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April 21, 2014

Advice 4398-E
(Pacific Gas and Electric Company ID U39 E)

Public Utilities Commission of the State of California

Subject: Pacific Gas and Electric Company's 2013 Renewables Portfolio
Standard Shortlist Report

I. Purpose

In compliance with Decision (D.03)11-024, Pacific Gas and Electric Company ("PG&E") hereby submits its 2013 Renewables Portfolio Standard ("RPS") Shortlist Report. The 2013 RPS Shortlist Report is comprised of PG&E's description of its 2013 RPS Solicitation Evaluation Criteria and Selection Process and the Independent Evaluator's Report for PG&E's 2013 RPS Solicitation (jointly the "Report").

II. Attachments

In support of this advice letter, PG&E is attaching the following documents:

- Section 1: Confidential Independent Evaluator Report
- Section 2: Public Independent Evaluator Report (Confidential Data Redacted)
- Section 3: Public Least-Cost, Best-Fit Report
- Section 4: Confidential Solicitation Overview
- Section 5: Confidential 2013 RPS RFO Workpapers

III. Confidentiality

PG&E submits the confidential Appendices 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 either the terms of the IOU Matrix, Appendix 1 of D.06-06-066 and Appendix C of D.08-04-023, or General Order 66-C.

III. Protests

Anyone wishing to protest this filing may do so by letter sent via U.S. mail, facsimile or E-mail, no later than May 12, 2014, which is¹ ~~after~~ ~~the~~ ~~date~~ of this filing. Protests must be submitted to:

CPUC Energy Division
ED Tariff Unit
505 Van Ness Avenue,th 4 Floor
San Francisco, California 94102

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

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

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

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

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

Any person (including individuals, groups, or organizations) may protest or respond to an advice letter (General Order 96-B, Section 7.4). The protest shall contain the following information: specification of the advice letter protested; grounds for the protest; supporting factual information or legal argument; name, telephone number, postal address, and (where appropriate) e-mail address of the protestant; and statement that the protest was sent to the utility no later than the day on which the protest was submitted to the reviewing Industry Division (General Order 96-B, Section 3.11).

¹ The 20-day protest period concludes on a weekend. PG&Es hereby moving this date to the following business day.

IV. Effective Date

PG&E submits this Advice Letter as a Tier 2 filing and requests that it be approved effective on May 21, 2014.

V. Notice

In accordance with General Order 96-B, Section IV, a copy of this Advice Letter excluding the confidential appendices is being sent electronically and via U.S. mail to parties shown on the attached list and the service lists for R.11-05-005 and R.12-03-014. Non-market participants who are members of PG&E's Procurement Review Group and have signed appropriate Non-Disclosure Certificates will also receive the Advice Letter and accompanying confidential attachments by overnight mail. Address changes and electronic approvals should be directed to PGETariffs@pge.com. Advice letter filings can also be accessed electronically at: <http://www.pge.com/tariffs>.

Sincerely,



Vice President - Regulatory Relations

cc: Paul Douglas – Energy Division
Cheryl Lee – Energy Division
Service Lists: R.11-05-005 and R.12-03-014

Attachments:

Section 1: Confidential Independent Evaluator Report
Section 2: Public Independent Evaluator Report (Confidential Data Redacted)
Section 3: Public Least-Cost, Best-Fit Report
Section 4: Confidential Solicitation Overview
Section 5: Confidential 2013 RPS RFO 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: Pacific Gas and Electric Company (ID U39 E)

Utility type:

ELC ffi GAS

ffi PLC ffi HEAT ffi WATER

Contact Person: Igor Grinberg

Phone#: (415) 973-8580

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

EXPLANATION OF UTILITY TYPE

(Date Filed/ Received Stamp by CPUC)

ELC= Electric
PLC= Pipeline

GAS= Gas
HEAT= Heat

WATER Water

Advice Letter (AL) 4398-E

Tier: 2

Subject of Pacific Gas and Electric Company's 2013 Renewables Portfolio Standard Shortlist Report

Keywords (choose from CPUC listing): Compliance, Portfolio

AL filing type: Monthly Quarterly ffi Annual One-Time Other _____

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #: D.13-11-024

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

Summarized 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: matrix that identifies all of the confidential information.

Confidential information will be made available to those who have executed a nondisclosure agreement: 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: Sandra J. Burns (415) 973-1627

Resolution Required? Yes No

Requested effective date: May 21, 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, 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 21 days after the date of this filing, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
ED Tariff Unit
505 Van Ness Avenue, 4th Floor
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

¹ The 20-day protest period concludes on a weekend. PG&E is hereby moving this date to the following business day.

**DECLARATION OF SANDRA J. BURNS
SEEKING CONFIDENTIAL TREATMENT
FOR CERTAIN DATA AND INFORMATION CONTAINED IN
ADVICE LETTER 4398-E
(PACIFIC GAS AND ELECTRIC COMPANY - U 39 E)**

I, Sandra J. Burns, declare:

1. I am presently employed by Pacific Gas and Electric Company (“PG&E”), and have been an employee at PG&E since 1985. I am a principal in the Renewable Energy group in the Energy Procurement department within PG&E. I am responsible for managing PG&E’s Renewables Portfolio Standard solicitation and negotiating power purchase agreements with counterparties. In carrying out these responsibilities, I have acquired knowledge of such sellers in general and, based on my experience in dealing with facility owners and operators, I am familiar with the types of data and information about their operations that such owners and operators consider confidential and proprietary.

2. Based on my knowledge and experience, and in accordance with Decision (“D”) 08-04-023 and the August 22, 2006 “Administrative Law Judge’s Ruling Clarifying Interim Procedures for Complying with Decision 06-06-066,” I make this declaration seeking confidential treatment of Sections 1, 4 and 5 of PG&E’s Advice Letter 4398-E, submitted on April 21, 2014.

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 the particular type of data and information listed in Appendix 1 of D.06-06-066 and Appendix C of D.08-04-023 (the “IOU Matrix”), or constitutes information that should be protected under General Order 66-C. The matrix also specifies the category or categories in the IOU Matrix to which the data and information corresponds, and why

confidential protection is justified. Finally, the matrix specifies that: (1) PG&E is complying with the limitations specified in the IOU Matrix for that type of data or information, if applicable; (2) the information is not already public, and (3) 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 in the attached matrix that is pertinent to this submittal.

I declare under penalty of perjury, under the laws of the State of California, that to the best of my knowledge, the foregoing is true and correct. Executed on April 21, 2014, at San Francisco, California.


SANDRA J. BURNS

PACIFIC GAS AND ELECTRIC COMPANY
Advice Letter 4398-E
April 21, 2014

IDENTIFICATION OF CONFIDENTIAL INFORMATION

Redaction Reference	1) The material submitted constitutes a particular type of data listed in the Matrix, appended as Appendix 1 to D.06-06-066 (Y/N)	2) Which category or categories in the Matrix the data correspond to:	3) That it is complying with the limitations on confidentiality specified in the Matrix for that type of data (Y/N)	4) That the information is 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
Documents: Sections 1, 4, and 5							
Section 1 – Confidential Independent Evaluator Report	Y	<p>Item VII (un-numbered category following VII G) Score sheets, analyses, evaluations of proposed RPS projects.</p> <p>Item VIII A) Bid information and B) Specific quantitative analysis involved in scoring and evaluation of participating bids.</p> <p>General Order (“GO”) 66-C.</p>	Y	Y	Y	<p>This confidential version of the Independent Evaluator’s (“IE”) report summarizes and evaluates confidential information concerning the Shortlisted Projects from PG&E’s 2013 Renewables Portfolio Standard (“RPS”) Solicitation. Disclosure of this report would provide business and financial information to participating bidders’ competitors and prospective sellers to PG&E and could impact their business conduct. This could place PG&E and its customers at a competitive disadvantage therefore this information is market sensitive information and should receive confidential treatment.</p> <p>The IE Report also contains certain information that PG&E understands the developers to consider proprietary and confidential. This information should receive confidential treatment pursuant to G.O. 66-C to the extent it</p>	<p>For information covered under Item VII (un-numbered category following VII G), remain confidential for three years.</p> <p>For information covered under Item VIII A), remain confidential until after final contracts submitted to CPUC for approval.</p> <p>For information covered under Item VIII B), remain confidential for</p>

PACIFIC GAS AND ELECTRIC COMPANY
Advice Letter 4398-E
April 21, 2014

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						is not covered by the Matrix.	three years after winning bidders selected. For information covered under GO 66-C, remain confidential indefinitely.
Section 4 – Solicitation Overview	Y	Item VII (un-numbered category following VII G) Score sheets, analyses, evaluations of proposed RPS projects. Item VIII A) Bid information and B) Specific quantitative analysis involved in scoring and evaluation of participating bids.	Y	Y	Y	This section contains bid evaluations, summaries of bid information, and quantitative analyses from PG&E's 2013 RPS Solicitation. Public disclosure of this information would provide valuable market sensitive information to competitors. Releasing this information publicly would be detrimental to negotiations with other counterparties therefore this information should receive confidential treatment. This section also contains certain information that PG&E understands the developers to	For information covered under Item VII (un-numbered category following VII G), remain confidential for three years. For information covered under Item VIII A), remain confidential until after final contracts

PACIFIC GAS AND ELECTRIC COMPANY
Advice Letter 4398-E
April 21, 2014

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		GO 66-C.				consider proprietary and confidential. This information should receive confidential treatment pursuant to G.O. 66-C to the extent it is not covered by the Matrix.	submitted to CPUC for approval. For information covered under Item VIII B), remain confidential for three years after winning bidders selected. For information covered under GO 66-C, remain confidential indefinitely.
Section 5 - 2012 RPS RFO Workpapers	Y	Item VII (un-numbered category following VII G) Score sheets, analyses, evaluations of proposed RPS projects.	Y	Y	Y	This section contains evaluations of bids, bid information, and quantitative analyses from PG&E's 2013 RPS Solicitation. The trend of renewable energy offers received by PG&E and the near term prices would provide strategic market information to potential sellers therefore	For information covered under Item VII (un-numbered category following VII G), remain confidential for

PACIFIC GAS AND ELECTRIC COMPANY

Advice Letter 4398-E

April 21, 2014

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		<p>Item VIII A) Bid information and B) Specific quantitative analysis involved in scoring and evaluation of participating bids.</p> <p align="center">GO 66-C.</p>				<p>this information is considered market sensitive information and should be treated confidential in nature. Public disclosure of this information would provide valuable market sensitive information to competitors. Release of this information publicly would be detrimental to negotiations with other counterparties and therefore this information should receive confidential.</p> <p>This section also contains certain information that PG&E understands the developers to consider proprietary and confidential. This information should receive confidential treatment pursuant to G.O. 66-C to the extent it is not covered by the Matrix.</p>	<p>three years.</p> <p>For information covered under Item VIII A), remain confidential until after final contracts submitted to CPUC for approval.</p> <p>For information covered under Item VIII B), remain confidential for three years after winning bidders selected.</p> <p>For information covered under GO 66-C, remain confidential</p>

PACIFIC GAS AND ELECTRIC COMPANY

Advice Letter 4398-E

April 21, 2014

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							indefinitely.

Section 2
Independent Evaluator Report
(PUBLIC Version)



April 21, 2014

ARROYO SECO CONSULTING

PACIFIC GAS AND
ELECTRIC COMPANY
2013 RENEWABLES
PORTFOLIO STANDARD
SOLICITATION

REPORT OF THE INDEPENDENT
EVALUATOR ON THE OFFER EVALUATION
AND SELECTION PROCESS

APRIL 21, 2014

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EXECUTIVE SUMMARY

This report provides an independent evaluation of the process by which the Pacific Gas and Electric Company (PG&E) undertook a competitive solicitation in 2014¹ to procure energy eligible to meet Renewables Portfolio Standard (RPS) goals. An independent evaluator (IE), Arroyo Seco Consulting (Arroyo), conducted a range of activities to review, test, and check PG&E's processes as the utility conducted outreach to renewable power developers and operators, solicited Offers, evaluated Offers, and selected a short list of Offers with which to pursue negotiations. Activities included reviewing PG&E's solicitation protocols, monitoring the utility team's outreach efforts and results, analyzing the Least-Cost, Best-Fit (LCBF) methodology and its inputs, analyzing PG&E's selection decisions in detail, performing independent evaluations of net market value and project viability of Offers, and considering the fairness of PG&E's decision-making process.

The high-level findings of this independent evaluation are that

- PG&E undertook adequate outreach to the renewable generation community and succeeded in conducting a robust competitive solicitation;
- The utility's Least-Cost, Best-Fit methodology was designed such that, for the most part, Offers were fairly evaluated, although Arroyo disagrees with PG&E's choice to not consider network upgrade costs for projects that interconnect outside the CAISO;
- Overall, PG&E administered its LCBF methodology fairly when evaluating the 2013 Offers. Arroyo disagreed with a few of PG&E's choices but believes that most but not all of these choices were within the range of subjective business judgment that an investor-owned utility may apply in making procurement decisions; and
- Arroyo's opinion is that PG&E's proposed RPS short list merits Commission approval, with one exception relating to a judgment about whether an Offer conformed to the requirements imposed on PG&E by Decision 13-11-024.

The report details the basis for these findings, following the 2013 version of the RPS Solicitation Shortlist Report Template provided by the Energy Division (ED) of the California Public Utilities Commission (CPUC). The public version of this report has had confidential information redacted.

¹ While Offers for the first stage of submittals were due on January 9, 2014, and proposals were evaluated in 2014, the solicitation was issued on December 16, 2013 and is considered to be the utility's 2013 RPS Request for Offers.

1. ROLE OF THE INDEPENDENT EVALUATOR

Pacific Gas and Electric Company issued a Request for Offers (RFO) on December 16, 2013, a competitive solicitation for power generation qualifying as eligible renewable energy resources (ERRs) under the California Renewables Portfolio Standard Program. The RPS Program was established by state law to ensure that retail sellers of electricity meet targets for procurement from ERRs as a percentage of annual retail sales. In its solicitation protocol for the 2013 RPS RFO, PG&E announced its goal of procuring up to 1,500 GWh/year of new supply, or about 1.875% of retail sales volume.²

The CPUC conditionally approved PG&E's 2013 RPS procurement plan in its Decision 13-11-024 issued on November 20, 2013. This chapter cites CPUC decisions that form the basis for an Independent Evaluator's participation in the 2013 RPS RFO, describes key roles of the IE, and details activities undertaken by the IE in this solicitation to fulfill those roles.

A. CPUC DECISIONS REQUIRING INDEPENDENT EVALUATOR PARTICIPATION

The CPUC first mandated a requirement for an independent, third-party evaluator to participate in competitive solicitations for utility power procurement in Decision 04-12-048 on December 16, 2004 (Findings of Fact 94-95, Ordering Paragraph 28). The CPUC required use of an IE when Participants in a competitive procurement solicitation include affiliates of investor-owned utilities (IOUs), IOU-built projects, or IOU-turnkey projects. The Decision envisaged that establishing an IE role would serve as a safeguard against anti-competitive conduct in the process of evaluating IOU-built or IOU-affiliated projects competing against Power Purchase Agreements (PPAs) with independent power developers.

In approving the IOUs' 2006 RPS procurement plans, the CPUC issued Decision 06-05-039 on May 25, 2006. This Decision expanded the CPUC's requirements, ordering that each IOU use an IE to evaluate and report on the entire solicitation, evaluation, and selection process, for the 2006 RPS RFO and future competitive solicitations. This requirement now applies whether or not IOU-owned or IOU-affiliate generation participates in the solicitation (Finding of Fact 20, Conclusion of Law 3, and Ordering Paragraph 8). This was intended by the CPUC to increase the fairness and transparency of the Offer selection process.

Decision 06-05-039 required the IE to report separately from the utility on the bid solicitation, evaluation, and selection process. Based on that Decision, the IE should provide a preliminary report along with the IOU submitting its short list. This document represents that short list report for PG&E's 2013 renewable solicitation.

² Pacific Gas & Electric Company, Renewables Portfolio Standard: 2013 Solicitation Protocol, December 16, 2013, page 4.

B. KEY INDEPENDENT EVALUATOR ROLES

To comply with the CPUC's requirements, PG&E retained Arroyo Seco Consulting to serve as IE for the 2013 RPS solicitation by providing an independent evaluation of the utility's Offer evaluation and selection process.

The CPUC stated its intent for IEs to "separately evaluate and report on the IOU's entire solicitation, evaluation and selection process", in order to "serve as an independent check on the process and final selections."³ More specifically, the Energy Division of the CPUC has provided a 2013 template to guide how IEs should report on the RPS competitive procurement process, outlining four specific issues that should be addressed:

- Did the IOU do adequate outreach to participants, and was the solicitation robust?
- Was the IOU's LCBF methodology designed such that offers were fairly evaluated?
- Was the LCBF offer evaluation process fairly administered?
- Does the proposed RPS shortlist merit Commission approval?

The structure of this report, setting out detailed findings for each of these issues, is organized around the guidance of that template.

C. IE ACTIVITIES

To fulfill the role of evaluating PG&E's 2013 solicitation, several tasks were undertaken, both prior to Offer Opening and subsequently. Prior to the Stage 1 Offer due date of January 9, 2014⁴, Arroyo performed several tasks to assess PG&E's methodology:

- Reviewed the solicitation and its attachments including PG&E's 2013 Form Agreements and description of the LCBF methodology and criteria.
- Examined the utility's non-public protocols detailing how PG&E would evaluate Offers against various criteria.
- Attended PG&E's Bidders' Webinar on December 18, 2013 to evaluate information provided to potential Participants, and how that information was distributed.
- Reviewed the list of registered attendees of the Bidders' Webinar against PG&E's master list of RFO contacts (used for outreach to potential Participants).

³ California Public Utilities Commission Decision 06-05-039, May 25, 2006, "Opinion Conditionally Approving Procurement Plans for 2006 RPS Solicitations, Addressing TOD Benchmarking Methodology", page 46.

⁴ PG&E's 2013 solicitation protocol requested that Participants submit offer packages in two stages: for the initial deadline, they were to submit offer forms and project interconnection information, which allowed PG&E to begin its market valuation of proposals. The remainder of each offer package including a detailed project description was due on January 16, 2014.

- Checked the posting of questions and answers from the Bidders' Webinar on PG&E's public website to see whether information that was made available in-person to conference attendees was also provided to other potential Participants.
- Examined PG&E's 2013 RFO master contact list; performed an analysis of contacts with respect to industry and technology representation.
- Interviewed members of PG&E's evaluation team regarding details of the 2013 version of the utility's LCBF methodology and its inputs, with a focus on PG&E's approach to valuing electric storage proposals, which was a new opportunity this year for Participants to add value to their Offers and for PG&E to make progress towards meeting its recently imposed obligation to procure viable and cost-effective energy storage systems under CPUC Decision 13-10-040.

During the period between Offer Opening and PG&E's development of a final short list for submittal to the CPUC, Arroyo's activities included:

- Participating in opening Offers. Arroyo obtained an electronic copy of each Offer package, and independently built a database for tracking Offers.
- Monitoring PG&E's evaluation team's requests of individual Participants to address material deficiencies to ensure that each Offer included sufficient information to complete an evaluation and to minimize the number of Offers disqualified as non-conforming. Arroyo monitored other e-mail communications between PG&E and Participants to check for fairness in how information was provided.
- Reading portions of each Offer. Arroyo focused on project descriptions and pricing, and on descriptions of proposed facilities relevant to project viability.
- Participating in PG&E evaluation team discussions about which Offers to disqualify for nonconformance with the requirements of the Solicitation Protocol, and why.
- Spot-checking Offer-specific data inputs to PG&E's valuation model, including assignments to Locational Marginal Price (LMP) zones.
- Building two independent valuation models (one for capacity and energy deliveries, one for storage) and using them to value Offers. This served as a cross-check against PG&E's LCBF model. The IE models used independent inputs and a different methodology than PG&E's. They were simpler and lacked granularity used in the PG&E model. However, an independent valuation was useful for testing the robustness of PG&E team's ranking of Offers using alternate assumptions.
- Scoring Offers independently for viability, using the ED's 2011 version of the Project Viability Calculator. The independently developed Offer valuations and viability scores provided part of the basis for developing an independent view of the relative merit of Offers that the PG&E team selected or rejected, and will facilitate a viability ranking of executed contracts against peer proposals.

- Reviewing PG&E's scoring of Offers for the criteria other than market valuation and project viability, testing for consistency and fairness in the treatment of projects.
- Attending meetings of PG&E's steering committee, as it made decisions to approve or modify proposed selections for the short list.
- Attending meetings of PG&E's Procurement Review Group (PRG), including answering questions about the solicitation and the Offers, and presenting an independent commentary and observations about the RFO.
- Offering PG&E's evaluation team commentary based on independent opinion.

Arroyo's focus going forward will be on assessing the fairness of project-specific negotiations for shortlisted Offers and the merit for CPUC approval of individual agreements that PG&E may choose to execute.

2. ADEQUACY OF OUTREACH TO PARTICIPANTS AND ROBUSTNESS OF THE SOLICITATION

In its 2013 RPS solicitation, PG&E sought to meet a goal of procuring up to approximately 1.875% of retail load (or 1,500 GWh/year) by selecting Offers that will lead to some negotiated, executed contracts and to some new commercially operating generating facilities. This section assesses the degree to which PG&E adequately conducted outreach activities to elicit sufficient participation in the RFO process, and the degree to which the resulting solicitation may be judged robust enough to be fully competitive.

A. CLARITY AND CONCISION OF SOLICITATION MATERIALS

PG&E's 2013 RPS solicitation protocol is modestly sized for a document of its type (it totals 35 pages excluding attachments, vs. SDG&E's 31 pages). Arroyo's opinion is that the contents of the protocol generally provided clear and comprehensible direction on how to prepare and submit complete Offer packages that could be accepted and evaluated.

- Nearly all Offers were submitted as complete and conforming packages. The most common deficiencies related to submitting a storage input spreadsheet in the offer form for proposals that include bundled energy storage. Some Offers had internally inconsistent characterizations of parameters of the proposed storage. This appears to have stemmed from ambiguous wording of the description of the fields in the offer form spreadsheet. When PG&E later edited those descriptions in correspondence with Participants to clarify what specific information was requested, most but not all developers were better able to fill in the fields so that the data were internally consistent. A related deficiency was failure of some Participants to complete offer information about ancillary services characteristics of storage units.

The proportion of Offers that needed to be corrected for deficiencies in the offer packages was modest. This suggests that with the exception of the new worksheet for storage input parameters, PG&E's solicitation materials and instructions were clear enough for most Participants to understand and follow. However, the difficulties with preparing an internally consistent energy storage proposal in a timely way proved too challenging for some Participants, and prevented their deficient proposals from being considered for shortlisting. In future years, more effort should be devoted to communicating clearly with Participants about how the energy storage portion of the offer form should be prepared. A separate text section with instructions for filling out those fields might be helpful, or a portion of the Participants' webinar could usefully focus on these input parameters.

- The 2013 solicitation protocol stated some preferences of the utility:

1. Offers that begin delivery in 2020 or later (when the utility currently forecasts a net RPS compliance need, in contrast to 2019 or earlier);
2. Projects considered bundled, in-state resources, or out-of-state resources scheduled into a California balancing authority without substituting electricity from another source, or using a dynamic transfer agreement (“Category 1”), over projects whose output will be considered renewable energy credits (RECs) for RPS compliance purposes (“Category 3”) and over out-of-state resources whose output is shaped and firmed using substitute electricity and scheduled into a CAISO interface point (“Category 2”);
3. Among Category 2 Offers, a delivery pattern that is flat in all hours, except with no off-peak delivery in the second quarter of each year (spring flood);
4. Resources that can contribute to the utility’s Resource Adequacy (RA) requirement, i.e. Offers for projects whose interconnections have Full Capacity Deliverability Status (FCDS) rather than energy-only status;
5. Offers with a delivery term of ten to fifteen years, as opposed to periods longer than twenty years or shorter than ten;
6. Projects sited within the PG&E service territory, as opposed to sites within the territories of other utilities (CAISO participating members or otherwise);
7. Projects that offer flexibility in scheduling generation, such as Offers that provide for additional hours of buyer curtailment beyond the minimum required 250 hours per contract year.⁵ Attachment K to the protocol stated the utility’s preference for curtailment at any time, e.g. up to 8,760 hours per year.

Based on the details of Offers received, Arroyo infers that most Participants understood these preferences. For example, only a small portion of Offers did not include a variant with an on-line date in 2020 or later. Similarly, most Offers proposed unlimited buyer curtailment. Very few Participants proposed PPAs with a contract tenor less than ten years or greater than twenty.

When the utility solicited feedback from non-shortlisted Participants after closing the solicitation, the sense of the commentary about the clarity of RFO materials was positive overall. Some developers indicated that PG&E’s written requirements were “pretty transparent” and “well laid out, pretty clear” or “well-defined”, and that the documentation was “straightforward and clear” without many ambiguities. A majority of respondents to PG&E’s feedback survey for non-selected Participants agreed that PG&E clearly identified the criteria it would use to evaluate Offers; a strong majority agreed that the Participants’ webinar was helpful. One Participant contrasted the clarity of the presentation in PG&E’s

⁵ The minimum requirement of at least 250 buyer curtailment hours/year is stated in PG&E’s offer form for Category 1 deliveries. It is not explicitly stated in the 2013 Form Agreement, which allows for unlimited buyer curtailments except as constrained by the specific text of Appendix XV. The specific limits are to be negotiated and agreed between buyer and seller.

Participants' webinar to a "very poor presentation" provided by another IOU that "didn't have all its eggs together [sic]."

To the extent that Participants providing feedback identified specific areas in which clarity could be improved, they tended to focus on narrow topics such as providing more guidance about how energy storage would be used (e.g. frequency of cycles) in order to get a better sense of how to model the economics of storage, and how, specifically, PG&E would value storage.⁶ Other topics for which Participants requested more clarity in future included providing the rationale for substantial changes in PG&E's time-of-delivery factors and for PG&E's preference for a 2020 or later on-line date.

Overall, Arroyo believes that PG&E's solicitation materials were clear and concise, though the offer form section for energy storage parameters deserves improvements or clarifying instructions.

B. ADEQUACY OF OUTREACH

Here are some considerations used to evaluate whether PG&E performed successfully in reaching out to the community of renewable power developers and plant owners:

- How many individuals were contacted?
- To what extent were these contacts in companies that develop and/or own renewable power projects or market unbundled RECs?
- Was a diverse set of renewable technologies covered in the contacts, or was the outreach excessively focused on one or two technologies?
- How widely was information about the solicitation disseminated? How?
- Was information about the solicitation readily available to the public?
- To what extent did Participants appear well-informed about the details of the RFO?

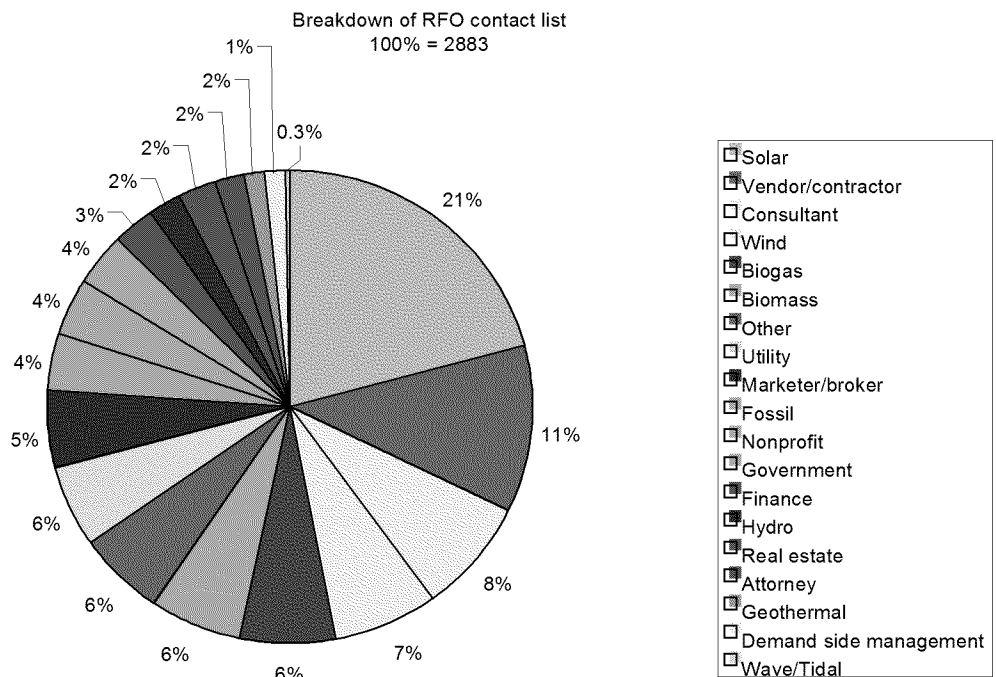
By December 2013, PG&E had compiled a general contact list for use in publicizing its RFOs totaling about 2,900 individuals. PG&E appears to have been actively compiling contacts for outreach and updating and refining its list of existing contacts, as well as responding to requests to be added to the list.

⁶ While the public protocol and its Attachment K named the value attributed to time-shifting energy delivery to more valuable hours, it did not specifically identify the other key components of value that PG&E took into account in evaluating Offers with bundled storage although they are discussed in general elsewhere in the Attachment. Arroyo recommends that in future solicitations involving energy storage PG&E provide more transparency by naming specific components of value it attributes to storage in its public RFO materials without disclosing confidential details.

The largest segment represented on the list was composed of contacts active in the solar power sector. The second largest segment was comprised of vendors, including equipment vendors, design and engineering firms, and construction contractors. The third largest segment was made up of consulting firms of various sorts with specialties such as electric transmission, water and wastewater quality, public relations and lobbying, environmental permitting, solar resource assessment, composting, and carbon offset credit certification. Developers or owners of wind generation and biomass- and biogas-fueled generation followed in representation on the list. Other well-represented sectors included electric and water utilities, wholesale marketers, brokers, and traders of power, gas, renewable energy credits, and other commodities, developers and owners of fossil-fueled generation or fossil fuel producers, non-profit organizations including land trusts, environmental advocacy groups, and carbon registries, government agencies, and entities with no obvious direct connection to the renewable power industry, such as real estate agents, journalists, professors, and religious youth groups. (Arroyo views the presence of these less relevant contacts on PG&E's outreach list as a consequence of the utility's efforts to be inclusive in its approach.) Figure 1 displays estimated shares by sector of the contacts.

Inspection of the contact list reveals that many of the major developers of renewable energy are included, particularly for solar and wind resources, as are owners of California-based biomass and geothermal projects. Other contacts were with entities that provide services to renewable energy developers: law firms, financing providers, consultants, and hardware vendors. It is unclear whether service providers sought inclusion on PG&E's contact list to keep abreast of RFOs or to develop business with plant developers.

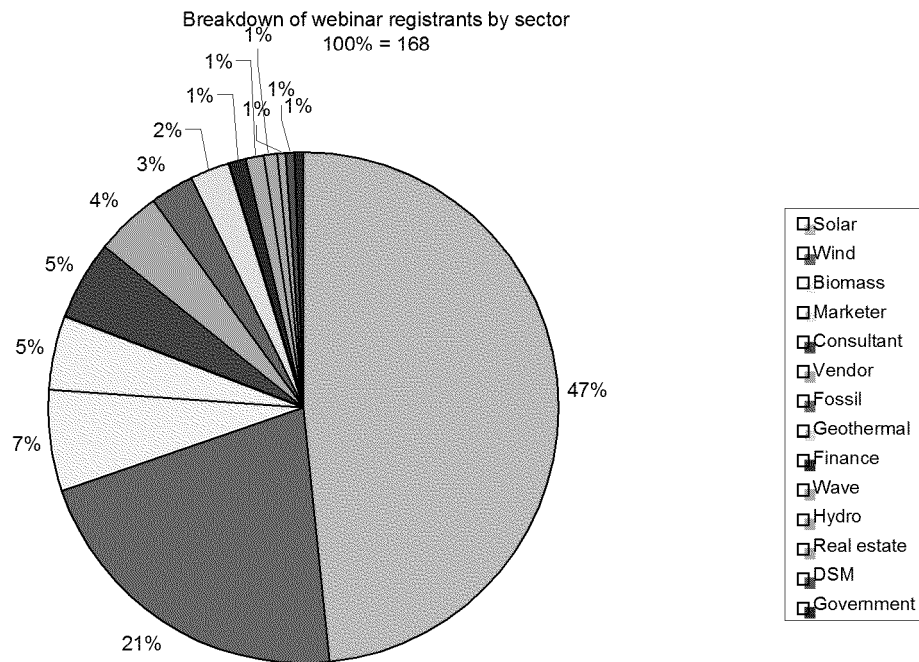
Figure 1. Composition of RFO contact list



PG&E did not issue a formal press release to announce the issuance of the 2013 RPS RFO. News of the solicitation was reported in the electric power trade press, including Megawatt Daily⁷; journalistic reportage of the release of the RFO appeared to be less broad than in prior years. The detailed solicitation protocol and its attachments, the schedule, and other informational items were posted on PG&E’s public website. News of PG&E’s RPS RFO was publicized not only in the trade press but also on the websites of law firms whose practices include a focus on renewable energy contract law, such as K&L Gates and Davis Wright Tremaine, perhaps for their clients’ benefit.

Another indicator of the adequacy of outreach for the RFO was the response of attendees for the bidders’ conference. Figure 2 displays a count of organizations, by sector, with individuals who registered for the conference (some companies had several registrants). A turnout of 168 individual registrants and 126 actual attendees represents a strong response and expression of industry interest. Nearly half of registrants were from the solar sector; this was followed by the wind and biomass-fueled generation sectors.

Figure 2. Composition of registration for bidders’ conference



Of participants in the bidders’ conference, about 88% represented companies directly involved with developing or operating renewable energy generation, or marketing renewable energy credits, as opposed to consultants, equipment vendors, and other entities unlikely to participate directly in a renewable solicitation. About half the attendees represented companies that later submitted Offers. It appears that most of the companies that chose to

⁷ Megawatt Daily, “Pacific Gas & Electric Seeks Renewable Energy Proposals”, December 17, 2013.

participate in the 2013 RPS RFO took the solicitation seriously and endeavored to understand how the RFO would be conducted by attending the conference.

PG&E posted condensed versions of questions posed by Participants at the conference with PG&E's answers on its website. This enhanced the fairness of the RFO, ensuring that webinar attendees did not benefit from information not made available to competitors.

Arroyo's opinion is that PG&E conducted substantial outreach to renewable power developers active in North America. The number of individuals contacted, the distribution of the news of the solicitation in the electric power trade press, the attendance at the bidders' conference, and the decent yield of Offers submitted by conference attendees all suggest that PG&E's overall outreach effort was strong and effective.

C. ROBUSTNESS OF THE SOLICITATION

Here are some considerations used to evaluate whether PG&E performed successfully in conducting a robust solicitation:

- Was the response to the solicitation large enough for PG&E to expect to achieve its goal of procuring up to 1,500 GWh/year, given the likely attrition of shortlisted Offers and projects, without having to accept a majority of Offers?
- Was the response to the solicitation diverse with respect to technologies?
- Was the distribution of responses broadly represented by projects that were assessed as moderately or highly viable, or was there an excess of less viable Offers?

The response to the solicitation was robust; contracting with all Offers would provide [REDACTED]. The volume of the response was [REDACTED] the stated goal for the solicitation. The volume of bundled energy Offers proposed, [REDACTED] represented a decrease by about 40% from the 2012 RPS solicitation's response, which had substantial participation. Similarly, the total capacity of proposed projects for in-state, bundled generation was [REDACTED], or about 40% less than the response to the 2012 RPS RFO.

One would expect PG&E to be easily able to meet its volume goal for the solicitation from such a response. [REDACTED]

[REDACTED] This should be adequate for PG&E to contract with sellers to achieve the targeted volume even with attrition from Participants whose negotiations fail to culminate in contract execution, who choose to contract with competing buyers, whose project suffers failures or setbacks during the negotiating period, or who otherwise withdraw their proposal from negotiations.

Arroyo speculates that the lower volume of Offers submitted to PG&E's 2013 RPS RFO compared to the 2012 solicitation may be influenced in part by the newly imposed requirement for new projects to have at minimum an active interconnection application that

has obtained a Phase II interconnection study. In the 2012 RPS RFO, about 19% of Offer variants were for proposed projects that had not yet obtained a Phase II study report. Such projects would have been ineligible to participate if the 2013 requirement had been in place. Also, this year some developers might have chosen not to offer projects they would rather bring on line before PG&E's preferred initial delivery date of 2020 or later, perhaps in order to seize the benefits of federal tax credit programs that are scheduled to terminate. Both reasons were cited by surveyed non-Participants, along with the complexity of the offer submission process and the preference for projects in PG&E's service territory.

The technology that represented the largest share of Category 1 volume was solar photovoltaic power, [REDACTED]. This was followed by wind generation [REDACTED], geothermal [REDACTED], biomass [REDACTED] and solar thermal [REDACTED]. No Offers for biogas-fueled, wave, or tidal power were submitted this year. Proposals to sell the utility unbundled renewable energy credits made up only a modest portion of total Offers; [REDACTED]. This suggests an opportunity for PG&E to enhance outreach efforts to biogas developers and REC brokers and traders.

The share of wind generation Offers increased from PG&E's 2012 RPS RFO. [REDACTED]

[REDACTED] In contrast, the portion of proposals from geothermal projects declined from 2012; [REDACTED].

D. IMPERIAL VALLEY OFFERS

The CPUC has stated a public interest in obtaining a robust response to the IOUs' RPS solicitations from developers in the Imperial Valley, and in the 2009 RPS solicitations required that the utilities hold special Imperial Valley bidders' conferences. This focus is "in order to provide all reasonable opportunities for optimal use of the Sunrise transmission project."⁸ For the IOU's 2013 RPS solicitations, the CPUC did not specifically require any remedial measures to bolster procurement from Imperial Valley projects but required continued monitoring of IOUs' renewable procurement activities in the Imperial Valley area.

PG&E received [REDACTED] Offers for output of Imperial Valley facilities, [REDACTED] proposed for bundled energy delivery. The number of individual proposals was much less than [REDACTED] received in PG&E's 2011 and 2012 RFOs. However,

[REDACTED] In this year's solicitation the total capacity of Offers for Imperial Valley projects, [REDACTED], totaled about [REDACTED] of all capacity offered. The total annual volume of Imperial Valley projects offered, [REDACTED]. This representation of proposals from Imperial Valley projects seems to be robust [REDACTED].

⁸ California Public Utilities Commission, Decision 11-04-030, "Decision Conditionally Accepting 2011 Renewables Portfolio Standard Procurement Plans and Integrated Resource Plan Supplements", April 20, 2011, page 24.

[REDACTED]

E. ADEQUACY OF FEEDBACK FROM PARTICIPANTS

In its communications notifying Participants that their Offers had not been shortlisted, PG&E offered an opportunity to discuss the outcome. Several Participants whose Offers were rejected expressed an interest in follow-up discussions. Arroyo observed [REDACTED] of these sessions [REDACTED]

[REDACTED] Also, PG&E sent a survey by e-mail to its RFO contact list, receiving [REDACTED] Arroyo's opinion is that PG&E sought adequate feedback from Participants about the bidding and evaluation process.

The feedback sessions were welcomed by the Participants who requested them. They created an opportunity for developers to get answers to queries about the ranking of their proposals and the specifics of PG&E's evaluation method. Most Participants, when prompted to offer feedback on PG&E's solicitation materials and process, had positive commentary. Some developers compared PG&E's handling of its RFO quite favorably against other IOUs, commenting on PG&E's better preparedness, clearer answers to questions, and transparency of calculations on the offer form. Some Participants indicated that PG&E was easier to deal with, more straightforward in its handling of questions, and more willing to provide quick, direct feedback than the other IOUs, particularly SDG&E.

This year for the first time PG&E utilized an internet-based platform for offer submittal. Participants on average preferred this to the prior approach of submitting hardcopies or flash drives, though at least one Participant viewed the platform as "not very user-friendly". For those Participants requesting feedback, PG&E provided guidance on the value ranking of rejected Offers by quartile, which several Participants found useful for considering their approach to future solicitations. Several Participants stated their appreciation for PG&E's willingness to provide feedback quickly, including e-mail answers to last-minute questions about the RFO before the deadline. Others indicated their approval of PG&E's use of phased deadlines for the offer form and interconnection information vs. other project description data, saying that it made offer preparation easier.

Various critiques of PG&E's RFO were also offered. Some themes included:

- The substantial change in time-of-delivery factors from prior years' had an impact on financial models that was confusing or hard to interpret.

9 [REDACTED]

- It was difficult to decide how best to deal with PG&E's stated preference for contract start dates of 2020 or later, and to understand how PG&E would make the tradeoff between Offer variants with earlier vs. later dates.
- The offer form section for energy storage was more difficult to fill in, and somewhat buggy. It was difficult to fill in without knowing more precisely how one's energy storage would be dispatched and how PG&E assigns value to storage. Use of Excel macros by all IOUs in their forms caused some problems.
- Some non-Participants objected to PG&E requiring a Phase II interconnection study, apparently not recognizing that this was ordered by the CPUC.
- Several Participants did not recognize that the maximum number of hours per year of buyer curtailment that they nominated would directly affect their Offer's valuation, despite the description provided in the public solicitation materials.
- Some felt that PG&E's approach to specifying Offers made it easier for a developer to customize her detailed proposals in comparison to Edison's approach. This seemed advantageous in differentiating proposals. Other would have preferred even greater latitude to customize Offers (such as unbundling the renewable generation entirely from the energy storage, which would be unacceptable in an RPS solicitation).
- The amount of documentation required for an offer package was perceived as "still a formidable amount of work" especially for smaller developers, but other Participants appreciated the two-phased deadlines, which allowed them to spread out the burdensome effort of offer preparation over more time.

Arroyo's opinion is that PG&E's efforts to give and receive feedback after the close of the solicitation were adequate and clearly helpful both to the utility and to those Participants who were willing to take part in a debriefing session.

3. FAIRNESS OF OFFER EVALUATION AND SELECTION METHODOLOGY

The key finding of this chapter is that PG&E's evaluation and selection methodology for identifying a short list for the 2013 RPS RFO was designed fairly, overall. Arroyo has some specific but narrow disagreements with the design of the utility's approach.

The following discussion identifies principles for evaluating the methodology, evaluates its strengths and weaknesses, and identifies some specific issues with the methodology and its inputs that Arroyo recommends be addressed in future solicitations.

A. PRINCIPLES FOR EVALUATING THE METHODOLOGY

The Energy Division of the CPUC has usefully suggested a set of principles for evaluating the process used by IOUs for selecting Offers in competitive renewable solicitations, within the template intended for use by IEs in reporting. These include:

- There should be no consideration of any information that might indicate whether the participant is an affiliate.
- Procurement targets and objectives were clearly defined in the IOU's solicitation materials.
- The IOU's methodology should identify quantitative and qualitative criteria and describe how they will be used to rank offers. These criteria should be applied consistently to all offers.
- The LCBF methodology should evaluate offers in a technology-neutral manner.
- The LCBF methodology should allow for consistent evaluation and comparison of offers of different sizes, in-service dates, and contract length.

Some additional considerations appear relevant to PG&E's specific situation. Unlike some utilities, PG&E does not rely on weighted-average calculations of scores for evaluation criteria to arrive at a total aggregate score. Instead, the team ranks Offers by Portfolio-Adjusted Value ("PAV"). "After the calculation of PAV is complete, PG&E considers project viability, contribution to RPS goals, and supplier diversity."¹⁰ In other words, PG&E ranks Offers based on value but uses its commercial judgment to consider other key attributes of the proposals. This suggests a few other principles for assessing fairness:

¹⁰Pacific Gas and Electric Company, Renewables Portfolio Standard, 2013 Solicitation Protocol: Attachment K, PG&E's Description of its RPS Bid Evaluation, Selection Process and Criteria, December 16, 2013, page 2.

- The methodology should identify how non-valuation measures will be considered; all non-valuation criteria used in selecting Offers should be transparent to Participants.
- The logic of how non-valuation criteria or preferences are used to reject higher-value Offers and select lower-value Offers should be applied consistently and without bias.
- The valuation methodology should be reasonably consistent with industry practices.

B. STRENGTHS AND WEAKNESSES OF PG&E'S METHODOLOGY

PG&E's evaluation methodology for renewable energy RFOs has been revised over the years; its evolution has benefitted from input from IEs and the utility's PRG, and from internal review. This section discusses the methodology in greater depth, and addresses a set of specific issues that are called out in the Energy Division's 2013 template for IE reports.

1. CONSISTENCY WITH 2013 RPS PROCUREMENT PLAN, PORTFOLIO FIT

Overall, PG&E's evaluation and selection methodology is consistent with its 2013 RPS procurement plan. In Arroyo's opinion, PG&E adequately incorporated the needs and preferences stated in its RPS procurement plan as approved by the CPUC into its approach.

- The volume goal for the 2013 solicitation is consistent with that stated in the plan of procuring up to 1,500 GWh/year through new long-term contracts.
- The RPS procurement plan states a goal of "encouraging generators with contracts expiring in 2020 and beyond to submit offers in upcoming solicitations for extensions that qualify as bankable". PG&E's solicitation protocol is explicit in acknowledging that existing generators can make eligible Offers, and provides detailed information on the requirements for such sellers' proposals.

Arroyo does not discern any structural bias within PG&E's evaluation methodology for or against existing generators' Offers. The valuation methodology is blind to whether the project exists or will be built. An existing generator will score higher for project viability than proposed new projects, having completing many challenges facing new facilities such as obtaining site control, an interconnection, and permits. However, existing generators proposing new PPAs starting before 2020 will be disadvantaged by the adjustment to PAV for RPS Portfolio Need; the value of earlier deliveries will be discounted in years with a net long compliance position. This discount applies equally to new projects that propose COD prior to 2020, so Arroyo does not view this feature of the methodology as biased against existing projects.

The protocol text does not explicitly "encourage" existing generators to offer proposals, though it acknowledges it will consider any timely Offer from an existing resource. Also, many of the owner-operators of existing generators whose contracts are expected to expire in the next several years are on PG&E's RFO contact list.

Additionally, the protocol allows for eligibility of Offers for short-term extensions of existing contracts despite the stated preference for contract terms of ten or more years. The emphasis is on short- or medium-term extensions that would qualify for

banking of renewable energy credits for future use. Arroyo views this as one way in which PG&E has sought to accommodate older existing facilities that are less well-positioned to propose ten-year terms (such as projects with uncertain and volatile fuel prices). However, it is evident from Offer submittals that some sellers lack basic awareness of statutes and CPUC Decisions governing bankability of RECs.

- As ordered by the Decision approving PG&E's 2013 RPS procurement plan, the protocol explicitly requires new projects bidding into the RFO to have a Phase II interconnection study or its equivalent. The protocol goes further and specifies that the project must have remained active in the interconnection process (as opposed to having once obtained a Phase II study then dropping its queue position). The protocol gives specific guidance on what would be considered the equivalent of a Phase II study for projects interconnecting at the distribution level and for projects proposing to deliver renewable energy from a repowered facility.
- As ordered by the CPUC, PG&E's 2013 RPS procurement plan does not require sellers to agree to unlimited buyer curtailments of project output. Instead, the 2013 RPS Form Agreement leaves unstated how many buyer curtailment hours can be ordered per year, and provides a contract appendix that the buyer and seller can negotiate to specify operational constraints on buyer curtailment, potentially including a maximum number of hours that curtailment orders can be invoked. PG&E required Participants in the RFO to nominate in the offer form the maximum number of hours per year the utility can order curtailments. This limit would be written into the contract appendix as a constraint on buyer curtailments, unless the Participant in fact chose to offer unlimited curtailment hours (8,760 hours per year) in which case the appendix would not constrain hours of curtailment.
- The plan indicates that the 2013 RPS RFO would seek products that enable PG&E to comply with its Resource Adequacy requirements. The public protocol states PG&E's preference for projects that are fully deliverable (as opposed to energy-only or partially deliverable). The valuation methodology rewards fully deliverable projects with higher valuations, all else being equal.
- The procurement plan does not propose a non-zero integration cost adder to be used in calculating Portfolio-Adjusted Value, consistent with the Decision approving the plan. PG&E's methodology used in valuing Offer for the 2013 RPS RFO does not include an integration cost adjustment. PG&E's net market value methodology does include an adjustment for the cost impact of debt equivalence, new for 2013.
- In prior years, the RPS RFO solicitation protocols required Participants whose Offers were shortlisted to agree to negotiate exclusively with PG&E for six months after posting a short list deposit. Consistent with the Decision approving the 2013

RPS plan, PG&E has deleted that requirement from the 2013 protocol so that shortlisted parties can negotiate with both PG&E and other buyers.¹¹

- The Decision approving the plan ordered PG&E not to include a contract provision requiring a seller to bear all integration-related charges attributable to the resource. PG&E's 2013 Form Agreement is silent regarding integration costs. It includes provisions that were also included in prior years' Form Agreements that allocate CAISO penalties, and CAISO charges related to scheduling and imbalance energy, between buyer and seller. The Form Agreement is silent regarding allocation between buyer and seller of any future CAISO charge categories for integration costs not specifically identified and allocated by contract provisions.
- The Decision approving the plan also ordered PG&E to conform its collateral requirements for project development security for Category 1 and 2 deliveries to those of Southern California Edison. The final RPS plan and the text of the 2013 Form Agreement set required project development security to those levels.
- The Decision approving the plan ordered PG&E to remove the "contract term adjustment" from its methodology for calculating Portfolio-Adjusted Value. The protocol excludes such an adjustment, and such an adder is absent from the calculation of PAV. The solicitation protocol retains a publicly stated qualitative preference for Offers of ten- to fifteen-year contract term, vs. longer contract tenors.
- The RPS procurement plan states its intent to encourage sellers to propose RPS Offers with energy storage, a new feature of the annual plans. The 2013 solicitation protocol clearly encourages Offers that include energy storage, if it is charged solely with RPS-eligible energy and can be counted towards PG&E's storage procurement target. The PG&E team has developed a methodology for valuing the storage component of RPS Offers, taking into account operational constraints. Also, PG&E has added the contribution of an Offer towards meeting the utility's energy storage procurement targets as a new evaluation criterion for the 2013 RPS solicitation.

In summary, PG&E's methodology aligns closely with its 2013 RPS procurement plan, and is consistent with the plan's stated needs and preferences. In particular, final versions of PG&E's 2013 solicitation protocol and Form Agreement reflect specific changes from draft versions ordered by the CPUC in its Decision approving the 2013 RPS procurement plan.

Portfolio Fit. PG&E no longer uses a stand-alone metric for portfolio fit. Instead, it takes into account its various preferences for attributes of portfolio fit in adjustments it applies to calculate Portfolio-Adjusted Value, including adjustments based on project location, timing of contract deliveries vs. periods of RPS compliance needs, firmness vs. variability of energy delivery, and flexibility of deliveries. In Arroyo's opinion PG&E's methodology adequately takes into account characteristics related to portfolio fit preferences.

¹¹ However, PG&E's 2013 solicitation protocol retains a section heading, "Binding and Exclusive Nature of Offer", even though the text requiring exclusive negotiations has been deleted. Arroyo recommends that the reference to exclusivity be deleted in future.

2. MARKET VALUATION

PG&E's market valuation approach has a number of general strengths including its consistency with industry practice, its rapid turnaround, its reliance on market price data rather than dispatch model outputs, and its relation to real option pricing. Its weaknesses are the same as other methods that rely on extrapolating market price beyond a time horizon when a liquid, transparent market price signal for energy or capacity can be observed.

PG&E now must place a value on the ratepayer benefits of energy storage bundled into RPS RFO proposals. While the methodology for this is consistent with the utility's approach to valuing energy deliveries, valuation depends on inputs regarding the future hourly shape of CAISO market prices. While PG&E uses assumed hourly prices in other aspects of valuation, Arroyo views the energy storage valuation as more sensitive to hourly shaping than valuation of energy in general. Valuing storage also requires PG&E to consider future pricing of ancillary services products and flexible Resource Adequacy; it is challenging to project these prices into the distant future, much less next year. However, Arroyo acknowledges that there are few or no good alternative approaches for estimating these components of the value of energy storage for long-term contracts.

Price vs. Value. PG&E's LCBF methodology takes into account both proposed price and estimated net value of each Offer, in the narrow sense that price is an input to PG&E's valuation model. However, PG&E primarily ranks Offers by Portfolio-Adjusted Value to screen for selection, and does not construct or review a separate ranking by contract price.

When reviewing Offers to select a short list, PG&E does review information on LCBF-based Net Market Value and pricing, but the focus is on levelized PAV, which includes transmission network upgrade cost impacts, rather than on NMV or contract price. As a result, the methodology does not systematically select lowest-priced project Offers when they would incur large upgrade costs or are sited outside PG&E's service territory. Arroyo views this use of value rather than price as the primary metric for ranking as appropriate given the potentially vast cost to ratepayers of network upgrades and PG&E's concerns about its future ability to import Resource Adequacy attributes for its ratepayers' benefit.

Financial Benefits and Costs. Overall, PG&E's LCBF methodology adequately takes into account nearly all financial benefits and costs of proposed Offers (see below for one exception in the transmission upgrade cost section). There are costs that would be challenging to quantify financially; their omission seems reasonable. For example:

- Environmental externalities relating to the impact of new projects on wildlife or scarce water supplies are difficult to quantify as financial costs. While these environmental costs are not estimated in financial terms, PG&E's selection of a short list is informed by a review of project environmental risks, in the context of assessing project viability. Environmental risk is not part of PG&E's definition of the RPS Goals criterion, while environmental benefit to low-income/high-unemployment communities is.
- Some areas of PG&E's grid suffer from deficiencies in local capacity resources vs. requirements identified to maintain local reliability. For example, the CAISO

has identified deficiencies in the Kern and Sierra local areas within PG&E's territory.¹² It is difficult to quantify in financial terms the extra benefit to grid reliability that would be provided by contracting with resources in deficient sub-areas, or extending PPAs with existing resources that might otherwise retire.

Most deficiencies seem likely to be resolved by debottlenecking grid investments in the medium term, though future generator retirements could create issues in the future. The costs of unreliability caused by local resource deficiencies are not taken into account in PG&E's methodology. Arroyo agrees that some but not all local deficiencies are likely to be addressed by transmission investments by 2020 or later (years stated as preferred on-line dates for this RFO) and that available analyses of local deficiencies do not address the post-2019 situation.

- PG&E assumes for valuation that the cost of integrating new resources into the electric system is zero, consistent with current CPUC policy. Utilities in other jurisdictions apply estimated costs of integration for intermittent resources when ranking the value of potential new projects, based on estimates of such components as obtaining sufficient load-following resources and frequency regulation. At some point as CAISO load grows and as intermittent resources make up a greater proportion of the resource mix the price of increasingly scarce but required load-following and regulation could likely increase. This potential effect is not included in PG&E's valuation of RPS resources; there is no CEC-approved method for such an estimate. Continuing to assume zero integration costs in RPS RFOs could skew renewable procurement and new construction decisions towards investments that some day could, in hindsight, seem imprudent from a system operability and reliability viewpoint.

3. EVALUATION OF OFFERS' TRANSMISSION COSTS

PG&E's LCBF methodology includes the costs of transmission upgrades in its value calculations for all Offers involving projects that propose to interconnect directly to the CAISO. In the protocol for market valuation for this RFO, PG&E indicated it would use estimates of network upgrade costs from interconnection studies. PG&E no longer reserves the alternative of using proxy cost estimates from the IOUs' Transmission Ranking Cost Reports. The methodology explicitly weighs the costs of network upgrades against the benefits of Resource Adequacy value in calculating PAV. PG&E used transmission experts to review transmission study results that served as inputs to the LCBF methodology.

PG&E's methodology omits consideration of these network upgrade costs in situations where the project proposes to interconnect outside the CAISO balancing authority area and some or all of the network costs are ultimately borne by transmission customers of that other balancing authority area, such as the Imperial Irrigation District (IID). In IID's case California ratepayers end up bearing upgrade costs in their rate base, but they happen to be

¹² California Independent System Operator, 2015 Local Capacity Technical Analysis: Draft Report and Study Results, April 3, 2014, page 2.

businesses and households largely outside the CAISO grid, so these costs are not taken into account when PG&E estimates the Offer's value and do not directly affect PG&E's rates.¹³

In its Decision approving PG&E's 2012 RPS procurement plan, the CPUC stated that "the Commission agrees with PG&E that no preferences should be given to CAISO-interconnected projects or to projects otherwise interconnected."¹⁴ By loading the valuation of CAISO-interconnected projects with network upgrade costs but not considering such costs when valuing IID-interconnected projects, the methodology can systematically bias selection for the latter. In Arroyo's opinion, PG&E's calculation of net value is not a neutral metric for comparing CAISO- and non-CAISO-interconnected projects. This bias or preference is the opposite of the concern previously expressed by stakeholders including IID, fearing discrimination against IID-interconnected projects.

Not only does PG&E's method for calculating transmission adders omit network upgrades on the IID grid required for new projects, it also omits the cost of network upgrades that may be required in the CAISO grid for new generation built in IID's territory. Specifically, San Diego Gas & Electric Co. has estimated the impact of new "external" generation built to interconnect to IID's grid upon SDG&E's grid. At some level of new build within IID, SDG&E projected that it would have to construct new 69-kV transmission lines in order to accommodate flows from those projects from Imperial Valley substation westward into the core of its territory without overloads.¹⁵ Because projects interconnecting to IID do not obtain an analysis of network upgrades in a CAISO interconnection study, PG&E is unable to obtain project-specific information about how to estimate CAISO upgrade costs driven by such effects. The only publicly visible sources of such analyses were SDG&E's Transmission Ranking Cost Reports, which are no longer required.

Congestion charges. Arroyo believes that the current implementation of the LCBF methodology does not appropriately count congestion charges between certain distant CAISO delivery points such as the Palo Verde trading hub and the EZ hubs internal to CAISO service territories. For example, the difference between monthly on-peak forward prices for Palo Verde and SP-15 recently quoted for the 2014-2020 period averaged about \$6/MWh. Arroyo's concern is that the LCBF methodology overvalues Offers for delivery at Palo Verde because it does not take into consideration the difference between the value of power delivered at the periphery of the CAISO and the value of power delivered in the core

¹³ While new projects interconnecting to IID's grid are obligated to pay up front the out-of-pocket costs for constructing network upgrades, IID's practice is to reimburse these projects by issuing them transmission service credits that can be used to offset the tariff rate the project pays over time for transmitting energy from the project to an IID-CAISO intertie point. In effect, the foregone revenues that the project would have paid IID absent these credits must be made up by rates paid by IID's native customers or other transmission customers. Arroyo views this arrangement as imposing some of the cost of network upgrades onto IID ratepayers (the volume of credits issued does not take into account any interest payments on the upfront payments made by the new project).

¹⁴ CPUC Decision 12-11-016, "Decision Conditionally Accepting 2012 Renewables Portfolio Standard Procurement Plans and Integrated Resource Plan Off-Year Supplement", November 14, 2012, page 17.

¹⁵ San Diego Gas & Electric Company, Draft Transmission Ranking Cost Report of San Diego Gas & Electric Company (U 902 E), June 27, 2012, page 24.

of Edison's territory. The valuation improperly treats these Offers as if the projects would deliver energy in Rosemead within the "SCE Core" rather than at a nuclear plant in central Arizona, surrounded by four large gas-fired CCGTs, at the far side of import bottlenecks.

Arroyo recommends that PG&E develop estimates of LMP multipliers appropriate for these delivery points as it has done for zones within the main body of the CAISO grid, or use a Palo Verde forward curve for valuing Offers that propose to deliver energy in central Arizona. Arroyo's opinion is that PG&E's mispricing of Arizona projects creates a systematic selection bias favoring such proposals which is unfair to California projects.

4. EVALUATION OF OFFERS' PROJECT VIABILITY

PG&E's public solicitation protocol states that the utility "will evaluate the project viability of each offer" using the currently adopted version of the CPUC's Project Viability Calculator, and that "PG&E will review all submissions and adjust self-scores as appropriate." Similarly, PG&E's presentation in its Participants' Webinar indicated that "All offers will be evaluated and scored" using the Calculator.

Arroyo understands this to imply that PG&E leaves developers' self-scores intact when other considerations, such as low value, cause the Offer to be rejected, and focuses primarily on scoring higher-valued Offers. In the case of most Offers that are considered for selection, PG&E conducts conformance checks of the developers' scores and/or conducts its own detailed scoring. In Arroyo's opinion it would be better to review and adjust developers' scores for all rejected Offers that rank higher in valuation than the lowest-valued shortlisted proposal, in order to ensure that PG&E's logic for selection and rejection based on value and viability is applied consistently and fairly. However, Arroyo has a broader view of what submissions are appropriate for PG&E to review and adjust than the utility does.

Arroyo scored all conforming Offers using the Project Viability Calculator, and discussed details of some of those evaluations with the PG&E team.

5. OTHER STRENGTHS AND WEAKNESSES

Participants' viewpoints on strengths and weaknesses. Feedback from Participants provided some insight into attributes of PG&E's approach compared to other utilities'.

- Overall, Participants provided positive commentary on the relative transparency of PG&E's methodology and the clarity of solicitation materials.
- The valuation of the buyer curtailment option is a fairly new element of PG&E methodology; some Participants either did not appreciate its potential impact on the ranking of their proposals or were concerned that they do not have a clear view of how large the impact on total valuation might be.
- Similarly, some Participants found it difficult to assess how PG&E might make the tradeoff between Offer variants for a 2016 vs. 2020 on-line date given the stated preference for the later timing. Absent clear guidance about how much less valuable an Offer with the earlier COD might be, these developers felt unconfident. Other

Participants seemed to have no difficulty assessing the economics of making proposals for both earlier and later on-line dates.

- While several Participants found the opportunity to propose bundled energy storage into their Offers, they were unsure about how PG&E would value the storage component and whether it was advantageous or not to submit such variants. Some found it difficult to estimate the economics of their proposed storage without guidance about how PG&E might dispatch the storage unit.
- Some Participants noticed that PG&E's changes to its time-of-delivery periods and factors caused their Offers to provide less revenue than using the prior factors, creating concerns about why this might be and what PG&E was doing to the assumptions underlying its valuation.

Valuation of energy storage. The evaluation of Offer variants with bundled energy storage was new for PG&E in the 2013 RPS solicitation. The methodology relies to a large extent on projecting the value of flexible Resource Adequacy out for the duration of the proposed contracts. Because this is the first time PG&E has attempted to assign input parameters for such an analysis, and because the market for flexible RA is not fully implemented and price discovery from a liquid, transparent market is not yet available, the effort is challenging. Arroyo's opinion is that PG&E has made reasonable assumptions, given the circumstances, which could eventually turn out to be inaccurate. However, Arroyo's view is that the methodology likely does an acceptable job of ranking the alternatives for storage by attractiveness, as opposed to calculating absolute dollar value.

It will not be until the first round of storage solicitations when the IOUs will be able to compare the economics of these RPS-bundled proposals to firm-priced Offers for stand-alone storage. At this point in time it is unclear whether the best proposals for energy storage offered by participants in the RPS RFO (those with the smallest value decrements for including storage capability) are competitive with stand-alone storage or not.

C. FUTURE LCBF METHODOLOGY IMPROVEMENTS

PG&E's methodology has undergone repeated refinement, motivated both by internal choices within the utility and external impetus by the regulator. Incremental improvements have been made over time. Arroyo can only suggest a few modest possible improvements.

ENSURING FAIRNESS OF TREATMENT

PG&E applies a transmission adder for new projects interconnecting to the CAISO grid, and does not apply such an adder for new projects interconnecting to the grids of other balancing authority areas. In Arroyo's opinion this results in disparate treatment of the two classes of seller that is not neutral. While it seems legitimate that PG&E would be less focused on grid costs that do not directly affect PG&E's customers' rates, in the case of projects interconnecting to IID's grid the costs are ultimately borne by California ratepayers

who reside outside the CAISO's boundaries.¹⁶ This approach does not optimize energy investment from the vantage of what is the least-cost solution for society overall, but rather from the more parochial perspective of what is best for PG&E's ratepayers. Arroyo recommends that PG&E count these network upgrade costs in its valuation methodology.

This issue also exists in the situation of new projects proposed to be interconnected to other "foreign" balancing authority areas outside California. It is less clear how concerning it should be, that part of the cost of delivering energy from a new project is ignored because it is being subsidized by Arizona or New Mexico customers, as opposed to by California residents within IID's territory or California municipal utilities' territories.¹⁷

IMPROVING VALUATION INPUTS

Arroyo has some minor suggestions for improving the valuation methodology:

- Use a discount rate based on an estimate of the cost of capital for power developers, rather than PG&E's authorized cost of capital. Arroyo believes that given the risks that face renewable project development (permitting, site control, interconnection, equipment procurement, financing, etc.) it is more appropriate to discount future benefits and costs of the projects using a higher discount rate representative of the riskier independent power industry, rather than that of a regulated monopoly.
- Develop LMP multipliers appropriate for CAISO interconnection points such as Palo Verde, Mead, Mohave, Parker Dam, and the Hassayampa-North Gila line, so that energy from projects that propose such nodes as delivery points can be valued taking congestion costs and losses fully into account. Or, at minimum, use a Palo Verde forward curve to value energy deliveries in central Arizona instead of an SP-15 forward curve. These CAISO delivery points at the fringe of Edison's and SDG&E's service territories tend to record higher congestion differentials than points within the territories. The protocol's Attachment K provides LMP multipliers only for zones internal to the CAISO grid, not for these far-flung CAISO delivery points. Arroyo is concerned that PG&E's current practice of assigning new projects that will deliver in central Arizona to the SCE Core LMP area overstates the value of their deliveries and understates risks associated with inbound congestion events.

IMPROVING VIABILITY SCORING

¹⁶ While developers whose projects interconnect to the IID grid may claim that they pay the entire cost of network upgrades up front, Arroyo opines that this is less than wholly true if the project subsequently benefits from the return of those payments in the form of transmission service credits later used to reduce the project's operating costs. The net effect is for the project to pay less than the full cost of the upgrades and for IID ratepayers to bear the shortfall in rates when IID foregoes transmission service revenues when it reimburses the project with transmission service credits.

¹⁷ Another consideration is that PG&E's ratepayers could later bear some of the costs of IID network upgrades. If IID increases transmission rates to make up for the foregone revenues lost by providing transmission service credits to today's project, future projects on IID's grid that sell to PG&E through future contracts may need to recover the higher-priced transmission service charge through higher PPA prices directly borne by PG&E ratepayers.

The regulator could improve utilities' and IE's ability to use the Project Viability Calculator. The 2011 Calculator scores the project's progress on achieving its transmission requirements in part based on whether required upgrades have obtained CPUC approval. However, the public version of the CPUC's Transmission Project Tracking Spreadsheet (posted on the CPUC's web site) is dated December 2009. Without access to updated public information about the regulatory status of individual transmission projects (e.g. whether an application for a Permit to Construct has been filed yet, or whether a final decision has been issued) it is difficult to score transmission requirements accurately.

REFINING THE RPS GOALS CRITERION

PG&E's 2012 and 2013 RPS solicitation protocols narrowed the elements of the RPS Goals evaluation criterion from its definition in prior years. Arroyo suggests that PG&E reassess whether its preferences are fully reflected in the current design. With the narrowed definition, PG&E should not attempt to justify its selections by citing contributions to resource diversity of its portfolio; resource diversity was dropped from the RPS Goals criterion. PG&E should not treat different resources disparately during shortlisting solely based on fuel type without publicly stating an evaluation criterion for diversity of fuel types.

Arroyo is of the opinion that resource diversity is a legitimate element of a utility's prudent management of its supply portfolio. The CPUC included resource diversity as a qualitative attribute that IOUs can use in evaluating proposals in competitive RPS solicitations in Decision 04-07-029. Omitting resource diversity as a stated evaluation factor in the public solicitation protocol makes it appear unfair if the utility invokes that benefit of diversity to justify selection of lower-valued Offers that offer diversity of fuel type or system role (e.g. baseload vs. peaking) while rejecting higher-valued proposals.

D. ADDITIONAL OBSERVATIONS

This was the first RFO in which PG&E sought Offers with electrical storage units bundled with renewable energy. The methodology PG&E devised is straightforward though developing appropriate inputs to the calculations is challenging. The description of how PG&E performs valuation of storage in the solicitation protocol is rather terse; Arroyo suspects that Participants would benefit from more transparency into how PG&E takes the benefits of storage into account in valuation and selection. Some Participants did not follow instructions in the offer form about how to fill in specific fields with attributes of their proposed storage modules; also, some Participants found it difficult to respond to PG&E's specific requests to correct internally inconsistent data. Greater clarity in communicating up-front about the details of how to propose energy storage would improve the process.

PG&E did not finalize drafts of its non-public protocols for this year's RPS RFO until after Offers were due. This is not best practice; it would be better to lock in procedures for evaluation before specific Offer information is available; however, Arroyo doubts that one should draw implications of this for the fairness of the RFO, acknowledging that development of detailed new protocols for the valuation of energy storage was time-consuming.

4. FAIRNESS OF ADMINISTERING THE OFFER EVALUATION AND SELECTION PROCESS

This section describes the extent to which PG&E's administration of its protocols for Offer evaluation and selection in the 2013 RPS solicitation was conducted fairly. Arroyo's opinion is that the process was, overall, conducted in a fair and generally consistent manner. Arroyo disagreed with a few of PG&E's choices.

A. PRINCIPLES USED TO DETERMINE FAIRNESS OF PROCESS

The Energy Division has suggested a set of principles proposed to guide IEs in determining if an IOU's administration of its evaluation and selection process was fair:

- Were all offers treated the same regardless of the identity of the bidder?
- Were participant questions answered fairly and consistently and the answers made available to all participants?
- Did the utility ask for "clarifications" that provided one participant an advantage over others?
- Was the economic evaluation of the offers fair and consistent?
- Was there a reasonable justification for any fixed parameters that were a part of the IOU's LCBF methodology (e.g., RMR values; debt equivalence parameters)?
- What qualitative and quantitative factors were used to evaluate offers?

Some other considerations appear relevant to reviewing PG&E's administration of its methodology. The use of business judgment in bringing multiple non-valuation criteria to bear on decision-making, rather than a mathematical, objective means of doing so, implies an opportunity to test the fairness of administration using additional principles:

- Were the decisions to reject higher-valued Offers from the short list because of low scores in criteria other than valuation or PG&E's preferences applied consistently across all Offers? Were decisions to select lower-valued Offers in preference to higher-valued ones because of their superior attributes in non-valuation criteria made consistently, or were the higher-valued proposals skipped over unfairly?
- If PG&E did not select the projects for the short list that provide the best overall value while meeting the needs of PG&E's three compliance periods, what factors prevented those projects from being selected? Was their rejection based on factors that were communicated transparently to Participants in the solicitation protocol?

- Does the resulting short list conform to the needs of PG&E's portfolio?
- Were the judgments used to create the short list based on evaluation criteria and preferences that were publicly disseminated to Participants prior to Offer submittal?

B. REVIEWING PG&E'S ADMINISTRATION OF ITS EVALUATION AND SELECTION PROCESS

PG&E provided Arroyo Seco Consulting with detailed inputs to its valuation model and with evaluation results throughout the evaluation process, including detailed information about transmission adders. Arroyo also had copies of all Offers and of correspondence between PG&E and Participants, and was able to arrive at independent opinions about the strengths and weaknesses of individual Offers against the evaluation criteria.

The PG&E team discussed its logic for selection of the draft short list with the IE; Arroyo attended the steering committee meeting in which a draft proposal for the short list of Offers was reviewed, discussed, and finalized. The logic and priorities underlying why specific Offers were rejected and accepted to the short list were made evident in these sessions. Arroyo had access to members of the evaluation team responsible for scoring the Offers against each of the evaluation criteria. Arroyo was able to question decisions that appeared unfair or inconsistent from an independent perspective.

Additional elements of Arroyo's approach for evaluating the fairness of the evaluation and selection process include:

- Building an independent valuation model that directly used detailed Offer information, to construct an independent ranking of Offers by net market value;
- Independently scoring Offers using the CPUC-approved Project Viability Calculator;
- Developing an independent point of view about which Offers merited selection;
- Comparing PG&E's valuation ranking to the independent model's ranking, identifying outliers (e.g. where the utility ranked an Offer much higher than the IE or vice versa), and determining whether variances were caused by different inputs and methodology or stemmed from errors by either PG&E or Arroyo;
- Comparing the question-and-answer information posted on PG&E's public website to ensure that answers were made available to all Participants;
- Auditing communications between PG&E and Participants to check whether any individual Participant was advantaged by requests posed or information provided;
- Reviewing in detail and discussing PG&E's decisions to reject Offers for nonconformance with the requirements of the solicitation protocol;

- Reviewing PG&E's decisions to reject Offers based on the utility's stated preferences or low scores on non-value criteria; identifying whether those rejections were fair;
- Assessing PG&E's decisions to select Offers that were lower valued over higher-valued alternatives, based on superior scores on other attributes; and
- Testing these rejection and acceptance decisions for consistency; reviewing whether the logic for rejection and acceptance was consistently applied to all Offers.

C. FAIRNESS OF REJECTION OF OFFERS FOR NONCONFORMANCE TO THE REQUIREMENTS OF THE SOLICITATION

PG&E performed a detailed review of offer packages to identify deficiencies that needed to be addressed and to assess which Offers deviated from RFO requirements. Most Participants whose Offers were identified as deficient were able to submit the missing information. A common deficiency was a failure to fill in the offer form for energy storage parameters accurately or with internal consistency. Similarly, some Participants initially failed to complete the portions of that section describing ancillary services information.

Just prior to the Offer due-date, PG&E identified minor glitches within its offer form spreadsheet, in which some Participants were unable to input a value to the field for direct assigned cost (e.g. interconnection facilities costs that are the responsibility of the project). Because this information is not directly used to evaluate proposals, PG&E suggested a work-around for direct assigned cost to be entered into a text field. Similarly, some Participants were unable to input a zero value for reliability network upgrade cost. PG&E's work-around was to have these projects enter a value of \$1. Arroyo considers these minor imperfections to have been inconsequential to the fairness of the solicitation or the evaluation of Offers.

PG&E chose to reject only a very few Offers for failure to conform to the requirements of the solicitation protocol:

Contract tenor. [REDACTED] Offers [REDACTED] [REDACTED] proposed new RPS agreements for contract terms of less than ten years. Rather than being extensions of the existing contracts, these would be entirely new agreements; [REDACTED]

PG&E's assessment was that the projects' delivery of bundled RECs would likely not qualify to be banked for later compliance needs. Arroyo agreed with PG&E that the solicitation protocol excluded consideration of new contracts with short tenors that are ineligible for banking.

Incomplete offer. PG&E received a package [REDACTED] [REDACTED] [REDACTED] The package did not include an offer form, nor did it suggest that [REDACTED] proposed to sell PG&E renewable energy, as opposed to offering [REDACTED]

crews for hire at hourly fees. PG&E rejected the package as non-conforming, and Arroyo agreed.

Arroyo believes that PG&E could have rejected [REDACTED] Offer that included an essentially blank Supplier Diversity Questionnaire. PG&E chose not to; the omission of a diversity commitment level could be addressed during negotiations.

Missing Phase II interconnection study or equivalent. In its Decision to conditionally accept the IOU's 2013 RPS procurement plans, the CPUC ordered PG&E to include a requirement in its solicitation protocol that projects must have completed a CAISO "Phase II (or equivalent or exemption) study to bid into its 2013 RPS solicitation."¹⁸ PG&E's solicitation protocol explicitly addressed this requirement. The protocol further clarified that for "existing and repowered facilities, a completed CAISO repowering assessment and PTO interconnection facilities study is deemed as "equivalent" to the Phase II study within the CAISO territory."¹⁹ In 2013 the CAISO issued a technical bulletin describing in detail under what circumstances an existing project that proposes to repower its generator(s) can obtain an interconnection agreement without having to undergo the full generator interconnection and deliverability allocation procedures (GIDAP), by demonstrating that "the total capability and electrical characteristics of the generating unit will be substantially unchanged."²⁰

The technical bulletin essentially offers an exemption from the requirement of obtaining CAISO Phase I and II studies for projects whose proposed repowers meet specific criteria. These repower projects can submit an affidavit "representing that the total capability and/or electrical characteristics of the generating unit(s) will remain substantially unchanged" along with supporting information. The project may or may not still need to undergo an interconnection facilities study, so an affidavit confirming no substantial change does not necessarily exempt a project from any CAISO repowering assessment at all. However, the technical bulletin specifically requires that for this exemption the "repowered generating unit must utilize the same fuel source and point of interconnection to the ISO grid as the existing generating unit. Combustible fuel sources such as coal, oil, and natural gas, will be considered the same for repowering purposes."²¹

PG&E's interpretation of the technical bulletin is that repowering projects that replace an old wind turbine with a new wind turbine would likely meet this same-fuel requirement and in general would be exempt from undergoing the full GIDAP studies. On that basis PG&E decided to accept Offers that propose to repower existing wind generation projects with new turbines even if they do not yet have a formal determination from the CAISO that the repowered projects will be substantially unchanged from the existing facility. Arroyo agrees with this judgment, on the basis that, unless a developer proposes that the repowered

¹⁸ California Public Utilities Commission, Decision 13-11-024, "Decision Conditionally Accepting 2013 Renewables Portfolio Standard Procurement Plans and Integrated Resource Plan and On-Year Supplement", Ordering Paragraph 10, page 72.

¹⁹ Pacific Gas & Electric Company, Renewables Portfolio Standard: 2013 Solicitation Protocol, December 16, 2013, page 12.

²⁰ California Independent System Operator, Technical Bulletin – ISO Tariff Section 25.1.2 Procedure, Generator Unit Repowering, September 12, 2013, page 4.

²¹ Loc. cit.

project will have a larger MW capacity than the existing wind farm, it seems very likely that CAISO approval of the use of an existing interconnection for a new set of wind turbines will be a ministerial process because such repowers will qualify for the exemption. Arroyo is unaware of any precedents in which a wind-to-wind generator repower has required anything more than CAISO approval of an affidavit from the wind farm owner that the project will undergo no significant change in capability and electrical characteristics in its repower.

PG&E received several Offers from [REDACTED]. One was for a new [REDACTED] project [REDACTED] has an executed interconnection agreement for a [REDACTED] at this location. The developer has as yet taken no steps to amend the interconnection agreement for a material modification addendum to switch technology [REDACTED]. No studies have been initiated or completed to demonstrate that the change would have no significant impact on the network. The proposed repower would be ineligible for the exemption by the strict terms of the technical bulletin. PG&E deemed the [REDACTED] to be non-conforming to the requirements of the RPS RFO for failing to meet the requirement of obtaining a Phase II interconnection study or its equivalent, and Arroyo agreed.

However, one submitted Offer was a proposal to [REDACTED]. [REDACTED] In Arroyo's opinion, this would constitute fuel switching; according to the strict text of the CAISO's technical bulletin on repowering it would not be exempted from the generation interconnection and deliverability assessment procedures. PG&E chose to accept and evaluate the Offer in order to err on the side of inclusiveness.

Arroyo speculates that the CAISO could either adhere to the strict text of its technical bulletin and move this project [REDACTED] through the full interconnection study process, or the CAISO could ignore its own technical bulletin's language and [REDACTED]

[REDACTED] In other words, the physical and contractual capacity of the proposed "repower" would exceed the "total capability" of the existing [REDACTED]. On that basis Arroyo believes that this proposed [REDACTED] project would fail to meet the requirements for an exemption as stated in the CAISO's technical bulletin in two ways: by switching fuels [REDACTED] and by increasing the capacity of the generator beyond that specified in the existing interconnection agreement.

²² [REDACTED]

Upon being queried by PG&E about the status of the interconnection after offer submittal, [REDACTED] the request would be studied under the CAISO's Independent Study Process (ISP) rather than the full GIDAP process. However, [REDACTED]

[REDACTED] (In contrast, other Participants with projects undergoing the Independent Study Process submitted Initial or Supplemental Reviews demonstrating that their projects had fully satisfied all ISP fast-track screens by the January 9 offer deadline [REDACTED])

As noted above, PG&E's 2013 RPS procurement plan and public solicitation protocol specify a "completed CAISO repowering assessment" to be the equivalent of a Phase II study for the purposes of determining the eligibility of a proposed repowered project to participate in the 2013 RPS RFO. Also, in designing its Project Viability Calculator, the Energy Division assigns a score of 9 in the category of "Interconnection Progress" to projects that have completed a Phase II study, have completed a Facilities Study (e.g. for interconnections at distribution-level voltage), or have "passed the Fast Track screens". On that basis, Arroyo's interpretation is that if the CAISO chooses to assess a proposed repower through the Independent Study Process rather than through the GIDAP, once the project has obtained an Initial Review or Supplementary Review stating that the proposed repower has passed all fast track screens, it has achieved the equivalent of a Phase II interconnection study. [REDACTED] had not accomplished this by the offer deadline [REDACTED]

[REDACTED]
Arroyo disagrees with PG&E's judgment and considers [REDACTED]

[REDACTED] to fail to conform to the requirements of PG&E's solicitation protocol and to the CPUC's Decision requiring that it have obtained the equivalent of a Phase II interconnection study. Having not passed ISP fast track screens by the offer deadline, [REDACTED] should have been rejected for non-conformance to the requirements of PG&E's solicitation protocol and the CPUC's ordering paragraph 10 in Decision 13-11-024, in Arroyo's opinion.

[REDACTED]

[REDACTED]

In Arroyo's opinion it would have been fairer for PG&E to reject [REDACTED] [REDACTED] Both projects propose to employ [REDACTED] technology but to use an interconnection agreement that was previously executed for a different fuel and technology altogether, while both projects failed to obtain the equivalent of a Phase II study to make a major modification to their interconnection agreements by the RFO deadline. To reject one Offer as non-conforming but to accept and shortlist the other Offer seems to Arroyo to constitute disparate and arguably unfair treatment.

[REDACTED]

TARDY OFFERS

PG&E set a deadline for the first round of Offer submissions of 1 p.m. PST on January 9, 2014. Three offer forms were submitted that afternoon later than 1 p.m.; one was submitted as an Adobe Acrobat .pdf file rather than as a Microsoft Excel file as required, and used the wrong offer form (for a REC-only proposal rather than for bundled Category 1 deliveries). PG&E chose to err on the side of inclusivity and accepted the tardy submittals; the developer using the wrong form eventually submitted a correct version several days late; this too was accepted. The issue of whether the late submittals failed to conform to the solicitation protocol was moot because none were selected for PG&E's short list.

D. REASONABLENESS AND FAIRNESS OF PARAMETERS AND INPUTS

Nearly all parameters and inputs that PG&E used in its evaluation of the 2013 RPS RFO Offers were reasonably and fairly chosen, in Arroyo's opinion. This includes assumptions for market pricing of energy and system RA capacity, for the value of buyer curtailment options, for the impact of debt equivalence, and for numerous other inputs.

Arroyo continues to have a concern that PG&E's use of its own approved cost of capital as the discount rate for valuing cash flows of independent power plants likely understates the riskiness of those cash flows and places excess weight on pricing in more years.

Also, Arroyo acknowledges that the utility faces challenges in selecting inputs to its methodology for valuing energy storage, because the method relies on projecting the value of flexible RA capacity and ancillary services products into distant years. Arroyo's opinion is that PG&E has made a fair and reasonable initial effort to estimate these parameters given today's knowledge but that in all likelihood the inputs selected have considerable estimation error and will need to be refined over time.

Arroyo disagreed with the input parameters that PG&E used in valuing proposals that would deliver power at the Palo Verde hub in Arizona; this is discussed below. Arroyo disagreed with assuming zero as the input for network upgrade costs for projects interconnecting to the Imperial Irrigation District grid, as described previously.

Arroyo suspects that PG&E's input assumptions for the market price of RECs that it used to value near-year REC-only Offers were higher than appropriate for these products. The REC forward curve was [REDACTED]; its values fell well above the pricing of three REC-only purchases PG&E transacted in 2013 for almost all years of those contracts' ten-year terms. It is also well above the prices of REC-only transactions or quotes reported publicly by municipal utilities such as Azusa, Palo Alto, and Turlock Irrigation District. [REDACTED]

[REDACTED] PG&E's recent transactions may be more representative of today's going price for unbundled RECs. If so, the use of these inputs to calculate net market value of unbundled RECs for near-term delivery may overstate the attractiveness of the shortlisted Category 3 Offers. Arroyo acknowledges the difficulty of making a forward curve for a product like unbundled RECs with very limited liquidity or transparency into prices of transactions.

PG&E has a variety of internal controls in place to ensure that its selection of inputs and parameters are reasonable and fair. The Energy Supply organization relies on a separate and independent risk management function for oversight of power market assumptions used in valuation, and on a corporate financial function for oversight on financial assumptions. The choice of parameters is described in internal nonpublic protocols. Some of the inputs are based on estimates made by the CEC and CPUC. Additionally, Arroyo had the opportunity to review the inputs to the valuation model in detail and to raise specific questions about or objections to inputs with the PG&E team as appropriate.

E. THIRD-PARTY ANALYSIS

In its 2013 RPS RFO, PG&E engaged the services of an external transmission expert with Flynn Resource Consultants Inc. to review submitted interconnection studies and interconnection agreements, to estimate appropriate transmission adders for use in the market valuation process, to assign projects to local areas for estimating congestion and loss

factors, and to score projects on the interconnection progress and transmission upgrade elements of the Project Viability Calculator. Both PG&E's evaluation team and the Arroyo spot-checked this outsourced content for quality control; no issues were identified.

F. TRANSMISSION COST ADDERS AND INTEGRATION COSTS

PG&E closely followed its public and nonpublic protocols in administering its procedures for transmission adders. The team relied on data from Phase II interconnection studies or interconnection agreements to estimate the cost of network upgrades for new projects. PG&E no longer uses Transmission Ranking Cost Reports as the basis for adders.

As stated in the discussion of PG&E's LCBF methodology, there is a narrow subset of cases in which Arroyo disagrees with how PG&E applies transmission cost adders.

- In Arroyo's opinion, transmission cost adders should be calculated and applied when valuing projects that interconnect within California outside the CAISO's balancing authority area. Arroyo considers the valuations of these PPAs to understate the full cost to society of power from the projects, and the evaluation methodology to be less than fully fair to competing projects that interconnect to the CAISO grid. PG&E ignored network upgrade costs that are borne by ratepayers of other balancing authority areas and do not directly affect the rates of PG&E customers.

PG&E's public and non-public protocols do not specifically address how to calculate transmission adders for new projects with non-CAISO delivery points, and do not explicitly call for excluding these transmission costs. However, the non-public protocol for market valuation specifies that transmission network upgrade costs will be subtracted in calculating Net Market Value. In future solicitations it would be better for the procurement plan and solicitation protocol to state explicitly that transmission adders will be set to zero for non-CAISO-interconnecting projects so that this element of the methodology is transparent to regulators and developers.

- In Arroyo's opinion, the lack of estimated LMP multipliers or congestion and loss factors for CAISO intertie points that fall outside the main body of the territory presents a gap in data inputs. In particular, Arroyo believes that PG&E should use a forward price curve for the Palo Verde trading hub rather than the SP-15 forward curve to value Offers that propose to deliver in central Arizona [REDACTED]

[REDACTED] One data source for forward price information suggests that the Palo Verde forward curve averages about \$6/MWh lower than SP-15 forwards for on-peak power, as observed in January 2014. Arroyo's concern is that projects that propose to deliver at points like Palo Verde are unfairly advantaged vs. projects assigned to recognized LMP zones; PG&E valued [REDACTED] as if it delivered at Rosemead in the heart of SP-15 rather than at the far fringe of the CAISO's grid. Projects interconnecting to peripheral outposts of the CAISO grid in other states should be evaluated with a recognition that average nodal prices there are on average

materially lower than those within the core of the CAISO due to congestion and losses.²³

With these narrow exceptions, Arroyo's opinion is that PG&E properly assessed and applied transmission adders to Offers. PG&E applied no integration cost adder to Offers, consistent with the CPUC's Decision approving the 2013 RPS procurement plans.

G. AFFILIATE PROPOSALS AND BUYOUT OR TURNKEY OFFERS

PG&E did not solicit Offers for utility buy-out or turnkey construction of projects for utility-owned generation from its 2013 RPS RFO, focusing instead on seeking Offers for Power Purchase Agreements or for unbundled RECs. No affiliates of PG&E submitted Offers so the issue of conflicts of interest in selecting proposals from affiliates did not arise.

H. PG&E'S USE OF ADDITIONAL CRITERIA AND ANALYSIS IN CREATING A SHORT LIST

PG&E's overall approach to creating a short list was to rank PPA Offers for delivery of bundled energy by Portfolio-Adjusted Value and to select highest-valued Offers. However, the choice of specific Offers for the short list was also strongly influenced by PG&E applying its seller concentration criterion and exercising the preference for projects sited within the utility's service territory that was stated in the solicitation protocol. Another factor that was not stated in the public solicitation protocol played a role in selection, however, suggesting that decision-making would be more transparent and more fair in future RFOs if PG&E were to disclose the consideration of such factors in its protocols.

1. COUNTERPARTY CONCENTRATION

PG&E named counterparty concentration as one of its evaluation criteria in the solicitation protocol for the 2013 RPS RFO. The utility invoked this criterion to limit the number of Offers for projects

[REDACTED]

[REDACTED] PG&E chose to reject [REDACTED]

²³ PG&E re-ran [REDACTED] using a Palo Verde forward curve as input and concluded that, [REDACTED] PAV would be lower using that forward curve, [REDACTED] still be valued above the marginal solar photovoltaic Offer selected for the short list.

[REDACTED] even though they rank higher in PAV than other selected solar photovoltaic Offers. Then PG&E selected an even lower-valued Offer [REDACTED]

2. RESOURCE DIVERSITY AND RPS GOALS

PG&E chose the individual highest-valued Offers of nearly all technologies for the short list: solar photovoltaic, wind, biomass, and geothermal. While [REDACTED] submitted that featured existing or proposed new [REDACTED]

²⁴

As a consequence, the Portfolio-Adjusted Values of the marginal selected Offers for each technology varied widely. [REDACTED]

[REDACTED] In other words, PG&E applied different standards for cutting off selection of different resources or fuels rather than applying a single value cutoff level below which all Offers would be rejected. In internal discussion, the PG&E team cited technology diversity as part of the rationale for selecting the highest-valued and high-viability biomass-fueled Offer and geothermal Offer.

This might appear to be a form of discrimination based on technology, to select a project using one technology while rejecting more than two dozen other Offers with higher valuation that employ another technology. If so, it would violate one of the examples of principles for evaluating IOUs' evaluation methodologies suggested by the Energy Division

²⁴ [REDACTED]

in its 2013 IE template: “The LCBF methodology should evaluate offers in a technology-neutral manner.”²⁵ The CPUC has stated that “IOUs are directed to evaluate bids for renewable energy using a transparent, technology neutral least cost / best fit methodology”.²⁶

In the case of selecting [REDACTED] biomass-fueled Offer, however, PG&E is invoking a publicly stated component of its RPS Goals evaluation criterion: “The RPS Goals evaluation will take into account the Offer’s support of the CPUC’s and Legislature’s RPS program benefits and goals and the state’s biomass energy goals”.²⁷ Attachment K of the solicitation protocol explicitly identifies as a consideration for selection an Offer’s support for the 20% goal for biomass-fueled energy production as a portion of the state’s renewable energy needs specified by Executive Order S-06-06. By placing a strong emphasis on this component of the RPS Goals evaluation criterion, in Arroyo’s opinion PG&E can justify its selection of a biomass-fueled project’s Offer while rejecting higher-valued competing Offers using other technologies.

In contrast, there is no specific component of the RPS Goals evaluation criterion that calls for a preference or desire for geothermal energy. PG&E previously had included “Resource Diversity benefits” as a component of its RPS Goals criterion, but dropped it beginning with the 2012 RPS solicitation after passage of Senate Bill X1-2.

However, PG&E could almost justify its selection of [REDACTED] by invoking the project viability criterion and the locational preference for projects in its territory. [REDACTED]

[REDACTED] can be considered to be superior in project viability to any proposed new project that has yet to be built, and preferred in location to projects sited in southern California. The numerous Offers rejected from PG&E’s short list that had higher valuations than [REDACTED] consisted almost entirely of proposed new solar photovoltaic and wind projects in PG&E’s territory or of existing wind projects sited in SP-15. Thus, by assigning a strong weight to project viability and locational preference PG&E could make a case for selecting the lower-valued [REDACTED], rather than relying solely on asserting a benefit for resource diversity

However, an exception is posed by PG&E’s rejection of [REDACTED] whose PAV was higher than [REDACTED]. For PG&E to reject an existing [REDACTED] with a high PAV and to select an existing [REDACTED] with lower PAV seems less than fully fair. To justify disparate treatment of two viable facilities in NP-15 seems to require PG&E to invoke resource diversity as an explicit evaluation criterion, when it was not stated publicly in the approved protocol or plan.

²⁵ California Public Utilities Commission, 2013 RPS Solicitation Shortlist Report Template: RPS Independent Evaluator (IE) Report Template – Standard Form, February 19, 2014, page 2.

²⁶ California Public Utilities Commission, “Progress of The California Renewable Portfolio Standard as Required by the Supplemental Report of the 2006 Budget Act”, Report to the Legislature, April 2007, page 6.

²⁷ Pacific Gas & Electric Company, Renewables Portfolio Standard: 2013 Solicitation Protocol, December 16, 2013, page 28.

Resource diversity was identified by the CPUC in Decision 04-07-029 as a qualitative attribute that could be used to justify moving a proposal onto an IOU's short list if "the initial bid rank should be within reasonable price proximity to those selected for the short-list" and if the utility consults with and receives support from its PRG for elevating the proposal. In the case of [REDACTED]

[REDACTED]
Arroyo considers these two to be within reasonable price proximity. PG&E reports that its PRG did not provide any feedback in opposition to [REDACTED]

On that basis, Arroyo's main disagreement with PG&E on its apparent use of the qualitative attribute of resource diversity to select the [REDACTED] is the utility's omission of resource diversity as an evaluation criterion in the solicitation protocol and RPS procurement plan. More transparency in communicating about how PG&E makes its selection decisions would be desirable. Arroyo's opinion is that either resource diversity should have been stated as a consideration for selecting a short list, or the [REDACTED] should have been both selected, or both rejected.

3. PROJECT VIABILITY

Overall, PG&E followed the methodology stated in its solicitation protocol:

"PG&E will evaluate the project viability of each offer using the June 2, 2011 CPUC adopted version of the PVC. Participants are requested to self-score each of their offers using the PVC...PG&E will review all submissions and adjust self-scores as appropriate."

The PG&E team used the Project Viability Calculator to score [REDACTED] projects considered for selection. PG&E left self-scores intact for low-PAV Offers rejected based on value. PG&E's decision that its team would not score the project viability of each and every Offer did not affect selection of a short list. All the shortlisted Offers were scored by the team.²⁸ Arroyo agrees that the task of scoring every Offer variant is tedious and burdensome, and that scoring the lowest-valued proposals for viability does not contribute much to the selection process.²⁹

PG&E performed data conformance checks on Offer variants it scored, including using outside data sources to confirm the accuracy of the scores. PG&E also assessed environmental risks, which have the potential to impair project viability if they could delay or prevent permitting; this environmental risk assessment is not part of the Project Viability

²⁸ [REDACTED]

²⁹ Arroyo independently scored at least one variant of each conforming Offer, in order to rank projects on their project viability when later reporting on the merit of specific executed PPAs for CPUC approval, as prescribed by the Energy Division's template for IE reports.

Calculator scoring. Only two projects, [REDACTED] were scored high for environmental risks, associated with potential impacts to special-status species. These projects were judged by PG&E as sufficiently viable to select for the short list given both the overall assessment of project viability and the utility's sense of the likelihood of successful permitting by their proposed on-line dates. [REDACTED]

Some Offers appear to have been rejected by the utility in part because of the low viability of a proposed project. The high viability of existing, operating projects currently delivering energy to PG&E provided support for the utility's decision to select proposals [REDACTED]

4. RPS GOALS

Appendix K to the solicitation protocol named three components of the RPS Goals criterion: adherence to legislative/regulatory direction, consistency with the CPUC's Water Action Plan, and support for Executive Order S-06-06 regarding biomass-fueled generation.

PG&E's evaluation team scored [REDACTED] for consistency with RPS goals, focusing on projects considered for shortlisting. All shortlisted Offers were deemed to be consistent with RPS goals, receiving either a zero or plus score.

5. DELIVERY POINT

PG&E stated in its 2013 solicitation protocol a preference for projects that deliver in PG&E's service territory. The calculation of Portfolio-Adjusted Value for each Offer included adjustments that reduce the estimates of value of projects located in SP-15 or outside the CAISO. Reviewing the Offers ranked highest for Net Market Value vs. those ranked highest for PAV, Arroyo believes that the short list contains significantly more projects that would deliver in NP-15 or ZP-26 and fewer in SP-15 than would have been the case had PG&E continued to use NMV as its key metric for valuing proposals. In that sense the adjustments to calculate PAV accomplished the intent of its design of incorporating PG&E's preference regarding siting in its service territory into a quantitative measure.

Figure 3.



PG&E went beyond the locational adjustment to valuations in its solicitation protocol to exercise a further preference for northern California projects. It selected [REDACTED]

[REDACTED]. In other words, PG&E apparently chose to select [REDACTED] out of strict value ranking because of its stated locational preference. Arroyo views

such a choice as within the range of reasonable judgment and discretion that a utility should be allowed to exercise, as long as its locational preference was transparent to Participants.

The short list is geographically diverse in project location. The proportion of shortlisted projects located in PG&E's territory [REDACTED] is lower than those for PG&E's 2012 RPS RFO [REDACTED] and 2011 RPS RFO [REDACTED]. Figure 3 displays the distribution of Offers received and shortlisted Offers by location of delivery point.³⁰ The representation of NP-15 projects on the short list is roughly proportional to the fraction of Offers for projects in NP-15, despite generally lower offer pricing for projects in SP-15 and IID's territory.

6. COMMERCIAL OPERATION DATE

Figure 4.



The solicitation protocol clearly stated PG&E's preference to select Offers that begin deliveries in 2020 or later. This preference aligns with the utility's current view of when its RPS portfolio will need increased deliveries to meet compliance goals.

Most Offer variants received proposed a 2020 on-line date. Several developers suggested their intent to bring projects into operation earlier than 2020 and to sell to other off-takers until deliveries to PG&E begin in 2020. Figure 4 displays a distribution of Offer variants by initial delivery date. Many of the proposals for on-line dates earlier than 2020 were for existing projects whose current contracts expire prior to 2020, or for variants of offers for which the developer was also willing to start deliveries in 2020 for another variant.

With one exception, the Offers for bundled renewable energy deliveries that PG&E selected for its short list proposed on-line dates in the 2020 to 2022 period. (The exception was a proposal for deliveries from [REDACTED])

[REDACTED] As previously described, the inputs to PG&E's valuation methodology tend to rank projects higher in value if they have a later on-line date, all else being equal. This led to a situation in which offer variants with a 2022 on-line date mostly ranked higher in value than variants with a 2020 on-line date.

The shortlisted REC-only proposals were offered for 2015 delivery start dates. For unbundled RECs, proposed pricing was a stronger driver of value than timing of deliveries, and the shortlisted offers suggested lower pricing for deliveries in 2015 than for later years.

7. SUPPLIER DIVERSITY

³⁰ [REDACTED]

One of the components of the RPS Goals evaluation criterion is whether an Offer will contribute towards PG&E's supplier diversity goals. The solicitation protocol states that

"It is the policy of PG&E that Women-, Minority-, and Disabled Veteran-owned Business Enterprises (WMDVBE) shall have the maximum practicable opportunity to participate in the performance of Agreements resulting from this Solicitation. PG&E encourages Participants to carry out PG&E's policy and contribute to PG&E's goal by reaching greater than 30% of all procurement with WMDVBEs... The Supplier Diversity evaluation will take into account the Participant's status as a WMDVBE, intent to subcontract with WMDVBEs, and the Participant's own Supplier Diversity Program."³¹

PG&E's evaluation committee scored Offers based on the submittal of Attachment L, a Supplier Diversity Questionnaire that the utility routinely uses in solicitations.

Among developers submitting to the 2013 RPS RFO, [REDACTED]

[REDACTED]³²
This selection appears to have been based primarily on the Offer's valuation ranking rather than on its score for supplier diversity. [REDACTED]

Only one Offer was scored as a "plus" for supplier diversity by PG&E. Six of the shortlisted Offers were scored as "minus" for supplier diversity. [REDACTED]

[REDACTED] It is possible that in the course of negotiations PG&E may convince these sellers to conform their PPAs to the utility's basic expectations for contributing to supplier diversity, as has been done in prior RPS contract negotiations.

8. ENERGY STORAGE

³¹ Pacific Gas and Electric Company, Renewables Portfolio Standard: 2013 Solicitation Protocol, December 16, 2013, page 28.

³² [REDACTED]

PG&E took into account its valuation of proposed energy storage components when calculating PAV. When deciding which Offers to select for the short list, the team took note of which proposals included variants with energy storage. [REDACTED]

9. REC-ONLY OFFERS

PG&E received conforming REC-only Offers from [REDACTED]

[REDACTED] PG&E chose to shortlist [REDACTED]

The utility views procurement to increase its bank of unbundled RECs as a useful means of managing around uncertainty in achieving RPS compliance over the next several years. The shortlisted REC Offers' levelized prices [REDACTED] fall well below PG&E's internal forward curve for unbundled RECs, [REDACTED]

One of the project developers [REDACTED] withdrew its RECs from consideration [REDACTED]

I. ANALYSIS OF PG&E'S SHORT LIST RESULTS

This section provides a review of instances in which Arroyo Seco Consulting disagreed with PG&E's decisions in the administration of its evaluation and selection methodology, and a discussion of the fairness of the decisions.

1. SOURCES OF DISAGREEMENT

Arroyo disagreed with some aspects of how PG&E applied its methodology:

- Imperial Irrigation District Transmission Adders. In Arroyo's opinion it would have been fairer to apply transmission adders for network upgrade costs in the Imperial Irrigation District's grid, even though those costs are not directly borne by PG&E ratepayers. In Arroyo's opinion, PG&E's methodology advantages projects within IID's territory whose net valuations are uncompetitive when full costs, including required grid upgrades, are taken into account. This disparate treatment seems less than fully fair. [REDACTED]

Arroyo acknowledges that PG&E's logic for its selection is sound if premised on the utility's sole focus on direct costs to PG&E ratepayers, because the deliveries from these projects to PG&E customers would be subsidized by IID ratepayers. Arroyo's concern here is that it is less than fully fair for an evaluation methodology to so strongly favor one class of projects (new IID-interconnecting generators) over another (new CAISO-interconnecting generators) and it seems undesirable from a public policy standpoint to select projects that are not the least-cost alternatives when all costs to society, including to IID customers in California, are considered.

- Valuation Model Inputs for Projects Delivering at Palo Verde. PG&E used forward curves for SP-15 as inputs to its valuation model when evaluating Offers for projects that would deliver their output at Palo Verde in central Arizona. Arroyo views this as inappropriate; one set of forward curve observations taken in the month after the offer deadline suggested that on-peak pricing at Palo Verde for the next seven years is about \$6/MWh below that of SP-15. PG&E's approach values energy deliveries [REDACTED] as if they were provided at Rosemead in the heart of Edison's service territory. Arroyo views this approach as overstating the Offers' values. [REDACTED]

[REDACTED] PG&E also ran its model using Palo Verde forward prices and concluded that use of those inputs would not have affected its choice [REDACTED].

- Offers Ranked Low for Project Viability. Arroyo ranked [REDACTED] in the bottom quartile among all Offers ranked for project viability, using the Project Viability

Calculator. On that basis Arroyo would not have selected these low-viability projects for the short list. However, Arroyo also acknowledges that PG&E is applying its business judgment to make a tradeoff between project viability and other attributes, and in general IOUs are given considerable latitude by their regulator to exercise their discretion on issues such as where to make tradeoffs about value and viability.

[REDACTED]

[REDACTED]

[REDACTED]

Arroyo ranked [REDACTED] in the bottom quartile in project viability among all Offers. [REDACTED]

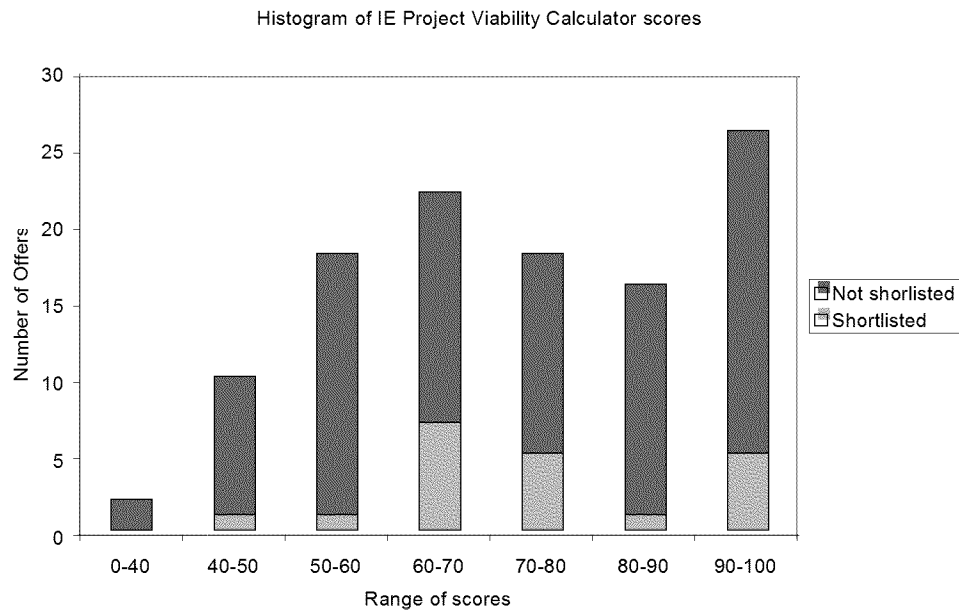
[REDACTED]

[REDACTED]

[REDACTED] In requiring a Phase II study or equivalent in Decision 13-11-024, the CPUC indicated that this requirement was “a reasonable approach to minimize project failure risk”. In Arroyo’s opinion the low viability score [REDACTED] illustrates how failure to obtain the equivalent of a Phase II study correlates with a higher risk of project failure.

Figure 5 displays a histogram of the independent scores Arroyo assigned to the projects offered in the RFO and to the shortlisted Offers. Most of the shortlisted proposals were scored above the median of all Offers, [REDACTED]

Figure 5.



[REDACTED]



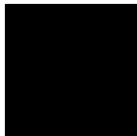
Figure 6 displays a histogram of levelized pre-TOD price. PG&E mostly picked Offers ranked in the lowest-priced quartile, [REDACTED]



RPS solicitations were intended to be competitive mechanisms to achieve least-cost solutions, without favor for any individual technology or fuel type. [REDACTED] creates an appearance that PG&E violated the principle of technology-neutral evaluation suggested in the IE template. [REDACTED]



Figure 6.



- Use of Resource Diversity as an Evaluation Criterion. PG&E appears to have used the qualitative attribute of technology or resource diversity as the basis to shortlist a [REDACTED] without having included resource diversity as a criterion in the RPS procurement plan or the solicitation protocol. Arroyo's opinion is that PG&E should have publicly stated that resource diversity would be a consideration in evaluating proposals, or should have selected the higher-valued, equally viable [REDACTED] for the short list, or should have rejected both [REDACTED]. Arroyo believes that PG&E would have been justified in selecting [REDACTED] if it had stated publicly that resource diversity would be applied as a qualitative attribute for selecting Offers as described in Decision 04-07-029.

2. INDEPENDENT OFFER ANALYSES

Arroyo conducted its own rather simplified valuation analysis. These valuations correlated well with PG&E's Net Market Value analysis, but with a fair amount of noise in the comparison. Arroyo also performed an independent review of project viability.

Overall, if Arroyo had used its valuation and viability scores to select a list, more Offers in SP-15 would have been chosen, both for solar and wind projects. Fewer Offers in NP-15 would have been chosen. [REDACTED]

[REDACTED] Projects that Arroyo scored below median for project viability would have been rejected: [REDACTED]. This simply reflects the strength of PG&E's preference for projects in its own service territory and its greater willingness to select low-viability proposals than Arroyo would have considered desirable.

3. RECTIFYING DEFICIENCIES OF REJECTED OFFERS

PG&E communicated early about offer deficiencies and provided Participants an opportunity to correct them by correcting submissions. None of these were rejected from consideration after corrections. In a few cases deficiencies were clearly beyond remedy:

[REDACTED]

In the case of Offers PG&E rejected for non-compliance with RFO requirements, Arroyo believes that little could have been done to help Participants rectify deficiencies.

[REDACTED]

4. OVERALL FAIRNESS OF ADMINISTRATION

Despite a few disagreements, Arroyo's opinion is that nearly all of PG&E's decisions to select or reject Offers to arrive at a short list were fair and reasonable. Arroyo believes that in most decisions, PG&E's preferences and its choices were within the realm of "reasonable business judgment" that the CPUC allows IOUs to exercise in energy procurement.

However, three specific choices PG&E made could arguably be considered unfair:

1. Not counting [REDACTED] network upgrade costs in its valuation while counting network upgrade costs for new projects interconnecting to the CAISO grid,
2. Selecting [REDACTED] while rejecting a higher-valued [REDACTED] Offer also in NP-15 and of comparable viability, apparently based on a desire for greater resource

diversity, when that qualitative attribute was not stated as part of PG&E's approved procurement plan or solicitation protocol, and

3. Shortlisting [REDACTED] while deeming [REDACTED] to be non-compliant to the requirements of the RFO, where in both cases a Participant proposed to use an existing interconnection agreement for a new project of different technology, and neither has obtained the equivalent of a Phase II interconnection study from the CAISO, which the CPUC ordered PG&E to make a requirement of this RFO.

Arroyo believes policymakers would need to make a subjective judgment about the issues surrounding these examples in order to conclude whether the principle of fair treatment was sufficiently compromised to merit rejecting these Offers. Arroyo's opinion is that the third example is a clearer case of unfair treatment than the first two.

J. IMPERIAL VALLEY OFFERS

PG&E received [REDACTED] for renewable generation either already operating in or proposed to be sited in the Imperial Valley, or 7% of the total number of conforming Offers for bundled RPS-eligible energy. These Offers totaled about 11% of total volume proposed. This response level for the Imperial Valley is less in absolute numbers and as a proportion of total proposals than in PG&E's last two RPS solicitations. Fewer developers with sites in the Imperial Valley participated in this year's RFO than previously. [REDACTED]

PG&E applied the same approach to evaluate these Offers as it did others other than not applying transmission adders to IID-interconnecting projects. Projects in the Imperial Valley comprise [REDACTED]

Overall, the response of the developer community to propose Imperial Valley projects was robust (though less so than in prior years) and PG&E's selection of Imperial Valley Offers was representative of that response. Arroyo perceives no evidence that PG&E failed in any way to perform outreach to generation developers and owners active in the Imperial Valley or that there was any structural impediment in the RFO process that materially hindered the selection of competitively priced Offers for projects in the Imperial Valley.

5. MERIT FOR CPUC APPROVAL

This chapter discusses whether PG&E's proposed short list merits CPUC approval.

A. FAIRNESS, CONSISTENCY WITH CPUC DECISIONS AND APPROVED METHODOLOGY

Arroyo's opinion is that PG&E's conduct of its 2013 RPS solicitation was, overall, conducted in a manner that was fair to ratepayers and competing developers and consistent with Commission decisions and with PG&E's approved LCBF methodology. Most shortlisted Offers rank high in value and moderate or high in viability; nearly all of PG&E's evaluation and selection decisions closely followed its approved methodology. In Arroyo's opinion there were only a few specific lapses in fairness and consistency worth identifying:

- Arroyo's opinion is that ignoring network upgrade costs when valuing projects interconnecting with the grids of non-CAISO balancing authority areas is less than fully fair to projects interconnecting within the CAISO. Arroyo is unsure whether [REDACTED], which benefited from not having its [REDACTED] upgrade costs counted in PG&E's valuation, merits selection given the substantial impact such costs should have on its competitiveness against projects in the CAISO.
- PG&E's decisions to accept [REDACTED] as conforming to RFO requirements and to shortlist it appear to be inconsistent with Decision 13-11-024, which ordered PG&E to require a Phase II interconnection study or its equivalent of offered projects. Arroyo's opinion is that the limited progress [REDACTED] made toward analysis of a major modification of an existing interconnection agreement of [REDACTED] does not meet the specific requirement for a "completed CAISO repowering assessment" described in PG&E's 2013 RPS procurement plan as the equivalent of a Phase II study, so the Offer should have been rejected as non-conforming.³⁴
- PG&E appears to have used the qualitative attribute of resource diversity to justify selecting [REDACTED] while rejecting a higher-valued, equally viable Offer [REDACTED]. If so, this is inconsistent with PG&E's approved 2013 RPS procurement plan and solicitation protocol, which did not include resource diversity as an evaluation criterion. Arroyo's opinion is that PG&E would have been justified in using resource diversity as a qualitative attribute to select [REDACTED] while rejecting [REDACTED] but if so

³⁴ Pacific Gas & Electric Company, Pacific Gas and Electric Company's (U 39 E) Final 2013 Renewable Energy Procurement Plan, December 4, 2013, page 85.

should have included it as an evaluation criterion in both the plan and the protocol.

B. BEST OVERALL VALUE

Because PG&E's initial screening of Offers focused primarily on their ranking in Portfolio-Adjusted Value, the final short list is mostly composed of high-valued Offers that in aggregate can provide attractive value to ratepayers. The aggregate value of the short list would have been even higher if PG&E had not rejected some Offers based on concerns about seller concentration, consistent with its approved solicitation protocol. [REDACTED]

[REDACTED]

Arroyo opines that PG&E's choices to reject high-valued Offers and to select smaller, lower-value variants rather than larger ones were justified by the use of the seller concentration criterion.

PG&E's choice to augment its short list with lower-valued Offers ranked high for evaluation criteria other than market value, instead of continuing to select the next highest-PAV Offers, also tended to reduce the value of the short list slightly. [REDACTED]

[REDACTED]

If PG&E had not chosen a methodology with adjustments disfavoring projects outside its service territory, the net market value of the short list would have been higher. By rejecting lower-priced, higher-NMV projects such as [REDACTED] in SP-15 and selecting higher-priced, lower-NMV projects such as [REDACTED] in NP-15, PG&E increased the average pricing and decreased the aggregate NMV of its short list. However, the Portfolio-Adjusted Value methodology that PG&E employed was approved for use by the CPUC, and Arroyo agrees that a utility should be able to reasonably exercise its preference for new generation to be built within its service territory.

C. CONFORMANCE TO NEEDS

Overall, the short list conforms quite well to PG&E's RPS compliance needs in the timing of deliveries in periods when the utility's portfolio is expected to be short of RPS

deliveries. Negotiating PPAs with some of the selected Offers should advance the utility towards meeting its RPS compliance goals in 2020 and beyond. The list would be expected to lead to high-value executed contracts that bring the state closer to meeting RPS goals at lowest or low cost given the current state of the renewable market.

It is less clear whether the short list fits well with PG&E's supply portfolio in more traditional measures such as contributing to filling net energy needs in time of day or season. Much of the short list is made up of new solar and wind projects that might contribute in the long term to heavier reliance on intermittent resources that could raise integration costs and to greater needs for ramping resources in spring and summer afternoons. Only a modest portion of the short list would provide firm generation and none of the shortlisted Offers are for dispatchable contracts, though all provide some degree of buyer curtailment option.

Also, it seems unlikely that the shortlisted REC-only Offers would meet any immediate compliance need. PG&E anticipates using deliveries of unbundled RECS in this decade as a tool for managing through uncertainty to comply with RPS requirements in 2020 and later. Acquiring these RECs would contribute to overprocurement in this decade and would incur some carrying costs if as anticipated these RECs are banked for much later use. Whether this is a cost-effective strategy will depend on the specifics of any transaction.

The short list, overall, conforms well to PG&E's 2013 RPS procurement plan and protocol. With a total volume of [REDACTED] of bundled energy proposals shortlisted, the utility should have a good opportunity to negotiate and execute the goal of up to 1,500 GWh/year of new long-term contracts. Most of the shortlisted Offers are for Category 1 deliveries, identified as preferred products in the plan. Most of the shortlisted Offers are existing, generating resources or have obtained their Phase II interconnection studies, stated as a requirement in the plan. [REDACTED]

The procurement plan states that "the offers selected will have the best combination of market value, Portfolio Adjusted Value (PAV), viability, and qualifications, based on the evaluation criteria". While this is generally true, the short list includes one Offer that ranks in the second quartile for PAV [REDACTED] and two that rank in the third quartile [REDACTED]). Arroyo would characterize these as ranking moderate rather than high in PAV. However, PG&E appears to have selected [REDACTED] based both on [REDACTED] the RPS Goals criterion [REDACTED]) and [REDACTED] high viability. [REDACTED] appears to have been selected based on high viability and contribution to technology diversity.

Arroyo does not view the moderate-PAV [REDACTED] as having any other attributes cited in the procurement plan such as viability, qualifications, or any other publicly stated evaluation criteria that would justify its selection.³⁵ On that basis, the

³⁵ PG&E scored [REDACTED]

(Footnote continued)

selection of [REDACTED] does not appear to Arroyo to be consistent with the text of PG&E's 2013 RPS procurement plan. Arroyo acknowledges that PG&E's and policymakers' opinions about how much viability risk is appropriate to take in shortlisting projects may vary widely, and that the passage of time should improve the project's viability profile.

Overall, PG&E followed the methodology described in its solicitation protocol to select a short list. While Arroyo disagreed with some selection decisions, PG&E's decisions were fully consistent with the protocol other than the exceptions cited here and above.

Arroyo's opinion is that PG&E's short list, other than the key exception of [REDACTED] [REDACTED] which Arroyo believes does not conform to the requirements of Decision 13-11-024 and PG&E's 2013 RPS procurement plan, [REDACTED] [REDACTED] merits CPUC approval. PG&E selected mostly high-PAV Offers while focusing on proposals that would begin deliveries in years when PG&E currently expects to have a short position. To the extent PG&E selected Offers ranking moderate in value, the utility can justify nearly all its choices based on its preference for projects sited in its service territory and on high rankings for viability. [REDACTED] [REDACTED] are exceptions, but Arroyo would characterize these two shortlisted Offers as subject to differences of opinion about project viability and about how unfair the disparate treatment of a higher-valued rejected Offer was, respectively, as opposed to a disagreement about the basic eligibility of a project to participate in the RFO given the specific requirements ordered by a CPUC Decision.

[REDACTED]

6. DETAILS ON THE SHORT LIST

Figures 7 and 8 display the breakdown of total Offers and shortlisted Offers by renewable technology.

Figure 7.

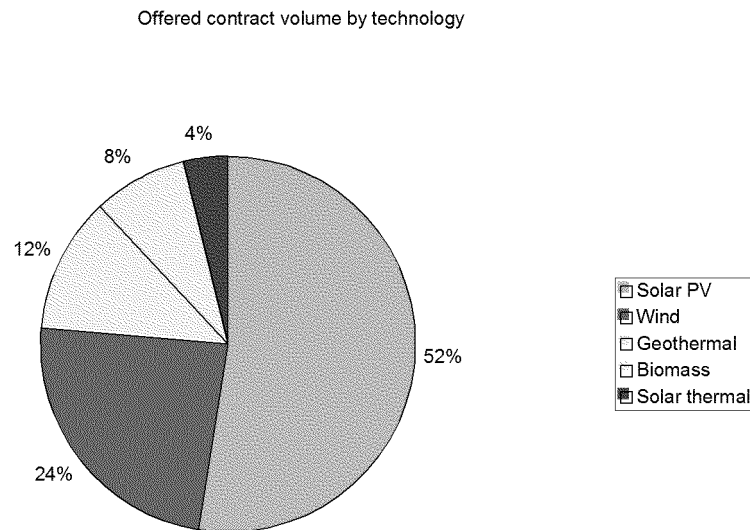


Figure 8.



Figure 9 illustrates the trend in median and minimum Offer variant prices proposed to PG&E in the last few RPS solicitations.³⁶ The substantial decline in median offered price in prior years has leveled off. Within this overall trend, however, some developers have continued to reduce proposed pricing for individual projects from prior years, while others have increased their offered prices substantially.

Figure 9.

³⁶ The data plotted for PG&E's 2011 RPS RFO exclude a set of very low-priced proposals for a wave-driven generation technology that PG&E and Arroyo agreed was likely to be non-viable.

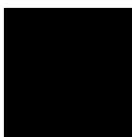


Table 1 summarizes PG&E's short list.

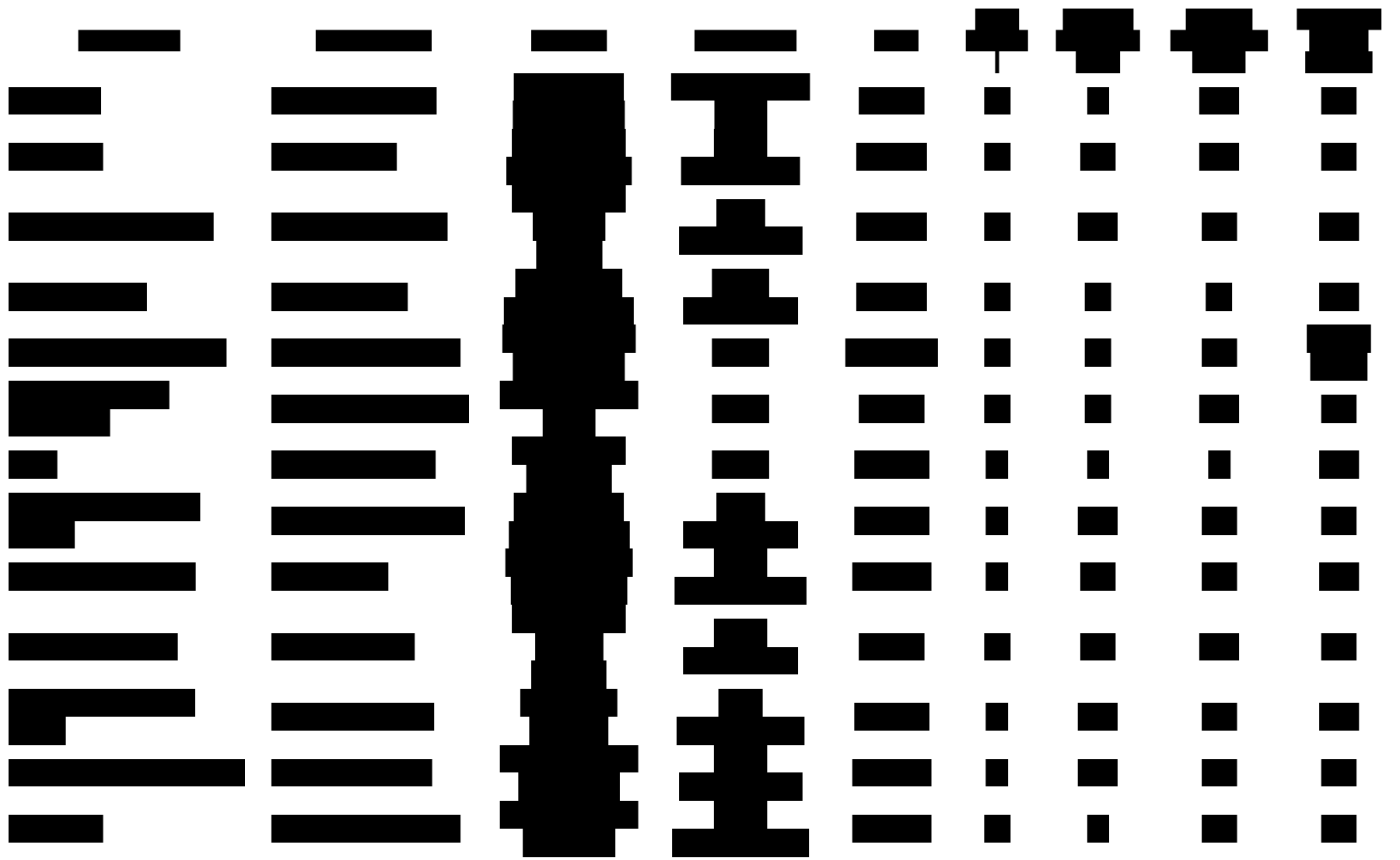
Table 1. PG&E's proposed short list

[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]

37 [REDACTED]



A-2



Section 3
Least-Cost Best-Fit Report
PUBLIC



April 21, 2014

Section 3. Least-Cost Best-Fit Report (Public)

I. Introduction

A. Note relevant language in statute and CPUC decisions approving LCBF process and requiring LCBF Reports

Section 399.13(a)(4)(A) of the California Public Utilities Code requires the CPUC to adopt a “ process that provides criteria for the rank ordering and selection of least-cost and best-fit eligible renewable energy resources to comply with the California Renewables Portfolio Standard Program obligations on a total cost basis.” The statute also sets forth the following factors that must be taken into account in the LCBF process:

(i) Estimates of indirect costs associated with needed transmission investments and ongoing electrical corporation expenses resulting from integrating and operating eligible renewable energy resources.

(ii) The cost impact of procuring the eligible renewable energy resources on the electrical corporation's electricity portfolio.

(iii) The viability of the project to construct and reliably operate the eligible renewable energy resource, including the developer's experience, the feasibility of the technology used to generate electricity, and the risk that the facility will not be built, or that construction will be delayed, with the result that electricity will not be supplied as required by the contract.

(iv) Workforce recruitment, training, and retention efforts, including the employment growth associated with the construction and operation of eligible renewable energy resources and goals for recruitment and training of women, minorities, and disabled veterans.

Decision (“D.”) 03-06-071 and D.04-07-029 adopted criteria for the rank ordering and selection of least cost, best fit renewable resources for use in Renewables Portfolio Standard (“RPS”) solicitations. In addition, D.05-07-039 directed the Investor-Owned Utilities (“IOUs”) to make their bid evaluation process transparent to their Procurement Review Groups (“PRG”) and the California Public Utilities Commission (“Commission”).

In D.06-05-039, the Commission required “each utility to provide a report when it submits its short list of bids. Each utility should also serve a copy on the service list, and make the report available to the fullest extent possible to any other person or party expressing interest, subject to confidential treatment of protected information. The report shall explain each utility’s evaluation and selection model, its process, and its decision rationale with respect to each bid, both selected and rejected.” D.06-05-039 also required each IOU to hire an Independent Evaluator (“IE”) “to separately evaluate and report on the IOU’s entire solicitation, evaluation and selection process for this and all future solicitations. This will serve as an independent check on the process and final selections. The Independent Evaluator’s preliminary report should be provided with the IOU’s shortlist, and a final report with the Advice Letter (“AL”)

for approval of selected bids.” D.06-05-039 further required that each IOU include certain elements, subject to confidential treatment of protected information, in each report. These elements include bid-specific price information, the evaluation and scoring of each bid, and the decision rationale with respect to each bid, both selected and rejected.

The Scoping Memo for Resolution (“R.”) 06-05-027, issued August 21, 2006, required the IOUs to submit their first written report describing their bid evaluation criteria and selection process on September 29, 2006. In the RPS Transparency Workshop held on December 15, 2006, the Commission’s Energy Division staff proposed, pursuant to D.06-05-039, a template to be used for future evaluation criteria and selection reports (“LCBF Written Report”).

On February 19, 2014, the CPUC’s Energy Division provided templates to PG&E for use in preparing this and the other attachments to this Advice Letter.

B. Describe goals of IOU’s offer evaluation and selection criteria and processes

The goal of the 2013 RPS Solicitation bid evaluation and selection criteria and processes is to produce a shortlist of viable, competitively priced offers for negotiations which will ultimately result in renewable energy procurement of up to 1,500 gigawatt hours (“GWh”) of PG&E’s load.

1. Provide the procurement target (“need”) for this solicitation (e.g. 1,500 GWh)

The procurement target for this solicitation is up to 1,500 GWh.

2. Describe how “need” was determined for this solicitation. Comment specifically on whether, and to what extent, you considered other procurement options (e.g. UOG, solar PV program, feed-in tariffs, RAM, etc.), total energy portfolio needs, and other utility requirements to meet IOU’s overall need stated in its Procurement Plan.

PG&E’s goal for its 2013 RPS RFO was to add to its RPS portfolio up to 1,500 GWh per year of RPS-eligible deliveries through long term contracts. This goal was additional and incremental to any volumes PG&E has procured or intends to procure through the Renewable Auction Mechanism (“RAM”) program, Renewable Market Adjusting Tariff (“Re-MAT”) programs, the Qualifying Facility (“QF”) program, and PG&E’s Photovoltaic (“PV”) program. To determine its “need” from the 2013 RPS Solicitation, PG&E employed a deterministic approach, consistent with the Energy Division Staff methodology for calculating the renewable net short (“RNS”), to develop a forecast of RPS-eligible deliveries from its existing portfolio that risk-adjusts

for potential project failures or delays. The results from this RNS are provided in Appendix 1 of PG&E's 2013 Renewable Energy Procurement Plan.¹

In addition to calculating an RNS based on the Energy Division Staff methodology, PG&E also monitors an *Alternate* RNS. The *Alternate* RNS provides the same calculations as the RNS but substitutes PG&E's internal long-term bundled retail sales forecast for the assumptions provided in the August 2, 2012 ALJ Ruling. Results from the *Alternate* RNS are provided in Appendix 1A of the 2013 Renewable Energy Procurement Plan.²

3. Explain any assumptions made regarding expiring projects, projects under contract but not online, projects still shortlisted from previous solicitations, bilaterals under negotiation, and distributed generation programs (e.g. RAM, solar PV program, etc.).

Given that the 2013 RPS RFO "need" is based on the results of the RNS calculations provided in PG&E's 2013 Renewable Energy Procurement Plan, all project and portfolio assumptions are consistent with PG&E's Renewable Net Short modeling assumptions from Appendix 3 of PG&E's 2013 Renewable Energy Procurement Plan. These assumptions are summarized in the following table.³

¹ See PG&E 2013 Renewable Energy Procurement Plan, Appendix 1. December 4, 2013.

² *Id.*, Appendix 1A.

³ *Id.*, Appendix 3.

TABLE 1
PG&E's Renewable Net Short Modeling Assumptions

	Assumptions
Signed Contracts	<ul style="list-style-type: none"> All signed contracts are assumed to deliver at 100% of contract volumes, and deliveries start at current best estimate of commercial operation date, or expected commercial operation date ("ECOD").
Operational Projects <i>Contracts Executed Post-2002</i>	<ul style="list-style-type: none"> Forecast is based on contract volumes or a blended three year average output (for projects with at least a full calendar year of deliveries, PG&E averages annual contract quantities with actuals if more than 12 months of actual delivery data is available). Year 2013 deliveries: Recorded meter data replaces forecasted deliveries for all projects as it becomes available.
Baseline Non-Hydro <i>Pre-2002, QF Contracts</i>	<ul style="list-style-type: none"> PG&E forecasts non-hydro QF projects at 95% of their 3-year average output, with the slight reduction based on the observation that, for a variety of reasons, these older resources (as a portfolio) have tended to under-deliver when compared to their average historical performance. Year 2013 deliveries: Recorded meter data (as available) replaces forecasted deliveries for all projects.
Baseline Small Hydro <i>Pre-2002 QF, Irrigation District, and legacy utility-owned assets</i>	<ul style="list-style-type: none"> Projects are forecast at 76% of normal for 2013 (based on PG&E's latest internal hydro delivery forecast), and 100% of normal for future years. Year 2013 deliveries: Recorded deliveries are used in place of forecasts as they become available.

<p>Re-contracting</p>	<ul style="list-style-type: none"> • For the following reasons this risk-adjusted forecast does not assume that expiring volumes are retained: <ol style="list-style-type: none"> 1. PG&E does not yet have contractual commitments for these expiring volumes; 2. A number of the expiring contracts are with aging generating facilities with limited remaining useful life; 3. Contract-renewal bids may not be competitive with offers for new projects received in the current or future solicitations; and 4. Assuming re-contracted volumes obscures PG&E's current real need for additional energy in later years. • Re-contracting is not precluded by this assumption, but rather it reflects that re-contracting will be considered in the future side-by-side with procurement of other new resources. • This forecasting methodology (i.e. not assuming any re-contracting) is consistent with PG&E's Annual RPS compliance filing that only shows PG&E's current contractual commitments.
<p>Shortlisted Projects</p> <p><i>From 2012 Solicitation or Bilateral Offer⁴</i></p>	<ul style="list-style-type: none"> • No shortlisted projects are included in PG&E's forecast. • Only executed contracts, or generic deliveries from pre-approved procurement programs (i.e., PV Program, RAM, and Feed-in Tariffs) are included in PG&E's forecast.
<p>Future Volumes from Pre-Approved Programs</p>	<p style="text-align: center;">Feed-in Tariffs</p> <p style="text-align: center;">E-SRG, E-PWF (AB 1969 FIT)</p> <ul style="list-style-type: none"> • All deliveries from executed contracts are assumed at 100% of contract volumes. • Annual energy volumes (for non-operating projects) are modeled based on PG&E's best estimate for project

⁴ These assumptions reflect PG&E's RNS provided in the 2013 Renewable Energy Procurement Plan, which did not include shortlisted projects from either the 2012 RPS RFO or 2013 RPS RFO Solicitations.

start dates/initial energy delivery date.

ReMAT

- Modeled start date for generic volumes assumed to begin 3/1/2016 and ramp up linearly until 1/1/2018, reaching a total of ~118 MW.

SB1122 (Bioenergy Feed-in Tariff Program)

- Modeled start date for generic volumes assumed to begin 7/1/2016 and ramp up linearly until 5/1/2018, reaching a total of 110 MW.

Renewable Auction Mechanism (Remaining Capacity)

- For planning purposes PG&E assumed a project start date equal to 5/1/2016.
- Technology mix assumed to be 10 MW of baseload, 10 MW of as-available non-peaking, and 85 MW of as-available peaking.
- All deliveries from executed contracts are assumed at 100% of contract volumes.

PV Originally Authorized for PG&E Photovoltaic Program

- Consistent with PG&E's request in Advice Letters 4160-E and 4161-E, PG&E assumed that the Renewable Auction Mechanism accommodates the remaining 252 MW of PG&E's PV Program volumes.
- For planning purposes, PG&E assumed that 52 MW starts on 1/1/2017, 100 MW on 1/1/2018, and 100 MW on 1/1/2019 (30 months from contract approvals in 7/1/2014 through 7/1/2016, respectively).
- All deliveries from executed contracts are assumed at 100% of contract volumes.

<p>Compliance Period Procurement Quantity Requirements</p>	<p>As implemented by D.11-12-020, SB 2 1X requires retail sellers of electricity to meet the following RPS procurement quantity requirements beginning on January 1, 2011:</p> <ul style="list-style-type: none"> • An average of twenty percent of the combined bundled retail sales during the first compliance period (2011-2013). • Sufficient procurement during the second compliance period (2014-2016) that is consistent with the following formula: $(.217 * 2014 \text{ retail sales}) + (.233 * 2015 \text{ retail sales}) + (.25 * 2016 \text{ retail sales})$. • Sufficient procurement during the third compliance period (2017-2020) that is consistent with the following formula: $(.27 * 2017 \text{ retail sales}) + (.29 * 2018 \text{ retail sales}) + (.31 * 2019 \text{ retail sales}) + (.33 * 2020 \text{ retail sales})$. • 33 percent of bundled retail sales in 2021 and all years thereafter.
<p>Bundled Retail Sales RNS</p>	<ul style="list-style-type: none"> • Forecasts of retail sales for the first five years of the forecast are generated by PG&E's <i>Load Forecasting and Research</i> team every January, and may be updated throughout the year as additional data becomes available. • Forecasts of retail sales beyond the first five years are sourced from the 2010 LTPP sales forecast, per the August 2, 2012 ALJ Ruling in R.11-05-005 regarding the methodology for calculating the renewable net short. • Monthly recorded sales replace forecasts as 2013 progresses.
<p>Bundled Retail Sales <i>Alternate RNS</i></p>	<ul style="list-style-type: none"> • Forecasts of retail sales are generated by PG&E's <i>Load Forecasting and Research</i> team every January, and may be updated throughout the year as additional data becomes available. • Monthly recorded sales replace forecasts as 2013 progresses.
<p>Banking</p>	<ul style="list-style-type: none"> • PG&E assumes that (1) Category 3 products that do not exceed applicable portfolio content limits are not deducted from bankable volumes, (2) grandfathered (pre-June 1, 2010) short-term products are bankable, and (3) that volumes banked before December 31, 2020 may be applied in any post-2020 period. • PG&E's accounting is consistent with the direction set forth in Decision 12-06-038.

4. If size of shortlist is not equivalent to determined need, provide a detailed explanation of why it differs.

The shortlist is larger than the procurement goal for the RFO. PG&E shortlists bids representing greater volumes of energy than its RFO goal for several reasons. First, not all shortlisted bids will result in an executed contract. Second, PG&E's experience is that different counterparties are willing to negotiate more readily, and on quicker timetables, than others. Third, it is in customers' interest that projects continue to be competitive throughout the negotiation process. If a bidder withdraws, delays, or refuses to agree to reasonable terms, PG&E is able to turn to other counterparties on the shortlist and still attain its RFO goal.

II. Offer Evaluation and Selection Criteria

A. Description of Criteria

1. List and discuss how the quantitative and qualitative criteria were applied to evaluate and select offers. This section should include a full discussion of the following items, but it should not be a copy of the protocol:

a. Net Market Valuation

- energy
- resource adequacy / capacity
- integration costs
- congestion cost adders
- transmission cost adders

b. Portfolio-Adjusted Value (Location, RPS Portfolio Need, Energy Firmness, Curtailment)⁵

c. Portfolio fit

d. Credit and collateral requirements

e. Project Viability

f. Other qualitative criteria/ preferences (e.g. seller concentration, supplier diversity, etc.)

Solicited bids were evaluated based on the criteria listed above. The following discussion describes each criterion in more detail.

a. Market Valuation

⁵ Please note, PG&E added subsection II.A.b ("Portfolio-Adjusted Value (Location, RPS Portfolio Need, Energy Firmness, Curtailment") to the Least-Cost Best-Fit Process Overview template. PG&E was approved to utilize PAV as an evaluation criteria in the 2013 RPS Plan Decision (D.13-11-024) therefore it has been included within this analysis.

- Overview of the Market Valuation Criterion

Market valuation considers how an Offer's costs compare to its market benefits. Costs include estimated transmission network upgrade costs, congestion costs, integration cost, and contract payments. Benefits include energy, capacity, and ancillary services values. Each of these components is described more fully below. Consistent with CPUC D.12-11-016, Net Market Value ("NMV") is computed according to the following formula:

$$\text{Net Market Value: } R = (E + C) - (P + T + G + I)$$

$$\text{Adjusted Net Market Value: } A = R + S$$

Where

E = Energy Value

C = Capacity Value

P = Post-Time-Of-Delivery ("TOD") Adjusted Power Purchase Agreement ("PPA") Price

T = Transmission Network Upgrade Cost

G = Congestion Costs

I = Integration Costs

S = Ancillary Service Value

Costs and benefits are each quantified and expressed in terms of discounted dollars per megawatt per hour ("MWh"). NMV is benefits minus costs, and is expressed in terms of discounted dollars per MWh.

- Calculation of Benefits and PPA Costs

Energy benefit (E), for each hour of delivery, is the quantity of energy delivery for an hour multiplied by the forward energy price at the corresponding Trading Hub (NP15, SP15, or ZP26), adjusted for losses for that hour. The quantity of energy delivery for each hour is determined by the hourly generation profile of the Offer. If an Offer includes energy storage that allows PG&E to schedule the discharge from the storage component, the energy benefit also includes the additional value that PG&E may receive from being able to shift the RPS energy from the Project to more valuable hours given the constraints of the energy storage.

Losses vary by location of the project and are assessed using the Locational Marginal Price ("LMP") Multipliers. The LMP Multipliers are provided in Table 1. The average Loss Multipliers for On-peak and Off-peak are provided in Table 1. A higher Loss Multiplier implies less loss, thus more value associated with a project located in the corresponding load zone.

Discounted hourly energy benefit is summed across hours of delivery, and summed across years. The total discounted benefit is then divided by total MWh of energy and expressed in terms of discounted dollars per MWh.

For offers providing Buyer Curtailment, **energy benefit** includes the expected value of the difference between the (presumably negative) wholesale market spot price avoided when Buyer Curtailment occurs and the contractual payments to the Seller when Buyer Curtailment occurs.

Capacity benefit (C) for Resource Adequacy (“RA”), for year of availability, is the projected monthly quantity of qualifying capacity multiplied by the projected monthly capacity price, discounted and summed across years. To the extent that an Offer provides flexible capacity that is expected to count for flexible RA and provide the ISO’s must-offer requirement for flexible capacity, resources were evaluated at the projected monthly premium (which can be zero or positive) for flexible RA and then added to the capacity benefit. The total discounted capacity benefit is then divided by total MWh of energy and expressed in terms of discounted dollars per MWh. There currently exists significant uncertainty regarding design of RA markets in California, especially for delivery years beyond 2015. Therefore, the calculation of capacity benefit may evolve as more information is known about market design or as uncertainty lingers.

Ancillary Services benefit (A/S) assumed to be zero if an Offer does not provide any ancillary services (“A/S”) capability. For Offers that provide PG&E the ability to schedule Ancillary Services, the incremental benefit of having A/S capability will be captured, not to be double counted with the energy benefit.

PPA Payments (P) are the expected payments under each Offer including associated debt equivalence costs. For forward contracts, an Offer’s price for each hour is multiplied by the appropriate TOD factors if applicable, as specified in the 2013 RPS Solicitation Protocol. The PPA Payment for each hour is then calculated by multiplying expected delivery quantity to the Offer’s price. The discounted hourly PPA Payment is summed over the contract term and then divided by the total MWh to be expressed in units of discounted dollars per MWh.

– **Calculation of Transmission Network Upgrade Costs**

The Transmission Network Upgrade Costs (T) is the projected cost, if any, of bringing the power from the generating facility to PG&E’s network. For the 2013 RPS RFO, Participants were required to have at least a Phase II

interconnection study, or equivalent, to bid into the RFO. PG&E required Participants to submit the latest interconnection study, or interconnection agreement, with each offer. PG&E also requested supplemental transmission information from developers for each Offer. This information included the proposed project's current interconnection queue position and form of interconnection applied for (e.g. energy only vs. full capacity deliverability status), application status and expected timing for execution of any interconnection agreements, and transmission provider. Details of the current or proposed interconnection were requested for the projects, including voltage level, transmission or distribution service level, transmission line, and interconnecting substation.

If the proposed Project is located outside the CAISO-controlled grid and offered delivery outside the CAISO grid, the Seller was asked to deliver the energy onto or to an intertie with the CAISO grid. PG&E accepted offers for power at a CAISO interface point from projects that interconnect within a non-CAISO control area. Since these projects do not go through the CAISO interconnection process and are not assigned network upgrades, PG&E assumed the transmission adder is zero. For example, projects interconnecting to another control area go through an interconnection process where the generation facility is located (*e.g.*, Imperial Irrigation District "IID"). The Seller is responsible for paying any upgrade costs with its interconnecting utility and all transmission costs to get to the CAISO. Since these costs are built into the offer price, PG&E did not assign additional transmission costs.

PG&E used results from Participants' completed Phase II interconnection studies or equivalent to calculate the transmission cost as described below.

A Present Value Revenue Requirement (PVRR) is calculated from the interconnection study for each evaluated bid. If the Seller is offering an energy-only resource, PG&E uses the reliability network upgrades identified in the interconnection study for calculation of the transmission adder. If the Seller is offering a full deliverability resource, PG&E used both the reliability network upgrades and delivery network upgrades in the calculation.

The Present Value Revenue Requirement ("PVRR") captures from a ratepayer perspective the risk and cost to construct and maintain transmission upgrades to accommodate the generation from the renewable resource.

This PVRR of the costs of the Network Upgrades is converted into discounted dollars per MWh by dividing the PVRR by the total MWh.

- **Congestion Costs**

Congestion cost (G) for each hour is calculated by multiplication of 1) a Congestion Cost Multiplier for the corresponding time period and load zone, 2) the LMP of the corresponding Trading Hub, and 3) expected energy delivery. The hourly congestion costs are discounted over the contract period

and then divided by the total expected energy quantity MWh to arrive at the Congestion Cost in discounted dollars per MWh.

A summary of Congestion Cost Multipliers for each load zone is included in Table 1. A higher Congestion Cost Multiplier indicates a higher Congestion Cost (G). Specifically, a Congestion Cost Multiplier greater than zero indicates that generation in the corresponding area serves load outside of the area by congested lines and thus a new generator in the corresponding area is expected to increase the congestion. A zero Congestion Cost Multiplier implies there is no congestion in the transmission lines connecting the area. A Congestion Cost Multiplier less than zero indicates that loads in the corresponding area are served by the constrained transmission line(s) and thus a new generation in the area may reduce congestion.

TABLE 1
Congestion Cost Multipliers and Loss Multipliers¹

	Descriptive Names	CAISO APNodes	Loss Multipliers		Congestion Cost Multipliers		LMP Multipliers	
			for E		for G		for E-G	
			On Peak	Off Peak	On Peak	Off Peak	On Peak	Off Peak
1	PG&E Central Coast	PGCC	103.9%	102.2%	3.5%	2.6%	100.4%	99.6%
2	PG&E East Bay	PGEB	103.3%	101.5%	3.5%	1.9%	99.8%	99.6%
3	PG&E Fresno	PGF1	103.8%	103.7%	2.4%	0.2%	101.4%	103.5%
4	PG&E Fulton Geysers	PGFG	102.8%	100.1%	3.9%	2.0%	98.9%	98.2%
5	PG&E Humboldt	PGHB	105.2%	106.1%	3.7%	1.7%	101.5%	104.4%
6	PG&E Los Padres	PGLP	101.5%	99.7%	3.7%	2.1%	97.7%	97.6%
7	PG&E North Bay	PGNB	103.3%	101.0%	3.8%	1.9%	99.5%	99.1%
8	PG&E North Coast	PGNC	104.2%	100.1%	4.9%	2.3%	99.2%	97.7%
9	PG&E North Valley	PGNV	98.9%	98.6%	3.1%	1.6%	95.8%	97.0%
10	PG&E Peninsula	PGP2	104.4%	102.3%	3.6%	1.9%	100.8%	100.5%
11	PG&E Sacramento Valley	PGSA	101.4%	100.6%	2.3%	1.4%	99.1%	99.2%
12	PG&E South Bay	PGSB	104.0%	102.2%	3.3%	1.7%	100.7%	100.5%
13	PG&E San Francisco	PGSF	106.2%	103.1%	2.2%	1.8%	104.0%	101.3%
14	PG&E Sierra	PGSI	100.6%	100.1%	1.3%	1.7%	99.3%	98.4%
15	PG&E San Joaquin	PGSN	97.9%	97.7%	3.4%	2.1%	94.5%	95.6%
16	PG&E Stockton	PGST	102.0%	101.1%	3.4%	1.9%	98.6%	99.2%
17	So Cal Edison Core	SCEC	96.2%	98.0%	-2.4%	-1.3%	98.6%	99.3%
18	So Cal Edison North	SCEEN	95.1%	98.4%	-4.7%	-2.7%	99.8%	101.1%
19	So Cal Edison West	SCEW	98.2%	99.4%	-4.7%	-1.8%	102.8%	101.2%
20	So Cal Edison High Desert	SCHD	91.7%	94.3%	-1.0%	-1.7%	92.7%	96.0%
21	So Cal Edison Low Desert	SCLD	95.3%	96.9%	-0.3%	-1.5%	95.5%	98.4%
22	So Cal Edison North West	SCNW	95.8%	98.1%	-1.9%	-1.8%	97.8%	99.9%
23	San Diego Gas & Electric Core	SDG1	98.1%	98.9%	-3.2%	-0.8%	101.3%	99.8%

¹ Congestion multipliers shown are a simple average over hours and months. Contract valuations use disaggregated values for different months.

Overall locational value of a project should be assessed by looking at the LMP multipliers provided in Table 1. The LMP multipliers imply the relative value of 1 MWh in each load zone compared with the corresponding Trading Hub (NP15, SP15, or ZP26) price. For example, PG&E could consider Offer A located in Sierra and Offer B located in San Francisco, with everything else the same. Offer B will have higher Energy Value (E) because the Loss Multipliers in San Francisco are higher than for the Sierra. On the other hand, Offer A has lower Congestion Cost (G) because the Congestion Cost Multiplier for Sierra is lower than San Francisco. Overall, Offer B scores higher than Offer A, because E-G will score higher due to higher LMP Multipliers in San Francisco compared with Sierra.

- Integration Costs

Pursuant to D.12-11-016, integration costs were assumed to be zero.

b. Portfolio Adjusted Value

Portfolio Adjusted Value (“PAV”) adjustments included the following components: Location, RPS Portfolio Need, Energy Firmness and Curtailment. PAV modifies the NMV to account for elements that impact a particular Offer’s value in the context of PG&E’s portfolio.

1) Location

PG&E has a preference for projects in its service territory. This preference is influenced by constraints (either in the marketplace or imposed on PG&E by regulatory agencies) that may limit the amount of capacity in SP15 that PG&E can count toward its RA requirement. Capacity located closer to PG&E’s load is likely to deliver energy that has more value for PG&E’s bundled electric portfolio, even when market forward prices indicate that energy delivered farther away has greater Market Value. The long-term risk for PG&E’s customers is less when resources are located within PG&E’s service territory rather than outside of PG&E’s service territory. The calculation of PAV effectuates this by adjusting the value of energy and capacity for offers from resources in SP15.

For offers from resources in SP15, the Energy Value component in NMV was adjusted so that the PAV Energy Benefit is not more than the Energy Value component calculated using NP15 prices, for each period the value of energy is calculated. This adjustment is not intended to adjust for congestion—that is accounted for in the calculation of NMV in the Congestion Multipliers. This adjustment is intended to account for the relative value, to PG&E’s portfolio, of energy that may be used to serve PG&E’s bundled customer load. This adjustment is not duplicative of the Energy Value component of NMV. Whereas PG&E’s calculation of Energy Value in NMV represents an offer’s value of energy to any wholesale market participant, including investor-owned utilities in southern California and purely financial traders, the locational adjustment described here is specific to PG&E’s portfolio and would not be made by investor-owned utilities in southern California, financial traders, and wholesale market participants in general (although the locational adjustment described here might be made by other load-serving entities with load heavily concentrated in northern and central California).

The PAV Capacity Benefit for offers from resources in SP15 was calculated using capacity prices that are no higher than the capacity prices used for offers from resources in NP15. The PAV Capacity Benefit for offers from resources in SP15 was based on capacity prices that are no higher than the short-run cost of capacity. This adjustment is intended to account for the relative value, to PG&E’s portfolio, of capacity that may be used to meet future resource adequacy requirements to serve PG&E’s bundled electric customers. The adjustment reflects the fact there is a constraint on how much capacity in SP15 that may be counted toward PG&E’s RA requirements. This adjustment is not duplicative of the Capacity Value component of NMV. Whereas PG&E’s calculation of Capacity Value in NMV represents an offer’s

value of capacity to any wholesale market participant, including investor-owned utilities in southern California and purely financial traders, the locational adjustment described here is specific to PG&E's portfolio and would not be made by investor-owned utilities in southern California, financial traders, and wholesale market participants in general (although the locational adjustment described here might be made by other load-serving entities with load heavily concentrated in northern and central California).

As a consequence of these adjustments to the value of energy and capacity, offers from resources in NP15 tended to have higher PAV and rank better than equivalent offers from resources in SP15.

2) RPS Portfolio Need

PG&E has a preference for offers with deliveries beginning in 2020 or later. PG&E considered how an offer contributes to PG&E's overall portfolio need for RPS energy. For each delivery year in which PG&E's portfolio (augmented by the offer) is projected to be short RPS-eligible energy, the PAV Adjustment for the offer's RPS-eligible energy was higher. The RPS Portfolio Need adjustment is not duplicative of the Energy Value component of NMV. Whereas PG&E's NMV calculation reflected the value of generic energy in the marketplace, the RPS portfolio need adjustment described here reflected the incremental value of RPS-eligible energy to PG&E's portfolio in meeting the portfolio's RPS requirement.

Thus, offers that deliver RPS energy only in periods when PG&E's portfolio needs RPS energy have higher PAV and rank better than equivalent offers that deliver RPS energy in periods when PG&E's portfolio does not need RPS energy.

3) Energy Firmness

PG&E's NMV calculation of Energy Value uses energy forward price curves that are associated with firm energy. Offers in the 2013 RPS RFO were typically not for firm energy. To value the energy benefit for an offer from a resource that has uncertainty in the minute-by-minute production of energy, a risk-adjusted multiplier was used in calculating PAV. PAV is calculated as the product of an offer's Energy Benefit (as calculated in the Energy Value component of NMV and then adjusted by the locational adjustment and RPS portfolio need adjustment described above) and the PAV risk-adjusted multiplier for that offer. The PAV risk-adjusted multiplier took on values between 0.8 and 1.0. A multiplier of 1.0 represents an offer's Energy Benefit is the same as if the offer were to provide firm energy. A multiplier of 0.8 represents substantial reduction in an offer's Energy Benefit because of the offer's significant uncertainty in energy production from its resource. The multiplier for an offer from a solar thermal resource is higher than the multiplier for an offer from a wind resource or a solar PV resource. An offer for a solar thermal resource with storage has a higher multiplier than a solar

thermal resource without storage. The particular PAV risk-adjusted multiplier applied to an offer will be a function of the relative firmness of the offer's energy and not simply a function of the renewable technology being offered.

The energy firmness adjustment itself did not result in any PAV increase or better ranking for offers providing dispatchability. For offers providing dispatchability, PG&E either: (1) used option-based approaches to calculate the Energy Value component of NMV, and/or (2) calculated PAV using the curtailment adjustment described below. Nonetheless, offers providing dispatchability have higher PAV and rank better than equivalent offers that do not provide dispatchability.

The energy firmness adjustment is not duplicative of the Energy Value component of NMV. Whereas PG&E's NMV calculation reflects the value of firm energy in the marketplace, the energy firmness adjustment described here reflects PG&E's assessment of the reduction in offer value that results from measuring and managing a position with uncertainty in energy production. For the same particular offer, other wholesale market participants might assess lower or higher reductions in offer value, resulting from each wholesale market participant's different portfolio positions and different capabilities, opportunities, and constraints for wholesale market activities.

The energy firmness adjustment is also not a proxy or substitute for a nonzero integration cost adder. The energy firmness adjustment is strictly in the context of PG&E's portfolio. In contrast, an integration cost adder is in the context of the system. The PG&E portfolio perspective and the physical transmission system perspective are two distinct and separate perspectives.

Thus, offers that deliver RPS energy with greater firmness had higher PAV and rank better than equivalent offers that deliver RPS energy with less firmness.

4) Curtailment Hours Offered

PG&E prefers a Seller to offer its energy as curtailable at any time at Buyer's discretion, for which the Seller will be compensated.

PG&E's NMV calculation of Energy Value includes the option value of the difference between the (presumably negative) wholesale market spot price avoided when Buyer Curtailment occurs and the Buyer's cost of Curtailment. This expected value is anticipated to be realized by any wholesale market participant and is not specific to the particular composition or positions of PG&E's portfolio or PG&E's particular capabilities, opportunities, and constraints for wholesale market activities. When an offer does not conform to PG&E's preference for unlimited Buyer Curtailment and limits the number of hours of curtailment, PG&E may not be able to curtail in the hours that are more valuable to PG&E and its customers. Recognizing increasing operational challenges that additional inflexible resources are placing on the system, PG&E will adjust the PAV of such offers to account for the costs and

operational challenges that are added to PG&E's portfolio. The operational challenges include the operational complexity caused by the limits on curtailment hours. The energy that PG&E cannot curtail when needed may increase the portfolio's costs for imbalance energy charges from the CAISO, cause the CAISO to issue involuntary curtailment orders to PG&E that can be costly, cause extreme price volatility in spot market prices for energy and ancillary services and as a result increase the cost of ancillary services, and add similar costs associated with managing the portfolio. The PAV adjustment for Limited Curtailment Hours represents these decremental values to PG&E's portfolio. Defined in this way, the PAV curtailment adjustment is therefore not duplicative of PG&E's calculation of NMV.

The PAV curtailment adjustment is also not duplicative of any integration cost adder that might be used in the future. The curtailment adjustment is strictly in the context of PG&E's portfolio. In contrast, an integration cost adder is in the context of the system. The PG&E portfolio perspective and the physical transmission system perspective are two distinct and separate perspectives.

The PAV curtailment adjustment is also not duplicative of the PAV energy firmness adjustment. The curtailment adjustment reflects a flexibility or dispatchability (emanating from hours of Buyer Curtailment) that is a quality superior to must-take firm energy, whereas the energy firmness adjustment reflects uncertain generation that is typically inferior to must-take firm energy and at best is the same quality as must-take firm energy.

Thus, offers that provide less than full curtailment had lower PAV and ranked worse than equivalent offers that provided the requested hours of Buyer Curtailment.

c. Portfolio fit

See section II.A.b above.

d. Credit and collateral requirements

PG&E did not score Participants' credit and collateral requirements during the 2013 RPS Solicitation. Following Shortlisting, PG&E may consider the Participant's capability to perform all of its financial and financing obligations under the Agreements and PG&E's overall credit concentration with the Participant, including any of Participant's affiliates. Participants were requested to indicate what level of project development and delivery term security they would meet.

e. Project Viability

The CPUC developed a Project Viability Calculator ("PVC") with stakeholder participation from utilities, renewable project developers and ratepayer advocates. The CPUC's PVC, along with background on its

development, instructions for use, and criteria scoring guidelines can be found on <http://www.cpuc.ca.gov/PUC/energy/Renewables/procurement.htm> and in the PVC itself.

PG&E evaluated the project viability of the higher ranking offers using the June 2, 2011 CPUC PVC. Participants were asked to self-score each of their offers using the PVC in Attachment D and provide supporting documentation for each score. PG&E reviewed submissions and adjusted self-scores as appropriate.

For background, a project's viability score is based on weighted scores in three categories: 1) Company / Development Team, 2) Technology, and 3) Development Milestones. The Project Viability assessment results in a score ranging from 0 to 100 points with 100 being the highest possible score. Offer information required by PG&E for evaluation of project viability is described in Section VI of the 2013 RPS Solicitation Protocol. The Participant's claims in all three categories were verified to the extent possible using publicly available data and/or PG&E data.

f. Other qualitative criteria / preferences (e.g. seller concentration, supplier diversity, etc.)

- RPS Goals

PG&E assessed the Offer's consistency with and contribution to California's goals for the RPS program (collectively "RPS Goals"). Determination of the extent to which the proposed development supports RPS Goals is based on the information provided in the Offer as well as PG&E's assessment of the project (see RPS Solicitation Protocol Section VI). The RPS Goals assessment considers the factors described below.

1. Legislative direction implemented in 399.13(a)(7):

"In soliciting and procuring eligible renewable energy resources for California-based projects, each electrical corporation shall give preference to renewable energy projects that provide environmental and economic benefits to communities afflicted with poverty or high unemployment, or that suffer from high emission levels of toxic air contaminants, criteria air pollutants, and greenhouse gases."

2. Consistency with the CPUC's Water Action Plan adopted on December 15, 2005 and updated October 2010.

To the extent a project uses water on site, its impact on California's water quality and consistency with the CPUC's recommended water conservation practices and goals was reviewed.

3. Executive Order S-06-06, signed on April 25, 2006.

In this executive order, Governor Schwarzenegger described the benefits of biomass resources in electricity production and established a goal that the state would meet 20% of its renewable energy needs with electricity produced from biomass. The Participants were encouraged to describe whether and how their respective facilities could support the 20% goal.

- Supplier Diversity

In support of PG&E's supplier diversity goals, the good faith efforts of Participants to subcontract with Women-, Minority-, and Service- Disabled Veteran-owned Business Enterprises ("WMDVBE"), or the Participant's status as a certified WBE, MBE, or DVBE are factors that are considered in the bid evaluation process. In each of its RFOs, PG&E encourages participation from suppliers who are WMDVBEs or that have supplier diversity programs. Through this encouragement, PG&E continues to send a message to market participants that supplier diversity is an important initiative to PG&E. PG&E required Solicitation participants to fill out a section within the Offer Package that indicated whether the participant was a WMDVBE, whether the participant had WMDVBE programs within their organization and if the participant would commit a percentage of their construction and maintenance to third-party WMDVBE subcontractors. PG&E used this data to consider supplier diversity in the shortlisting process.

1) Outreach conducted to WMDVBE companies prior to and during this solicitation

PG&E has continued its outreach efforts with WMDVBEs. PG&E's Wholesale Electric Procurement website provides WMDVBEs with information about upcoming Request for Offers (RFOs) and descriptions of various programs available. PG&E's Wholesale Electric Procurement website includes a section on Supplier Diversity for those suppliers interested in the various power procurement programs run by PG&E. WMDVBEs can also sign up through PG&E's website to receive RFO email notifications directly.

PG&E's Energy Procurement team continues to make a concerted effort to reach out to potential WMDVBE suppliers that express an interest in providing electric procurement to PG&E. These potential WMDVBE suppliers received one-on-one meetings with PG&E to discuss their capabilities and opportunities. PG&E recommended next steps to the WMDVBEs which included providing contact information to other representatives within PG&E that are better suited to handle the WMDVBE suppliers' proposed electric or gas products. In addition to fielding numerous calls and emails from suppliers interested in becoming a PG&E supplier of electricity, PG&E is developing an Electric Commodity procurement website tailored to WMDVBEs. This website will provide information about on-going outreach and educational items of interest to the WMDVBE community as well as benefit Non-WMDVBE Supplier understanding. The objective is

that as our Non-WMDVBEs realize the importance of supplier diversity to PG&E, they will provide more opportunities for WMDVBEs to participate in power procurement.

2) Number of WMDVBE companies prior to and during this solicitation and supplier diversity spending on construction, operation and maintenance of facilities.

PG&E advanced its efforts to develop guidelines and provide opportunities for WMDVBEs in power procurement. The company spent 11% more with WMDVBEs in Power Procurement in 2013 when compared to 2012. While there is more work that can be done, PG&E is building the foundation for continuous improvement with the goal of program sustainability. While PG&E acknowledges that implementing the General Order (GO) 156 Electric Commodity Procurement initiative will take time, PG&E is determined to continue its efforts to facilitate increased WMDVBE participation. Initiatives such as GO 156 are successful in large part due to building upon incremental victories such as those described below that encourage stakeholders to reach a little further to do what they otherwise did not think was possible.

The company has approximately 1,600 MW of renewable projects under PPAs that are expected to complete construction and come online in 2014. PG&E's Energy Procurement team worked diligently to educate WMDVBEs about direct and subcontracting opportunities to support business needs in these areas. Renewable project development programs continue to hold potential for WMDVBEs' direct or subcontracting participation. Significant project investment is required for in-site preparation, permitting, environmental studies, engineering, construction, operations and maintenance services, and each of these areas of project develop offers an opportunity for WMDVBEs to add value.

3) Women, minority, and/or disabled veterans trained or hired by utility specifically for purposes of this solicitation

PG&E has staff dedicated to the RFO process and therefore did not have a need to hire or train any new WMDV specifically for purposes of this solicitation.

B. If a weighting system is used, please describe how each LCBF component is assigned a quantitative or qualitative weighting compared to other components. Discuss the rationale for the weightings.

PG&E does not apply a weighting system to the LCBF components in the overall evaluation and selection of Offers.

C. Describe any qualitative factors used in your 2013 LCBF ranking and how they were used in the rankings and shortlisting.

After the calculation of PAV was complete, PG&E considered qualitative factor, including project viability, contribution to RPS goals, supplier diversity, project location, seller concentration and technology diversity.

PG&E's selection process included project-specific trade-offs between the qualitative and quantitative factors. Final shortlisting decisions were made based on best professional judgment using the scores and assessments from the portfolio-adjusted value and the other evaluation criteria. PG&E also solicited feedback from its Procurement Review Group ("PRG") and the Independent Evaluator ("IE") regarding the shortlist before it was finalized.

D. Discuss how the evaluation process differs, if at all, for operating and new projects, different expected portfolio content categories, and varying term lengths (e.g. incorporating costs of delivering energy from out-of-state facilities).

PG&E received offers for operating and new projects. PG&E evaluated the new and existing resources using the same PAV components. Existing resources, all else being equal, may be preferred because they have no project development risk, and so have higher project viability. In addition, existing resources may be able to offer shorter delivery terms, which are preferred.

In this RFO, PG&E received a limited number of PCC 3 offers and no PCC 2 offers. PG&E created separate rankings for projects in Product Content Categories 1 and 3.⁶ This distinction is based on the fact that projects in each category have different limitations on how they can be used for RPS compliance.

PG&E indicated a minimum term length of at least ten years. Term length has a quantitative impact on the debt equivalence calculation that is part of the of the PPA payment calculation. In addition, PG&E has a qualitative preference for shorter term lengths. PG&E received some PCC 1 Offers from out-of-state resources that would be dynamically scheduled. In this instance, when considering offers of similar PAV, PG&E applied its preference for resources located in CAISO. PG&E viewed the in-CAISO resources as providing more certainty regarding delivery and project benefits.

E. Evaluation of utility-owned, turnkey, buyouts, and utility-affiliate projects

1. Describe how utility-owned projects are evaluated against PPAs

PG&E's solicitation did not include utility-owned projects.

2. Describe how turnkey projects are evaluated against PPAs

PG&E's solicitation did not include turn-key projects.

⁶ See Cal. Pub. Util. Code §§399.16(a)(1), (a)(3).

3. Describe how buyout projects are evaluated against PPAs

PG&E's solicitation did not include PPAs with buyout options.

4. Describe how utility-affiliate projects are evaluated against non-affiliate projects

PG&E does not have an affiliate that offered a renewable energy project into this solicitation.

F. Conformance and Confirmation of Bid Information

1. Describe process for determining bid conformance

The eligibility criteria for bidding into this RFO were: 1) PPA of 10 years or more or grandfathered⁷ status, 2) Phase II interconnection study or equivalent and 3) location within the CAISO or delivery to CAISO interface point. Bidders were asked to submit a variety of offer documents, including an Excel-based offer form.

Reasons for bid non-conformance were lack of an interconnection study or not meeting the statutory requirements necessary to obtain grandfathered status. PG&E first checked to see if all offer documents had been provided. If documents were missing, PG&E notified Sellers by e-mail and asked them to provide the documents within two days. If Sellers still did not provide a CAISO interconnection study, PG&E contacted the Seller to get more information about their interconnection status, and then made a determination, in consultation with the IE, on whether the offer should be considered ineligible. For Sellers that provided a non-CAISO interconnection study, PG&E reviewed the other materials provided to confirm that Seller was offering delivery to the CAISO and that appropriate transmission arrangements were in place.

Sellers' compliance with the delivery term requirement was determined by reviewing the data in the Excel offer form.

PG&E considered Offers that planned to repower as having met the requirement for a Phase II study or equivalent, generally accepting Sellers' assertions that an interconnection study would not be required.

1. Describe process, if any, for determining accuracy of information provided in bids

PG&E generally expects a bidder to provide true, accurate information. If PG&E identifies apparent anomalies in the quantitative data, PG&E contacts the Seller to confirm the information is correct and that the Seller has not misunderstood the offer form.

⁷ "Grandfathered" refers to criteria listed in the California Public Utilities Code at Section 399.16(d) to ensure that existing contracts continue to "count in full" for purposes of RPS compliance.

In terms of project viability, PG&E requests that the Seller document its self-score with references to supporting data. PG&E reviews that data to evaluate the accuracy of the higher-ranking offers.

III. Offer Evaluation and Selection Process

A. What is the process by which offers are received and evaluated, selected or rejected for shortlist inclusion, and further evaluated once on the shortlist?

When Offers are received and opened, a processing team reviews each Offer to identify and summarize key characteristics, and to note any major areas of missing or unclear information. PG&E has set up evaluation teams for each of the evaluation criteria described above. Each team reviews the higher ranking Offers in its evaluation area in order to ensure consistency in scoring across Offers. If there are any additional information needs from a bidder, PG&E makes such requests. Responses are taken into account prior to ranking Offers. The IE is actively involved in the shortlisting process. PG&E also keeps the PRG updated regarding its progress toward shortlisting.

A PG&E evaluation committee oversees the integrity of the evaluation process and makes a shortlist recommendation to the PG&E steering committee. The steering committee has the authority to approve the shortlist and additionally to rule on issues of eligibility. Following shortlisting, the steering committee approves the priority of negotiations. Offers and their respective valuations are updated as new information becomes available in the course of negotiations. As part of the updating of Offer valuation after shortlisting, PG&E may make refinements to its valuation methodology.

B. What is the typical amount of time required for each part of the process?

For the 2013 RPS Solicitation, the interval between the issuance of the request for Offers to the receipt of Offers was approximately three weeks; from the date of bid receipt until notification of bidders eligible for shortlisting, the interval was approximately nine weeks; from the date of notification to transmission of the preliminary short list to the Commission was one week. In PG&E's experience, negotiations can take from three to six months, or longer, once active negotiations have begun, depending on the complexity of the transaction and the differences between the seller and the IOU. The time from contract execution until Commission approval is generally six to twelve months.

E. Were any offers rejected for non-conformance? If so, how many and what were the non-conforming characteristic(s)?

There were 4 offers rejected for non-conformance. The offers were rejected because 1) the offers was an extension that included incremental deliveries whose deliveries were not grandfathered and therefore were ineligible for banking under statute and applicable CPUC decisions, as required by the 2013 RPS Solicitation

Protocol, 2) the offer did not meet the requirement for a Phase II interconnection study or equivalent or 3), the offer was for services rather than for an RPS eligible product.

F. Describe involvement of the Independent Evaluator.

The IE reviews the evaluation criteria, detailed protocols, and the market valuation models prior to Offer opening. The IE provides feedback on potential areas for improvement. The IE receives a copy of all Offer documents⁸. The IE monitors all email communications with bidders. PG&E uses email exclusively to make supplemental information requests, and all responses are provided to the IE upon receipt. The IE may submit additional questions that are not raised by the PG&E team. The IE participates in all meetings of PG&E's RPS steering committee and in all PRG meetings related to PG&E's RPS solicitation. The IE performs an independent evaluation of the Offers. If any substantive differences exist between the IE's evaluation and PG&E's evaluation, the IE discusses these areas with PG&E to determine the reason and to correct the difference. Finally, the IE issues the report attached as Sections 1 and 2 of this Advice Letter, evaluating the fairness of the RFO and conformance to the Protocol.

G. Describe involvement of the Procurement Review Group.

For the 2013 RPS Solicitation, PG&E presented a detailed summary along with the preliminary shortlist recommendation. Key project characteristics and selection rationale were discussed. The PRG raised questions and provided initial feedback. PG&E solicited and incorporated the PRG's feedback into its selection of the final shortlist.

H. Discuss whether and how feedback on the solicitation process is requested from participants (both successful and unsuccessful) after the solicitation is complete.

PG&E gets feedback from both successful and unsuccessful bidders after the shortlist is complete. For successful (shortlisted) bidders, PG&E solicits feedback as part of its ongoing discussions with the counterparty. PG&E also offered a feedback call to all non-shortlisted bidders. PG&E explained where the project fell in the PAV ranking by quartile, which offer variations scored higher, and the primary reasons why bidders' projects were not successful. PG&E responded to requests for feedback from a large number of unsuccessful bidders. As part of those conversations, PG&E asked bidders for their feedback on the solicitation process. This year, PG&E also sent out a survey to its general RFO email distribution list in an effort to obtain feedback from Sellers that did not participate in the RPS RFO in order to better understand what might have prevented their participation.

⁸ For the 2013 RPS RFO, Participants submitted their offers via the online platform Power Advocate. The IE had access to the offer documents in the same manner as PG&E.

IV. Final Shortlist

A. How was the size of the shortlist determined?

The shortlist is sized to create a population of Offers large enough to satisfy PG&E's procurement target up to 1,500 GWh of load. PG&E takes into account that Offers may be withdrawn and that negotiations with others may not result in executed contracts.

B. Describe what role price had in determining your proposed shortlist. Were offer prices examined relative to other offers or other procurement options? Was there a certain price point cut off? Was rate impact considered for individual offers or on a portfolio or shortlist level? What were the primary reasons for not shortlisting a project (e.g. price, online date, viability, environmental concerns, seller concentration, non-conforming, other)?

PG&E evaluated projects' PAV, which takes into account the price offered by a Seller. PAV compares the cost of the project's energy with the benefit of that energy (the avoided cost of purchasing the energy in the market), plus RA value and other portfolio attributes. There was not a price cut-off, but a value cut-off. Projects were considered relative to each other and ranked relative to each other.

Although rate impact did not factor directly into the ranking, projects with a higher net value are likely to have a lower rate impact.

The primary reason for not shortlisting projects that otherwise offered favorable value was seller concentration. A significant number of the highest ranked offers were from the same counterparties and PG&E wanted a diverse set of counterparties on its shortlist. If the Seller offered a large project with smaller sized variations that had similar value, PG&E selected the variation with the smaller size. In addition, if the Seller offered multiple projects in SP15 and NP15 with similar value, PG&E selected the project located in NP15.

C. Describe how project viability affected your shortlist results. Did LCBF rankings or your proposed shortlist change based on project viability and/or project viability scores?

PG&E scored projects on viability and value. PG&E shortlisted projects that had high market value and acceptable viability scores. PG&E did not set a minimum viability threshold. Rather, PG&E reviewed the top-ranked PAV offers to determine qualitatively whether the offers had significant enough viability concerns to warrant exclusion from the shortlist.

See Section 4 for more details.

D. Describe how other qualitative characteristics and/or certain project characteristics (e.g. online date, location, and project size) factored into your shortlisting decisions).

In addition to the factors above, P&GE considered technology diversity. PG&E shortlisted a range of technologies for shortlisting. In some cases, a project was shortlisted in order to obtain a diverse set of technologies on the shortlist, even if the PAV was less attractive than the PAV for projects utilizing other technologies.

Using the considerations discussed above, PGE&'s selection process included project-specific trade-offs between the qualitative and quantitative factors. Final shortlisting decisions were made based on best professional judgment.

E. Describe how offers' locations affected your proposed shortlist. Was being located in or near certain areas (e.g. RETI CREZs) a factor in your decisions? Was being located in the Tehachapi or Sunrise transmission areas a factor in your decisions? How were adders or costs incorporated to take into account a project's location (e.g. firming/shaping costs, adder for Sunrise region, etc.)

See Section II.A above for a general description of how offers outside the CAISO were evaluated.

Being located in a CREZ was not a direct consideration, nor was being located in Tehachapi or Sunrise transmission areas.

F. Describe any policy issues or other strategies (e.g. seller concentration, technology diversity, operational flexibility, etc.) that affected your proposed shortlist.

See Section IV.D above.

G. Describe how safety was considered in determining your proposed shortlist and if it affected the proposed shortlist.

Local, state and federal agencies that have review and approval authority over the projects are charged with enforcing safety, environmental and other regulations for the bidders' projects. PG&E's PPA requires all Sellers to comply with all applicable rules and regulations regarding safety. These PPA provisions serve to: (1) clarify that the burden of safe operations resides with the seller, the entity with control over on-site decisions, and (2) protect PG&E customers against bearing the cost of imprudent or unsafe operations. They do not provide PG&E with rights to enforce or dictate safe operations of any project as those rights reside with the governmental authorities with safety and permitting oversight. As a result, safety considerations do not impact the shortlist.

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

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