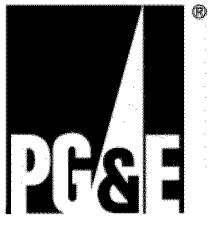
Application: 12-03-026
(U 39 E)
Exhibit No.: _____
Date: August 3, 2012
Witnesses: Various

PACIFIC GAS AND ELECTRIC COMPANY

THE OAKLEY PROJECT

REBUTTAL TESTIMONY

CONFIDENTIAL VERSION



PACIFIC GAS AND ELECTRIC COMPANY
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A. Certificate of Public Convenience and Necessity Is Not Required for the Oakley Project (Issue 1(a))

Q 1 The Western Power Trading Forum (WPTF) and CAlifornians for Renewable Energy (CARE) argue that Pacific Gas and Electric Company (PG&E) is required to get a Certificate of Public Convenience and Necessity (CPCN) for the Oakley Generation Station (Oakley Project).[1] Do you agree?

A 1 No, as I explain in more detail below.

Q 2 What is your understanding generally as to when a CPCN is required?

A 2 I am not an attorney, but it is generally my understanding under California Public Utilities Code (Pub. Util. Code) Section 1001 that a CPCN is required before a California Public Utilities Commission (CPUC or Commission)-regulated utility begins construction of, or extends, a "line, plant or system." Section 1001 provides in relevant part:

> No railroad corporation whose railroad is operated primarily by electric energy, street railroad corporation, gas corporation, electrical corporation, telegraph corporation, telephone corporation, water corporation, or sewer system corporation shall begin the construction of a street railroad, or of a line, plant, or system, or of any extension thereof, without having first obtained from the commission a certificate that the present or future public convenience and necessity require or will require such construction.

Q 3 Is PG&E constructing the Oakley Project?

A 3 No, the Oakley Project is being constructed by Contra Costa Generating Station, LLC (CCGS). Under the Amended and Restated Purchase and Sale Agreement (Amended PSA), PG&E has no ownership interest in the Oakley Project until it is fully constructed, all permitting and governmental approvals are obtained to PG&E's satisfaction, and CCGS has complied with all of the requirements in the Amended PSA. The conditions of the transfer of the Oakley Project from CCGS to PG&E are generally described in PG&E's Initial Testimony and described in more detail in the Amended

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1 WPTF Testimony at pp. 3-5 (WPTF, Ackerman); CARE Testimony at 2 (CARE, Sarvey).

PSA sections referenced in PG&E's Initial Testimony.[2] Until the transfer occurs, PG&E will not own the Oakley Project.

In addition, PG&E has no direct involvement in or responsibility for construction activities related to the Oakley Project. All of this work is being undertaken by CCGS. CCGS is responsible for all construction activities, including retaining all contractors necessary to develop the Oakley Project, and all development activity related to the Oakley Project.

Q 4 If the terms of the Amended PSA are not satisfied, will PG&E have any ownership in the Oakley Project?

A 4 No. Until the transfer of the project occurs, as I described above, PG&E has no ownership in the Oakley Project.

Q 5 Is the Oakley Project an extension of an existing PG&E-owned facility?

A 5 No. The Oakley Project is being built on land that is not owned by PG&E and the facility is not an extension of any existing PG&E-owned facility.

Q 6 Have other parties in this proceeding acknowledged that PG&E is not building or constructing the Oakley Project?

A 6 Yes. The Utility Reform Network's (TURN) witness Kevin Woodruff acknowledged that "a third party would build Oakley and sell the plant to PG&E, which would then own and operate it."[3] William Monsen, the witness for the Independent Energy Producers Association (IEP) testified that "[CCGS] will develop, construct, and then transfer the Oakley Project to PG&E pursuant to the [Amended PSA]."[4]

Q 7 Did any party in the initial proceeding addressing the Oakley Project, Application 09-09-021, argue that PG&E was required to obtain a CPCN for the Oakley Project?

A 7 To the best of my knowledge, no party in Application 09-09-021 claimed that PG&E was required to obtain a CPCN for the Oakley Project.

Q 8 Has PG&E entered into similar Purchase and Sale Agreement arrangements before?

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2 PG&E Initial Testimony, Chapter 4, at p. 4-4 ("Transfer of Project to Utility") (PG&E, Monardi).

3 TURN Testimony at p. 1, lines 18-19 (TURN, Woodruff).

4 IEP Testimony at p. 5 (IEP, Monsen).

A 8 Yes. In PG&E's 2004 Long-Term Request for Offers (LTRFO), it entered into a Purchase and Sale Agreement (Original Colusa PSA) for the Colusa Generating Station (Colusa Project), which was submitted by PG&E in Application 06-04-012 and was approved by the Commission in Decision 06-11-048.

Q 9 Was PG&E required to obtain a CPCN for the Colusa Project?

A 9 Not initially. In the decision approving the Original Colusa PSA, the Commission indicated that a CPCN was not required for the Colusa Project because it was not being built by PG&E.[5] However, when the developer of the Colusa Project later notified PG&E that it did not intend to proceed with the project, PG&E stepped in to acquire the Colusa Project assets and permitting that existed at that time and to complete the construction of the project. Because PG&E would then be constructing the project, PG&E filed for a CPCN in Application 07-11-009, which was later granted by the Commission in Decision 08-02-019.

Q 10 Did any of the parties in this proceeding also participate in Application 06-04-012 regarding the initial approval of the Colusa Project?

A 10 Yes. TURN, the Division of Ratepayer Advocates (DRA), and WPTF were parties in Application 06-04-012.

Q 11 Did any of these parties claim that a CPCN was initially required for the Original Colusa PSA?

A 11 No. To the best of my knowledge, none of these parties asserted that a CPCN was required for the Colusa Project.

Q 12 Are the Original Colusa PSA and Amended PSA for the Oakley Project fundamentally similar with regard to PG&E's responsibility to construct the project?

A 12 Yes. Obviously, there are a number of differences between the Amended PSA for the Oakley Project and the Original Colusa PSA, not the least of which is that they address different projects. However, the fundamental premise underlying both PSAs is the same—in both cases, the counterparty to the PSA is fully responsible for constructing the project and only upon

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5 D.06-11-048 at p. 32, n. 18.

satisfaction of certain very specific terms and conditions is the ownership of the project transferred to PG&E.

Q 13 Were there any other utility-owned generating (UOG) facilities that arose from the 2004 LTRFO?

A 13 Yes, the Humboldt Generating Station (Humboldt Project) was a winning project in the 2004 LTRFO.

Q 14 Was PG&E required to get a CPCN for the Humboldt Project?

A 14 Yes. Unlike the Colusa Project, PG&E was responsible for constructing the Humboldt Project. PG&E entered into an Engineering, Procurement and Construction (EPC) contract for the Humboldt Project under which PG&E was responsible for permitting and managing the construction of the project. PG&E owned the land on which the project was to be located and owned the facility as it was being built by a third-party contractor.

Q 15 Given this background, what is the basis for parties in this proceeding arguing that PG&E is required to get a CPCN?

A 15 WPTF and CARE rely on several references in Decision 12-04-046 regarding the need for a CPCN for UOG facilities.[6]

Q 16 Do you agree with these parties' interpretation of Decision 12-04-046?

A 16 Again, I am not an attorney and thus I will not address legal arguments related to the requirements and impact of Decision 12-04-046. However, I have reviewed the decision and did not find any discussion of the differences between PSA and EPC contracts with regard to utility responsibility for construction, nor was there a discussion of Pub. Util. Code Section 1001. Moreover, I did not see any discussion in Decision 12-04-046 that the Commission was overturning its prior decision that there was no need for a CPCN in a situation involving a PSA, such as the Original Colusa PSA. Based on my understanding of the Amended PSA and the discussion above, I do not believe that a CPCN is required for the Oakley Project.

Q 17 Do other parties agree with PG&E that a CPCN is not required?

A 17 Yes. In discovery, PG&E asked a number of parties if they contended that a CPCN was required for the Oakley Project. Many of these parties objected to PG&E's discovery and did not provide a substantive answer. However,

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6 WPTF Testimony at pp. 3-5 (WPTF, Ackerman); CARE Testimony at p. 2 (CARE, Sarvey).

DRA did provide a substantive answer and indicated that it was not contending that a CPCN is required for the Amended PSA and/or the Oakley Project.[7]

B. The Oakley Project Is Not Barred by Decision 12-04-046 (Issue 1(b))

Q 18 Relying on Decision 12-04-046, WPTF and CARE argue that the Commission should require PG&E to first conduct a Request for Offer (RFO) and, only if the RFO fails, should PG&E be able to propose the Oakley Project.[8] Please address this issue.

A 18 I am not an attorney, so I will not address legal issues regarding the effective date of Decision 12-04-046 and whether that decision should apply to this application. However, I do have two comments related to this issue. First, the Oakley Project was the result of a competitive process. The Oakley Project was offered in PG&E's 2008 LTRFO and was one of the winning offers. When the Commission reviewed the 2008 LTRFO results, it determined that the 2008 LTRFO was generally open, transparent and reasonable.[9] The Commission also determined that the Oakley Project had numerous beneficial attributes.[10] However, the Commission determined that the Oakley Project was not needed to meet the need identified in the 2006 Long-Term Procurement Plan (LTPP) proceeding decision (i.e., D.07-12-052) and thus denied the Oakley Project at that time. Although Decision 12-04-046 has now changed the rules regarding UOG offers in RFOs for new resources, this does not change the fact that the Oakley Project resulted from a competitive process and was one of the best offers resulting from that process. When the 2008 LTRFO was conducted, PG&E did it in a manner that was fully consistent with the Commission's RFO rules that were in effect at that time.

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7 *See* DRA's Response to PG&E's First Set of Data Requests to DRA, Question No. 1 provided on July 18, 2012.

8 WPTF Testimony at pp. 5-6 (WPTF, Ackerman); CARE Testimony at pp. 2-3 (CARE, Sarvey).

9 D.10-07-045 at pp. 19-21 (the Commission identified some areas for improvement in future RFOs and concluded that "[t]hese criticisms should be taken in context of the RFO as a whole and while significant particularly in regard to future RFO's, do not change our determination that overall PG&E conducted a reasonable RFO and evaluation.").

10 *Id.* at p. 40.

Second, as a matter of equity, consideration of the Oakley Project should not be barred by Decision 12-04-046. Although I am not aware of the exact amount, the developers of the Oakley Project, CCGS, have to date likely spent millions of dollars participating in the 2008 LTRFO and developing the Oakley Project. CCGS followed the Commission's RFO rules in effect in 2008 when it submitted a UOG proposal in the 2008 LTRFO, spent months negotiating an agreement with PG&E, and finalized an agreement based on the Commission's then current rules. When the Commission eventually approved the Oakley Project in December 2010, CCGS likely spent millions more dollars pursuing permits and licenses, which they successfully received from the California Energy Commission (CEC) and Bay Area Air Quality Management District (BAAQMD). Since the CEC and BAAQMD permits were issued, CCGS has likely spent millions of dollars on construction and development of the Oakley Project. At each step of the way, CCGS has followed the Commission's rules and requirements and has expended significant amounts of money on developing the Oakley Project. In my opinion, barring the Oakley Project based on Decision 12-04-046 given the history in this proceeding would be inequitable. Furthermore, besides the equity issues, the failure to approve the Oakley Project will erode developer and investor confidence in the California electric utility market which will likely result in investors seeking higher returns to invest or not investing at all. In either case, higher prices are the result.

Q 19 Relying on Decision 12-04-046, CARE argues that approving the Amended PSA would damage the competitive market in California.[11] Do you agree?

A 19 No. Parties that oppose UOG frequently make dire predictions that the approval of any UOG project will damage or hinder the development of competitive markets in California. The reality, however, is very different. PG&E conducted LTRFOs in 2004 and 2008 for new generation resources. Both LTRFOs allowed both offers for UOG and Power Purchase Agreements (PPA). Both of these LTRFOs were robust and PG&E received numerous offers totaling thousands of megawatts (MW). Offers included

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[11] CARE Testimony at p. 14, lines 2-17 (CARE, Sarvey).

both UOG and PPA offers, and in both LTRFOs at least one of the winning offers was a UOG proposal, while other winning offers were PPAs. The presence of UOG did not harm the competitive market or dampen generator interest in these LTRFOs.

C. The Oakley Project Is Authorized by Decision 07-12-052 (Issue 1(c))

Q 20 WPTF and CARE assert that PG&E has not complied with the requirements of Decision 10-07-052.[12] What is your understanding of the requirements in Decision 07-12-052 for UOG resources proposed outside of an RFO?

A 20 In Decision 07-12-052, the Commission indicated that a utility could propose a UOG project outside of an RFO if: (1) an RFO is infeasible; and (2) the UOG project meets one of four "unique circumstances."[13] The Commission also stated that it would "consider these unique circumstances for UOG approval outside of a competitive solicitation on a case-by-case basis via an IOU application."[14] The infeasibility of an RFO and the unique circumstances requirement are addressed below.

1. An RFO for New Resources by 2018 Is Infeasible

a. The Timeline for New Resource Development Is Lengthy and Growing Longer

Q 21 CARE argues that Decision 07-12-052 requires PG&E to demonstrate that an RFO is infeasible and that, in this case, an RFO is not infeasible.[15] Although not referring Decision 07-12-052 directly, DRA and IEP similarly argue that it is feasible for PG&E to conduct an RFO or "market test."[16] Do you believe that PG&E can conduct an RFO and that new resources can be developed in time to meet the 2018 resource need identified by the California Independent System Operator (CAISO)?

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12 WPTF Testimony at p. 6 (WPTF, Ackerman); CARE Testimony at pp. 3-5 (CARE, Sarvey).

13 D.07-12-052 at pp. 210-212. In Decision 07-12-052, the Commission initially approved five unique circumstances. However, in response to petitions for modification, the Commission subsequently eliminated one of the unique circumstances, which was an expansion of an existing facility. See D.08-11-008 at pp. 22-23.

14 D.07-12-052 at p. 212.

15 CARE Testimony at p. 3, lines 16-17 (CARE, Sarvey).

16 IEP Testimony at pp. 36-38 (IEP, Monsen); DRA Testimony at pp. 3-6 to 3-7 (DRA, Shmidt and Huang).

A 21 No. I believe that it would be infeasible for PG&E to conduct an RFO and for new generation resources to be developed in time to meet the 2018 resource need identified by the CAISO. PG&E's Initial Testimony described in detail the process for conducting an RFO and subsequently developing a new generation resource and explained why this process would not allow for a new generation resource to be on-line by 2018.[17]

Q 22 In response to CARE's, DRA's and IEP's concerns, can you describe the steps necessary to conduct an RFO?

A 22 Yes. There are two steps in the development of an RFO. First, PG&E is required to develop all of the RFO materials, protocols and evaluation criteria before the RFO is issued. As PG&E explained in response to IEP's discovery requests in this proceeding,[18] various Commission decisions require consultation with the Procurement Review Group (PRG) and/or Cost Allocation Mechanism Group and other preparation efforts to ensure robust solicitation process standards are met.[19] For example, Decision 07-12-052 lays out the following process prior to a launch:

> The Commission believes that the RFO process would benefit from additional rigor on the part of the PRGs, [Independent Evaluators ("IEs")], and [Energy Division ("ED")] in scoping, reviewing, and revising RFO bid documents to help identify data gaps, confirm the fairness of the components of the RFO that the [Investor-Owned Utility ("IOU")] identifies as confidential, and ensure that both the letter and spirit of the RFO are consistent with the Commission policies set forth in this and past procurement decisions. To address these concerns, the IOUs will need to build consultation with PRGs and ED into the early stages of the RFO process.
>
> Prior to drafting RFO bid documents, we will require all IOUs to hold a meeting with the IE, PRG, and ED to outline their plans (quantities and types of products they intend to solicit, category definitions if multiple bid categories are envisioned, any unique circumstances to be addressed in the RFO) and solicit feedback. Then, the draft RFO bid documents are to be developed under the oversight of an IE. The bid documents should include (for internal review by the PRG and ED staff) clear descriptions of the bid criteria (including the rationale for selecting and weighting the criteria) and the evaluation and selection process. The draft bid documents are to be vetted through the PRGs, and any differences are to be resolved with ED staff in advance of the public issuance of bid documents. In addition, the IOU is to provide the PRGs

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17 PG&E Initial Testimony, Chapter 5, at pp. 5-5 to 5-11 (PG&E, Monardi).

18 PG&E Response to IEP's Data Request Set 2, Question 1.a.

19 See e.g., D.02-10-062, D.04-12-048, and D.07-12-052.

and ED staff a decision rationale with respect to each selected and rejected bid upon completion of an RFO.[20]

This process is lengthy and requires a substantial amount of time. For example, in PG&E's 2008 LTRFO, the process of developing the LTRFO protocols, contracts and materials took four months before the issuance of the 2008 LTRFO.

Second, after an RFO is issued, potential developers need to be given time to develop offers. These offers then need to be reviewed, evaluated, shortlisted and, for offers that make the shortlist, further negotiations need to occur. As PG&E explained in response to DRA's data requests in this proceeding,[21] it is PG&E's experience that the time between the launch of an RFO and submittal of contracts for Commission approval is approximately one year. Since 2002, PG&E has run two LTRFO solicitations open to new conventional generation resources. These two LTRFOs were started in 2004 and 2008. It takes time to run a robust solicitation allowing time for PRG and IE input, as well as time for developers to adequately prepare offers. In addition, it takes time, frequently six months or more from shortlisting to filing a contract for approval, in order to negotiate these types of complex agreements. In the case of the 2004 LTRFO, the solicitation was re-launched in March 2005 and contracts were filed for approval in April 2006.[22] In the case of the 2008 LTRFO, the solicitation was launched in April 2008 and the first contract was filed for approval in April 2009.

In short, based on PG&E's experience, it takes sixteen (16) months to develop and conduct an RFO for new generation resources. After this process is complete, PG&E must then seek Commission approval of a winning offer. An offer arising from an RFO is typically not effective until it is approved by the Commission.

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20 D.07-12-052 at pp. 149-150.

21 PG&E Response to DRA's Data Request Set 3, Question 2.

22 The 2004 LTRFO Solicitation was originally launched in 2004, suspended and then re-launched on March 18, 2005 pursuant to the revised LTRFO requirements ordered in Decision 04-12-048.

Q 23 How do the new Prevention of Significant Deterioration (PSD) requirements impact the feasibility of conducting an RFO and getting new generation resources developed?

A 23 In December 2009, the U.S. Environmental Protection Agency (EPA) declared that greenhouse gases (GHG) threaten the public health and welfare of the American people (the endangerment finding), and this finding became effective on January 14, 2010. Regulating GHGs at the federal level is furthered by the PSD program and New Source Review rule changes finalized by EPA in early 2010. Among these rule changes, the GHG Tailoring Rule provides that any new source of GHGs exceeding 100,000 tons per year CO_2-equivalent and commencing construction after July 1, 2011 would be considered to be a major stationary source and subject to PSD permitting requirements.

One principal requirement for PSD permits is that a new major source or major modification must apply Best Available Control Technology (BACT), which is determined on a case-by-case basis taking into account, among other factors, the cost effectiveness of the control and energy and environmental impacts. BACT standards for GHGs, in particular standards applicable to natural-gas fired power plants, are uncertain.

Q 24 What is your estimate as to how long it would take a new generation resource to obtain a PSD?

A 24 If a PSD permit is required, the permit must be issued prior to the start of construction of a new stationary source. As a preliminary matter, a developer is required to prepare a PSD permit, which itself can take a considerable amount of time. Processing a PSD permit should take approximately 12 months. However, many air districts (including the BAAQMD) have not been delegated the authority to issue PSD permits by the EPA. Obtaining a PSD permit directly from EPA is expected to take longer than a local air district and in some cases significantly longer. Once issued, PSD permits have a 30-day appeal period. If any third-party challenges the PSD permit during the appeal period, an automatic stay is granted preventing the start or continuation of construction. Any PSD permit challenges must be resolved by the federal Environmental Appeals Board which can take 6-18 months. Overall, these new EPA regulations will create

uncertainty, construction delays, and higher costs for developers of conventional power plants.

Q 25 Do you have an understanding as to whether the PSD requirements apply to the Oakley Project?

A 25 It is my understanding that the PSD requirements do not apply to the Oakley Project. The BAAQMD determined that a PSD permit was not required at the time of the Oakley Project's air permit application and the BAAQMD's issuance of the Authority to Construct (ATC) for the project. CCGS has further indicated that it is in full compliance with the EPA's Tailoring Rule and it has met the requirement to commence construction of an emissions unit prior to July 1, 2011.

Q 26 IEP asserts that during the energy crisis combustion turbine facilities were quickly brought on line and that the same can be done again if needed.[23] Can you respond to this?

A 26 Yes. First, even IEP concedes that this kind of last minute procurement is less than optimal. This type of last-minute procurement often results in contracts that are more expensive than procuring a resource in sufficient time to meet a future need, such as PG&E proposes in this proceeding. Second, the facilities that were brought online quickly during the energy crisis were done pursuant to expedited environmental review processes at the CEC that have expired. An emergency order from the Governor allowed a 21-day review process for certain peaker facilities which would normally operate less than 2,500 hours per year. In addition, the state legislature authorized two other expedited CEC review processes (four and six months in duration). These three expedited review processes are no longer available. Third, the situation cited by IEP involves combustion turbine peaker units, not combined-cycle facilities. The Oakley Project has been designed as a flexible plant that provides high base load efficiency, wide turndown, fast ramping, and quick starting. As such, the Oakley Project can be operated as a base load facility to take advantage of its high efficiency (low heat rate) or as a highly flexible shaping/load following facility utilizing its other attributes to integrate with renewable energy. Therefore, the

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23 IEP Testimony at p. 35, lines 1-5 (IEP, Monsen).

Oakley Project offers the optimal attributes of both a combined cycle and a combustion turbine peaker facility. Fourth, the facilities identified by IEP were developed before the PSD requirements described above went into effect.

Q 27 IEP also asserts that existing facilities can be upgraded or retrofitted to meet any need that would be met by the Oakley Project.[24] Do you agree?

A 27 No. PG&E's Initial Testimony, Chapter 2, pages 2-4 to 2-8, includes a description of the Oakley Project design features. As PG&E explained, the design attributes of the Oakley Project are extensive. One of the most significant attributes is a specially designed Heat Recovery Steam Generator (HRSG) to operate under the conditions imposed by a combustion turbine that is ramped up to full load rapidly without concern for the HRSG. Other key features are the addition of an auxiliary boiler to maintain a warm ready state while offline, an air permit that allows both combustion turbines to start simultaneously, and a special steam turbine steam bypass system that allows the combustion turbines to start and ramp up quickly without the need to run them at low loads to allow the steam turbine to warm up. These design features are not typical of operating combined cycles and would be challenging to incorporate into an upgraded or retrofitted existing facility.

As PG&E explained to IEP in discovery:

> While it may be technically "possible" to retrofit an existing combined cycle unit to employ the features of GE's Rapid Response plant, it would likely not be commercially feasible to do so. The Rapid Response design is a "total plant" design wherein most of the power block scope is provided by GE as an integrated package specifically designed to provide the Rapid Response performance. This scope includes the combustion turbines, steam turbine, generators, heat recovery steam generators, steam bypass systems, distributed controls system, and continuous emissions monitoring system. In addition, to assure the anticipated operating profiles and associated benefits are achieved, it is very important that key balance-of-plant equipment and systems outside of GE's scope be designed and constructed in accordance with GE's specifications and guidelines. Attempting to retrofit the Rapid Response design into an existing plant would be a costly and complex process that would likely require extensive modifications to or replacement of existing equipment and systems, especially the HRSG's and steam systems which are the most expensive equipment and systems following the turbine systems. Also, any modified equipment or systems would need

[24] IEP Testimony at pp. 33-34 (IEP, Monsen).

to be brought up to the current version of the California Building Standards Code ("CBSC"). The 2010 version of the CBSC included significant revisions to structural design criteria that would likely make it difficult to reuse existing structures and foundations. Permitting issues would also need to be considered, likely including amendments the CEC license and air permit.

Assuming GE would even be willing to consider a retrofit design, it's doubtful that they would be willing to guarantee the performance to the same extent as that of a new plant. Without a solid performance guarantee, financing a Rapid Response retrofit project would be a challenge. Also, since there are currently no GE 7FA.05 combined cycle plants in operation, such a retrofit would not be able to incorporate GE's latest combustion turbine technology and thus would not be able to recognize the benefits of the higher output and efficiency of the 7FA.05 as compared to GE's earlier 7FA models.

A final consideration to a retrofit of this magnitude would be the length of time the plant would be out of service. This would be lost capacity on the grid during this period.[25]

IEP's testimony also fails to provide any detail as to the amount of time needed for an existing facility to be retrofitted to provide benefits similar to the Oakley Project, and whether such a retrofit would be possible by 2018.

Q 28 Do any of the interveners in this proceeding agree that there is not sufficient time to conduct a new RFO and have resources online by 2018?

A 28 Yes, Fairfield Energy Center and Madera Energy Center (FEC/MEC) agree that given the lengthy RFO process, "it is unlikely that process would result in a commercial online date by 2017 or 2018."[26]

Q 29 Is there any additional support for PG&E's claim that an RFO is infeasible?

A 29 Yes. In the 2012 LTPP proceeding (R.12-03-014), an independent generator, GenOn Energy, Inc. (GenOn), submitted testimony on July 23, 2012 in Track 1 of that proceeding regarding the amount of time necessary to develop new generation resources. GenOn provided detailed testimony concerning the lengthy development process in California, concluding that it takes 81 months, or seven (7) years, to develop a new generation resource in California.[27] Given this timing, it is clearly infeasible to conduct an RFO to meet the 2018 need identified by the CAISO.

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25 PG&E response to IEP Data Request Set 1, Request 13(e).

26 FEC/MEC Testimony at p. 15, lines 17-18 (FEC/MEC, Fredericks and Roberts).

27 See *Local Reliability Track I Reply Testimony of Sean Beatty on Behalf of GenOn Energy, Inc.*, filed on July 23, 2012 in Rulemaking 12-03-014. GenOn's testimony is included as Attachment A to PG&E's Rebuttal Testimony.

b. Alternatives to Oakley Are Infeasible or Do Not Provide the Flexibility Necessary to Integrate Renewable Resources

Q 30 In its testimony, DRA indicates that "[d]emand response, energy storage, and other options could facilitate renewable integration. PG&E has not made any showing that Oakley is needed instead of other types of preferred resources to reduce system integration needs."[28] Do you believe preferred resources can address renewable integration needs?

A 30 In this instance, no. Few types of resources in the loading order are capable of providing operational flexibility and ancillary services and are able to be online by 2018. The vast majority of demand-side resources, including energy efficiency and distributed generation resources, are neither consistently dispatchable nor capable of providing ancillary services. The one possible exception is demand response (DR) which is potentially capable of providing flexible products. However, no such DR programs currently exist in California. Any new DR program or a modification of an existing DR program would need to be established in the next DR portfolio funding cycle (2015-2017).

Q 31 What about energy storage?

A 31 Regarding storage, it is unlikely that any meaningful storage capacity will be online by 2018. Batteries are still early-stage technologies, and with limited operating experience. Furthermore, active CAISO queue positions for battery-related technologies account for less than 10 MW of capacity. PG&E is undergoing a feasibility study for the only utility-scale compressed air energy storage (CAES) project under development in California. The PG&E CAES project has not yet started the interconnection study process, and is not expected to come online before 2020. Aside from one project coming online this summer, it is unlikely any additional pumped storage facilities will be completed by 2017-2018 given Federal Energy Regulatory Commission (FERC) licensing requirements and construction timeframes.

Q 32 In its testimony, FEC/MEC claims that there are at least four other resources under "advanced development" that could be commercially operational by

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[28] DRA Testimony at pp. 2-10 to 2-11 (DRA, Shmidt).

2017, prior to the CAISO's established need in 2018.[29] Specifically, FEC/MEC identifies four resources shortlisted in the 2008 LTRFO: Fairfield, Madera, Stockton and Vacaville. Do you agree with these claims?

A 32 No. PG&E disagrees that these projects are under "advanced development." The Fairfield, Madera and Stockton projects are not listed on the CEC project status report.[30] Based upon this information, PG&E concludes that the Fairfield, Madera and Stockton projects have not started the CEC permitting process. The Vacaville project (listed as the CPV Vaca-station project, Docket Number 2008-AFC-11) is noted as being on hold. In addition, the CEC Staff has not yet issued a Staff Assessment for the proposed facility.[31]

With respect to interconnection, FEC/MEC note Stockton has an executed Large Generator Interconnection Agreement (LGIA), but listed the other three projects as having an "unknown" or "not completed" interconnection status. Redacted

Redacted

For the reasons explained in Chapter 5 of PG&E's Initial Testimony, the CAISO interconnection process takes several years to undergo studies, execute an LGIA, and construct the necessary interconnection facilities and transmission network upgrades necessary to provide full deliverability to the CAISO grid.[32]

Overall, these four resources have significant permitting and interconnection steps remaining to conclude the development process. Thus, it is unlikely these resources could be online by 2018.

Q 33 DRA asserts that there are viable available alternatives to the Oakley Project that are sufficiently developed so that an RFO would be feasible.[33] Do you agree?

A 33 No. PG&E's Initial Testimony indicated that there are only three large, conventional projects in the CAISO territory that are available for contract

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29 FEC/MEC Testimony at pp. 14-15 (FEC/MEC, Fredericks and Roberts).

30 http://www.energy.ca.gov/sitingcases/all_projects.html.

31 http://www.energy.ca.gov/dockets/docket_redesign.php?docketNo=08-AFC-11.html.

32 PG&E Initial Testimony, Chapter 5 at pp. 5-8 to 5-10 (PG&E, Monardi).

33 DRA Testimony at pp. 2-9 to 2-10 (DRA, Shmidt).

and could be considered as an alternative to the Oakley Project and participate in an RFO.[34] The three projects are the Redacted Redacted Redacted In addition, PG&E would still be required to develop and conduct the RFO. As explained above, this process typically takes sixteen (16) months, followed by the period of time required for Commission approval and at least two to three years to construct the facilities.

2. There Is a Specific, Unique Reliability Need for the Oakley Project

Q 34 Do any of the unique circumstances identified in Decision 07-12-052 apply to the Oakley Project?

[34] PG&E Initial Testimony, Chapter 5 at pp. 5-11 to 5-12 (PG&E, Monardi).

A 34 As a preliminary matter, PG&E's position is that the Oakley Project does not need to satisfy the requirements of Decision 07-12-052 given the language in Decision 10-07-045 providing the opportunity for PG&E to file a new application for the Oakley Project. However, this is an issue of legal interpretation, and is better addressed in briefs rather than testimony. If the Commission determines that the Decision 07-12-052 requirements apply to the Oakley Project, then the Oakley Project certainly satisfies the "Reliability" standard for a unique circumstance.

Q 35 What standard did the Commission establish for a unique circumstance of "Reliability" in Decision 07-12-052?

A 35 The Commission described "Reliability" as follows:

> [R]esources needed to meet specific, unique reliability issues (particularly in circumstances in which it becomes evident that reliability may be compromised if new resources are not developed[)], and the only means of developing new resources in sufficient time is via UOG.[35]

Q 36 CARE and TURN assert that there is no unique reliability issue that justifies the Oakley Project.[36] IEP and DRA make similar arguments, but do not reference Decision 07-12-052.[37] Do you believe that the Oakley Project satisfies the unique reliability circumstance requirement?

A 36 Yes. First, the Oakley Project meets a "specific, unique reliability issue." In particular, the CAISO has identified a "2,535 MW deficiency in flexible capacity requirements, resulting in an estimated 3,570 MW of additional capacity needs" by 2017-2018.[38] This reliability issue arises as a result of the increasing amount of renewable generation, retirement of Once-Through Cooling (OTC) units, and proposals to significantly increase the amount of distributed generation in California are all contributing to significant reliability issues. The CAISO studies and statements addressing reliability issues are described in detail in Chapter 5 of PG&E's Initial Testimony and Section D.2

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35 D.07-12-052 at p. 212.

36 CARE Testimony at pp. 4-5 (CARE, Sarvey); TURN Testimony at pp. 17-18 (TURN Woodruff).

37 IEP Testimony at pp. 21-23 (IEP, Monsen); DRA Testimony at pp. 2-7 to 2-9 (DRA, Shmidt).

38 *Petition for Waiver of Tariff Provisions and Request for Confidential Treatment,* filed January 25, 2012 in FERC Docket No. ER12-897-000 ("Sutter Waiver Petition") at p. 28. The Sutter Waiver Petition is included as Attachment B to this Rebuttal Testimony. The Declaration of Mark Rothleder, which supported the Sutter Waiver Petition, was included as Attachment 1 to Chapter 5 of PG&E's Initial Testimony.

of this Rebuttal Testimony. In March 2012, the CAISO's Chief Executive Officer (CEO) summarized the situation by concluding that "under the most likely scenarios" California will be short several thousand megawatts of ramping capacity within the next five years.[39]

Q 37 Will reliability be compromised if new resources are not developed?

A 37 Yes. Without sufficient flexible capacity to integrate renewable resources and replace the retiring OTC units, the CAISO has indicated that there are "significant impediments" to the reliable operation of the CAISO grid starting in 2017.[40] The CAISO has also stated that failure to consider reasonable study assumptions and incorporate those assumptions in procurement decision making could "lead to electricity outages caused by a shortfall of the flexible resources needed to operate the system reliably."[41] In short, California could find itself in several years with a significant capacity shortfall for flexible resources.

Q 38 What would be the result of such a shortfall?

A 38 As the Commission has indicated, interruption of power and lack of reliability can have a significant economic impact on California.[42] Moreover, this could cause the state to continue to rely on aging and inefficient units that increase GHG emissions as a result of their inefficiency.

Q 39 Is the only means of developing the necessary resources in sufficient time the Oakley Project?

A 39 Yes. As explained above in Section C.1, at this point it is infeasible to conduct an RFO and to have a new generation resource such as the Oakley Project online by 2017-2018. On the other hand, the Oakley Project is fully permitted and construction has already commenced. The Oakley Project enjoys broad community support and, if the Commission approves this application, the Oakley Project will be on-line and providing needed operating flexibility by June 2016, in advance of the need identified by the CAISO.

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39 *CEO Report from Steve Berberich to CAISO Board of Governors*, dated March 21, 2012 at p. 2.

40 Sutter Waiver Petition at p. 3.

41 *Id.* at p. 6.

42 D.07-01-041 at p. 23 and Finding of Fact (FOF) 17-18.

Q 40 DRA observes that if additional needs arise for flexible resources to support renewable integration, they can be met with other resources. In particular, DRA says that the Commission is currently considering over 4,500 MW of new resources to meet local capacity requirements in Southern California.[43] Can you comment on DRA's observations?

A 40 Yes. In its testimony in Track 1 of the 2012 LTPP proceeding, the CAISO estimated a range of about 3,100 MW to 4,600 MW of local area resource need to meet Southern California's local capacity requirements associated with the potential retirement of Southern California's OTC units. The amount of new capacity needed is a function of the location of new resource additions and effectiveness to solve the local reliability requirements. DRA exaggerates the amount of capacity that is likely to be built to address Southern California local reliability requirements. A more likely amount of local capacity added is approximately 3,100 MW. Assuming the local reliability needs are met by a 3,100 MW mixture of combined cycle gas turbine (CCGT) and gas turbine units, the CAISO estimated a 1,051 MW residual system shortage of upward load following resource. To cover this shortage, the CAISO estimated about 1,200 MW generic resources will be needed.[44] PG&E further addresses DRA's argument regarding capacity in Southern California in Section D.2.d, below.

3. Additional Issues Raised Regarding Decision 07-12-052

Q 41 In its testimony, CARE notes that Decision 07-12-052 encourages brownfield development and then asserts that the Oakley Project is on a greenfield site and on "farmland of statewide importance."[45] Can you respond to this?

A 41 Yes. First, with regard to greenfield development, as PG&E explained in its Initial Testimony, the Oakley Project will be located on an industrial site that is currently zoned for heavy industry.[46] Although the site was partially used

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43 DRA Testimony at p. 2-7, lines 12-21 (DRA, Shmidt).

44 See *Testimony of Mark Rothleder on Behalf of the California Independent System Operator*, submitted in Rulemaking 12-03-024 on May 23, 2012 at pp. 3-5. Mr. Rothleder's testimony is included as Attachment C to this Rebuttal Testimony.

45 CARE Testimony at p. 4, lines 7-19 (CARE, Sarvey).

46 PG&E Initial Testimony, Chapter 2, at p. 2-1 (PG&E, Maring).

for a vineyard, it is located in an industrial area. Second, with regard to the issue of "farmland of statewide importance," this is an issue that was raised and addressed by the CEC. The CEC evaluated this issue during the environmental review process, and determined:

> The project will convert 21.95-acres of Farmland of Statewide Importance. The conversion is consistent with and contemplated by the City of Oakley 2020 General Plan Environmental Impact Report. The conversions would not result in significant impacts nor does it necessitate mitigation under the Oakley General Plan.[47]

D. The Oakley Project Is Authorized by Decision 10-07-045 (Issue 1 (d))

1. The Oakley Project Has All Necessary Permits

Q 42 CARE asserts that the Oakley Project does not have all necessary permits and thus does not satisfy the requirements of Decision 10-07-045.[48] Do you agree with this?

A 42 No. In Chapter 3, Section C of PG&E's Initial Testimony, PG&E provided detailed testimony concerning the CEC licensing authority and the licensing process that took place for the Oakley Project. The CEC issued a Final Decision on May 18, 2011 approving the Oakley Project. After completing several pre-construction data submittals required by the Conditions of Certification, CCGS was approved to begin construction on June 1, 2011. In Chapter 3, Section D of PG&E's Initial Testimony, PG&E provided detailed testimony concerning the BAAQMD's process for reviewing CCGS's application for a minor source and their eventual issuance of a Final Determination of Compliance (FDOC) for use by the CEC to complete their environmental review. The BAAQMD then issued their Authority to Construct (ATC) after CCGS submitted the Emissions Reduction Credits, as required by the FDOC on June 2, 2011. These are the two permits necessary for CCGS to proceed with construction of the Oakley Project.

Q 43 Has CCGS started construction of the Oakley Project?

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47 Energy Resources Conservation and Development Commission of the state of California, May 2011, Order 11-0158-15 approving the Application for Certification of Oakley Generating Station (Docket 09-AFC-4) (CEC Final Decision), Section VII.A, Land Use, FOF 1, p. 28.

48 CARE Testimony at p. 6, lines 6-12 (CARE, Sarvey).

A 43 Yes. As described in PG&E's Initial Testimony, construction activities started in June 2011.[49] On the CEC website the Oakley Project is listed as being "approved and under construction."[50]

Q 44 Although IEP acknowledges that construction has started, it asserts that little progress has been made over the past year at the Oakley Project site and that construction has come to a "halt" beyond site preparation activities.[51] Please respond to this assertion.

A 44 First, as IEP acknowledges, site preparation is continuing at the Oakley Project site. Because site preparation is an essential first step for any construction project, IEP's tacit acknowledgement that this activity is continuing is an acknowledgement that the Oakley Project remains under construction. Second, IEP only attached a single page from the monthly Oakley Project compliance reports submitted by CCGS to the CEC. The other pages of these reports provide more detailed information concerning construction and development activities that are continuing on the Oakley Project. Finally, the fact that construction activity has not significantly ramped up is to be expected given the status of this proceeding. While construction is continuing, given the uncertainty of the Commission's approval of the Amended PSA, CCGS cannot be expected to significantly ramp up construction activity, or make significant equipment purchases, until the Commission has decided whether to approve the Amended PSA. This is exactly why PG&E has advocated for a schedule in this proceeding that allows for a Commission decision by the end of the year, and why PG&E opposes proposals by IEP and other parties to significantly delay this proceeding.

Q 45 CARE asserts that the Oakley Project permits are not final because the CEC permit is currently the subject of an appeal at the California Supreme Court.[52] Can you address this issue?

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49 PG&E Initial Testimony, Chapter 3 at pp. 3-10 to 3-11 (PG&E, Maring).

50 *See* http://www.energy.ca.gov/sitingcases/all_projects.html (CEC website listing status of projects in California).

51 IEP Testimony at pp. 40-43 (IEP, Monsen).

52 CARE Testimony at p. 6, lines 9-10 (CARE, Sarvey).

A 45 Yes. Communities for a Better Environment (CBE) and Robert Sarvey filed a Petition for Writ of Review at the California Supreme Court regarding the CEC decision approving the Oakley Project license, as well as the Commission's earlier decision regarding the Oakley Project (i.e., D.10-12-050).[53] CBE and Mr. Sarvey did not ask the California Supreme Court to stay the CEC decision. It is my understanding that the CEC and Commission have filed separate motions that effectively seek the dismissal of CBE's and Mr. Sarvey's Petition for a Writ of Review. As of the time this rebuttal testimony was prepared, these requests are still pending at the California Supreme Court. However, neither the California Supreme Court nor any other court has stayed the effectiveness of the CEC decision, nor has any court stayed ongoing construction activities related to the Oakley Project.

Q 46 CARE asserts that a PSD permit is required for the Oakley Project.[54] Do you agree?

A 46 No. The developer of the Oakley Project, CCGS, and the BAAQMD determined that a PSD permit was not required at the time of the Oakley Project's air permit application and the BAAQMD's issuance of the ATC for the project. CCGS has informed PG&E that CCGS is in full compliance with the EPA's Tailoring Rule and it has met the requirement to commence construction of an emissions unit prior to July 1, 2011. PG&E provided the operational requirements for the Oakley Project in the Amended and Restated Purchase and Sale Agreement (Amended PSA), Exhibit E and Attachment E-1 with corresponding annual emission limits in the Amended PSA. CCGS is required to obtain the required permits to operate the facility based on these requirements.

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53 *Communities for a Better Environment, et al. v. CEC, et al.*, California Supreme Court, Case No. S194079.

54 CARE Testimony at p. 6, lines 11-12 (CARE, Sarvey).

2. The Final Results From CAISO Studies Demonstrate Significant Reliability Risks

a. The Requirements of Decision 10-07-045 Have Been Satisfied

Q 47 TURN, WPTF, DRA and CARE assert that PG&E has not satisfied the second requirement of Decision 10-07-045 regarding final results of the CAISO's Renewable Integration Study demonstrating that there are significant reliability risks from integrating the 33 Percent Renewable Portfolio Standard (RPS).[55] Do you agree with this assertion?

A 47 No, as I will explain in more detail below.

Q 48 Do the interveners correctly characterize the CAISO study requirement in Decision 10-07-045?

A 48 Generally yes, except for TURN. In Decision 10-07-045, the Commission specifically stated that PG&E could resubmit the Oakley Project if the Oakley Project had received all permits and:

> If the final results from the CAISO Renewable Integration Study demonstrates that, even with the projects approved by the Commission, there are significant negative reliability risks from integrating a 33% Renewable Portfolio Standard.[56]

Q 49 How has TURN mischaracterized this requirement in Decision 10-07-045?

A 49 Throughout its testimony, TURN replaced the word "results" with "report."[57]

Q 50 Is TURN's use of the term "report" significant?

A 50 Yes. TURN states that Decision 10-07-045 requires the CAISO to develop a "final report" and to submit it to the Commission presumably for the Commission's approval.[58] TURN then extrapolates from this that the "final report" was to have been submitted in the 2010 LTPP proceeding and approved by the Commission in that proceeding. However, the language in Decision 10-07-045 is quite clear. The Commission did not require a "report" nor did the Commission require that the "final results" from a CAISO study be submitted to or approved by the Commission. In short, TURN is

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55 TURN Testimony at pp. 5-14 (TURN, Woodruff); WPTF Testimony at pp. 7-8 (WPTF, Ackerman); DRA Testimony at pp. 2-1 to 2-2 (DRA, Shmidt); CARE Testimony at p. 7 (CARE, Sarvey).

56 D.10-07-045 at p. 41.

57 See e.g., TURN Testimony at p. 5, line 24 to p. 6, line 3 (TURN, Woodruff).

58 *Id.* at p. 6, lines 1-3 and 13-14 (TURN, Woodruff).

reading into Decision 10-07-045 steps that were not required by the Commission.

Q 51 Did the Commission define the term "CAISO Renewable Integration Study" in its decision?

A 51 No. However, as with most studies or analyses prepared as part of a Commission proceeding, these studies and analyses are filed in the form of testimony by parties in the proceeding. Most importantly, as I explain below, more recent CAISO studies have reached the exact same conclusion, i.e., that there are significant negative reliability risks from integrating 33 percent RPS resources. Thus, the 2010 LTPP and subsequent CAISO studies are sufficient to satisfy the requirement in D.10-07-045.

Q 52 Did the Commission require the CAISO to establish a specific amount of megawatts needed for 33 percent RPS integration?

A 52 No. Decision 10-07-045 simply requires that the final results from a CAISO study indicate that "there are significant negative reliability risks from integrating a 33% Renewable Portfolio Standard."

Q 53 In response to interveners' arguments, can you describe the CAISO studies that have occurred since Decision 10-07-045 was issued that address the significant negative reliability risks associated with integrating 33 percent RPS?

A 53 Yes. A year after Decision 10-07-045 was issued, the CAISO submitted the results of its 33 percent RPS integration study in the 2010 LTPP proceeding (R.10-05-006).[59] The CAISO's study was based on scenarios developed by the Commission's ED. After describing its analysis in detail, the CAISO concluded that some of the scenarios identified capacity shortfalls, while others did not identify any shortfalls.[60] The CAISO explained that it could not determine whether sufficient flexible capability existed in those scenarios if the available generation capacity was limited to the existing 15-17 percent Planning Reserve Margin because these scenarios had excess reserve

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59 *Track I Direct Testimony of Mark Rothleder on Behalf of the California Independent System Operator*, submitted on July 1, 2011 in R.10-05-006. Portions of Mr. Rothleder's testimony in the 2010 LTPP proceeding are included as Attachment D to DRA's Testimony.

60 *Id.* at pp. 43-44.

margin.[61] The CAISO indicated that it intended to run additional scenarios and sensitivities.[62]

Q 54 Did any parties other than the CAISO present any analysis of 33 percent RPS integration needs in the 2010 LTPP proceeding?

A 54 Yes. PG&E, Southern California Edison (SCE), and San Diego Gas & Electric Company (SDG&E) prepared a Joint Investor-Owned Utility (IOU) Analysis that included the four scenarios developed by the Commission's ED as well as several IOU Common Scenarios and a sensitivity analysis.[63]

Q 55 What happened after the CAISO and Joint IOU studies were submitted in the 2010 LTPP?

A 55 On August 3, 2011, twenty-three (23) parties submitted a settlement in Track 1 of the 2010 LTPP proceeding that addressed, in part, issues related to RPS integration.[64] The settlement provided that "[t]he resource planning analyses presented in this proceeding do not conclusively demonstrate whether or not to add capacity for renewable integration purposes through the year 2020, the period to be addressed in the current LTPP cycle."[65] Thus, the settling parties agreed that "further analysis is needed before any renewable integration resource need is made."[66] The settling parties recommended that the Commission and the CAISO collaborate and continue the work undertaken to date to refine and understand the future need for new renewable integration resources.

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61 *Id.* at p. 44.

62 *Id.* at p. 49.

63 *See* DRA's Testimony, Attachment F (including portions of the Joint IOU Analysis from the 2010 LTPP proceeding).

64 *Motion for Expedited Suspension of Track 1 Schedule, And For Approval of Settlement Agreement Between and Among Pacific Gas and Electric Company, Southern California Edison Company, San Diego Gas & Electric Company, The Division of Ratepayer Advocates, The Utility Reform Network, Green Power Institute, California Large Energy Consumers Association, The California Independent System Operator, The California Wind Energy Association, the California Cogeneration Council, The Sierra Club, Communities for a Better Environment, Pacific Environment, Cogeneration Association of California, Energy Producers and Users Coalition, Calpine Corporation, Jack Ellis, GenOn California North LLC, the Center for Energy Efficiency and Renewable Technologies, the Natural Resources Defense Council, NRG Energy, Inc., The Vote Solar Initiative, and the Western Power Trading Forum*, filed August 3, 2011 in Rulemaking 10-05-006. For purposes of this testimony, the settlement is referred to as the "2010 LTPP Settlement."

65 2010 LTPP Settlement at p. 5.

66 *Id.*

Q 56 Were any of the parties who filed intervener testimony in this proceeding also parties to the 2010 LTPP Settlement?

A 56 Yes. TURN, DRA, WPTF and CBE were all parties to the 2010 LTPP Settlement.

Q 57 Did the CAISO continue to work on its RPS integration studies after the 2010 LTPP Settlement was filed in August 2011?

A 57 Yes. In its opening brief in Track 1 of the 2010 LTPP proceeding, the CAISO explained that "as part of the ISO's continuing study efforts, the ISO conducted a preliminary analysis of possible local and system flexibility capacity needs for the 2011-2020 timeframe and provided these results in a Board of Governors briefing on August 25, 2011."[67] Using the High Load Trajectory Scenario developed by the Commission's ED and assuming the retirement of OTC units, the CAISO determined that there was a need for 4,600 MW of capacity by 2020 to provide upward balancing flexibility and 800 MW of downward balancing flexibility.[68]

Q 58 Did the CAISO explain why it used the High Load Trajectory Scenario in its analysis as compared to the other three scenarios developed by the Commission's ED?

A 58 Yes. The CAISO explained:

> [T]he material reflects concerns that certain assumptions specified by the CPUC are based on the expectation that state agencies and others will successfully implement new demand response and energy efficiency measures that are not yet in development. We believe it is more prudent to plan on these measures not materializing which results in higher expected demand and generation needs. Accounting for the possibility that state energy efficiency and demand response goals will not materialize is not an indictment of the goals. The goals are among the most important and least cost steps California can take to successfully integrate the expected levels of new renewable generation. However, the consequences of having insufficient resources to reliably operate the grid are much more significant than the consequences of over-procurement. In addition to severe economic consequences, electricity outages caused by shortage of the flexible resources needed to reliably operate the system would put renewable goals themselves at risk.[69]

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67 *See Opening Brief of the California Independent System Operator Corporation on Track I Issues*, filed September 16, 2011 in Rulemaking10-05-006 at p. 4. A copy of the CAISO's brief is included as Attachment D to this Rebuttal Testimony.

68 *Id.* at pp. 4-5 and Exhibit 1 at p. 2.

69 *Id.*, Exhibit 1 at p. 2.

Q 59 Did the CAISO make any recommendations regarding procurement to meet this need?

A 59 Yes. The CAISO explained that "[t]he ISO shares the concerns identified by AES that, given the lengthy lead times required to permit and construct generation needed for operational flexibility, long-term procurement decisions must be made quickly, preferably well before year end 2012."[70] The CAISO concluded that "[t]hese studies document that additional flexibility services are needed to maintain reliability with the higher levels of variable renewable generation to meet California's 33% renewable portfolio standard."[71]

Q 60 Did the CAISO do any additional analysis after August 2011 regarding the reliability risks from integrating 33 percent RPS?

A 60 Yes. As PG&E explained in its Initial Testimony, in January 2012, the CAISO filed a petition at FERC regarding the Sutter Energy Center (Sutter).[72] In its filing, the CAISO explained that since August 2011, it had conducted a supplemental sensitivity analysis that that made certain adjustments to the work performed for the 2010 LTPP.[73] Based on this additional analysis, which was not available when the 2010 LTPP Settlement was executed, the CAISO concluded that there was "an estimated 3,570 MW capacity gap by the end of 2017."[74]

Q 61 Since filing the Sutter Waiver Petition in January 2012, has the CAISO continued to affirm its conclusion that there will be a capacity gap by the end of 2017 for flexible resources needed to integrate 33 percent RPS?

A 61 Yes. PG&E described these statements in its Initial Testimony in Chapter 5 on pages 5-3 to 5-4.[75]

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70 *Id.* at p. 5.

71 *Id.*, Exhibit 1 at p. 8.

72 PG&E Initial Testimony, Chapter 5, at pp. 5-2 to 5-3 (PG&E, Alvarez).

73 Sutter Waiver Petition at pp. 15-16.

74 *Id.* at p. 16.

75 A copy of the relevant pages from the CAISO Flexible Capacity Proposal, referred to on page 5-4 of PG&E's Initial Testimony, is included as Attachment E to this Rebuttal Testimony. Relevant pages from the *2013 Flexible Capacity Procurement Requirement: Supplemental Information to Proposal*, issued March 2, 2012 by the CAISO is included as Attachment F to this Rebuttal Testimony.

b. Intervener Assertions That the CAISO Results Are Not Final Are Misplaced

Q 62 IEP attaches a recent June 22, 2012 CAISO presentation to its testimony to support its argument that the CAISO is continuing to study the need for renewable integration.[76] Are there any other pages in this presentation that IEP did not include that are relevant here?

A 62 Yes. The very first page of the presentation shows the supply variability and uncertainty facing California with the retirement of OTC units and the increasing amount of variable and intermittent renewable generation. This information is consistent with the CAISO studies and analysis that I described above which demonstrate the need for the Oakley Project. Included as Attachment G to this Rebuttal Testimony is a copy of the cover page of the presentation and the first page.

Q 63 TURN says that CAISO has not as issued "its final report" from the renewable integration study.[77] CARE also claims that the CAISO has not completed its 33 percent renewable integration study, and that the Commission should wait until the final study has been completed before additional generation is authorized.[78] Do you agree with those claims?

A 63 No, I do not agree with those claims. First, as indicated above in Section IV.B.1, Decision 10-07-045 does not require a "final report" as TURN asserts. Second, as described above, the CAISO submitted testimony in the 2010 LTPP proceeding that included the CAISO's study results, indicating in the High Load Trajectory Scenario a need for resources to integrate the 33 percent RPS. The CAISO has continued to refine its study, ultimately resulting in the study submitted in the Sutter Waiver Petition that demonstrated a capacity gap for integrating 33 percent RPS by the end of 2017. Since submitting the Sutter Waiver Petition in January 2012, the CAISO has continued publicly and at the Commission to re-affirm the final results included in the Sutter Waiver Petition. While TURN and CARE may disagree with the conclusions the CAISO has reached,

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76 IEP Testimony at p. 22, n. 38 (IEP, Monsen) (Attachment M which includes a single page from a CAISO presentation).

77 TURN Testimony at pp. 5-10 (TURN, Woodruff).

78 CARE Testimony at p. 6 (CARE, Sarvey).

there is no question that the CAISO has prepared final study results that demonstrate significant negative reliability risks from the 33 percent RPS.

Q 64 Please explain why "final results" from the CAISO study submitted in the 2010 LTPP proceeding demonstrate that even with the projects approved by the Commission, there are significant negative reliability risks from integrating a 33 percent RPS.

A 64 The CAISO's study showed that the system needs 4,600 MW of flexible capacity High Load Trajectory Scenario in 2020. The CAISO study not only included all projects approved by the Commission but new generation additions which are now not likely to be available, as indicated in its Sutter Waiver Petition.[79] Therefore, if not all the assumed new projects develop, or if additional existing units retire, the need could be higher.

Q 65 What is the significance of the CAISO's analysis in the Sutter Waiver Petition?

A 65 In this petition, the CAISO explained that "the operations planning scenario, which is a more prudent and appropriate scenario for planning future reliability needs, definitively shows that a capacity gap will exist by the end of 2017 that cannot be filled by planned generation and that would only be exacerbated by removal of the Sutter plant."[80] Similarly, in his declaration, Mr. Rothleder explained that the CAISO analysis had concluded that there was a capacity gap by 2017.[81]

Q 66 Did the CAISO indicate in the Sutter Waiver Petition that there are significant reliability risks associated with the 33 percent RPS integration?

A 66 Yes. The reliability risks are discussed both in the petition and in Mr. Rothleder's Declaration. The CAISO summarized these risks by explaining:

> Nothing, however, will undermine the state's policy goals more quickly than reliability issues, challenges with integrating renewable resources, or significant cost impacts. Ensuring that we have adequate flexible resources on the system enables us to avoid operations issues and mitigate cost impacts.[82]

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79 Sutter Waiver Petition, p. 31.

80 Sutter Waiver Petition at p. 26 (footnotes omitted) (emphasis added).

81 Sutter Waiver Petition, Declaration of Mark Rothleder at p. 30.

82 Sutter Waiver Petition at p. 3.

Q 67 Since it filed the Sutter Waiver Petition, has the CAISO continued to study system needs related to 33 percent RPS integration?

A 67 Yes. The CAISO has convened a working group to look at renewable integration issues and prepared additional studies and testimony for the 2012 LTPP proceeding (i.e., R.12-03-014). These updated studies continue to show a shortage of capacity needed to integrate 33 percent RPS and the need for incremental system resources.

c. Criticism of the CAISO Studies Is Unwarranted

Q 68 DRA takes the position that all of the CAISO studies and statements relied on by PG&E in this application originate from the CAISO's studies that were considered in the 2010 LTPP and which the Commission used to conclude that additional generation was not needed by 2020.[83] DRA says that PG&E's application is asking the Commission to modify Decision 12-04-046, and that if the Commission were to reverse its prior decision, it should give parties the opportunity to be heard.[84] Do you agree with DRA's position?

A 68 No. PG&E is not proposing to modify Decision 12-04-046 and the Commission has complete discretion to approve the Oakley Project based on the record in this proceeding. The record of the 2010 LTPP proceeding did not include additional information presented by the CAISO after July 2011, which PG&E has described in its Initial Testimony (Chapter 5) and in this Rebuttal Testimony.

Q 69 TURN argues that the CAISO "results" are all based on High Load Trajectory Scenario, and that there are several aspects of the methodology in the CAISO's studies that were flawed.[85] Do you agree?

A 69 No. TURN is mistaking differences of opinion or concerns with flaws. In fact, TURN's August 4, 2011 testimony in the 2010 LTPP refers to concerns, and on-going efforts to resolve these concerns.[86] Since the July 1, 2011 filing, the CAISO and its consultant E3 have addressed

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83 DRA Testimony at p. 2-4, lines 9-11 (DRA, Shmidt).

84 DRA Testimony at pp. 2-2 to 2-5 (DRA, Shmidt).

85 TURN Testimony at pp. 10-14 (TURN, Woodruff).

86 TURN, 2010 LTPP Track 1 Testimony of August 4, 2011, p. 7 filed in Rulemaking 10-05-006.

questions TURN had previously raised,[87] and to my knowledge have not found flaws. In fact, the continued use by the CAISO of its Operations Planning Scenario (also referred to as the High Load Trajectory Scenario), which TURN refers to as the "4600 Study," is a good indication that CAISO still stands behind the final results filed in the 2010 LTPP on July 1, 2011.

Q 70 Has the CAISO explained why it has relied on the Operations Planning Scenario in the Sutter Waiver Petition and other filings?

A 70 Yes. In the Sutter Waiver Petition, the CAISO provided detailed testimony as to why the Operations Planning Scenario was the most prudent scenario to use when considering the need generation to integrate renewable resources. For example, the CAISO explained:

> The ISO cannot prudently or adequately plan for future capacity requirements based on a set of scenarios that are overly optimistic and difficult to justify given what we know about historical usage of the grid. In particular, the four other scenarios studied by the ISO in the LTPP proceeding are based on a CPUC-mandated assumption that peak system load will be approximately 45,000 MW, which is more than ten percent lower that the ISO's historic peak load and is lower than the ISO's 2010 peak load of 47,530 MW or 2011 peak load of 45,545 MW (which occurred in the midst of the recession and during a very mild summer).[88]

Q 71 WPTF acknowledges that "updated study reports show that significant amounts of new, highly flexible generation resources will be required by CAISO to integrate and manage renewable resources steadily coming online," but that the CAISO's need assessment stems from the CAISO's own "high load" scenario and not from a Commission-approved scenario, and that as a result this updated show of need does not comply with the third condition of Decision 10-07-045 that allows PG&E to submit the application for the Oakley Project.[89] Do you agree with WPTF's assessment?

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87 For example, one of TURN's main concerns was the capacity need identified in the All-Gas Case scenario in 2020, which CAISO and E3 have explained in subsequent working group meeting and presentations to all LTPP parties. A recent presentation on this topic can be found at: http://www.cpuc.ca.gov/NR/rdonlyres/32D2572E-7B0B-4DAD-8D99-AB13CBA1470F/0/201206OpFlexMeetingpresentationPDF.pdf (The relevant slides are Slides 30 to 37 out of 169 slides).

88 Sutter Waiver Petition at p. 6.

89 WPTF Testimony at pp. 7-8 (WPTF, Ackerman).

A 71 No, as explained in the prior answer, the Operations Planning Scenario is an operationally relevant case that was defined in the Scoping Memo of the 2010 LTPP proceeding for study in that proceeding. Stress conditions that are reasonably expected to occur need to be evaluated to determine the adequacy of the system, which is precisely what the CAISO did and as a result the reason for its concern with the shortage of flexible capacity.

d. Additional Arguments Concerning the Need for System Resources to Integrate Renewable Generation Are Not Persuasive

Q 72 DRA argues that projects proposed by SDG&E in Application 11-05-023 and in Track 1 of the 2012 LTPP proceeding (R.12-03-014) for local capacity in Southern California will satisfy any need for new resources to integrate renewable generation identified by the CAISO.[90] Do you agree?

A 72 No. First, it is not clear that any new capacity will be approved in Application 11-05-023 or in Track 1 of the 2012 LTPP. A number of parties, including DRA, have protested various issues in both proceedings and the outcome of both proceedings is uncertain. Second, even if the requested new capacity is approved in both proceedings, it is not sufficient to address the need for flexible capacity resources identified by the CAISO. In Track 1 of the 2012 LTPP proceeding, the CAISO ran a simulation assuming that 3,137 MWs of capacity is added in Southern California and assumed that this capacity could provide various flexibility attributes to the system including regulation-up and regulation-down, operating reserves and load following.[91] Even with this significant addition of local capacity, the CAISO still concluded that "the simulation results show a 1,051 MW residual system shortage of upward load following resource. To cover the shortage, about 1,200 MW [of] generic resources will be needed because a resource with a minimum load can contribute toward load following for the portion of the resources operating range between the resource minimum and maximum operating level."[92]

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90 DRA Testimony at pp. 2-8 to 2-9 (DRA, Shmidt).

91 Attachment C at pp. 3-4.

92 *Id.* at pp. 4-5.

Q 73 Did DRA perform any analysis in its testimony to demonstrate that the capacity proposed in SDG&E's application (A.11-05-023) and Track 1 of the 2012 LTPP proceeding would be sufficient to meet the system need for resources to integrate the 33 percent RPS requirements?

A 73 No, DRA did not do any independent analysis. Instead, DRA simply cites to Scoping Memos in the two proceedings and the CAISO's testimony in Track 1 of the 2012 LTPP proceeding.[93] Notably, as I explained above, the CAISO analysis concluded that additional system resources would be needed in addition to the resources procured to meet the local capacity needs in Track 1 of the 2012 LTPP.

Q 74 TURN takes the position that PG&E has not shown that the Oakley Project meets any specific system need.[94] CARE takes a similar position suggesting that no specific resource needs have been determined yet, or that the Oakley Project is needed.[95] Do you agree?

A 74 No. As indicated above, the CAISO has consistently indicated there is a need for flexible capacity as early as 2018. In addition, the CAISO has identified need for 4,600 MW of flexible capacity to meet projected load following requirements in 2020. Load following capacity is required to respond load/wind/solar forecast deviations and intra-hour variability. The Oakley Project provides the needed flexible capacity.

3. As the Commission Determined in Decision 10-07-045, the Oakley Project Has Numerous Beneficial Attributes

Q 75 In Decision 10-07-045, did the Commission provide any more explanation as to why it would specifically consider the Oakley Project?

A 75 Yes. The Commission explained, "[t]hough we deny the Oakley project at this time, we understand developing and building a power plant in California is a long process, fraught with pitfalls. Given this risk and the fact that we believe this plant has numerous beneficial attributes, PG&E may resubmit

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93 DRA Testimony at p. 2-8, n. 30-35 (DRA, Shmidt).

94 TURN Testimony at pp. 17-18 (TURN, Woodruff).

95 CARE Testimony at pp. 12-18 (CARE, Sarvey).

the Oakley project, via application, for Commission consideration under the specific conditions below."[96]

Q 76 Has PG&E already explained some of the beneficial attributes of the Oakley Project?

A 76 Yes. In Chapters 2, 3 and 5 of PG&E's Initial Testimony, PG&E described in detail various beneficial attributes of the Oakley Project.

Q 77 A number of parties in this proceeding, including CARE and FEC/MEC, have questioned the operational benefits of the Oakley Project.[97] Does PG&E intend to address these questions?

A 77 Yes, the operational issues raised by CARE and FEC/MEC are addressed in detail in Section H.1.

4. PG&E Addressed TURN's Concern Regarding the Valuation of a UOG Asset

Q 78 TURN asserts that PG&E has not addressed the argument that TURN raised in Application 09-09-021, and which the Commission identified in Decision 10-07-045, regarding the valuation of a 30-year UOG project as compared to a 10-year PPA.[98] Is this correct?

A 78 No. PG&E addressed this issue in its Initial Testimony.[99] PG&E addresses this issue further in Section D.3 of this Rebuttal Testimony regarding the cost effectiveness of the Oakley Project.

E. There Is a Need to and Basis for Procuring the Oakley Project (Issue 1(e))

Q 79 Issue 1(e) in the Scoping Memo addresses the issue of whether there is "a need to procure new UOG outside of the Commission's ongoing long-term procurement process (LTPP) and in exception to Commission policies and precedents regarding long-term procurement?" Did interveners address this issue?

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96 D.10-07-045 at p. 40.

97 See e.g., CARE Testimony at pp. 9-11 (CARE, Sarvey); FEC/MEC Testimony at pp. 4-13 (FEC/MEC, Fredericks and Roberts).

98 TURN Testimony at pp. 27-29 (TURN, Woodruff).

99 PG&E Initial Testimony, Chapter 5 at p. 5-16 (PG&E, Alvarez).

A 79 Yes. Although interveners did not always identify Issue 1(e), a number of the interveners'' arguments addressed topics within the scope of Issue 1(e). These topics are addressed below.

1. System Reliability Risks Resulting From Regulatory Lag

Q 80 TURN does not appear to be concerned about regulatory lag and instead asserts that the Commission should simply wait until the 2012 LTPP Track 2 process concludes before considering the Oakley Project.[100] DRA also argues that the Commission should wait until Track 2 of the 2012 LTPP proceeding is complete before reviewing and authorizing any new resources, including the Oakley Project.[101] IEP and CARE appear to make similar suggestions, although their testimony does not specifically refer to Track 2.[102] Do you agree with these proposals?

A 80 No. As PG&E explained in its Initial Testimony, the development and construction of new conventional resources in California can take at least five years, and is typically longer.[103] In fact, several market participants have recently filed evidence in other Commission proceedings indicating this timeframe is even longer. In March 2012, the IEP filed a reply brief in the 2010 LTPP Proceeding indicating:

> Recent experience suggests that even under the best of circumstances, the time for developing a sizable new generation plant can range from five to almost eight years, and even longer for contentious or litigated projects. This lead time means that the process for selecting new resources must begin in 2013—next year—to ensure that the needed resources will begin commercial operations in 2020.[104]

Sean Beatty of GenOn filed Reply Testimony in Track 1 of the 2012 LTPP proceeding (included as Attachment A to this Rebuttal Testimony) which noted a variety of challenges to development of generation resources, including new PSD requirements. Overall, Mr. Beatty

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100 TURN Testimony at pp. 4-5 and 21-22 (TURN, Woodruff).

101 DRA Testimony at p. 2-11 (DRA, Shmidt) and p. 3-7 (DRA, Shmidt).

102 IEP Testimony at p. 23, lines 10-21 and p. 39, lines 5-14 (IEP, Monsen); CARE Testimony at p. 13, lines 8-22 (CARE, Sarvey).

103 PG&E Testimony, Chapter 5 at pp. 5-5 to 5-11 (PG&E, Monardi).

104 *Reply Comments of the Independent Energy Producers Association on the Proposed Decision on Tracks I and III of the Long-Term Procurement Plan Proceeding*, filed on March 19, 2012 in Rulemaking 10-05-006. PG&E has attached the relevant pages from IEP's comments as Attachment H to this Rebuttal Testimony.

estimates 81 months, or approximately seven years, are needed to develop new resources in California.[105] Furthermore, he states:

> Developers would need to receive the signal of an RFO during 2013 to commence the development process. Assuming that a new project can be completed in seven years (which may be optimistic), a procurement decision issued by the end of 2012, with a LTRFO to be issued in early 2013, should provide adequate time to conduct a competitive process and allow project developers to offer projects that could be operational in 2020.[106]

Waiting until Track 2 of the 2012 LTPP proceeding is completed could result in substantial delays in the development of new resources needed in California and would definitely prevent the development of new resources by 2018, when the CAISO is predicting there will be a need for these new resources.

Q 81 Are TURN and DRA clear on when they expect Track 2 of the 2012 LTPP to be completed?

A 81 No. TURN witness Kevin Woodruff indicates that Track 2 is scheduled to be completed "in 2013" but is not specific as to when in 2013 this will occur.[107] Later in his testimony, Mr. Woodruff further hedges on the completion of Track 2, stating that it "should be later next year."[108] DRA is equally as vague, simply indicating that work in Track 2 will proceed "throughout 2013" and the Commission will authorize a system need at some unspecified point in time.[109]

Q 82 Based on your experience, do you expect the Commission to issue a decision in Track 2 of the 2012 LTPP in 2013?

A 82 Unfortunately, based on past LTPP proceedings, it is highly unlikely. The 2008 LTPP proceeding (R.08-02-007) was initiated in February 2008 and, almost two years later, the proceeding was suspended and no Commission determination regarding need was ever made. The 2010 LTPP proceeding was initiated in May 2010 and on December 3, 2010 the *Assigned Commissioner and Administrative Law Judge's Joint Scoping*

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105 See Attachment A at p. 6.

106 *Id.* at p. 7.

107 TURN Testimony at p. 4, line 27 (TURN, Woodruff).

108 *Id.* at p. 14, line 6 (TURN, Woodruff).

109 DRA Testimony at p. 2-11, lines 18-19 (DRA, Shmidt).

Memo and Ruling (2010 LTPP Scoping Memo) was issued establishing the standardized planning assumptions and scenarios to be used by the CAISO and other parties in the 2010 LTPP for the purposes of determining system need. The CAISO submitted testimony and studies based on the 2010 LTPP Scoping Memo on July 1, 2011. After intervener testimony, a settlement, and briefing, the Commission ultimately issued a decision in the 2010 LTPP proceeding regarding system need and the settlement in April 2012 – 16 months after the 2010 LTPP Scoping Memo was issued.

Q 83 Using the 2010 LTPP proceeding timeline as a benchmark, what would that mean for a decision in Track 2 of the 2012 LTPP proceeding?

A 83 Based on the 2012 LTPP Scoping Memo issued May 17, 2012, the earliest the Commission will issue a decision regarding the assumptions and the scenarios to be used is December 2012.[110] Assuming the 2012 LTPP proceeds at the same pace as the 2010 LTPP, a Commission decision would not be issued on Track 2 until April 2014 (i.e., 16 months after the assumptions and scenarios are finalized).

Q 84 Is an April 2014 date for a decision in Track 2 of the 2012 LTPP optimistic?

A 84 Yes. In the 2010 LTPP proceeding, virtually every active party signed on to a settlement, so ultimately there was very little that was in dispute. Even with a settlement, it was 16 months between when the scenarios and assumptions were finalized and when a Commission decision was issued. In Track 2 of the 2012 LTPP proceeding, it is very unlikely that a settlement will be reached. If hearings and extensive briefing is required, it is likely that a Track 2 decision could be issued well after April 2014.

Q 85 What would this timing mean for the Oakley Project if the Commission adopts TURN's and DRA's proposal to wait until there is a Commission decision in Track 2 of the 2012 LTPP before reviewing and considering the Oakley Project?

A 85 Assuming the most optimistic timing, this means that review and consideration of the Oakley Project would not start until April 2014. Assuming a 9- to 12-month review process for the Oakley Project, this

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110 See *Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge*, issued May 17, 2012 in Rulemaking 12-03-014 at p. 10 (showing a proposed decision in Track 2 on scenarios in November 2012).

effectively means that the Amended PSA would not be approved until late 2014 or early 2015.

Q 86 Can the developers of the Oakley Project, CCGS, wait until late 2014 or early 2015 for a Commission decision on the Amended PSA?

A 86 No. First, the Amended PSA includes a Guaranteed Commercial Availability Date of June 2016. CCGS could not meet this date if the Amended PSA was not approved until late 2014 or early 2015. More fundamentally, however, a developer cannot be expected to continue to pour money and time into a project with a decision on the underlying agreement delayed until late 2014 or early 2015. No bank or other lender will provide CCGS with substantial development funds if the approval of the Amended PSA is uncertain and delayed until late 2014 or early 2015. In short, TURN and DRA's proposal will effectively terminate the Oakley Project.

Q 87 Are there system reliability risks associated with the Commission not approving the Oakley Project?

A 87 Yes. As PG&E explains in detail in Sections C and D of this Rebuttal Testimony, the CAISO has identified a need for new generation resources by 2018 that can assist with the integration of renewable resources, as well as other challenges facing the California electric system such as the retirements of OTC and growth of distributed generation. Given the regulatory lag described above, there are reliability risks that support approval of the Oakley Project.

Q 88 IEP says that the current integration studies do not justify the Oakley Project, and recommends as a "low risk" strategy completing the on-going integration studies first because of the significant uncertainty as to the need, timing, and best resource for renewable integration.[111] Do you agree with IEP's proposal?

A 88 No, I do not agree. The information available today from past and current integration studies actually shows that there is a significant negative reliability risk because of deficiency in flexible capacity to balance load. As indicated in CAISO's the Sutter Waiver Petition the need for flexible capacity occurs as early as 2018. Opposite to what IEP proposes, waiting

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111 IEP Testimony at pp.22-26 (IEP, Monsen).

for a 2012 LTPP decision and new integration studies to be completed is a high risk strategy because the lead-time associated with developing new resources would prevent resources to be available when needed.

2. There Is a Public Interest in a Reliable Regulatory Framework

Q 89 TURN suggests that today there is no reliable regulatory framework regarding long-term resource planning and procurement, and that to restore such a framework the Commission should reject PG&E's application and focus instead on managing the process for new resource need and procurement that have worked before.[112] Do you agree?

A 89 No. PG&E supports a reliable regulatory framework regarding long-term resource planning and procurement. However, PG&E does not agree that rejecting this application will improve current conditions. Reversing the Commission's prior decision to approve the Oakley Project will not provide regulatory stability or enhance California's long-term resource planning framework. It would be a signal to parties and developers that there is even more risk and uncertainty in the regulatory process. California already has a reputation for being one of the most difficult states in which to permit and site new resources. Contrary to TURN's suggestion, the Commission should approve the application to reduce resource planning uncertainty and risk. Resource planning has become more complex because of the absence of clear planning criteria to address the need for flexible capacity to integrate higher levels of intermittent renewable generation. This does not mean that the solution is to postpone making decisions or wait for some undetermined amount of time in the future, as TURN proposes. In fact, if anything, given the increased uncertainty and the lack of experience forecasting and operating with higher levels of renewables with fewer flexible resources, the Commission should err on the side of having an excess margin of flexible capacity, and be more amenable to deviate from the past to protect reliability of service for customers. As PG&E explains in more detail in Section H.4 below, the downside of not having adequate resources far outweighs the cost of carrying the excess margin.

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112 TURN Testimony at pp. 19-22 (TURN, Woodruff).

3. The Oakley Project Is Cost Effective

Q 90 TURN argues because PG&E estimates a negative market valuation that the Oakley Project cannot be considered "reasonable" unless it is expected to reduce ratepayer costs as compared to not approving the Amended PSA.[113] Do you agree with this statement?

A 90 No. As TURN concedes, a negative market valuation may be acceptable when a resource is needed to meet reliability.[114] The CAISO's study has shown a significant negative reliability risk resulting from deficiencies in flexible capacity to balance loads and resources. Therefore, TURN is incorrect that the Oakley Project cannot be considered "reasonable" because it has a negative market valuation.

Q 91 Have previous long-term resource solicitations resulted in selection and Commission approval of projects with negative market values?

A 91 Yes. For example, in the 2008 LTRFO all projects selected had a negative market value; however, when compared to other offers received, these selected projects met the resource need at the lowest cost to customers.

Q 92 How does the Oakley Project compare to other resources selected in prior solicitations?

A 92 As shown below, the Oakley Project has the best (least negative) market value of the projects selected in prior solicitations.

Q 93 DRA says that the results from the 2008 LTRFO and that PG&E's net market valuation of the Oakley Project are outdated.[115] Do you agree with DRA's statements?

A 93 No. While PG&E did use the pricing of the offers accepted in past solicitations, PG&E did update the forward prices for the market valuation and the transmission costs for the Oakley Project. Therefore, the market values presented in PG&E's Initial Testimony were current.[116]

Q 94 Has PG&E updated its evaluation of the Oakley Project and other alternatives presented in the Initial Testimony?

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[113] TURN Testimony at pp. 18-19 (TURN, Woodruff).

[114] TURN Testimony at p. 19, n 27 (TURN, Woodruff) (TURN uses the term "reliability criterion" rather than just the word "reliability.").

[115] DRA Testimony at pp. 3-4 to 3-6 (DRA, Shmidt and Huang).

[116] PG&E Initial Testimony, Chapter 5, Table 5-1 (PG&E, Alvarez).

A 94 Yes, in response to DRA's data requests, PG&E updated the cost-effectiveness analysis of the Oakley Project. As part of this process, PG&E used current forward prices, updated the network transmission costs of the Oakley Project and other projects considered in its testimony, and corrected the heat rate for the Oakley Project. Taking all these changes into account improved the cost effectiveness of the Oakley Project compared to other alternatives that was presented in PG&E's Initial Testimony.

The following table shows the market value of the projects presented in its Initial Testimony, Table 5-1 before and after the above updates.

TABLE E-1
PACIFIC GAS AND ELECTRIC COMPANY
OAKLEY PROJECT COST-BENEFIT COMPARISON

Line No.	Project	Life (Years)	Incremental Capacity(a) (MW)	Before Updates Levelized Market Value(b) ($/kW-yr)	After July 2012 Updates Levelized Market Value(c) ($/kW-yr)
				Redacted	
1	Oakley Project – June 1, 2016 Operation	30	586		
2	Mariposa Project	10	184		
3	Marsh Landing Project	10	719		
4	GWF Tracy Upgrade	10	145		
5	Los Esteros Critical Energy Facility Upgrade	10	109		

(a) Capacity added by the project, expressed in July peak conditions.
(b) Resource and transmission cost of each project less energy and capacity benefits, discounted to June 1, 2012.
(c) Resource and transmission cost of each project less energy and capacity benefits, discounted to June 1, 2012.

Q 95 Were there other updates PG&E made in its calculation of the cost and benefits of different commercial operating dates for the Oakley Project?

A 95 Yes, in addition to reflecting the updated inputs discussed in the prior question and answer, PG&E also identified a mistake in present valuing the Oakley Project's costs and benefits for different commercial operating dates (COD). The following table compares the costs and benefits presented in pages 5-16 to 5-18 of its Initial Testimony before and after the above updates.

TABLE E-2
PACIFIC GAS AND ELECTRIC COMPANY
OAKLEY PROJECT COST- BENEFIT- COMPARISON
JUNE 1, 2012 NET PRESENT VALUES ($MILLION, NEGATIVE = COST)

Line No.	Description	Cost	Benefit	Cost Less Benefit	Impact of Accelerating COD From 2020	CPM Cost Through May 2018
1	Before Updates					
2	2016 COD	Redacted				
3	2020 COD					
4	Difference					
5	After Updates					
6	2016 COD	Redacted				
7	2020 COD					
8	Difference					

Q 96 Please explain the change in the Oakley Project's cost and benefits in the above table.

A 96 Part of the change is due to the updated forward prices and transmission costs, but the majority of the change is due to the fact that in the Initial Testimony, the Oakley Project's costs and benefits had been escalated to June 1, 2016, so they appeared larger than they were if discounted to June 1, 2012. The Capacity Procurement Mechanism (CPM) costs, however, had been discounted correctly to June 1, 2012, so these did not change. Therefore, when compared at the same point in time, the cost of accelerating the Oakley's Project COD is now less than half than the CPM price paid to keep the existing combined CCGTs on-line until they are needed.

Q 97 In response to DRA's concern about the cost-effectiveness evaluation being updated, what do you conclude from the updated evaluation of the Oakley Project and other alternatives considered?

A 97 There are three main conclusions that can be reached from the updated analysis. First, the updated analysis shows that the Oakley Project has a lower (less negative) market valuation than previously estimated in PG&E's Initial Testimony. Second, the Oakley Project has the best (least negative) market value of the projects selected in the last solicitation. Finally, the net cost developing the Oakley Project for a 2016 COD, compared to a

2020 COD, is less than half of the cost of paying a CPM price to existing resources to remain in operation until 2018, when the CAISO says they will be first needed.

Q 98 DRA states that developing equivalent comparisons between UOG and PPA offers is difficult and that PG&E has amortized the Oakley Project's costs over 30 years, and that this "automatically makes it difficult to come up with a fair assessment of how Oakley's costs compare[d] to the other PPAs submitted into the 2008 LTRFO."[117] Do you agree with DRA's suspicion that the comparison presented by PG&E is not fair?

A 98 No. The levelized approach that PG&E used is a fair representation of the PPA alternatives available from prior solicitations because this is equivalent to assuming that the price of successive 10-year PPAs or a new 20-year PPA needed to balance the 30-year life of the Oakley Project is the same as the price of the first 10-year PPA.

Q 99 TURN comments that PG&E has acknowledged TURN's concern about the comparison of 30-year UOG project versus 10-year PPAs, but did not change its approach in response to the Commission's concerns, providing "additional strong grounds for rejecting the Oakley PSA."[118] Do you agree with TURN's comments?

A 99 No. TURN's comments do not tell the complete story, and incorrectly characterize PG&E's testimony as not addressing TURN's concerns. PG&E explained in its Initial Testimony why in the absence of actual offers the levelized approach PG&E has used is a superior approach to making assumptions about successive 10-year or 20-year PPA prices that PG&E may receive at the end of the first 10-year PPA. In essence, PG&E's levelized approach is equivalent to assuming that the price of successive 10-year PPAs or a new or 20-year PPA is the same as the price of the first 10-year PPA. This is a reasonable assumption to make to address the uncertainty as to the price of offers at the end of the first 10-year PPA. PG&E disagrees that this means that PG&E has not addressed

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117 DRA Testimony at p. 3-6 (DRA, Shmidt and Huang).

118 TURN Testimony at pp. 27-29 (TURN, Woodruff).

Decision 10-07-045 or that this provides "strong grounds" for rejecting the application.

Q 100 Dale Fredericks and Richard Roberts on behalf of FEC/MEC claim that Fairfield and Madera could offer more competitive facilities than the Oakley Project, and recommend that PG&E refresh bids from all the 2008 LTRFO shortlisted offers in early 2013.[119] Do you agree with FEC/MEC's recommendation?

A 100 No. FEC/MEC participated in PG&E's 2008 LTRFO and their offers were inferior to the Oakley Project's market value. More recently, in preparation for this Rebuttal Testimony, PG&E refreshed the market valuation for these projects using the same forward prices it used to value the Oakley Project, and both Fairfield and Madera offers are significantly worse than Oakley Project and other projects selected in prior solicitations.[120] As a result, PG&E sees no reason to refresh the 2008 LTRFO short-listed bids as recommended by FEC/MEC.

4. The Oakley Project Is Infra-Marginal

Q 101 TURN says the Oakley Project is not infra-marginal, and proposes a different comparison of paying a CPM price from January 1, 2013 to June 1, 2016 against the cost of accelerating the Oakley Project from 2020 to 2016.[121] Do you agree with TURN that this is a more relevant comparison?

A 101 No. TURN's comparison is incorrect. If the Oakley Project is developed for 2016 COD, there is no need to pay CPM prices for an amount of existing capacity equal to that provided by the Oakley Project since the project is available before CAISO projects it will be needed in 2018. The avoided payments extend at least until 2018 Therefore, PG&E's comparison is correct, and the Oakley Project is infra-marginal. As noted before, after updating forward prices and correcting for PG&E's present value error, the accelerating the Oakley's Project COD is now less than half than the CPM price paid to keep the existing combined CCGT on-line until they are

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119 FEC/MEC Testimony at pp. 2-4 (FEC/MEC, Fredericks and Richards).

120 The net market values of the Madera and Fairfield offers are Redacted on a levelized basis discounted to June 1, 2012.

121 TURN Testimony at pp. 24-29 (TURN, Woodruff).

needed. This is true even if including only the first five months of 2013, as TURN does in its filing.

Q 102 IEP proposes that PG&E use a lower escalation cost for the Oakley Project's capital cost, and that with that lower escalation rate, the difference between the cost of accelerating the Oakley Project's COD and paying a CPM price to existing capacity would be only $39 million.[122] Can you comment on IEP's analysis?

A 102 Yes. To estimate the capital cost of a project similar to the Oakley Project with a 2020 COD, PG&E used an escalation slightly lower than IEP's 2.75 percent escalation, not the 3.7 percent escalation figure that IEP highlights in its testimony. As noted above the updated comparison shows an increasing advantage of accelerating the Oakley Project's COD to 2016 relative to the CPM payment alternative is now over $Redacted; therefore, even with the adjustment in cost IEP calculates, the 2016 COD is still clearly infra-marginal.

Q 103 DRA claims that the Oakley Project comes with a $1.5 billion price tag to ratepayers in just the first eight years of the project's life.[123] Do you agree with DRA's characterization of the impact of the Oakley Project on customers?

A 103 No, DRA mischaracterizes the Oakley Project's impact on customers' costs. The simple sum of the non-fuel costs of the project over the first eight years of life that DRA refers to represents only the cost side of the equation, and ignores the avoided capacity and power purchase costs, or the benefits of the project. A better measure of the impact on customers is the net cost of the project (costs less benefits), relative to the net cost of other alternatives. As previously shown, the Oakley Project has a lower net market costs compared to other projects PG&E has selected in prior solicitations; therefore compared to those alternatives, the Oakley Project actually offers a positive net impact on customers' costs. Furthermore, the most appropriate measure of the impact on customers' cost should not only include the first eight years of life of the project, but the entire life of the

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[122] IEP Testimony at pp. 17-19 (IEP, Monsen).

[123] DRA Testimony at p. 1-1 (DRA, Shmidt).

project. Beyond the first eight years, the Oakley Project will provide additional benefits which are in excess of its costs.

5. UOG Facilities Such as the Oakley Project Should Not Be Barred in California

Q 104 IEP asserts that PPAs are preferable over UOG because under a PPA an independent generator bears the cost risks rather than utility customers.[124] Do you agree with this statement?

A 104 No. First, in many PPAs the generator does not bear certain cost risks. For example, in a tolling agreement the utility is typically responsible for procuring fuel for a facility and thus the generator does not bear any risk in terms of fluctuations in fuel costs. Another example would be greenhouse gas compliance costs, which in many PPAs can be the responsibility of the utility, not the generator. In these cases, the generator is insulated from risks that prices and costs will fluctuate.

Second, even when a PPA provides for fixed capacity and energy payments, the generator may subsequently ask for a price amendment if costs increase. For example, the Russell City Energy Center (Russell City Project) was one of the winning offers in PG&E's 2004 LTRFO. As a result of permitting delays and cost increases in equipment, materials and labor, the developer of the Russell City Project asked for a delay in the project on-line date, a contract price increase, and other amendments.[125] The Commission ultimately approved a revised version of the PPA amendments that included, among other items, "a 30% cost increase over the terms of the original PPA" and provisions that shifted "certain risks from the developer to PG&E's customers related to control of future GHG emissions."[126]

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[124] IEP Testimony at p. 36, lines 1-6 and Attachment U at p. 29 (IEP, Monsen).

[125] D.09-04-010 at p. 2 (approving amendments to the Russell City Project PPA).

[126] *Id.* at pp. 7-8.

6. The Oakley Project Will Facilitate the Retirement of and Reliance on Aging and Inefficient Units

Q 105 DRA argues that the Oakley Project "may" facilitate the retirement of OTC units, but that there is no guarantee it will do so.[127] Will approval of the Oakley Project enable the retirement of "existing, inefficient once-through cooling facilities"?

A 105 Yes. The existing OTC facilities in California are all older and much less efficient resources than the Oakley Project. Evidence of their relative inefficiency can be seen in Table E-3 below which indicates the heat rates for natural gas-fired OTC units that are within the CAISO territory and were operational in June 2012.[128]

TABLE E-3
PACIFIC GAS AND ELECTRIC COMPANY
HEAT RATES FOR OTC FACILITIES IN CALIFORNIA

Line No.	OTC Facility	2011 Heat Rate (Btu/kWh)
1	Alamitos	12,333
2	Contra Costa	11,916
3	El Segundo	14,676
4	Encina	13,639
5	Huntington Beach	10,976
6	Mandalay	13,010
7	Morro Bay	10,952
8	Moss Landing	7,685
9	Ormond Beach	12,450
10	Pittsburg	12,599
11	Redondo Beach	12,099

All IOUs in California are required to follow the standards of least-cost dispatch (LCD) outlined in CPUC Standard of Conduct 4, adopted in Decision 02-10-062 and elaborated in Decisions 02-12-069, 02-12-074, 03-06-076, and 05-01-054. These decisions mandate that IOUs dispatch their portfolios of existing resources, allocated DWR contracts and market purchases to meet their electric load obligations in a least-cost manner. To implement these LCD requirements, PG&E schedules and bids

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[127] DRA Testimony at pp. 2-6 to 2-7 (DRA, Shmidt).

[128] The source of heat rate data is the 2011 California Energy Commission QFER report: http://energyalmanac.ca.gov/electricity/web_qfer/Heat_Rates.php.

resources in order to achieve the result that resources are dispatched when their variable costs are below market prices. With fossil-fired resources, variable costs are largely dependent upon the price of natural gas. Resources with higher heat rates and therefore higher variable costs are dispatched less frequently than resources with lower heat rates and lower variable costs.

As efficient resources such as the Oakley Project are added to the system with lower variable costs, the older, less-efficient OTC facilities will be dispatched less. As those OTC facilities are dispatched less, revenues will decline, which facilitates their retirement for economic reasons, possibly prior to their State Water Resources Control Board (SWRCB) compliance deadline. Furthermore, with the Oakley Project in its resource mix, PG&E would have less of need to procure Resource Adequacy (RA) from the OTC units, which would further facilitate their retirement for economic reasons. In addition to the relative efficiency and expected lower operating costs associated with the Oakley Project, the project will provided needed operational flexibility to the CAISO grid and thereby further reduce the need for reliance on OTC units.

PG&E does not own any gas-fired OTC facilities, and therefore PG&E cannot directly commit to retire any of these OTC units that are owned by third parties. However, the CAISO will continue to rely on these resources for flexible operating capacity unless other, new resources such as the Oakley Project are developed to replace these existing OTC units.

Q 106 Has the CEC made any determinations that are specific to the Oakley Project that concern the beneficial attributes of the project with respect to the retirement of OTC units?

A 106 Yes. In the CEC's Final Decision approving the Oakley Project, issued in May 2011, the CEC stated:

> If no new natural gas plants were constructed, reliance on older power plants may increase. These plants could consume more fuel and emit more air pollutants per kilowatt-hour generated than the [Oakley Project]. In the near term, the more likely result is that existing plants, many of which produce higher levels of pollutants, could operate more than they do now.[129]

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129 CEC Final Decision, Section II, Project Alternatives, at p. 13.

Q 107 CARE asserts that OTC units in California are not retiring, but are instead being repowered.[130] Can you respond to this assertion?

A 107 Yes. Facility owners of fossil-fueled plants affected by the SWRCB's OTC Policy were required to submit an implementation plan by April 1, 2011 demonstrating how they would comply with the policy by their facility's assigned compliance date. Their options included retirement or making capital investments bring the facility in compliance with the OTC Policy. Some affected facilities have already been retired, and other owners scheduled retirements in advance of their OTC compliance deadline. However, the compliance plans remain uncertain for other facilities whose owners have not made a final decision whether the capital investments required to continue to operate are economic. One facility is worth noting in this context: Morro Bay Power Plant (MBPP). On April 1, 2011, MBPP's owner, Dynegy, filed its OTC implementation plan.[131] In that document, Dynegy stated no definitive plans to retire the facility, expressed its intent to study commercially viable ways to continue to operate and comply with the policy and discussed the possibility of repowering MBPP's Unit 3 and Unit 4. Since that time, Dynegy filed for bankruptcy, the power purchase agreement for MBPP expired, and Dynegy cancelled plans to repower MBPP Units 3 and 4.[132] Without a new power purchase agreement, Dynegy may retire the facility. While no final decision has been made, the chances that Dynegy will retire MBPP are increasing. If Dynegy retires MBPP prior to the end of 2012, the retirement will be three years ahead of its OTC compliance deadline of December 31, 2015.

Q 108 Are there any other benefits of the Oakley Project related to OTC units?

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130 CARE Testimony at p. 16, lines 3-13 (CARE, Sarvey).

131 Dynegy Morro Bay, LLC, Once through Cooling Policy Implementation Plan for the Morro Bay Power Plant, April 1, 2011: http://www.swrcb.ca.gov/water_issues/programs/ocean/cwa316/powerplants/morro_bay/docs/mb_ip2011.pdf

132 Cancellation of the plans to repower MBPP Units 3 and 4 are referenced in this letter from the CEC Compliance staff to MBPP: http://www.energy.ca.gov/sitingcases/morrobay/compliance/2012-06-15_Completion_of_Phase_I_and_Request_to_Terminate_Approval_of_Phases_II_and_III_TN-65766.pdf

A 108 Yes. One benefit is that the Oakley Project will allow for the retirement of aging and less efficient facilities that, but for the Oakley Project, the CAISO may otherwise need to rely on for system reliability and flexibility purposes. It is likely that in the next few years, a number of generators will threaten retirement of their facilities, especially many of the aging and inefficient units, unless they are compensated by the CAISO or California customers to remain in operation. Without resources such as the Oakley Project, that have the operating attributes necessary to maintain grid reliability, the Commission and California will find it necessary to compensate these generators so that they do not retire.

7. The Oakley Project Provides Environmental Benefits and Does Not Displace Renewables

Q 109 FEC/MEC argues that the Oakley Project displaces renewable resources.[133] Do you agree?

A 109 No. Many renewable resources are intermittent (solar and wind) or baseload resources (biomass) and cannot provide the type of operating flexibility provided by the Oakley Project. As the CEC determined:

> Most new renewable generation in California will be wind and solar generated power. But the wind and the sun are not continuous, on-demand resources. As a result, in order to rely on such intermittent sources of renewable-generated power, utilities must have available other, non-renewable generating resources or significant storage that can fill the gap when renewable generation decreases. Indeed, because of this need for backup generation, or if and when utility-scale storage becomes feasible and cost-effective, non-renewable generation must increase in order for the state to meet the 20 percent renewable portfolio standard.
>
> OGS would provide flexible, highly dispatchable power. The "Rapid Response" capability of OGS allows each of the combustion turbine generators to start up and reach full load in less than 90 minutes for all cases, and hot/warm startups would occur in less than 30 minutes. OGS would provide short-starting and fast-ramping power under the CAISO use of these terms, which set a fast start as under 10 minutes. OGS would also provide a wide range of turndown operation, and is deemed fast starting in our evaluation because of its ability to come to full load in less than two hours. OGS would not obstruct penetration of renewable energy due to its ability to turn down to low loads and to achieve startups in less than two hours. OGS is likely to serve as an

[133] FEC/MEC Testimony at p. 13, lines 5-11 (FEC/MEC, Fredericks and Roberts).

important firming source for intermittent renewable resources in support of California's RPS and GHG goals.[134]

Q 110 Did the CEC make any other statements about the environmental benefits of the Oakley Project with regard to renewable integration.

A 110 Yes. After an exhaustive review, the CEC determined:

> The evidence shows that the [Oakley Project] will benefit the State of California's electrical system by providing peaking power and ancillary services during periods of high demand. The project will do so in the most fuel efficient manner practicable, without creating adverse effects on energy supplies or resources. Furthermore, the project will contribute to regional electricity reserves.[135]

Q 111 Did the CEC address GHG benefits of the Oakley Project?

A 111 Yes. The CEC determined that:

> The [Oakley Project] will be consistent with the state's GHG policies and will help achieve the state's GHG goals, by (1) causing a decrease in overall electricity system GHG emissions; and (2) fostering the addition of renewable generation into the system, which will further reduce system GHG emissions.[136]

8. Recent Developments in California Support the Oakley Project

Q 112 Are there any other recent developments that you think further support the need for the Oakley Project?

A 112 Yes. With the recent outage at SCE's San Onofre Nuclear Generation Station (SONGS) nuclear power plant, there have been an increasing number of individuals and groups who have urged the early retirement of SCE's SONGS facility and opposed license renewal for PG&E's Diablo Canyon nuclear power plant. In addition, the Commission is currently evaluating a scenario in the 2012 LTPP proceeding that assumes the early retirement of SONGS and Diablo Canyon by 2015. The current licenses for Diablo Canyon Units 1 and 2 expire in 2024 and 2025, respectively. If Diablo Canyon is not relicensed, there will be an even greater need for new generation resources in Northern California. Given the Oakley Project's efficiency and low emissions relative to other conventional generation resources, the Oakley Project would be even more critical if the operating licenses for Diablo Canyon are not renewed.

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[134] CEC Final Decision, Section V.A, Greenhouse Gas Emissions, at p. 12.

[135] *Id.*, Section IV.B, Power Plant Efficiency, at p. 6.

[136] *Id.*, Section V.A, Greenhouse Gas Emissions, at p. 2.

F. The Amended PSA Is Reasonable and the Oakley Project Is Least-Cost and Best-Fit

1. The Amended PSA Is Reasonable

Q 113 In its testimony, DRA raises concerns regarding the Redacted Redacted (SVA) portion of the Amended PSA.[137] In particular, DRA states that "the Amended PSA does allow for CCGS Redacted Redacted pursuant to a Redacted Redacted (SVA) between PG&E and CCGS."[138] Is this accurate?

A 113 No. Pursuant to the Amended PSA and related agreements including the SVA, Redacted Redacted

Q 114 On page 4-7 and 4-8 of its testimony, DRA claims the SVA is unreasonable. Do you agree?

A 114 No. Redacted Redacted

[137] DRA Testimony at pp. 4-7 to 4-8 (DRA, Huang).

[138] *Id.*

Redacted

Q 115 WPTF asserts that CCGS is taking on minimal risk for the Oakley Project.[139] Please describe the development risks that CCGS is assuming in the Amended PSA.

A 115 The Amended PSA was structured so that CCGS takes on most of the development and construction risks. Risks that CCGS holds include:

Redacted

[139] WPTF Testimony at p. 12, lines 1-2 (WPTF, Ackerman).

Redacted

Q 116 Were there any other concerns raised about specific provisions in the Amended PSA?

A 116 No.

2. The Oakley Project Is the Least-Cost/Best-Fit Alternative

Q 117 WPTF argues that the Oakley Project is not a least-cost/best-fit alternative.[140] Has PG&E demonstrated in its Initial and Rebuttal Testimony the Oakley Project is the least-cost/best-fit alternative?

A 117 Yes. With regard to least cost, PG&E described in detailed the cost effectiveness of the Oakley Project in Chapter 5, Section E of its Initial Testimony and Section E.3 of its Rebuttal Testimony. With regard to best fit, PG&E described the beneficial operating characteristics of the Oakley Project, and how these characteristics are the best fit for PG&E's portfolio need to integrate renewable resources, in Chapters 2 and 5, Section D of PG&E's Initial Testimony and Section H.1 of its Rebuttal Testimony. Finally, in Chapter 5, Section C of PG&E's Initial Testimony and Section C.1 of its Rebuttal Testimony, PG&E demonstrated that there are unlikely to be any viable alternatives to the Oakley Project. All of this testimony demonstrates that the Oakley Project is the least-cost/best-fit alternative.

G. PG&E's Ratemaking and Cost Recovery Proposal for the Oakley Project Are Reasonable

Q 118 DRA proposes adopting limitations on PG&E's ratemaking proposal for the Oakley Project.[141] Do you disagree with DRA's recommendations?

A 118 Yes. The ratemaking and cost recovery mechanism included in the Partial Settlement Agreement, which was originally proposed in Application 09-09-021, and is being proposed by PG&E in this proceeding for the Oakley Project is reasonable because in its proposal, PG&E has agreed to: (1) Reduce its initial capital cost estimate by $24.5 million; (2) Cap the operations and maintenance (O&M) costs and capital addition costs to the estimated costs used in the 2008 LTRFO evaluation process for

[140] WPTF Testimony at pp. 10-12 (WPTF, Ackerman).

[141] DRA Testimony at p. 4-1, lines 15-19 (DRA, Huang).

a period of eight years; and (3) Provide detailed plant availability and heat rate information to TURN, DRA and the Commission for not only the facilities at issue in this proceeding, but other PG&E-owned facilities. With regard to the initial capital cost estimates, PG&E's proposal also includes a cost-recovery band for costs above the initial estimates, which is a ratemaking mechanism previously approved by the Commission for UOG facilities. The ratemaking proposal for the Amended PSA and the Oakley Project is consistent with previous Commission decisions regarding utility-owned generating projects, which have approved initial capital costs and, in some instances, the use of a cost recovery band and cost sharing for costs above the initial capital cost estimates. Below, PG&E addresses each of the concerns raised by DRA.

1. PG&E's Proposal for O&M Expenses Is Reasonable

Q 119 DRA asserts that the O&M expenses should be fixed for ten (10) years and PG&E should not be able to increase these expenses for any reason.[142] How does this vary from PG&E's O&M proposal?

A 119 PG&E has proposed fixing the O&M expenses for eight (8) years and allowing for PG&E to file an advice letter during that period to increase O&M expenses for four narrowly defined circumstances.[143] These circumstances are: (1) Delays in closing; (2) Increased O&M caused by governmental agency requirements or changes in permitting assumptions; (3) Changes in operating profile from the maximums assumed in the O&M forecast (i.e., 333 starts/year and 4329 operating 8 hours/year); and (4) On a one-time basis, changes to reflect the terms and conditions in the final, executed Long-Term Service Agreement (LTSA). In addition, PG&E's proposal allows for annual changes in O&M based on pre-specified escalation indices without an advice letter filing.

Q 120 DRA asserts that fixing the O&M expenses for 10 years with no possibility of an increase is similar to a PPA with a third-party generator.[144] Do you agree with DRA?

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[142] DRA Testimony at pp. 4-3 to 4-4 (DRA, Huang).

[143] PG&E Initial Testimony, Chapter 6, at p. 6-2 (PG&E, O'Flanagan).

[144] DRA Testimony at p. 4-3, lines 20-22 (DRA, Huang).

A 120 No. First, PPAs often include specific escalation terms, based on pre-specified escalation indices that allow the generator to recover more under the PPA over-time, which may address rising O&M costs. In addition, it is not unusual for PPAs to include provisions that would allow for escalation of O&M for delays in the operative date.[145] Another example of how PG&E's proposal is not inconsistent with PPAs is the provision to allow for changes in O&M for changes in the operating profile of the Oakley Project from that assumed in this application. This provision is directly analogous to the payments for unit starts and fired hours included in PPAs. In addition to O&M increases allowed under PPAs, if a generator's cost increase, it can seek to amend its PPA to cover certain additional costs. For example, Panoche Energy Center, LLC has recently requested that the Commission in effect revise its contract with PG&E to compensate them for GHG compliance costs from implementation of the Cap and Trade Program required under Assembly Bill 32.

Q 121 DRA also recommends that, if the Commission allows PG&E to be able to request an increase in O&M during the first eight years, PG&E be required to file an application instead of an advice letter.[146] Do you agree with this proposal?

A 121 No. First, an application typically takes substantially longer than an advice letter process and there is no reason for substantial delay in a Commission determination of an O&M increase limited to the four circumstances proposed by PG&E. Second, parties still have full due process rights to protest an advice letter and present to the Commission any reason or arguments for opposing changes to the O&M. Third, in past proceedings, the Commission has approved the use of an advice letter process for increases in O&M expenses. For example, for the Gateway Generating Station (formerly Contra Costa 8), DRA, PG&E and other parties entered into a settlement that allowed PG&E to use the advice letter process for increases in certain O&M costs, such as payments under the LTSA.[147] It is

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[145] Under PG&E's proposal, PG&E is already foregoing 24 months of O&M escalation by not increasing its O&M request from its original Oakley Project application.

[146] DRA Testimony at p. 4-4 (DRA, Huang).

[147] D.06-06-035, Attachment A at p. 7 (settlement agreement for the Gateway Generating Station).

notable that in this instance, DRA agreed in a settlement to the use of an advice letter process for O&M changes. Similarly, in Decision 06-11-048, the Commission authorized PG&E to use an advice letter process to adjust its O&M forecast estimate for the Humboldt and Colusa Projects.[148] Thus, PG&E's proposal in this proceeding to use an advice letter process is fully consistent with past Commission decisions.

2. PG&E's Proposal for Initial Capital Costs Is Reasonable

Q 122 DRA proposes that the Commission "disallow" recovery of costs in excess of the initial capital cost estimate.[149] How do you respond?

A 122 DRA claims that PG&E's initial capital cost sharing proposal provides a strong incentive for PG&E to spend more rather than managing costs within the initial capital cost estimates. The truth is just the opposite; the cost sharing proposal gives PG&E an incentive to ensure that costs do not exceed the initial capital cost estimate, allows for some minor cost increases to cover small change orders and avoid expensive and time-consuming after-the-fact reasonableness reviews in the case of modest increases in capital costs. PG&E developed its current initial capital cost estimate by removing $24.5 million from its original capital cost estimate included in Application 09-09-021. This was more than the $24.1 million included as contingency in the original estimate. In recognition of this reduction, the cost sharing proposal allows recovery of the first $20 million above the lower initial capital estimate. This amount is less than 2 percent of the initial capital cost. As a comparison, the Gateway Project (Contra Costa 8) decision allowed a 4.4 percent contingency and Colusa Project allowed a 2 percent contingency. It is unreasonable to allow no provisions for risks and uncertainty due to any minor scope changes in development, engineering and construction, as would result from DRA's proposal.

It should also be noted that the economic analysis included in this application assumed that the actual capital cost of the Oakley Project was $20 million above the initial capital cost. In addition to providing an incentive to aggressively manage costs, the cost sharing bands above the first

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[148] D.06-11-048, Ordering Paragraph 13.

[149] DRA Testimony at pp. 4-2 and 4-5 to 4-6 (DRA, Huang).

$20 million is a reasonable way of avoiding the time and expenses of an after-the-fact reasonableness review for modest increases in project costs.

Q 123 Has the Commission adopted a similar cost sharing proposal in other proceedings?

A 123 Yes. The Commission has adopted as being reasonable a similar cost sharing proceeding for the Gateway Project in Decision 06-06-035.

Q 124 Can you think of an example where a PPA for a new generation resource was amended to increase the price?

A 124 Yes. One example that I can think of is the Russell City Project, which was one of the winning offers in PG&E's 2004 LTRFO. As a result of permitting delays and cost increases in equipment, materials and labor, the developer of the Russell City Project asked for a delay in the project on-line date, a contract price increase, and other amendments.[150] The Commission ultimately approved a revised version of the PPA amendments that included, among other items, "a 30% cost increase over the terms of the original PPA" and provisions that shifted "certain risks from the developer to PG&E's customers related to control of future GHG emissions."[151] In the case of the Russell City Project, the increase not only covered increases in the project's capital costs, but also O&M costs.

3. PG&E's Proposed Procedure for Revising the Capital Costs Is Reasonable

Q 125 DRA opposes the use of an advice letter process for revising the capital cost estimate due to operational Performance Enhancements.[152] How do you respond?

A 125 An application is not necessary to review the reasonableness of increasing the capital cost estimate for operational performance enhancements. Operational performance enhancements are opportunities to increase the plant performance or efficiency by paying for modifications not specified in the original scope of work. PG&E would pursue these enhancements only if it was in the best interest of our customers. PG&E's advice letter requesting

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[150] D.09-04-010 at p. 2 (approving amendments to the Russell City Project PPA).

[151] *Id.* at pp. 7-8.

[152] DRA Testimony at p. 4-7 (DRA, Huang).

an increase in capital costs for operational performance enhancements would demonstrate the benefits to customers of the enhancements. As stated above, the advice letter process would give parties the opportunity to protest the request and present their reasons why the request should not be granted.

Q 126 DRA also recommends that the Commission reject PG&E's proposal to seek recovery of capital additions for the Oakley Project in a General Rate Case (GRC) for rates effective January 1, 2024.[153] How do you respond?

A 126 DRA states "[t]he Commission should not pre-approve future capital additions through this application. Rather, the need for and benefits of any potential future capital additions should be proposed through an application." PG&E proposes to include an updated estimate of ongoing capital additions for the Oakley Project in the GRC application after the 8-year period covered by this application. PG&E is not asking for pre-approval of capital additions in 2024 in this application, but will do so in a future GRC for capital additions after 2023. Under the current plan, this would be the 2023 GRC. When the Commission has approved interim cost recovery for generation projects outside of the GRC (e.g., Gateway, Humboldt, Colusa), it has also approved that they be rolled into a GRC after commercial operations. PG&E is simply requesting similar treatment for the Oakley Project starting in 2024.

4. IEP's Arguments Regarding Near-Term Rate Impacts are Flawed

Q 127 IEP claims that a rate based project such as the Oakley Project will increase near-term rates to a greater extent than power purchases under a PPA.[154] Can you respond to this statement?

A 127 IEP's testimony does not tell the full story. IEP's testimony includes the following figure to support its assertion.

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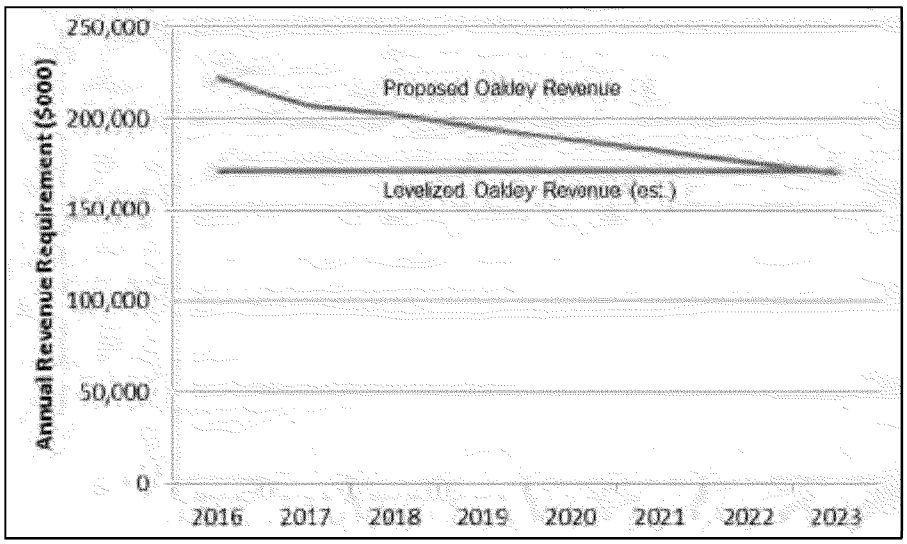
[153] DRA Testimony at p. 4-6 (DRA, Huang).

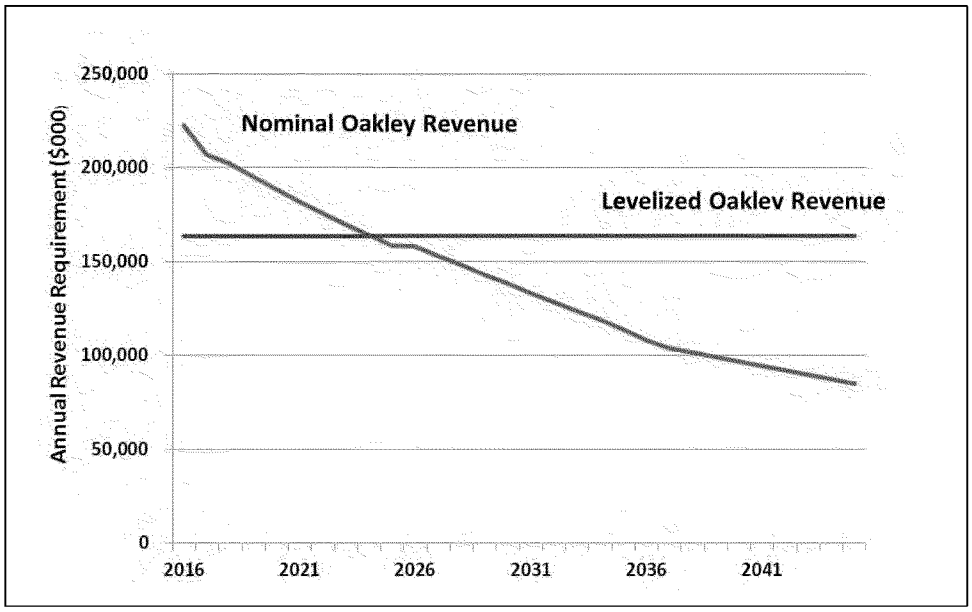
[154] IEP Testimony at pp. 13-14 (IEP, Monsen).

IEP FIGURE 1



The figure shows that for the first eight years of service the non-fuel revenue requirement for the Oakley Project exceeds its levelized cost. However, when one looks at the revenue requirement over the expected 30-year life of the project, after about the eighth year the revenue requirement is below the levelized cost, as demonstrated below in IEP Figure 2.

IEP FIGURE 2



The Oakley Project will be subject to Commission cost-of-service regulation over the life of the facility, whereas an Independent Power

Producer is free to renegotiate the price of its product after the end of the contract term, PG&E customers will continue to receive the benefits of the declining revenue requirement over the life of the Oakley Project.

H. Additional Issues Raised by Intervenors

1. Concerns About the Operational Characteristics of the Oakley Project Are Misplaced

a. The Oakley Project's Heat Rate Will Be the Best in PG&E's Portfolio

Q 128 FEC/MEC asserts that using ISO[155] conditions when referencing the Oakley Project's heat rate is not appropriate because summer ambient conditions will be different.[156] Do you agree?

A 128 No. Manufacturers of generation equipment typically quote their performance at a single operating point identified as ISO conditions. This allows the performance to be used and compared without prejudice of different operating conditions. This is required because plant performance can change with varying ambient conditions. When the Oakley Project's performance was compared to the performance of other CCGT facilities, PG&E appropriately used published CCGT data at ISO conditions.

Q 129 Is PG&E attempting to hide the fact that the actual average heat rate will be higher because it may be running a significant amount of time at higher ambient temperatures and at low loads when used for spinning reserve?

A 129 No. PG&E used ISO conditions for performance comparison purposes only. Combustion turbine facilities, both combined cycle and simple cycle, generally exhibit the following variations in heat rate:

- As the combustion turbines accumulate operating hours, the heat rate will increase.
- At higher ambient temperatures, the heat rate will increase. At lower ambient temperatures, the heat rate will decrease.
- At lower combustion turbine loads, the heat rate will increase.

With regard to the actual operation and corresponding heat rate of the Oakley Project, the facility has been designed as a flexible plant that

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[155] ISO refers to International Organization for Standardization. "ISO conditions" is a reference to 59°F and 60 percent relative humidity.

[156] FEC/MEC Testimony at pp. 5-7 (FEC/MEC, Fredericks and Roberts).

provides high base load efficiency, wide turndown, fast ramping, and quick starting. As such, the Oakley Project can be operated as a base load facility to take advantage of its high efficiency (low heat rate) or as a highly flexible shaping/load following facility utilizing its other attributes to integrate with renewable energy. It is general knowledge in the industry that the heat rate increases when operating at low loads, but the benefits of the spinning reserve it provides is an overall benefit to support CAISO regulation requirements and PG&E's customers.

With combined-cycle facilities, increases in heat rate will be less noticeable than they would be in simple cycle facilities as the higher combustion turbine heat rate will result in increased turbine exhaust energy which can be recovered by the HRSGs to generate additional steam which will translate into additional steam turbine output.

Q 130 FEC/MEC suggest that using an Air Cooled Condenser (ACC) was a poor choice for this project because it is less efficient than a water cooled plant at high ambient temperatures and thus will result in a higher heat rate.[157] Do you agree?

A 130 No. While the ACC technology results in a slight efficiency loss at high ambient temperatures, many operating scenarios of the Oakley Project at various ambient conditions were modeled. One model was performed at a peak July condition of 104°F, 18 percent relative humidity. The model indicates only a Redacted increase in the heat rate[158] from ISO conditions to the July peak condition. At a lower ambient temperature, the increase would be less. However, the benefits of the ACC technology outweigh the slight increase in heat rate at high ambient temperatures. In Chapter 2, page 2-3 of PG&E's Initial Testimony, PG&E explained that the ACC will reduce water consumption by roughly 90 percent when compared to similar combined cycles that utilize water for process cooling. In addition, in Chapter 2, page 2-11, PG&E listed other environmental benefits of an air cooled facility that included reduction in waste water discharge, and

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157 FEC/MEC Testimony at p. 6 (FEC/MEC, Fredericks and Roberts).

158 Redacted

elimination of the unsightly vapor plumes and air emissions related to wet cooled facilities.

Finally, a comparison of the Oakley Project to recent wet-cooled projects demonstrates the use of air cooling does not detrimentally impact the efficiency of the Oakley Project:

TABLE H-1
PACIFIC GAS AND ELECTRIC COMPANY
OAKLEY GENERATING STATION DATA RESPONSE
EFFICIENCY COMPARISON OF NET GUARANTEED ELECTRICAL HEAT RATE TO THOSE OF WET-COOLED COMBINED CYCLE POWER PLANTS WITHIN PG&E'S PORTFOLIO

Redacted

Q 131 FEC/MEC argues that it is inappropriate for PG&E to compare the Oakley Project's performance with that of existing, older-technology plants now operating in California.[159] Do you agree?

A 131 No. First, FEC/MEC implies that PG&E only compared the Oakley Project to significantly older facilities. That is not the case. In Table 2-2 in Chapter 2 of PG&E's Initial Testimony, the Oakley Project was compared to PG&E's Gateway and Colusa Generating Stations' efficiency. The Gateway and Colusa Generating Stations are not "significantly older" facilities. Notably, the comparison indicated that the Oakley Project was more efficient than either of those plants by up to 2 percent.

Second, in a data response provided to DRA's Data Request #2, Request 5, PG&E compared the Oakley Project to eleven other air-cooled projects that are either in construction/start-up, in development, or not currently moving forward. The performance number for these projects

[159] FEC/MEC Testimony at p. 7 (FEC/MEC, Fredericks and Roberts).

would be "new and clean condition" as FEC/MEC uses that term. This comparison indicated that the Oakley Project had the lowest heat rate of the 12 projects. In fact, one of the projects that is using the Siemens Flex Plant Product technology (the predominant competing technology to GE's Rapid Response technology) in California, had a heat rate that is approximately 6 percent higher than the Oakley Project.

Q 132 FEC/MEC also raises a concern about the energy use when the Oakley Project is offline. Specifically, FEC/MEC claims that the auxiliary boiler and large electrical loads for the vacuum pumps are needed during shutdowns to keep the plant ready for quick start dispatch and that the energy use associated with this equipment should be factored into the reported heat rate.[160] Can you address those concerns?

A 132 Yes. Electric-driven vacuum pumps are for the hogging ejectors, which are the ejectors that are used to initially evacuate the sub-atmospheric portion of the steam system. The holding ejectors, those ejectors used to maintain vacuum once it has been established, will be conventional steam jet air ejectors (SJAE). When the Oakley Project is offline in hot-standby mode, the SJAEs will be supplied steam from the auxiliary boiler. It will not normally be necessary to operate the electric driven vacuum pumps in this mode. During shorter offline periods, the demand on the auxiliary boiler is expected to be minimal as steam for the SJAE and steam turbine seals will be provided initially from the thermal energy stored within the HRSGs. During extended offline periods, the auxiliary boiler will come online once the energy stored within the HRSGs is no longer sufficient to supply the steam need for the SJAE and steam turbine seals. It would be impractical to estimate the amount of energy needed during a shutdown because the number and length of shutdowns would be difficult to estimate and may constantly vary based on potential market and climatic condition changes. It is more likely that facilities integrating renewable resources will need to be operating so as to better be able to more quickly provide ramping capability with their spinning reserve.

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[160] FEC/MEC Testimony at pp. 7-8 (FEC/MEC, Fredericks and Roberts).

Q 133 In response to FEC/MEC,[161] is the heat rate of 6,752 British Thermal Units/Kilowatt-Hour (Btu/kWh) (HHV) used in PG&E's Initial Testimony an expected or guaranteed heat rate and do you expect this number to be achieved?

A 133 The 6,752 Btu/kWh (HHV) heat rate is an expected heat rate. CCGS's guarantee in the Amended PSA is Redacted Btu/kwh (HHV) which is approximately Redacted higher. Manufacturers typically add approximately 1 percent or more for guarantee margin. If the 1 percent improvement were considered then the expected heat rate would be Redacted Btu/kWh (HHV). This means using typical margins manufacturers add to the expected heat rate for their guarantee, the expected heat rate would be lower than that used in PG&E's testimony. Redacted

Redacted

The new technology 7FA is made up from proven designs of the major components and includes the same design of the combustion system used in the latest existing fleet of 7FA combustion turbines. The combustion system design is one of the major components on achieving emissions and heat rate objectives. It is also important to note that GE achieved the heat rate guarantees for their 7FA combustion turbines on PG&E's Colusa and Gateway Generating Stations. In addition, GE is currently full load testing the first 7FA new technology turbine in the factory. In the past, combustion turbines of similar size to the Oakley Project's were often (but not always) tested at the factory but not at full load. This testing provides a level of comfort that any major issues with the technology will be addressed at the factory before it is installed at the Oakley Project. A recent communication from the leaders of the 7FA new technology testing team at GE provided an update on the testing which stated "the validated base load heat rate fully supports the Oakley performance expectations."[162] The test results also

[161] FEC/MEC Testimony at p. 7 (FEC/MEC, Fredericks and Roberts).

[162] See email from GE dated July 30, 2012 from Joe Barry with attached GE testing program update document. This email is included as Attachment I to PG&E's Rebuttal Testimony and the performance information from GE is included as Attachment J.

indicate the performance is exceeding GE's expectations in several other areas. GE also provided details of the level of testing being performed and details of the test stand equipment.

Q 134 CARE asserts that "[t]he CEC's Comparative Cost of California Central Station Electricity Generation states that an advanced combined cycle project like Oakley should have a heat rate of 6,310 Btu/kWh at the low end and an average heat rate of 6,510 Btu/kWh."[163] Is this an accurate statement?

A 134 No. The referenced CEC report does not classify a project such as the Oakley Project as an advanced combined cycle project.[164] While the Oakley Project is certainly considered an "advanced combined cycle" project when compared to existing F-class combined cycle plants, the referenced CEC report uses the term "advanced combined cycle" specifically in reference to GE's H System™, which is a 400 MW block size unit, designed for baseload operation, that uses a new design concept from the 7FA fleet that is a closed-loop steam cooling system to cool the combustion turbine thereby allowing increased firing temperatures and a higher cycle efficiency. This technology is not designed to provide fast ramping, numerous starts and stops, or turndown. The Inland Empire facility is the only such project in California utilizing this technology. Under the referenced CEC report, the Oakley Project would be more correctly categorized as a "conventional combined cycle" for which the CEC indicates a heat rate range of 6,600 Btu/kWh to 7,200 Btu/kWh. The Oakley Project's 6,752 Btu/kWh (HHV) heat rate is at the lower end of this range. In addition, the Oakley Project has the distinct advantage of being designed for renewable integration with fast ramp, fast start and stop, and significant turndown capability. All of these benefits are achieved with high efficiency, low emissions and without duct firing.

Q 135 CARE also states that "[t]he more recently constructed combined cycle power plants have <u>average</u> heat rates almost as good as GE's expected <u>baseload</u> heat rate for the Oakley Project. The Metcalf Project has an

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[163] CARE Testimony at p. 8, lines 15-17 (CARE, Sarvey).

[164] See Attachment K (excerpts from CEC report).

average heat rate of 6,884 Btu/kWh. The Palomar Project has an average heat rate of 6,959 Btu/kWh."[165] Can you comment on this statement?

A 135 Yes. The heat rates indicated for Metcalf and Palomar are for a single year, 2008 when both plants experienced their highest capacity factor, per the referenced CEC report. If the average heat rates for all years listed in the report are averaged, the "average" heat rates for Metcalf and Palomar are 7,000 and 7,022 Btu/kWh (HHV), respectively. This is higher than the Oakley Project heat rate.

2. The Oakley Project Is Operationally Flexible and Designed to Integrate Renewable Resources

Q 136 FEC/MEC asserts that PG&E's 2008 LTRFO did not seek new generation resources that were capable of integrating renewable resources and thus the Oakley Project was not designed to provide the operational flexibility needed for renewable integration.[166] Do you agree?

A 136 No. First, PG&E's 2008 LTRFO expressly sought flexible resources that were designed to integrate intermittent renewable generation. In Decision 07-12-052, which authorized the 2008 LTRFO, the Commission authorized PG&E to procure new generation resources that could "be used to adjust for the morning and evening ramps created by intermittent types of renewable resources."[167] PG&E's 2008 LTRFO protocol expressly referenced Decision 07-12-052 and indicated in detail the type of new generation resources that were needed to provide operational flexibility.

Second, PG&E explained in detail the operating flexibility of the Oakley Project in Chapter 2 of its Initial Testimony, all of which will allow the Oakley Project to have the flexibility needed to integrate renewable resources. FEC/MEC ignores most of this testimony and simply asserts that the Oakley Project will not assist in integrating renewable resources.

Third, FEC/MEC ignores the CAISO's statements that the Oakley Project "exceeds the flexibility of a generic combined cycle resource the [CAISO] is currently using to study grid requirements to facilitate

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[165] CARE Testimony at p. 9, lines 2-5 (CARE, Sarvey) (emphasis in original).

[166] FEC/MEC Testimony at pp. 4-5 (FEC/MEC, Fredericks and Roberts).

[167] D.07-12-052 at p. 106.

renewable integration" and the Oakley Project "can provide the necessary flexibility to meet [33% RPS integration] requirements."[168]

Fourth, FEC/MEC ignores the CEC's conclusion, after the submission of extensive evidence and hearings, that the Oakley Project is "flexible, highly dispatchable power" that will foster renewable resource integration.[169]

Q 137 What is the basis for FEC/MEC's argument that the Oakley Project will be limited in its ability to integrate renewable resources?

A 137 FEC/MEC argues that air permit limitations on the number of starts, run hours and emissions limitations will limit the ability of the Oakley Project to integrate renewable resources.[170] CARE makes similar arguments.[171]

Q 138 Are these concerns valid?

A 138 No. As described in more detail below, CCGS permitted the Oakley Project for variety of dispatch scenarios including cases with high starts and high operating hour scenarios. There is no permit limit on the annual number of starts, therefore, the Oakley Project will be capable of many more than 300 starts by simply trading off operating hour emissions for starts in the annual emissions calculations.

Q 139 FEC/MEC claims that, based on the number of starts permitted in the BAAQMD air permit, the Oakley Project will be limited to 2,300 hours of operation per year.[172] Do you agree with this calculation?

A 139 No. The Oakley Project is not limited to 300 starts per year. The requirement for 300 starts was a part of PG&E's 2008 LTRFO requirement. However, the BAAQMD ATC for the Oakley Project does not directly limit the number of starts.[173] The annual number of starts will be limited only by the annual emissions limits contained in Condition 43 of the BAAQMD ATC. The values listed in Condition 43 were the result of the following three "design" operating scenarios developed by CCGS to establish annual

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[168] PG&E Initial Testimony, Chapter 5, Attachment 2.

[169] CEC Final Decision, Section V.A, Greenhouse Gas Emissions, at p. 12.

[170] FEC/MEC Testimony at pp. 9-11 (FEC/MEC, Fredericks and Roberts).

[171] CARE Testimony at pp. 10-11 (CARE, Sarvey).

[172] FEC/MEC Testimony at p. 5, lines 6-9 (FEC/MEC, Fredericks and Roberts).

[173] A copy of the ATC is included as Attachment N to this Rebuttal Testimony.

emissions limits that could accommodate a wide variety of actual operating scenarios:

- Case 1
  - 300 total starts of which 25 are cold and 275 are hot.
  - 5,390 total operating hours of which 233 hours are for startups and shutdowns and 5,157 hours are at base load.
  - This case was developed to reflect PG&E's 300 annual starts (25 cold) requirement.
- Case 2
  - 312 total starts of which 1 is cold, 51 are warm and 260 are hot.
  - 5,662 total operating hours of which 229 are for startups and shutdowns and 5,433 hours are at base load.
  - This case was developed to reflect a 6 × 16 operating profile where the plant, on average, would run six days per week for 16 hours per day. This case is more realistic than Case 1 in that it has only one cold start, but still combines a high number of starts with a high number of base load operating hours.
- Case 3
  - 52 starts of which 1 is cold and 51 are hot.
  - 8,463 total operating hours of which 39 hours are for startups and shutdowns and 8,424 hours are at base load.
  - This case was developed to reflect a 6 × 24/1 × 16 operating profile where the plant, on average, would run six days per week for 24 hours per day and 18 hours per day for the remaining day. This case more or less reflects a base load operating scenario.

In general, annual Carbon Monoxide (CO) and POC emissions are more heavily influenced by the number of starts whereas annual nitrous oxide (NO_x), PM10, and sulfur oxide (SO_x) emissions are more heavily influenced by run hours. CCGS used the highest value from each of the three cases to establish the annual emission limit for each pollutant.[174] These calculations assume average annual operating emissions concentrations that are less

[174] See BAAQMD, Final Determination of Compliance, January 2011, p. A-7 of Appendix A http://www.baaqmd.gov/Divisions/Engineering/Public-Notices-on-Permits/2011/012111-20798/Oakley-Generating-Station.aspx.

than the short-term (1-hour) emissions concentration limits included in the air permit. The assumed annual operating emissions concentrations are 1.5 parts per million (ppm) for NO_x and 1.0 ppm for CO as opposed to 1-hour permit limits of 2.0 ppm for both pollutants. In addition, these calculations assume all operating hours are at base load. In reality, many operating hours can be expected to be at loads less than base load, especially those scenarios with a high number of starts. Since reduced load operation will generate fewer emissions on a mass basis, the assumption that all hours of operation will be at base load overstates the actual operating emissions.

CCGS used these lower emissions thresholds for two reasons. First, the scope of work in the Amended PSA requires Redacted Redacted Second, operating plants typically operate below the permits limits so that during minor upsets or transient conditions they do not exceed the permit limits.

Q 140 Was the Marsh Landing Project approved by the Commission in Decision 10-07-045 approved, in part, because of its ability to integrate renewable resources?

A 140 Yes. The Commission approved the Marsh Landing Project in part because it had "attributes desirable for renewable integration."[175]

Q 141 Was the Marsh Landing Project limited in terms of the number of starts or run time?

A 141 Yes. The Marsh Landing Project has much more significant limitations than the Oakley Project, including "the facilities' maximum number of starts per year is limited to 167 per turbine, and the annual hours of operation are limited to 1,705."[176] Despite this, the Commission recognized that the Marsh Landing Project provided a number of attributes that were desirable for the integration of renewable resources and approved the PPA for the project. The Oakley Project is even more flexible in terms of starts and run time and thus CARE's and FEC/MEC's concerns about the ability to integrate renewables are misplaced.

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[175] D.10-07-045 at p. 39.

[176] *Id.* at p. 35.

Q 142 Can you respond to FEC/MEC's and CARE's concerns about the Oakley Project operating characteristics in comparison to other facilities with regard to the Oakley Project's ability to integrate renewables?

A 142 Yes. The following tables compare the operating attributes of the Oakley Project with other combined cycle facilities in California:

TABLE H-2
PACIFIC GAS AND ELECTRIC COMPANY
COMPARISON OF THE OAKLEY PROJECT AND OTHER COMBINED CYCLE FACILITIES IN PG&E'S PORTFOLIO

Redacted

TABLE H-3
PACIFIC GAS AND ELECTRIC COMPANY
OAKLEY GENERATING STATION DATA RESPONSE
STARTUP AND OPERATING HOUR LIMITATIONS OF POWER PLANTS
WITHIN PG&E'S PORTFOLIO

Redacted

TABLE H-3
PACIFIC GAS AND ELECTRIC COMPANY
OAKLEY GENERATING STATION DATA RESPONSE
STARTUP AND OPERATING HOUR LIMITATIONS OF POWER PLANTS
WITHIN PG&E'S PORTFOLIO
(CONTINUED)

Redacted

Q 143 CARE indicates that it is concerned with the length of the start times for the Oakley Project.[177] Can you address this concern?

A 143 Yes. CARE's brief testimony is based on information selectively pulled from emails and the Amended PSA to make it appear that the start time for the Oakley Project is too slow. The reality is very different. As the tables above indicate, the Oakley Project has the best start up time of any combined-cycle facility in PG&E's portfolio. Moreover, as PG&E described in detail in its Initial Testimony, the Oakley Project ramp rates are very aggressive so that the facility is able to quickly ramp up,[178] the GE Rapid Response technology provides a significantly advance in CCGT design so that the facility can ramp more quickly,[179] and the start times of the Oakley Project are substantially better than average CCGT start times.[180] In short, the facts demonstrate that the Oakley Project overall has significantly better start times than any other combined-cycle resource in PG&E's portfolio.

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[177] CARE Testimony at p. 10, lines 4-13 (CARE, Sarvey).

[178] PG&E Initial Testimony at pp. 2-7 to 2-8 (PG&E, Maring).

[179] *Id.* at pp. 2-3 to 2-5 (PG&E, Maring).

[180] *Id.* at p. 2-10, Table 2-1 (PG&E, Maring).

Q 144 FEC/MEC states "Oakley simply has too-large generating unit size for Renewable Integration Duty", and a smaller "block size" is more appropriate.[181] Do you agree with this statement?

A 144 No. While FEC/MEC states the Oakley Project's generators are too large, they provide no analysis or basis for what they believe is the proper "block size." The Oakley Projects generators on the combustion turbines are approximately 20 percent larger than the fleet of GE 7FA and Siemens 501 F combined cycles in California. The steam turbine's generator would be of similar size as the significant number of F class combined cycles in California that have duct firing capability. FEC/MEC's statement would lead one to believe that the entire fleet of F class combined cycles in California is too large to support Renewable Integration. The Oakley Project has two block sizes because it has two combustion turbines that can run individually. Within each block there is wide range of turndown that can be ramped up or down to respond to intermittent renewable energy resources.

3. The Oakley Project Is a State of the Art Facility

Q 145 DRA asserts that more efficient CCGT technologies may have been developed since the 2008 LTRFO and the Oakley Project may no longer be state of the art.[182] IEP makes similar arguments, supporting its claims with several promotional brochures from other manufacturers.[183] Can you respond to this?

A 145 Yes. First, DRA is correct that technology is always developing and there will always be incremental improvements in CCGT technology. That being said, at some point a decision needs to be made regarding a new projects and proposals for new projects cannot constantly be rejected because, during the regulatory approval process, incremental improvements have occurred.

Second, neither DRA nor IEP prepared any study or analysis demonstrating that other technologies are more efficient or cost effective

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[181] FEC/MEC Testimony at p. 12 (FEC/MEC, Frederickson and Roberts).

[182] DRA Testimony at pp. 3-2 to 3-3 (DRA, Shmidt).

[183] IEP Testimony at pp. 30-32 (IEP, Monsen).

than the GE Rapid Response technology included in the Oakley Project. Instead, these parties simply cite several articles and promotional brochures that tout the effectiveness of various technologies and then assert that the GE Rapid Response technology may not be the most efficient. In its Initial Testimony, PG&E provided detailed information and evidence concerning the benefits and efficiency of the GE Rapid Response technology and, other than referencing brochures, DRA and IEP have done nothing to dispute this information.

Third, DRA and IEP ignore the analysis performed last year by the CEC of various technologies and equipment that was included as a part of the CEC's Final Decision on the Oakley Project. In its analysis, the CEC considered various alternative technologies and equipment for the Oakley Project, and then concluded that "[t]he evidence indicates that the proposed turbines [for the Oakley Project] embody the most fuel-efficient electric generation technology available."[184]

Finally, GE has performed testing and validation of its Rapid response technology which demonstrates that the benefits of this technology.[185]

Q 146 CARE expresses concern that, since the Oakley Project will incorporate state-of-the-art GE technology, there is a chance that facility may have equipment problems.[186] Can you address this concern?

A 146 Yes. There are several reasons why PG&E is comfortable with the GE 7FA new technology combustion turbines. First, the new technology 7FA is made up from proven designs of the major components. As GE explained, "[i]n developing the 7FA.05 gas turbine, GE has mined the wealth of knowledge that comes from the largest and most experienced F-class fleet in the industry and combined it with proven technology from across GE's broad portfolio of heavy duty and aeroderivative gas turbines, as well as GE's aircraft engine models."[187] Second, GE has constructed a new testing facility in their Greenville, SC, manufacturing facility to facilitate full load testing of the new compressor design and then the complete combustion

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[184] CEC Final Report, Section IV.B, Power Plant Efficiency, at p. 3.

[185] See Attachment L, GE's Next 7FA Gas Turbine Test and Validation, dated July 2011.

[186] CARE Testimony at pp. 9-10 (CARE, Sarvey).

[187] Attachment L at p. 1.

turbine assembly. The compressor testing was completed earlier this year and the combustion turbine testing is ongoing as of this writing.[188] Third, Redacted PG&E also intends to execute a long term maintenance agreement with GE for the Oakley Project, similar to agreements for the Colusa and Gateway Projects. Redacted Redacted

4. Concerns About Over-Procurement Are Overstated

Q 147 DRA expresses several concerns about potential over-procurement as a result of the Oakley Project. DRA's first concern is about stranded assets.[189] Can you address this?

A 147 Yes. As a preliminary matter, given the need described in PG&E's Initial Testimony and Rebuttal Testimony, PG&E does not believe that there is any risk of over-procurement. Instead, the Oakley Project is needed to meet the needs identified by the CAISO for renewable integration, as well as the retirement of OTC units and the potential growth of distributed generation. However, even if the Oakley Project does result in over-procurement for a limited period of time, the risk of under-procurement balances any risk of over-procurement. In Decision 07-01-041, the Commission explained the considerable and detrimental impact that under-procurement and lack of electric system reliability can have on California.[190] More recently, in the 2012 LTPP proceeding, the CAISO provided testimony explaining the asymmetric risk of under-procurement versus over-procurement. As CAISO witness Neil Millar aptly explained:

> Q. TURN witness Woodruff and other intervener witnesses have taken issue with the ISO's cautionary statements, in Mr. Spark's supplemental testimony, that the risks of under-procurement are greater than the risks of over-procurement ("asymmetric risk). What is your response?
>
> A. Reiterating earlier comments,I believe a fundamental threat to achieving the state's goals is to fail to provide reliable service in the transition. Over-reaching in attributing potential benefits to resources that provide other benefits, and failing to take appropriate action to ensure reliable system operation will jeopardize reliability as well as

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[188] *See* Attachments I and J.

[189] DRA Testimony at p. 2-12 (DRA, Shmidt).

[190] D.07-01-041 at p. 23 and FOF 17-18.

> continued progress in advancing state goals. Contrary to assurances provided in other testimony in this proceeding, in particular Ms. May's and Mr. Spencer's, rotating outages due to lack of local capacity are noticed by the public, and declining system reliability will not an acceptable consequence of transitioning to a more sustainable energy future.
>
> Mr. Sparks' supplemental testimony drew considerable acrimony in referring to the asymmetrical risk of over-supply versus under-supply. The asymmetrical risk is, in my view, is a statement of fact, not an attempt to encourage decisions based on fear. To the contrary, this is a time for pragmatic decisions enabling the electric system in California to move forward in addressing the complex issues.[191]

Q 148 DRA's second concern is that the Oakley Project could increase GHG emissions by filling any need with a conventional resource. Do you agree with this concern?

A 148 No. As explained in detail in PG&E's Initial Testimony and Rebuttal Testimony, the Oakley Project is exactly the kind of facility needed to integrate renewable resources and thus it actually facilitates GHG-free resources such as wind and solar. Moreover, in reviewing the Oakley Project, the CEC made a number of key determinations regarding the environmental benefits of the Oakley Project, including a reduction in GHG emissions. The CEC explained:

> If no new natural gas plants were constructed, reliance on older power plants may increase. These plants could consume more fuel and emit more air pollutants per kilowatt-hour generated than the [Oakley Project]. In the near term, the more likely result is that existing plants, many of which produce higher levels of pollutants, could operate more than they do now.[192]

The CEC then went on to conclude:

> The [Oakley Project] will be consistent with the state's GHG policies and will help achieve the state's GHG goals, by (1) causing a decrease in overall electricity system GHG emissions; and (2) fostering the addition of renewable generation into the system, which will further reduce system GHG emissions.[193]

Q 149 What was DRA's third concern?

A 149 DRA was also concerned that the Oakley Project could "crowd out" preferred resources. However, PG&E is not suggesting that the

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[191] *Reply Testimony of Neil Millar on Behalf of the California Independent System Operator Corporation*, submitted July 23, 2012 in Rulemaking 12-03-014 at p. 18.

[192] CEC Final Decision, Section II, Project Alternatives, at p. 13.

[193] *Id.*, Section V.A, GHG Emissions, at p. 2.

Oakley Project replace any of the preferred resources required by the Commission, such as to meet the 33 percent RPS goal. In fact, without resources such as the Oakley Project, it will be difficult to achieve the State's challenging preferred resource goals. As the CAISO explained in the Sutter Waiver Petition:

> Nothing, however, will undermine the state's policy goals more quickly than reliability issues, challenges with integrating renewable resources, or significant cost impacts. Ensuring that we have adequate flexible resources on the system enables us to avoid operations issues and mitigate cost impacts.[194]

Q 150 IEP also expresses concern about the impact of the Oakley Project on PG&E's rates.[195] Please respond to this concern.

A 150 PG&E is also concerned about customer rates and costs. However, there are a number of significant items that impact rates, including rate design, compliance-related costs such as RPS and GHG costs, electric and gas distribution and transmission costs, and numerous other items. As PG&E explained in Section E, the Oakley Project is cost effective and has a significantly better value than other alternative resources. Moreover, as explained above, the cost of under-procuring resources is likely substantially more significant than the incremental costs of the Oakley Project. Notably, in the 2012 LTPP proceeding, IEP indicated that, on balance, IEP advocates a more conservative approach to procurement to avoid shortages.[196] IEP also noted that given the 6-8 years that it takes to develop a new resource, the Commission should not delay procurement decisions.

Q 151 Has IEP expressed concerns about rate impacts when PPAs are being amended to increase the PPA costs.

A 151 Not that I am aware of. For example, as PG&E explained in Section G, as a result of permitting delays and cost increases in equipment, materials and labor, the developer of the Russell City Project asked for a delay in the

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194 Sutter Waiver Petition at p. 3.

195 IEP Testimony at pp. 7-17 (IEP, Monsen).

196 *Reply Testimony of William A. Monsen on Behalf of the Independent Energy Producers Association Concerning Track One of the Long-Term Procurement Proceeding*, submitted July 23, 2012 in R.12-03-014. PG&E has attached the relevant portions of this testimony as Attachment O.

project on-line date, a contract price increase, and other amendments.[197] The Commission ultimately approved a revised version of the PPA amendments that included, among other items, "a 30% cost increase over the terms of the original PPA" and provisions that shifted "certain risks from the developer to PG&E's customers related to control of future GHG emissions."[198] IEP did not express any concern about the 30 percent cost increase or the risk transfer proposed by Russell City Project developer or the impact of this increase on rates.

Q 152 Does IEP's concern about the rate impact of various actions such as this Application or the Russell City PPA amendment appear to be selective?

A 152 Yes. When an application involves a UOG proposal, IEP is concerned about the rate impact. When a PPA is amended, IEP seems less concerned about rate impacts.

5. PG&E's Confidentiality Designations Are Appropriate and the Amount of Discovery Provided Has Been Voluminous

Q 153 IEP complains that it was not able to review the Amended PSA because "PG&E has not made the Amended PSA available to IEP."[199] WPTF raises a similar issue.[200] Can you comment on these concerns?

A 153 Yes. First, PG&E marked the Amended PSA as market sensitive information consistent with Commission Decision 06-06-066 and Pub. Util. Code Section 454.5(g). Administrative Law Judge (ALJ) Yacknin affirmed that the Amended PSA was appropriately marked confidential in the *Administrative Law Judge's Ruling on Motion to Seal the Evidentiary Record*, issued June 28, 2012. The Commission has determined that IEP is a market participant and cannot have access to market sensitive information.[201] Second, in Decision 11-07-028, the Commission established a procedure for market participants, such as IEP and WPTF, to use a reviewing representative in proceedings to review market information.

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[197] D.09-04-010 at p. 2 (approving amendments to the Russell City Project PPA).

[198] *Id.* at pp. 7-8.

[199] IEP Testimony at p. 5 (IEP, Monsen).

[200] WPTF Testimony at p. 10, lines 8-10 (WPTF, Ackerman).

[201] D.11-07-028 at p. 34 (identifying IEP as a market participant).

IEP and/or WPTF could have followed this procedure and a reviewing representative could have had access to the Amended PSA. Thus, it is inaccurate for IEP to say that PG&E did not make the Amended PSA available. The reality is that IEP's and/or WPTF's reviewing representative could have reviewed the Amended PSA in this proceeding, but these parties chose not to avail itself of the procedures approved by the Commission in Decision 11-07-028.

Q 154 How many discovery requests, including subparts, has PG&E responded to in this proceeding?

A 154 PG&E has responded to 19 sets of data request in this proceeding, which include a total of 192 questions, 419 total questions including question sub-parts. PG&E has a 97 percent on-time response rate within this proceeding.

6. PG&E Is Providing Attachments of Materials Cited in Its Initial and Rebuttal Testimony

Based on direction provided by ALJ Yacknin after PG&E's Initial testimony was served, PG&E is providing as attachments to this Rebuttal Testimony all or relevant portions of the following materials that were cited either in PG&E's Initial Testimony or its Rebuttal Testimony:

Attachment	Attachment Description
A	*Local Reliability Track I Reply Testimony of Sean Beatty on Behalf of GenOn Energy, Inc.*, submitted on July 23, 2012 in R.12-03-014
B	*Petition for Waiver of Tariff Provisions and Request for Confidential Treatment*, filed by the CAISO in FERC Docket No. ER-12-897-000 on January 25, 2012(a)
C	*Testimony of Mark Rothleder on Behalf of the California Independent System Operator*, submitted on May 23, 2012 in R.12-03-014
D	*Opening Brief of the California Independent System Operator on Track I Issues*, filed September 16, 2011 in R.10-05-006
E	*Flexible Capacity procurement: market and Infrastructure Straw Proposal*, issued by the CAISO on March 7, 2012
F	*2013 Flexible Capacity procurement Requirement: Supplemental Information to Proposal*, issued by the CAISO on March 2, 2012
G	*Market Surveillance Committee Operational Flexibility Study Update*, issued by the CAISO on June 22, 2012
H	*Reply Comments of the Independent Energy Producers Association on the Proposed Decision on tracks I and III of the Long-Term procurement Plan Proceeding*, filed by IEP on March 19, 2012 in R.10-05-006
I	E-Mail from Joe Barry (GE Power & Water) to Jon Maring (PG&E) regarding GE 7FA.05 and Rapid Response - Experience, Test, and Validation Data dated July 30, 2012
J	Performance Information provided by GE on July 30, 2012
K	Excerpts from CEC's *Comparative Cost of California Central Station Electricity Generation*, cited in CARE's Testimony on p. 8, n. 18
L	GE's Next 7FA Gas Turbine Test and Validation, dated July 2011
M	2011 CEC Integrated Energy Policy Report
N	Oakley Project Authority to Construct issued by BAAQMD
O	*Reply Testimony of William A. Monsen on Behalf of the Independent Energy Producers Association Concerning Track One of the Long-Term Procurement Proceeding*, submitted July 23, 2012 in R.12-03-014.

(a) This does not include the Declaration of Mark Rothleder which was included as Attachment 1 to Chapter 5 of PG&E's initial Testimony.

PACIFIC GAS AND ELECTRIC COMPANY

APPENDIX A

STATEMENT OF QUALIFICATIONS

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF ANTONIO J. ALVAREZ

Q 1 Please state your name and business address.

A 1 My name is Antonio J. Alvarez, and my business address is Pacific Gas and Electric Company, 245 Market Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am a manager within the Energy Policy, Planning and Analysis Department of PG&E's Energy Procurement organization. I lead the team responsible for renewable integration issues.

Q 3 Please summarize your educational and professional background.

A 3 I earned a bachelor of science degree in civil engineering from the Universidad Javeriana, a master's degree in engineering management from Stanford University, and a master's degree in business administration from the Haas School of Business at the University of California, Berkeley. I joined PG&E in September 1977 and have held various positions in planning and contract analysis and administration.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring sections:

- C.2, "There Is a Specific, Unique Reliability Need for the Oakley Project."
- D.2, "The Final Results From CAISO Studies Demonstrate Significant Reliability Risks."
- D.4, "PG&E Addressed TURN's Concern Regarding the Valuation of a UOG Asset."
- E.2, "There Is a Public Interest in a Reliable Regulatory Framework."
- E.3, "The Oakley Project Is Cost Effective."
- E.4, "The Oakley Project Is Infra-Marginal."
- E.6, "The Oakley Project Will Facilitate the Retirement of and Reliance on Aging and Inefficient Units."
- E.7, "The Oakley Project Provides Environmental Benefits and Does Not Displace Renewables."
- E.8, "Recent Developments in California Support the Oakley Project."

- H.4, “Concerns About Over-Procurement Are Overstated.”

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF JON L. MARING

Q 1 Please state your name and business address.

A 1 My name is Jon L. Maring, and my business address is Pacific Gas and Electric Company, 245 Market Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am a senior director in the Energy Supply Department.

Q 3 Please summarize your educational and professional background.

A 3 I joined PG&E in 2005 as director in the Generation Department, responsible for new power plant construction. Prior to PG&E, I worked at Calpine Corporation where I was a director of new power plant construction. I have more than 35 years of experience working in power generation projects in the areas of development, engineering, and construction, and have been involved in projects that resulted in approximately 4,500 megawatts of new generation in California over the last 15 years, including PG&E's new Gateway Generating Station, Colusa Generating Station, and Humboldt Bay Generating Station. I attended Union College in New York, in mechanical engineering, and I am a licensed mechanical engineer in California. I also hold a project management certificate from University of California, Davis. Other former employers include Sacramento Municipal Utility District and General Electric Company, where I also worked in the areas of new power plant development, design, and construction.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring sections:

- C.3, "Additional Issues Raised Regarding D.07-12-052."
- D.1, "The Oakley Project Has All Necessary Permits."
- D.3, "As the Commission Determined in D.10-07-045, the Oakley Project Has Numerous Beneficial Attributes."

I am co-sponsoring sections:

- H.1, "Concerns About the Operational Characteristics of the Oakley Project Are Misplaced."

- H.2, "The Oakley Project Is Operationally Flexible and Designed to Integrate Renewable Resources."
- H.3, "The Oakley Project Is a State of the Art Facility."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF MARINO MONARDI

Q 1 Please state your name and business address.

A 1 My name is Marino Monardi, and my business address is Pacific Gas and Electric Company, 77 Beale Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am a director in the Energy Supply Management organization and responsible for management of the short-, medium- and long-term electric portfolio.

Q 3 Please summarize your educational and professional background.

A 3 I have more than 27 years of experience working in the electric and gas utility industry predominantly in the areas of structured transactions, planning, trading and operations. I joined PG&E in 2004, where I have had leading roles in several Request for Offers as well as structuring a number of long-term power purchase transactions. Prior to my employment at PG&E, I worked at Puget Sound Energy as a director in the Energy Portfolio Management Division. There my responsibilities included overseeing the development and implementation of hedging and optimization strategies and programs to manage power and gas portfolio costs and risk, the structuring and transacting of derivatives to manage price and volumetric risks, and the analysis of power and gas markets and the portfolio to support such hedging activities. I have also worked for the Sacramento Municipal Utility District and the Illinois Department of Energy and Natural Resources. I attended the University of Wisconsin/Parkside, and Indiana University, where I received a master's degree in public affairs with a specialization in energy economics.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring s ections:

- A, "A CPCN Is Not Required for the Oakley Project (Issue 1(a))."
- B, "The Oakley Project Should Not Be Barred by Decision 12-04-046 (Issue 1(b))."
- C.1, "An RFO for New Resources by 2018 Is Infeasible."

- E.1, “System Reliability Risks Resulting From Regulatory Lag.”
- E.5, “UOG Facilities Such as the Oakley Project Should Not Be Barred in California.”
- F.1, “The Amended PSA Is Reasonable and the Oakley Project Is Least-Cost and Best Fit.”
- F.2, “The Oakley Project Is the Least Cost/Best Fit Alternative.”
- H.5, “PG&E’s Confidentiality Designations Are Appropriate and the Amount of Discovery Provided Has Been Voluminous.”

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF STEVE ROYALL

Q 1 Please state your name and business address.

A 1 My name is Steve Royall, and my business address is Pacific Gas and Electric Company, 245 Market Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am a director in the Energy Supply Department.

Q 3 Please summarize your educational and professional background.

A 3 I joined PG&E in 2007 as director in the Generation Department, responsible for managing the Gateway Generating Station. Prior to PG&E, I worked at Northern California Power Agency where I was the assistant general manager of power generation and the managers of gas fired generation. I have more than 35 years of experience working in power generation projects in the areas of operation, engineering, and construction, and commissioning and have been involved in projects that resulted in approximately 3,500 megawatts of new generation in California and Washington over the last 35 years, including PG&E's new Gateway Generating Station, and Colusa Generating Station. Other former employers include Calpine Corporation, Phillips oil company and Freeport MCMoran corporation.

Q 4 What is the purpose of your testimony?

A 4 I am co-sponsoring sections:

- H.1, "Concerns About the Operational Characteristics of the Oakley Project Are Misplaced."
- H.2, "The Oakley Project Is Operationally Flexible and Designed to Integrate Renewable Resources."
- H.3, "The Oakley Project Is a State of the Art Facility."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA
DECLARATION OF MARINO MONARDI IN SUPPORT OF
THE CONFIDENTIAL TREATMENT OF PG&E'S PREPARED REBUTTAL TESTIMONY
IN A.12-03-026

I, Marino Monardi, declare:

1. I am a director in the Energy Supply Management organization at Pacific Gas and Electric Company (PG&E). I am responsible for management of PG&E's short-, medium- and long-term electric portfolio. This declaration is based on my personal knowledge of PG&E's electric portfolio and my understanding of the Commission's decisions protecting the confidentiality of market-sensitive information concerning fuels management of an investor-owned utility.

2. Based on my knowledge and experience, and in accordance with the "Administrative Law Judge's Ruling Clarifying Interim Procedures For Complying With Decision 06-06-066," issued in Rulemaking 05-06-040 on August 22, 2006, I make this declaration seeking confidential treatment for certain information contained in PG&E' prepared testimony in A.12-03-026.

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 (the "IOU Matrix") of Decision 06-06-066 or constitutes information that should be protected under General Order 66-C. The matrix also specifies the category or categories in the IOU Matrix to which the data and information corresponds, and why confidential protection is justified. Finally, the matrix specifies that: (1) PG&E is complying with the limitations specified in the IOU Matrix for that type of data or information; (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 that is pertinent to my testimony in the attached matrix.

I declare under penalty of perjury, under the laws of the State of California, that the foregoing is true and correct. Executed on August 3rd, 2012 at San Francisco, California.

MARINO MONARDI

PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
A.12-03-026 - PG&E's Rebuttal Testimony
August 3, 2012

IDENTIFICATION OF CONFIDENTIAL INFORMATION

Redaction Reference	Listed in Matrix (Y/N)	Matrix Category	Comply with matrix limitation (Y/N)	Not already public (Y/N)	Cannot be aggregated, redacted or summarized (Y/N)	PG&E's Justification for Confidential Treatment	Length of Time
Document: A.12-03-026 - PG&E's Rebuttal Testimony							
Q&A 32	N	General Order 66-C	N/A	Y	Y	This testimony includes confidential, non-public interconnection information.	For information under GO 66-C, indefinite.
Q&A 33	N	General Order 66-C	N/A	Y	Y	This testimony contains confidential market sensitive information obtained and/or developed internally by PG&E. Disclosure of this information and analysis would provide valuable market sensitive information to competitors.	For information under GO 66-C, indefinite.
Q&A 94, Table E-1	Y	Item VIII.B	Y	Y	Y	This table includes quantitative price analyses and net market valuation of projects offered in PG&E's 2008 LTRFO and negotiated bilaterally. This analysis reveals information that could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information covered under Item VIII.B, remain confidential for three years after winning bids selected.
Q&A 95, Table E-2	Y	Items VII.B General Order 66-C	Y	Y	Y	The redacted information contains confidential pricing information from the Amended and Restated Purchase and Sale Agreement ("Amended PSA") as well as market information concerning valuation of the benefits of the Oakley Project. This information could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information confidential under Item VII.B, confidential for three years after date contract deliveries start. For information under GO 66-C, indefinite.

PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
A.12-03-026 - PG&E's Rebuttal Testimony
August 3, 2012

IDENTIFICATION OF CONFIDENTIAL INFORMATION

Redaction Reference	Listed in Matrix (Y/N)	Matrix Category	Comply with matrix limitation (Y/N)	Not already public (Y/N)	Cannot be aggregated, redacted or summarized (Y/N)	PG&E's Justification for Confidential Treatment	Length of Time
Q&A 100, Footnote 123	Y	Item VIII.B	Y	Y	Y	The redacted information contains net market values on a levelized basis from offers in the 2008 LTRFO. This information could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information covered under Item VIII.B, remain confidential for three years after winning bids selected.
Q&A 102	Y	Items VII.B General Order 66-C	Y	Y	Y	The redacted information contains confidential pricing information analysis based on the terms of the Amended PSA, as well as market information concerning valuation of the benefits of the Oakley Project. This information could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information confidential under Item VII.B, confidential for three years after date contract deliveries start. For information under GO 66-C, indefinite.
Q&As 113-115 (redacted portion)	Y	Items VII.B	Y	Y	Y	Describes confidential contract terms from the Amended PSA. This information could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information confidential under Item VII.B, confidential for three years after date contract deliveries start.
Q&A 129, footnote 160	Y	Item VII.B	Y	Y	Y	Information based on contract terms from the Amended PSA. This information could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information covered under Item VII.B, remain confidential for three years

PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
A.12-03-026 - PG&E's Rebuttal Testimony
August 3, 2012

IDENTIFICATION OF CONFIDENTIAL INFORMATION

Redaction Reference	Listed in Matrix (Y/N)	Matrix Category	Comply with matrix limitation (Y/N)	Not already public (Y/N)	Cannot be aggregated, redacted or summarized (Y/N)	PG&E's Justification for Confidential Treatment	Length of Time
Q&A 129, Table H-1	Y	Item VII.B General Order 66-C, Section 2	Y	Y	Y	The table contains confidential contract terms and operating information regarding the Oakley Project and the capabilities of the Oakley Project generating equipment. This table also contains confidential performance information from the Los Esteros, Russell City, and Delta facilities that are based on contractual terms and/or PG&E operating information.	For information covered under Item VII.B, remain confidential for three years after date contract deliveries start. For information under GO 66-C, indefinite.
Q&A 132 (redacted portion)	Y	Item VII.B	Y	Y	Y	Information based on contract terms from the Amended PSA and description of contract terms. This information could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information covered under Item VII.B, remain confidential for three years
Q&A 138 (redacted portion)	Y	Item VII.B	Y	Y	Y	Describes contract terms from the Amended PSA. This information could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information covered under Item VII.B, remain confidential for three years
Q&A 141, Tables H-2, H-3	Y	Item VII.B. General Order 66-C, Section 2	Y	Y	Y	The tables detail confidential contract terms and operating information regarding the Oakley Project and the capabilities of the Oakley Project generating equipment. These tables also contain confidential performance information from several facilities that are based on contractual terms and/or PG&E operating information. PG&E is required by the PSA to maintain confidentiality of contract terms.	For information covered under Item VII.B, remain confidential for three years For information under GO 66-C, indefinite.

PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
A.12-03-026 - PG&E's Rebuttal Testimony
August 3, 2012

IDENTIFICATION OF CONFIDENTIAL INFORMATION

Redaction Reference	Listed in Matrix (Y/N)	Matrix Category	Comply with matrix limitation (Y/N)	Not already public (Y/N)	Cannot be aggregated, redacted or summarized (Y/N)	PG&E's Justification for Confidential Treatment	Length of Time
Q&A 144 (redacted portion)	Y	Item VII.B	Y	Y	Y	Describes contract terms from the Amended PSA. This information could be used by suppliers to structure future offers that result in higher procurement costs for PG&E and its customers.	For information covered under Item VII.B, remain confidential for three years