BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans	Rulemaking 13-12-010 (Filed December 19, 2013)

REPLY COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

Pursuant to the Administrative Law Judge's (ALJ's) February 8, 2016 Ruling Seeking Comment on Assumptions and Scenarios for Use in the California Independent System Operator's 2016-17 Transmission Planning Process and Future Commission Proceedings (Ruling), the California Independent System Operator Corporation (CAISO) hereby files the following reply comments. On February 22, 2016, parties to this proceeding provided opening comments on the assumptions and scenarios proposed by the California Public Utilities Commission (Commission). The CAISO addresses the issues raised in opening comments in the context of the questions posed in the Ruling.

I. Introduction

The CAISO appreciates the Commission's continued effort to develop common assumptions and scenarios for use in the Commission's planning and procurement processes and the CAISO's transmission planning process. The assumptions and scenarios developed by the Commission staff represent a significant amount of work that provides tangible benefits in appropriately planning for system needs. The proposed scenarios and assumptions provide a well-thought out path to address accelerated policy goals, while preserving the fundamental work planning and procurement work conducted to achieve the 33% renewable portfolio standard. In the sections below, the CAISO addresses the opening comments of parties submitted on questions 1-7 of the Ruling.

1. Is a high additional achievable energy efficiency (AAEE) trajectory, representing a doubling of AAEE by 2030, as proposed, reasonable? If not, what alternative methodology or AAEE adoption curve would be more reasonable and why?

In opening comments, parties generally agreed with the AAEE doubling methodology proposed in the Ruling, but many cautioned that actual progress toward the

AAEE goal should be closely monitored. As noted by several parties in opening comments, Senate Bill 350 establishes an aggressive, but qualified goal of doubling energy efficiency by 2030. While the "hockey stick"[1] ramp up in AAEE proposed in the Ruling appears reasonable, the CAISO believes that further guidance from the California Energy Commission (CEC) is needed to determine how the doubling of AAEE will be implemented and modeled in future studies that lead to actual procurement, approval, or review of transmission solutions. CEC input is particularly important in this case because Senate Bill 350 specifically provides that energy efficiency targets should be set based on cost effectiveness and feasibility on an individual utility basis.[2] The legislation also provides that energy efficiency savings should come from both end use electric and natural gas customers. The details regarding the eventual implementation of the AAEE target will significantly affect the demand forecast and the procurement and planning conducted by the Commission and the CAISO. As a result, the CAISO believes the Ruling appropriately notes that the Infrastructure Investment Scenario the CAISO will use in its transmission plan will incorporate the existing Mid AAEE scenario without doubling.

In the Infrastructure Investment Scenario the CAISO will use in 2016-17 transmission planning process, it is appropriate to use the Mid AAEE scenario, without any modifications to double AAEE pursuant to Senate Bill 350. This is consistent with the Commission's Ruling and staff's expressed intent not to generate a portfolio that may lead to new transmission development or a forced re-examination of previously approved transmission investment decisions until more information is available.[3] In this case, CEC input on the implementation and modeling of the AAEE target is necessary prior to triggering new transmissions solutions or reviewing the need for previously approved solutions. This approach is also consistent with the 2015 IEPR final report, adopted by the CEC on February 10, 2016, which recommends using the Mid AAEE scenario for

[1] *See* Opening Comments of the Natural Resources Defense Council, p. 7.
[2] Senate Bill 350, Section 6.
[3] *See* Ruling, Attachment Draft Planning Assumptions & Scenarios Update For The 2016 Long Term Procurement Plan Proceeding And The CAISO 2016–17 Transmission Planning Process, p. 54-55.

system-wide and flexibility studies for the CPUC long-term procurement plan and CAISO transmission planning process cycles.

Second, the CAISO supports the Ruling requirement that studies use the 8760 hour load profiles as adjusted by 8760 hour AAEE load shapes developed by the CEC.[4] The CAISO also recommends that the Commission include the 8760 AAEE load shapes developed by the CEC in the Scenario Tool. Development of the 8760 hour AAEE load shapes further underscores the importance of using CEC input to determine how the doubling of AAEE will be implemented. The CEC needs the opportunity to study how the increase in AAEE will affect the 8760 hour load shapes and, in turn, how the AAEE will drive future planning and procurement decisions.

2. Are updates to the demand-side and supply-side assumptions reasonable and accurate? Please specify any assumptions that should be revised and provide a detailed justification supporting the revision.

The CAISO believes that the demand and supply-side assumptions are generally reasonable and accurate. In opening comments, Southern California Edison Company (SCE) identified an issue regarding the accuracy of the 2015 mid-load IEPR demand forecast without adjusting SCE's peak due to the shift in the net peak demand hour caused by the increased penetration of photovoltaic (PV) distributed generation. The CAISO shares SCE's concerns regarding modeling the shift in net peak load caused by increasing PV distributed generation, but believes that the CEC, in conjunction with other stakeholders, should develop and implement a methodology to capture the PV peak shift impacts.

The CAISO will use the single forecast set (SFS) and AAEE scenarios in its base case transmission planning analysis and will conduct load sensitivities to comply with the NERC TPL-001-4 mandatory reliability standard. This standard requires the CAISO to conduct load sensitivities, and uncertainties on this issue can be addressed through this broader framework. In the 2015 California Energy Demand (CED) forecast, the CEC acknowledges that the need to address the PV peak shift:

> At some point, continued growth in PV adoption will likely reduce demand for utility-generated power at traditional peak hours to the point where the hour of peak utility demand is pushed back to later in the day.

[4] *Id*. p. 13.

> This means that future PV peak impacts could decline significantly as system performance drops in the later hours. This possibility has not been incorporated into the demand forecast through CED 2015, since staff has not yet developed models to forecast hourly loads in the long term. Staff expects to develop this capability for the 2017 Integrated Energy Policy Report (2017 IEPR), and such an adjustment to PV peak impacts could significantly affect future peak forecasts.[5]

The CAISO agrees with this assessment and looks forward to working with the CEC to develop PV peak shift impacts for future studies.

Several parties also take issue with the frequency response requirement. The CAISO believes that some clarification is warranted. Section 4.2.14 accurately describes the replacement of the local generation requirements of SCE, SDG&E and CAISO with the CAISO system-wide frequency response requirement. As stated in this section, the NERC BAL-003-1 requires the CAISO to maintain a 752 MW frequency response obligation. 50% of this requirement can be met through hydro resources. The remaining 50% can be met through storage or combined cycle resources, assuming such resources have sufficient headroom. Combined cycle units provide 0.8 MW toward the frequency response obligation for each MW of online capacity. Section 4.2.14 accurately captures this information, but other portions of the assumptions and scenarios state that the frequency response obligation must be met by 4800 MW of online combined cycle resources. For example, Table 11 on page 52 refers to "Local Frequency Restraints" to be met with "4800 MW combined cycle + 365 MW hydro."[6] This, and other similar references should be updated to conform with the narrative in Section. 4.2.14.

[5] CEC California Energy Demand 2016-2026, Revised Electricity Forecast Volume 1: Statewide Electricity Demand and Energy Efficiency, January 2016, http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-03/TN207439_20160115T152221_California_Energy_Demand_20162026_Revised_Electricity_Forecast.pdf, p. 37.

[6] The assumptions and scenarios also refer to the 4800 MW combined cycle requirement on p. 56.

3. How should exports be treated for modeling purposes? Should we assume no net exports?

The Ruling specifically states that in the 2016 LTPP, there should be study assumptions that California "may" export energy. Many parties expressed support for this proposal, with varying levels of proposed net export capability. The CAISO generally agrees that net export capability should be increased above zero, despite the fact that historical practice shows that the CAISO is a consistent net importer, even when every prices are negative. However, with the expansion of the energy imbalance market and the potential expansion of the CAISO-controlled grid, there may be additional opportunities to export energy. In this context, the CAISO believes that it is appropriate to model a maximum of 2000 MW of net exports from the CAISO. In addition, in the Interregional Transmission Planning Scenario, the CAISO agrees that an increased net export amount should be analyzed. As was pointed out by many parties to this proceeding, the 2000 MW net export limitation corresponds to the base case net export level to be studied in the CAISO's regional integration studies required by Senate Bill 350. This assumption represents a reasonable base case that will require significant but achievable increases in export capability.

4. Do the ten proposed scenarios provide useful information for decision makers? Are there other scenarios that should be modeled instead or in addition?

The CAISO generally agrees with commenters that the selected portfolios will be useful for decision makers. The CAISO also agrees with those commenters recommending that the Interregional Transmission Planning Coordination Scenario be renamed because the variation presented in that scenario does not reflect increased transmission planning coordination. Instead, the scenario should be renamed as the Interregional Coordination Scenario.

Also, the CAISO notes that several parties suggested that a risk-of-retirement scenario be studied.[7] The CAISO agrees that there is a potential for the economic early retirement of gas generation as a result of the increasing levels of renewable generation

[7] Comments of Diamond Generating Company on Assumptions and Scenarios, p. 4-7; Comments of Calpine Corporation on Assumptions and Scenarios, p. 3.

interconnecting to the electrical grid. The CAISO also agrees that this potential requires additional study. To that end, the CAISO intends to study an economically-driven retirement of gas sensitivity as part of its 2016-17 transmission plan, as noted in the recently released draft study plan.[8] The purpose of this study is to assess the early retirement scenarios to identify if there are any reliability impacts associated with the early retirement of gas generation on the CAISO controlled grid

5. Assuming not all scenarios will be modeled, in what order of priority should the scenarios be studied?

The CAISO agrees with the comments submitted by PG&E that it is important to study the Infrastructure Investment Scenario as the base case in the CAISO's transmission planning process. The CAISO reiterates that the Investment Infrastructure Scenario assumes the Mid AAEE scenario, without any modifications to double AAEE pursuant to Senate Bill 350

6. Is using a default scenario based on a 43.3% Renewable Portfolio Standard (RPS) in 2026 and doubling AAEE per Senate Bill 350 by 2030 – but interpolated to a 2026 AAEE amount for 2016 LTPP purposes - reasonable?

Parties were generally supportive of using a 43.3% RPS in 2026 in order to meet 2030 RPS requirements. The CAISO believes that a 50% RPS scenario should be used in the 2026 studies conducted in this proceeding. By modeling a scenario that more accurately reflects the end goal of the RPS, the Commission and parties will get a more accurate picture of end-state system needs that can then be "dialed back" to adjust for intervening year requirements. This approach is especially warranted in this case because expected slow load growth between 2026 and 2030 will cause minimal changes in system requirements. Instead of studying a somewhat arbitrary 43.3% goal, studying the actual statutory RPS goal contained Senate Bill 350 will provide real insight into the system need to meet the 50% renewable goal.

The CAISO discussed the role of AAEE in the scenarios in Section 1 above and does not reiterate that discussion here.

[8] See CAISO Draft 2016-2017 Transmission Planning Process Unified Planning Assumptions and Study Plan, http://www.caiso.com/Documents/Draft20162017StudyPlan.pdf, p. 51.

7. **Is re-using a 2015-16 CAISO transmission planning process 33% RPS portfolio in the CAISO 2016-17 transmission planning process study appropriate? (Staff's intent is to avoid evaluating transmission needs based on speculative resource portfolios.)**

Several parties took issue with the use of the 33% RPS portfolio in the CAISO's 2016-17 transmission planning process. The CAISO strongly supports staff's recommendation to use the 33% RPS portfolios for the 2016-17 transmission plan. Changing the portfolios used to plan the 33% RPS goals at this point will cause the CAISO to revisit already approved transmission solutions designed to meet the 33% RPS goal. This would in turn cause serious industry uncertainty regarding the state of already approved transmission solutions. The CAISO clarifies that new RPS portfolios are appropriate for analyzing how to move beyond the 33% RPS to the 50% RPS goal contained in Senate Bill 350 because such analysis will not upset previously approved planning decisions.

II. Conclusion

The CAISO appreciates this opportunity to offer comments and looks forward to continuing cooperation with the Commission and stakeholders in developing the resources necessary to meet the state's ambitious goals for a low-carbon grid.

Respectfully submitted,

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