BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Develop An Electricity Integrated Resource Planning Framework and to Coordinate and Refine Long-Term Procurement Planning Requirements.	Rulemaking 16-02-007 (Filed February 11, 2016)

COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

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Pursuant to the Joint Administrative Law Judges' Ruling Seeking Comment on Staff Proposal on Process for Integrated Resource Planning (Ruling), the California Independent System Operator Corporation (CAISO) provides comments in response to specific questions posed in the Ruling. The Ruling requests input on the May 17, 2017 Staff Proposal for Implementing Integrated Resource Planning at the CPUC (Staff Proposal) prepared by the Energy Division in Rulemaking 16-02-007.

I. Introduction

The CAISO appreciates the opportunity to comment on the Staff Proposal. It is evident that significant work and thought has been put into the Staff Proposal. The CAISO looks forward to working with Energy Division Staff, the Commission, and stakeholders in the integrated resource planning (IRP) process and also looks forward to providing the CAISO's reliability analysis in the IRP proceeding to add to the record. As described in more detail in the CAISO's answers to questions posed in the Ruling, there are important reliability issues to be discussed at a high level and, separately, more detailed analyses that should be addressed in the Modeling Advisory Group.

II. Discussion

In the discussion below, the CAISO reproduces specific questions posed in the Ruling together with the relevant CAISO answers.

Q1. ***<u>Guiding Principles.</u> Are the guiding principles for IRP articulated in Chapter 1 of the Staff Proposal adequate and appropriate for Commission policy purposes? What changes would you recommend and why?***

The CAISO appreciates that the Commission has revised the Guiding Principles to include ensuring electric grid reliability (Revised Guiding Principle #1). Maintaining electric reliability is foundational to all of the state's policy goals. As noted in the CAISO's August 31, 2016 informal comments on Staff's Concept Paper,[1] the CAISO strongly agrees with Guiding Principle #6, which seeks to maintain process alignment amongst state planning processes. The CAISO, the Commission, and the California Energy Commission (CEC) expended considerable efforts to ensure that the state planning processes are properly aligned, especially with respect to the use of common inputs and assumptions in the planning processes. The CAISO recommends that Guiding Principle #6 should be modified to specifically acknowledge the fundamental role that the CEC's Integrated Energy Policy Report (IEPR) demand forecast plays in providing a common foundation for planning processes, including the IRP. Please also see the CAISO's response to Question 35 below.

Q3. ***<u>Overall IRP process.</u> Comment on the overall IRP process proposed in Chapter 2 of the Staff Proposal, beginning with the California Air Resources Board (CARB) establishing greenhouse gas planning targets for the electricity sector and ending with the Commission procurement and policy implementation. What changes would you recommend and why?***

External process alignment with the CEC's IEPR managed forecast is a foundational issue underlying the overall proposed IRP process. This demand forecast, which includes demand-side load modifiers such as energy efficiency, demand response and electric vehicle charging, is used in the CAISO's Transmission Planning Process (TPP) and, as such, any supply-side portfolios should be aligned with those used in the IRP. Please also see the CAISO's response to Question 35 below.

[1] Available at http://www.caiso.com/Documents/Aug31_2016Pre-WorkshopComments-IntegratedResourcePlanning_R16-02-007.pdf).

The CAISO seeks clarification on the intent and purpose of the Reference System Plan as discussed in the high-level steps referenced in Chapter 2 of the Staff Proposal. In Step 3, "LSEs Develop Plans," the Staff Proposal clearly states that the "Reference System Plan adopted by the Commission forms the basis for subsequent modeling or other analytical work by LSEs to develop their respective LSE plans."[2] Step 2, "CPUC Adopts Reference System Plan and LSE Filing Requirements," also notes that the Reference System Plan "may be used to inform the CAISO TPP."[3] However, Step 4, "CPUC Reviews LSE Plans," states that the "Commission votes on the aggregate portfolio and corresponding short-term actions to serve as the "Preferred System Plan," formally replacing the Reference System Plan in that IRP cycle.[4]

First, CAISO would like Energy Division Staff to clarify what is meant by "inform the CAISO TPP" and whether the Reference System Plan results in policy direction sufficient to support new transmission projects. Second, if the Reference System Plan is intended to be replaced by the Preferred System Plan, then only the Preferred System Plan should be used as the basis for policy driven projects in the TPP. In fact, as noted in Step 5, "IRP Implementation," only the Preferred System Plan will be used as the basis to authorize new procurement. If the CAISO were to use both plans (*i.e.*, the Reference System Plan in one year and the Preferred System Plan in the next) but the plans have significantly different supply-side buildouts, this could lead to churn in the TPP, impacting the stability needed for long lead-time asset planning. Furthermore, when projects proceed through the permitting process, the differences in assumptions could lead to regulatory risk. Material differences between the Reference and Preferred System Plans may be limited to the first 2017-2018 cycle, and the plans may converge after several iterations, but not necessarily. A process would need to be developed to allow for reconciliation or provide regulatory approval to use one plan versus another.

The Staff Proposal notes that the Reference System Plan may be used to "justify a new track or proceeding to further explore any capital intensive, long-lead time resources indicated to be beneficial."[5] The CAISO agrees with this approach as those projects may require additional consideration outside the scope of IRP. However, a process should be developed to incorporate the results of the separate track or proceeding back into the core IRP proceeding.

[2] Staff Proposal, p. 22.
[3] Staff Proposal, p. 21.
[4] Staff Proposal, p. 21.
[5] Staff Proposal, pp. 21-22.

The IRP is proposed as a two year cycle. The CAISO notes that more time will likely be needed to vet through both assumptions and outputs, ensure sufficient stakeholder engagement and review, and, especially in the first few cycles, additional time to work through unexpected challenges or outcomes. Please also see the CAISO's response to Questions 11, 12, and 22 below.

Q4. <u>2017-2018 IRP process.</u> Do you support the Staff Proposal's characterization of the purpose and outcomes of the first round of IRP in 2017-2018? Why or why not?

The CAISO generally supports the characterization of the 2017-2018 IRP cycle as a way to "demonstrate the feasibility of the proposed process"[6] so that "lessons learned from this first cycle will be incorporated into a revised, multi-year IRP process, beginning in 2019 and operating over a two-year cycle."[7] However, the CAISO seeks clarification on an apparent discrepancy. In the introduction to Chapter 2, the Staff Proposal notes that for the 2017-2018 cycle, "the Preferred System Portfolio will generally serve to provide non-binding information to individual resource proceedings, which will continue to be responsible for planning and implementing their respective programs."[8] At the end of Chapter 2, the Staff Proposal suggests that the "Preferred System Portfolio generated in 2018, moreover, is expected to inform the CAISO TPP and procurement and infrastructure authorizations to the extent feasible and appropriate."[9] If the 2018 Preferred System Plan is non-binding for individual resource proceedings, then there is a risk that any CAISO transmission plan based on the 2018 Preferred System Plan may not correlate with the supply plan it is intended to interconnect. Similarly, the Staff Proposal notes that the 2017 Reference System Plan is "a benchmark for [LSEs to generate] their own preferred portfolio" that would in turn need to be evaluated and obtain Commission approval.[10] If that is the intent and process, then any transmission plan approved on the basis of the 2017 Reference System Plan would be quickly superseded by the 2018 Preferred System Plan. If the two plans have significantly different supply-side buildouts, this could lead to unnecessary churn in the TPP, impacting the stability needed for long lead-time asset planning.

[6] Staff Proposal, p. 20.
[7] Staff Proposal, p. 24.
[8] Staff Proposal, p. 20.
[9] Staff Proposal, p. 24.
[10] Staff Proposal, p. 20.

The CAISO appreciates the Staff Proposal's recognition of the importance of internal and external process alignment as noted in the last bullet in Chapter 2 and described in detail in Chapter 7. The CAISO believes that a fundamental task of the 2017-2018 IRP cycle should be alignment with external processes, especially the IEPR forecast developed by the CEC. As noted later in the Staff Proposal, given the currently proposed process, the first opportunity to align the IRP with the IEPR is in 2019. If there are delays or if processes are not appropriately aligned, the next opportunity may not present itself until 2021 (*i.e.*, the next full IEPR cycle.)

Q6. LSE-specific GHG emissions targets.

- ***a. Do you support dividing electric sector responsibility between publicly-owned utilities (POUs) and LSEs regulated by the Commission, as suggested in the Staff Proposal? Why or why not?***
- ***b. Is further differentiation of GHG emissions responsibility by LSE based on an overall sectoral marginal GHG abatement cost curve or planning price reasonable? Why or why not?***
- ***c. What challenges might individual LSEs encounter in preparing their portfolios based on a marginal GHG abatement planning price? How might those challenges be overcome?***
- ***d. If you recommend a different approach to setting LSE specific GHG emissions targets, please describe it in detail.***

It is unclear how the Commission will "require LSEs to use the (CAISO-wide) marginal GHG abatement cost (or "GHG Planning Price") of meeting the 2030 electric sector target as a constraint in developing their portfolio,"[11] and how that will produce the right amount of mass-based emissions for each Load Serving Entity (LSE) in 2030. Each LSE may have its own marginal GHG abatement cost that differs from that of other LSEs if a mass-based emission target constraint is enforced in the individual LSE's modeling. The difference in the GHG Planning Price reflects the differences in the LSEs' portfolios. It is not necessary, even if possible, to require all LSEs to have the same marginal GHG Planning Price. What is important is that LSEs generate correct amount mass-based emissions in developing their individual portfolios. The CAISO recommends that in the 2017-18 IRP that the Commission should divide

[11] Staff Proposal, p. 30.

the CAISO-wide mass-based GHG planning target among the LSEs by their load (GWh) ratios. That means all LSEs' loads have the same (CAISO-wide average) GHG contents. Each LSE would then enforce a mass-based emission target constraint in modeling to develop its preferred plan.

Q7. <u>Modeling in 2017-2018.</u>

a. Do you support use of the RESOLVE modeling approach for development of a Reference System Plan in 2017-2018? Why or why not?

Chapter 2 of the Staff Proposal states that "[i]f the aggregate portfolio and corresponding short-term actions are reasonably consistent with the Reference System Plan and with state goals, the CPUC approves (or 'certifies' in the case of CCAs) the individual LSE Plans. The Commission votes on the aggregate portfolio and corresponding short-term actions to serve as the 'Preferred System Plan,' formally replacing the Reference System Plan in that IRP cycle."[12] Therefore, the Staff Proposal indicates that the RESOLVE model will eventually produce the Preferred System Plan, or a standard for it.

From the CAISO's experience, RESOLVE is an effective screening tool to develop a short-list of scenarios for further analysis, as an example. The RESOLVE model was used in CAISO's Senate Bill 350 analysis on the impact of a regional independent system operator power market to develop plausible renewable energy portfolios.[13] However, to better understand the reliability impacts of the RESOLVE portfolios, the CAISO relied on a separate model to conduct detailed reliability analysis over all 8760 hours in a year using production cost simulations of the entire western power grid. The table below outlines some of the major differences between the two models.

Models used in the "Impacts of a Regional ISO-Operated Power Market on California"

	RESOLVE	**Power Systems Optimizer****
Type of model	Portfolio analysis	Production cost model
Most suited for	Scenario or portfolio screening.	Detailed reliability analysis. Regularly used for regional

[12] Staff Proposal, p. 22.
[13] See page I-6 in Senate Bill 350 Study, "The Impacts of a Regional ISO-Operated Power Market on California," http://www.caiso.com/Documents/SB350Study-Volume1Purpose-ApproachandFindings-MainReport.pdf

	RESOLVE	Power Systems Optimizer**
		transmission and generation resource planning.
Granularity – time span	Models 37 "representative" days and extrapolates those results over a single year. This analysis can be replicated over multiple years.	Models all hours in a year (8760 hours) chronologically and analysis can be replicated over multiple years.
Granularity - spatial	Zonal	Zonal/Nodal
Optimization	Co-optimizes investment and dispatch for least-cost portfolios. Does not utilize unit commitment methodology.	Based on security-constrained least-cost unit commitment and dispatch.
Results	An approximation for scenario screening.	Detailed to address reliability needs
**Power Systems Optimizer is one software tool. Others which are frequently used include: GridView, Promod, GE-MAPS, Plexos, and Dayzer.		

As noted in the Staff Proposal, RESOLVE will model the CAISO as one large "zone" without transmission detail within the footprint. Demand-side load modifiers and supply-side resources are applied uniformly across the CAISO load and RESOLVE "does not offer insight into where those resources are most likely to be developed or whether they are more likely to be developed inside or outside" of more granular footprints.[14]

The Staff Proposal notes in Box 4.2 "Reliability in IRP Modeling" that "RESOLVE addresses any flexibility problems it encounters by making an economic decision about whether to curtail existing resources, or add new resources to the system, depending on which option results in the lowest costs."[15] While the CAISO supports this general approach, it is important to note that the economic procurement decisions should be made based on rigorous simulations using a production cost model with a greater level of granularity.

b. If you prefer an alternative approach, describe it in detail.

Ideally, procurement decisions should be made based on the outputs of a production cost simulation model that has more granular details as suggested above. The CAISO appreciates the

[14] Staff Proposal, p. 46-47.
[15] Staff Proposal, p. 37.

Staff Proposal's expectation that "[a]dditional, more detailed modeling may be necessary for confirming that the Reference System Plan, LSE Plans, and Preferred System plan meet all relevant reliability standards, including local reliability needs."[16] The CAISO believes it is definitely necessary to conduct more rigorous reliability based production cost simulations to confirm the Preferred System Plan and looks forward to collaborating with the Commission and other stakeholders in the IRP Modeling Advisory Group. In this forum, the CAISO can provide its reliability modeling analysis and expertise. The Modeling Advisory Group will serve as a forum to discuss details of the modeling work. Additionally, the CAISO would like to engage the Commission and other stakeholders at a higher level discussion about reliability modeling and processes that would set the direction for the Modeling Advisory Group.

However, to address the concerns presented in the answer to Question 7a, the CAISO proposes the following two alternative approaches:

- The Commission can use the RESOLVE model to develop the Reference System Plan, but not as the standard to evaluate the LSE Plans and the aggregate portfolio. Instead, the Commission should use rigorous reliability-based production cost simulations to assess the LSE Plans and the aggregate portfolio to determine whether they meet the state goals; or
- The Commission can use the RESOLVE model to generate portfolios as inputs for production cost simulation modeling. The Commission can then pick the optimal portfolio from the production cost simulation outputs that meets all state goals as the Reference System Plan. The Reference System Plan can be used as the standard in evaluating the LSE Plans and the aggregate portfolio. The same production cost simulation model should be used in evaluating the individual LSE Plans and the aggregate portfolio.

Q9. <u>Modeling Assumptions.</u> Do you have any specific changes to recommend to the modeling assumptions detailed in Chapter 4 and Appendix B of the Staff Proposal and the associated spreadsheet Scenario Tool? What are they and why? Indicate a publicly-available source of your recommended assumptions.

[16] Staff Proposal, p. 37.

Net Export Limit - The Staff Proposal assumes a net export limit of 5,000 MW and cites the CAISO's "Impacts of a Regional ISO-Operated Power Market on California" study on a regional grid.[17] Later, the Staff Proposal notes that CAISO "regionalization" is not specifically proposed as an alternative future for study in IRP 2017-18.[18] The CAISO clarifies that if regionalization is not an alternative future, then the net export limit should be 2,000 MW.

Effective Load Carrying Capability (ELCC) – The CAISO would like to understand better how the Effective Load Carrying Capability method used in RESOLVE differs from the methodologies currently contemplated in the Commission's resource adequacy proceeding.

Planning Reserve Margin – the Staff Proposal uses planning reserve margin to represent the system resource need.[19] In the later released "Answers to emailed technical questions" it was stated that "Forced outage rates are not considered in the operational module of RESOLVE … The assumed impact of forced outages on reliability is implicitly captured in the enforcement of a 15% PRM constraint, which ensures that sufficient capacity is available to meet peak demands in spite of some probability of resource outages." [20] The CAISO has found through a series of studies that a planning reserve margin is not an accurate measurement of system resource need in today's system with significant amounts of renewable penetration. Also the ELCC values of resources do not seem to be consistent among the various studies. The CAISO suggests not using the planning reserve margin to represent the system resource need. The system resource need should be determined through rigorous reliability-based production cost simulations that consider system requirements on a more granular basis.

Demand Response – The CAISO seeks clarification on how Demand Response-Shift, or DR-Shift (Advanced) resources are being considered as technical and regulatory barriers still exist. Some discussion of this has occurred in the CAISO's Energy Storage and Distributed Energy Resources Phase 2 stakeholder initiative.[21]

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[17] Staff Proposal, p. 40.
[18] Staff Proposal, p. 42.
[19] Staff Proposal, p. 37 (See Box 4.2 "Reliability in IRP Modeling").
[20] http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6442453818
[21] See discussion in section 6.1 in: http://www.caiso.com/Documents/DraftFinalProposal-EnergyStorage_DistributedEnergyResourcesPhase2.pdf.

Q10. <u>Modeling outputs and metrics.</u> Are the modeling outputs and metrics in Chapter 4 of the Staff Proposal reasonable? What changes would you suggest and why? Be as specific as possible about how to quantify your recommended metrics.

The CAISO seeks clarification regarding what metric #4 ("reserve margin (as %)") is meant to reflect. The Staff Proposal notes that "[s]ystem resource needs are represented as a mandatory planning reserve margin of 15%. If insufficient resources are available to meet the planning reserve margin, RESOLVE will add resources until the reserve margin requirement is satisfied."[22] The CAISO requests clarification regarding how the output for metric #4 would deviate from 15%.

Q11. <u>Sensitivities.</u> Are the sensitivities defined in Chapter 4 of the Staff Proposal reasonable? What changes would you suggest and why?

Although the CAISO does not disagree with the sensitivities selected, as noted in response to Question 3, the large number of resultant scenarios may require more time than is currently allotted in the 2017-2018 IRP process to vet through assumptions and outputs, ensure sufficient stakeholder engagement and review, and work through unexpected challenges or outcomes. Under the current schedule, stakeholders only have one opportunity to provide comments and reply comments after the modeling results are published (August and/or September). In September, the Modeling Advisory Group will continue to meet "to discuss modeling changes needed in 2018" but there are no other listed opportunities for stakeholders to provide comments before a Proposed Decision on the Reference System Plan is issued in Fall 2017.

Q12. <u>Futures.</u> Are the alternative futures proposed to be modeled in Chapter 4 of the Staff Proposal the appropriate ones? What changes would you suggest and why?

See the CAISO response to Question No. 11, above.

[22] Staff Proposal, p. 37.

Q13. ***<u>Costs.</u> Is the cost analysis summarized in the Staff Proposal appropriate and sufficient for the Commission to assess tradeoffs among alternative futures and choose the appropriate level of GHG emissions reductions in the electric sector by 2030 for which to plan? Explain.***

The CAISO does not have a comment on the cost analysis as long as reliability is maintained from the outset. The CAISO supports the additional examination of out-of-state wind, long-duration storage, and additional geothermal resources.

Q14. ***<u>Risks.</u>***

a. Are there any other risks or criteria that should be considered in the portfolio analysis described in the Staff Proposal?

The CAISO appreciates the Staff Proposal's effort in detailing the potential risks and staff's approaches to analyze risks. The CAISO agrees with the Staff Proposal's reliance on the 2016-17 TPP local reliability requirements to ensure system and local reliability.

Q18. ***<u>Short-term investments, actions, or procurements.</u> Has staff identified the correct areas for analysis to determine the need for short-term investment or procurement activities, including: bulk storage, out of state wind, and geothermal resources? What changes or additions would you recommend and why?***

The CAISO agrees with the identified areas for analysis.

Q19. ***<u>Transportation electrification.</u>***

a. Do you support the Staff Proposal's approach to characterizing transportation electrification and the uncertainties and impacts associated with it? Explain.

b. What tools and/or data could be used to assess how electric vehicle deployment could maximize benefits to disadvantaged communities?

For Questions 19a and 19b, electric vehicle charging (and storage in general) offers an opportunity to absorb potential oversupply of carbon-free electricity. Charging behavior that is aligned to the CAISO's locational marginal prices will be able to take advantage of time- and location-specific signals. Additional analysis may require load profiles (which may be pulled from data from charging pilots), infrastructure and technology that enables day-time charging, and time-variant rates.

Q20. Reference System Plan development.

- ***a. What methodology should staff use to develop a recommendation for the portfolio to include in the Reference System Plan?***
- ***b. If you recommend a scorecard-style approach, what weight should be given to each state goal in Table 4.4 of the Staff Proposal?***
- ***c. Are there any additional criteria, apart from the goals listed in Table 4.4 of the Staff Proposal, that staff should also include? If so, why?***
- ***d. Are there any additional questions or studies that staff should address in the Reference System Plan? If so, describe each question or study and explain why you think it should be included, considering the limited time and resources available.***

The CAISO does not have a preference for either a scorecard-style or qualitative approach. It is more important to evaluate the resources actually procured rather than the Reference (or Preferred) System Plan. For example, the optimally balanced, reliable and cost-effective portfolio adopted by the Commission may be undone by individual procurements that differ significantly from the adopted plan.

Q21. LSE filing process. Do you support the approach to LSE IRP filing outlined in Chapter 5 of the Staff Proposal? Why or why not?

The CAISO generally supports the Staff Proposal's suggestion to maintain the current rulemaking as quasi-legislative proceeding to consider and set forward looking policy. This will allow for greater communication amongst stakeholders while individual applications may be

designated as rate setting. The CAISO agrees that the consolidated IRP will require "a longer response period than most single applications to the CPUC" and supports additional time for fuller stakeholder engagement as additional filings, analyses, vetting and discussion will be needed for this new process.[23]

Q22. General LSE filing requirements.

a. Are there any additional general requirements that the Commission should require LSEs to include in their IRPs?

The Staff Proposal requires LSEs to detail any modeling tools used and described the modeling approach.[24] The CAISO agrees with the need to document such information but the Staff Proposal lacks sufficient guidance on what models would be more appropriate or effective, especially with regard to reliability modeling. As the CAISO noted in response to Question 7, the Reference System Plan, because it is not based on an 8760-hour reliability-based production cost modeling, will not have sufficient granularity to identify reliability needs for each LSE to act on. If the LSEs use the Reference System Plan as guidance, but do not use detailed production cost modeling, LSE applications may not meet reliability requirements.

On the other hand, the Staff Proposal expects to use the Strategic Energy Risk Valuation Model (SERVM) production cost model to review the aggregated LSE-preferred portfolios or the Reference System Portfolio for reliability metrics such as "Loss of Load Expectation, Loss of Load Hours, and Expected Unserved Energy."[25] Because this review is conducted after the Reference System Plan is developed and after the LSEs file preferred plans, it is unclear whether differences identified in the SERVM review are due to individual LSE submissions or the difference between RESOLVE and SERVM.

The CAISO generally agrees with the use of a production cost model but seeks clarification on the process to engage with stakeholders on how the individual plans will be aggregated (especially if plans have vastly different degrees of sophistication and complexity). The CAISO also seeks more detail on how each LSE's Preferred Portfolio, if based on vastly different assumptions than the Reference System Plan, should be evaluated.

[23] Staff Proposal, p. 52.
[24] Staff Proposal, p. 56 (*See* "Study Design" sections 2a and 2b).
[25] Staff Proposal, p. 62-63.

The CAISO also seeks clarification regarding whether SERVM will be used to evaluate individual LSE plans. The Commission should provide for a validation process in which parties have an opportunity to use other tools other than SERVM to conduct validations. As part of this validation process, the Commission should consider third-party analysis in deciding the Preferred System Plan. It would be more efficient if the Commission coordinates the validation efforts through the Modeling Advisory Group. It is not clear that currently envisioned IRP process has sufficient time for such validation process.

The Staff Proposal further states:

> *For LSEs that serve load within a CAISO-defined local capacity area: Report the LSE's own assessment of annual incremental local capacity resource needs for the entire local capacity area if it differs from the most recent transmission plan adopted by the CAISO governing board.*[26]

The CAISO seeks clarification on what the expected outcome would be if the LSE assessment differs from the CAISO's local capacity technical report.[27] The CAISO notes that any discussion of 2018 needs would likely be superseded by the Commission's pending decision in the resource adequacy proceeding. As noted above, the Staff Proposal did not specify a model to be used to determine reliability requirements, so LSEs may not be unable to appropriately model or analyze the local capacity resource need (or, at minimum, may not be able to compare results with the CAISO's analysis). Moreover, much of the modeling requires complex engineering analysis and adherence to many national, regional, and local planning requirements, which are not expressly required or detailed in the Staff Proposal as a prerequisite for IRP filings. While the CAISO is interested in reviewing and engaging with stakeholders on their IRP filings, especially with regard to flexible and local reliability analyses, any review would require significant time and resources from the CAISO staff. CAISO seeks to work with Energy Division Staff on how such a review could be accomplished.

[26] Staff Proposal, p. 57 (See "Study Results," Section 3e).
[27] These are documented in the CAISO's most recent local capacity technical report available at: https://www.caiso.com/Documents/Final2018LocalCapacityTechnicalReport.pdf

Q25. ***<u>Standard and Alternative IRPs.</u> Do you support the staff proposal for standard and alternative IRP filings? What changes would you suggest, either to the overall approach or to the specific requirements for each, and why?***

Please see CAISO's response to Question 22 regarding the Staff Proposal's "Standard of Review for LSE Plans."

Q29. ***<u>Marginal GHG abatement cost/planning price:</u> Is it appropriate and feasible for the Commission to use the results of the IRP analysis to inform the inputs for certain cost-effectiveness analysis, such as in the Integrated Distributed Energy Resource proceeding evaluation of the societal cost test for demand-side resources? Why or why not?***

The CAISO does not object to the use of the results of the IRP analysis to inform other Commission proceedings but emphasizes the importance of process alignment if the GHG abatement cost/planning price is separately reflected in the CEC's IEPR demand forecast. For the 2017-2018 IRP cycle, the CAISO agrees that the Reference System Plan is largely informational and alignment is expected to occur between the 2018 Preferred System Plan and the 2019 IEPR.

Q33. ***<u>Cost allocation and cost recovery.</u>***

a. Is the Staff Proposal approach to these issues workable? What changes would you recommend and why?

The CAISO appreciates this important discussion and notes that any action in this proceeding should be coordinated with the Cost Allocation Mechanism (CAM), the Power Charge Indifference Adjustment (PCIA), and the proposed Order Instituting Rulemaking to Review, Revise, and Consider Alternatives to the Power Charge Indifference Adjustment to be voted on at the Commission meeting on June 29, 2017.[28]

[28] Regular agenda item 21, http://docs.cpuc.ca.gov/publisheddocs/published/g000/m191/k015/191015532.pdf

b. How important is it for the Commission to allocate responsibility for deficiencies in the aggregate portfolio (of all LSE plans) to individual LSEs?

The CAISO notes the importance of this question and looks forwarding to working with the Commission and stakeholders on this issue.

c. How should the Commission address the situation where one LSE's IRP is identifiably the cause of a gap in meeting the Reference System Plan GHG target for the electric sector (e.g., if one LSE does not appropriately factor the GHG Planning Price into its IRP)?

The CAISO notes the importance of this question and looks forwarding to working with the Commission and stakeholders on this issue.

d. How should the Commission assign responsibility for procurement of system or flexibility resources when an overall deficiency is identified?

The CAISO notes the importance of this question and looks forwarding to working with the Commission and stakeholders on this issue.

Q34. <u>Alignment of IRP process with other Commission resource proceedings.</u>

a. Are there obvious opportunities for alignment across Commission proceedings that the staff should consider in developing a process alignment workplan?

The CAISO generally agrees with the Staff Proposal approach for Commission internal process alignment. The CAISO notes that an opportunity exists to ensure that the distributed energy resource growth scenario forecasts currently being developed by the Investor Owned Utilities (IOUs) for the 2017-2018 distribution planning process are aligned with both the IRP and external processes (*i.e.*, the CEC's IEPR and the CAISO's TPP).[29] This is timely because

[29] Distribution Resources Plan (DRP) proceeding (R.14-08-013) Track 3 (Policy) Sub-track 1 (DER Adoption and Distribution Load Forecasting) activities. "Revised Distributed Energy Resource Assumptions and Framework

the IOUs have recently proposed a draft "assumptions and framework" document to be applied to the 2017-2018 distribution planning process cycle. The draft assumptions and framework document details how each IOU will forecast the growth in demand response, energy efficiency, behind-the-meter Photovoltaics (PV), energy storage, electric vehicles, and energy efficiency. There is considerable overlap with IRP and it would benefit the IOUs and stakeholders to align these processes. More importantly, the demand-side forecasts should be coordinated with the CEC as the IEPR forecast reflects all of these resources.

b. What would be the benefits to coordinating proceedings to align based on these opportunities?

As noted in Guiding Principle #6, the "IRP process should align with related planning processes of other state and federal agencies and entities, while avoiding any redundancy or conflict with other state policies and programs."[30] The CEC's IEPR plays a fundamental role in the state in providing a common foundation for planning processes, including the CAISO's TPP.

Currently, the three major IOUs have proposed to use slightly different assumptions from each other and, in the case of Southern California Edison Company (SCE) and San Diego Gas and Electric (SDGE), different assumptions than those used in the most comparable vintage of the IEPR. Pacific Gas & Electric Company (PGE) will rely on the same demand-side inputs as provided in the 2016 IEPR to develop its 2017 distribution plan. This is consistent with and contemporaneous with the publication of the 2017 IEPR and 2017-2018 TPP. SCE and SDGE, on the other hand, will be producing 2018 distribution plans and, as a result, intend to use the more recent 2017 forecast for most demand-side modifiers. This means that the information used in the distribution plans will have been submitted to the 2017 IEPR through the demand forecast forms filed by each utility, but not yet reconciled with the CEC's own forecasts. Currently, the only forum to discuss methodological and output differences is via the Demand Analysis Working Group (DAWG). However, while DAWG can provide a forum to reconcile

Document of Pacific Gas and Electric Company (U 39 E), San Diego Gas & Electric (U 902 E), and Southern California Edison Company (U 338 E)," June 6, 2017. See also working group information available at: http://drpwg.org/growth-scenarios/

[30] Staff Proposal, p. 19.

assumptions and outputs, it is not well equipped to address the more fundamental forecast vintaging differences.

This inconsistency between IOUs will be a logistical challenge in aligning the DRP with IRP, IEPR and TPP. For the CAISO, inconsistent assumptions may lead to over- or under-expansion of the transmission system and squeeze long lead-time projects when processes are out of sync. More importantly, the projects that are approved under the TPP will need to be defended in the siting process which may be challenged differing underlying demand-side forecasts exist and there is no clear regulatory direction regarding which alternative should be used.

c. Identify any barriers to coordination.

A potential barrier may be the timing of the Proposed Decision under the Distribution Resources Plan proceeding to adopt the 2017-2018 distribution planning process assumptions and framework document, currently expected by the third quarter of 2017. There may not be enough time to align the current distribution planning process with the currently proposed 2017-2018 IRP cycle. Nonetheless, the CAISO believes that coordination (both within the Commission and with the CEC) can and should occur for future cycles, especially in time for the Preferred System Plan to align with procurement authorizations.

Q35. <u>Preferred System Plan.</u> Is the Staff Proposal's recommendation to utilize a Commission-approved Preferred System Plan as the basis for input into the IEPR and TPP processes appropriate and workable? What changes would you recommend and why?

Per the external process alignment developed in response to a letter from California state senators Alex Padilla and Jean Fuller, the Commission, CAISO, and CEC committed to a single managed forecast developed by the CEC in coordination with the Commission and CAISO. [31] (See also THE CAISO's response to Question 36) As such the CAISO's comments below assume that the IEPR is the demand forecast source for the TPP.

[31] See two responses: (1) http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=11891 and (2) http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=11892

To respond to the questions above, it is important to note the timing of each plan. For example, if the 2018 Preferred System Plan is to be aligned with IEPR and TPP so that it provides information into these processes, then the 2018 Preferred System Plan should have as its starting point the 2018 IEPR update demand forecast. The 2018 Preferred System Plan (which is expected to be adopted by the Commission at the end of 2018) can then be considered in the 2019 full IEPR, which starts at the beginning of the 2019 and is expected to be approved by the CEC in early 2020. Once the CEC approves the 2019 full IEPR, it will be used as the foundation of the 2020-2019 TPP. The 2018 Preferred System Plan may produce a renewable portfolio for the 2019-2020 TPP but the CAISO notes that there will be a misalignment because the underlying demand forecast for the 2019-2020 TPP will be the 2018 IEPR update whereas the underlying demand forecast for the 2018 Preferred System Plan will be based on the 2017 full IEPR.[32] There may not be a remedy for this misalignment until the 2020-2021 TPP, which will be based on the 2019 full IEPR and will be aligned with the renewable portfolio developed via the 2018 Preferred System Plan. The CAISO notes, however, that the proposed non-binding nature of the 2018 Preferred System Plan (per the CAISO's response to Question 4) still needs clarification. While the timing of the various processes can be made to align, the CAISO seeks clarification on what the process would be for the IEPR to consume information from the IRP. See response to question 36.

Q36. Alignment with CEC's Integrated Energy Policy Report (IEPR) and California Independent System Operator's (CAISO's) Transmission Planning Process (TPP).

a. Do you support the Staff Proposal approach to coordination with the IEPR and TPP processes? What changes would you recommend and why?

The CAISO strongly supports efforts to maintain external process alignment. In 2013, Senators Padilla and Fuller sent a letter to the Commission, CEC, and CAISO about consistency and improvements in the demand forecast and procurement planning processes.[33] In response to the letter, the three agencies committed to a single managed forecast developed by the CEC in

[32] If using the most recently CEC approved IEPR.
[33] http://seuc.senate.ca.gov/sites/seuc.senate.ca.gov/files/01-28-13%20group%20letter.pdf

coordination with the Commission and CAISO.[34] The California Air Resources Board joined this effort in 2016.

The resultant process alignment has functioned effectively since 2014 and has expanded from energy efficiency to developing and using common assumptions for all demand-side resources embedded in the IEPR forecast.[35] Such alignment is essential to ensure that all planning and procurement activities work from a common set of assumptions and consider agreed-upon scenarios of future development and system conditions.

The Staff Proposal notes that it is anticipated in the future that "the IRP process will provide incremental impacts from CPUC policies to IEPR. Thus, this part of the previous IEPR-LTPP-TPP alignment will likely require some adjustments... CPUC staff is also open to exploring with the CEC the opportunity to establish a process whereby these inputs could flow into the IEPR on an annual basis."[36] The CAISO would like to be part of this discussion so that the TPP is appropriately aligned. CAISO also notes that this task would not be insignificant as the IEPR evolves into an hourly forecast (8760 hours) with greater geographical granularity. Both process and technical details will need to be developed and then evaluated.

For the TPP, the Staff Proposal suggests a "special study" in the TPP based on the Reference System Plan.[37] Rather than prejudge the need for a special study, CAISO will work with the Commission to understand the impact of the selected Reference System Plan and evaluate whether additional studies are needed in the TPP.

[34] See two joint responses from the Commission, CEC, and CAISO: (1) http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=11891 and (2) http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=11892

[35] See the process alignment text: http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6630 and the process alignment diagram: http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=6631.

[36] Staff Proposal, pp. 79-80.

[37] Staff Proposal, p. 81.

b. Are there previous outputs from long-term procurement planning that are not anticipated to be included in IRP but which may be necessary? Describe the outputs and the benefits of including them.

While not an output per se, the CAISO had been an integral part of the long-term procurement planning process and provided its reliability analysis into the proceeding. The CAISO will continue provide its reliability analysis to the Commission and will work collaboratively with the Commission and stakeholders through the IRP process.

Q37. <u>Regional Planning.</u> How should the IRP process and analysis take into account the potential for CAISO regionalization?

The CAISO appreciates the Staff Proposal's suggestion to work with the CAISO in refining the Reference System Plan. In the CAISO's opinion, the Reliability Assessment Committee is not the most appropriate forum to engage in regional planning discussions. Via FERC Order 1000, the CAISO has an interregional coordination process with the WECC planning regions. The CAISO will work with the Commission to better understand how the IRP may inform interregional discussions.

The CAISO's analysis on regionalization conducted per SB 350 showed that California could reach its 50 percent renewable energy goal while saving consumers up to $1.5 billion by 2030, lowering greenhouse gas emissions and adding jobs in California.[38] The IRP process and analysis should reflect the CAISO regionalization, based on whether there is additional legislative action to further regionalization.

[38] Studies are available at http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=4C17574F-73AE-40E3-942C-59C3A13BBDF1

III. Conclusion

The CAISO appreciates the opportunity to submit these comments and looks forward to working with the Commission to develop the IRP process in a manner that ensures electric reliability while meeting California's state policy goals.

Respectfully submitted,
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