Amended Testimony of L. Jan Reid on Track I and Track III Issues

R.10-05-006

Served August 6, 2011
on behalf of
L. Jan Reid

TABLE OF CONTENTS

Pursuant to Rule 1.12 of the Commission's Rules of Practice and Procedure, I serve this amended testimony on Track I and Track III issues in this proceeding. I will serve both a redlined and a clean version of my amended testimony. I served direct Track I and Track III testimony in this proceeding on August 5, 2011. My amended testimony makes the following changes to my direct testimony:

1. The first bulleted item in Section II.B was corrected to indicate that The CAISO modeled small solar profiles at an aggregate level.

2. The first bulleted item on page 5 of my direct testimony states that "The CAISO's model does take into consideration the autocorrelation of forecast errors associated with load, wind resources, and solar resources., instead of individually." This bulleted item has been deleted since it is not a deficiency in the CAISO's methodology.

3. On page 7 of my direct testimony, I incorrectly indicate that the California Coastal Commission was created by Proposition 9. This has been changed to correctly indicate that the California Coastal Commission was created by Proposition 20.

4. Non-substantitative changes to the text are included.

Pursuant to Rule 1.9 of the Commission's Rules of Practice and Procedure, I serve this testimony on Track I and Track III issues of this proceeding.

Pursuant to the procedural schedule set forth in the June 13, 2011 ruling (Ruling) of Administrative Law Judge (ALJ) Peter Allen as modified by the August 4, 2011 email from ALJ Allen, I submit this testimony on behalf of myself. I am a customer of Pacific Gas and Electric Company (PG&E) and am a party in this proceeding.

In the testimony, I discuss the recommendations of the investor owned utilities (IOUs)[1]. I discuss Track I issues in Sections II-III and Track III issues in Section IV. In briefs, I may take positions on issues not addressed herein. The testimony is supported by workpapers that are available on request.

Witness qualifications are set forth in Appendix A.

I. Recommendations

I have relied on state law, past Commission decisions, and information furnished by the California Independent System Operator and the investor owned utilities in developing recommendations regarding the issues in this proceeding. Page references are given in parentheses after each recommendation or proposed finding.

I recommend the following:

1. The Commission should adopt a system capacity need of zero megawatts (MW) for renewable integration. (pp. 3-7)

2. The Commission should adopt the Energy Division Staff (Staff) proposal on Once Through Cooling (OTC) given in Appendix A of ALJ Allen's June 13, 2011 ruling. (pp. 10-11)

[1] The IOUs in this proceeding are Pacific Gas and Electric Company (PG&E), San Diego Electric & Gas Company (SDG&E), and Southern California Edison Company (SCE).

3. The Commission should not establish a Rulebook as suggested by Staff. (pp. 11-12)

4. The Commission should prohibit both an IE and the IE's employer from having a financial interest in any potential bidder in a solicitation. (p. 12)

5. The Commission should open an Order Instituting Investigation (OII) into the feasibility of shutting down the SONGS and Diablo Canyon facilities. (pp. 7-9)

My recommendations are based on the following proposed findings:

1. No party in this proceeding has recommended that the Commission adopt a specific non-zero system need for renewables integration. (p. 4)

2. The CAISO's RIM methodology is deficient with respect to the items listed in Section II.B of this testimony. (pp. 4-6)

3. The Staff's OTC proposal encourages conservation, seeks to improve water quality, and is consistent with the Commission's policy goals. (pp. 10-11)

4. The Commission does not need to establish a Rulebook in order to adopt changes to procurement rules. (pp. 11-12)

5. The IE has a conflict of interest if his or her firm has a financial interest in a potential bidder in a solicitation. (p. 12)

II. Renewable Integration Models

A. Background

Two separate renewable integration models have been the subject of workshops and comments in this proceeding. Workshops were held on August 24-25, 2010, October 22, 2010, November 30, 2010, and May 10, 2011. Parties filed workshop comments on September 21, 2010, November 22, 2010, and January 14, 2011. Parties filed workshop reply comments on September 28, 2010, December 3, 2010, and January 26, 2011.

At the workshops, model results were presented by both PG&E and the California Independent System Operator (CAISO).[2] It is my understanding that PG&E is continuing development of its model, but is not presenting it for consideration at this time. Therefore, my testimony only addresses the CAISO's Renewable Integration Model (RIM).

The CAISO and the IOUs served testimony on July 1, 2011. The parties conducted submitted discovery to the CAISO and the IOUs. The CAISO's response to Reid's first set of discovery questions is provided in Attachment A to this testimony.

In its opening testimony, the CAISO has stated that "In addition to the five CPUC scenarios, the ISO also studied an "All Gas" scenario in support of development of metrics by the IOUs, and conducted a sensitivity analysis assuming all three Helms pumps are available year round.identified." (CAISO Testimony, p. 7) The CAISO has also stated that "the study results show the flexibility requirements to support a 33% RPS result in a range of possibilities, from no additional capacity needs to the need for substantial capacity additions depending on the scenario assumptions." (CAISO Testimony, p. 4)

I note that no party in this proceeding has recommended that the Commission adopt a specific non-zero system need for renewables integration.

B. Deficiencies in the CAISO Methodology

Reid and other parties have identified a number of deficiencies in the CAISO's methodology. These deficiencies include:

- The CAISO modeled small solar profiles at an aggregate level, instead of individually. (CAISO Testimony, p. 23)

[2] PG&E did not present its model results at every workshop.

- The CAISO states that "The CAISO used three standard deviations for the seasonal load forecast errors. The forecast errors for wind and solar were also truncated at ± three standard deviations." (Attachment A, CAISO Response to Reid Question 11) I discuss the number of standard deviations in Section II.C.

- The CAISO has also stated that "Holding all other variables constant, an increase in forecast error would increase the load following and regulation needs determined in Step 1." (Attachment A, CAISO Response to Reid Question 3b)

- The CAISO did not conduct sensitivity runs to account for the potential substitution between wind and solar. (Attachment A, CAISO Response to Reid Question 3c)

- The CAISO did not calculate the elasticity[3] of capacity need with respect to the vast majority of variables. (Attachment A, CAISO Response to Reid Question 5)

- The CAISO states that an increase in the price of electricity "does not change the need for additional capacity, even though high electricity price may provide incentives for investments in new capacity." (Attachment A, CAISO Response to Reid Question 5)

- The CAISO did not calculate a correlation matrix between several important variables. (Attachment A, CAISO Response to Reid Question 6)

- The CAISO states that "The ISO did not perform studies for every year between 2012 and 2020 and the study results vary greatly based on the scenarios assumptions." (Attachment A, CAISO Response to Reid Question 7)

- The CAISO did not employ a historical trend to estimate the forecast error for the period 2011-2020. (Attachment A, CAISO Response to Reid Question 8)

---

[3] Elasticity is the ratio of the percent change in one variable to the percent change in another variable. For example, if a one percent change in Variable A causes a 1.5 percent change in Variable B, the elasticity of Variable B with respect to Variable A is 1.5

- The CAISO did not account for technological changes that may occur to reduce the intermittency level of renewable resources. (Attachment A, CAISO Response to Reid Question 17)
- The CAISO did not test for the existence of serial correlation. Instead, the CAISO states that "There is no serial correlation assumed." (Attachment A, CAISO Response to Reid Question 25h)
- The ISO did not backtest the simulation results against historical results. Attachment A, CAISO Response to Reid Question 29) I discuss backtesting in Section II.D.
- The CAISO did not conduct external robustness tests relative to its RIM. I discuss robustness tests in Section II.E.

C. Number of Standard Deviations

A confidence level of 95% is a standard confidence level in many types of statistical applications. For example, the CPUC has ordered the investor owned utilities (IOUs) to use a 95% confidence level when calculating Time To Expiration Value at Risk (TEVaR) results. (Decision (D.) 07-12-052, Ordering Paragraph 21, slip op. at 303)

Therefore, I recommend that a 95% confidence level (1.96 standard deviations) be used in the CAISO's model. A confidence level of 95% is consistent with 1.96 standard deviations. I note that PG&E has provided a graphical explanation of the relationship between confidence intervals and the number of standard deviations. (PG&E October, 2010 Presentation, Slide 38)

D. Backtesting

Backtesting (or back-testing) is the process of evaluating a strategy, theory, or model by applying it to historical data. A key element of backtesting that differentiates it from other forms of historical testing is that backtesting calculates how a strategy would have performed if it had actually been applied

in the past. For example, backtesting can be used in studying how a trading method would have performed in past markets.

E. Robustness

In computer science, "robustness" is the ability of a computer system to cope with errors during execution; or the ability of an algorithm to continue to operate despite abnormalities in input, calculations, etc. Formal techniques, such as fuzz testing,[4] are essential to proving robustness, since this type of testing involves invalid or unexpected inputs.

The size and resource intensiveness of a particular model does not prove that the model is robust.

F. Renewable Integration Need

For all of the above reasons, I recommend that the Commission adopt a system capacity need of zero MW for renewables integration in this proceeding.

III. Nuclear Power Plants

SCE has pointed out that "Women's Energy Matters (WEM) has filed intervenor testimony in Track II of this proceeding recommending the immediate shutdown of San Onofre Nuclear Generating Station Units (SONGS 2 & 3)." (SCE Testimony, p. 36)

WEM's recommendation was not limited to the SONGS facility. WEM argued that "It is incumbent on the Commission to begin preparing for a shut-down of Diablo Canyon and San Onofre nuclear reactors in either case. Both reactors sit on and near multiple faults capable of major earthquakes; both sit on

[4] "Fuzz testing" or "fuzzing" is a software-testing technique that provides invalid, unexpected, or random data to the inputs of a program. A description of fuzz testing and references is available at *http://pages.cs.wisc.edu/~bart/fuzz/*.

oceanfront real estate where tsunamis are a possibility. The earth's tectonic plates can heave at any moment, without warning." (WEM Track II Testimony, May 4, 2011, p. 8)

SCE argues that WEM's recommendation should not be adopted because:

- The premature shutdown of SONGS would have immediate and adverse impacts on electric system reliability. (SCE Testmony, pp. 38-39)
- There is not enough time for mitigation to avoid the negative impacts of an immediate shutdown of SONGS (SCE Testimony, pp. 39-40)
- A premature shutdown of SONGS would impact state environmental goals. (SCE Testimony, p. 40)
- A shutdown of SONGS would have a negative economic impact on Southern California. (SCE Testimony, pp. 40-41)

Both WEM and SCE have provided compelling arguments concerning the nuclear power plant shutdown issue. WEM is certainly correct concerning the risks associated with the continued operation of California's nuclear power plants. SCE makes a compelling case that it may not be in the public interest for the Commission to order an immediate shutdown of the SONGS facility.

The existence of nuclear power plants has been a major public issue in California since at least the 1972 debate over Proposition 20, which established the California Coastal Commission.

A recent poll conducted by the Public Policy Institute of California (PPIC) found that Californians are opposed to building more nuclear power plants. Josh Richmond of the Oakland Tribune has reported that "The poll found 65 percent of Californians now oppose building more plants while 30 percent are in

favor, the lowest level of support since PPIC began asking the question in 2001 and a 14-point drop since one year ago."[5]

Although the poll did not ask respondents whether California should shut down its nuclear power plants, the results indicate that there is significant public opposition to nuclear power in California.

Since both WEM and SCE make compelling arguments concerning this issue and there is a growing public concern about nuclear power plants, I seek to resolve this issue by recommending that the Commission open an OII into the feasibility of shutting down the SONGS and Diablo Canyon facilities. In this OII, I recommend that the Commission consider the following factors:

1. The risks associated with the continued operation of these facilities.
2. Electric system reliability.
3. Ratepayer costs associated with de-commissioning.
4. The disposition of utility costs associated with un-depreciated ratebase.
5. The financial effect on the IOUs if the nuclear plants are shut down.
6. The cost of replacement power.
7. The effect on renewable integration.
8. Existing regulations of the U.S. Department of Energy and the Nuclear Regulatory Commission.
9. The transmission licensing process.
10. The cost effectiveness of shutting down the nuclear power plants.
11. The economic impact of a shutdown on California residents.

---

[5] Source: "State poll: Support for offshore oil drilling grows", Josh Richman, Oakland Tribune, July 28, 2011.

IV. Track III Issues

ALJ Allen's Ruling refers to four Track III issues which have been identified in a previous ruling issued on March 13, 2011. (Ruling, p. 6) These four issues are

> 1) procurement rules relating to once-through cooling issues; 2) refinements to the bid evaluation process, particular weighing competing bids between utility-owned generation and power purchase agreements; 3) refinements to the existing timelines associated with the utilities' RFOs for resource adequacy products; and 4) utility procurement of greenhouse gas related products.

The Ruling states that "This Ruling confirms that we are addressing those four issues, plus one other issue, consisting of procurement oversight rules, including the oversight responsibilities and authority of various entities (including Independent Evaluators and the Procurement Review Group) and standards of conduct applicable to the utilities and their employees." (Ruling, p. 6)

The Ruling contains two appendices, Appendix A and Appendix B. ALJ Allen has requested that parties' testimony address the proposals contained in these appendices. (Ruling, p. 7)

I discuss Track III issues below.

A. Once Through Cooling (OTC)

The CPUC Energy Division Staff's (Staff's) OTC Proposal (See Ruling, Appendix A) would prohibit a utility from entering into a contract for longer than one year with an OTC facility. There are three possible exemptions from this prohibition. A utility is exempt from this prohibition if one of the following three conditions applies:

1. A facility is found by the Water Resources Control Board to be fully in compliance with Section 316(b) of the Clean Water Act.

2. If the Commission authorizes the procurement of new capacity in the LTPP proceeding, contracts longer than one year and/or that extend beyond the Water Resources Control Board OTC compliance date as detailed in the October 1, 2010 Statewide Water Control Policy on the Use of Coastal and Estuarine Waters Used for Power Plant Cooling or in successor documents for the express purpose of enabling the repowering of those OTC facilities are permitted if those contracts do not result in operation of the once-through-cooling system beyond the compliance date.

3. If an OTC facility elects to comply with the State Water Resources Control Board OTC policy by means of SWRCB Track 2 (under which water intake is reduced by 93% or screens or similar technologies that are expected to be approved by the State Water Resources Control Board are utilized) contracting with such a facility beyond the State Water Resources Control Board's compliance date is permitted.

The Commission has a long history of supporting water policies which improve water quality and encourage conservation. The Commission has stated that: (CPUC Water Action Plan, December 15, 2005, p. 2)

> In light of increasing statewide concerns about water quality and supply, the Commission will explore innovative solutions to water problems and keep pace with newer approaches it is implementing in the energy and telecommunications sectors as well as strategies being used by water agencies and entities not subject to Commission jurisdiction. In our loading order for water supply sources, we recognize that cost-effective conservation is the best, lowest-cost of supply.

The Staff proposal encourages conservation, seeks to improve water quality, and is consistent with the Commission's policy goals. Therefore, the Commission should adopt the Staff proposal.

B. The Rulebook

Energy Division staff (Staff) "has consistently envisioned that the Rulebook should supersede existing decisions, in that the document would be

treated as a General Order and will be fully enforceable." (Ruling, Appendix B, p. 2)

I disagree with Staff on this issue. The Rulebook should serve an informative purpose and should not be treated as a General Order as suggested by Staff. The Rulebook should serve to:

1. Inform the public of the procurement rules that have been adopted by the Commission.

2. Inform CPUC staff, the IOUs, and other parties of the procurement rules that have been established by the Commission.

The Commission does not need to establish a Rulebook in order to change its procurement rules. Therefore, I recommend that the Commission not establish a Rulebook at this time.

Below, I address Staff's proposed changes to the Commission's existing procurement rules.

1. Independent Evaluators (IEs)

Staff proposes that "A minimum criterion for independence is that the IE has no financial interest in any of the potential bidders, including the affiliate, or in the outcome of the process." (Ruling, Appendix B, p. 10) This requirement is necessary, but not sufficient.

Even though an IE has no financial interest in any of the potential bidders in a solicitation, the IE may still have a conflict of interest. The IE has a conflict of interest if his or her firm has a financial interest in a potential bidder. Therefore, I recommend that the Commission mandate that neither the IE nor an IE's employer have a financial interest in any potential bidder in a utility solicitation.

Staff recommends that "An IE may remain in the IE pool for two years, after which he/she must go through a reevaluation process based upon the

inclusion criteria as defined in Section 1 (b) to assure continued compliance." (Ruling, Appendix B, p. 11)

I recommend that this item be changed to indicate that an IE will not be subject to the two-year limit unless the IE has been given an assignment by the IOU and has completed that assignment. In some instances, the IE will not have completed an assignment within a two-year period. In this case, neither the IOU nor its procurement review group (PRG) will be able to fairly evaluate the IE's performance.

2. Procurement Review Groups

Section 451 of the Public Utilities Code requires that the Commission ensure that all utility charges are just and reasonable. Because the Commission is responsible for ensuring that rates are reasonable, it must consequently ensure that utility costs (including procurement costs) are reasonable.

Prior to 2002, the Commission often discharged this responsibility via periodic ex-post reasonableness reviews. Since October 2002, the reasonableness of utility procurement has been determined by the interaction of the utility, its PRG, and the advice letter process. The PRGs have been an important part of this process. They have reduced the need for the ex-post reasonableness review, and have been used by the Commission on numerous occasions. The Commission has explicitly noted their effectiveness.

The Commission established a PRG for each IOU's interim procurement in August 2002. (D.02 08 071, slip op. at 24 25). The PRG process was initially extended until the end of 2003 (D.02 10 062, slip op. at 3) and then extended indefinitely.

The Commission has reviewed the PRG process and found that "PRGs are valuable for the IOUs' procurement process and we direct the IOUs to continue

to use them in an advisory capacity for their procurement activities, including for procurement when an IOU is considering recovering costs from bundled and unbundled customers using the D.06-07-029 CAM." (D.07-12-052, Conclusion of Law 23, slip op. at 293)

The PRG process acts as an alternative to formal Commission proceedings. Instead of Commission review of all procurement activities in formal applications or in ex-post reasonableness reviews, utility procurement is reviewed by the PRG, and then the utility is allowed to request approval through expedited applications or the advice letter process. I believe that the Commission assumes that utility procurement activities will be adequately reviewed by the PRGs. In this way, lengthy Commission proceedings can often be avoided.

Staff recommends that "The California Energy Commission and IOU are invited to participate in the PRG." (Ruling, Appendix B, p. 12) I have no objection to the California Energy Commission re-involving itself in the PRG process. However, it is not necessary to invite the IOUs to participate in their own PRG. The IOUs convene the PRG meetings and make presentations to their PRGs.

An IOU should not be allowed to routinely participate in another IOU's PRG. There may be times when joint meetings of the PRGs may be held, but this should be a special circumstance. One IOU should not be allowed to have access to confidential information of another IOU via the PRG process. For these reasons, I recommend that the above-quoted sentence be rewritten to read "The California Energy Commission is invited to participate in the PRGs."

Staff recommends that "The members of each PRG would be committed to devote the time necessary to meet and confer with the utilities on each proposed contract and/or procurement process and provide written comments to the

utilities within no later than fifteen days of initiation of the review process." (Ruling, Appendix B, p. 17)

I am a member of PG&E's PRG group. I am unable to provide meaningful feedback to PG&E on a proposed contract or process until PG&E responds to my data requests.

Therefore, I recommend that the following language be used:

> The members of each PRG would be committed to devote the time necessary to meet and confer with the utilities on each proposed contract and/or procurement process. PRG members shall submit data requests to the IOU within 48 hours of the initial presentation by the IOU. PRG members shall provide written comments to the IOUs within 15 days of the IOUs response to a PRG member's data request.

V. Conclusion

The Commission should adopt my recommendations for the reasons given herein. This completes my direct testimony. Witness qualifications are given in Appendix A.

APPENDIX A
WITNESS QUALIFICATIONS

QUALIFICATIONS AND PREPARED TESTIMONY OF L. JAN REID

My name is L. Jan Reid. My business address is 3185 Gross Road, Santa Cruz, CA 95062. I retired from the California Public Utilities Commission (CPUC) in June 2005, and am now working as sole proprietor of Coast Economic Consulting, and as a consulting economist and expert witness.

I hold a Bachelor of Arts degree in Economics and a Master of Science degree in Applied Economics and Finance from the University of California, Santa Cruz. The subject of my master's thesis was whether the Capital Asset Pricing Model (CAPM) is a biased estimator of market risk.

I was employed at the Commission in the Office of Ratepayer Advocates from 1998 to 2005. I sponsored written testimony on cost of capital, electric procurement, risk management, and credit ratings. I have made presentations in Commission workshops, developed econometric models, and provided internal financial and economic analysis in proceedings related to market power, electric procurement, operations support services, asset valuation, performance-based ratemaking (PBR) proposals, and utility service quality.

Since leaving the Commission, I have represented myself and Aglet Consumer Alliance in procurement review groups (PRGs) for Pacific Gas and Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company. I have participated in formal proceedings involving cost of capital, renewables portfolio standards, long-term procurement plans, resource adequacy, and demand-response programs.

This completes my statement of qualifications.

VERIFICATION

I, L. Jan Reid, make this verification on my behalf. The statements in the foregoing document are true to the best of my knowledge, except for those matters that are stated on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Dated August 6, 2011, at Santa Cruz, California.

/s/

L. Jan Reid
3185 Gross Road
Santa Cruz, CA 95062
Tel/FAX (831) 476-5700
janreid@coastecon.com