

To: Nathaniel Skinner

From: Robert Fagan and Alan Wecker

Date: May 9, 2013

Re: Response to request for Informal Comments in Response to California Independent System Operator's (CAISO) presentation on long-term procurement planning (LTPP) Base Case preliminary results

The Division of Ratepayer Advocates (DRA) submits the following comments regarding the CAISO's preliminary results on the 2012 LTPP Base Case scenario, presented at the April 24, 2013 workshop. As a preliminary matter, DRA notes that violations in the modeling results do not necessarily demonstrate a need for new resources. The output of this modeling exercise does not necessarily imply a need for procurement. Instead, the modeling output may represent a need for a change in market structure to incentivize the use of operationally flexible attributes from existing or planned resources. For example, if a "load following" shortage violation occurs, the CAISO should indicate the amount of external resources available to meet that violation in the hour or hours in which it occurs. This will not necessarily indicate that those resources will be the solution to the violation, but it recognizes that these resources have the potential to reduce ramping needs.

1. Track 2 modeling should include reasonable assumptions for resources authorized in the Los Angeles (LA) and San Diego Gas & Electric (SDG&E) local capacity areas. (Questions 1a and 1b)

Including 1,000 megawatts (MW) of gas-fired generation for the Southern California Edison (SCE) service territory (900 MW of combined cycle and 100 MW of gas turbine) is a reasonable assumption to use for the 2012 LTPP modeling.¹ Decision (D.) 13-02-015² authorized at least 1,000 MW of gas-fired resources for the West Los Angeles sub-area of the LA Basin local reliability area. It authorized a maximum of 1,200 MW of gas-fired resources for LA Basin area. Until SCE selects a final set of resources pursuant to the Decision's authorization, it is sensible to model the system in 2022 using the "floor", rather than the "ceiling," for gas-fired resources. The modeling can be updated for the next LTPP (2014 LTPP) to reflect then-current information on SCE procurement activities (along with updated assumptions for the other factors, such as load and other supply).

Modeling the system with the floor level of new local resources will illustrate the magnitude and timing (e.g., summer peak period, or off-peak period) of any residual need that may be indicated by the model's results. The alternative – modeling the higher level of resources (1,200 MW) representing the ceiling of the procurement authorization – will **not** reveal the extent of any system "headroom" that may exist if no residual need is detected. Thus, using a realistic amount in the modeling exercise that is on the lower end of resources authorized in D.13-02-015 will provide better information on need (if any arises) than using the upper limit of resources authorized.. The modeling *per se* does not bear on the

¹ Slide 16 of CAISO's 4/24/2013 PowerPoint presentation.

² D. 13-02-015, Ordering Paragraph 1(a), p. 131.

authorization (as it shouldn't), but careful configuration of the modeling inputs does present an opportunity to assess timing and magnitude of need – an opportunity that may be lost if the model is “oversupplied.”

The use of 343 MW of a modeled gas turbine (GT) resource for the SDG&E local reliability area is reasonable, although lower values could also suffice. The use of 343 MW appears to be based on a table in D.13-03-029, which showed a potential 343 MW local reliability need (in the trajectory case) in 2018 if the Encina plant retires.³ D.13-03-029 authorized SDG&E to procure up to 298 MW to meet a local capacity requirement need of up to 298 MW beginning in 2018,⁴ and approved a power purchase agreement with Escondido of 45 MW.⁵ If CAISO uses 343 MW of “new” local area resource for the SDG&E area, we presume the 343 MW includes 45 MW for Escondido, and would not double count the 45 MW of Escondido power.

2. New out-of-state renewable portfolio standard resource scheduling parameters will improve the Track 2 modeling. (Question 2A)

The assumptions for external RPS resource scheduling into the CAISO balancing area are reasonable.⁶ The 2012 LTPP changes (vs. the 2010 LTPP parameters also listed on slide 20) effectively recognize that out-of-state resources (in this case, RPS resources) may be more likely to take advantage of 15-minute scheduling timeframes than was presumed at the time of the 2010 LTPP modeling.⁷ With this change, the Step 1 statistical modeling will account for the more granular scheduling of out-of-state renewables; this will have an effect on the key output from the Step 1 process, the computation of load-following and regulation resource requirements that are an input into the PLEXOS modeling (Step 2). These assumptions reflect the output characteristics of resources, rather than how the resource is accounted for RPS compliance. It does not appear that additional RPS clarification is necessary for the Step 1 process.

3. Potential over-generation assessment seems premature. (Question 3)

First, we note that preliminary results find that no over-generation instances occurred during either the July or March modeled months.⁸ While there was some expression of concern over potential over-generation at the 4/24/2013 workshop, it is not clear that any deeper analysis of over-generation is necessary for the modeling process in this cycle, other than to consider whether export limitations should be imposed on the model. If CAISO or other parties provide evidentiary support for export limitations, then they should be considered. If such evidence is provided, it should clearly state the reasons for export limitations, the time periods they would be in effect, and the particular paths or lines

³ D. 13-03-029, pp. 13-14.

⁴ D. 13-03-029, Ordering Paragraph 3, p. 27.

⁵ D. 13-03-029, Ordering Paragraph 1, p. 26; Finding of Fact 2 at p. 22.

⁶ Slide 20 of CAISO's 4/24/2013 PowerPoint presentation.

⁷ Slide 20 of CAISO's 4/24/2013 PowerPoint presentation.

⁸ Slide 32 of CAISO's 4/24/2013 PowerPoint presentation.

they apply to. Stakeholders should have the opportunity to review the data. DRA notes that in reality the flow of imports and exports is primarily a wholesale market issue that the PLEXOS modeling engine itself is well-positioned to handle without artificially constraining the ability for lower-priced CAISO region power (i.e., during relatively low load and high renewable generation periods) to flow out of the region (i.e., exports) when market conditions call for it. The PLEXOS construct allows unit commitment and dispatch decisions in neighboring regions to be directly modeled (those parameters affect the ability of CAISO-region power to be exported in the model), and thus no additional over-generation assessments are necessary.

ADDITIONAL COMMENTS

4. The difference between instantaneous and average hourly peak load must be accounted for when determining modeled load and Load Following Up requirements.

The preliminary results present data for one day in July 2022 – the day in which modeled load is at its peak value (7/22/2022).⁹ On this day, the “upward reserve” quantity appears to remain relatively constant during the period of time when load is at its peak – for the year. We note that the model has perfect foresight concerning the hour when this peak load value will occur. The intent of carrying additional “load following up” reserve (beyond reliability reserves required to meet Western Electricity Coordinating Council (WECC) requirements)¹⁰ is to allow for intra-hour variation around the modeled peak-hour load. To the extent that instantaneous hourly peak load and not average hourly peak load is used, the load following requirement for that hour must be reduced. It is imperative that “average hourly load” for the peak hour be used in the model as long as load following reserve amounts are applied for that peak hour.

5. The Southern California Import Transmission (SCIT) tool must be vetted before allowing its use in PLEXOS.

CAISO introduces a new tool for use in this years’ LTPP modeling – reflecting Southern California Import Transmission (SCIT) constraints.¹¹ This tool should only be used in this modeling effort if there is transparency of the tool’s function and configuration. DRA presumes that stakeholders will have the opportunity to discuss the way in which the tool will be used, what its parameters are, and how changing market and grid conditions can affect when this constraint may be binding in the model. In general, it is important to properly, consistently, and comprehensively characterize how changes in generation availability, reactive power supply sources and transmission modifications will affect the overall SCIT constraint. If stakeholders are not allowed to review and comment on this tool, it should not be included in this modeling effort. This tool could have the effect of adding overly conservative assumptions into this model. In particular, as once-through cooling (OTC) resource retirement is modeled within the SCIT tool, both likely and projected additions that reinforce the stability of the grid

⁹ Slide 31 of CAISO’s 4/24/2013 PowerPoint presentation.

¹⁰ Slide 11 of CAISO’s 4/24/2013 PowerPoint presentation.

¹¹ Slide 23 of CAISO’s 4/24/2013 PowerPoint presentation.

(including but not limited to conversion of OTC generators to synchronous condenser operation) must also be included or else the SCIT constraint may be too stringent.

6. Further clarity is needed to determine how Demand Response will be modeled in PLEXOS.

Demand response resources can play a critical role in providing flexibility to grid operation. DR resources can be explicitly modeled in PLEXOS. DRA would appreciate guidance from Commission staff to stakeholders as to how the DR in the Track 2 scenarios will be modeled. By 2022, DR resources procurement and implementation will have already undergone at least two major periods of program design, refinement and implementation, with the next three-year cycle for DR procurement (2015-2018) commencing in 2014. It is reasonable to conclude that by 2022, DR resources in the aggregate will have attained a high degree of controllability, and DR programs will have been fully informed by CAISO system needs for flexible and dispatchable resources. It is reasonable to expect that 2020 DR resources will contribute towards meeting system ramping needs. The modeling of these resources for 2022 in this 2012 LTPP must not underestimate those contributions. The “Event-based Demand Response” resources described in the LTPP 2012 Scenarios Decision¹² must be fully reflected in the PLEXOS modeling. Details on DR configuration and what operational characteristics are input into PLEXOS are unavailable as of this comment filing. It is critical that the full level of projected DR, as reported in the June 1, 2012 Load Impact Reports, is made available to the PLEXOS modeling. The relative “dispatchability” of this resource must be considered and included in the PLEXOS model. In addition, “inflexible” DR should be recognized in the model as a resource that can replace flexible generation as a non-spinning resource. “Inflexible” DR should be modeled as providing all or part of 3% of operating reserves whenever the resource is available.

7. When adjusting scheduling intervals from hourly to 15-minute intervals, it is important to have concurrent tie flow data to see how much Load Following Up shortfall the interties could provide.

The workshop presentation indicated that CAISO plans to keep the hourly interval in the Step 1 calculation.¹³ This means that the load-following (LF) and regulation reserve capacity that is added to PLEXOS as an additional capacity requirement for all hours of the year will reflect capacity needed to address intra-hour deviations arising from the combination of forecast load, wind and solar resources. PLEXOS will not explicitly consider the ability of intertie resources that could schedule into CAISO in 15-minute intervals as providing a form of intra-hour ramp that would otherwise lower the LF and regulation requirement seen by the PLEXOS model. Thus, it is critical that all results of the PLEXOS modeling that show “need” based on a violation of the LF constraint be interpreted carefully: such situations do not automatically indicate a need for additional CAISO-region resources, such as new gas turbines. For example, as long as transmission import capacity exists into CAISO during any period when a violation may occur, this implies that external resources, acting in response to market energy price signals (which will be at 15-minute intervals, if not shorter time-period intervals by 2022 – for PacifiCorp

¹² D. 12-12-010.

¹³ Slide 37 of CAISO’s 4/24/2013 PowerPoint presentation.

resources, they will be available at 5-minute intervals¹⁴) could be available to meet at least part of the ramping requirement.

8. Incremental Preferred Resources should be added as model inputs to the Replicating Transmission Planning Process (TPP) scenario.

DRA supports a consistent approach to modeling for the TPP scenario. It is our understanding that in the newest transmission planning process, the CAISO will use incremental preferred resources as inputs. DRA would expect, and would support the use of similar modifications to the forecast load and supply resources for the TPP scenario in this 2012 LTPP.

9. The modeling assumptions should be transparent and provided as soon as possible.

All input data used in the Step 1 (statistical) model and the Step 2 (PLEXOS) model must be made available to stakeholders as soon as possible, similar to what was provided during the 2010 LTPP. The final PLEXOS input file must also be made available, as DRA will use PLEXOS during the 2012 LTPP process. DRA expects that the input data will reflect the CPUC's Final Track 2 Decision on scenarios and assumptions,¹⁵ but until the actual input data is made available the modeling inputs cannot be verified and the modeling results cannot be replicated.

10. Stochastic Modeling should be used efficiently to supplement the PLEXOS runs.

Performing stochastic modeling for a selective subset of time periods (e.g., peak summer week, off-peak high renewable generation period) would be sufficient to determine the extent to which variable generation output integration concerns exist on the CAISO system during relatively extreme operational periods. There is no need to conduct stochastic modeling to cover all 8,760 hours of the year. DRA notes that current information on stochastic model inputs themselves for the year 2022 will be highly uncertain. While it is important to use the best available current information to assess the probabilistic nature of critical modeling inputs, with each passing LTPP cycle we will learn more about the actual operational patterns associated with higher levels of renewable energy penetration. DRA supports ongoing exploration of renewable energy impacts on the grid using stochastic modeling, but urges caution in the interpretation of such results.

11. Current modeling of the ramp rate of the existing and future thermal fleet may underestimate actual ramping capability that currently exists on the grid.

DRA notes that the current representation of "flexible" capability of the existing thermal fleet of resources may underestimate the fleet's capability in the presence of stronger price signals and/or additional revenue potential from both wholesale spot market changes and flexible RA capacity product structures. Currently-incorporated planned outage times may also change as market price signals are made available for flexibility characteristics. DRA supports the CAISO's plan to optimize planned outages.¹⁶ As these anticipated revenue stream sources come into place, it is imperative that CAISO

¹⁴See MOU, Exhibit B, p. 1. http://www.caiso.com/Documents/ISO-PacifiCorpMOU_Effective20130212.pdf.

¹⁵D.12-12-010.

¹⁶Slide 43 of CAISO's 4/24/2013 PowerPoint presentation.

revisit the data that exists in the CAISO Master File to ensure proper characterization of the capability of the existing fleet as used in the LTPP modeling. Since these data have the potential to reduce the need for new resources to provide required flexibility, the Commission should be explicit that procurement of new generation is not the only interpretation of a finding of need from the model results.