PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

September 3, 2014

Advice Letter: 4331-E

Brian Cherry
Vice President, Regulation and Rates
Pacific Gas and Electric Company
P.O. Box 770000
San Francisco, CA 94177

SUBJECT: Updated Greenhouse Gas Procurement Plan in Pacific Gas and Electric Company's Bundled Procurement Plan

Dear Mr. Cherry:

Advice Letter 4331-E is effective as of August 28, 2014, per Resolution E-4660 approved on August 28, 2014.

Sincerely,

Edward Randolph

Edward Randolph
Director, Energy Division

Pacific Gas and Electric Company®

Brian K. Cherry
Vice President
Regulatory Relations

Mailing Address
77 Beale St., Mail Code B10C
Pacific Gas and Electric Company
P.O. Box 770000
San Francisco, CA 94177

Fax: 415.973.7226

December 20, 2013

Advice 4331-E
(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

<u>Subject</u>: Updated Greenhouse Gas ("GHG") Procurement Plan in Pacific Gas and Electric Company's Bundled Procurement Plan

<u>Introduction</u>

Pursuant to Ordering Paragraph ("OP") 9 of Decision ("D.") 12-04-046, Pacific Gas and Electric Company ("PG&E") hereby submits to the California Public Utilities Commission ("Commission" or "CPUC") this advice letter filing to update PG&E's GHG Procurement Plan (Appendix L of PG&E's Bundled Procurement Plan ("BPP")) and its associated procurement limits (the "GHG Purchase Limit"). Specifically, PG&E requests revisions necessary to ensure PG&E's compliance with the California Air Resources Board's ("CARB") Assembly Bill ("AB") 32 GHG Cap-and-Trade regulation related to suppliers of natural gas. In addition, PG&E requests to update elements of its GHG Procurement Plan to reflect current regulatory and market conditions.

<u>Background Concerning BPP</u>

On April 19, 2012, the Commission issued D.12-04-046, authorizing PG&E to procure certain compliance instruments to comply with its GHG compliance obligation under the CARB Cap-and-Trade Program.[1] D.12-04-046 also specified that PG&E's procurement of such GHG compliance instruments is subject to maximum purchase limits, including a the GHG Purchase Limit.[2] D.12-04-046 required PG&E to update its BPP to incorporate the modifications made in that decision.

On May 21, 2012, PG&E submitted supplemental Advice Letter 4026-E-A to incorporate BPP modifications required by D.12-04-046. PG&E subsequently identified additional modifications in order to conform its BPP to D.12-04-046, which PG&E submitted in its second supplement on

[1] *See* D. 12-04-046 at Conclusion of Law ("COL") 8.

[2] *Id*. at Ordering Paragraphs 8 and 9.

August 31, 2012 in Advice Letter 4026-E-B, replacing the BPP provided in Advice Letter 4026-E-A in its entirety.

On October 11, 2012, the Commission issued Resolution E-4544, which approved PG&E's BPP, including the GHG Procurement Plan included as Appendix L. On September 30, 2013, PG&E filed Advice Letter 4290-E updating its GHG Purchase Limit. Advice Letter 4290-E is pending Commission approval.

Background Concerning PG&E's Cap-and-Trade Compliance Obligation

PG&E's GHG emissions obligation, established in CARB's Cap-and-Trade regulation, began in 2013 and will be expanded effective January 1, 2015 to include suppliers of natural gas. Natural gas suppliers such as PG&E will have a GHG compliance obligation equal to the GHG emissions that would result from full combustion of all natural gas delivered to end-use customers that are not directly regulated by the Cap-and-Trade Regulation (the"Net Natural Gas Compliance Obligation").[3]

CARB is expected to consider amendments to its Cap-and-Trade regulation in early 2014 (the "Proposed Amendments"), including an allocation of allowances to natural gas suppliers.[4] The Proposed Amendments related to natural gas supplier emissions would, starting with emissions year 2015 and continuing through 2020, allocate a defined quantity of allowances to PG&E on behalf of its natural gas customers. This quantity is equivalent to PG&E's Natural Gas Compliance Obligation from budget year 2011, multiplied by the corresponding "current" year's cap-adjustment factor.[5] In addition, the Proposed Amendments would require PG&E to consign a minimum percentage of its allocated allowances to CARB auctions each year.[6] Unconsigned allowances would directly fulfill a portion of PG&E's compliance obligation and reduce PG&E's needs to procure GHG compliance instruments for its Net Natural Gas Compliance Obligation.

Utilizing the BPP to Procure GHG Compliance Instruments for Natural Gas

PG&E is proposing to modify the BPP to procure GHG compliance instruments associated with its Net Natural Gas Compliance Obligation. PG&E's approved BPP permits amendments

---

[3] *See* Cap-and-Trade regulation at Section 95852(c). Certain PG&E customers are regulated by CARB as covered entities as defined in the Cap-and-Trade regulation because their annual GHG emissions equal or exceed a threshold of 25,000 metric tons of carbon dioxide equivalent.

[4] The Proposed Amendments are available at http://www.arb.ca.gov/regact/2013/capandtrade13/capandtrade13isorappe.pdf.

[5] *See* Proposed Amendments at Section 98593(a). The cap adjustment factor starts at 94.4 percent in 2015 and declines to 85.1 percent in 2020.

[6] *See* Proposed Amendments at 95893 at Table 9-4. The minimum percentage consignment requirement is 25 percent in 2015 and increases 5 percent per year.

through the advice letter process to ensure PG&E's compliance related to GHG emissions that fall under the Cap-and-Trade Program as necessary, including modifications to ensure compliance with the Program's expanded scope.[7]

Amending the BPP for PG&E's natural gas supplier obligation is appropriate because the GHG Procurement Plan addresses PG&E's procurement authority and strategies to achieve compliance for all PG&E's emissions subject to Cap-and-Trade. PG&E's proposal is consistent with the GHG Procurement Plan's framework because the Plan currently addresses GHG obligations associated with separate functions, including PG&E's Energy Procurement Department and the Gas Transmission and Distribution Department.[8] The addition of PG&E's natural gas supplier obligation into PG&E's GHG Procurement Plan is therefore consistent with the current BPP framework addressing PG&E's GHG obligations as a single portfolio.

Moreover, PG&E is directly regulated by CARB under the Cap-and-Trade regulation as a single business entity. Utilizing one procurement vehicle and compliance strategy to address the company's combined GHG compliance obligation is important. Finally, PG&E's proposed use of a single GHG Procurement Plan, strategy, and team is efficient and will reduce administrative costs associated with Cap-and-Trade compliance.

Consistent with the framework set forth in the GHG Procurement Plan, costs associated with each category of compliance instruments are recovered by separate balancing accounts through a weighted average cost methodology. Specifically:

- Electric costs are recorded to the Energy Resource Recovery Account;
- Natural gas compressor station costs are recorded to the Gas Operational Cost Balancing Account in compliance with D.13-03-017; and,
- PG&E proposes that natural gas supplier costs will be recorded to the Gas Programs Balancing Account described in Application 13-09-015.[9]

<u>Description of Changes to PG&E's GHG Procurement Plan</u>

To ensure PG&E's compliance with the CARB's Cap-and-Trade regulation related to suppliers of natural gas, PG&E is proposing to modify its GHG Procurement Plan to:

---

[7] *See* BPP at Sheet 287 and n. 13 (establishing procurement authority for all of PG&E's emissions subject to Cap-and-Trade and specifying that PG&E may seek Commission approval of amended procurement authority through the advice letter process if amendments are necessary to ensure PG&E's compliance related to any GHG emissions that fall under CARB's expanded cap such the expansion to include suppliers of natural gas).

[8] *See* BPP at Sheets 287-288.

[9] On September 30, 2013 PG&E filed Application 13-09-015 to recover forecasted natural gas GHG cap-and-trade compliance costs and to establish a new balancing account that can be used for GHG compliance costs and other similar types of costs, as well as an annual true-up mechanism.
This application did not address procurement authority except to note that it will be addressed via Advice Letter in the Bundled Procurement Plan.

1. **Include PG&E's GHG Obligations as a Supplier of Natural Gas**. PG&E is proposing in this Advice Letter updates the BPP to reflect modifications to the Cap-and-Trade regulation pertaining to natural gas suppliers. The BPP would be modified to include a description of PG&E's Cap-and-Trade compliance obligation as a natural gas supplier, and details CARB regulatory requirements concerning its natural gas supplier allowance allocations and consignment requirements.

2. **Add GHG Purchase Limits Applicable to Natural Gas.** Consistent with D.12-04-046, the GHG Procurement Plan establishes a Direct Compliance Obligation Purchase Limit to set overall volume limits for PG&E's GHG product procurement tied to its actual and forecasted GHG emissions. In the proposed GHG Procurement Plan changes, PG&E has proposed a separate and distinct formula, analogous to the formula applicable to its existing GHG compliance obligation, to limit PG&E's GHG product procurement associated with PG&E's net natural gas compliance obligation or the "Net Natural Gas Compliance Obligation Purchase Limit." The sum of the Direct Compliance Obligation Purchase Limit and the Net Natural Gas Compliance Obligation Purchase Limit formula will set the maximum amount of GHG Products that PG&E may purchase to fulfill its compliance obligation as regulated entity under the Cap-and-Trade Program.

In addition to changes to reflect the expansion of Cap and Trade to include natural gas suppliers, PG&E is also proposing to update the GHG Procurement Plan to reflect current regulatory and market conditions. First, PG&E is proposing general updates to BPP language reflecting adopted and proposed changes to the Cap-and-Trade Regulations subsequent to PG&E's Advice Letter 4026-E-A filing on August 31, 2012. In addition, PG&E is proposing to update elements of the GHG Procurement Strategy consistent with the authority provided to it by D.12-04-064. These changes are described in further detail Confidential Appendix A.

Key Drivers of Differences to Procurement Limits

Consistent with the requirements specified by the GHG Procurement Plan, PG&E explains the key drivers of changes to its GHG Procurement Limit and provides work papers detailing PG&E's calculation of the applicable limits in Confidential Appendix F. Differences between PG&E's 2014 GHG Procurement Limits compared to the limits filed as part of Advice Letter 4290-E reflect the inclusion of PG&E's forecast of its Net Natural Gas Compliance Obligation for years 2015 through 2017.

For the purpose of calculating the GHG Procurement Limits, PG&E has assumed that the Proposed Amendments are adopted by the CARB. PG&E provides an estimate of its Net Natural Gas Compliance Obligation, and provides an estimate of its natural gas allowance allocation to calculate the limit applicable to natural gas.[10] The accompanying confidential workpapers further detail PG&E's calculation of changes to PG&E's GHG Procurement Limit.

[10] PG&E will not conclusively know what its Net Natural Gas Compliance Obligation is until CARB provides a list of PG&E's customers that are covered entities and provides the GHG emissions associated with the volume of natural gas delivered to them by PG&E. The Cap-and-Trade regulation states that CARB will provide this information within 30 days of the verification deadline in Section 95103 of the

Confidentiality

In support of this Advice Letter, PG&E submits Confidential Appendices A, B, C and F in the manner directed by D.08-04-023 and the August 22, 2006, Administrative Law Judge's Ruling Clarifying Interim Procedures for Complying with D.06-06-066 to demonstrate the confidentiality of the material and to invoke the protection of confidential utility information provided under General Order 66-C and Public Utilities Code Section 454.5(g). A separate Declaration Seeking Confidential Treatment is being filed concurrently with this Advice Letter.

Confidential Appendices:

Confidential Appendix A	**Detailed Explanation of Proposed Changes to GHG Procurement Plan**
Confidential Appendix B	**Confidential Version of Updated BPP Appendix L (Redlined)**
Confidential Appendix C	**Confidential Version of Updated BPP Appendix L (Clean)**
Confidential Appendix F	**GHG Procurement Limit Workpapers**

Protests

Anyone wishing to protest this filing may do so by letter sent via U.S. mail, by facsimile or electronically any of which must be received no later than January 9, 2014, which is twenty days from the date of this filing. The protest must state the grounds upon which it is based, including such items as financial and service impact, and should be submitted expeditiously. Protests should be mailed to:

CPUC Energy Division
Attention: Tariff Unit, 4th Floor
505 Van Ness Avenue
San Francisco, CA, 94102

Facsimile: (415) 703-2200
E-mail: EDTariffUnit@cpuc.ca.gov

Copies of the protests also should be mailed to the attention of the Director, Energy Division, Room 4004, at the address shown above.

The protest should also be sent via U.S. mail (and by facsimile and electronically, if possible) to PG&E at the address shown below on the same date it is mailed or delivered to the Commission:

Mandatory Reporting Regulation, or approximately September 30 of the year following the emissions year (e.g., September 30, 2016 for emissions year 2015).

Pacific Gas and Electric Company
Attention: Brian Cherry
Vice President, Regulatory Relations
77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, California 94177

Facsimile: (415) 973-7226
E-mail: PGETariffs@pge.com

I. Tier Designation

PG&E is designating this as a Tier 3 Advice Letter.

II. Effective Date

PG&E requests that the Commission issue a Resolution approving the updated GHG Procurement Plan by no later than **June 26, 2014.** Approval by this date will allow sufficient time for PG&E's updated plan to be implemented in advance of the November 2014 GHG Auction.

III. Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the service lists for R.11-03-012 and R.12-03-014. Address changes to the General Order 96-B list and electronic approvals should be directed to PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Advice letter filings can also be accessed electronically at: http://www.pge.com/tariffs.

Brian Cherry /IG

Vice President – Regulatory Relations

cc: President Michael R. Peevey
Commissioner Mark J. Ferron
Commissioner Catherine J.K. Sandoval
Commissioner Mike Florio
Commissioner Carla Peterman
Frank Lindh, General Counsel
Chief ALJ Karen Clopton
Edward Randolph, Director, Energy Division
Energy Division Tariff Unit, Energy Division

Damon Franz, Energy Division
Jason Houck, Energy Division
Service List for R.12-03-014
Service List for R.11-03-012

Limited Access to Confidential Material:

The portions of this Advice Letter marked Confidential Protected Material are submitted under the confidentiality protection of Section 454.5(g) of the Public Utilities Code and General Order 66-C. A separate Declaration seeking confidential treatment regarding the confidential information is filed concurrently herewith.

Attachments:

Confidential Appendix A	**Detailed Explanation of Proposed Changes to GHG Procurement Plan**
Confidential Appendix B	**Confidential Version of Updated BPP Appendix L (Redlined)**
Confidential Appendix C	**Confidential Version of Updated BPP Appendix L (Clean)**
Public Appendix D	**Public Version of Updated BPP Appendix L (Redlined)**
Public Appendix E	**Public Version of Updated BPP Appendix L (Clean)**
Confidential Appendix F	**GHG Procurement Limit Workpapers**

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY
ENERGY UTILITY

MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No. **Pacific Gas and Electric Company (ID U39 E)**

Utility type:

☑ ELC ☐ GAS

☐ PLC ☐ HEAT ☐ WATER

Contact Person: Igor Grinberg

Phone #: (415) 973-8580

E-mail: ixg8@pge.com and PGETariffs@pge.com

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas
PLC = Pipeline HEAT = Heat WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: **4331-E** **Tier: 3**

Subject of AL: **Updated Greenhouse Gas ("GHG") Procurement Plan in Pacific Gas and Electric Company's Bundled Procurement Plan**

Keywords (choose from CPUC listing): Compliance, Procurement

AL filing type: ☐ Monthly ☐ Quarterly ☐ Annual ☑ One-Time ☐ Other ______________________________

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #: D.12-04-046

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL: ____________________

Is AL requesting confidential treatment? If so, what information is the utility seeking confidential treatment for: Yes. See the attached matrix that identifies all of the confidential information.

Confidential information will be made available to those who have executed a nondisclosure agreement: ☑ Yes ☐ No All members of PG&E's Procurement Review Group who have signed nondisclosure agreements will receive the confidential information.

Name(s) and contact information of the person(s) who will provide the nondisclosure agreement and access to the confidential information: Maria Vanko, (415) 973-5639

Resolution Required? ☑Yes ☐No

Requested effective date: **June 26, 2014** No. of tariff sheets: N/A

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/A

Service affected and changes proposed: N/A

Pending advice letters that revise the same tariff sheets: N/A

Protests, dispositions, and all other correspondence regarding this AL are due no later than 20 days after the date of this filing, unless otherwise authorized by the Commission, and shall be sent to:

California Public Utilities Commission
Energy Division
EDTariffUnit
505 Van Ness Ave., 4th Flr.
San Francisco, CA 94102
E-mail: EDTariffUnit@cpuc.ca.gov

Pacific Gas and Electric Company
Attn: Brian Cherry
Vice President, Regulatory Relations
77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, CA 94177
E-mail: PGETariffs@pge.com

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

DECLARATION OF MARIA VANKO SEEKING CONFIDENTIAL TREATMENT FOR CERTAIN DATA AND INFORMATION CONTAINED IN PG&E'S ADVICE LETTER 4331-E

I, Maria Vanko, declare:

1. I am a Principal in the Portfolio Management Department within the Energy Procurement Organization at Pacific Gas and Electric Company (PG&E). In this position, my responsibilities include leading commercial Greenhouse Gas policy activities This declaration is based on my personal knowledge of PG&E's greenhouse gas compliance instrument procurement practices and my understanding of the Commission's decisions protecting the confidentiality of market-sensitive information concerning electric procurement of an investor-owned utility.

2. Based on my knowledge and experience, and in accordance with the "Administrative Law Judge's Ruling Clarifying Interim Procedures For Complying With Decision 06-06-066," issued in Rulemaking 05-06-040 on August 22, 2006, I make this declaration seeking confidential treatment for Advice Letter 4331-E which provides an update to PG&E's greenhouse gas ("GHG") Procurement Plan.

3. Attached to this declaration is a matrix identifying the data and information for which PG&E is seeking confidential treatment. The matrix specifies that the material PG&E is seeking to protect constitutes data and information covered by General Order (GO)-66-C, Section 2.2b, which would place PG&E in an unfair business disadvantage if disclosed; and Public Utilities Code Section 454.5(g), which would reveal market sensitive information. The matrix also specifies why confidential protection is justified. Finally, the matrix specifies that: (1) the information is not already public; and (2) the data cannot be aggregated, redacted, summarized or otherwise protected in a way that allows partial disclosure. By this reference, I

am incorporating into this declaration all of the explanatory text that is pertinent to my testimony in the attached matrix.

I declare under penalty of perjury, under the laws of the State of California, that the foregoing is true and correct. Executed on December 20, 2013 at San Francisco, California.

Maria Vanko

MARIA VANKO

PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
ADVICE LETTER 4331-E
December 20, 2013

IDENTIFICATION OF CONFIDENTIAL INFORMATION

Redaction Reference	1) Constitutes data listed in Appendix 1 to D.06-06-066 (Y/N)	2) Data correspond to category in Appendix 1:	3) Complies with limitations of D.06-06-066 (Y/N)	4) Data not already public (Y/N)	5) The data cannot be aggregated, redacted, summarized, masked or otherwise protected in a way that allows partial disclosure (Y/N)	PG&E's Justification for Confidential Treatment	Length of Time
Document: Advice Letter 4331-E Appendix A, B, C and F							
Appendix A	N	General Order 66-C, Section 2.2; Public Utilities Code Section 454.5(g);	N/A	Y	Y	This appendix contains a confidential explanation of the changes to PG&E's greenhouse gas ("GHG") procurement plan. The release of this commercially sensitive information could cause harm to PG&E's customers and put PG&E at an unfair business disadvantage. If this information was disclosed, it could be used by market participants to gain an insight into PG&E's procurement needs and thus gain a commercial advantage.	No quantification in GO 66-C and PUC Section 454.5(g)
Appendix B	N	General Order 66-C, Section 2.2; Public Utilities Code Section 454.5(g);	N/A	Y	Y	This appendix contains a redlined version of PG&E's updated greenhouse gas ("GHG") procurement plan. The release of the commercially sensitive information contained in this appendix could cause harm to PG&E's customers and put PG&E at an unfair business disadvantage. If this information was disclosed, it could be used by market participants to gain an insight into PG&E's procurement needs and thus gain a commercial advantage.	No quantification in GO 66-C and PUC Section 454.5(g)
Appendix C	N	General Order 66-C, Section 2.2; Public Utilities Code Section 454.5(g);	N/A	Y	Y	This appendix contains a clean version of PG&E's updated greenhouse gas ("GHG") procurement plan. The release of the commercially sensitive information contained in this appendix could cause harm to PG&E's customers and put PG&E at an unfair business disadvantage. If this information was disclosed, it could be used by market participants to gain an insight into PG&E's procurement needs and thus gain a commercial advantage.	No quantification in GO 66-C and PUC Section 454.5(g)

PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
ADVICE LETTER 4331-E
December 20, 2013

IDENTIFICATION OF CONFIDENTIAL INFORMATION

Redaction Reference	1) Constitutes data listed in Appendix 1 to D.06-06-066 (Y/N)	2) Data correspond to category in Appendix 1:	3) Complies with limitations of D.06-06-066 (Y/N)	4) Data not already public (Y/N)	5) The data cannot be aggregated, redacted, summarized, masked or otherwise protected in a way that allows partial disclosure (Y/N)	PG&E's Justification for Confidential Treatment	Length of Time
Appendix F	N	**General Order 66-C, Section 2.2; Public Utilities Code Section 454.5(g);**	N/A	Y	Y	This appendix contains workpapers supporting PG&E's updated greenhouse gas ("GHG") procurement plan and limits. The release of this commercially sensitive information could cause harm to PG&E's customers and put PG&E at an unfair business disadvantage. If this information was disclosed, it could be used by market participants to gain an insight into PG&E's procurement needs and thus gain a commercial advantage.	No quantification in GO 66-C and PUC Section 454.5(g)

Appendix D

Public Version of Updated BPP Appendix L (Redlined)

APPENDIX L

GHG PROCUREMENT PLAN

CONFIDENTIAL

A. Background

1. California Air Resource Board's Cap-and-Trade Regulations

Assembly Bill ("AB 32") is California's groundbreaking greenhouse gas ("GHG") legislation that requires the reduction of statewide GHG emissions to 1990 levels by 2020. To this end, the California Air Resources Board ("CARB") proposed a statewide Cap-and-Trade regulation and other programmatic measures, including a Renewable Energy Standard, Customer Energy Efficiency, and Combined Heat and Power, to achieve these emissions reductions. The Cap-and-Trade regulation, which became effective on January 1, 2012, is intended to establish a market-based price for GHG emissions and, over time, provide market signals for efficient resource utilization and procurement activities to reduce GHG emissions. ~~This~~ Since that time, the regulation has been and is ~~and will~~ likely to continue to be amended; should changes to the regulation necessitate modifications to this plan, Pacific Gas and Electric Company ("PG&E") will submit an advice letter to the California Public Utilities Commission ("CPUC" or "Commission") requesting changes.

Compliance with the emissions cap established in the CARB Cap-and-Trade regulation ~~begins~~ began in 2013 and is broken up into three compliance periods. The first compliance period—for the years 2013 through 2014 ~~—is scheduled to~~ commenced on January 1, 2013. Covered entities in the first compliance period include operators of any facility that annually emits at least 25,000 metric tons of carbon dioxide equivalent ("$mtCO_2e$").[1] Operators are required to obtain and surrender compliance instruments equivalent to the annual GHG emissions for each such facility. Importers of electricity

[1] Units of GHG are typically measured in terms of $mtCO_2e$.

into California are also responsible for obtaining and retiring compliance instruments for GHG emissions deemed to be associated with electricity imports for purposes of compliance with Cap-and-Trade.

The second compliance period—for the years 2015 through 2017 — is scheduled to commence on January 1, 2015. Beginning in the second compliance period, covered entities expand to include, among others, suppliers of natural gas that meet or exceed the 25,000 mtCO_2e threshold. A supplier of natural gas is required to obtain and surrender compliance instruments for every metric ton of CO_2e that would result from the full combustion or oxidation of all fuel delivered to end users in California, less the emissions associated with fuel that is delivered to its customers that are required to participate in the Cap-and-Trade program ("covered entities").

There are two types of compliance instruments:

i. ***Allowances*** are limited tradable authorizations ~~created~~ accepted by CARB to emit up to one mtCO_2e. Allowances are year-specific and can be used for an annual compliance filing for the year it was issued or for any subsequent compliance filing. An allowance can be bought, sold, transferred, or "banked" for use in a particular compliance period. Allowances will be available via direct allocation[2] by CARB, auctions to be conducted under the auspices of CARB, and the Allowance Price Containment Reserve[3] ("APCR") to be established by CARB. CARB

---

[2] According to the Cap-and-Trade regulation, the investor-owned utilities ("IOU") are required to consign 100% of their electric distribution utility ("EDU") directly allocated allowances to the auctions in the allocation year; any allowances unsold in the previous year will remain in the IOU's ~~consignment~~ auction holding account. An IOU cannot use a directly allocated EDU allowance to satisfy its compliance obligation. Proposed Amendments to the Cap-and-Trade regulation also provide ~~natural gas suppliers~~ directly allocated allowances to natural gas suppliers for each compliance year between 2015 and 2020, and a portion of those allowances may be used to satisfy its compliance obligation.

[3] The CARB APCR will be populated with a finite quantity of allowances available for purchase at fixed prices and only by covered entities. ~~that are required ("covered entities") to participate in the Cap-and-Trade program.~~

auctions are currently scheduled to be held quarterly.[4] Allowances may also become available in secondary markets.

ii. ***Offset Credits*** ("Offsets") are tradable compliance instruments ~~issued~~ accepted by CARB that represent verified reductions of one $mtCO_2e$ from projects whose emissions or avoided emissions are not from a source covered under the Cap-and-Trade program. For compliance purposes, an offset and an allowance are virtually interchangeable for the year issued, however, an entity can only use offsets to meet up to 8% of its compliance obligation in any compliance period. In addition, CARB's Cap-and-Trade regulation allows CARB to invalidate an offset for errors, regulatory violations or fraud. CARB has ~~proposed~~ adopted specific rules for using offsets for Cap-and-Trade compliance, including the types of projects that qualify and the process for offset verification, issuance, and registration.

Allowances and offsets may also be available from external GHG Emissions Trading System ("GHG ETS") to which California has linked.[5]

PG&E's actual Cap-and-Trade compliance obligation for a given year is determined by the GHG emissions reported annually to CARB per the Mandatory Reporting Rule ("MRR").[6] Annual reports are due to CARB by April 10 of the calendar year following the emission year for facility operators or suppliers, including suppliers of natural gas, and June 1 for electric power entities. PG&E's compliance obligation as a supplier of natural gas comprises its natural gas supplier reported emissions, less emissions from deliveries to covered entities which are customers of the supplier. The

[4] In 2012, there ~~will only be~~was one auction, on November 14, 2012. For that auction, IOUs must consign one-third of 2013's allowances allocated to them; the balance of those allowances must be consigned to the auctions in 2013. ~~This change was noted in the March 30, 2012 proposed amendments to the cap-and-trade regulation. CARB's Board is scheduled to consider these amendments on June 28, 2012.~~

[5] ~~Additional regulatory language referencing external GHG ETS to which California may be linked was added as part of the March 30, 2012 proposed amendments to the cap-and-trade regulation.~~ CARB's Board ~~is scheduled to consider these~~ approved amendments allowing for the use of compliance instruments issued by linked jurisdictions on ~~June 28, 2012~~May 10, 2013.

[6] Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Division 3, Chapter 1, Subchapter 10, Article 2, Sections 95100 to 95133, title 17, California Code of Regulations).

CARB's Staff October 23, 2013 proposed amendments to the Cap-and-Trade regulation (the "Proposed Amendments") specify that this value is to be provided to the natural gas supplier within 30 days of the verification deadline in section 95103 of the MRR.

Cap-and-Trade compliance showings are made annually and at the end of each compliance period. In order to demonstrate compliance in a given year, PG&E must surrender enough compliance instruments to cover 30% of its qualifying emissions by November 1 of the following calendar year (~~-~~"annual surrender date"). In addition, PG&E must surrender enough compliance instruments to cover the balance of its qualifying emissions over a multi-year compliance period by November 1 of the calendar year following the end of each compliance period ("compliance period surrender date").

PG&E~~ is expected to~~ receives an allocation of free allowances associated with its business as a electric distribution utility directly from CARB annually; however, these free allowances cannot be used directly by PG&E to satisfy its compliance obligation. PG&E expects to receive an additional allocation of free allowances associated with its business as a natural gas supplier for use in the 2015 budget year and thereafter; a percentage of these free allowances may be used directly by PG&E to satisfy its compliance obligation.

In the 2015 budget year, a minimum of 25~~-~~% of a natural gas supplier's directly allocated allowances are required to consigned to the auction. The remaining directly allocated allowances may be used to satisfy the natural gas supplier's compliance obligation, or may be consigned to the auction. In each subsequent budget year through 2020, the natural gas suppliers' consignment minimum increases by 5~~-~~%.

All directly-allocated electric allowances, and starting in 2015, the minimum percentage of natural gas supplier allowances, ~~-~~must be consigned by PG&E into one or more of the auctions. ~~For the 2012 auction, allowances designated for consignment at least ten (10) days before the auction will be available for sale at that auction. Beginning in 2013,~~ In each year, allowances consigned at least seventy-five (75) days prior to a quarterly auction will be offered for sale at that auction and each consigning entity agrees to accept the auction settlement price for allowances sold at auction. Until 2015, o~~O~~nly IOUs and publicly-owned utilities ("POU") can consign allowances to the auction~~.~~, and beginning in 2015, natural gas suppliers can consign allowances to the auction.

2. Greenhouse Gas Compliance Instruments and California Air Resources Board Auctions

Procurement of compliance instruments may take place through any or all of the following: (1) CARB-sanctioned allowance auctions; (2) APCR; and (3) allowance or offset procurement via secondary markets.

The first CARB allowance auction ~~is scheduled to take place~~ took place on November 14, 2012, and allowance auctions will be held quarterly thereafter. To participate in an auction, PG&E must register for the auction prior to the auction date. The auction format consists of single-round bidding, with sealed bids consisting of price and quantity, and bid units of 1,000 $mtCO_2e$. Bidders may submit multiple bids. Each auction will clear at the auction settlement price as follows: beginning with the highest bid price, bids will be considered in declining order by price and bidders at that price will be awarded allowances until: (a) the next lower bid price is less than the auction floor price, in which case the current price is the settlement price; or (b) the total quantity of allowances bid at the next lower bid price is greater than or equal to the number of allowances available to be awarded, in which case the next lower bid price is the settlement price. If the total quantity bid at the settlement price is greater than the number of available allowances, the regulation describes the process by which these allowances would be distributed to each entity bidding at the auction settlement price.[7]

Prior to each auction, PG&E will also be required to provide a bid guarantee, which will consist of a bond, cash, or letter of credit with a value greater than or equal to the maximum value of bids to be submitted.[8] The Cap-and-Trade regulation also limits each participating entity's holdings of allowances in its trading or compliance accounts, with certain exemptions. This limits the total amount of allowances any participating entity can purchase and hold. In addition, ~~the March 30, 2012 proposed amendments to~~ the regulation stipulates that CARB shall restrict IOUs and POUs from purchasing more than 40% of the allowances offered at each auction. Proposed Amendments to the Cap-and-Trade regulation specify that the auction purchase limit for auctions conducted from January 1, 2015 through December 31, 2020 is 25% of the allowances offered at each auction.

Prior to a given auction, CARB will disclose the number of allowances from California and any external GHG ETS to which California has linked that will be offered in that auction. Beginning in 2013, in addition to consigned allowances, in each auction

---

[7] The process for resolution of tie bids ~~was changed in March 30, 2012, proposed amendments to the cap-and-trade regulation, and has not yet been finalized~~is specified in Section 95911 (e)(5) of the Cap-and-Trade regulation.

[8] Auction participants must provide a bid guarantee to the financial services administrator at least twelve (12) days prior to the auction. ~~This deadline was extended from one week as part of the March 30, 2012 proposed amendments to the cap-and-trade regulation.~~

of allowances from the current and previous budget years ("current auction"), CARB ~~will~~ offers one-quarter of its own current year allowances designated for auction. Concurrent with the current auction, CARB will conduct an auction for allowances from future budget years ("advance auctions"). In each advance auction it will offer one-quarter of its own allowances allocated for the budget year three years subsequent to the current calendar year.[9] Current and advance auctions will be conducted separately.

The APCR will be filled with 121.8 million $mtCO_2e$ allowances for 2013-2020. There is no refill mechanism proposed for the APCR, and use of the APCR is restricted to entities registered into the California cap-and-trade system. Allowances purchased from the APCR go into an entity's compliance account and cannot be withdrawn or traded. To the extent allowances remain in the APCR, they ~~will~~ becaome available for purchase by complying entities on March 8, 2013. Subsequent APCR sales ~~will be~~are conducted on the first day six weeks after each quarterly auction. The APCR consists of three tiers with different associated prices; each tier consists of one-third of the 121.8 million $mtCO_2e$ allowances with which the APCR is initially populated. Tier 1 allowances will be sold to entities with a compliance obligation at $40/$mtCO_2e$ in 2013,[10] Tier 2 at $45/$mtCO_2e$ in 2013, and Tier 3 at $50/$mtCO_2e$ in 2013.

[9] With the exception of 2012, when all of the allowances allocated for advance auction from the 2015 budget will be designated for sale at the advance auction.

[10] The APCR price for each tier will rise by 5% plus the Consumer Price Index ("CPI") each year.

Finally, to the extent that allowances are transacted between parties outside of the auction or APCR, within three days of settlement, the seller and buyer must report each transaction to CARB.[11]

B. PG&E's Allowance Consignment Proposal

[redacted]

[11] The timeline for transfer of compliance instruments between accounts may change as part of the ~~March 30, 2012~~ proposed amendments to the cap-and-trade regulation.

[redacted]

C. PG&E's Potential Greenhouse Gas Risks

1. Greenhouse Gas Obligations

Beginning with the first compliance period, PG&E is required by CARB's Cap-and-Trade regulation to surrender compliance instruments for its qualifying utility-owned generation ("UOG"), imports, and gas compressor stations (herein collectively described as "physical" obligations). Furthermore, PG&E has contractual obligations associated with certain tolling agreements that require it to either: (1) provide the counterparty with compliance instruments for the energy under contract; or (2) reimburse the counterparty for the Cap-and-Trade compliance costs associated with its facility's operation under the contract.

Beginning with the second compliance period, PG&E is required by CARB's Cap-and-Trade regulation to surrender compliance instruments for its emissions associated with is business as a natural gas supplier, less those emissions associated with fuel delivered to covered entities as determined by CARB (the "net natural gas compliance obligation").

2. Cap-and-Trade Penalties

PG&E could face CARB penalties for failure to surrender an adequate number of compliance instruments ~~for UOG, imports, and gas compressor stations~~ for which it has a compliance obligation.

CARB's Cap-and-Trade rule imposes a four-time excess emissions penalty resulting from "untimely surrender" of allowances. This penalty would be assessed by requiring that additional compliance instruments be surrendered, rather than by cash payment. In addition, if an entity fails to surrender the required compliance instruments within five (5) days of the first auction or reserve sale conducted by CARB following the applicable surrender date, whichever is the latter, and for which the registration deadline has not passed when the untimely surrender obligation is assessed, CARB's Cap-and-Trade rule would treat each ton of GHG emissions for which a compliance instrument was not surrendered as a separate violation for each day the violation continues.

AB 32 incorporates longstanding air pollution penalty authority pursuant to Health and Safety Code ("HSC") Section 38580. In relevant part, under HSC § 42300 et seq., CARB may impose civil and criminal penalties on corporations and individuals and may also seek injunctive relief. Civil penalty authority (per day of violation) is up to $10,000 (strict liability); $20,000 (negligent emissions violation); $40,000 (knowing emissions violation); $35,000 (falsification of document with intent to deceive); and $75,000 (intentional emissions violation). Additional penalties that are more severe can result from negligent or intentional violations causing unreasonable risk of or actual bodily injury or death. AB 32 specifies that any violation of a CARB climate regulation is considered an emissions violation.

[redacted]

3. Offset Credits ("Offsets")

CARB's Cap-and-Trade regulation allows CARB to invalidate an offset for errors, regulatory violations, or fraud. In the case where an offset is used to meet a compliance requirement and is later invalidated, the complying entity must replace the invalidated offset with a valid compliance instrument within six (6) months of notification by CARB of the offset's invalidation or be subject to compliance penalties. PG&E will only purchase offsets if the purchase contract requires the seller to assume the risk of invalidation and to post appropriate collateral. PG&E will assess the risk of invalidation for each offset transaction.

D. PG&E's GHG-Related Product Procurement

This GHG Procurement Plan addresses the GHG-related procurement authority necessary for PG&E to comply with the obligations associated with emissions from sectors covered by Cap-and-Trade ~~beginning in the first compliance period~~program, namely facilities with GHG emissions greater than or equal to 25,000 $mtCO_2e$ per year and imported electricity, and PG&E's net natural gas compliance obligation.[14] As an entity that is required to comply with Cap-and-Trade, PG&E will need to procure compliance instruments to meet the compliance requirements associated with its own facilities and imports, as well as the GHG contractual obligations associated with Power Purchase Agreements with third parties that require PG&E to procure GHG compliance products or assume GHG compliance costs for such parties, and PG&E's net natural gas compliance obligation. PG&E's Energy Procurement Department will procure GHG compliance instruments for all of PG&E's emissions subject to Cap-and-Trade, and transfer requested GHG allowances to PG&E's Gas Transmission and Distribution

~~[14] Beginning in 2015, concurrent with the start of the second compliance period, CARB intends to expands the scope of covered sectors subject to the cap to include suppliers of natural gas, transportation fuels, and other fuels. PG&E may seek Commission approval of amended procurement authority through the advice letter process if amendments are necessary to ensure PG&E's compliance related to GHG emissions that would fall under this expanded cap.~~

Department[15] (i.e., for GHG emissions associated with ~~at~~ gas compressor stations~~,~~ and PG&E's net natural gas compliance obligation) at PG&E's weighted-average cost.[16] Below, PG&E describes its GHG obligations and Commission-approved GHG-related products and procurement processes, as well as its GHG procurement strategy. The products, procurement processes, and GHG procurement strategy establish the upfront achievable standards for PG&E's procurement activities consistent with AB 57.

1. Greenhouse Gas Obligations

PG&E's primary need to procure GHG compliance instruments and engage in GHG transactions ~~for the first compliance period beginning 2013~~ arises in connection with the following:

- Utility-Owned Facilities: Conventional generation facilities and gas compressor stations owned by PG&E that are either operating or under construction and that emit at least 25,000 $mtCO_2e$ per year, such as the Humboldt Generating Station, Colusa Generating Station, and Gateway Generating Station, will have a compliance obligation under Cap-and-Trade.
- Selected Tolling Agreements: Contracts that allocate to PG&E or where PG&E has assumed GHG compliance instrument procurement responsibility for such counterparties.
- Electricity Imports: PG&E is responsible for GHG emissions deemed to be associated with its electricity imports for purposes of compliance with Cap-and-Trade.
- Net Natural Gas Compliance Obligation: PG&E is responsible for GHG emissions that would result from full combustion or oxidization of natural gas

[15] PG&E's Energy Procurement Department will only act as the buying agent for GHG Products requested by the Gas Transmission and Distribution Department for the ~~limited~~ GHG obligations associated with its gas compressor stations and its net natural gas compliance obligation. ~~A forecast of GHG position will be conducted by~~ The Gas Transmission and Distribution~~, who~~ will ~~then~~ request a quantity of compliance products from the Energy Procurement Department.

[16] Weighted-average cost is the weighted-average cost of PG&E's allowances and offsets in a given compliance year. For a discussion of cost recovery, see Section D.6.

delivered to end users in California, less the fuel that is delivered to its customers which are covered entities.

2. Greenhouse Gas-Related Products

The following GHG-related products ("GHG Products") have been approved by the Commission:

TABLE APPENDIX L-1
PACIFIC GAS AND ELECTRIC COMPANY
GHG PRODUCTS

Product	Description
GHG Allowance	A compliance instrument accepted by CARB providing the right to emit one mtCO_2e to satisfy obligations under the Cap-and-Trade regulation.
GHG Offset	A compliance instrument representing a verified emission reduction that is accepted by CARB in lieu of a GHG Allowance to satisfy obligations under the Cap-and-Trade regulation.

3. Greenhouse Gas-Related Processes

PG&E will procure GHG Products from the ~~Primary~~ CARB and ~~Secondary~~ ~~M~~markets[17] to meet its entity-specific and contractual compliance obligations in accordance with its procurement strategy. PG&E is authorized to procure these GHG Products using the following procurement methods:

TABLE APPENDIX L-2
PACIFIC GAS AND ELECTRIC COMPANY
GHG PROCUREMENT METHODS AND PRACTICES

Transaction Process	Description
CARB Auction	Authorization to procure GHG Allowances through any CARB Auction in accordance with the Cap-and-Trade regulation.
Allowance Price Containment Reserve	Authorization to procure GHG Allowances through CARB's Allowance Price Containment Reserve.

[17] ~~The Primary Market consists solely of the~~CARB sells allowances through CARB auctions and the APCR ~~for allowances~~. The ~~Secondary Market~~ market consists of allowance and offset products offered for purchase outside of ~~the~~ CARB~~Primary Market~~.

In addition to the new GHG Procurement Methods and Practices in Table Appendix L-2, PG&E will use approved procurement methods and practices as described in its Bundled Procurement Plan that govern procurement via competitive Requests for Offer ("RFO") processes and transparent exchanges[18] to procure GHG Products. When procuring via bilateral transactions (including brokers), PG&E will utilize a competitive RFO process, consult with its Procurement Review Group ("PRG"), apply its approved procurement credit and collateral requirements, and apply the applicable affiliate transaction rules. PG&E can also procure GHG Products on exchanges that have been previously approved by the Commission for power procurement. For exchanges not previously approved, PG&E will submit a Tier 2 advice letter detailing: (1) what exchange it is seeking to use; (2) the liquidity and transparency of the exchange, specific for GHG Products, including an explanation of how the Commission can be assured that the price of the products procured on the exchange is reasonable; and (3) the regulatory authority or authorities the exchange is subject to. Finally, PG&E has authority to resell GHG Products, but will report such sales to its PRG.

4. Greenhouse Gas Procurement Strategy

[redacted]

[18] The use of exchanges includes the "clearing" of bilateral transactions authorized by the Commission.

[redacted]

i. Maximum Volume Limits

j. Financially Hedging GHG Product Price Risk

Each of these elements is described in more detail below.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted] [redacted] [redacted] [redacted]

[redacted] [redacted] [redacted] [redacted] [redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted]

- [redacted] [redacted]
- [redacted] [redacted]

[redacted]

[redacted]

i. Maximum Volume Limits

Consistent with Decision 12-04-046, specific overall volume limits for PG&E's GHG Product procurement will tie to the actual and forecasted GHG emissions for its facilities, certain tolling agreements, and electric imports. Beginning in the fourth quarter of 2014, PG&E imposes a separate and distinct formula, described below, to limit PG&E's GHG product procurement associated with PG&E's net natural gas compliance obligation.

~~-~~CARB's regulation also set limits on the number of allowances that can be held, and offsets that can be used for compliance. In addition, ~~March 30, 2012 proposed amendments to the~~ Cap-and-Trade regulation restricts PG&E from purchasing more than 40% of the allowances offered at each auction, and Proposed Amendments restrict PG&E from purchasing more than 25% of the allowances offered at each auction from 2015 onward. These various limits will cap the amount of GHG Products PG&E will procure. PG&E will also transact GHG Products consistent with regulations established regarding the use of such products for compliance with Cap-and-Trade. PG&E may purchase GHG Products in excess of its annual compliance requirements and may "bank" surplus GHG Products to use in future compliance years in accordance with its procurement strategy and the procurement limits set forth below.

Generally in the current year, PG&E may purchase GHG Products to fulfill 100% of its current net remaining compliance obligation and its forecasted compliance obligation for the remainder of the current year. In addition, in the current year PG&E may purchase a portion of its forecasted compliance obligation for the following three compliance years not to exceed a set percentage in total for each year. PG&E will not purchase GHG Products with vintages more than three years from the current year. Finally, PG&E will not purchase more than 8% of its direct compliance obligation, as defined below, in the form of offsets, provided these purchases also stay within the overall GHG Product procurement limits identified below.

The procurement limit sets the maximum amount of GHG Products PG&E may purchase in the current year to fulfill its "direct compliance obligation," defined as the tons of emissions for which PG&E has an obligation to retire allowances on its own behalf as a regulated entity under the Cap-and-Trade program, and/or is otherwise obligated to procure GHG Products for a third party that is a regulated entity under the Cap-and-Trade program (i.e., certain contractual arrangements where PG&E is contractually responsible, or could elect to assume that responsibility, for procuring GHG Products for a third party). A "purchase" is defined as taking title of the GHG Product when it is delivered. Thus forward purchases count against the procurement limit in the year delivered, which may not be the current year.

PG&E's Direct Compliance Obligation Purchase Limit for the current year is calculated as:

LCY = A + 100% * FDCY + 60% * FDCY + 1 +40% * FDCY + 2 + 20% * FDCY + 3

Where:

"L" is the maximum number of GHG Products PG&E can purchase for purposes of meeting its direct compliance obligation.

"CY" is the Current Year, i.e., the year in which PG&E is transacting in the market.

"A" is PG&E's net remaining compliance obligation to date, calculated as the sum of the actual emissions for which PG&E is responsible for retiring allowances (or obligated to purchase for a third party) up to the Current Year, minus the total allowances or offsets PG&E has purchased up to the Current Year that could be retired against those obligations. This term in the calculation ensures PG&E is always able to buy sufficient GHG Products to cover any prior years' shortfalls, given that actual emissions may end up being less than forecast and/or prior decisions about how much procurement to do.

"FD" is PG&E's "forecasted compliance obligation", the projected amount of emissions for which PG&E is responsible for retiring GHG Products, or obligated to purchase for a third party, calculated using an implied market heat rate ("IMHR") that is two-standard deviations above the expected IMHR[34].

If this equation results in a negative number in a given year, PG&E's Direct Compliance Obligation Purchase Limit for that year should be set at zero.

PG&E's Net Natural Gas Compliance Obligation Purchase Limit for the current year is calculated as:

$LCY_G = A_G + (100\% * FDCYG) + (60\% * FDCY_G+1) + (40\% * FDCY_G+2) + (20\% * FDCY_G+3)$

Where:

"L_G" is the maximum number of GHG Products PG&E can purchase for purposes of meeting its net natural gas compliance obligation.

"CY_G" is the Current Year, i.e., the year in which PG&E is transacting in the market.

"A_G" is PG&E's net remaining natural gas compliance obligation to date, calculated as the sum of the actual emissions for which PG&E is responsible for retiring GHG Products in its capacity as a natural gas supplier up to the Current Year.

[34] The IMHR two-standard deviations above the expected IMHR is calculated as follows: (1) the monthly historic IMHR is calculated by dividing monthly forward electricity prices by monthly forward gas prices for the period 2003 through 2011, yielding the forward monthly IMHR for this period; (2) monthly standard deviations of the forward monthly IMHR are then calculated separately for January through December; (3) the IMHR two-standard deviations above the expected IMHR is equal to the forward IMHR plus the standard deviation calculated in (2) multiplied by 2.0. The forward electricity prices to be used in calculating forecasted compliance obligations for the Direct Compliance Obligation Purchase Limits are then calculated by multiplying the IMHR at two-standard deviations above the expected IMHR by the forward gas price.

"FD_G" is PG&E's "forecasted natural gas compliance obligation" or the projected amount of emissions for which PG&E is responsible for retiring GHG Products calculated using a 1 in 20 forecasted 'cold year' scenario, less those allowances directly allocated by CARB to satisfy its natural gas compliance obligation that could be retired against that obligation.

The sum of the Direct Compliance Obligation Purchase Limit and the Net Natural Gas Compliance Obligation Purchase Limit formula set the maximum amount of GHG Products PG&E may purchase in the current year to fulfill its compliance obligation as regulated entity under the Cap-and-Trade program. In addition to its Direct Compliance Obligation Purchase Limit and Net Natural Gas Compliance Obligation Purchase Limit, in the current year PG&E will not purchase GHG Products for future years greater than the percentages allowed in the combined ~~Direct Compliance Obligation Purchase Limit~~ formula. Therefore, for the prompt year (current year plus one) PG&E will not purchase in aggregate during the current year more than 60% of the prompt year's combined forecasted compliance obligation ~~(as calculated above)~~. Similarly, the percentages for current year plus two and current year plus three are 40% and 20%, respectively.

Consistent with Ordering Paragraph 9 of D.12-04-046, Table Appendix L-4 below details estimated forecast of the amount of greenhouse gas compliance instruments (in metric tons carbon dioxide equivalents) that correspond to the maximum procurement levels applicable to both the September through December 2013, and 2014 periods detailed in Table Appendix L-5.

[redacted]

[redacted]

[redacted]

[redacted]

j. **Financially Hedging Greenhouse Gas Compliance Instrument Price Risk**

Because the products and markets to financially hedge GHG compliance instrument price risk are not developed at this time, PG&E is not seeking authority

[redacted]

financially hedge GHG compliance instrument price risk at this time. PG&E will seek to amend its BPP by advice letter to seek such authority as these markets and products develop. PG&E's purchase of financial instruments to hedge GHG Product price risk will be subject to the procurement limit set forth below.

The "financial exposure" purchase limit sets the specific limit on the amount of GHG Products PG&E can purchase to hedge its financial exposure to GHG costs under the Cap-and-Trade program. As with the Direct Compliance Obligation Purchase Limit formula above, this is a purchase limit, meaning the number that emerges from this calculation would set the maximum amount of GHG Products PG&E is allowed to purchase in the current year for purposes of hedging its financial exposure. As above, "purchase" is defined as taking title of the GHG Product when it is delivered. PG&E is not allowed to purchase allowances or offsets for hedging purposes with vintages more than three years from the current year.

PG&E's Financial Exposure Purchase Limit is calculated as:

FLCY = 20% * FECY + 10% * FECY+1 + 5% * FECY+2 + 2.5% * FECY+3 – B

Where:

"FL" is the maximum number of GHG Products PG&E can purchase for purposes of hedging its financial exposure to GHG costs.

"CY" is the current year, i.e., the year in which PG&E is transacting in the market.

"FE" is an estimate of PG&E's financial exposure to GHG costs that will, or are anticipated to be, embedded in the price of energy, calculated based on the tons of GHG emissions for which PG&E believes it will bear the costs through an embedded cost of such emissions as reflected in energy prices. This amount does not include the costs PG&E anticipates incurring as a result of its direct compliance obligation as "direct compliance obligation" is defined above. "B" is PG&E's net purchases of GHG Products to date for hedging purposes, calculated as the total purchases of GHG Products for purposes of hedging PG&E's financial exposure up to the current year minus those GHG Products sold up to the current year. This term helps ensure that if PG&E hedged considerably in prior years and those hedges did not pay out (i.e. the price PG&E saw in the market for GHG Products stayed below what PG&E paid for a GHG Product and so PG&E did not sell the instrument), that gets factored into the amount of additional hedging PG&E is allowed to undertake.

Should this equation result in a negative number in a given year, PG&E's Financial Exposure Purchase Limit for that year will be set at zero.

5. Procurement Review Group Consultation

PG&E will annually review with its PRG its proposed CARB auction bidding strategy, including discussion of the total volume of GHG Products that PG&E might acquire and its GHG position. PG&E will also consult with its PRG on RFOs for GHG Products, and prior to transacting for any GHG Product in the ~~Secondary M~~market with a vintage year[36] more than three years in the future beyond the current calendar year. PG&E will report any GHG Product sales to the PRG. Finally, PG&E will report any forecast updates, corresponding revisions to the purchase limits and GHG Product transactions to the PRG at its quarterly position update.

6. Quarterly Compliance Reports and ~~Energy Resource Recovery Account~~ Cost Recovery

Forecast updates and corresponding revision to the purchase limits along with all GHG Product transactions will be reported in PG&E's Quarterly Procurement

[36] A "vintage year" is an attribute of each allowance that refers to the compliance year that CARB associates with the allowance at issuance. The vintage year designation restricts the allowance's eligibility for use to certain compliance periods. In the case of offsets, the vintage year refers to the year in which the offset is created.

Compliance Report ("QCR"). In addition, the QCR will provide a summary of current market conditions and all GHG Product transactions conducted by PG&E. PG&E~~'s will~~ records costs for GHG Products[37] associated with the electric sector obligation and natural gas compressor station obligation in its respective Energy Resource Recovery Account ("ERRA") and Gas Operational Cost Balancing Account ("GOCBA") for recovery in rates. GHG Products associated with its natural gas supplier obligation will be recorded in its proposed Gas Programs Balancing Account ("GPBA") for recovery in rates.

PG&E's request for cost recovery of GHG Products through ERRA, GOCBA, and GPBA implicitly assumes the purchase of these products can be financed with short-term debt. However, PG&E's short-term borrowing capacity is limited, and much of that capacity is needed to meet day-to-day operational needs, other balancing account under-collections and collateral to support energy procurement. Thus, depending on the cost and tenor of these products, PG&E may need to resort to financing with long-term debt and/or equity. In that event, PG&E may seek alternative cost recovery mechanisms in order to recover its actual cost of financing of these products.

7. Approval for Contract Term Duration

For transactions of GHG Products with vintage years four years or fewer into the future, PG&E will include these transactions in its QCR and the annual ERRA Compliance proceeding. For transactions of GHG Products with vintage years more than four years into the future, PG&E will submit the transactions for review through the

[37] Including costs related to offset development, if authorized, in accordance with the procurement strategy.

Commission's advice letter process. PG&E will not enter into a contract whose delivery term extends beyond 2020.

8. Independent Evaluator

For contracts with delivery terms that are greater than two years, PG&E will include an Independent Evaluator ("IE") in any competitive solicitation and an IE Report in its respective QCR or advice letter filings.

9. Updates Via Advice Letter

The procurement strategy for which approval is requested above is based on the final CARB Cap-and-Trade and Mandatory Reporting Rule regulations~~, and where noted, the March 30, 2012 proposed amendments to the Cap-and-Trade regulation~~ as amended by the October 24, 2013 proposed amendments. Certain changes to CARB's regulations may affect implementation of this plan for GHG-related procurement. Should market conditions, CARB's regulations, or the electric portfolio change to the point of necessitating modifications to the plan, PG&E will submit an advice letter to the Commission requesting changes.

PG&E will update its GHG compliance forecasts and corresponding purchase limits as necessary via a Tier 2 advice letter. The advice letter will include a description and workpapers detailing the calculation of the estimated purchase limits and an explanation of the key drivers of differences from the prior estimates.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Appendix E

Public Version of Updated BPP Appendix L (Clean)

APPENDIX L

GHG PROCUREMENT PLAN

CONFIDENTIAL

A. Background

1. California Air Resource Board's Cap-and-Trade Regulations

Assembly Bill ("AB 32") is California's groundbreaking greenhouse gas ("GHG") legislation that requires the reduction of statewide GHG emissions to 1990 levels by 2020. To this end, the California Air Resources Board ("CARB") proposed a statewide Cap-and-Trade regulation and other programmatic measures, including a Renewable Energy Standard, Customer Energy Efficiency, and Combined Heat and Power, to achieve these emissions reductions. The Cap-and-Trade regulation, which became effective on January 1, 2012, is intended to establish a market-based price for GHG emissions and, over time, provide market signals for efficient resource utilization and procurement activities to reduce GHG emissions. Since that time, the regulation has been and is likely to continue to be amended; should changes to the regulation necessitate modifications to this plan, Pacific Gas and Electric Company ("PG&E") will submit an advice letter to the California Public Utilities Commission ("CPUC" or "Commission") requesting changes.

Compliance with the emissions cap established in the CARB Cap-and-Trade regulation began in 2013 and is broken up into three compliance periods. The first compliance period—for the years 2013 through 2014 commenced on January 1, 2013. Covered entities in the first compliance period include operators of any facility that annually emits at least 25,000 metric tons of carbon dioxide equivalent ("mtCO_2e").[1] Operators are required to obtain and surrender compliance instruments equivalent to the annual GHG emissions for each such facility. Importers of electricity into California are

[1] Units of GHG are typically measured in terms of mtCO_2e.

also responsible for obtaining and retiring compliance instruments for GHG emissions deemed to be associated with electricity imports for purposes of compliance with Cap-and-Trade.

The second compliance period—for the years 2015 through 2017 — is scheduled to commence on January 1, 2015. Beginning in the second compliance period, covered entities expand to include, among others, suppliers of natural gas that meet or exceed the 25,000 mtCO_2e threshold. A supplier of natural gas is required to obtain and surrender compliance instruments for every metric ton of CO_2e that would result from the full combustion or oxidation of all fuel delivered to end users in California, less the emissions associated with fuel that is delivered to its customers that are required to participate in the Cap-and-Trade program ("covered entities").

There are two types of compliance instruments:

i. ***Allowances*** are limited tradable authorizations accepted by CARB to emit up to one mtCO_2e. Allowances are year-specific and can be used for an annual compliance filing for the year it was issued or for any subsequent compliance filing. An allowance can be bought, sold, transferred, or "banked" for use in a particular compliance period. Allowances will be available via direct allocation[2] by CARB, auctions to be conducted under the auspices of CARB, and the Allowance Price Containment Reserve[3] ("APCR") to be established by CARB. CARB auctions are currently

[2] According to the Cap-and-Trade regulation, the investor-owned utilities ("IOU") are required to consign 100% of their electric distribution utility ("EDU") directly allocated allowances to the auctions in the allocation year; any allowances unsold in the previous year will remain in the IOU's auction holding account. An IOU cannot use a directly allocated EDU allowance to satisfy its compliance obligation. Proposed Amendments to the Cap-and-Trade regulation also provide directly allocated allowances to natural gas suppliers for each compliance year between 2015 and 2020, and a portion of those allowances may be used to satisfy its compliance obligation.

[3] The CARB APCR will be populated with a finite quantity of allowances available for purchase at fixed prices and only by covered entities.

scheduled to be held quarterly.[4] Allowances may also become available in secondary markets.

ii. ***Offset Credits*** ("Offsets") are tradable compliance instruments accepted by CARB that represent verified reductions of one mtCO_2e from projects whose emissions or avoided emissions are not from a source covered under the Cap-and-Trade program. For compliance purposes, an offset and an allowance are virtually interchangeable for the year issued, however, an entity can only use offsets to meet up to 8% of its compliance obligation in any compliance period. In addition, CARB's Cap-and-Trade regulation allows CARB to invalidate an offset for errors, regulatory violations or fraud. CARB has adopted specific rules for using offsets for Cap-and-Trade compliance, including the types of projects that qualify and the process for offset verification, issuance, and registration.

Allowances and offsets may also be available from external GHG Emissions Trading System ("GHG ETS") to which California has linked.[5]

PG&E's actual Cap-and-Trade compliance obligation for a given year is determined by the GHG emissions reported annually to CARB per the Mandatory Reporting Rule ("MRR").[6] Annual reports are due to CARB by April 10 of the calendar year following the emission year for facility operators or suppliers, including suppliers of natural gas, and June 1 for electric power entities. PG&E's compliance obligation as a supplier of natural gas comprises its natural gas supplier reported emissions, less emissions from deliveries to covered entities which are customers of the supplier. The CARB's Staff October 23, 2013 proposed amendments to the Cap-and-Trade regulation

---

[4] In 2012, there was one auction, on November 14, 2012. For that auction, IOUs must consign one-third of 2013's allowances allocated to them; the balance of those allowances must be consigned to the auctions in 2013.

[5] CARB's Board approved amendments allowing for the use of compliance instruments issued by linked jurisdictions on May 10, 2013.

[6] Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (Division 3, Chapter 1, Subchapter 10, Article 2, Sections 95100 to 95133, title 17, California Code of Regulations).

(the "Proposed Amendments") specify that this value is to be provided to the natural gas supplier within 30 days of the verification deadline in section 95103 of the MRR.

Cap-and-Trade compliance showings are made annually and at the end of each compliance period. In order to demonstrate compliance in a given year, PG&E must surrender enough compliance instruments to cover 30% of its qualifying emissions by November 1 of the following calendar year ("annual surrender date"). In addition, PG&E must surrender enough compliance instruments to cover the balance of its qualifying emissions over a multi-year compliance period by November 1 of the calendar year following the end of each compliance period ("compliance period surrender date").

PG&E receives an allocation of free allowances associated with its business as a electric distribution utility directly from CARB annually; however, these free allowances cannot be used directly by PG&E to satisfy its compliance obligation. PG&E expects to receive an additional allocation of free allowances associated with its business as a natural gas supplier for use in the 2015 budget year and thereafter; a percentage of these free allowances may be used directly by PG&E to satisfy its compliance obligation.

In the 2015 budget year, a minimum of 25% of a natural gas supplier's directly allocated allowances are required to consigned to the auction. The remaining directly allocated allowances may be used to satisfy the natural gas supplier's compliance obligation, or may be consigned to the auction. In each subsequent budget year through 2020, the natural gas suppliers' consignment minimum increases by 5%. All directly-allocated electric allowances, and starting in 2015, the minimum percentage of natural gas supplier allowances, must be consigned by PG&E into one or more of the auctions. In each year, allowances consigned at least seventy-five (75) days prior to a quarterly auction will be offered for sale at that auction and each consigning entity agrees to accept the auction settlement price for allowances sold at auction. Until 2015, only IOUs and publicly-owned utilities ("POU") can consign allowances to the auction, and beginning in 2015, natural gas suppliers can consign allowances to the auction.

2. Greenhouse Gas Compliance Instruments and California Air Resources Board Auctions

Procurement of compliance instruments may take place through any or all of the following: (1) CARB-sanctioned allowance auctions; (2) APCR; and (3) allowance or offset procurement via secondary markets.

The first CARB allowance auction took place on November 14, 2012, and allowance auctions will be held quarterly thereafter. To participate in an auction, PG&E must register for the auction prior to the auction date. The auction format consists of single-round bidding, with sealed bids consisting of price and quantity, and bid units of 1,000 $mtCO_2e$. Bidders may submit multiple bids. Each auction will clear at the auction settlement price as follows: beginning with the highest bid price, bids will be considered in declining order by price and bidders at that price will be awarded allowances until: (a) the next lower bid price is less than the auction floor price, in which case the current price is the settlement price; or (b) the total quantity of allowances bid at the next lower bid price is greater than or equal to the number of allowances available to be awarded, in which case the next lower bid price is the settlement price. If the total quantity bid at the settlement price is greater than the number of available allowances, the regulation describes the process by which these allowances would be distributed to each entity bidding at the auction settlement price.[7]

Prior to each auction, PG&E will also be required to provide a bid guarantee, which will consist of a bond, cash, or letter of credit with a value greater than or equal to the maximum value of bids to be submitted.[8] The Cap-and-Trade regulation also limits each participating entity's holdings of allowances in its trading or compliance accounts, with certain exemptions. This limits the total amount of allowances any participating entity can purchase and hold. In addition, the regulation stipulates that CARB shall restrict IOUs and POUs from purchasing more than 40% of the allowances offered at each auction. Proposed Amendments to the Cap-and-Trade regulation specify that the auction purchase limit for auctions conducted from January 1, 2015 through December 31, 2020 is 25% of the allowances offered at each auction.

Prior to a given auction, CARB will disclose the number of allowances from California and any external GHG ETS to which California has linked that will be offered in that auction. Beginning in 2013, in addition to consigned allowances, in each auction of allowances from the current and previous budget years ("current auction"), CARB offers one-quarter of its own current year allowances designated for auction. Concurrent with the current auction, CARB will conduct an auction for allowances from future budget years ("advance auctions"). In each advance auction it will offer one-quarter of its

[7] The process for resolution of tie bids is specified in Section 95911 (e)(5) of the Cap-and-Trade regulation.
[8] Auction participants must provide a bid guarantee to the financial services administrator at least twelve (12) days prior to the auction.

own allowances allocated for the budget year three years subsequent to the current calendar year.[9] Current and advance auctions will be conducted separately.

The APCR will be filled with 121.8 million $mtCO_2e$ allowances for 2013-2020. There is no refill mechanism proposed for the APCR, and use of the APCR is restricted to entities registered into the California cap-and-trade system. Allowances purchased from the APCR go into an entity's compliance account and cannot be withdrawn or traded. To the extent allowances remain in the APCR, they became available for purchase by complying entities on March 8, 2013. Subsequent APCR sales are conducted on the first day six weeks after each quarterly auction. The APCR consists of three tiers with different associated prices; each tier consists of one-third of the 121.8 million $mtCO_2e$ allowances with which the APCR is initially populated. Tier 1 allowances will be sold to entities with a compliance obligation at \$40/$mtCO_2e$ in 2013,[10] Tier 2 at \$45/$mtCO_2e$ in 2013, and Tier 3 at \$50/$mtCO_2e$ in 2013.

Finally, to the extent that allowances are transacted between parties outside of the auction or APCR, within three days of settlement, the seller and buyer must report each transaction to CARB.[11]

B. PG&E's Allowance Consignment Proposal

[redacted]

[9] With the exception of 2012, when all of the allowances allocated for advance auction from the 2015 budget will be designated for sale at the advance auction.
[10] The APCR price for each tier will rise by 5% plus the Consumer Price Index ("CPI") each year.
[11] The timeline for transfer of compliance instruments between accounts may change as part of the proposed amendments to the cap-and-trade regulation.

[redacted]

C. PG&E's Potential Greenhouse Gas Risks

1. Greenhouse Gas Obligations

Beginning with the first compliance period, PG&E is required by CARB's Cap-and-Trade regulation to surrender compliance instruments for its qualifying utility-owned generation ("UOG"), imports, and gas compressor stations (herein collectively described as "physical" obligations). Furthermore, PG&E has contractual obligations associated with certain tolling agreements that require it to either: (1) provide the counterparty with compliance instruments for the energy under contract; or

---

[redacted]

[redacted]

(2) reimburse the counterparty for the Cap-and-Trade compliance costs associated with its facility's operation under the contract.

Beginning with the second compliance period, PG&E is required by CARB's Cap-and-Trade regulation to surrender compliance instruments for its emissions associated with is business as a natural gas supplier, less those emissions associated with fuel delivered to covered entities as determined by CARB (the "net natural gas compliance obligation").

2. Cap-and-Trade Penalties

PG&E could face CARB penalties for failure to surrender an adequate number of compliance instruments for which it has a compliance obligation.

CARB's Cap-and-Trade rule imposes a four-time excess emissions penalty resulting from "untimely surrender" of allowances. This penalty would be assessed by requiring that additional compliance instruments be surrendered, rather than by cash payment. In addition, if an entity fails to surrender the required compliance instruments within five (5) days of the first auction or reserve sale conducted by CARB following the applicable surrender date, whichever is the latter, and for which the registration deadline has not passed when the untimely surrender obligation is assessed, CARB's Cap-and-Trade rule would treat each ton of GHG emissions for which a compliance instrument was not surrendered as a separate violation for each day the violation continues.

AB 32 incorporates longstanding air pollution penalty authority pursuant to Health and Safety Code ("HSC") Section 38580. In relevant part, under HSC § 42300 et seq., CARB may impose civil and criminal penalties on corporations and individuals and may also seek injunctive relief. Civil penalty authority (per day of violation) is up to $10,000 (strict liability); $20,000 (negligent emissions violation); $40,000 (knowing emissions violation); $35,000 (falsification of document with intent to deceive); and $75,000 (intentional emissions violation). Additional penalties that are more severe can result from negligent or intentional violations causing unreasonable risk of or actual bodily injury or death. AB 32 specifies that any violation of a CARB climate regulation is considered an emissions violation.

[redacted]

3. Offset Credits (“Offsets”)

CARB’s Cap-and-Trade regulation allows CARB to invalidate an offset for errors, regulatory violations, or fraud. In the case where an offset is used to meet a compliance requirement and is later invalidated, the complying entity must replace the invalidated offset with a valid compliance instrument within six (6) months of notification by CARB of the offset’s invalidation or be subject to compliance penalties. PG&E will only purchase offsets if the purchase contract requires the seller to assume the risk of invalidation and to post appropriate collateral. PG&E will assess the risk of invalidation for each offset transaction.

D. PG&E's GHG-Related Product Procurement

This GHG Procurement Plan addresses the GHG-related procurement authority necessary for PG&E to comply with the obligations associated with emissions from sectors covered by Cap-and-Trade program, namely facilities with GHG emissions greater than or equal to 25,000 mtCO_2e per year and imported electricity, and PG&E's net natural gas compliance obligation. As an entity that is required to comply with Cap-and-Trade, PG&E will need to procure compliance instruments to meet the compliance requirements associated with its own facilities and imports, as well as the GHG contractual obligations associated with Power Purchase Agreements with third parties that require PG&E to procure GHG compliance products or assume GHG compliance costs for such parties, and PG&E's net natural gas compliance obligation. PG&E's Energy Procurement Department will procure GHG compliance instruments for all of PG&E's emissions subject to Cap-and-Trade, and transfer requested GHG allowances to PG&E's Gas Transmission and Distribution Department[14] (i.e., for GHG emissions associated with gas compressor stations and PG&E's net natural gas compliance obligation) at PG&E's weighted-average cost.[15] Below, PG&E describes its GHG obligations and Commission-approved GHG-related products and procurement processes, as well as its GHG procurement strategy. The products, procurement

[14] PG&E's Energy Procurement Department will only act as the buying agent for GHG Products requested by the Gas Transmission and Distribution Department for the GHG obligations associated with its gas compressor stations and its net natural gas compliance obligation. The Gas Transmission and Distribution will request a quantity of compliance products from the Energy Procurement Department.

[15] Weighted-average cost is the weighted-average cost of PG&E's allowances and offsets in a given compliance year. For a discussion of cost recovery, see Section D.6.

processes, and GHG procurement strategy establish the upfront achievable standards for PG&E's procurement activities consistent with AB 57.

1. Greenhouse Gas Obligations

PG&E's primary need to procure GHG compliance instruments and engage in GHG transactions arises in connection with the following:

- Utility-Owned Facilities: Conventional generation facilities and gas compressor stations owned by PG&E that are either operating or under construction and that emit at least 25,000 $mtCO_2e$ per year, such as the Humboldt Generating Station, Colusa Generating Station, and Gateway Generating Station, will have a compliance obligation under Cap-and-Trade.
- Selected Tolling Agreements: Contracts that allocate to PG&E or where PG&E has assumed GHG compliance instrument procurement responsibility for such counterparties.
- Electricity Imports: PG&E is responsible for GHG emissions deemed to be associated with its electricity imports for purposes of compliance with Cap-and-Trade.
- Net Natural Gas Compliance Obligation: PG&E is responsible for GHG emissions that would result from full combustion or oxidization of natural gas delivered to end users in California, less the fuel that is delivered to its customers which are covered entities.

2. Greenhouse Gas-Related Products

The following GHG-related products ("GHG Products") have been approved by the Commission:

TABLE APPENDIX L-1
PACIFIC GAS AND ELECTRIC COMPANY
GHG PRODUCTS

Product	Description
GHG Allowance	A compliance instrument accepted by CARB providing the right to emit one $mtCO_2e$ to satisfy obligations under the Cap-and-Trade regulation.
GHG Offset	A compliance instrument representing a verified emission reduction that is

	accepted by CARB in lieu of a GHG Allowance to satisfy obligations under the Cap-and-Trade regulation.

3. Greenhouse Gas-Related Processes

PG&E will procure GHG Products from the CARB and markets[16] to meet its entity-specific and contractual compliance obligations in accordance with its procurement strategy. PG&E is authorized to procure these GHG Products using the following procurement methods:

TABLE APPENDIX L-2
PACIFIC GAS AND ELECTRIC COMPANY
GHG PROCUREMENT METHODS AND PRACTICES

Transaction Process	Description
CARB Auction	Authorization to procure GHG Allowances through any CARB Auction in accordance with the Cap-and-Trade regulation.
Allowance Price Containment Reserve	Authorization to procure GHG Allowances through CARB's Allowance Price Containment Reserve.

In addition to the new GHG Procurement Methods and Practices in Table Appendix L-2, PG&E will use approved procurement methods and practices as described in its Bundled Procurement Plan that govern procurement via competitive Requests for Offer ("RFO") processes and transparent exchanges[17] to procure GHG Products. When procuring via bilateral transactions (including brokers), PG&E will utilize a competitive RFO process, consult with its Procurement Review Group ("PRG"), apply its approved procurement credit and collateral requirements, and apply the applicable affiliate transaction rules. PG&E can also procure GHG Products on

[16] CARB sells allowances through CARB auctions and the APCR. The market consists of allowance and offset products offered for purchase outside of CARB.
[17] The use of exchanges includes the "clearing" of bilateral transactions authorized by the Commission.

exchanges that have been previously approved by the Commission for power procurement. For exchanges not previously approved, PG&E will submit a Tier 2 advice letter detailing: (1) what exchange it is seeking to use; (2) the liquidity and transparency of the exchange, specific for GHG Products, including an explanation of how the Commission can be assured that the price of the products procured on the exchange is reasonable; and (3) the regulatory authority or authorities the exchange is subject to. Finally, PG&E has authority to resell GHG Products, but will report such sales to its PRG.

4. Greenhouse Gas Procurement Strategy

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

i. Maximum Volume Limits

j. Financially Hedging GHG Product Price Risk

Each of these elements is described in more detail below.

[redacted] [redacted]

[redacted]

[redacted] [redacted]

[redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted] [redacted]
[redacted] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted]
[redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted] [redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

[redacted] [redacted]

[redacted]

[redacted] [redacted]

[redacted]

[redacted]

i. Maximum Volume Limits

Consistent with Decision 12-04-046, specific overall volume limits for PG&E's GHG Product procurement will tie to the actual and forecasted GHG emissions for its facilities, certain tolling agreements, and electric imports. Beginning in the fourth quarter of 2014, PG&E imposes a separate and distinct formula, described below, to limit PG&E's GHG product procurement associated with PG&E's net natural gas compliance obligation.

CARB's regulation also set limits on the number of allowances that can be held, and offsets that can be used for compliance. In addition, Cap-and-Trade regulation restricts PG&E from purchasing more than 40% of the allowances offered at each auction, and Proposed Amendments restrict PG&E from purchasing more than 25% of the allowances offered at each auction from 2015 onward. These various limits will cap the amount of GHG Products PG&E will procure. PG&E will also transact GHG Products consistent with regulations established regarding the use of such products for compliance with Cap-and-Trade. PG&E may purchase GHG Products in excess of its annual compliance requirements and may "bank" surplus GHG Products to use in future compliance years in accordance with its procurement strategy and the procurement limits set forth below.

Generally in the current year, PG&E may purchase GHG Products to fulfill 100% of its current net remaining compliance obligation and its forecasted compliance obligation for the remainder of the current year. In addition, in the current year PG&E may purchase a portion of its forecasted compliance obligation for the following three compliance years not to exceed a set percentage in total for each year. PG&E will not purchase GHG Products with vintages more than three years from the current year. Finally, PG&E will not purchase more than 8% of its direct compliance obligation, as defined below, in the form of offsets, provided these purchases also stay within the overall GHG Product procurement limits identified below.

The procurement limit sets the maximum amount of GHG Products PG&E may purchase in the current year to fulfill its "direct compliance obligation," defined as the tons of emissions for which PG&E has an obligation to retire allowances on its own behalf as a regulated entity under the Cap-and-Trade program, and/or is otherwise obligated to procure GHG Products for a third party that is a regulated entity under the Cap-and-Trade program (i.e., certain contractual arrangements where PG&E is contractually responsible, or could elect to assume that responsibility, for procuring GHG Products for a third party). A "purchase" is defined as taking title of the GHG Product when it is delivered. Thus forward purchases count against the procurement limit in the year delivered, which may not be the current year.

PG&E's Direct Compliance Obligation Purchase Limit for the current year is calculated as:

LCY = A + 100% * FDCY + 60% * FDCY + 1 +40% * FDCY + 2 + 20% * FDCY + 3

Where:

"L" is the maximum number of GHG Products PG&E can purchase for purposes of meeting its direct compliance obligation.

"CY" is the Current Year, i.e., the year in which PG&E is transacting in the market.

"A" is PG&E's net remaining compliance obligation to date, calculated as the sum of the actual emissions for which PG&E is responsible for retiring allowances (or obligated to purchase for a third party) up to the Current Year, minus the total allowances or offsets PG&E has purchased up to the Current Year that could be retired against those obligations. This term in the calculation ensures PG&E is always able to buy sufficient GHG Products to cover any prior years' shortfalls, given that actual emissions may end up being less than forecast and/or prior decisions about how much procurement to do.

"FD" is PG&E's "forecasted compliance obligation", the projected amount of emissions for which PG&E is responsible for retiring GHG Products, or obligated to purchase for a third party, calculated using an implied market heat rate ("IMHR") that is two-standard deviations above the expected IMHR[27].

If this equation results in a negative number in a given year, PG&E's Direct Compliance Obligation Purchase Limit for that year should be set at zero. PG&E's Net Natural Gas Compliance Obligation Purchase Limit for the current year is calculated as:

$$LCY_G = A_G + (100\% * FDCYG) + (60\% * FDCY_G+1) + (40\% * FDCY_G+2) + (20\% * FDCY_G+3)$$

Where:

"L_G" is the maximum number of GHG Products PG&E can purchase for purposes of meeting its net natural gas compliance obligation.

"CY_G" is the Current Year, i.e., the year in which PG&E is transacting in the market.

"A_G" is PG&E's net remaining natural gas compliance obligation to date, calculated as the sum of the actual emissions for which PG&E is responsible for retiring GHG Products in its capacity as a natural gas supplier up to the Current Year.

"FD_G" is PG&E's "forecasted natural gas compliance obligation" or the projected amount of emissions for which PG&E is responsible for

[27] The IMHR two-standard deviations above the expected IMHR is calculated as follows: (1) the monthly historic IMHR is calculated by dividing monthly forward electricity prices by monthly forward gas prices for the period 2003 through 2011, yielding the forward monthly IMHR for this period; (2) monthly standard deviations of the forward monthly IMHR are then calculated separately for January through December; (3) the IMHR two-standard deviations above the expected IMHR is equal to the forward IMHR plus the standard deviation calculated in (2) multiplied by 2.0. The forward electricity prices to be used in calculating forecasted compliance obligations for the Direct Compliance Obligation Purchase Limits are then calculated by multiplying the IMHR at two-standard deviations above the expected IMHR by the forward gas price.

retiring GHG Products calculated using a 1 in 20 forecasted 'cold year' scenario, less those allowances directly allocated by CARB to satisfy its natural gas compliance obligation that could be retired against that obligation.

The sum of the Direct Compliance Obligation Purchase Limit and the Net Natural Gas Compliance Obligation Purchase Limit formula set the maximum amount of GHG Products PG&E may purchase in the current year to fulfill its compliance obligation as regulated entity under the Cap-and-Trade program. In addition to its Direct Compliance Obligation Purchase Limit and Net Natural Gas Compliance Obligation Purchase Limit, in the current year PG&E will not purchase GHG Products for future years greater than the percentages allowed in the combined formula. Therefore, for the prompt year (current year plus one) PG&E will not purchase in aggregate during the current year more than 60% of the prompt year's combined forecasted compliance obligation . Similarly, the percentages for current year plus two and current year plus three are 40% and 20%, respectively.

Consistent with Ordering Paragraph 9 of D.12-04-046, Table Appendix L-4 below details estimated forecast of the amount of greenhouse gas compliance instruments (in metric tons carbon dioxide equivalents) that correspond to the maximum procurement levels applicable to both the September through December 2013, and 2014 periods detailed in Table Appendix L-5.

[redacted]

[redacted]

[redacted]

[redacted]

j. Financially Hedging Greenhouse Gas Compliance Instrument Price Risk

Because the products and markets to financially hedge GHG compliance instrument price risk are not developed at this time, PG&E is not seeking authority

[redacted]

financially hedge GHG compliance instrument price risk at this time. PG&E will seek to amend its BPP by advice letter to seek such authority as these markets and products develop. PG&E's purchase of financial instruments to hedge GHG Product price risk will be subject to the procurement limit set forth below.

The "financial exposure" purchase limit sets the specific limit on the amount of GHG Products PG&E can purchase to hedge its financial exposure to GHG costs under the Cap-and-Trade program. As with the Direct Compliance Obligation Purchase Limit formula above, this is a purchase limit, meaning the number that emerges from this calculation would set the maximum amount of GHG Products PG&E is allowed to purchase in the current year for purposes of hedging its financial exposure. As above, "purchase" is defined as taking title of the GHG Product when it is delivered. PG&E is not allowed to purchase allowances or offsets for hedging purposes with vintages more than three years from the current year.

PG&E's Financial Exposure Purchase Limit is calculated as:

$$FLCY = 20\% * FECY + 10\% * FECY+1 + 5\% * FECY+2 + 2.5\% * FECY+3 – B$$

Where:

"FL" is the maximum number of GHG Products PG&E can purchase for purposes of hedging its financial exposure to GHG costs.

"CY" is the current year, i.e., the year in which PG&E is transacting in the market.

"FE" is an estimate of PG&E's financial exposure to GHG costs that will, or are anticipated to be, embedded in the price of energy, calculated based on the tons of GHG emissions for which PG&E believes it will bear the costs through an embedded cost of such emissions as reflected in energy prices. This amount does not include the costs PG&E anticipates incurring as a result of its direct compliance obligation as "direct compliance obligation" is defined above. "B" is PG&E's net purchases of GHG Products to date for hedging purposes, calculated as the total purchases of GHG Products for purposes of hedging PG&E's financial exposure up to the current year minus those GHG Products sold up to the current year. This term helps ensure that if PG&E hedged considerably in prior years and those hedges did not pay out (i.e. the price PG&E saw in the market for GHG Products stayed below what PG&E paid for a GHG Product and so PG&E did not sell the instrument), that gets factored into the amount of additional hedging PG&E is allowed to undertake.

Should this equation result in a negative number in a given year, PG&E's Financial Exposure Purchase Limit for that year will be set at zero.

5. Procurement Review Group Consultation

PG&E will annually review with its PRG its proposed CARB auction bidding strategy, including discussion of the total volume of GHG Products that PG&E might acquire and its GHG position. PG&E will also consult with its PRG on RFOs for GHG Products, and prior to transacting for any GHG Product in the market with a vintage year[29] more than three years in the future beyond the current calendar year. PG&E will report any GHG Product sales to the PRG. Finally, PG&E will report any forecast updates, corresponding revisions to the purchase limits and GHG Product transactions to the PRG at its quarterly position update.

6. Quarterly Compliance Reports and Cost Recovery

Forecast updates and corresponding revision to the purchase limits along with all GHG Product transactions will be reported in PG&E's Quarterly Procurement

[29] A "vintage year" is an attribute of each allowance that refers to the compliance year that CARB associates with the allowance at issuance. The vintage year designation restricts the allowance's eligibility for use to certain compliance periods. In the case of offsets, the vintage year refers to the year in which the offset is created.

Compliance Report ("QCR"). In addition, the QCR will provide a summary of current market conditions and all GHG Product transactions conducted by PG&E. PG&Erecords costs for GHG Products[30] associated with the electric sector obligation and natural gas compressor station obligation in its respective Energy Resource Recovery Account ("ERRA") and Gas Operational Cost Balancing Account ("GOCBA") for recovery in rates. GHG Products associated with its natural gas supplier obligation will be recorded in its proposed Gas Programs Balancing Account ("GPBA") for recovery in rates.

PG&E's request for cost recovery of GHG Products through ERRA, GOCBA, and GPBA implicitly assumes the purchase of these products can be financed with short-term debt. However, PG&E's short-term borrowing capacity is limited, and much of that capacity is needed to meet day-to-day operational needs, other balancing account under-collections and collateral to support energy procurement. Thus, depending on the cost and tenor of these products, PG&E may need to resort to financing with long-term debt and/or equity. In that event, PG&E may seek alternative cost recovery mechanisms in order to recover its actual cost of financing of these products.

7. Approval for Contract Term Duration

For transactions of GHG Products with vintage years four years or fewer into the future, PG&E will include these transactions in its QCR and the annual ERRA Compliance proceeding. For transactions of GHG Products with vintage years more than four years into the future, PG&E will submit the transactions for review through the

[30] Including costs related to offset development, if authorized, in accordance with the procurement strategy.

Commission's advice letter process. PG&E will not enter into a contract whose delivery term extends beyond 2020.

8. Independent Evaluator

For contracts with delivery terms that are greater than two years, PG&E will include an Independent Evaluator ("IE") in any competitive solicitation and an IE Report in its respective QCR or advice letter filings.

9. Updates Via Advice Letter

The procurement strategy for which approval is requested above is based on the final CARB Cap-and-Trade and Mandatory Reporting Rule regulations, as amended by the October 24, 2013 proposed amendments. Certain changes to CARB's regulations may affect implementation of this plan for GHG-related procurement. Should market conditions, CARB's regulations, or the electric portfolio change to the point of necessitating modifications to the plan, PG&E will submit an advice letter to the Commission requesting changes.

PG&E will update its GHG compliance forecasts and corresponding purchase limits as necessary via a Tier 2 advice letter. The advice letter will include a description and workpapers detailing the calculation of the estimated purchase limits and an explanation of the key drivers of differences from the prior estimates.

[redacted]

[redacted]

[redacted]

PG&E Gas and Electric
Advice Filing List
General Order 96-B, Section IV

1st Light Energy
AT&T
Alcantar & Kahl LLP
Anderson & Poole
BART
Barkovich & Yap, Inc.
Bartle Wells Associates
Braun Blaising McLaughlin, P.C.
CENERGY POWER
California Cotton Ginners & Growers Assn
California Energy Commission
California Public Utilities Commission
California State Association of Counties
Calpine
Casner, Steve
Center for Biological Diversity
City of Palo Alto
City of San Jose
Clean Power
Coast Economic Consulting
Commercial Energy
County of Tehama - Department of Public Works
Crossborder Energy
Davis Wright Tremaine LLP
Day Carter Murphy
Defense Energy Support Center
Dept of General Services
Division of Ratepayer Advocates
Douglass & Liddell
Downey & Brand
Ellison Schneider & Harris LLP
G. A. Krause & Assoc.
GenOn Energy Inc.
GenOn Energy, Inc.
Goodin, MacBride, Squeri, Schlotz & Ritchie
Green Power Institute
Hanna & Morton
In House Energy
International Power Technology
Intestate Gas Services, Inc.
K&L Gates LLP
Kelly Group
Linde
Los Angeles Dept of Water & Power
MRW & Associates
Manatt Phelps Phillips
Marin Energy Authority
McKenna Long & Aldridge LLP
McKenzie & Associates
Modesto Irrigation District
Morgan Stanley
NLine Energy, Inc.
NRG Solar
Nexant, Inc.
North America Power Partners
Occidental Energy Marketing, Inc.
OnGrid Solar
Pacific Gas and Electric Company
Praxair
Regulatory & Cogeneration Service, Inc.
SCD Energy Solutions
SCE
SDG&E and SoCalGas
SPURR
San Francisco Public Utilities Commission
Seattle City Light
Sempra Utilities
SoCalGas
Southern California Edison Company
Spark Energy
Sun Light & Power
Sunshine Design
Tecogen, Inc.
Tiger Natural Gas, Inc.
TransCanada
Utility Cost Management
Utility Power Solutions
Utility Specialists
Verizon
Water and Energy Consulting
Wellhead Electric Company
Western Manufactured Housing Communities Association (WMA)