaches, all exports from in-state generation would be included in the cap because they would be regulated at the source.

Q5. How extensive do you view the threat of contract shuffling under a load-based program, given the accessibility of clean resources within the western interconnect? What mechanisms do you propose to combat this possibility? On what basis do you support your position? Under a load-based system, three basic options may be used to match a retail provider's load to the sources of electricity used to serve the load: (1) the use of contracts and settlements data, (2) the development of a tracking system to facilitate matching sources to loads, with unclaimed sources pooled and assigned to all retail providers for any electricity that cannot be accounted for on a specified basis, and (3) the use of a tracking system and tradable emission attribute certificates (TEAC) to ensure that all electricity is assigned.

PG&E Response: There is no way to entirely combat contract shuffling if a single state like California is the only state with restrictions on carbon emissions in an

interconnected regional power market like the WECC. Only a national, or at least WECC-wide, source-based system would prevent contract shuffling. PG&E agrees with Dallas Burtraw of Resources for the Future and a member of the Governor's Market Advisory Committee, who has stated:

"Further, efforts to prevent increased imports from unregulated regions (GHG "leakage") or to incent emissions reductions elsewhere in the west by identifying sources of power for imports and their emissions are likely to be ineffective, regardless of the administrative procedures used to identify specific generation sources. Consequently, any policy—load-based or source-based—that addresses only California emissions, or attempts to prevent leakage by administrative procedures that identify sources of imports, is very likely to have its environmental goals frustrated by the inability of a California-only policy to alter operations or investment decisions elsewhere in the western North American market."^{2/}

In a California-only context, to reduce contract shuffling, importers must have ownership relationships or unit specific contracts with out of state resources in order to be regulated based on claimed specified imports.

Under a national or regional regime, load based caps become almost impossibly complex. All of the states involved will have to agree on the methodologies to determine the emissions value of power imported and exported. Entities in other states might try to claim that specific coal generation in their states is exported to California, even if California LSEs do not have unit specific relationships and do not choose to import coal-based power. California IOUs are uniquely vulnerable to this concern because (1) they may purchase electricity through bid-based, carbon-blind integrated forward markets operated by the California Independent System Operator and (2) they cannot prevent unit-specific bids into those "pools" from out-of-state coal generators.

^{2/} Dallas Burtraw, Resources for the Future, Discussion Paper 07-49; November, 2007 <http://www.rff.org/rff/Documents/RFF-DP-07-49.pdf>, pp.3- 4.

The three options cited in the question to mitigate contract shuffling would be unlikely to be effective, because none of the options addresses the fact that Western power markets rely to a large extent on imports and exports of unspecified energy that are untraceable from the load to a specific unit or source. Thus, the most viable long-term method for avoiding contract shuffling would be a national or WECC-wide source based cap.

Q6. Which of these systems best accounts for all imports? What are the advantages and disadvantages of each potential tracking system in terms of accuracy, cost of development and administration of tracking systems, costs of administration to the parties, and overall costs to ratepayers? Are there alternative tracking approaches that you would recommend, and for what reasons?

PG&E Response: None of these tracking systems can precisely account for emissions associated with imports. For individual transactions, load serving entities may or may not be the entities who import the power into California. Marketers can and do bring power from out-of-state sources into CAISO markets, where it is pooled and purchased by LSEs. When system power, or unspecified energy, is purchased in California, the LSE purchasing the power will not know if the power is imported or from what specific source or sources the power originates.

An effective power pool will result in an efficient mix of resources for the market as a whole; it is not intended to link individual generators to individual loads. Any attempts to assign or track generation based on loads, whether generated in state or imported, will necessarily depend on a policy outcome, such as using default emissions rates or disaggregate emissions attributes. A technical or database solution to match generation that runs through a power pool to particular load does not exist. PG&E is not optimistic that a feasible, accurate system that can track electricity flow through a

multitude of transactions and repackaging can be developed in the near future without a host of simplifying assumptions, thereby creating an inherently inaccurate tracking and reporting system for emissions.

Of the three options listed, options (1) and (2) are not distinct. Option 1 appears to be a partial source of data for setting up a tracking system. When viewed together, it remains true that many imports and in-state generation will be blended into a pool and assigned to LSEs. LSEs will be forced either to accept this system average based on some approximating method, or electricity dispatch will become more inefficient as LSEs use more unit-specific contracts in lieu of economic unspecified energy, resulting in a thin day-ahead spot market. In the former case, customers may have to pay for more emissions than actually exist. In the latter case, scheduling problems and uneconomic dispatch may also increase costs and, possibly, emissions.^{3/} Either way, California will have to conduct a potentially highly arbitrary and contentious analysis in order to determine which specific generation can be claimed by LSEs and which goes into the general pool for allocation, with approximations of emissions rates. Because this process will be complicated and contentious, it also is likely to impose additional administrative and transaction costs on utility customers.

While option (3), using TEACs, has advantages over the other load based cap options, it has large administrative complexities and costs that outweigh potential advantages and may not be viable in the long-term. The TEACs system could internalize the value of low GHG emitting generation in the dispatch decision by

^{3/} For further explanation, please refer to the report issues by the Market Surveillance Committee of the California Independent System Operator, entitled "Opinion on "Load-based and Source-based Tracking of Carbon Dioxide in California," November 27, 2007, (<http://www.caiso.com/1c9d/1c9d6f661ba60.pdf>).

decreasing the marginal cost to customers of lower emitting resources more than it decreases the marginal cost of higher emitting resources. Unlike the other options, it is possible to provide an emissions-related price signal in short-term markets with this option.

This approach, however, has some significant drawbacks. Implementing TEACs for just one or a few states in WECC will create a need to arbitrarily decide which generators are to be included in the TEAC system. If all generators in the WECC are included, but not all LSEs, surplus TEACs will render the system ineffective—high-GHG TEACs will go unassigned and the resulting price may be very low.

TEACs may address the problem of unspecified energy delivered from a power pool, giving utilities control over their emissions profile. However, implementing the systems and markets needed to make TEACs viable would require substantial up front costs to create the infrastructure for the trading platform. Even if this obstacle were surmounted, entities would have to trade in three different markets: the energy market, the TEACs market, and the allowances market. As pointed out by Olivia Hartridge of Morgan Stanley, creating such a complicated system of related but separate markets might discourage active participation by a variety of entities.^{4/} Additionally, the layers of multiple markets increase the opportunities for arbitrage and market manipulation. Finally, because a national system is likely to be source-based, California would have to invest a large amount of money and effort to create a system that would quickly become obsolete and incompatible with other emissions markets and systems once these broader trading systems began operating.

^{4/} Olivia Hartridge, Morgan Stanley, comments during presentation at PUC/ CEC Joint Workshop, April 19, 2007.

Thus, option (1) may simply provide a source of data for Option 2. Option (2) will be inaccurate and will impose significant administrative costs for a short-lived system. Option (3), relying on TEACs, may more accurate than the others, but is very complicated, requires large start up costs, and is likely to be unnecessary and incompatible with a national or international source-based system once implemented.

Q7. If a load-based approach is pursued, would the potential benefits of a full TEAC system be great enough to warrant the start-up and administrative costs?

PG&E Response: No. As explained above, while the TEAC system is the only option of the three presented that attempts to incorporate environmental, least cost dispatch under a load based cap system and to resolve the attribution of generation dispatched into a power pool, the enormous complexity of having three markets, an administrative determination of which WECC generators can participate and which cannot, the administrative and start up costs, and the cost of dismantling the system make this option inferior to source-based and first seller systems.

3.4. Source-based Cap-and-trade System Design Options

3.4.1. Pure Source-based (GHG Regulation of In-state Generation Only)

Under an in-state-only source-based approach, the regulated entities would be the power plants located in California that generate electricity and emit GHGs. Under such a system, electricity use associated with imports would not be directly regulated under the cap-and-trade system. Instead, other policies and programs such as energy efficiency and the Renewable Portfolio Standard (RPS) would be utilized to decrease reliance on imported GHG-intensive power sources.

Q8. Do you view this approach as compliant with Assembly Bill (AB) 32? Please support your answer.

PG&E Response: Yes. AB 32 provides the ARB with discretion regarding the design of particular emissions reduction measures, strategies and programs needed to meet the overall AB 32 statewide emissions limit.

The threat of leakage can be viewed over two time horizons: short-term and long-term.

Q9. In light of the relatively high capacity factors of carbon-intensive facilities outside the state, how extensive do you expect the short-term threat of substituting higher-carbon imports for in-state generation to be? Might this possibility be dealt with through specific program design (e.g., allocations, limiting conditions, etc.)?

PG&E Response: Under a “pure” source based cap (i.e. emissions limits are applied only to sources, not to other entities) for California in-state generation only, it is probable that imports from lower cost sources will increase. Whether these imports are more GHG intensive than the in-state power being displaced is unclear, because coal dispatch is likely to remain unchanged in the short-term.

In-state electricity prices will rise as in-state generators internalize emissions in their running costs and bids. Imports may increase as out-of-state entities take advantage of the higher price and will not incur a corresponding compliance cost. Whether this will greatly increase the emissions associated with electricity serving California is unclear. In most hours, and in most areas of the WECC, the marginal, price-setting generators are gas-fired combined cycle plants (gas CCs). A cap-and-trade program solely applicable to in-state generators may lead mainly to reduced generation by in-state gas CCs, and increased generation by out-of-state gas CCs that do not incur a compliance cost, and increased imports as well. Overall emissions from WECC generators may increase somewhat due to increased generation overall, to overcome increased transmission losses. However, the cap-and-trade program would probably not affect the dispatch of out-of-state coal plants; these facilities have such low running costs, compared to gas CCs, that they will run at high capacity factors regardless of programs California imposes.

In the medium-term, if other Western states implement cap-and-trade programs that exempt exports while California continues to regulate only in-state generation, out-of-state entities may claim that coal based generation is being exported to California even though coal-based dispatch is unchanged. In the long-term, a California only source-based cap could lead to reduced investment in plants inside the state in favor of new facilities elsewhere.

However, despite these limitations, an in-state only source-based cap may have merit, giving California valuable insight into the cap and trade market with the greatest administrative simplicity. Further, assuming an in-state only source-based cap is superseded over the short or mid-term by a national source-based system, the incentive for long-term contracts with high-emitting imports is likely to be significantly reduced. In addition, the current prohibition on California utilities signing long-term contracts with high emitting resources provides additional assurances that this will not occur. Thus, PG&E believes the “short term threat” of higher-emitting imports may not be significant in terms of emissions, as the marginal resource being imported is likely to be similar to the marginal resource in California and may not outweigh the advantages of an administratively simple in-state, source-based system.

Q10. Given existing procurement oversight and the prospect for a regional or federal GHG program in the foreseeable future, how extensive do you expect the threat to be of a longer-term shift of production to regions beyond the reach of a California source-based cap-and-trade regime?

PG&E Response: If a federal or regional GHG program is perceived to be probable (which PG&E believes to be the case), the threat of a long term shift of generation to regions outside California would be significantly reduced even if California has adopted

an in-state only source-based cap. Again, the rules implementing SB1368 provide additional assurance. As soon as a federal or WECC-wide program is established, any shift in generation between states will be the result of internalizing carbon costs, a desirable outcome. This compatibility with a future federal source-based program is one of the key advantages of the first seller approach, as identified by a number of environmental groups, other parties and the Governor's Market Advisory Committee.

Q11. If emissions associated with imported power are excluded from a cap-and-trade program, what policies beyond the existing suite of program including energy efficiency, California Solar Initiative, RPS, and Emission Performance Standard (EPS) do you recommend that California employ to achieve the necessary reductions from the electricity sector?

PG&E Response: PG&E believes there are a number of technological innovations that may be pursued beyond the existing suite of California energy policy programs in order to incent and obtain additional GHG reductions from the electric sector, including power imports. Among other programs, new customer metering and home energy management technologies offer promise for reducing electricity loads and therefore reducing GHGs. New customer energy efficiency technologies applicable in the commercial and industrial sectors, along with improvements in building and appliance design standards, also offer longer term opportunities for achieving significant permanent reductions in GHGs in the electric sector. Significant upgrades of bulk power transmission facilities in Western power markets, including with Canadian resources, also offer opportunities for further substitution of low carbon electricity for higher emitting sources.

Q12. As the Public Utilities Commission does not currently have authority to oversee all energy efficiency and renewable procurement programs for all kinds of retail providers (investor owned utilities (IOUs), community choice aggregators (CCAs), electric service providers (ESPs), and publicly owned utilities (POUs)), which agency(ies) should fill in any gaps? Which agency should be responsible for overseeing energy efficiency and renewable procurement for POUs? Would the

California Air Resources Board (ARB) have the authority to require certain energy efficiency and renewable targets be met by POUs?

PG&E Response: The CPUC should continue to oversee the IOUs for CEE and RPS programs. Where the CPUC does not have the authority to oversee similar programs offered by other LSEs, these LSEs should have the same compliance responsibilities as IOUs. PG&E does not have a view at this time as to which particular agency should have regulatory oversight over non-IOU LSEs.

Q13. What sources would a source-based system cover? Could it cover California utility-owned facilities located outside of California?

PG&E Response: A source-based system could cover all stationary sources of greenhouse gas emissions, similar to the source-based regulatory programs that currently cover criteria air pollutants emitted by stationary sources under the California and federal Clean Air Acts. To the extent that California utilities own generating facilities located outside California and import power from those facilities into California, a source-based system could cover such facilities on a non-discriminatory basis through regulation of such power imports by “first sellers/first deliverers.”

Q14. Would a strengthened EPS assist in reducing emissions due to California imports? What recommended changes would you make to the EPS?

PG&E Response: In PG&E’s view, a strengthened EPS should not affect dispatch and therefore emissions levels in the short-term. The prohibition of California LSEs signing contracts 5 years or longer with high emitting facilities will affect future investment in these facilities. PG&E suggests no changes currently.

3.4.2. Deliverer/First Seller

The term “deliverer/first seller” generally refers to the entity that first delivers or sells electricity into the electricity grid in California. For generation within California, the deliverer/first seller (the regulated entity) would be the generator, similar to a source-based system. For imported power, the deliverer/first seller would be the entity that delivers the electricity into the California grid (the first sale within California), which could be a retail provider (an IOU, POU, ESP, or CCA) or wholesale marketer.

Q15. Please comment on the “First Seller Design Description” paper, which is Attachment A to this ruling. Does the paper accurately describe the deliverer/first seller program? If not, describe your concerns and include an accurate description from your perspective.

PG&E Response: While the paper in Attachment A (“Resero”) does contain useful discussion, it lacks key facts and information on the design and implementation of a “first seller/first deliverer” system and thus its value is limited in evaluating the First Seller approach. (PG&E notes that Resero apparently was expected to consult with and gather information from key stakeholders on the First Seller approach, but did not contact PG&E or apparently other IOUs for such purpose.) As a threshold matter, the Resero paper is incomplete in that it identifies areas where First Seller is argued to be more complex than the Load Based Cap approach, but the paper then does not attempt to identify where the First Seller is simpler, more accurate and more easily implementable than the Load Based Cap. Finally, the Resero paper highlights areas which it calls “pitfalls” of the First Seller approach, but then fails to state that these issues exist without regard to whether the point of regulation is the First Seller or Load Based Cap and exist because California is implementing a single-state solution, rather than a national approach. In this regard, the Resero paper would benefit from including the type of analysis and evaluation of AB 32 point of regulation issues that the Market Surveillance Committee of the California Independent System Operator recently

submitted in this proceeding, which concluded that a Load Based Cap could have significant adverse impacts on the operation of wholesale regional electricity markets.^{5/} In summary, a point by point comparison of First Seller and a Load Based Cap would have provided a more informative discussion of the relative merits of these alternatives.

The following is a summary of PG&E's primary comments on the Resero paper, with a detailed discussion following the summary.:

- The Resero paper is factually and logically incorrect in asserting that the First Seller approach is more complex than the Load-Based Cap simply because there are fewer LSEs than First Sellers.
- The Resero paper erroneously finds that in-state generation emissions data would be managed in the same way under the First Seller and the Load-Based Cap approaches, thereby ignoring a huge complexity and defect in the Load-Based Cap.
- The Resero paper correctly states that the First Seller approach works with CAISO markets and incorporates emissions costs into energy prices but fails to point out that the Load-Based Cap does not do so.
- The Resero paper mistakenly attributes complications with California's reporting and regulation of imported and unspecified power to the First Seller approach, ignoring the fact that these problems have nothing to do with the point of regulation and in fact are increased under a Load-Based Cap.
- The Resero paper incorrectly finds that limitations on the use of e-tags hinders the use of the First Seller approach, when such e-tag limitations have nothing to do with the point of regulation at all. E-tags could be used as documentation to verify importing entities and amounts imported. E-tags will not be used to assign GHG emissions to imports. The point of regulation is irrelevant to this use of E-tags.
- The Resero paper is incorrect in concluding that use of unit specific contracts to define imports is a viable and preferred alternative to the tracking and reporting of unspecified imports by "first seller" marketers.

The paper is incorrect in stating that First Seller is more complex than the Load-Based Cap because LSEs are a smaller, more stable group than First Sellers.

Part 1 of the Resero paper incorrectly labels the First Seller approach as "more complex"

^{5/} Market Surveillance Committee, California Independent System Operator, "Opinion on 'Load-based and Source-based Tracking of Carbon Dioxide in California,'" November 27, 2007 (<http://www.caiso.com/1c9d/1c9d6f661ba60.pdf>).

than a Load-Based Cap because tracking imports requires identifying “a constantly changing set of First Sellers rather than a smaller and fairly stable set of load-serving entities (LSEs).”^{6/} First, As PG&E stated in our August 6 comments, all owners, operators and users of the bulk electric system are required to register with the WECC. Importers of electricity are a finite set of entities which have to meet NERC and WECC criteria, not a group with ever-changing membership. Second, the ARB has already determined that it will monitor all significant point sources in California, many more entities than there are electricity importers. Gathering data from many entities is part of the normal ARB operations, and the number of entities should not add significant complexity. Finally, the ARB has already decided correctly to have all importers of electricity report imports, regardless of the point of regulation. This decision is correct, will improve California’s understanding regarding who imports electricity, from where, and if levels rise.

The Resero paper erroneously states that in-state generation emissions data is managed in the same way under First Seller and the Load-Based Cap, thereby ignoring a huge complexity of the Load-Based Cap.

In Parts 5 and 6, Resero states identifying emissions to in-state generation should be “straightforward” under First Seller.^{7/} This is correct, but for first seller only. However, the paper substantially errs in implying that the treatment of in-state emissions is exactly the same under either first seller or the load based cap.^{8/} Many parties,

^{6/} Resero, p. 5.

^{7/} Resero, at Parts 5 and 6: “For in-state generators, emissions data would be collected in the same way as has been proposed for Load-Based methods.” p. 6; “For in in-state generation, identifying carbon emissions should be straightforward and is already the subject of extensive discussions.” p. 8.

^{8/} Resero, p. 13

including PG&E, have described previously the administrative exercise that will have to occur to assign in-state generation dispatched through the power pool or through unspecified contracts to LSEs. By equating the treatment of in-state generation under the two schemes, Resero does not identify an enormous complexity of the load-based cap, which would highlight the overwhelming advantage of first seller for in-state generation.

Resero correctly states that the First Seller point of regulation works with the CAISO markets and incorporates emissions costs into energy prices but fails to point out that the Load-Based Cap does not do this.

Resero properly finds that the First Seller approach should mesh well with the CAISO markets in Finding F and Part 10 of the paper. Resero is correct in stating that, under First Seller, CAISO prices “will reflect added costs of carbon management. (That is, with the proper dispatch and resulting prices);” and that “the First Seller importers should be well positioned to incorporate the costs of emissions into their energy market bids.”

While the above is correct, Resero fails to note that the load-based cap does not mesh well with the CAISO markets. PG&E and others have submitted extensive comments to this effect to the PUC. Only under First Seller will all of the bids submitted to the CAISO internalize GHG costs. According to a recent report and analysis by the Market Surveillance Committee of the CAISO:

“The load-based approach will encourage self-scheduling in conflict with the efficiency potential of the MRTU markets, whereas the source-based approach will encourage economic bidding, thus utilizing MRTU’s new economic dispatch in concert with GHG regulation to achieve the desired environmental objectives.

A load-based system . . . will pose a grave danger to the efficiency and competitiveness of the California short-run markets.

A load-based system would conflict with the goal of more competitive energy and ancillary services markets in California, and with the goal of creating liquid and deep markets day-ahead and in real-time in order to lower operation system costs and maximize the ability of the ISO operators manage unforeseen contingencies. In contrast, a source-based policy and MRTU would work together to lower the costs of meeting GHG goals and California's need for power."^{9/} (Pg 7- 8)

Dallas Burtraw of *Resources for the Future*, an independent environmental economics think-tank, adds to this argument with "It is most important for policymakers to recognize that the future of electricity markets and allowance markets are intertwined... If the goal is to increase competition—for example, through the introduction of a day-ahead market as planned, for 2008—then the load-based approach to a cap-and-trade program would pose a fundamental conflict."^{10/}

Resero mistakenly attributes complications with CA's regulation of imported power with First Seller, ignoring the fact that these problems have nothing to do with the point of regulation.

Resero describes various difficulties in identifying the emissions content of electricity imports and attributes these to the First Seller approach, failing to note that these same problems occur in the Load-Based Cap or that the Load-Based Cap would ignore these problems by collecting less information about imports. Finding B states, "There is a potential for resource shuffling . . . with these First Sellers comparable to what would exist with a Load-Based approach. (See discussion item 5.)"^{11/} However, in Part 5, Resero presents no argument or evidence that this is the case. Part 5 describes

^{9/} Market Surveillance Committee, California Independent System Operator, "Opinion on 'Load-based and Source-based Tracking of Carbon Dioxide in California,'" November 27, 2007. (<http://www.caiso.com/1c9d/1c9d6f661ba60.pdf>), pp.7- 8.

^{10/} Dallas Burtraw, *Resources for the Future*, Discussion Paper 07-49; November, 2007 <http://www.rff.org/rff/Documents/RFF-DP-07-49.pdf>, p.3.

^{11/} Resero, p.2.

the difficulty of capturing emissions information and resource shuffling potential in non-CAISO balancing authorities. In either the First Seller or the Load-Based cap approach, the problem of contract shuffling with imports exists. This will occur as long as only California has a low GHG preference and has nothing to do with the point of regulation. In either case, California will have to make a regulatory decision to determine the resources delivered to and serving California.

Part 6 claims without any validation, “For imported power, identifying the source or carbon content under a First Seller approach may be at least as challenging as doing so under a Load-Based approach.” The footnote accompanying this statement says, “Under Load-Based regulation other options (such as an LSE identifying sources of power) were envisioned that could be unmanageable under a First Seller approach.”^{12/} Resero does not explain or provide any evidence for the claims made. All options to identify imports under the load-based cap remain under First Seller. If the LSE is the First Seller, it will be able to claim specific imports under both points of regulation, consistent with implementing rules. Additionally, First Seller will capture information from *all* importers, which the Load-Based cap will *not* do.

Finally, in Part 8, the paper claims that assessing the carbon content of imports by reviewing contracts will be more challenging under First Seller than under the Load-Based cap.^{13/} Under the Load-Based cap, the imports by non-LSEs would not be directly captured, increasing the possibility of leakage. Under First Seller, all importers are captured. Reviewing contracts is necessary only for unit specific claims. Otherwise,

^{12/} Resero, p. 8.

^{13/} Resero, p. 11.

the default emissions rate will be used.

The limitation on the use of e-tags has nothing to do with the point of regulation and should not be labeled as a First Seller pitfall.

In the conclusion, Resero states that “The paper addresses several potential pitfalls of First Seller regulation, including the lack of ability to trace specific sources using eTag information.”^{14/} Problems with this statement include the implication that this pitfall does not exist under the Load-Based Cap and the implication that eTag information would be used to validate unit specific claims under First Seller.

PG&E does not espouse the use of e-tags to validate unit specific claims and does not recall any other parties doing so. PG&E specifically has advocated the use of e-tags as one form of back-up documentation for imports, to be used to identify only the importer, the quantity of imports, and the broad region of imports. PG&E has suggested that unit specific claims be validated through contractual and ownership relationships only, and not through e-tags. Knowing the importing party, the amount of imports, and the region of imports is important under either point of regulation. E-tags are a tool for system reliability and scheduling and should not be modified for GHG purposes. However, they are a useful source of information to be mined for California to understand its dependence on imports.

Given the nature of the electricity market, California will need to make a regulatory decision on the emissions value and rules for unit specific claims. As purchasers of electricity do not know the source of electricity until after transactions are completed for most imports, PG&E agrees that the control area of generation on e-tags

^{14/} Resero, p. 13.

should not be used for emissions assignment, under both the Load-Based cap and First Seller. For this reason, Finding F and the discussion on assigning emissions value to imports in Parts 7 and 10 does not adequately identify the relative merits of the First Seller/ Load-based cap alternatives.

Use of unit specific contracts to define imports is not preferential against Marketers.

Finding D suggests that using contract information to assign emissions value to imports is more difficult under First Seller because the larger number of entities involved have different abilities to have unit specific contracts. Resero elaborates on this in Part 8, implying that LSEs and Marketers have differential abilities to enter into long-term unit specific contracts and ownership relationships. However, according to the ARB draft regulation, specific claims may be made for any “particular generating unit or facility whose electrical generation can be confidently tracked due to full or partial ownership or due to its identification in a power contract.”^{15/} There is no length qualification. Marketers and LSEs alike have equal ability to enter into these unit specific contracts. Finally, these requirements are without regard to the point of regulation, contrary to the implication in Part 8 that the assignment proposals under First Seller are more specific than those considered for the Load-Based cap.

For these reasons, PG&E believes that the Resero paper in its present form contains significant errors and omissions and should not in its present form be relied upon for evaluation of the type or point of regulation.

3.4.3. Source-based for In-state Generation, Load-Based for Imports

^{15/} ARB, Proposed Regulation For Mandatory Reporting of Greenhouse Gas Emissions, 95102 (a)(166).

Under this approach, the point of regulation would be the electricity generators for in state generation and the retail providers for imported power.

Q16. Please describe in detail your view of how this option would work.

PG&E Response: PG&E believes that a “hybrid” source-based/load-based system would have the following effects:

1. In-state sources would internalize emissions in their marginal costs. In-state electricity prices will increase.
2. The marginal cost of out-of-state generation will not increase. The program gives a competitive advantage to out-of-state generation. Importers, who do not have a compliance burden, will sell more power into California to take advantage of the increased price of electricity. Even if the marginal resource is the same in both markets, emissions may increase because of transmission losses.
3. If all generators efficiently include dispatch costs, and with in-state generators incurring GHG compliance costs while out-of-state generators do not, in-state generation may decrease and imports may increase.
4. LSEs will have to report what part of their load is met by in-state generation.
5. LSEs will have to report what part of their load is met by their own imports.
6. The ARB will have to determine which in-state generation was not claimed and ensure no double claims.
7. Unclaimed in-state generation would need to be assigned to unfulfilled LSE load.
8. Imports would then be assigned to unfulfilled LSEs load.
9. The ARB would have to calculate what each LSE is responsible for, given their own imports and the marketer imports assigned to them.

Q17. Do you support such an approach? Why or why not?

PG&E Response: PG&E believes that there are significant difficulties with this approach. It has advantages over a load based cap in that in-state generation has an increased chance of dispatch in the correct order. However, even in this approach, entities without compliance responsibility can make the import decision; in-state generation and imports will have to be assigned to load; and the ARB will have to make a regulatory decision on LSE responsibility. This option has less chance of leakage than a pure source based cap or a load based cap, but has a higher chance of leakage than First Seller or national source-based approaches.

Q18. Does this approach have legal issues associated with it? Provide a detailed analysis and legal citations.

PG&E Response: ARB has discretion to adopt emissions reductions measures and strategies that achieve AB 32's GHG reduction goals consistent with the economic and technological feasibility criteria and other statutory criteria listed in AB 32. Thus, all else being equal, a hybrid source-based/load-based system would appear to comply with AB 32 if it is otherwise consistent with AB 32's economic and technological criteria. A hybrid source-based/load-based system would be evaluated under the Commerce Clause to the U.S. Constitution based on whether it treats out-of-state sources of power on a non-discriminatory basis compared to in-state sources. This determination would be largely fact-based and would focus on whether the direct or indirect effects of the emissions standards adopted would treat out-of-state sources no more stringently than in-state sources.

Q19. If retail providers are responsible for internalizing the cost of carbon for imported power, all power generated in-state may need to be tracked to load to avoid double regulation of in-state power. Do you agree?

PG&E Response: In this option, the cost of carbon would not be internalized in the cost of imported electricity. The cost of carbon would be paid by LSEs after power is purchased. The ARB would have to assign responsibility for imports based on an administrative decision. In order to make this administrative decision, the ARB would have to track all in-state generation to load, a task that PG&E believes would not be feasible and thus would result in double counting and double regulation problems.

Q20. If that is the case, does a mixed source-based/loadbased approach offer any advantages compared to a load-based approach in terms of simplifying reporting and tracking? What if the load-based system uses TEACs? How could imports be differentiated from in-state generation in a way that reduces the complexity of reporting and tracking compared to a load-based approach?

PG&E Response: In terms of reporting and tracking, the mixed source-based/ load-based for imports approach does have some advantages over the pure load based cap. In-state reporting and tracking are simpler and more accurate for in-state resources. A TEACs system offers no further advantage even if restricted to imports, because the ARB would still have to determine the import responsibility for each LSE. The best way to reduce the complexity of reporting and tracking for imports is to assign responsibility for the imports at their source or at the time they are delivered into California and not attempt to track the imports to specific load served.

3.5. Deferral of a Market-based Cap-and-Trade System

In this scenario, a California-only cap-and-trade system would not be implemented for the electricity sector at this time. Instead, California would work with other Western states to develop a Western Climate Initiative cap-and-trade system and/or work toward a national cap-and-trade program. In the meantime, existing policies and programs in the electricity sector may need to be ramped up to meet the AB 32 goals. Several variations of this option may be possible. For example, a loadbased cap could still be developed for retail providers, with assignment of individual entity obligations and trading available within the California electricity sector only, but not with other sectors. A second alternative would be to develop individual entity caps (or carbon budgets) which entities could not exceed without facing penalties or fees, but not allow for any trading of allowances at this time. Another option would be to ramp up the mandatory levels of

existing programs such as the energy efficiency and RPS programs to higher goals, and make all retail providers obligated to meet these additional goals, without assigning specific cap levels to individual entities.

Q21. How important is it that a cap-and-trade system be included in the near-term as part of the electricity sector's AB 32 compliance strategy?

PG&E Response: PG&E believes that a cap-and-trade market-based system for regulating GHG emissions, if designed properly, offers better opportunities over both the near term and long term for achieving cost-effective and sustained GHG reductions than other forms of regulation, such as "command and control" emissions limits. For this reason, PG&E believes that it is essential that a cap-and-trade system be considered as part of the electric sector's AB 32 compliance strategy. Nonetheless, if it becomes more likely than not that a national source-based system will be adopted and implemented within the same general time period as AB 32, then there could be significant advantages and efficiencies in California deferring adoption of a cap-and-trade market structure in the short period prior to that national system. As discussed above in response to questions 9 and 10, an in-state only source-based system, with deferral of regulation of imports, could be viable as a means of bridging to a national source-based system, because the threat of long term shifting of generation to out-of-state sources would be significantly mitigated by the imminence of the national system.

Q22. Would your answer to Q12 be different if there is no market-based cap-and-trade system? If so, please explain.

PG&E Response: PG&E's response to Question 12 would not be different. Regulation of non-IOU LSEs would still need to be addressed.

Q24. How deferral of a cap-and-trade program for the electricity sector would facilitate or hinder California's integration into a subsequent regional or federal program.

PG&E Response: Deferring adoption of a source based cap-and-trade program in California is more likely to facilitate California's integration into a subsequent federal program. A load-based cap may hinder such integration. However, we do believe that the example that California sets by adopting a smoothly functioning source-based or first seller-based cap-and-trade program can serve to encourage federal action.

A key integration issue is the transferability of allowances from a state to a federal program. Inability to transfer such allowance may cause significant integration issues and be very costly to complying entities and to LSE's customers.

Q25. If neither a regional system nor a national system is implemented within a reasonable timeframe, should California proceed with implementing its own cap-and-trade system for the electricity sector? If so, how long should California wait for other systems to develop before acting alone?

PG&E Response: Absent a change in the legislative mandate in AB 32, California is required to proceed with implementing its own state-only compliance program, regardless of whether a regional or national system will be implemented within a reasonable timeframe. However, if no national system is likely to be enacted within the same time frame as AB 32, e.g. by 2012, then California may need to consider deferring the cap-and-trade component of the AB 32 program until source-based GHG programs are in place elsewhere in Western regional power markets. This is because the costs, inefficiencies and "leakage" associated with a state-only GHG program in the electricity sector may effectively negate the net emissions reductions sought to be realized under such a program.

Q26. What flexible compliance mechanisms could be integrated into a non-market based GHG emission reduction approach?

PG&E Response: A program of GHG offsets could be integrated into a non-market

based reduction program, such as the adoption of individual entity caps, although PG&E's preference would be to see a cap-and-trade program adopted. For example, offsets have been used by companies to satisfy voluntary reduction commitments outside of any cap-and-trade scheme.

Q27. If a market-based cap-and-trade system is not implemented for the electricity sector in 2012, how would you recommend addressing early actions that entities may have undertaken in anticipation of a market?

PG&E Response: PG&E supports the adoption of a market-based cap-and-trade system in California, and believes that it is reasonable to have a program in place by 2012. However, if implementation of such a system is delayed and entities have undertaken measures in anticipation of such a market-based system, these early actions should be recognized through an equitable distribution of allowances once the market-based system is in place. Allowances should not be allocated on the basis of historical emissions because such an allocation scheme would penalize and discourage early actions.

3.6. Recommendation and Comparison of Alternatives

Q28. Submit your comprehensive proposal for the approach California should utilize regarding the point of regulation and whether California should implement a cap-and-trade program at this time for the electricity sector. If you recommend that another approach be considered besides those detailed above, propose it here. If you recommend one of the above options, give as detailed a discussion as possible of how the approach would work.

PG&E Response: PG&E's first and foremost preference is a national source-based, multi-sector cap and trade approach with a WECC-wide regional source-based approach as a second option. Under a multi-sector, California only cap and trade system, PG&E supports a First Seller approach. PG&E previously provided extensive comments and analysis of the First Seller approach in our August 6 and 15, 2007, comments in this

proceeding and will not repeat those comments here.

The First Seller approach can be summarized as follows:

1. In-state generators and importers report emissions data per the ARB reporting regulations. Importer emissions responsibility is determined through the ARB protocol. Under AB 32, CARB will require all applicable entities registered in the WECC (LSEs and marketers) to report their import-based emissions if they import power into California for ultimate consumption in California. E-tags will not be turned into the ARB but can be used for back-up documentation for independent reporting auditors.
2. First sellers purchase allowances from LSEs through an independent mechanism or agency.
3. Value of the allowances is used for customer benefit, such as offsetting customer costs.

Other details about trading mechanisms should be developed after the point of regulation is chosen.

Q29. Address and compare how each of the alternatives identified in the above questions, and the proposal you submit in response to the preceding question, would perform relative to each of the principles or objectives listed above and any other principles or objectives you propose. For each alternative, address important tradeoffs among the principles.

PG&E Response:

In our previous comments in this proceeding, PG&E has extensively analyzed and compared the First Seller approach to the Load-Based Cap approach, and has concluded that the First Seller approach is superior to the Load-Based Cap in its ability

to achieve most of the key principles and objectives listed above. PG&E does not intend to repeat this comparison and analysis in these comments, but incorporates our previous comments and analysis in this proceeding by reference.^{16/}

In terms of all the alternatives or variations on the First Seller and Load-Based Cap approaches identified in this ALJs Ruling, PG&E believes that the key variable to consider is whether a national GHG system is likely to be implemented within the same general time frame as AB 32. PG&E believes the answer is yes, a national GHG system is likely to be in place in the same general time frame as implementation of AB 32, and therefore two of the alternatives listed in this ALJs Ruling (in-state only source-based, and programmatic implementation of AB 32 pending adoption of a national program) could be evaluated further for implementing AB 32 prior to the effective date of the national program.

Even if a national program is likely in the short term, PG&E would have concerns about adoption of two other alternatives identified by the ALJs Ruling (hybrid load-based cap/source-based cap, and expansion of the SB 1368 emission performance standard or other procurement restrictions). This is because both of these alternatives provide for significant reliance on a “load-based” approach to limiting GHG emissions, which is subject to the same or similar distortions and defects PG&E has identified with the Load-Based Cap approach.

If a national program is not adopted or is rejected for whatever reason, then PG&E would recommend that California move forward with the First Seller approach, while at the same time increasing and accelerating its efforts to establish a regional

^{16/} PG&E Opening and Reply Comments on First Seller Issues, August 6 and 15, 2007.

source-based cap and trade system in Western power markets. Under this phased system, the First Seller approach would allow California to move ahead in achieving significant GHG reductions in the electric sector without waiting for a regional source-based system. At the same time, the First Seller approach would ensure that California could quickly and efficiently convert its program to a regional source-based cap-and-trade program in the West, with the least amount of administrative complexity and incompatibility. Finally, since global warming is a global issue, PG&E recommends in this instance that California redouble its efforts to encourage a support a national based cap-and-trade system to effectively address this problem on the scale it needs to be addressed.

PG&E provides the following comments on how each of the alternatives in the ALJs Ruling can be evaluated and compared using the key policy principles listed in Question 3:

LOAD BASED CAP USING A TRACKING SYSTEM BASED ON CONTRACTS AND SETTLEMENTS

The following quote from the CAISO's Market Surveillance Committee (MSC) summarizes the deficiencies of the Load-Based Cap option:

"...a load-based cap-and-trade system, is clearly and substantially inferior to the other options. We believe that the load and source-based approaches are similar in some respects, but that the load-based approach is distinctly inferior in others. In particular, we argue that the two systems are essentially the same on the issues of determining the GHG content of power imports and incentives for investments in energy efficiency and renewable energy. However, in terms of administrative complexity, adverse impacts on the efficiency and costs of dispatching generation units to meet load in California energy and ancillary services markets, and compatibility with likely federal GHG legislation, a load-based system has serious disadvantages compared to any of the other options. Contrary to some claims, we believe that resulting cost of energy to consumers would likely be

higher under a load-based cap."^{17/}

- **Cost minimization:** The Load-Based cap may have higher costs than a source-based system.
- As 1,100 lbs/ MWh is likely higher than the average emissions rate of power serving the power pool, customers will pay more for any transaction that is not unit-specific, and the quantity of generation to which this high default emission rate will be applied is greater than under a first seller or source-based approach.
- Running counter to objectives of the MRTU, there will be a tendency to do more unit-specific contracts with low emitting generation, which will increase overall procurement costs, possibly affect contract performance assurance, and possibly lead to scheduling problems and inefficient dispatch.
- Administrative costs may be great and will also impact customer costs. The sunk costs of the tracking system will be in all likelihood no longer be useful in the transition to the federal source-based system.
- **Compatibility with wholesale markets and the MRTU:** Under a load based cap, the costs of GHGs will not be included in the price of electricity for economic dispatch purposes. Since economic dispatch is one of the foundational purposes of the MRTU, a load based cap would undermine MRTU's effectiveness. In addition, one effect of the MRTU may be fewer unit-specific contracts, since more units will bid into a pool, improving market efficiency. Under a load based cap, however, LSEs may prefer bilateral contracts

^{17/} Market Surveillance Committee of the California Independent System Operator, "Opinion on 'Load-Based and Source-Based Trading of Carbon Dioxide in California,'" November 27, 2007, pp. 2- 3.

particularly if the default emissions rate is set at a high or unpredictable level.

This also will frustrate the MRTU goal of a more efficient market.

- **Environmental Integrity:**
- Importers and other sellers bidding into the California power market would have no compliance obligation and would, therefore, not reflect any GHG compliance costs in their electricity bid prices.
- Since GHG costs will not be included in generators' bids into the Integrated Forward Market, the CAISO will not be able to dispatch bids or curtail generation based on all economic inputs, because the GHG emissions price is not included. Over time, this may significantly affect actual day-to-day emissions quantities if dispatch does not reflect GHG costs.
- Leakage may occur as default emission rates are used over actual emissions rates.
- According to Dallas Burtraw of Resources for the Future, the load-based approach will fail to deliver incentives for technological innovation.
- **Expandability:** The Load-based cap neither is expandable nor can it act as a model for the nation. The complications of tracking imports and exports under a multiple state load-based cap regime would become monumental, especially if states differ on the value of imports and exports. The administrative burden to solve such issues would be intense. Further the implementation of a Load-based cap in California would fail to influence the national source based cap and would hamper California's ability to transition. To quote the CAISO's Market Surveillance Committee:

This conclusion means that a fully effective GHG policy for the electric sector must cover the bulk of the western US market. This implies that a California policy under AB32 should be viewed as an initial step, and that a major goal of that policy should be to facilitate the establishment and implementation of federal or other west-wide policies, rather than to act as an obstacle to such policies. Precedent, as well as the preponderance of proposed federal legislation, indicates that source-based trading of emissions allowances will likely be the basis of any federal regulation of power sector GHG emissions. The emissions accounting and other mechanisms associated with a California load-based system would, at best, be sunk costs that would be abandoned if a federal source-based GHG trading system is adopted. At worst, the existence of an incompatible state-level system could delay or increase the cost of implementing the federal system.^{18/}

- **Accuracy:** The load-based approach introduces complexity and imprecision in making an assignment of emissions to generation that occurs in the state as well as out of state. (Burtraw 15)^{19/}
- None of the load based cap options track who imports power nor how much power is imported. Load serving entities often are not the entities who import the power into California.
- The load based cap necessitates some methodology for assigning emissions from facilities and imports to LSEs, perhaps through default emissions values. This introduces imprecision, uncertainty, chance for error and greater incentive for gaming in the emissions of the complying entity, the LSE. The imprecision of the load based cap introduces increased uncertainty to the measurement of emissions reductions actions taken by the LSE for its load.

^{18/} Market Surveillance Committee of the California Independent System Operator, "Opinion on 'Load-Based and Source-Based Trading of Carbon Dioxide in California,'" November 27, 2007, pp. 2- 4.

^{19/} Dallas Burtraw, Resources for the Future, Discussion Paper 07-49; November, 2007

- Any attempts to assign or track generation, whether generated in state or imported, to load will depend on a policy decision, like averaging emissions in the pool or the use of disaggregate emissions attributes. The technical or database solution to match generation that runs through a pool to particular load does not exist. Neither California nor the WECC should expect that a feasible, accurate tracking system that can track electricity flow through a multitude of transactions and repackaging will be developed in the near future without a host of simplifying assumptions, thereby inherently inaccurate.
- **Administrative:** The state will have to undergo an exercise to determine which generation has been claimed by LSEs and which goes into the general pool. Because this process may be complicated and contentious, it may be administratively costly.

LOAD BASED CAP USING TEACS

While the TEACs option would integrate better with the wholesale markets, and be more accurate than the original Load-based Cap, the high start-up costs, administrative complexities, and market complexities far outweigh potential advantages. Additionally, TEACs would not be likely to serve as a national model.

- **Cost minimization:** Theoretically the costs should be the same as first seller. However, implementing TEACs would require huge up front costs to create the infrastructure for the trading platform.
- **Compatibility with wholesale markets and the MRTU:**
- The TEACs system could internalize the value of low GHG emitting generation in the dispatch decision by decreasing the marginal cost of lower emitting

resources more than it decreases the cost of higher emitting resources. Unlike the other options of the load based cap, it is possible to maintain least cost dispatch with this option. TEACs also solve the problem of the power pool, giving utilities control over their emissions profile.

- If some LSEs in WECC are not subject to the load-based program, but all generators are included, there will be surplus TEACs. In that case, some coal-based TEACs will go unassigned. The solution is unpalatable: Arbitrarily exclude some generators from the TEAC scheme, so that the supply of TEACs matches demand served by LSEs under load-based caps.
- Entities would have to trade in three different markets: the energy market, the TEACs market, and the allowance market. Creating such a complicated system of markets might discourage active participation by a variety of entities. Additionally, the layers of markets increase the opportunities for arbitrage.
- **Environmental Integrity:** The environmental integrity could be compromised if all generation in the WECC receives TEACs while only some LSEs are subject to the load-based cap.
- **Expandability:** The national system will be source based. California would have to spend a large amount of money to create an incompatible system that would have to be dismantled in fairly short order and lose the ability to scale up its system and influence the national design.
- **Accuracy:** Since all imports and in-state generation has to be tracked to create all of the TEACs, this option should be accurate.

- **Administrative:** Administratively more complex as the extra trading platform has to be created and then monitored.

IN-STATE SOURCE BASED CAP ONLY

This option is administratively the easiest and is expandable. However, this option is more costly than First Seller and may cause increased imports.

- **Cost minimization:** As in-state generation internalizes emissions in the marginal cost, in-state electricity prices will increase. The marginal cost of out-of-state generation will not increase. Importers, who do not have a compliance burden, will sell more power into California to take advantage of the increased price of electricity. The program gives a competitive advantage to out-of-state generation. Thus, money will flow out of state to marketers who do not have to buy allowances. California will face increased electricity prices while internalizing less GHGs. Additional expenditures would have to occur above the increased electricity prices for the programmatic measures to account for the GHG in the imports.
- **Compatibility with wholesale markets and the MRTU:** If there is economically efficient dispatch, in-state generation should decrease and imports will increase. While in-state dispatch may be relatively efficient, this option is inefficient because only the in-state generation has internalized the GHG price.
- **Environmental Integrity:** Under a pure source based cap for California generation, it is likely that imports will increase. Whether these imports may be more GHG intensive than the in-state power being displaced is unclear, since coal

dispatch will be unchanged. Even if the marginal resource is the same in both markets, emissions may increase because of transmission losses.

- **Expandability:** This option is easily expandable to the federal system.
- **Accuracy:** The option is accurate because there is no need to match generation to load, but the option does not account at all for imports
- **Administrative:** Administratively easiest option.

IN-STATE SOURCE BASED CAP WITH A LOAD BASED CAP FOR IMPORTS

There are significant difficulties with this approach. It is better than a pure load based cap in that in-state generation has an increased chance of dispatch in the correct order. However, even in this approach, entities without compliance responsibility can make the import decision; in-state generation and imports will have to be assigned to load; and the ARB will have to make a regulatory decision on LSE responsibility. This option has less chance of leakage than a pure source based cap or the load based cap, but has increased chance of leakage than the first seller approach.

- **Cost minimization:**

As in-state generation internalizes emissions in the marginal cost, in-state electricity prices will increase. The marginal cost of out-of-state generation may not increase commensurately. Importers do not have a compliance and corresponding cost burden, and may sell more power into California to take advantage of the increased price of electricity. This approach therefore gives a competitive advantage to out-of-state generation, and funds will flow out of state to marketers who do not have to buy allowances. California will face increased electricity prices while internalizing less GHGs. Additional expenditures would

have to occur above the increased electricity prices for the programmatic measures to account for the GHG in the imports.

➤ **Compatibility with wholesale markets and the MRTU:**

If there is economically efficient dispatch, in-state generation should decrease and imports will increase. While in-state dispatch should be efficient, this option is inefficient because only the in-state generation has internalized the GHG price.

➤ **Environmental Integrity:** As under a pure source based cap for California generation, there is an almost certain probability that imports will increase.

Whether these imports are much more GHG intensive than the in-state power being displaced is unclear, since coal dispatch will be unchanged. Even if the marginal resource is the same in both markets, emissions may increase because of transmission losses.

➤ **Expandability:** This option is expandable to the federal system, with the imports component replaced by a broad source-based system.

➤ **Accuracy:** The ARB will have to undergo the inaccurate administrative process of assigning all generation to LSEs to determine the LSEs' imports responsibility. LSEs that import a great deal of power may try to leave importing to marketers, hoping that imports responsibility gets spread out over all LSEs.

➤ **Administrative:** The ARB would have to assign responsibility for imports based on an administrative decision. In order to make this administrative decision, the ARB would have to track all in-state generation to load. LSE compliance responsibility would depend on these later regulatory outcomes, adding significant and unnecessary uncertainty.

FIRST SELLER

While PG&E may prefer a national or WECC wide source-based approach, the First Seller option should be pursued in a California only multi sector scenario.

- **Cost minimization:** This option should have equal to lower costs than all of the other options considered. It integrates GHG costs into the electricity market efficiently without creating an excessively burdensome administrative system.

- **Compatibility with wholesale markets and the MRTU:**

1. The deliverer/first-seller option provides a more effective response to leakage by directly internalizing the GHG compliance costs in both in-state generation and imports. In-state California generators will reflect the cost of GHG allowances in their electricity bid prices submitted to the California ISO. Similarly, importers of electricity— responsible for surrendering allowances under the deliverer/first-seller approach—will factor these costs into their decision to import power.

2. First Seller provides direct price signals to utilities and other power sellers.

- **Environmental Integrity:**

1. Because all parties include GHG costs, environmental dispatch is possible.
2. First Seller requires default emissions rates only for unspecified imports, and therefore minimizes leakage
3. The first seller approach aligns the regulation of in-state sources of GHG emissions with the ability to track responsibility for those emissions under AB 32, because in-state sources would comply with AB 32 emissions requirements directly.

- **Expandability:** This option is expandable to the federal system which is likely to be source based.
- **Accuracy:**
 1. Of the proposals being considered, the First Seller approach is the only proposal that regulates all imports. None of the other proposals will capture all of the entities that decide to import power into California.
 2. This option is more accurate because it allows more accurate monitoring and assignment of emissions, reducing the scope of line of sight problems for imports because transactions do not need tracking after in-state delivery occurs.
- **Administrative**
 1. The best way to reduce the complexity of reporting and tracking for imports is to assign responsibility for the imports at the time they are delivered into California and not attempt to track the imports to specific load served.
 2. The list of potential importers is easily known.

PROGRAMMATIC MEASURES ONLY

This option may be more costly, inaccurate, and administratively complex than a market based mechanism, depending on the design of the market based mechanism. On the other hand, this option may reasonably transition California well for the coming national source-based market.

- **Cost minimization:** This option is more costly than a market based mechanism. California will have to bear the costs of increased programmatic measures and will be much less able to use efficiencies and innovations of a market-based approach.

- **Compatibility with wholesale markets and the MRTU:** This option is incompatible with environmental dispatch as importers and in-state generators will not internalize GHG costs. However, dispatch should be economic and not counter to MRTU goals.
- **Environmental Integrity:** May be difficult to determine, as avoided emissions will not be perfectly quantifiable.
- **Expandability:** While this option is not incompatible with a federal system, it is not expandable and does not provide a comprehensive, market-based model for the nation.
- **Accuracy:** Avoided emissions will not be perfectly quantifiable.
- **Administrative:** Increased administrative burden and costs as each programmatic measure must be monitored.

CO2RCs

CO2RCs are a more complicated version of TEACs. The concept is more confusing, unnecessarily complex, and totally unworkable in a California only context.

- **Cost minimization:**
 - The CO2RCs approach apparently assumes that if certain WECC states participate in the WCI but other states do not, the LSEs in the WCI states should absorb all of the CO2RCs in the WECC, sending money from WCI states to non-WCI states. This entails punitive, costly action against those states that do decide to pursue GHG regulation in the WCI, raising barrier for states to desire to do so.

➤ **Compatibility with wholesale markets and the MRTU:**

- The electricity market prices of CO2RCs would need to be carefully considered. CO2RCs may impact prices in non-WCI states with unknown ramifications.
- The idea may possibly work for vertically integrated utilities but does not function at all for the California marketplace. The CO2RCs concept does not work with merchant generation and a power pool integrated forward market.

➤ **Environmental Integrity:**

- A CO2RC does not actually represent a reduction. CO2RCs are granted to all generators whose emissions rates are less than 2200 lbs/ MWH. A generator with an emissions rate slightly below that rate, for example 2000 lbs/ MWH would earn more CO2RCs by producing more electricity and emitting more GHG into the atmosphere.
- If all generators in the WECC receive CO2RCs, then there would be a huge oversupply in a California only system. There is no substantiation that CO2RCs would solve the leakage problem.
- Assuming total WECC generation is 831,570 GWH, at an average emissions rate of 0.5 mtons/ MWH, over 415 MILLION CO2RCs would need to be created. *(Just to be clear, what units are CO2RCs?)*

➤ **Expandability:**

- It is unlikely that CO2RCs will be able to link seamlessly with the EU and RGGI. This is because rather than being a fixed quantity, like an allowance, more CO2RCs are created with increased electricity generation and increased emissions.
- CO2RCs are unlikely to be a model for a source-based national system in which emissions allowances are traded instead of CO2RCs.

➤ **Accuracy:**

- If total generation and demand grow, the total CO2RCs awarded will grow. To control emissions under such a scenario demands a much more hands-on regulatory approach to the GHG cap. One solution suggested to this is to devalue the CO2RC if too many are produced. This would signify that CO2RCs produced in different years would have different values. Unlike an allowance where a ton is a ton, a CO2RC in one year would not necessarily be equivalent to a CO2RC in another year. This could create confusion in the market place and make valuation of the assets complicated.

➤ **Administrative**

- Requiring CO2RC generation to show WCI load based contracts to earn CO2RCs means that generation has to be tied to load. If that were easily possible, CO2RCs would not be needed at all.

- The CO2RC method would involve many administrative decisions and would have to be managed in a hands-on fashion. An administrative decision would have to be made to decide how participating states would absorb the extra CO2RCs. Not allocating CO2RCs to generation serving non-WCI load would require the very tracking of generation to load the CO2RCs approach purports to avoid.

IV. CONCLUSION

For the reasons stated above PG&E recommends that the CPUC and Energy Commission adopt and recommend the policies on type and point of regulation under AB 32 as described in PG&E's comments in this proceeding.

Respectfully Submitted,

CHRISTOPHER J. WARNER

By: _____

CHRISTOPHER J. WARNER

Pacific Gas and Electric Company

77 Beale Street

San Francisco, CA 94105

Telephone: (415) 973-6695

Facsimile: (415) 972-5220

E-Mail: CJW5@pge.com

Attorneys for

PACIFIC GAS AND ELECTRIC COMPANY

Dated: December 3, 2007