

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



October 10, 2011

Advice Letter 3735-E

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

**Subject: Power Purchase Agreement for Procurement of Renewable
Energy Resources between Shiloh III Wind Project, LLC,
and PG&E**

Dear Mr. Cherry:

Advice Letter 3735-E is effective May 26, 2011 per Resolution E-4402.

Sincerely,

A handwritten signature in blue ink that reads "Julie A. Fitch".

Julie A. Fitch, Director
Energy Division



September 30, 2010

Advice 3735-E

(Pacific Gas and Electric Company ID U39 E)

Public Utilities Commission of the State of California

Subject: Power Purchase Agreement for Procurement of Renewable Energy Resources Between Shiloh III Wind Project, LLC, and Pacific Gas and Electric Company

I. INTRODUCTION

A. Purpose

Pacific Gas and Electric Company (“PG&E”) seeks the California Public Utilities Commission’s (“Commission”) approval of a power purchase agreement (“PPA”) between Shiloh III Wind Project, LLC (“Shiloh III”) a subsidiary of enXco, Inc. (“enXco”), and PG&E. The PPA is for Renewable Portfolio Standard (“RPS”)-eligible energy from a 60 megawatt (“MW”) wind project to be located in Montezuma Hills in Solano County, California (“Project”). PG&E requests that the Commission issue a resolution no later than April 2011, approving the PPA and containing the findings as set forth in Section VI below.

B. Subject of the Advice Letter

The Commission’s approval of the Shiloh III PPA will authorize PG&E to accept deliveries of RPS-eligible energy from a California wind generator within PG&E’s service territory. The Project is located in the same area as other operational wind facilities, including enXco’s Shiloh II project, which has been delivering renewable energy to PG&E since February 2009. The fact that enXco has already successfully developed a similar project in the same area supports the high viability of Shiloh III.

The PPA resulted from bilateral negotiations. enXco first proposed the offer for the Project in September 2009, after the 2009 RPS Solicitation had ended in August 2009. Because the Project has an early commercial operation date, is competitive both in terms of price and market valuation, and is highly viable, PG&E chose to enter into bilateral negotiations, rather than waiting until the 2010 Solicitation during which time the Project could have been sold to another entity. By moving forward with the bilateral negotiation,

PG&E was able to secure a PPA for a highly viable project that provides for deliveries of RPS-eligible power starting in 2012.

PG&E requests that the Commission issue a resolution no later than April 2011 approving the Shiloh III PPA in its entirety and all payments to be made by PG&E under the PPA and containing the findings required by the definition of CPUC Approval adopted by Decision (“D.”) 07-11-025 and D.08-04-009. As discussed in further detail below and in the confidential appendices, the “least-cost, best-fit” (“LCBF”) analysis indicates that this PPA is reasonable and meets the needs of PG&E’s portfolio. As discussed above, the Project is located within PG&E’s service territory in a known wind resource area and is being developed by a viable counterparty. enXco has substantial experience developing and operating hundreds of megawatts of wind farms in North America. enXco has ordered REpower 2.05 MW turbines for the Project. The REpower turbines are manufactured by an established turbine manufacturer with thousands of installed and commercially operational turbines. Moreover, enXco has site control for the project, and the project is not contingent upon tax incentives. Finally, no significant transmission upgrades are necessary for this project. Not only is the project highly viable and competitively priced, but the Project also has an expected commercial online date of May 2012 and will deliver directly to the CAISO controlled grid for 20 years. As a result, the Project will contribute to PG&E’s 20-percent-by-2010 RPS goals through flexible compliance, as well as longer-term RPS goals.

Consistent with the protocol used for review of RPS contracts resulting from the 2009 RPS Solicitation, PG&E has included Confidential Appendices A through G and public Appendix H, which provide further details demonstrating the reasonableness of the PPA. As discussed below, PG&E requests confidential treatment for the information contained in Appendices A through G.

C. General Project(s) Description

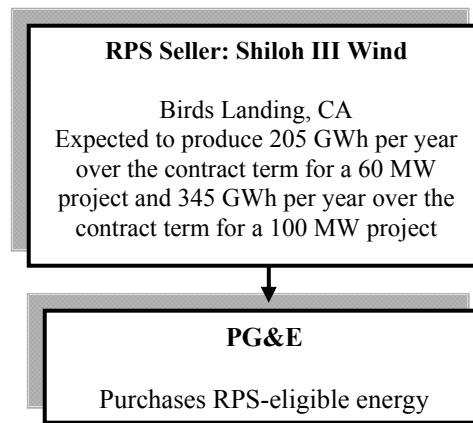
Project Name	Shiloh III Wind Project, LLC
Technology	As-available, wind power
Capacity (MW)	60 MW with an option for PG&E to increase the contract capacity to 100 MW
Capacity Factor	Approximately 39%
Expected Generation (GWh/Year)	205 GWh (60MW) or 345 GWh (100MW)
Initial Commercial Operational Date (COD)	5/31/2012
Date Contract Delivery Term Begins	Commercial Operation Date

Delivery Term (Years)	20 years
Vintage (New / Existing / Repower)	New
Location (City and State)	Solano County, CA
Control Area (e.g., California Independent System Operator (“CAISO”), Bonneville Power Administration (“BPA”))	CAISO
Nearest Competitive Renewable Energy Zone (CREZ), as identified by the Renewable Energy Transmission Initiative (RETI)	Solano
Type of Cooling, if applicable	N/A
Price relative to Market Price Referent (MPR)	Price is above the applicable 2009 MPR for a project coming online in 2012. Price information is discussed in further detail in Confidential Appendix D.

D. General Deal Structure

The PPA is for 60 MW with an option for PG&E to increase the capacity to 100 MW (for additional details, see Confidential Appendix D). The PPA arose from bilateral negotiations between enXco and PG&E. The Project will interconnect to the CAISO. PG&E will be the scheduling coordinator. There is no firming and shaping associated with this deal.

Figure 1: PPA Delivery Structure



E. RPS Statutory Goals

Senate Bill (“SB”) 1078 established the California RPS Program, requiring an electrical corporation to increase its use of eligible renewable energy resources to 20 percent of total retail sales no later than December 31, 2017. The legislature subsequently accelerated the RPS goal to reach 20 percent by the end of 2010. In addition, California is actively considering increasing its renewable goals beyond the current 20 percent renewable energy target. Governor Schwarzenegger’s Executive Order issued in November 2008 describes a new target for California of 33 percent renewable energy by 2020, and his executive order issued in September 2009 directs the California Air Resources Board to adopt a regulation consistent with this 33 percent target by July 31, 2010. Finally, the California Air Resources Board’s Scoping Plan, adopted in December 2008, identifies an increase in the renewables target to 33 percent by 2020 as a key measure for reducing greenhouse gas emissions and meeting California’s climate change goals.

The Project is expected to be operational by May 31, 2012. Therefore, the PPA will contribute to PG&E’s 20-percent-by-2010 RPS goal through the use of flexible compliance. The PPA will also contribute to PG&E’s longer-term RPS goals.

F. Confidentiality

In support of this Advice Letter, PG&E has provided the confidential information listed under Section V.C, “Request for Confidential Treatment,” below. This information includes the PPA and other information that more specifically describes the rights and obligations of the parties. This information is being submitted 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. A separate Declaration Seeking Confidential Treatment is being filed concurrently with this Advice Letter.

Confidential Attachments:

Appendix A – Consistency with Commission Decisions and Rules and Project Development Status

Appendix B – 2009 Solicitation Overview

Appendix C – Independent Evaluator Report (Confidential)

Appendix D – Contract Summary**Appendix E – Comparison of Contract with Utility’s 2009 Pro Forma Power Purchase Agreement****Appendix F – Power Purchase Agreement****Appendix G – Project’s Contribution Toward RPS Goals****Public Attachment:****Appendix H – Independent Evaluator Report (Public)****II. CONSISTENCY WITH COMMISSION DECISIONS****A. Consistency with PG&E’s Adopted RPS Procurement Plan**

PG&E’s 2009 Renewable Procurement Plan (“2009 Plan”) was conditionally approved in D.09-06-018 on June 4, 2009. As required by statute, the 2009 Plan included an assessment of supply and demand to determine the optimal mix of renewable generation resources, consideration of compliance flexibility mechanisms established by the Commission, and a bid solicitation setting forth the need for renewable generation of various operational characteristics.¹

The goal of PG&E’s 2009 Plan was to procure approximately one to two percent of its retail sales volume, or between 800 GWh and 1,600 GWh per year. With expected RPS-eligible energy deliveries of approximately 205 GWh per year, the PPA meets the criteria for the renewables procurement contained in the 2009 Plan. The PPA provides relatively near-term deliveries, which is especially valuable to PG&E and it will help contribute to PG&E’s longer-term RPS goals.

The PPA is also consistent with PG&E’s approved 2009 Plan because its evaluation was consistent with the review protocol in the 2009 RPS Solicitation, including portfolio fit, viability, and market valuation.

¹ Pub. Util. Code § 399.14(a)(3).

B. Consistency with Commission Guidelines for Bilateral Contracting

PG&E negotiated the PPA on a bilateral basis because of the timing of negotiations. Bilateral negotiations started after the end of the 2009 RPS Solicitation in August 2009. By beginning negotiations rather than waiting until the following Solicitation, PG&E was able to secure a PPA for a highly viable project that provides for deliveries of RPS-eligible power by 2012.

The Commission has developed guidelines for how the utilities may enter into bilateral RPS contracts. In D.03-06-071, the Commission authorized entry into bilateral RPS contracts provided that such contracts did not require Public Goods Charge funds and were “prudent.”² Later, in D.06-10-019, the Commission again held that bilateral contracts were permissible provided that they were at least one month in duration, and also found that such contracts must be reasonable and submitted for Commission approval by advice letter.³ Also in that decision, the Commission stated that bilateral contracts were not eligible for supplemental energy payments.⁴

Based on D.03-06-071 and D.06-10-019, the Commission set forth the following four requirements for approval of bilateral contracts in a recent Resolution approving a bilateral RPS contract executed by PG&E: (1) the contract is submitted for approval by advice letter; (2) the contract is longer than one month in duration; (3) the contract does not receive above-market funds (“AMF”); and (4) the contract is deemed reasonable by the Commission.⁵ The Commission noted that it would be developing evaluation criteria for bilateral contracts, but that the above four requirements would apply in the interim.⁶

On June 19, 2009, the Commission issued D.09-06-050 establishing price benchmarks and contract review processes for short-term and bilateral RPS contracts. D.09-06-050 provides that bilateral contracts should be reviewed using the same standards as contracts resulting from RPS solicitations.⁷

² D.03-06-071 at 57-58.

³ D.06-10-019 at 29.

⁴ *Id.* at 31.

⁵ Resolution E-4216 at 5.

⁶ *Id.*

⁷ D.09-06-050 at 29.

The PPA is not eligible for AMF because it resulted from bilateral negotiations. The PPA has a 20-year term, and is therefore longer than one month in duration. Finally, the PPA is reasonable when considered against the standards used for evaluating contracts resulting from PG&E's 2009 RPS Solicitation, both with respect to price and other terms, as PG&E explains in this Advice Letter and in the attached Confidential Appendices. As discussed above, the Project is highly likely to provide near-term deliveries that will contribute towards PG&E's RPS goals. Additional information regarding PG&E's portfolio needs is included in the section below entitled "Portfolio Fit." The Commission should therefore approve the PPA.

C. Consistency of Bid Evaluation Process with Least-Cost, Best-Fit Decision

The RPS statute requires PG&E to procure the "least-cost, best-fit" ("LCBF") eligible renewable resources.⁸ The LCBF decision directs the utilities to use certain criteria in their bid ranking⁹ and offers guidance regarding the process by which the utility ranks bids in order to select or "shortlist" the bids with which it will commence negotiations. PG&E's approved process for identifying the LCBF renewable resources focuses on four primary areas:

1. Determination of market value of bid;
2. Calculation of transmission adders and integration costs;
3. Evaluation of portfolio fit; and
4. Consideration of non-price factors.

PG&E examined the reasonableness of the PPA using the same comparison tools used with other RPS transactions received in the 2009 RPS Solicitation and with bilaterals currently being offered to PG&E. The general finding is that this Project is reasonably priced and viable. A more detailed discussion of PG&E's evaluation of the PPA is provided in Confidential Appendices A and D.

1. Market Valuation

In a "mark-to-market analysis," the present value of the bidder's payment stream is compared with the present value of the product's market value to determine the benefit (positive or negative) from the procurement of the resource, irrespective of PG&E's portfolio. This analysis includes evaluation of the bid price and indirect costs, such as

⁸ Pub. Util. Code § 399.14(a)(2)(B).

⁹ D.04-07-029.

transmission and integration costs. PG&E's analysis of the market value of the PPA is addressed in Confidential Appendix A.

2. Portfolio Fit

Portfolio fit considers how well an offer's features match PG&E's portfolio needs. As part of the portfolio fit assessment, PG&E differentiates offers by the firmness of their energy delivery and by their energy delivery patterns. A higher portfolio fit measure is assigned to the energy that PG&E is sure to receive and fits the needs of the existing portfolio. The proposed Project is expected to offer deliveries on May 31, 2012, and continuing for 20 years, which will contribute toward PG&E's RPS goals and will provide additional wind generation to PG&E's portfolio. The portfolio fit of the Project with PG&E's portfolio is moderate. Further information on the Project's portfolio fit is discussed in Confidential Appendix A.

3. Consistency with the Transmission Ranking Cost Decision

Under the transmission ranking cost decision, the customer's potential cost of accepting energy deliveries from a project must be considered when determining the project's value. Consistent with Commission decisions, PG&E assigned a transmission cost reflective of the Project's signed Large Generator Interconnection Agreement ("LGIA") and the corresponding estimated network upgrade costs for this Project. Further transmission details are discussed in Confidential Appendices A and D.

4. Consistent Application of TOD

The price for the power under the PPA is not subject to Time of Delivery ("TOD") adjustments.

5. Qualitative Factors

PG&E considered qualitative factors as required by D.04-07-029 and D.07-02-011 when evaluating the PPA, including benefits to low income or minority communities, environmental stewardship, local reliability, and resource diversity benefits.

D. Compliance with Standard Terms and Conditions

The Commission set forth standard terms and conditions to be incorporated into contracts for the purchase of electricity from eligible renewable energy resources in D.04-06-014 and D.07-02-011, as modified by D.07-05-057 and D.07-11-025. These terms and conditions were compiled and published in D.08-04-009. Additionally, the non-modifiable term related to Green Attributes was finalized in D.08-08-028 and the non-

modifiable terms related to Tradable Renewable Energy Credits (“TREC”) were finalized in D.10-03-021.

The non-modifiable terms in the PPA conform exactly to the “non-modifiable” terms set forth in Attachment A of D.07-11-025 and Appendix A of D.08-04-009, as modified by D.08-08-028 and Appendix C of D.10-03-021. These terms may be found on the following pages of the PPA:

Non-Modifiable Term	PPA Section No.	PPA Page No.
STC 1: CPUC Approval	1.48	5
STC 2: RECs and Green Attributes		
• Definition of Green Attributes	1.103	11
• Conveyance of Green Attributes	3.2	30
STC 6: Eligibility	10.2(b)	54
STC 17: Applicable Law	10.12	62
STC REC-1 Transfer of renewable energy credits	10.2(c)	54 – 55
STC REC-2 Tracking of RECs in WREGIS	10.2(d)	55

The Project will interconnect directly with the CAISO. Therefore, the PPA does not include the non-modifiable terms intended for REC-only contracts.

The terms in the PPA that correspond to the “modifiable” standard terms and conditions drafted in D.07-11-025 and D.08-04-009 have been modified based upon mutual agreement reached during negotiations. Comparisons of the modifiable terms in the PPA against the modifiable terms in PG&E’s 2009 RPS PPA form in the Solicitation Protocol dated June 29, 2009, is provided in Confidential Appendix E.

Each provision in the PPA is essential to the negotiated agreement between the parties, and, therefore, the Commission should not modify any of the provisions. The Commission should consider the PPA as a whole in terms of its ultimate effect on utility customers. PG&E submits that the PPA protects the interests of its customers while achieving the Commission’s goal of increasing procurement from eligible renewable resources.

E. Consistency with Unbundled Renewable Energy Credit Transactions

The PPA is for the purchase of bundled RPS-eligible energy and therefore does not involve the purchase of unbundled renewable energy credits.

F. Consistency with Minimum Quantity Decision

In D.07-05-028, the Commission determined that in order to count energy deliveries from short-term contracts with existing facilities toward RPS goals, RPS-obligated load-serving entities must contract for deliveries equal to at least 0.25 percent of their prior year's retail sales through long-term contracts or through short-term contracts with new facilities.

The PPA is a long-term contract executed in 2010 and thus counts towards PG&E's procurement obligation under D.07-05-028. PG&E expects that, in 2010, it will be in compliance with the minimum quantity set for in D.07-05-028.

G. Tier 2 Short-Term Contract "Fast Track" Process

PG&E is not submitting this contract under the "Fast Track" Process.

H. Market Price Referent ("MPR")

The actual price under the PPA is confidential, market sensitive information. PG&E will indicate that the TOD-adjusted price under the PPA is above the applicable 2009 TOD-adjusted MPR adopted in Resolution E-4298 on December 17, 2009. As mentioned above, however, the price for the power under the PPA is not subject to TOD adjustments.

PG&E compared the price and net market value of the Project to offers resulting from the 2009 RPS Solicitation, recently executed contracts and other bilateral offers made to PG&E as detailed in Confidential Appendices A and D.

As discussed in the section entitled "Independent Evaluator" below, PG&E employed Lewis Hashimoto from Arroyo Seco Consulting to be the Independent Evaluator ("IE") of this Project. The IE stated in its report attached in Appendix H that the Project offers a moderate contract price and the PPA merits CPUC approval.

I. Above-Market Funds ("AMFs")

Since the PPA is a bilateral contract, it is not eligible for AMFs.

Had the PPA been eligible for AMFs, it would be considered “voluntary” procurement because PG&E was notified by the CPUC on May 28, 2009, that PG&E had exhausted its portion of the AMFs available for above-MPR contract payments. Since exhausting its AMFs, PG&E has continued to voluntarily procure renewables that are priced above the MPR, subject to Commission approval and a finding that the procurement is just and reasonable and fully recoverable in rates.

Notwithstanding the fact that the PPA is not AMFs-eligible, an AMFs analysis of the PPA is included in Confidential Appendix D, in accordance with CPUC requirements.

J. Compliance with Interim Emissions Performance Standard

A greenhouse gas Emissions Performance Standard (“EPS”) was established by Senate Bill 1368 (“SB 1368”), which requires that the Commission consider emissions costs associated with new long-term (five years or greater) power contracts procured on behalf of California ratepayers.

In D.07-01-039, the Commission adopted an EPS that applies to contracts for a term of five or more years for baseload generation with an annualized plant capacity factor of at least 60 percent. The PPA is not a covered procurement subject to the EPS because the generating facility has a forecast annualized capacity factor of less than 60 percent and therefore is not baseload generation under paragraphs 1(a)(ii) and 3(2)(a) of the Adopted Interim EPS Rules.

Notification of compliance with D.07-01-039 is provided through this Advice Letter, which has been served on the service list in the RPS rulemaking, R.08-08-009.

K. Procurement Review Group Participation

The Procurement Review Group (“PRG”) for PG&E includes the Commission’s Energy Division and Division of Ratepayer Advocates, Department of Water Resources (“DWR”), Union of Concerned Scientists (“UCS”), the Utility Reform Network (“TURN”), the California Utility Employees (“CUE”), and Jan Reid, as a PG&E ratepayer. The PPA was discussed at the April 9, 2010, PRG meeting.

L. Independent Evaluator

The Independent Evaluator (“IE”) for this PPA is Lewis Hashimoto of Arroyo Seco Consulting. The IE participated in the negotiation’s material discussions and communications, evaluated the PPA, and concluded that the PPA merits CPUC approval. Any findings of the IE to the PRG regarding the application solicitation, the project bid, and/or contract negotiations are contained in Confidential Appendix C and Public Appendix H.

III. PROJECT DEVELOPMENT STATUS

A. Company / Development Team

As mentioned above, Shiloh III is wholly owned by enXco, which has substantial experience developing and operating wind farms. enXco has over 1,100MW of installed capacity, of which over 1,000MW is wind generation and they are the third largest provider of third-party wind operations and maintenance (“O&M”) in North America. Additionally, enXco successfully developed the 150MW Shiloh II wind farm which is also located in the Montezuma Hills and is under contract with PG&E.

B. Technology

1. Technology Type and Level of Technology Maturity

enXco has secured REpower 2.05 MW wind turbines for the Project. REpower Systems AG is an established wind turbine manufacturer with thousands of turbines in commercial operation worldwide.

2. Quality of Renewable Resource

The Project is in a well known and highly predictable wind resource area. Multiple wind projects are already operating in the area among them are wind projects located in the Montezuma Hills including: Shiloh I (Iberdrola), Shiloh II (enXco), and High Winds Energy Center (Iberdrola). Additionally, the Montezuma wind project (NextEra) is in the Montezuma Hills and currently under construction.

3. Other Resources Required

None.

C. Development Milestones

Additional discussion is included in Confidential Appendix A.

1. Site Control

enXco has secured site control, through land leases, for the Project as of March 2010. All the land leases are on non-BLM land and extend through the term of the PPA.

2. Equipment Procurement

enXco recently decided to use REpower 2.05 MW turbines and have now placed orders with REpower Systems AG for the turbines needed for Shiloh III. The turbines are the most important equipment and often have the longest lead time. Other equipment will be procured in a timely manner and enXco does not anticipate any delays due to equipment procurement.

3. Permitting / Certification Status

The PPA includes the non-modifiable representation and warranty that during the delivery period, the Project will constitute an eligible renewable energy resource certified by the California Energy Commission (“CEC”). The CEC pre-certified Shiloh III as an eligible renewable energy resource on May 13, 2010.

The following tables summarize key, non-confidential permits, agreements, and licenses that TGP has identified may be necessary for the construction and operation of the generation facility.

Name of Permit or Lease Required	Grantor	Description of Permit or Lease	Date / Estimated Date of Permit Completion
Conditional Use Permit (“CUP”)	Solano County, CA	Permit to construct wind plant through county zoning ordinance	Estimated November 2010
Final Environmental Impact Report	Solano County, CA	County CEQA permit	Estimated November 2010
US Fish and Wildlife Service (“USFWS”) Section 10 Endangered Species Act Take Permit	Federal USFWS	Habitat conservation plan for California Tiger Salamander	Estimated January 2011

Name of Permit or Lease Required	Grantor	Description of Permit or Lease	Date / Estimated Date of Permit Completion
California Department of Fish and Game (“CDFG”) 2081 California Endangered Species Act (CESA) Incidental Take Permit	CDFG	For California Tiger Salamander	Estimated January 2011

4. Production Tax Credit / Investment Tax Credit

enXco will utilize either the Investment Tax Credit (“ITC”) or the Production Tax Credit (“PTC”) for the Project. Further discussion is included in Confidential Appendix A.

5. Transmission

The Project will interconnect into the CAISO-controlled grid on PG&E’s system. The point of interconnection will be the PNode at the Birds Landing Switching Station.

D. Financing Plan

Shiloh III’s financing plans are confidential and described in Confidential Appendix A. However, enXco has extensive project finance experience with total financings of over \$2.0 billion and approximately 950 MW. In 2008 and 2009, enXco successfully financed its 150 MW Shiloh II project, its 106 MW Hoosier Wind Project, its 100 MW Wapsipinicon Wind Project and its 24 MW Arnprior Solar project.

IV. CONTINGENCIES AND PROJECT MILESTONES

The PPA includes certain performance criteria and milestones that PG&E includes in its form RPS PPA contracts. These and other contingencies and milestones are addressed in Confidential Appendices A and D.

V. REGULATORY PROCESS

A. Requested Effective Date

PG&E requests that the Commission issue a resolution approving this advice filing no later than **April 2011**. Justification for this date is provided in Confidential Appendix D.

B. Earmarking

PG&E reserves the right to earmark deliveries from the PPA.

VI. REQUEST FOR COMMISSION APPROVAL

PG&E requests that the Commission issue a resolution no later than **April 2011**, that:

1. Approves the PPA in its entirety, including payments to be made by PG&E pursuant to the PPA, subject to the Commission's review of PG&E's administration of the PPA.
2. Finds that any procurement pursuant to the PPA is procurement from an eligible renewable energy resource for purposes of determining PG&E's compliance with any obligation that it may have to procure eligible renewable energy resources pursuant to the California Renewables Portfolio Standard (Public Utilities Code Section 399.11 et seq.) ("RPS") D.03-06-071 and D.06-10-050, or other applicable law.
3. Finds that all procurement and administrative costs, as provided by Public Utilities Code section 399.14(g), associated with the PPA shall be recovered in rates.
4. Adopts the following finding of fact and conclusion of law in support of CPUC Approval:
 - a. The PPA is consistent with PG&E's 2009 RPS procurement plan.
 - b. The terms of the PPA, including the price of delivered energy, are reasonable.
5. Adopts the following finding of fact and conclusion of law in support of cost recovery for the PPA:
 - a. The utility's costs under the PPA shall be recovered through PG&E's Energy Resource Recovery Account.
 - b. Any stranded costs that may arise from the PPA are subject to the provisions of D.04-12-048 that authorize recovery of stranded renewables procurement costs over the life of the contract. The

implementation of the D.04-12-048 stranded cost recovery mechanism is addressed in D.08-09-012.

6. Adopts the following findings with respect to resource compliance with the Emissions Performance Standard (“EPS”) adopted in R.06-04-009:
 - a. The PPA is not covered procurement subject to the EPS because the generating facility has a forecast capacity factor of less than 60 percent and, therefore, is not baseload generation under paragraphs 1(a)(ii) and 3(2)(a) of the Adopted Interim EPS Rules.

Protests:

Anyone wishing to protest this filing may do so by sending a letter by **October 20, 2010**, which is **20** days from the date of this filing. The protest must state the grounds upon which it is based, including such items as financial and service impact, and it should be submitted expeditiously. Protests should be mailed to:

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

Facsimile: (415) 703-2200
E-mail: mas@cpuc.ca.gov and jnj@cpuc.ca.gov

Copies should also be mailed to the attention of the Director, Energy Division, Room 4005, and Honesto Gatchalian, Energy Division, at the address shown above.

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

Pacific Gas and Electric Company
Attention: Jane Yura
Vice President, Regulation and Rates
77 Beale Street, Mail Code B10B
P.O. Box 770000
San Francisco, California 94177

Facsimile: (415) 973-6520
E-Mail: PGETariffs@pge.com

Effective Date:

PG&E requests that the Commission issue a resolution approving this advice filing on **April 2011**.

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.08-08-009, R.06-02-012 and R.08-02-007. 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 to the GO 96-B service list and electronic approvals should be directed to e-mail PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Advice letter filings can also be accessed electronically at: <http://www.pge.com/tariffs>.

Handwritten signature of Jane Yura in cursive script.

Vice President – Regulation and Rates

cc: Service List for R.08-08-009
Service List for R.06-02-012
Service List for R.08-02-007
Paul Douglas – Energy Division
Sean Simon – Energy Division
Niki Bawa – Energy Division

Attachments

Limited Access to Confidential Material:

The portions of this Advice Letter marked Confidential Protected Material are submitted under the confidentiality protections of Sections 583 and 454.5(g) of the Public Utilities Code and General Order 66-C. This material is protected from public disclosure because it consists of, among other items, the contract itself, price information, and analysis of the proposed RPS contract, which are protected pursuant to D.06-06-066 and D.08-04-023.

A separate Declaration Seeking Confidential Treatment regarding the confidential information is filed concurrently herewith.

Confidential Attachments:

Appendix A – Consistency with Commission Decisions and Rules and Project Development Status

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Public Attachment:

Appendix H – Independent Evaluator Report (Public)

CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY ENERGY UTILITY

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

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

Utility type:

- ELC GAS
 PLC HEAT WATER

Contact Person: David Poster and Linda Tom-Martinez

Phone #: (415) 973-1082 and (415) 973-4612

E-mail: dxpu@pge.com and lmt1@pge.com

EXPLANATION OF UTILITY TYPE

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

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: **3735-E**

Tier: 3

Subject of AL: **Power Purchase Agreement for Procurement of Renewable Energy Resources Between Shiloh III Wind Project, LLC, and Pacific Gas and Electric Company**

Keywords (choose from CPUC listing): Contracts, Portfolio

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

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution #:

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

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

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

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

Name(s) and contact information of the person(s) who will provide the nondisclosure agreement and access to the confidential information: Pat Fox (415) 973-1379

Resolution Required? Yes No

Requested effective date: **April 1, 2011**

No. of tariff sheets: N/A

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

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

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

Tariff schedules affected: N/A

Service affected and changes proposed¹: N/A

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

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

CPUC, Energy Division
Tariff Files, Room 4005
DMS Branch
505 Van Ness Ave.,
San Francisco, CA 94102
jnj@cpuc.ca.gov and mas@cpuc.ca.gov

Pacific Gas and Electric Company
Attn: Jane Yura
Vice President, Regulation and Rates
77 Beale Street, Mail Code B10B
P.O. Box 770000
San Francisco, CA 94177
E-mail: PGETariffs@pge.com

**DECLARATION OF PATRICK FOX
SEEKING CONFIDENTIAL TREATMENT
FOR CERTAIN DATA AND INFORMATION
CONTAINED IN ADVICE LETTER 3735-E
(PACIFIC GAS AND ELECTRIC COMPANY - U 39 E)**

I, Patrick M. Fox, declare:

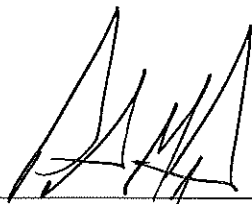
1. I am presently employed by Pacific Gas and Electric Company ("PG&E"), and have been an employee at PG&E since 2007. My current title is Principal within PG&E's Energy Procurement organization. In this position, my responsibilities include negotiating PG&E's Renewables Portfolio Standard Program ("RPS") Power Purchase Agreements. In carrying out these responsibilities, I have acquired knowledge of PG&E's contracts with numerous counterparties and have also gained knowledge of the operations of electricity sellers in general. Through this experience, I have become familiar with the type of information that would affect the negotiating positions of electricity sellers with respect to price and other terms, as well as with the type of information that such sellers 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 Appendices A, B, C, D, E, F and G to PG&E's Advice Letter 3735-E submitted on September 30, 2010. By this Advice Letter, PG&E is seeking this Commission's approval of a PPA that PG&E has executed with Shiloh III Wind Project, LLC.

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"), and/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, if applicable, 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 filing.

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 September 30, 2010 at San Francisco, California.



Patrick M. Fox

PACIFIC GAS AND ELECTRIC COMPANY Advice Letter 3735-E September 29, 2010		IDENTIFICATION OF CONFIDENTIAL INFORMATION PER DECISION 08-06-068 AND DECISION 08-04-023		Length of Time			
Redaction Reference	1) The material submitted constitutes a particular type of data listed in the Matrix, appended as Appendix 1 to D.06-06-065 and Appendix C to D.08-04-023 (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
1 Document: Advice Letter 3735-E	Y	Item VII (G) Renewable Resource Contracts under RPS program - Contracts without SEPs. 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. General Order 66-C.	Y	Y	Y	This Appendix contains bid information and evaluations from the 2009 Solicitation; discusses, analyzes and evaluates the Project and the terms of the PPA; contains information concerning and evaluations of project viability; and contains confidential information of the counterparties. Disclosure of this information would provide valuable market sensitive information to competitors. Since negotiations are still in progress with bidders from the 2005, 2006, 2007, 2008, and 2009 solicitations and with other counterparties, this information should remain confidential. Release of this information would be damaging to negotiations. In addition, if information about and evaluations of project viability is made public, it could harm the counterparties and adversely affect project viability. Finally, this information has been obtained in confidence from the counterparty under an expectation of confidentiality. It is in the public interest to treat such information as confidential because if such information were made public, it would put the counterparty at a business disadvantage, could create a disincentive to do business with PG&E and other regulated utilities, and could have a damaging effect on current and future negotiations with other counterparty.	For information covered under Item VII (G) and 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 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 General Order 66-C, remain confidential.
2 Appendix A	Y	Item VII (G) Renewable Resource Contracts under RPS program - Contracts without SEPs. 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. General Order 66-C.	Y	Y	Y	This Appendix contains bid information and bid evaluations from the 2009 Solicitation. This information would provide market sensitive information to competitors and is therefore considered confidential. Furthermore, offers from the 2005, 2006, 2007, 2008, and 2009 solicitations and offers received outside of those solicitations are still under negotiation, further substantiating why releasing this information would be damaging to the negotiation process.	For information covered under Item VIII (A), remain confidential until after final contracts submitted to CPUC for approval For information covered under Item VIII (B), remain confidential for three years after winning bidders selected
3 Appendix B	Y	Item VIII (A) Bid information and B) Specific quantitative analysis involved in scoring and evaluation of participating bids.	Y	Y	Y	This Appendix contains bid information and bid evaluations from the 2009 Solicitation. This information would provide market sensitive information to competitors and is therefore considered confidential. Furthermore, offers from the 2005, 2006, 2007, 2008, and 2009 solicitations and offers received outside of those solicitations are still under negotiation, further substantiating why releasing this information would be damaging to the negotiation process.	For information covered under Item VIII (A), remain confidential until after final contracts submitted to CPUC for approval For information covered under Item VIII (B), remain confidential for three years after winning bidders selected

Redaction Reference	1) The material submitted constitutes a particular type of data listed in the Matrix, appended as Appendix 1 to D.06-066 and Appendix C to D.08-04-023 (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
4 Appendix C	Y	Item VII (G) Renewable Resource Contracts under RPS program - Contracts without SEPs. 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. General Order 66-C.	Y	Y	Y	This Appendix contains bid information and evaluation from the 2009 Solicitation; discusses, analyzes and evaluates the Project and the terms of the PPA; contains information concerning and analyses and evaluations of project viability; and contains confidential information of the counterparties. Disclosure of this information would provide valuable market sensitive information to competitors. Since negotiations are still in progress with bidders from the 2005, 2006, 2007, 2008, and 2009 solicitations and with other counterparties, this information should remain confidential. Release of this information would be damaging to negotiations. In addition, if information about and evaluations of project viability is made public, it could harm the counterparties and adversely affect project viability. Finally, this information has been obtained in confidence from the counterparty under an expectation of confidentiality. It is in the public interest to treat such information as confidential because if such information were made public, it would put the counterparty at a business disadvantage, could create a disincentive to do business with PG&E and other regulated utilities, and could have a damaging effect on current and future negotiations with other counterparty.	For information covered under Item VII (G) and Item VIII (un-numbered category following VII G), remain confidential for three years For information covered under Item VIII (A), remain confidential until after final contracts 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 General Order 66-C, remain confidential.
5 Appendix D	Y	Item VII (G) Renewable Resource Contracts under RPS program - Contracts without SEPs. 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. General Order 66-C.	Y	Y	Y	This Appendix contains bid information and evaluations from the 2009 Solicitation; discusses, analyzes and evaluates the Project and the terms of the PPA; and contains confidential information of the counterparties. Disclosure of this information would provide valuable market sensitive information to competitors. Since negotiations are still in progress with bidders from the 2005, 2006, 2007, 2008, and 2009 solicitations and with other counterparties, this information should remain confidential. Release of this information would be damaging to negotiations. Furthermore, the counterparties to the PPA have an expectation that the terms of the PPA will remain confidential pursuant to confidentiality provisions in the PPA. It is in the public interest to treat such information as confidential because if such information were made public, it would put the counterparty at a business disadvantage, could create a disincentive to do business with PG&E and other regulated utilities, and could have a damaging effect on current and future negotiations with other counterparty.	For information covered under Item VII (G) and Item VIII (un-numbered category following VII G), remain confidential for three years For information covered under Item VIII (A), remain confidential until after final contracts 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 General Order 66-C, remain confidential.
6 Appendix E	Y	Item VII (G) Renewable Resource Contracts under RPS program - Contracts without SEPs.	Y	Y	Y	This Appendix contains the terms of the PPA. Disclosure of certain terms of the PPA would provide valuable market sensitive information to competitors. Since negotiations are still in progress with bidders from the 2005, 2006, 2007, 2008, and 2009 solicitations and with other counterparties, this information should remain confidential. Release of this information would be damaging to negotiations. Furthermore, the counterparty to the PPA has an expectation that the terms of the PPA will remain confidential pursuant to confidentiality provisions in the PPA.	Remain confidential for three years

Reduction Reference	1) The material submitted constitutes a particular type of data listed in the Matrix, appended as Appendix 1 to D.06-06-066 and Appendix C to D.08-04-023 (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
7 Appendix F	Y	Item VII G) Renewable Resource Contracts under RPS program - Contracts without SEPs.	Y	Y	Y	This Appendix contains the PPA. Disclosure of the PPA would provide valuable market sensitive information to competitors. Since negotiations are still in progress with bidders from the 2005, 2006, 2007, 2008, and 2009 solicitations and with other counterparties, this information should remain confidential. Release of this information would be damaging to negotiations. Furthermore, the counterparty to the PPA has an expectation that the terms of the PPA will remain confidential pursuant to confidentiality provisions in the PPA.	Remain confidential for three years
8 Appendix G	Y	Item VII (un-numbered category following VII G) Score sheets, analyses, evaluations of proposed RPS projects. Item VI B) Utility Bundled Net Open Position for Energy (MWh).	Y	Y	Y	This Appendix contains information that, if disclosed, would provide valuable market sensitive information to competitors and allow them to see PG&E's remaining RPS net open energy position. Since negotiations are still in progress with bidders from the 2005, 2006, 2007, 2008, and 2009 solicitations and with other counterparties, this information should remain confidential for three years.	Remain confidential for three years

Public Appendix H
Independent Evaluator Report

ARROYO SECO CONSULTING

PACIFIC GAS AND
ELECTRIC COMPANY
BILATERAL CONTRACT
EVALUATION

ADVICE LETTER REPORT OF THE
INDEPENDENT EVALUATOR ON A
CONTRACT WITH SHILOH III WIND
PROJECT, LLC

SEPTEMBER 21, 2010

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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”) bilaterally negotiated and executed a power purchase agreement (PPA) with Shiloh III Wind Project, LLC (“Shiloh III”), a wholly-owned subsidiary of enXco¹, for the output of a new 60-MW wind generating facility in the Montezuma Hills of southeastern Solano County.

This proposed contract originated as a bilateral proposal to PG&E from enXco, which had previously contracted with the utility for the output of its nearby Shiloh II Wind Project. An independent evaluator (IE), Arroyo Seco Consulting (Arroyo), conducted activities to review and assess PG&E’s processes as the utility evaluated and negotiated the amended and restated contract.

The structure of this report follows the 2009 Independent Evaluator Report Template provided by the Energy Division of the CPUC. Topics covered include:

- The role of the IE;
- Adequacy of outreach for and robustness of the prior competitive solicitation;
- The fairness of the design of PG&E’s least-cost, best-fit (LCBF) methodology;
- The fairness of PG&E’s administration of its LCBF methodology;
- Fairness of project-specific negotiations; and
- Merit of the PPA for CPUC approval.

Arroyo’s opinion is that negotiations between PG&E and Shiloh III Wind Project, LLC were conducted fairly, overall. While PG&E granted Shiloh III an interesting concession in contract terms, the project also granted PG&E some significant concessions, with the result that Arroyo views the balance of terms as fair to ratepayers and to competing developers. Arroyo agrees with PG&E that the proposed agreement merits CPUC approval, based on an independently developed opinion that the contract offers a moderate to high net valuation, a low contract price, moderate portfolio fit, and high project viability.

¹ enXco is itself a subsidiary of EDF Energies Nouvelles, S.A., which is 50% owned by Electricite de France, the primarily state-owned French utility; 25% of EDF Energies Nouvelles is owned by a family group and the remainder of the equity ownership is publicly traded.

1. ROLE OF THE INDEPENDENT EVALUATOR

The California Public Utilities Commission (CPUC) had conditionally approved PG&E's RPS procurement plan in its Decision 09-06-018 issued on June 8, 2009. This chapter elaborates on the prior CPUC decisions that form the basis for an Independent Evaluator's participation in reviewing contracts that are negotiated by IOUs, describes key roles of the IE, details activities undertaken by the IE in this solicitation to fulfill those roles, and identifies the treatment of confidential information.

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 its Decision 04-12-048 on December 16, 2004 (Findings of Fact 94-95, Ordering Paragraph 28). In that Decision, which addressed the approval of three utilities' long-term procurement plans, the CPUC required the 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 a role for an IE would serve as a safeguard in the process of evaluating IOU-built or IOU-affiliated projects competing against Power Purchase Agreements (PPAs) with independent power developers, a safeguard to protect consumers from any anti-competitive conduct between utilities and their corporate affiliates or from anti-competitive conduct by utilities developing their own generation.

Later, in approving the IOUs' 2006 RPS procurement plans and solicitation protocols, the CPUC issued Decision 06-05-039 on May 25, 2006. In that Decision, the CPUC expanded its requirement, 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 all future competitive solicitations. This requirement to employ an IE 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 requirement, among others, was intended by the CPUC to increase the fairness and transparency of the proposal selection process.

Subsequently, as part of Rulemaking 08-08-009 to continue implementation of the RPS program, the CPUC issued Decision 09-06-050 on June 19, 2009. In that decision, the Commission concluded that short-term bilaterally negotiated contracts (e.g. those with term of less than ten years) should be governed by the same contract review processes and standards as contracts that arise through competitive solicitations, including review by an independent evaluator.

B. KEY INDEPENDENT EVALUATOR ROLES

To comply with the requirements ordered by the CPUC in Decision 06-05-039, PG&E retained Arroyo Seco Consulting to serve as IE for the contract to be negotiated between PG&E and Shiloh III Wind Project, LLC.

The CPUC stated its intent for participation of an IE in competitive procurement solicitations 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.”² More specifically, the Energy Division (ED) of the CPUC has provided a template to guide how IEs should report on the 2009 RPS competitive procurement process, outlining four specific issues that should be addressed:

- Did the IOU do adequate outreach to potential bidders, and was the solicitation robust?
- Was the IOU’s least-cost, best-fit (LCBF) methodology designed such that all bids were fairly evaluated?
- Was the IOU’s RPS bid evaluation and selection process fairly administered?
- Did the IOU make reasonable and consistent choices regarding which bids were brought to the CPUC for approval?

The structure of this report, setting out detailed findings for each of these key questions, is organized around the template provided by the ED.

C. IE ACTIVITIES

To fulfill the role of evaluating the proposed Shiloh III contract, several tasks were undertaken. Arroyo Seco had performed several of these tasks within its work scope of serving as IE for PG&E’s 2008 and 2009 RPS competitive solicitations; these prior activities were directly relevant to the evaluation of the Shiloh III contract.

- Reviewed the 2009 RPS RFO Solicitation Protocol and its various attachments including the Forms of Power Purchase Agreement (PPA) and PG&E’s detailed description of its LCBF bid evaluation and selection process and criteria.
- Examined the utility’s nonpublic protocols detailing how PG&E evaluates proposed contracts against various criteria, including market valuation, portfolio fit, transmission adders, credit, project viability, and RPS goals.
- Examined PG&E’s 2009 RFO master contact list; performed a detailed analysis of contacts with respect to industry and technology representation.

² CPUC Decision 06-05-039, May 25, 2006, “Opinion Conditionally Approving Procurement Plans for 2006 RPS Solicitations, Addressing TOD Benchmarking Methodology”, page 46

- Interviewed members of PG&E’s evaluation committee and sub-committees regarding the process, data inputs and parameters, background industry and utility information, quantitative models, and other considerations taken into account in evaluating contracts against non-quantitative criteria and in performing market valuation of contracts.
- Reviewed in detail various data inputs and parameters used in PG&E’s LCBF market valuation methodology.
- Spot-checked contract-specific data inputs to PG&E’s valuation model.
- Spot-checked the assignment of individual projects to transmission clusters or to local zones within the system controlled by the California Independent System Operator (CAISO).
- Built an independent valuation model and using it to value proposed contracts. This served as a cross-check against PG&E’s LCBF market valuation model. The IE model used independent inputs and a different methodology than PG&E’s LCBF methodology. It was much simpler and lacked detail and granularity used in aspects of the PG&E model. Its main value was to provide an independent check on the ranking of contracts provided by PG&E’s valuation model and to scan for data input errors and differences in treatment of contracts between PG&E and the IE. Where variances in the ranking of contracts between the two models were large (and there were very few such situations) the cross-comparison was helpful in identifying errors such as incorrect energy pricing, inappropriate exclusion or inclusion of Resource Adequacy (RA) value, or inaccurate assignment of Transmission Ranking Cost Report (TRCR) adders.
- Developed independent project viability scores for each contract, using the ED’s version of the Project Viability Calculator. This served as a cross-comparison to check on the PG&E evaluation team’s scoring, and helped to surface ambiguities in the Calculator’s scoring criteria that could lead reasonable individuals to score contracts differently. It facilitated discussions that led both the PG&E team and the IE to revise their preliminary scores upon review and cross-check.
- Reviewed PG&E’s evaluation of each contract on the criteria other than market valuation and project viability, testing for consistency and fairness in the treatment of contracts.
- Attended meetings of PG&E’s Procurement Review Group (PRG), including answering questions about the independent review and presenting a commentary on the selection process the utility proposed to use to construct a short list. Members of the PRG followed up with more specific questions about contracts, valuations, and project viability scores, to which Arroyo responded with more detail.

- Reviewed documents that passed between the two parties during the negotiation, including draft contracts.

D. TREATMENT OF CONFIDENTIAL INFORMATION

The CPUC's Decision 06-06-066, issued on June 29, 2006, detailed specific guidelines for the treatment of information as confidential vs. non-confidential in the context of IOU electricity procurement and related activities, including competitive solicitations and bilaterally negotiated agreements. For example, the Decision provides for confidential treatment of "Score sheets, analyses, evaluations of proposed RPS projects",³ as opposed to public treatment (after submittal of final contracts for CPUC approval) of the total number of projects and megawatts bid by resource type.

To the extent that Arroyo's reporting on the evaluation of the proposed Shiloh III agreement requires a more explicit discussion of such analyses, scores, and evaluations, and a more specific critique of concessions granted in contract terms, these are handled in greater detail in the confidential appendix to this report.

³"Interim Opinion Implementing Senate Bill No. 1488, Relating to Confidentiality of Electric Procurement Data Submitted to the Commission", June 29, 2006, Appendix 1, page 17

2. ADEQUACY OF OUTREACH TO PARTICIPANTS AND ROBUSTNESS OF THE 2009 SOLICITATION

This section discusses an assessment of the degree to which PG&E adequately conducted outreach activities to drum up sufficient participation in the 2009 RPS RFO process, and the degree to which the resulting solicitation may be judged robust enough to be competitive.

A. CLARITY AND CONCISION OF SOLICITATION MATERIALS

While not a particularly concise set of materials, the contents of PG&E's 2009 RPS RFO solicitation protocol generally provided clear direction to Participants on how to prepare and submit complete proposal packages that could be evaluated. Arroyo has a few observations about the clarity of the guidance provided in the protocol and issues created when Participants failed to understand or follow that guidance:

- The great majority of proposals were submitted as complete and conforming packages. The most common deficiencies in other proposals were (1) failures to submit the offer form (Attachment D) for all variants or project phases; (2) errors in filling in the offer form such as missing data; (3) failures to provide the electronic version of the package; (4) discrepancies between proposal text and offer form; and (5) in the case of buyout options, failure to specify buyout price in the offer form.

Since the requirements for the offer form were clearly addressed in the solicitation protocol, in the instruction sheet for the offer form, and in the bidders' workshop presentation that PG&E provided, Arroyo can only surmise that many Participants neglected to pay attention to these small but important details. Arroyo cannot identify any improvements to the clarity of the RFO materials that would have reduced the incidence of such Participant errors.

- The 2009 solicitation protocol specifically and clearly stated that Participants who propose to deliver renewable power at a point outside the CAISO grid should also specify a price premium to deliver into the CAISO or to an interface point with the CAISO. Several Participants failed to do so.⁴ Other Participants specified premiums that lacked any detailed backup on how the power would be delivered. This created an issue regarding how best to treat Participants fairly and consistently, given that some proposals were only offered with pricing at busbars outside the CAISO, some

⁴ At one point in the protocol, it states that the Participant "must also specify" the premium; elsewhere the protocols states that the Participant "may also present" the premium. It may be helpful to strengthen the language to emphasize the mandatory nature of the premium.

offered what appeared to be unrealistic premiums for delivery into the CAISO as eligible renewable resources,⁵ and others provided the full information that the protocol requested in a credible and detailed way.

While this does not appear to be a real issue with the clarity of the RFO materials, Arroyo suggests that in future solicitations the protocol be drafted to emphasize the mandatory nature of proposing a price premium for CAISO delivery as part of the Offer, and to clarify the solicitations existing language that the premium must be sufficient to ensure that the power deliveries fully qualify as eligible renewable resources under the California Energy Commission's (CEC's) guidelines.

- The 2009 solicitation protocol clearly stated two preferences of the utility that are not among the evaluation criteria: (1) a preference for projects that interconnect to nodes within the PG&E service territory, as opposed to the territories of other utilities) or to interface points at the boundary of the CAISO, and (2) a preference for projects with earlier on-line dates vs. later. These stated preferences played an important role in decisions about which proposals the utility selected for its short list.

In the course of debriefing non-shortlisted Participants, it appeared that several parties were unaware of these stated preferences, perhaps because the description of the preference fell outside the chapter of the solicitation protocol that describes how proposals are evaluated. Arroyo recommends that in future solicitations PG&E seek to edit the protocol to help clarify that these specific preferences can play an important role in selection, even though they are not among the evaluation criteria. This would improve the transparency of the selection process to Participants.

- The discussions that took place while debriefing non-shortlisted Participants suggest that several developers did not clearly understand the importance of the Project Viability Calculator as a tool for assessing the likelihood that a proposed project could attain commercial operation. If each Participant had carefully reviewed the Calculator and its criteria scoring guidelines, they would be expected to identify in whether they had achieved site control of their proposed project's location. However, it became clear from debriefings that some developers failed to appreciate that their viability score would have been higher had they revealed that they had achieved site control in their proposals, rather than omitting that crucial information.

Arroyo considers the solicitation protocol to have clearly stated that the Calculator (as modified by PG&E) was the basis for evaluating projects on viability, and it provided in the text of the protocol a link to the CPUC webpage displaying the Calculator. Arroyo recommends one possible clarification: that in future solicitations PG&E reprint the entire text of the criteria scoring guidelines in Appendix K of the solicitation that describes the evaluation criteria in greater detail

⁵ The protocol's language suggests that the premium "could be expected to include the cost of...a firming and shaping agreement" (page 46). The California Energy Commission's guidebook on RPS eligibility names three contracting structures that would render out-of-state intermittent renewable generation eligible to meet RPS requirements; all three involve firming and shaping services to achieve scheduling for use by in-state retail customers.

(the 2009 version of Appendix K provides the guideline for PG&E’s additional criterion of “EPC Experience” but not guidelines for the other criteria)

Given the amount of relevant material that the utility needs to provide in its solicitation protocol, it is not surprising that the main body of the document totals fifty-five pages. Arroyo cannot identify any straightforward way to make the document more concise; the material provided is generally needed to provide Participants with a full and transparent view of how the solicitation is intended to function and of full disclosure about the obligations and constraints that govern Participants if they choose to proceed.

When the utility solicited feedback from non-shortlisted Participants after announcing the results of the short list, the general observations provided by developers were that PG&E’s “RFP documents were very clear” and “straightforward”, and that the solicitation process “worked out fine”. Criticisms of the solicitation tended to focus on aspects of the process other than the clarity of the RFO materials, such as criticism of the design of the Project Viability Calculator, of the amount of information required, and of PG&E’s unwillingness to provide publicly any detailed information about the shortlisted proposals.

Overall, Arroyo believes that PG&E’s solicitation materials were generally clear, if not particularly concise, and that improvement opportunities to help ensure more complete Offer packages are submitted in the future are minor.

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:

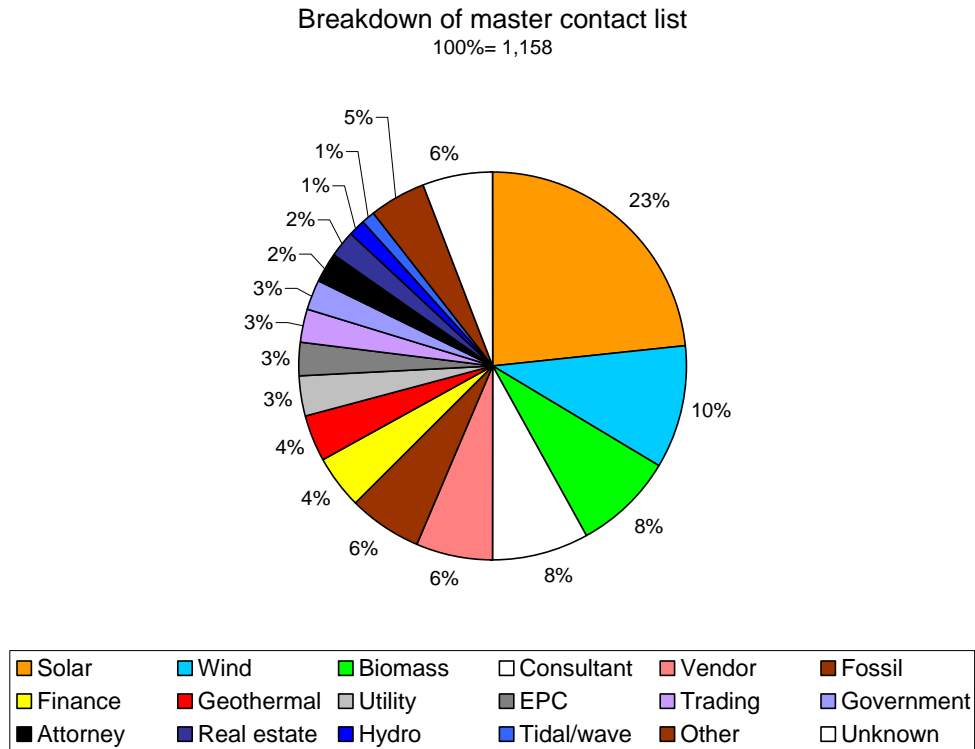
- How many individuals were contacted?
- To what extent were these contacts in companies that develop renewable power?
- Was a diverse set of renewable technologies covered in the contacts, or was the outreach excessively focused on one or two technologies?
- How widely was information about the solicitation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

By the beginning of July 2009, PG&E had compiled a contact list for use in publicizing its RFOs, totaling about 1,159 individuals. Of these, about 240 contacts were clearly identified as having been added in 2009, the period closest to the release of the RPS RFO.

When analyzed to attempt to assess which industry the individual contacts represented, the largest segment was made up of individuals in the solar power sector, followed by wind

power and biomass-based generation. Figure 1 displays the estimated shares by industry sector of these contacts. Note that this contact list is employed not just for renewable solicitations but for all-source RFOs as well.

Figure 1



Inspection of the overall contact list reveals that many of the major developers of renewable energy in North America are included, particularly among solar and wind developers. About half of the individual contracts represented organizations that could be positioned to participate in a renewable energy solicitation.

PG&E’s press release announcing the issuance of the 2009 RPS RFO was picked up and reported broadly in the electric power trade press, including publications such as:

- Global Power Report
- Megawatt Daily
- Power Market Today
- Electric Power Week
- Reuters News
- Dow Jones News Service

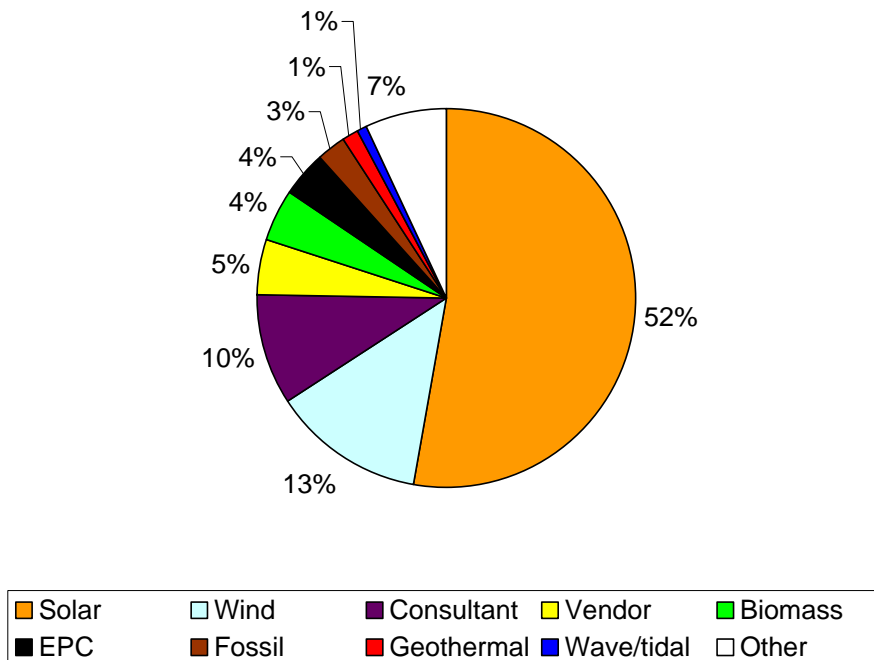
In additional, the detailed solicitation protocol and its attachments, the schedule, and other RFO informational items were posted on PG&E’s website for public access.

Another indicator of the adequacy of the outreach for the RFO was the response of attendees for the bidders’ conference. Figure 2 shows the breakdown of individuals who registered for the conference (there is no means to check who actually attended) by the sector of the industry their employer represents or specific projects for which their employer is currently pursuing a PG&E contract. A turnout of 243 individuals represents a very strong response and expression of industry interest, and is roughly twice the registration for the 2008 RPS RFO bidders’ conference. As with the contact list, the largest share of attendees represented the solar and wind sectors of the renewable industries.

Arroyo estimates that out of the individual corporations or entities that were represented in the large attendance at the bidders’ conference, about one-quarter actually submitted Offers (this includes entities that participated jointly with others in preparing an Offer). Arroyo considers that to be an indication of successful outreach, given that many of the organizations represented in the audience were not mainstream renewable energy developers with prior experience developing utility-scale power generation projects.

Figure 2

Breakdown of attendees, bidders' conference
100% = 231



As previously described, most proposal packages were complete and accurate. To the extent that the PG&E team had to follow up with Participants in order to address deficiencies, the errors in the packages generally related to:

- Failures to submit the offer form (Attachment D) for all variants or phases;
- Errors in filling in the offer form, such as missing data;
- Failures to provide the electronic version of the proposal;
- Discrepancies between the text of the proposal and the offer form; and
- In the case of buyout options, failures to specify buyout price in the offer form.

The bidders’ workshop presentation (held via webinar) dealt with how to fill in fields in the offer form in some detail, so it is hard to fault PG&E for insufficient outreach on these points. Attendance for the bidders’ workshop was, however, much smaller than for the bidders’ conference. No proposal was disqualified for an initial failure to fill in these fields properly if the Participant addressed the deficiencies, and Participants generally fixed the defects following correspondence with PG&E. The main impact of the deficient submittals was to slow down progress in evaluating proposals and making selections. Arroyo observes that PG&E may have an opportunity to increase the degree of outreach or promotion of the bidders’ workshop as a means to bring more Participants down the learning curve on how to use the PG&E-specific offer form, but some deficiencies are inevitable.

The vast majority of Participants seemed to understand, based on PG&E’s outreach efforts, what the purpose of this year’s solicitation was, and what specific information needed to be provided to complete a conforming proposal for this solicitation. A small number of Participants appear to have either mistaken the 2009 RPS solicitation for the as-yet-unapproved PV Program that PG&E has proposed to the CPUC as a means of eliciting mid-sized photovoltaic generation within its service territory, or regarded the proposed price for that separate program as a safe harbor to win shortlisting in the RFO.⁶ Arroyo cannot fault the utility for not making the distinction between the 2009 RPS RFO and other solicitations more clearly, given the plain text in the solicitation protocol describing the purpose of this RFO and the fact that it is a competitive solicitation and not a feed-in tariff.

Arroyo Seco Consulting’s conclusion is that PG&E conducted substantial outreach to the community of renewable power developers in North America. The number of individuals contacted, the breadth of distribution of the news of the solicitation in the electric power trade press, and the strikingly large attendance at the bidders’ conference and the decent yield of proposals submitted by conference attendees all suggest that PG&E’s overall outreach effort was strong and effective. There may be an opportunity for future improvement in one specific area, discussed below.

C. ROBUSTNESS OF THE SOLICITATION

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

⁶ Application 09-02-019, “Application of Pacific Gas and Electric Company To Implement Its Photovoltaic Program”, February 24, 2009

- Was the response large enough for PG&E to reasonably expect to achieve its goal of procuring 1 – 2% of retail load, given likely attrition of proposals between selection and commercial operation, without having to accept a majority of proposals?
- 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 projects?

The proposals PG&E received totaled a rather large volume of projected generation and capacity, far in excess of the expected growth in the utility's retail energy needs in the next several years. The offered volume totaled a substantial fraction of PG&E's expected retail load, and should provide plenty of opportunity for PG&E to negotiate, contract for, and procure the stated objective for the RFO of 1 to 2% of retail load, taking into account that some of the shortlisted Participants chose exclusive negotiation with other utilities for their projects instead of PG&E, some projects are likely to fall out of negotiation, and some projects that arrive at executed contracts may yet fail to be completed and enter commercial operation. Total GWh/year volume elicited exceeded the stated objective by a factor of dozens. This large ratio of offered volume to targeted procurement volume reflects a remarkably healthy and robust response, suggesting a strong likelihood that the targeted volume can be achieved at some point in time.

While the total size of the response to the RFO, measured in number of proposals, MW capacity offered, or GWh/year volume offered, was quite large, the diversity of renewable technologies appears to have diminished somewhat from the 2008 response. Certain technologies were underrepresented when compared to the outreach contact list or to the attendance at the bidders' conference.

Without directly obtaining feedback from developers who did not submit proposals (such as those who submitted Notices of Intent to participate but chose not to) it is hard to know what factors are limiting the response from other technologies. Arroyo speculates that current economic conditions may have worsened the economics of some of these generation methods, or that renewable fuel availability and pricing may have become more adverse.

Executive Order S-06-06 states a goal for California to obtain 20% of its renewable electric generation from biomass. In PG&E's case, the share of renewable power currently procured from biomass generation is already above that. However, as PG&E continues to succeed in negotiating large procurement contracts for renewable power using other technologies, a need may eventually emerge to increase the share of new procurement represented by biomass. Individuals associated with biomass and biogas generation made up about 8% of the utility's RFO contact list, and biomass and biogas power made up roughly 4% of the attendance of the bidders' conference, suggesting that PG&E has made efforts to solicit interest from this community, and engaged the attention of members of the biomass and biogas developer population. However, biomass and biogas proposals made up a smaller proportion of total volume offered. PG&E may have a continuing opportunity to increase the focus of its outreach to biomass developers in its future RPS solicitations.

D. ADEQUACY OF FEEDBACK FROM PARTICIPANTS

After arriving at a final short list, PG&E sent e-mails to Participants whose projects were not selected for the short list. Each communication included an opening to engage in a discussion of PG&E's evaluation. Several non-shortlisted Participants expressed an interest in such a follow-up discussion. Arroyo participated in most of these sessions in which the PG&E team debriefed the developers about the evaluation of these rejected proposals.

In general these feedback sessions were welcomed by Participants. They created an opportunity for Participants to obtain a clearer view of how PG&E's evaluation criteria and preferences applied to the specific proposals, and of what factors played a role in the failure to select the proposals. Most Participants, when prompted to offer feedback on PG&E's solicitation materials and process, had generally positive commentary, including positive ratings for the bidders' conference, for the solicitation protocol, and for the opportunity to debrief on the outcome of PG&E's selection. A variety of specific criticisms were offered. The feedback sessions that offered wholly negative commentary focused almost exclusively on developers who contested their proposal's rejection, rather than any specific, useful feedback on how to improve the solicitation materials or process.

Arroyo's opinion is that PG&E's efforts to seek feedback from non-shortlisted Participants were entirely adequate and quite helpful both to the utility and to those Participants who were willing to take part in a debriefing session. There remain opportunities to obtain more detailed feedback from the shortlisted parties in coming months as the utility and these Participants begin negotiations.

3. FAIRNESS OF PG&E'S CONTRACT EVALUATION METHODOLOGY

The key finding of this chapter is that, based on IE activities and findings, PG&E's evaluation methodology was designed fairly.

The following discussion identifies principles for evaluating the methodology, describes the methodology, evaluates the strengths and weaknesses of the chosen methodology, 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 provided a set of principles for evaluating the process used by IOUs for evaluating contracts in competitive renewable solicitations, within the template intended for use by IEs in reporting. The principles include:

- The IOU bid evaluation should be based only on information submitted in bid proposal documents.
- There should be no consideration of any information that might indicate whether the bidder 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 bids. These criteria should be applied consistently to all bids.
- The LCBF methodology should evaluate bids in a technology-neutral manner.
- The LCBF methodology should allow for consistent evaluation and comparison of bids of different sizes, in-service dates, and contract length.

Some additional considerations appear relevant to the specific situation PG&E finds itself in when evaluating renewable power contracts. Unlike some utilities, PG&E does not rely on weighted-average calculations of scores for various evaluation criteria to arrive at a total aggregate score. Instead, the team ranks contracts by net market value using its methodology, after which, “[u]sing the information and scores in each of the other

evaluation criteria, PG&E will decide which Offers to include and which ones not to include on the Shortlist.”⁷ The application of judgment in bringing the non-valuation criteria to bear on decision-making, rather than a mechanical, quantitative means of doing so, implies an opportunity to test the fairness and consistency of the method using additional principles:

- The methodology should identify how non-valuation measures will be considered; non-valuation criteria used in evaluating contracts should be clear to counterparties.
- The logic of using non-valuation criteria or preferences to reject high-value contracts and select low-value contracts should be applied consistently and without bias.
- The valuation methodology should be reasonably consistent with industry practices.

B. PG&E’S LEAST-COST BEST-FIT METHODOLOGY

The California state legislation that mandated the RPS program required that the procurement process use criteria for the selection of least-cost and best-fit renewable resources; in its Decisions D.03-06-071 and D.04-07-029 the CPUC laid out detailed guidelines for the IOUs to select LCBF renewable resources. PG&E adopted selection and evaluation processes and criteria for its 2009 RPS RFO. These are summarized in Section XI of PG&E’s 2009 Solicitation Protocol for its renewable solicitation, and detailed in Attachment K to that Solicitation Protocol.

Additionally, PG&E developed nonpublic documents for internal use that detail the protocols for each individual criterion used in the evaluation process. These include:

- Market valuation
- Portfolio fit
- Credit (including provision of collateral requirements)
- Project viability
- RPS goals
- Adjustment for transmission cost adders
- Ownership eligibility
- Sites for development

⁷ “Renewables Portfolio Standard, 2009 Solicitation Protocol, Pacific Gas and Electric Company, June 29, 2009”, page 42

The first six of these are listed as evaluation criteria in the 2009 RPS RFO solicitation protocol. Additionally, the protocol states two other evaluation criteria: the materiality and cost impact of counterparty's proposed modifications to PG&E's Form Agreement, and the total volume of offers submitted by a single counterparty (considering the volume of energy already under contract as well). In other words, the utility stated that it will take into account the degree to which potential counterparties have proposed changes to PG&E's 2009 Form Agreement as the basis for contracting, and the degree of supplier concentration in contracts with individual counterparties.

This section summarizes PG&E's methodology briefly and at a high level; readers are referred to the Solicitation Protocol and its Attachment K for a fuller treatment of the detailed methodology.

MARKET VALUATION

PG&E measures market value as benefits minus costs. Benefits include energy value and capacity value (Resource Adequacy value); ancillary services value is assumed zero. Costs are PG&E's payments to the counterparty, appropriately adjusted by Time-of-Delivery (TOD) factors as specified in the Solicitation Protocol. The TOD factors serve as a multiplier to the contract price per megawatt-hours (MWh) based on the time of day and season of the delivery, and are intended to reflect the relative value of the energy and capacity delivered in those time periods. Also, costs are adjusted to reflect transmission adders. The costs of integrating an intermittent resource into the electric system, such as load-following, providing imbalance services, operational reserves, and regulation, are assumed zero. Both benefits and costs are discounted from the entire contract period to 2010 dollars per MWh in the methodology.

For as-available energy delivery, PG&E measures energy value by projecting a forward energy curve (in hourly granularity) out to the time horizon of the contract period, and multiplying projected hourly energy price by the projected hourly generation specified by the contract's generation profile. For peaking or baseload contracts, the energy quantity is based on the performance requirements of the contract.

For dispatchable contracts, the protocol specifies use of a real-option pricing model to measure energy benefit. Similarly, the protocol specifies use of a real-option pricing model to value the utility buyout option attached to contracts that provide for a PPA plus such an option.

PG&E projects Resource Adequacy (capacity) value as a nominal dollar per kilowatt-year estimate. The CPUC recently revised the Resource Adequacy methodology that load-serving entities use to calculate Net Qualifying Capacity for intermittent generation that is sold on an as-available basis. While previously capacity quantity was calculated based on the annual average of the generation profile for the noon to 6 p.m. period, now the calculation is based on averaging the generation profile over five-hour blocks, the hours of which differ between April-October and November-May to reflect the different timing of peak demand in

different seasons.⁸ Also, the CPUC decided to base the Net Qualifying Capacity on a 70% exceedance level for these solar and wind resources whose output is stochastic in nature, in a calculation that takes into account diversity benefits of multiple individual generators with different profiles. The PG&E team has adapted its calculations of resource adequacy value to reflect the new definition of Net Qualifying Capacity.

For baseload and dispatchable resources, the capacity quantity is determined by the performance requirements of the contract. Capacity benefit is calculated as the product of capacity value and quantity, and discounted to 2009 nominal dollars.

PG&E incorporates compliance costs for greenhouse gases into the costs of non-renewable generation, assumed to begin in 2012. This feature is consistent with the CPUC's final resolution regarding the 2009 Market Price Referent that applies to contracts resulting from PG&E's 2009 RPS RFO.⁹ This feature only affects the net valuation of contracts indirectly, to the extent that projected future compliance costs are estimated to affect the value of capacity.

PORTFOLIO FIT

For the 2009 renewable solicitation, PG&E employed a quantitative scoring system to assess the portfolio fit of a contract into its overall set of energy resources and obligations. The team calculated one score for the firmness of delivery of the offered resource and another score for the time of delivery of the resource (relative to PG&E's portfolio needs). The overall score for portfolio fit is the numerical average of the two. This detailed methodology is not typically employed by PG&E for evaluating bilateral contracts.

CREDIT

PG&E assesses the degree to which counterparties propose to meet the requirements for providing collateral to meet their obligations. The requirements for collateral, described in detail in Section VII of the Solicitation Protocol, include posting Project Development Security after a PPA or PSA is executed and before Commercial Operation Date of the project, and posting Delivery Term Security for a PPA following the commencement of commercial operation. In the 2009 renewable solicitation, a subcommittee of PG&E's evaluation committee assigned numerical scores to each contract based primarily on the degree to which the counterparty proposed to comply with the utility's requirements for security; this scoring approach is not employed to evaluate bilaterally negotiated contracts, but such contracts are still rigorously evaluated by PG&E's credit department to ensure that its requirements are met.

⁸ California Public Utilities Commission, Decision 09-06-028, "Decision Adopting Local Procurement Obligations for 2010 and Further Refining the Resource Adequacy Program", June 18, 2009

⁹ California Public Utilities Commission, Energy Division, Final Resolution E-4298, December 17, 2009, pages 9 - 10

PROJECT VIABILITY

New in 2009, PG&E employs a version of the Project Viability Calculator to assess the likelihood that a proposed generation facility will be completed and enter full commercial operation on the proposed on-line date.

The history of renewable power procurement by California IOUs has been fraught with a certain incidence of contract failure. IOUs have, on occasion, negotiated PPAs with developers of new generation facilities, only to find later that some projects failed to come into full commercial operation on their proposed on-line dates. The failures or delays have arisen from a number of underlying causes, including impediments to site control, permitting, financing, transmission interconnection, and technical performance of the projects.¹⁰ Such failures or delays have contributed to a degree of shortfall between planned growth in delivered volumes of renewable energy and realized growth.

The Commission sought to address these issues of contract failure or delay related to poor viability of contracted facilities through vehicles such as Rulemaking 08-08-009 that included a review of LCBF methodologies for RPS offer evaluation, including an assigned Commissioner's ruling that addressed the issue of how to change procurement rules to ensure that viable projects are selected in the IOU's solicitations.¹¹ Pursuant to that ruling, the Energy Division of the CPUC drafted, circulated among stakeholders for comment, and finalized a Project Viability Calculator. The Calculator is envisaged to serve as a tool that will use standardized criteria to quantify a project's viability, relative to other projects.

The viability score is developed through an assessment of several attributes of the project, including

- Project development experience,
- Ownership and operating and maintenance experience,
- Technical feasibility,
- Resource quality,
- Manufacturing supply chain (e.g. degree of constraints upon availability of key components),
- Site control,

¹⁰ The CPUC's "Renewables Portfolio Standard Quarterly Report" to the California Legislature in July 2008 also reported other risk factors that could impede successful on-time completion of contracted renewable projects, such as uncertainty about the renewal of federal production and investment tax credits, developer inexperience, price reopeners, military radar, fuel supply, and equipment procurement.

¹¹ California Public Utilities Commission, "Assigned Commissioner's Ruling Regarding Potential Renewables Portfolio Standard Development in Imperial Valley and Evaluation of Renewable Procurement Contracts", February 3, 2009, pages 7-8.

- Permitting status,
- Project financing status,
- Interconnection progress,
- Transmission requirements, and
- Reasonableness of Commercial Operation Date (COD).

The Energy Division provided a set of scoring guidelines for each of these criteria, in an effort to standardize how a project would be assigned a score between zero and ten for each. These guidelines proved to be helpful for pursuing consistency and fairness in rating the viability of proposed projects.

In its Decision accepting the IOU's 2009 procurement plans, the CPUC noted that the Calculator "is a screening, not a dispositive, tool" that permits room for judgment.¹² Arroyo reads this to indicate that scores provided by the Calculator should not be used as the only determinant for selecting contracts based on superior viability, nor used to set a hard cutoff for selection vs. rejection based on score, but that the PG&E team may consider the Calculator score among other facts and considerations in assessing the likely viability of proposed projects. PG&E does not routinely score existing projects using the Calculator under the assumption that if they are already operating they are highly viable.

PG&E modified the Energy Division's final version of the Calculator by including a criterion for Engineering, Procurement, and Construction (EPC) experience, and reweighting the calculation to accommodate an twelfth criterion. This is consistent with a thesis that a project will be likelier to achieve commercial operation on schedule if the external contractor engaged by the developer to design, engineer, procure components for, and construct the project has had significant prior experience providing these services for other projects of similar size and technology.

RPS GOALS

PG&E assesses the degree to which a contract is consistent with and will contribute to the state of California's goals for the RPS Program, and the degree to which a contract will contribute to PG&E's goals for supplier diversity. The CPUC has articulated specific attributes of renewable generation projects which can be considered in utility procurement evaluations, such as benefits to low-income or minority communities, environmental stewardship, and resource diversity, that do not clearly fall within the other evaluation criteria. Similarly, the CPUC has issued a Water Action Plan, and to the extent a renewable energy project makes use of water on site, its proposed use of water is evaluated for consistency or inconsistency with the CPUC's recommended water conservation practices.

¹² California Public Utilities Commission, Decision 09-06-018, "Decision Conditionally Accepting 2009 Renewables Portfolio Standard Procurement Plans and Integrated Resource Plan Supplements", June 8, 2009, page

Additionally, the California Legislature articulated program benefits anticipated for the RPS program in the Legislative Findings and Declarations associated with the laws passed to create the program, and PG&E assesses the degree to which contracts would promote these benefits.

The Governor of California issued Executive Order S-06-06 that, among other things, established a goal that the state will meet 20% of its renewable energy needs with electricity generated from biomass. PG&E assesses the extent to which a project supports that goal.

PG&E has well-defined corporate objectives for supplier diversity, and evaluates whether the counterparty is, or will make a good faith effort to subcontract with, Women-, Minority-, and Disabled Veteran-owned Business Enterprises.

PG&E's methodology for scoring projects in the RPS solicitations on their support for RPS Goals involves scoring attributes of the proposal and calculating a weighted-average numerical score. This numerical approach is typically not employed to evaluate bilaterally negotiated contracts.

TRANSMISSION COST ADDERS

The cost of transmission to move power from a project offered in the solicitation to PG&E retail customers is considered twice in the process of market valuation. In the first ranking of Offers by market value, projects whose delivery points are outside the control area of the California Independent System Operator (or "CAISO") (such as projects interconnecting to other utilities' grids in the Pacific Northwest or the desert Southwest, or those within California that interconnect to the grids of utilities that are not CAISO members) are loaded with a proxy estimate of cost to transmit power from the delivery point to the border of the CAISO for firm delivery.

In the second step, the methodology takes into account the possible need to upgrade the transmission network in order to accommodate the increment of new renewable generation in locations (clusters) that may require significant capital outlay, either by PG&E or by other IOUs. Each California IOU publishes a Transmission Ranking Cost Report (TRCR) which identifies clusters that would require network upgrades to accommodate some level of new generation, and estimates a proxy for the cost of upgrades and the amount of new generation that would trigger the need for upgrades. If a CAISO interconnection study has been completed, the team can use the more specific estimate of transmission network upgrade costs identified in the study rather than the TRCR proxy.

PG&E does not use TRCR adders in the evaluation of bilaterally negotiated contracts, and did not use either a TRCR adder or an estimate of the cost of alternative commercial arrangements in evaluating the Shiloh III contract. In its independent review, Arroyo assessed the valuation of the Shiloh III contract relative to market price at the NP-15 zone, because the proposed facility's interconnection is within PG&E's grid. While the point of interconnection for the project, PG&E's Birds Landing substation, appears to be within PG&E's Vaca-Dixon transmission cluster, which is one of the more congested clusters in the service territory, the network upgrades required by the CAISO to achieve reliability and deliverability for the interconnection have already been performed. This would imply that

the network upgrade costs are sunk costs, and that going-forward costs for the interconnection are modest, and that no TRCR adder need be applied to the project's economics to make a fair comparison with competing alternatives.

UTILITY OWNERSHIP ALTERNATIVES AND SITES FOR DEVELOPMENT

PG&E has developed protocols for evaluation of proposals to sell the utility a site for development of renewable generation, to build and transfer to utility ownership a new facility, to provide the utility with an option to purchase a facility after some period of commercial operation, or to undertake joint development and/or joint ownership of a new facility. The evaluation of such Offers includes both an analysis of the economics of the project generation under utility ownership, analogous to the valuation of PPAs, as well as a consideration of the extent to which ownership of such a project is compatible with the utility's core competencies.

COUNTERPARTY CONCENTRATION

In the 2009 RPS solicitation protocol, PG&E stated explicitly that it will consider its total exposure to volume of contracted deliveries from any individual counterparty as well as the volume already contracted with the counterparty in making short list decisions. Arroyo regards supplier concentration as a legitimate business concern for the utility, both with respect to credit risk for the utility's supply portfolio as well as risk of development failure.

PG&E'S PREFERENCES REGARDING OFFERS

In addition to the various evaluation criteria, PG&E's solicitation protocol states two preferences regarding selection of Offers. In section III regarding Solicitation Goals, the section on contract term states that "Earlier deliveries are preferred to later deliveries." Arroyo views this as a reasonable preference to take into account when making a short list. PG&E has a legal obligation to meet near-term targets for RPS deliveries as a percent of total retail sales.¹³

PG&E also states in its solicitation protocol a preference for projects that deliver power to "a nodal delivery point...within PG&E's service territory" over projects that deliver to CAISO interface points (e.g. the California-Oregon Border, or COB, or points such as Mead, Palo Verde, or Four Corners substations) or to "California locations outside of the CAISO's control area", or to out-of-state locations.

Arroyo regards this as a reasonable preference, and appropriate to state in the protocol. Some of the operators of control areas external to the CAISO have in the past chosen not to provide services such as imbalance service or operating reserves that would be required to enable an intermittent generator such as a wind or solar photovoltaic facility that interconnects in their territory to schedule firm deliveries to a CAISO intertie. For other control area operators, there is a limitation on availability of transmission to wheel power

¹³ With some offers, however, the reverse may be true: an earlier proposed commercial operation date may be indicative of an inexperienced developer who is unaware of the barriers to achieving successful interconnection agreements, transmission development, local permitting, etc.

within their territory from a generator to and across a CAISO interface point, as there has been on Path 42 between IID and Southern California Edison territories.

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

PG&E's evaluation methodology for renewable energy solicitations has been revised over the course of several years, and its evolution has benefitted from input from IEs and the utility's PRG. Consequently, it has achieved a certain degree of refinement that has strengthened the process from the perspective of fairness and reasonableness.

1. MARKET VALUATION

PG&E's valuation methodology has several advantages over methods used by other utilities:

- It is rooted in a comparison to market price forwards rather than to hypothetical model outputs for future price based on inputs such as forecast demand, modeled supply increases, and fuel market price forwards.
- It is relatively rapid to turn around valuations of several PPAs at once, in contrast to the burdensome nature of running multiple cases of traditional utility production cost models with dozens of cases for each generating unit assumed built vs. assumed not built to calculate system cost differences between scenarios with each unit in vs. out.
- It uses a valuation concept that is generally accepted in the electric power industry.
- It provides an intuitive valuation based on the degree to which a generating unit is "in the money" with respect to market price

There are some drawbacks with this approach, some of which are common to any valuation methodology for long-term PPAs:

- Because western power market forwards are not liquid and transparent beyond a limited time horizon, PPAs that last for 25 or 30 years must rely on extrapolation of market forward curves for valuation rather than on direct observation of traded prices for power two decades hence.
- A certain degree of interpolation or projection is required to achieve hourly granularity in price assumptions.
- In the absence of functioning, liquid, transparent markets in California for Resource Adequacy or for Greenhouse Gas compliance, the valuation must rely on fundamental forecasts for the value of capacity and of GHG compliance rather than on traded forward curves.

- The methodology assigns Resource Adequacy value to all offered facilities interconnecting within the CAISO except where the project explicitly identifies that it plans to interconnect to the CAISO as an energy-only resource. Such energy-only resources are deemed to have Net Qualifying Capacity of zero by the CAISO. The developer benefits by avoiding the cost of network upgrades for deliverability. However, PG&E ratepayers do not benefit from receiving Resource Adequacy value from the project, so it is appropriate to assign zero RA value in the valuation.
- Arroyo has a concern about the extent to which projects that propose to interconnect to the CAISO through the SGIP will actually deliver the full calculated amount of Resource Adequacy to PG&E customers, in the absence of a deliverability assessment. The valuation methodology assigns these projects full RA value, but one can imagine an outcome in which such a project fails to deliver its proposed generation to the grid because of network constraints, or the CAISO counts less Net Qualifying Capacity than that calculated based on the proposed generation profile, if and when deliverability issues emerge.
- The approach used does not provide any direct insight into the cost of remarketing power when the utility must take delivery of an as-available generating resource and remarket the portion in excess of portfolio needs in off-peak periods. This is a feature of utility production cost models that provides some guidance regarding “portfolio fit” based on modeled unit commitment and dispatch outcomes.
- The methodology, given its inputs from forward curves, RA value and GHG compliance value assumptions, and discount rate, sometimes gives results that seem counterintuitive, such as preferring higher-priced but longer-term contracts to lower-priced but shorter-term contracts, or preferring PPAs with later on-line dates to earlier on-line dates, all else being equal. Upon inspection, these attributes of the methodology are consistent with the models construction and inputs. Undesirable outcomes (such as preferring contracts with much later start dates) can be addressed through PG&E’s flexibility to apply business judgment to its decisions.
- While the CAISO’s Market Redesign and Technology Update (MRTU) has been implemented, the data history of nodal pricing outcomes is not yet extensive enough to use for valuing projects at congested nodal locations. The methodology relies on prior information to adjust valuation for nodal price issues. This may be remedied in future solicitations.

2. EVALUATION OF VARIOUS TECHNOLOGIES AND PRODUCTS

PG&E’s evaluation approach for net value and project viability are essentially technology-blind. The project-specific inputs to the valuation model are contract price, timing, location, generation profile, and, if relevant, buyout price. These inputs do not specifically reflect the technology of the project. That being said, the cost of a project clearly affects the pricing offered by the developer, so higher-cost technologies tend to lose the competition, all else being equal.

The Project Viability Calculator was designed to be technology-blind as well; the scoring criteria do not provide for higher scores for specific technologies. However, the Calculator will return a lower score for a project that relies on a technology that is not well-commercialized, or that the developer (or affiliated members of its team) lacks prior experience developing, owning, operating, or financing, all else being equal. So in a sense the methodology will tend to discount projects based on newer technologies or on those that have not been implemented broadly at utility scale, and will tend to promote projects that rely on technologies that have found widespread market acceptance and have dozens of examples of 100+ MW installations. This means that, using the Calculator, IOU renewable solicitations will not be likely to be the venue for adopting new technologies unless they have some striking advantage in price (which tends not to be the case for hardware that has not yet achieved manufacturing economies of scale).

PG&E has attempted to facilitate short-term renewable power contracts (term less than ten years) by such initiatives as modifying its standard Form Agreement to accommodate such contracts, and crafting substitute language for the Form Agreement that more closely resembles industry standard agreements for short-term power transactions. One of the counterintuitive features of PG&E's valuation methodology, given its specific inputs, is that short-term contracts that are priced at what appears to be today's competitive market price for Western renewable power sales of one to three-year duration tend to appear worse in discounted net value than long-term contracts of 25 or 30 years duration whose contract prices start higher and escalate. Arroyo has concluded that it is generally inappropriate to compare a two-year contract to a thirty-year contract using PG&E's net value metric, and that it would be more appropriate to compare short-term PPA offers to other short-term PPA offers to make a judgment of their relative competitiveness.

3. EVALUATION OF PORTFOLIO FIT

PG&E's current approach to evaluate portfolio fit within its renewable power solicitations has specific advantages:

- The numerical score is based on quantitative calculations or on technology-specific attributes, and is fairly objective in its development.
- The scoring for time of delivery is closely related to how well the generation profile of the project matches PG&E's contractually designed super-peak periods vs. night periods, which in turn are intended to reflect the match with PG&E's portfolio needs.
- The range of score from zero to 100 enables a reviewer to discern differences between offers more easily than the range of zero to 5 used in the 2008 solicitation.

There are a few drawbacks to this approach:

- The methodology does not discern between how a contract might fit with PG&E's portfolio needs today (when the utility has little or no need for new baseload power) vs. needs a decade from now, when load growth and the retirement of older facilities might engender a stronger need for baseload power. Similarly, the methodology

does not distinguish a short-term from a long-term contract, though the latter might provide a better fit in the future given possible future portfolio needs.

- The methodology doesn't explicitly address the cost of remarketing power during off-peak periods, though it clearly recognizes the worse fit of resources that generate more in the early hours of the morning and more in winter rather than in summer.
- It may be difficult to accommodate the portfolio fit of certain technologies, such as solar thermal facilities with storage, in the framework being used. It is not clear whether such a facility that has a limited ability to schedule generation past the peak hours of insolation and a limited ability to respond to dispatch orders fits well into the existing scoring system for portfolio fit.
- In the greater scheme of things, the portfolio fit criterion does not appear to have as much impact as others such as market valuation, project viability, and RPS goals. To Arroyo's knowledge there has not yet been a situation where a renewable PPA's superior portfolio fit score has enabled it to be shortlisted despite inferior value or viability; nor has there been a situation where an inferior portfolio fit score has led a PPA to be rejected.

4. EVALUATION OF BIDS WITH VARYING SIZES, IN-SERVICE DATES, AND CONTRACT LENGTH

PG&E's valuation methodology is essentially blind to project size; it does not consider the extrinsic variables of MW capacity or GWh volume as positive or negative factors but rather reduces the value of the contract to a normalized \$/MWh metric. To the extent project size has an impact, it reveals itself in the proposed contract price if the technology is one that provides economies of scale and enables developers to propose lower prices for larger projects. This might be the case where fixed costs for elements such as switchyards, towers, steam turbines etc. can be spread over more MW capacity.

The viability scoring system, however, is not neutral to project size. It is evident that projects within California that can use the CAISO's Small Generator Interconnection Procedures (SGIP) will score higher for the Interconnection Progress criterion than any larger project that uses the Large Generator Interconnection Procedures (LGIP), except for those that have already progressed to the LGIP Phase II study or have obtained an interconnection agreement.¹⁴ This tends to favor projects with capacity of 20 MW or less.

Similarly, the larger the project, the less likely it is that the developer has succeeded in the past in developing similar or larger sized projects, owned and operated similar or larger sized projects, or financed similar or larger sized projects. So the proposal is likelier to score lower on Project Development Experience, Ownership/O&M Experience, and Project Financing Status if the project is larger. Also, in the case of newer technologies where there is limited manufacturing capacity worldwide for key components, a larger capacity project may score worse on Manufacturing Supply Chain than a smaller one, all else being equal.

¹⁴ On average, developers seem to prefer to have an executed PPA already in hand before paying the cost of a Phase II study, so it's less likely that Offers to an RFO that use LGIP are in Phase II already

Arroyo agrees that a developer who has never previously built, financed, or owned and operated a generation facility of the same or larger MW capacity as the current proposal may have poorer prospects for success in completing a facility on schedule than one who has two or more larger projects in her resume. This feature of the Project Viability Calculator, however, has the effect of “letting the rich get richer” by favoring proposals from developers who have successful track records and disfavoring those who lack large generation project experience. Whether this is fair or not isn’t obvious without more data on the relationship between prior project experience and success rate.

As described previously, PG&E explicitly prefers proposals which propose earlier commercial operation dates to later ones, and exercises this preference in making selections for the short list. The valuation methodology, using current inputs, exhibits a slight propensity to favor projects that start later rather than earlier, all else being equal (this is related to assumptions regarding power market prices, capacity value, and discount rate), but the preference for earlier CODs appears to swamp this small effect.

The valuation methodology similarly tends to favor contracts with longer duration to those with shorter terms, all else being equal.¹⁵ Since no counterparties ever seem to propose both a longer and shorter duration contract at the same contract price, this is a very minor effect, typically swamped by the lower contract price offered for the longer-term contracts. There does not appear to be a countervailing effect in the viability scoring methodology, where one might think that contracts for a solar photovoltaic project with a 30-year term would be scored lower for viability than the same project contracted for a 20-year term, given the limited expected reliable lifetime of inverters and trackers and the likelihood of declining reliability over the longer time horizon. The scoring guidelines for the Project Viability Calculator do not appear to take such issues into account.

5. EVALUATION OF BIDS’ TRANSMISSION COSTS

The valuation methodology has a complex set of algorithms and steps to assign proxies for actual transmission cost to the contract price of generation in order to compare proposals fairly, taking into account the cost of moving power from the delivery point to customers. These include estimates of the cost of moving power from non-CAISO delivery points to PG&E customers, and of the allocated cost of transmission network upgrades required to achieve deliverability for new generation facilities that propose to interconnect in congested locations. Many of the features of the transmission cost methodology are specified by regulatory decisions.

The methodology has a few strengths:

- It provides a means to level the playing field between Offers that deliver directly into PG&E’s service territory at uncongested locations and those whose proposed

¹⁵ This is a feature of the inputs rather than the algorithm; with a modest discount rate and power market forwards that are extrapolated beyond a few decades, proposed renewable contract prices tend to fall below brown power market prices in the most distant years so that the longer the contract term is, the more valuable the overall contract is.

facilities will require expensive new transmission upgrades and new substation facilities to maintain grid reliability.

- It provides a means to level the playing field between projects located within the CAISO and those delivering outside the CAISO for whom the cost of moving power to PG&E customers requires wheeling across foreign control areas, tariff payments to other transmission owners, and/or shaping and firming services needed to achieve firm scheduled deliveries into the CAISO in order to qualify as eligible renewable resources under CEC guidelines.

The transmission cost methodology also has some obvious drawbacks:

- The two-step process of calculating Transmission Cost Ranking Report adders is so analytically burdensome that it slows the turnaround time of the valuation ranking.
- The use of proxies such as published transmission tariffs or estimated costs for alternative commercial arrangements may understate the actual cost of moving power to PG&E customers from other control areas. The price of shaping and firming services (that would be required to render out-of-state intermittent power RPS-eligible) has escalated substantially from past years, reflecting the risk associated with providing such services and the increasing cost of doing so. Also, the cost of non-CAISO control area operators providing operating reserves, imbalance services, and wind integration services do not appear to be fully reflected in the proxies.
- It is difficult to explain to counterparties how the transmission analysis affects the valuation of their Offers. Despite the fact that the solicitation materials provided a discussion of TRCR adders, it was clear that some counterparties proceeded to propose new facilities sited in highly congested transmission clusters. Because these new facilities would likely require major capital expenditures to effect grid upgrades, and because the expenditures would be allocated to very few new generation projects (most experienced developers or those with knowledgeable transmission consultants seemed to avoid the most congested clusters), the proxy costs for transmission were quite high and when added to contract costs tended to disqualify these proposals from the short list. It was clear from debriefing sessions that some of the developers, particularly those less knowledgeable about grid issues, were completely unaware that their proposed project sites are very unattractive from a transmission point of view.

6. EVALUATION OF BIDS' PROJECT VIABILITY

The implementation of the Project Viability Calculator as a screening tool for use in the evaluation of proposals has brought several advantages:

- The Calculator is a step in the direction of more standardized evaluation of viability across all three IOUs.
- The Calculator provides a broader set of criteria by which projects are assessed than was the case with PG&E's prior approach to scoring viability.

- The range of scores from zero to 100 gives more visibility to differences between projects.
- The methodology allows PG&E to use both the more standardized tool as well as business judgment in taking project characteristics into account when making short list decisions.

There are still opportunities to improve the use of the Calculator.

- The scoring guidelines for the Calculator are sufficiently ambiguous that reasonable individuals scoring the same project can arrive at different results. When the scores rated by Arroyo and the PG&E team were compared, the variance between scores had a standard deviation of 13 points.¹⁶ This suggests that the Calculator is still a crude tool with imprecision in the scoring process, and that differences of only two or three points between projects should not be regarded as determinative in selecting one and rejecting the other; the difference falls within the error of the analysis.
- There is a future opportunity for the individual scorers within the PG&E team to achieve greater consistency in how they interpret the scoring guidelines as the team gains greater experience in using the Calculator.
- Arroyo does not regard some of the criteria in the Calculator as providing particular insight into the likelihood of successful project completion. For example, the score for Transmission Requirements depends simply on when access is expected, and not on the degree of difficulty anticipated for achieving the upgrades required to provide access while maintaining grid reliability and achieving deliverability for the project. Arroyo would view a project that depends on a two billion-dollar transmission upgrade requiring the acquisition and permitting of dozens of miles of right-of-way as more risky with respect to schedule than one that requires an upgrade to a single distribution substation, even if they have the same proposed timing for access.
- Some proposals were scored low simply because the counterparties omitted basic information, even though upon debriefing it became clear that full disclosure would have resulted in a higher score. It is unclear how this could be improved in the future, since the solicitation materials clearly stated what information was required.

7. OTHER ISSUES

PG&E's methodology has several other strengths in general not related to specific evaluation criteria. For example, use of an Independent Evaluator and subjecting the draft short list to review and comment by the Procurement Review Group introduces a window into sharply different opinions about what the utility's priorities should be, which is

¹⁶ The averages of Arroyo's and PG&E's scores for the Offers were only two points apart. Arroyo found the comparison between scores to be helpful to diagnose issues with specific projects and to identify errors made by either scorer, as opposed to stimulating arguments about which score was "right".

particularly helpful when subjective judgment is used to weigh conflicting criteria such as value, viability, and RPS goals. The utility took several suggestions by the IE and PRG members into account in assembling its final short list.

Feedback from non-shortlisted Participants provided some insight into other strengths of PG&E's solicitation process compared to other utilities.

- The bidders' conference was cited as being quite helpful in clarifying solicitation objectives, evaluation process, and requirements.
- The solicitation materials were regarded as clear and straightforward.
- While frustrated by PG&E's policy of not disclosing detailed information about the nature of the short list, and the utility's unwillingness to provide second chances to improve rejected Offers, Participants appreciated the opportunity to be debriefed about the reasons why their Offers were rejected because they could gather information on how to make their projects more competitive in future solicitations.

D. 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. Most of these have provided incremental improvements to the methodology. Arroyo can at this point only suggest a few modest changes that may further improve the means by which PG&E evaluates proposals or the transparency with which potential counterparties can view the evaluation process.

TRANSPARENCY

One set of suggestions would seek to address the sense, arising from debriefing non-shortlisted Participants, that comprehension of how PG&E evaluates and selects Offers among the developer community could be improved. This could lead to reduced wasted effort on the part of developers in promoting projects that are unlikely to be selected, and reduce the amount of wasted effort within the utility as it attempts to analyze Offers with poor viability and low value. Some ideas could include:

- Including a walk-through of the scoring guidelines for the Project Viability Calculator in the bidders' conference, to explain what specifically needs to be demonstrated within the text of the proposal and why it affects the viability score (e.g. identifying whether and how site control has been achieved, and naming the EPC contractor if it has been selected);
- Including the scoring guidelines for all twelve criteria used in the Calculator and not just the EPC Experience criterion within the body of the solicitation protocol, rather than a website reference, or within Appendix K;
- Describing in the bidders' conference which clusters in PG&E's service territory are the most congested, perhaps in terms of ranking by the proxy \$/kW cost that is

provided by PG&E's TRCR for network upgrade costs that would be allocated to generators choosing to interconnect there, based on the total MW range of possible new generation that was analyzed for the TRCR. This could give developers more of a sense of which sites are disadvantaged by congestion issues;

- Editing solicitation materials to emphasize the need for out-of-state projects to provide both busbar contract price and price premium for CAISO delivery, and to clarify for projects proposing to interconnect in non-CAISO control areas in the state the need to explicitly identify how the power would be moved to the CAISO;
- Stating within the protocol the types of relevant costs (such as firm transmission, imbalance costs, operating reserves, and shaping and firming fees if appropriate) that would need to be covered by the price premium to move power from a foreign control area to the CAISO, in an effort to motivate Participants to provide more accurate, more realistic, and more complete information about how they would deliver their energy, or alternatively educating them about the disadvantages of siting an intermittent generation project in a control area whose operator will not support proposed exports to the CAISO with operating reserves and imbalance services;
- Clarifying the extent to which transmission adders would be added to the economics of out-of-state projects proposing to deliver at distant substations such as Moenkopi or Four Corners, despite the fact that these serve as CAISO scheduling points;
- Editing the solicitation materials to clarify that, in addition to the various evaluation criteria, PG&E will use its preferences regarding delivery point and timeliness of commercial operation date to make selection and rejection decisions for the short list (or, alternatively, relabeling those two preferences as evaluation criteria); and
- Editing the solicitation protocol to provide a fuller description of how proposals for utility ownership (including PSAs, PPAs with buyout options, and joint development or joint development) are evaluated and what characteristics of such projects would render them attractive or unattractive to the utility as candidates for ownership.
- In the Decision approving the IOU's 2009 procurement plans, the CPUC specified that the utilities should conduct special outreach activities to highlight the unique opportunity to develop new renewable generation in the Imperial Valley now that the transmission investment in the Sunrise Powerlink is approved (by, for example, ordering that each IOU conduct a special bidders' conference to highlight the Imperial Valley opportunity). Similarly, the Decision called for specific monitoring by the Energy Division of the outcome for proposals located in the Imperial Valley in the 2009 RFOs. However, the Decision also stated that "Monitoring does not mean that preference is given to Imperial Valley developers" and "Providing a

Based on debriefing sessions with non-shortlisted Participants, it is evident that some developers understood the special outreach and special monitoring to imply that Offers for projects in the Imperial Valley would receive special preference by PG&E. In reviewing the solicitation materials, including the presentation at PG&E's special bidders' workshop on the Imperial Valley, Arroyo found no statement or suggestion that the utility would provide any special preference to Imperial Valley renewable projects. As was feared by a PRG member, the special outreach efforts, despite the careful wording of the solicitation materials, appear to have given the misimpression to some developers that a preference would be given to Imperial Valley developers.

Arroyo's suggestion is that, should the situation arise again to conduct special CPUC-directed outreach for particular opportunities, that the solicitation materials also emphasize that LCBF principles will be followed in PG&E's evaluation and selection procedures and that no special preference will be provided (unless of course the CPUC decides in the future to mandate a preference).

- The offer submittal deadline stated in the solicitation protocol was 10 a.m. Pacific Time on August 24, 2009. Arroyo wonders whether in future a better choice might be to reset the deadline to noon, in order that, on one hand, the PG&E team and IE can begin the Offer Opening process in the morning as package deliveries start to arrive, while on the other hand out-of-town Participants will not feel pressured to hand their Offers to the team in person at some incremental expense.

VALUATION INPUTS AND PARAMETERS

Arroyo has a few suggestions for improving the methodology for valuing proposals:

- Use the discount rate employed by the Energy Division in calculating the Market Price Referent, which is based on an estimate of the cost of capital for power developers, rather than a discount rate based on PG&E's authorized cost of capital. Arroyo believes that given the variety of risks that face renewable project development (permitting, site control, interconnection, equipment procurement, financing, etc.) it is more appropriate to discount the expected future benefits and costs of the projects using a higher discount rate representative of the riskier independent power industry, rather than the lower discount rate of a regulated monopoly. One effect of using the lower utility discount rate is that it overemphasizes the value to ratepayers of the last decade of project operation, including years after 2020, for which the extrapolation of power market pricing provides a picture of valuation that is tenuous at best. Arroyo believes that developers appropriately use a higher discount rate than PG&E's authorized cost of

¹⁷ California Public Utilities Commission, Decision 09-06-018, "Decision Conditionally Accepting 2009 Renewables Portfolio Standard Procurement Plans and Integrated Resource Plan Supplements", June 8, 2009, pages 16, 17

capital in making their decisions about contract price, despite the fact that once contracted the project revenue is essentially secured by PG&E's credit.

- Investigate the extent to which the CAISO will actually grant PG&E's customers the Resource Adequacy value for generation that interconnects through SGIP. Arroyo is concerned that assuming full RA value for small projects that will not undergo the scrutiny of a CAISO deliverability assessment may lead to a situation where SGIP-based projects are shortlisted assuming they will deliver RA value to ratepayers but later fail to actually deliver that value. While both the CAISO and CPUC are aware of this situation and wish to seek a solution, a solution is not guaranteed.
- Require projects that are seeking CAISO interconnections through the LGIP to state explicitly in their Offer whether they are pursuing energy-only status and avoiding the costs associated with network upgrades for deliverability. Such projects should not be credited with RA value in the evaluation, and it would be better to identify these situations early, as well as to monitor for those projects that switch to energy-only status after the short list is finalized so that their value to ratepayers is diminished with no concomitant reduction in contract price.
- Codify the procedures for assigning non-PG&E transmission adders to projects into a (nonpublic) protocol. The valuation methodology would benefit from an effort to achieve greater internal clarity and consistency in how decisions are made for assigning transmission adders for moving power from other states to the CAISO, for delivering power at CAISO interface points outside PG&E's territory, and delivering into non-CAISO control areas. It would be particularly helpful to codify precedents that have been made in prior RFOs regarding when and where to use TRCR adders vs. the cost of alternative commercial arrangements, in order to improve the consistency with which Participants and proposals are treated.
- Require that PG&E's subcommittee on ownership eligibility review all shortlisted proposals that involve utility ownership, including PPAs with buyout options. Arroyo noted that one proposal was shortlisted because the variant with a buyout option proposed an attractively low strike price for PG&E to purchase the facility at its option. The valuation of that buyout option variant was quite high among the rankings, but the valuation of the Offer if the buyout option were not exercised was substantially lower. Arroyo was concerned that there was apparently no buy-in required of the team responsible for considering such ownership for the PPA-with-buyout-option variant. This creates the possibility that a PPA-with-buyout Offer would be short-listed based on its attractive buyout price but that the facility itself would turn out later not to meet PG&E's criteria to own the project and the straight PPA valuation would fail to meet the value cutoff.¹⁸

VIABILITY

¹⁸ For the actual Offer in question, the valuation of the straight PPA with no buyout option exercise was much lower but still above the value cutoff so the concern Arroyo expresses is relevant for future solicitations but not for the current situation.

With the introduction of the Project Viability Calculator as a tool to assess the likelihood of projects achieving successful operation come some opportunities for the Energy Division and the IOUs to evaluate its use and possibly implement improvements for the future.

- There is an opportunity to refine the scoring guidelines for the Calculator. It became evident that reasonable people scoring offers could arrive at different interpretations of the guidelines, and that there are gray areas that require judgment. For example, one scorer might regard a developer's prior experience constructing and operating small photovoltaic installations that reside on a customer's premises beyond the meter as the basis for a high score on Project Development Experience, while another scorer might view these projects as not representing "wholesale generation" and therefore assign a zero score.¹⁹ Similarly, one scorer might view a photovoltaic project for which the developer estimates direct net irradiance based on publicly available government-published data for a nearby weather station as deserving a score of 10 for Resource Quality, while another scorer might assign a 5 to the same Offer because it does not cite a third-party resource assessment or measured irradiance at a comparable photovoltaic facility in the region.
- Even if the text of the scoring guidelines is not revised, there is an opportunity for the PG&E team to move towards a more uniform interpretation of the guidelines among scorers. This might be as simple as a pre-RFO internal workshop to discuss gray areas in the guidelines and come to some common understanding of how best to deal with ambiguities. Or it might be a chapter in PG&E's internal protocol for Project Viability that outlines additional guidance to clarify how the team might best deal with ambiguities or gray areas in the Calculator scoring guidelines. In the 2009 RFO, the PG&E team made substantial efforts to achieve consistency in scoring, and some of these ambiguities became evident only after internal review of preliminary scores led the team to revise them to improve the consistency of scoring; it is clearly a challenge for any team of scorers to approach perfect uniformity.
- The Calculator as currently constructed assigns a score for Permitting based on whether the developer has applied for permits, has achieved data adequacy for permit applications, or has obtained its permits. The score does not reflect the expected difficulty of obtaining permits. Arroyo suggests that the Energy Division consider including some judgment about the degree of difficulty of successful permitting. Some Offers were evaluated to be at risk for project failure due to serious environmental concerns that could lead to permitting failure, despite achieving moderately high viability scores using the Calculator.

PORTFOLIO FIT

¹⁹ At least one Participant noticed this feature of the scoring guidelines and asserted that its prior experience installing customer premises equipment beyond the meter constitutes wholesale generation experience.

Arroyo questions the relevance of PG&E's methodology for scoring proposals for Portfolio Fit. The CPUC has very clearly enunciated that IOUs should use a methodology that leads to selection of least-cost, best-fit resources.

However, Arroyo notes that the degree to which a proposed new resource fits well or badly into PG&E's existing and planned portfolio of supply resources is largely captured already in the valuation methodology. For example, the increased value of power delivered in super-peak hours and peak seasons vs. the decreased value of power delivered in night hours and off-peak seasons is captured by the valuation algorithm. The methodology to value RA benefits also captures the unique contribution of generators in peak hours when resources are most needed to meet reliability needs. PG&E's valuation methodology is designed to capture value of the flexibility of dispatchable resources over as-available resources. So to a large extent the valuation methodology has been constructed to reflect in dollar terms the value of both the firmness and time-of-delivery characteristics of Offers.

Also, the existing and prior methodologies for evaluating Portfolio Fit in PG&E's RPS RFOs do not directly address the question of when baseload resources will be needed for the portfolio or when peaking resources will be needed. (Note that the bilaterally negotiated resources are not scored with the same methodology as proposals in the RPS solicitation).

Therefore Arroyo surmises that most of the relevant features of fit with PG&E's portfolio needs are already captured by PG&E's valuation methodology, and scoring separately for Portfolio Fit is largely redundant. SCE appears to have captured its Fit evaluation within its valuation model and apparently doesn't employ a separate score for Fit.

It is hard to imagine a renewable resource whose Portfolio Fit characteristics are so superior that a reasonable person would select it for the short list despite deficiencies in value or viability, or a resource so inferior in Portfolio Fit (say, a non-dispatchable generator that produces power only between 1 a.m. and 4 a.m. in the springtime) that it would be rejected from the short list despite superior value and viability. Arroyo is not aware of any short list selections or rejections by PG&E that have been motivated primarily by a Portfolio Fit score. So Arroyo suggests the possibility that Portfolio Fit scoring be dropped in PG&E's future solicitations unless such a special case or a need for a tie-breaker arises.

4. FAIRNESS OF HOW PG&E ADMINISTERED THE CONTRACT EVALUATION PROCESS

This section describes the extent to which PG&E's administration of its protocols for contract evaluation and selection of a short list in the 2009 renewable solicitation was conducted fairly. The overall conclusion is that the process in this case was conducted in a fair and consistent manner, with some issues in the process worthy of detailed review, and some short-listed Offers for which the PG&E team and Arroyo disagreed about project viability and therefore about selection.

A. PRINCIPLES USED TO DETERMINE FAIRNESS OF PROCESS

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

- Were all bids treated the same regardless of the identity of the bidder?
- Were bidder questions answered fairly and consistently and the answers made available to all bidders?
- Did the utility ask for "clarifications" that provided one bidder an advantage over others?
- Was the economic evaluation of the bids 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 bids?

Some other considerations appear relevant to reviewing PG&E's methodology. The application of subjective 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 the administration of the process using additional principles:

- Were the decisions to reject higher-valued contracts from the short list because of low scores in criteria other than valuation or PG&E's preferences applied consistently across all contracts?
- Were the decisions to accept lower-valued contracts into the short list based on superior scores in criteria other than valuation, despite lower values of those specific contracts, applied consistently across all contracts?

- Were the judgments used to create the short list based on stated evaluation criteria or preferences that were publicly made available to potential counterparties prior to proposal submittal through the Solicitation Protocol?

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

PG&E provided Arroyo Seco Consulting with many detailed inputs to its valuation model and with results of market valuation at several steps during the evaluation process, including detailed information about transmission adders applied to contracts. Arroyo also had copies of all proposals and of correspondence between PG&E and counterparties during this period, and was able to make independent judgments about the strengths and weakness of individual proposals against the evaluation criteria laid out in PG&E's protocols.

Arroyo was present at evaluation committee and steering committee meetings in which draft proposals for the short list were developed, reviewed, questioned, modified, argued, and finalized. The logic and priorities underlying why specific proposals were rejected and accepted to the short list were made evident in these sessions. Arroyo had access to members of the evaluation committee responsible for scoring the proposals against each of the evaluation criteria. Arroyo was able to perform the role of questioning 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 contract information, to construct an independent ranking of Offers by net market value;
- Comparing PG&E's valuation ranking to the IE model's ranking in detail, identifying outliers (e.g. where PG&E ranked a contract much higher than the IE or vice versa), identifying the root cause for variances, and determining whether variances were justified by different inputs and methodology or stemmed from errors by either PG&E or IE;
- Checking intermediate analysis and inputs to the valuation model, e.g. assignment of projects to nodes and to transmission clusters, for accuracy and consistency;
- Comparing the question-and-answer information posted on PG&E's public website to ensure that answers provided to any Participant in the course of the bidders' conference and workshop were made available to all Participants;
- Auditing direct communications between PG&E and counterparties during the evaluation process to check whether any individual party was advantaged by requests posed or information provided;

- Reviewing in detail PG&E’s decisions to reject proposals for nonconformance with the requirements of the Solicitation Protocol; reviewing the utility’s decisions to accept for evaluation proposals that Arroyo may independently have regarded as non-conforming;
- Reviewing PG&E’s decisions to reject proposals for low scores in non-value criteria, or based on the utility’s stated preferences, and independently evaluating whether those low scores in non-value criteria were reasonable;
- Reviewing in detail PG&E’s decisions to accept to the short list proposals that the utility team scored low for valuation or other non-value criteria; and
- Testing these rejection and acceptance decisions for consistency; reviewing whether the logic for rejection and acceptance was consistently applied to all proposals.

C. FAIRNESS OF REJECTION OF PROPOSALS FOR NONCONFORMITY

Only two proposals were rejected by PG&E for nonconformance with the 2009 RPS RFO Solicitation Protocol.

PG&E rejected one proposal that proposed the sale of a site for development. PG&E’s solicitation protocol specified that Offers for sites for development should include, among other content, page D-1 of the standard offer form that provides a project description, a description of “Existing energy resource surveys of any natural resource or energy generation potential”, and a price or other consideration that the Participant seeks for the site. This Offer did not contain such information.

PG&E rejected another Offer that appeared to propose a PPA for renewable power. The Offer package omitted the required offer form Attachment D, and failed to provide most required elements of the package, such as a marked up version of Attachment H (the Form Agreement), Attachment A (a signed copy of the Solicitation Protocol Agreement), detailed descriptions of the site and the permits required, a site map, a project milestone schedule, a description of the proposed interconnection to the grid and the status of the interconnection application, and several other key components.

Arroyo’s opinion was that PG&E fairly rejected these two proposals for nonconformance with the requirements of the solicitation protocol. Arroyo identified one other proposal that probably merited rejection as well, but acknowledges that PG&E used its own business judgment in deciding to accept it for evaluation and selection.

D. REASONABLENESS AND FAIRNESS OF PARAMETERS AND INPUTS

The vast majority of the many parameters and inputs that PG&E used in its evaluation of the 2009 RPS RFO Offers were reasonably and fairly chosen, in the opinion of Arroyo Seco Consulting. Arroyo identified only one issue regarding the choices PG&E made about parameters and inputs that merits discussion.

PG&E used a discount rate of 7.6% to bring future Offer costs and benefits to a 2010 present value. Members of the PG&E evaluation committee indicated that this value is based on PG&E's approved cost of capital proceeding. It represents the approved weighted average cost of capital (WACC) for PG&E, on an after-tax basis.

An open issue is whether it is appropriate to use a regulated utility's authorized cost of capital as the discount rate for net revenues from PPAs with renewable generation developers. These developers are generally not regulated utilities but are rather private or public companies in the independent power producer (IPP) sector. The cost of equity and cost of debt for the riskier IPP sector are both considered higher than for regulated utilities. For example, the cost of debt assumed into the Energy Division's 2009 analysis of the Market Price Referent (MPR), an analysis that represents the risks of an IPP developer building a proxy plant under a long-term PPA, was 7.67% compared to PG&E's authorized 6.05%, and the assumed cost of equity underlying the proxy plant developer was 11.96% compared to PG&E's authorized 11.35%.²⁰

Arroyo asserts that the flow of net benefits of power deliveries from independent power companies contracting in long-term PPAs has more risk associated with it than PG&E's risk (e.g. higher credit risk, bankruptcy risk, liquidity risk, development risk) that merits discounting the net benefits at the higher WACC associated with the IPP industry. That suggests that the appropriate WACC to be used when evaluating Offers in this solicitation should be closer to the 8.25% after-tax WACC for the proxy plant used in the 2009 MPR model than to 7.6%.

Arroyo's opinion is that use of the utility's lower cost of capital results in valuations that overstate the importance of the most distant years of contract life, when the methodology depends on extrapolated market forward prices. Arroyo views this as a distortion that skews PG&E's value rankings to favor long-dated PPAs, projects with later on-line dates, and in some cases utility buyout options over straight PPAs.

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 risk management function for oversight on power market assumptions, and on a financial function for oversight on financial assumptions. The choice of parameters is described in internal nonpublic protocols available to the RFO evaluation committee and its management. Additionally, the IE has the opportunity to review the inputs to the valuation model in detail and to raise questions with the team as appropriate.

E. THIRD-PARTY ANALYSIS

PG&E did not outsource any portion of the offer evaluation to Arroyo Seco Consulting or to another third party. Arroyo did participate in discussions with the PG&E team regarding rankings, scoring, and attributes of the offers, but the underlying scores and calculations involved in assessing offers against evaluation criteria were performed by the PG&E team.

²⁰ California Public Utilities Commission, Final Resolution E-4298, December 17, 2009, page 21

F. TRANSMISSION COST ADDERS AND INTEGRATION COSTS

PG&E generally followed its transmission analysis protocols in administering its procedures for market valuation. The team utilized a set of detailed information on full transmission tariffs as a proxy to bring power delivered outside the CAISO grid to specific delivery points, interface points, or market hubs, and in some cases used estimates of the cost of alternative commercial arrangements as the proxy for the cost of moving power from market hubs to the CAISO. The team used the TRCR information of the three California IOUs to estimate the cost of network upgrades for new projects interconnecting in congested locations. This is a great deal of transmission information to process in a short period of time and the team should be commended for its success in having developed, acquired, and applied a full set of this data within the deadline for creating a short list. Arroyo noticed errors or inconsistencies in the application of transmission adders, but did not consider these to have led to unfair or unreasonable decisions about the short list.

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

The general approach PG&E's evaluation committee used to create a draft short list was to begin with the list of Offers ranked by market valuation (including the impact of transmission adders) and to:

1. Reject Offers judged to be non-conforming;
2. Reject Offers for Sites for Development and PSAs that did not pass a screening against the Ownership Eligibility and Cost Protocol;
3. Prioritize among Offer variants (e.g. straight PPA vs. PPA with buyout option, or 20-year contract vs. 25-year contract, or flat price vs. escalating price) based on valuation, selecting the most valuable variant for ranking;
4. Reject Offers regardless of value or viability that scored very low on the RPS Goals criterion because of serious environmental concerns;
5. Reject Offers that scored below a selected cutoff for net value;
6. Reject Offers that scored below a selected cutoff for viability score;
7. Rejecting a set of Offers that proposed to deliver at busbars outside the CAISO or at interface points of the CAISO based on PG&E's preference regarding delivery point and a judgment that there was no clear means to manage delivery to the CAISO, though the Offers met the valuation and viability screens. Also, prioritizing among another set of Offers that proposed to deliver outside the CAISO or to a CAISO interface point, rejecting Offers that are less attractive by virtue of size even if their valuation is attractive (these Offers will likely require third-party shaping/firming services to achieve eligibility as RPS resources; such services have limited availability

- and PG&E considered it appropriate to further reduce the total MW of offers requiring such services);
8. Review Offers from counterparties for whom accepting all high-valued and high-viability proposals would lead to excess supplier concentration; prioritize among Offers from each counterparty to select which ones to select for the short list by virtue of highest value, viability, and/or RPS Goals score, rejecting others once a threshold of excess concentration is reached;
 9. Selecting certain Offers that met the valuation cutoff but fell slightly below the viability cutoff, in the interest of achieving greater portfolio diversity (based on technology) in the short list;
 10. Rejecting Offers whose proposed commercial operation dates were in the more distant future;
 11. Placing Offers that were below the valuation and/or viability cutoffs, but that scored high on the RPS Goals criterion by virtue of being developed by entities certified by the CPUC Clearinghouse as Women-, Minority-, or Disabled Veteran-Owned Business Enterprises, into a special category in which the developer was offered an opportunity to improve the contract price, with a possibility to be selected for the short list if the improved net value achieved a specific threshold, regardless of viability score;
 12. Switching from one Offer to another in the case of one Participant who withdrew the Offer that was shortlisted. The replacement Offer had passed the screens for valuation and viability but had been rejected in step #7 above because of its large size; however, the Participant notified PG&E that the project was being reduced in MW capacity, bringing it into the range the utility considered acceptable; and
 13. Switching from one Offer to another in the case of a Participant who, upon being provided with notification of that one Offer had been short-listed, gave PG&E updated information about its other Offers. Between Offer Opening and the point in time where PG&E and the Participant discussed the short-listing decision, the developer had advanced other projects to the point that another Offer provided higher valuation, an equal viability score, and a superior delivery point than the Offer PG&E selected for the short list. Arroyo concurred with the decision to switch Offers when the updated information became available.

Using this overall logic, a preliminary draft of a short list was developed that fell within the volume target for the RFO, and was reviewed by PG&E's Procurement Review Group. PG&E further revised the draft based on guidance and commentary from the PRG. This section focuses on the specifics of how PG&E applied evaluation criteria other than valuation and viability, and applied stated preferences in administering its selection process.

1. UTILITY OWNERSHIP

PG&E uses a nonpublic internal protocol for evaluating offers for ownership, including Sites for Development, buyout options, joint development and/or joint ownership, and Purchase and Sale Agreements. While the solicitation protocol provides detail on what additional information a Participant should provide when proposing such an Offer for utility ownership, it is not particularly revealing about how such Offers are evaluated against criteria other than valuation. Arroyo suggests that, in the interest of transparency, in future solicitations PG&E should provide greater clarity on what high-level factors enter this evaluation.

2. SERIOUS ENVIRONMENTAL CONCERNS

Appendix K to PG&E's 2009 solicitation protocol states various attributes of a renewable project regarding which Offers are scored to arrive at a rating for support of RPS Goals. Among these is "environmental stewardship", which is identified in the CPUC's Decision 04-07-029 as one of a few designated "qualitative attributes" that the Decision allowed the IOUs to use as the basis for including Offers on a short list, subject to (1) the Offer being within reasonable price proximity to others selected and (2) support from the utility's PRG prior to elevation.²¹

In the 2009 RFO, PG&E's administration of its methodology to exclude Offers that pose serious environmental concerns represents the contrapositive of the CPUC's specific thinking in that Decision: instead of using this element of the RPS Goals criterion to elevate a lower-valued but uniquely environmentally beneficial Offer onto the short list, PG&E is using the qualitative attribute to demote higher-valued but environmentally detrimental projects from the short list.

In the interest of transparency of the solicitation, Arroyo would recommend that future solicitation materials clarify that, within the components that make up the RPS Goals evaluation criterion, the specific review of environmental stewardship attributes can serve as the basis for rejection of Offers that raise serious concerns.

3. CONSIDERATIONS OF SUPPLIER CONCENTRATION

In this year's solicitation, PG&E stated in its protocol that aversion of excess supplier concentration would be an evaluation criterion. The team reviewed developers who proposed multiple Offers that met the valuation and viability screens, and assigned MW limits to how many of those Offers to short-list based on how many contracts the utility already had executed with the counterparty. In assigning those limits the team used its judgment, taking into account factors such as

²¹ California Public Utilities Commission, Decision 04-07-029, "Opinion Adopting Criteria for the Selection [of] Least-Cost and Best-Fit Renewable Resources", July 8, 2004, Findings of Fact #28 and 29

- The number of megawatts of executed contracts for projects not yet operational vs. the number of megawatts for contracted projects that have achieved commercial operation (the former being considered a greater source of risk),
- The view of transactors about the likelihood that mutually acceptable contractual terms could be negotiated with the counterparty, vs. the risk of failure to achieve executed contracts through negotiation, and
- Guidance from PG&E's PRG.

4. DELIVERY POINT

PG&E stated in its 2009 solicitation protocol a preference for projects that deliver to the CAISO at nodal points within PG&E's service territory, over projects that deliver to other nodal points within the CAISO, to interface points of the CAISO, and to points outside the CAISO.

In screening Offers based on their proposed delivery points, PG&E chose to reject from the short list several projects that proposed to deliver at busbar points outside the CAISO or to interface points of the CAISO, regardless of their valuation or Project Viability Calculator score. PG&E chose to exercise its judgment that based on its experience to date, there was no clear provision to achieve the delivery required to make these resources eligible under CEC guidelines, given their location in the western grid and the challenges of successfully moving their power to the CAISO for firm scheduled delivery.

5. TECHNOLOGICAL DIVERSITY

PG&E added a few Offers to its short list that proposed facilities using a different technology than those already on the short list or within the utility's supply portfolio, but which fell below the viability cutoff used in screening projects. The reason cited was to provide greater portfolio diversity.

Technological diversity of the renewable power supply portfolio is not precisely a criterion or preference stated in the solicitation materials. However, within the RPS Goals evaluation criterion is a review of the extent to which an Offer will accomplish or promote a broad set of social and environmental goals, including a goal to "Increase the diversity, reliability, public health, and environmental benefits of the energy mix".²² Some would read this language, taken from the legislative objective stated for the RPS program, as a directive to diversify the state's energy mix away from fossil-fueled generation sources such as coal and natural gas. To others this might be interpreted as a mandate to strengthen the robustness of the energy mix by seeking to employ a broader range of technologies for renewable generation. The latter interpretation would open up the opportunity to select

²² Pacific Gas and Electric Company, "Renewables Portfolio Standard: 2009 Solicitation Protocol", June 29, 2009, page 28

lower-valued or lower-viability projects because they offer unique, different, or not-yet-fully-commercialized technologies that may benefit from demonstration at utility scale.

6. COMMERCIAL OPERATION DATE

The solicitation protocol clearly stated PG&E's preference to select Offers that proposed earlier commercial operation dates over Offers proposing later on-line dates.

The PG&E team exercised its preference for earlier on-line dates at various points in the selection process. It took this preference into consideration when selecting one or two among several Offers from individual Participants, for whom the supplier concentration criterion led to a decision to limit the total number of MW from each individual counterparty. In some cases this meant that higher-valued Offers with later on-line dates were rejected while lower-valued Offers with earlier on-line dates from the same Participant were accepted for the short list.

Similarly, projects with moderately high valuation and viability scores below but near the cutoff were rejected, both because of their mediocre viability scores and because of later proposed commercial operation dates.

7. SUPPLIER DIVERSITY

One of the components of the RPS Goals evaluation criterion is whether a proposal 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 (WMDVBEs) 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 supplier diversity goal of 21.5% of all procurement...The Supplier Diversity evaluation will take into account the Participant's status as a WMDVBE and/or an intent or policy of subcontracting with WMDVBEs.”²³

PG&E's evaluation committee scored Offers based on the submittal of Attachment L, the utility's Supplier Diversity Questionnaire, and the supplier diversity score became part of the overall RPS Goals score.

In the response to the 2009 RPS RFO, very few Offers were submitted by WMDVBEs that have been certified by the CPUC Clearinghouse. More Offers provided answers to the Supplier Diversity Questionnaire that demonstrated the developers' intent to provide outreach to WMDVBE subcontractors. None of the Offers submitted by certified WMDVBEs fell above either the valuation or viability cutoffs.

The PG&E team decided to provide a special opportunity to the certified WMDVBE Participants to improve their poor-scoring Offers. The team identified the most attractive

²³ Pacific Gas and Electric Company, “Renewables Portfolio Standard: 2009 Solicitation Protocol”, June 29, 2009, pages 44-45

Offer from each certified WMDVBE developer based on the initial evaluation, and communicated that, though the Offer failed to provide an acceptable level of value to be short-listed, the developer would have a chance to reduce the proposed contract price in order to pursue the possibility of selection.

In the actual event, one of the certified WMDVBE developers improved the contract pricing of an Offer sufficiently to the point where its valuation fell above PG&E's value cutoff, and it was accepted to PG&E's short list. While the Project Viability Calculator score for this Offer fell below PG&E's cutoff level, the gap between the score and the cutoff was within Arroyo's estimate of the standard error of the Calculator. Also, no other non-shortlisted that met the value cutoff and had a viability score superior to this WMDVBE's Offer was rejected on the basis of viability alone; these other Offers with better viability than that Offer were also rejected based on factors such as delivery point, timing of on-line date, or supplier concentration. Thus, no other Participant had a non-shortlisted Offer that was disadvantaged by the selection of this one WMDVBE Offer (other than by the special opportunity to reprice the proposal, which was not offered to other non-WMDVBE Participants).

No other certified WMDVBE developer improved its Offer pricing sufficiently in the repricing opportunity to the point where the net valuation of the revised Offer rose sufficiently towards the value cutoff to make the Offer acceptable to PG&E.

H. 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 methodology in the 2009 RPS RFO.

1. SOURCES OF DISAGREEMENT

While the PG&E evaluation committee and Arroyo Seco Consulting did disagree on some specific decisions in the administration of the evaluation process, nearly all of these issues were resolved in the course of review. Issues underlying disagreements included:

- Arroyo disagreed with some of the PG&E team's preliminary assignments of some Offers to local nodal areas or to pricing zones. After review and discussion, these disagreements were resolved, either through changes to the assignments or agreement that the assignments were correct.
- Arroyo disagreed with initial analyses in which PG&E assigned Resource Adequacy value to a few Offers that proposed to interconnect intermittent generation facilities outside the CAISO grid. Upon review, the PG&E team agreed that these Offers would not likely provide RA value to customers.
- Arroyo suggested that selection of Imperial Valley Offers with viability scores below PG&E's viability cutoff would amount to a preference for Imperial Valley projects. Preferential treatment of such Offers was explicitly rejected for the 2009 RPS RFO in the CPUC's Decision approving the 2009 procurement plans.

Based on guidance from PRG members, PG&E chose to drop one such Offer from its draft short list; another failed to stay on the final short list.

- PG&E made a preliminary selection of projects from two Developers that were not the Participant's highest-valued Offers; upon review, and given feedback from PRG members and the IE, PG&E decided to select higher-valued Offers.
- Arroyo's Project Viability Calculator scores for many individual Offers varied considerably from the PG&E team's scores. Upon comparison and discussion, PG&E revised its scores downwards for some Offers that it had included in a preliminary draft short list. This led the utility to decide to reject these Offers from the final short list. Similarly, Arroyo was convinced by PG&E's analysis to revise some of its Calculator scores upwards for Offers that PG&E had placed on the preliminary draft short list and to which Arroyo had raised objections.
- In the final short list, PG&E selected a few Offers that met its value cutoff but fell below the cutoff for viability. For most of these, Arroyo concurred with the decision to short-list based on other considerations.

However, Arroyo disagreed with PG&E's decision to select two Offers for the short list.

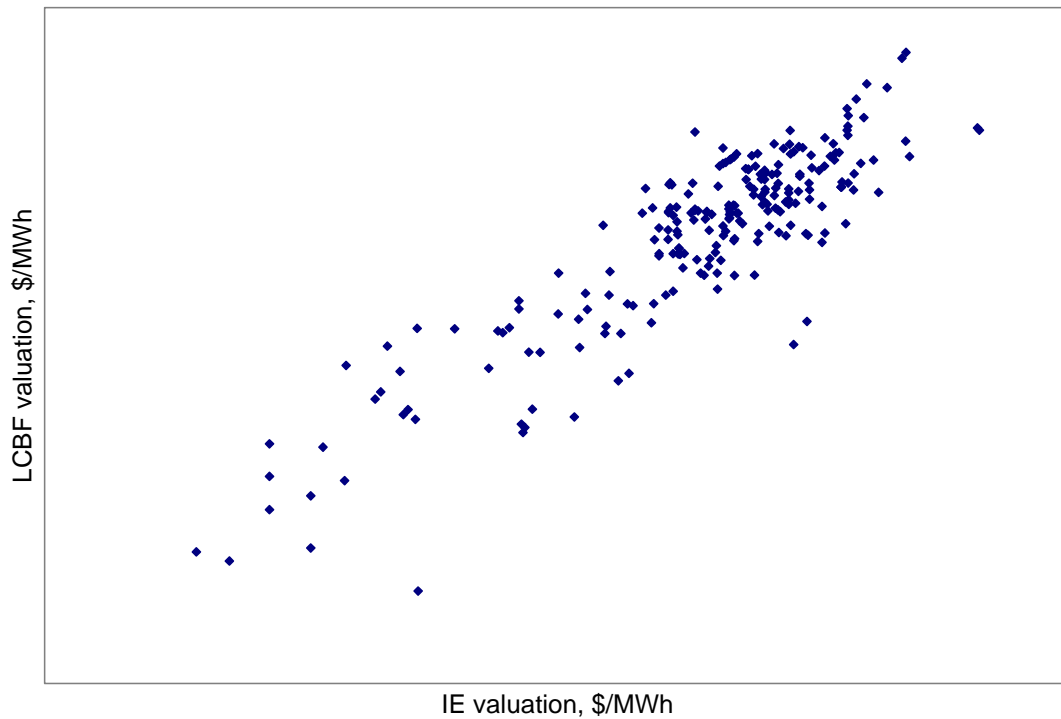
- One Offer, described previously, was short-listed on the basis of achieving greater portfolio diversity by providing a proposed project with a different technology. The PG&E team scored this proposal as lower in value, lower in viability, and equal in RPS Goals, vs. other competing Offers that were not selected for the short list. Its selection for the short list appears to be inconsistent and possibly unfair.
- Another Offer was for a short-term transaction from an existing facility. Arroyo assigned a much lower viability score to this Offer using the Project Viability Calculator than PG&E did. Arroyo had difficulty finding a factual basis in the Offer materials to consider this project more viable than other Offers that PG&E rejected from the short list for poor viability, creating concerns about fairness of selection.

The disagreement between the IE and the utility about placing the two Offers on the short list comes down to different opinions about the viability of the projects underlying the proposed transactions. If one accepts PG&E's opinion about the viability of the two Offers (disregarding the PG&E team's Project Viability Score for the first one), then their selection for the short list was entirely fair, reasonable, and consistent; if one accepts Arroyo's opinion, their selection would not be.

2. INDEPENDENT OFFER ANALYSES

Arroyo conducted its own rather simplified valuation process. The two sets of valuations generally correlated well, with a fair amount of noise in the comparison, as shown in Figure 3 that compares the two sets of valuations.

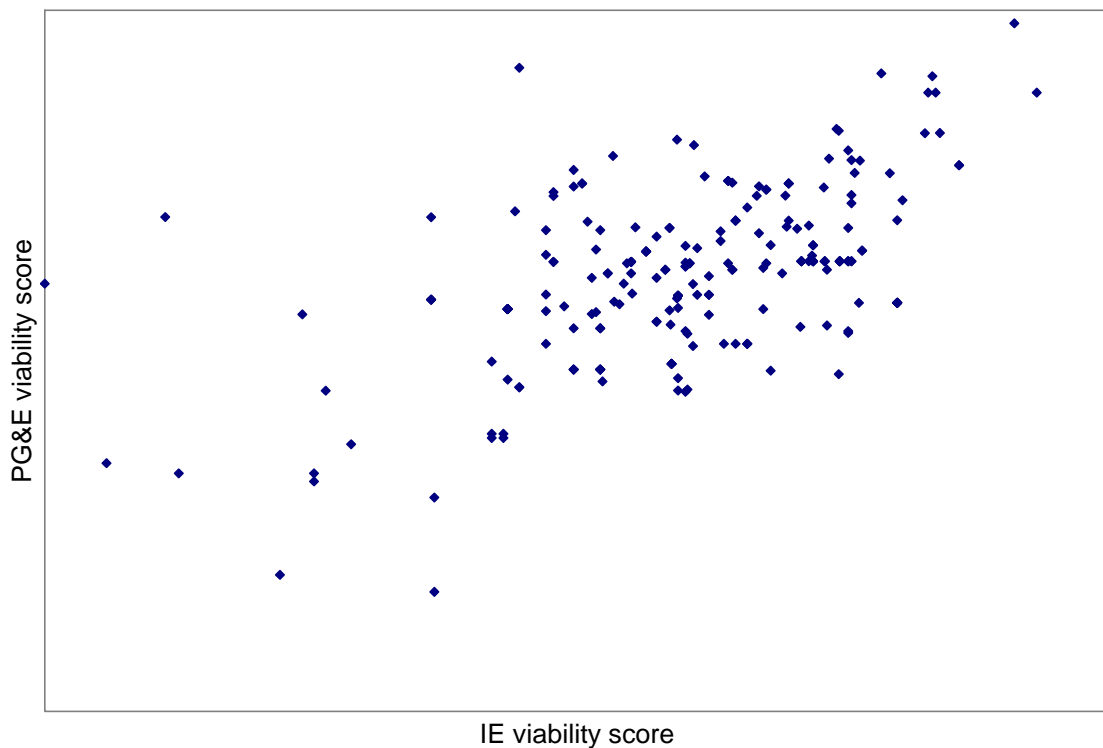
Figure 3



Arroyo did not use its simplified model to construct a separate short list. Instead, the simplified model was useful in quality control to identify errors in PG&E's or the IE's inputs, parameters, or assumptions for specific Offers. Also, the comparison helped identify what specific factors caused specific Offers to be ranked high or low in PG&E's short-listing process, such as the impact of the discount rate assumption, the on-line date, the choice of which transmission cluster to assign to an Offer, and the size of TRCR or transmission wheeling adders.

Arroyo also scored each Offer for viability independently of PG&E's analysis, using the original Energy Division version of the Project Viability Calculator. This was useful to get an estimate of what the standard error of the Calculator is, and a sense of whether differences in score reflect significant differences in the viability of projects or are within the noise of the method for assessing viability. Arroyo emerged from the comparison (shown in Figure 4) with a view that differences of a dozen or fewer points in viability score may not reflect true differences in the likelihood that one project is significantly likelier than another to achieve successful completion, given the roughness of the tool and the subjectivity of its use.

Figure 4



The correlation of the IE and PG&E team’s scores using the Project Viability Calculator is poorer than that between valuation models. Arroyo ascribes this to the gray areas in the scoring guidelines, to differences in the subjective judgments of individual scorers, and to PG&E’s use of an additional evaluation criterion in its modified Calculator. The comparison between the sets of scores helped reveal specific errors that Arroyo acknowledged in its draft scores and corrected, but no doubt there are other errors in Arroyo’s viability scoring that have not yet been identified.

3. RECTIFYING DEFICIENCIES OF REJECTED OFFERS

As observed previously, PG&E communicated early to several Participants about basic deficiencies in their Offer packages and provided them with an opportunity to correct these deficiencies by completing or correcting their original submissions. None of these original shortfalls in the packages resulted directly in rejection from the short list, as far as can be discerned. Most of the individual rejections of Offers were based on low valuations, low viability, and avoidance of excess supplier concentration.

In general deficiencies preventing Offers from being selected do not appear to be caused by errors or misjudgments by the Participants in drafting the Offer package, but rather by the poor economics of projects or technologies at the MW scale chosen by developers, by insufficient progress by the developer at this point in time in areas such as site control, permitting, demonstration of resource quality, and interconnection (e.g., a “not fully baked” project, deficient not in its intrinsic merits but in its degree of advancement to date), and by

the difficulty for some developers in locking down a competitive PPA price when the price of equipment and of contractors are moving targets.

Arroyo cannot identify how PG&E could have rectified the deficiencies associated with rejected Offers while maintaining fairness to Participants whose Offers were selected. The only suggestion Arroyo can offer would be to edit future solicitation materials and bidders' workshop presentations to clarify that the RPS solicitation differs completely from any proposed PV Program.

4. OVERALL FAIRNESS OF ADMINISTRATION

Despite a variety of minor disagreements and concerns, and two fundamental disagreements, Arroyo Seco Consulting's overall judgment was that PG&E's administration of its protocols to arrive at a short list for the 2009 RPS RFO was fair, unbiased, consistent, and reasonable.

Some of the disagreements between Arroyo and the PG&E team fall into the category of choices that Arroyo would have not made if it were administering the solicitation, but that Arroyo agrees are choices a reasonable person could make if that person had different priorities or emphases regarding the weights assigned to evaluation criteria. Most of PG&E's decisions to select for the short list Offers whose Project Viability Scores fell below its viability cutoff, on the basis of superior scores on attributes such as RPS Goals, supplier diversity, or technology diversity, fall into this category. Similarly, PG&E's decision to reject from the short list the highest valued Offers it received on the basis of a preference for early on-line dates is one that Arroyo would not have made, but may be a reasonable choice for a utility that has obligations to achieve near-term targets for RPS compliance.

PG&E did select for its short list two Offers that, in Arroyo's opinion but not in PG&E's, are sufficiently low in demonstrated project viability that these choices raise a question about the fairness and consistency of the decisions to select them. This disagreement represents a situation where reasonable observers can arrive at opposing opinions about the viability of a transaction given the same presented facts.

I. IMPERIAL VALLEY OFFERS

In the 2009 RPS RFO, PG&E received several proposals for renewable generation proposed to be sited in the Imperial Valley. The PG&E team generally applied the same steps and processes to evaluate these proposals as it did with others. One exception is that the utility did not use its stated preference for projects interconnecting to the grid within PG&E's service territory to reject or disfavor any Imperial Valley proposals, as it did with some proposals with other proposed points of interconnection.

Arroyo believes that the inclusion of Imperial Valley proposals on the final short list represents a fair and reasonable selection made by PG&E. The utility did not unfairly exert undue preference based on Imperial Valley location to select any proposal for the final short list, nor did it reject any Imperial Valley proposal that fully met the criteria applied to screen proposals, the same criteria used in other regions.

5. FAIRNESS OF PROJECT-SPECIFIC NEGOTIATIONS

This chapter gives an independent review of the extent to which PG&E's negotiations with Shiloh III Wind Project, LLC to enter into an amended and restated contract for renewable energy were conducted fairly. A more detailed narrative of discussion points of the negotiation and issues of fairness to other counterparties is provided in the confidential appendix to this report.

A. INDEPENDENT EVALUATOR'S OBSERVATIONS OF NEGOTIATIONS BETWEEN SHILOH III AND PG&E

Arroyo observed several negotiation sessions between PG&E's and enXco's staffs as they developed the detailed terms and conditions of the Shiloh III contract. Arroyo was also able to review several draft versions of term sheets or contracts in order to identify specific proposals and counterproposals the two parties previously made in the course of discussion. enXco requested numerous concessions from PG&E in these discussions, many of which were rejected.

B. FINDINGS FROM REVIEW OF THE SHILOH III CONTRACT IN COMPARISON TO PG&E'S 2009 FORM AGREEMENT

The starting point for negotiations between the two parties was PG&E's 2009 Form Agreement that is used by the utility as the basis for negotiation of long-term contracts with parties whose offers were short-listed in the 2009 renewable solicitation. The parties had previously negotiated a contract for the output of the nearby Shiloh II wind project, but the Form Agreement formed the starting point rather than that prior contract.

To a large extent terms and conditions of the executed conformed to PG&E's 2009 Form Agreement. PG&E granted certain concessions relative to that standard contract, and enXco provided at least two significant concessions compared to standard terms as well. Arroyo views the PPA as, overall, offering fair treatment of ratepayers and competing developers.

Overall, Arroyo concludes that the negotiations between enXco and PG&E on the terms and conditions of the Shiloh III PPA were conducted in a manner that was, overall, fair to ratepayers and to competing developers. More details on specific variances between this contract and PG&E's 2009 Form Agreement are provided in the confidential appendix to this report.

6. MERIT FOR CPUC APPROVAL

This chapter provides an independent review of the merits of the proposed PPA with Shiloh III Wind Project, LLC against criteria identified in the Energy Division's 2009 IE template.

A. CONTRACT SUMMARY

PG&E and Shiloh III executed a PPA for delivery of renewable energy from the proposed wind generating facility on July 27, 2010. The facility is proposed to be constructed in the Montezuma Hills in southeastern Solano County, about an eight of a mile west of the city limits of Rio Vista. It is within the Collinsville-Montezuma Hills Wind Resource Area designated by Solano County as land suitable for wind energy development, and is adjacent to or near several existing wind generation facilities. The contract term is proposed to begin at the end of May, 2012, with deliveries for twenty years. The contract capacity is 60 MW; the PPA specifies annual contract quantity of 204.6 GWh.

B. NARRATIVE OF EVALUATION CRITERIA AND RANKING

The 2009 template for IEs provided by the Energy Division calls for a narrative of the merits of the proposed project on the categories of contract price, portfolio fit, and project viability. More specific details are provided in the confidential appendix to this report.

CONTRACT PRICE AND MARKET VALUATION

Arroyo has compared the net value of the proposed Shiloh III contract to peer groups of currently available alternative, competing sources of renewable energy, using both a modified version of PG&E's LCBF methodology and a simpler but independent model. Based on those comparisons, Arroyo opines that the net market valuation of the Shiloh III PPA is moderate to high and the contract price is low.

The contract price of the Shiloh PPA is higher than the approved 2009 Market Price Referent for renewable energy contracts of 20-year term that begin deliveries in 2012. The confidential appendix to this report provides a more detailed discussion of the pricing of the PPA and the basis for Arroyo's opinion that the net value of the contract ranks moderate to high among competing alternatives available to PG&E.

PORTFOLIO FIT

Arroyo ranks the Shiloh contract's fit with PG&E's supply portfolio needs as moderate. The generation profile provided by enXco for the facility correlates poorly on a time-of-day basis with PG&E's portfolio needs, but correlates well on a seasonal basis with the utility's needs. As a wind resource, the facility has relatively poor day-ahead predictability of output control.

PROJECT VIABILITY

In Arroyo's opinion, the project viability of the Shiloh III wind facility is high. The project has obtained an interconnection agreement, and necessary transmission network upgrades have been completed. enXco has substantial experience developing, building, financing, and operating large wind generating facilities in the U.S. The project has made progress towards obtaining its use permit from Solano County. Arroyo independently scored the enXco facility using the Energy Division's final Project Viability Calculator, and observed that the score ranked high compared to competing alternatives.

RPS GOALS

Delivery of power under the Shiloh III PPA could advance PG&E towards its short-term RPS goals for renewable energy delivery, under flexible compliance rules, as well as towards its long-term goal in 2020. The contract would not advance the state towards the goal stated in Executive Order S-06-06 of providing at least 20% of the state's renewable power needs from biomass-based generation.

C. DISCUSSION OF MERIT FOR APPROVAL

Arroyo concurs with PG&E management that the Shiloh III contract merits CPUC approval. In Arroyo's opinion the contract offers moderate to high net value, low contract price, moderate portfolio fit, and high project viability. It would contribute to PG&E's efforts to meet its short-term RPS Goals and its long-term target as well. The negotiations resulted in a contract that varies in interesting ways from PG&E's Form Agreement, but Arroyo's opinion is that, overall, the result is fair to ratepayers and to competing developers.

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

Alcantar & Kahl	Department of Water Resources	North Coast SolarResources
Ameresco	Department of the Army	Northern California Power Association
Anderson & Poole	Dept of General Services	Occidental Energy Marketing, Inc.
Arizona Public Service Company	Division of Business Advisory Services	OnGrid Solar
BART	Douglass & Liddell	Praxair
BP Energy Company	Downey & Brand	R. W. Beck & Associates
Barkovich & Yap, Inc.	Duke Energy	RCS, Inc.
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Bloomberg New Energy Finance	Economic Sciences Corporation	Recurrent Energy
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CLECA Law Office	Green Power Institute	Santa Fe Jets
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California Cotton Ginners & Growers Assn	Hitachi	Sempra Utilities
California Energy Commission	International Power Technology	Sierra Pacific Power Company
California League of Food Processors	Intestate Gas Services, Inc.	Silicon Valley Power
California Public Utilities Commission	Lawrence Berkeley National Lab	Silo Energy LLC
Calpine	Los Angeles Dept of Water & Power	Southern California Edison Company
Cameron McKenna	Luce, Forward, Hamilton & Scripps LLP	Sunshine Design
Cardinal Cogen	MAC Lighting Consulting	Sutherland, Asbill & Brennan
Casner, Steve	MBMC, Inc.	Tabors Caramanis & Associates
Chris, King	MRW & Associates	Tecogen, Inc.
City of Glendale	Manatt Phelps Phillips	Tiger Natural Gas, Inc.
City of Palo Alto	McKenzie & Associates	Tioga Energy
Clean Energy Fuels	Merced Irrigation District	TransCanada
Coast Economic Consulting	Mirant	Turlock Irrigation District
Commerce Energy	Modesto Irrigation District	U S Borax, Inc.
Commercial Energy	Morgan Stanley	United Cogen
Consumer Federation of California	Morrison & Foerster	Utility Cost Management
Crossborder Energy	NLine Energy, Inc.	Utility Specialists
Davis Wright Tremaine LLP	NRG West	Verizon
Day Carter Murphy	New United Motor Mfg., Inc.	Wellhead Electric Company
Defense Energy Support Center	Norris & Wong Associates	Western Manufactured Housing Communities Association (WMA)
	North America Power Partners	eMeter Corporation