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

Roger E. Collanton
General Counsel
Anthony J. Ivancovich
Deputy General Counsel
Anna A. McKenna
Assistant General Counsel
Jordan Pinjuv
Senior Counsel
California Independent System
250 Outcropping Way
Folsom, CA 95630
Tel: (916) 351-4429
Fax: (916) 608-7222
Email: jpinjuv@caiso.com

Dated: March 12, 2020

Table of Contents

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

The California Independent System Operator Corporation (CAISO) hereby provides comments in response to the *2019-2020 Electric Resource Portfolios to Inform Integrated Resource Plans and Transmission Planning* (Proposed Decision), issued in this proceeding on February 21, 2020.

I. Introduction

The CAISO appreciates Energy Division staff's modeling improvements referenced in the Proposed Decision and strongly supports the use of the 2018 Preferred System Portfolio (PSP) for the 2020-2021 transmission planning process (TPP) reliability and policy-driven base cases. In addition, the CAISO requests that the Commission extend the use of the 2018 PSP to the CAISO's economic analyses. As a priority, the Commission should authorize incremental capacity procurement to address medium-term (2023 – 2026) needs, with a focus on procuring capacity and energy necessary to replace the Diablo Canyon Power Plant (Diablo Canyon). While the CAISO supports moving forward on a timely basis with the proposed Reference System Plan, the CAISO also encourages the Commission to explore a broader range of issues affecting resource planning and modeling through 2020 and in future integrated resource planning (IRP) efforts.

II. Discussion

A. The CAISO Strongly Supports the Proposed Decision on Portfolios for the Transmission Planning Process.

The CAISO strongly supports using the 2018 PSP for the 2020-2021 transmission

planning process (TPP) reliability and policy-driven base cases. The CAISO requests that the Commission also extend the use of the 2018 PSP to the CAISO's economic analyses. The CAISO continues to work closely with Energy Division staff to provide feedback on storage resource mapping and reduce unwarranted changes in renewable resource locations. Some of these efforts will be applied to the new Reference System Plan and the 30 MMT Portfolio (Level 2), both modeled as policy-driven sensitivities in the 2020-2021 TPP as requested by the Proposed Decision.[1] This will allow the CAISO to provide feedback to the Commission on the transmission implications for each portfolio, incorporating the newly developed methodology to map storage to busbars.[2]

B. The Commission Should Authorize Immediate Incremental Procurement to Address Medium-Term Needs.

As a priority, the Commission should authorize incremental capacity procurement to address medium-term (2023–2026) needs, with a focus on capacity and energy to replace the Diablo Canyon. Based on the results of the new Reference System Plan (RSP) in the Proposed Decision, the loss of load expectation (LOLE) increases between model year 2022 to years 2026 and 2030, from 0.032 to 0.113 and 0.108, respectively.[3] The Proposed Decision explains that "[w]hile the results are not under 0.1 LOLE, they are very close and we are confident enough in the robustness of the results in this round to adopt this portfolio as our 2019-2020 RSP [and results are] acceptable for reliability planning purposes a decade out."[4] The CAISO is deeply concerned about the trending and timing of these modeling results as medium-term "planning" soon becomes real-time operational needs.

As the CAISO pointed out in the recent procurement track, the current procurement paradigm does not sufficiently consider operational needs, especially energy to serve high loads after sunset and ramping and flexibility needs.[5] After 2023, the CAISO system will not have any recourse to once-through cooling resources and therefore cannot assume their availability in the planning studies. Moreover, the CAISO

[1] Proposed Decision, pp. 62-63.
[2] Proposed Decision, p. 63.
[3] Proposed Decision, Table 7: Key Metrics for New 2019-2020 RSP, p. 38.
[4] Proposed Decision, p. 39.
[5] *See* CAISO reply comments on Assigned Commissioner and Administrative Law Judge's Ruling Initiating Procurement Track and Seeking Comment on Potential Reliability Issues, August 12, 2019.

cannot assume its backstop mechanisms are a viable option to meet system requirements if there is an actual capacity shortfall. Therefore, the Commission should immediately authorize procurement to address medium-term (2023 through 2026) need to enable the planned retirement of Diablo Canyon while maintaining reliability, reducing greenhouse gas output, and addressing renewable integration needs. The Commission should issue a decision on medium-term reliability, renewable procurement, and related actions by summer 2020.

C. The Commission Should Continue to Focus on Reliability in its Modeling Improvements.

The CAISO appreciates Energy Division staff's modeling improvements as described in the Proposed Decision. Specifically, the 2,000 MW of generic capacity has been eliminated, the end year analysis is now 2045 rather than 2030, and once-through cooling resources are removed at the end of their original compliance date rather than extended to 2023.

In the next part of the IRP cycle, the CAISO requests the Commission take more time to address modeling improvements focused on reliability. For example, the CAISO is concerned that Energy Division staff does not have a robust process to fully iterate between RESOLVE and SERVM to provide the appropriate production cost modeling and LOLE feedback into RESOLVE to minimize manual adjustments and have confidence that modeling differences are appropriate. The Proposed Decision documents that when Energy Division staff saw "decreased reliability in SERVM results" due to the import constraint, they ultimately chose to relax the constraint by 1.5 GW but without basis.[6] While this manual fix forced a desired outcome, it does not explain why a reliable RESOLVE portfolio would be significantly less reliable in SERVM, thereby requiring additional import capability of 1.5 GW to maintain reliability, creating an unwarranted difference between RESOLVE and SERVM modeling assumptions. The increase in import capability is not materially different than the addition of 2,000 MW of generic effective capacity in the November 6, 2019 proposed RSP. The CAISO has previously expressed concern about the inconsistency between the resource adequacy import limit

[6] Proposed Decision, p. 33.

and energy import limit within the RESOLVE model.[7] The Proposed Decision offers some suggestions for improvement, such as the potential need for a higher reserve margin for a fleet with significantly high renewable and use-limited resource penetration.[8] The CAISO agrees that this is a reasonable premise for further investigation; so that manual fixes and adjustments can be minimized or reasonable modeling differences are explained rather than forced to align. The CAISO looks forward to the opportunity to work with Energy Division staff and through the Modeling Advisory Group to discuss additional observations and areas in which modeling could be enhanced to vet and assess policy direction.

Lastly, due to the compressed timeline, the CAISO was not able to complete and internally vet its own production cost modeling analyses to include into these opening comments. However, the CAISO will conduct such analyses to assess the reliability of the new RSP and will provide its results separately in an appropriate forum. The CAISO urges the Commission to provide sufficient time and forums for modeling parties to provide analysis and feedback into the proceeding and looks forward to further discussion with Energy Division staff and parties on the CAISO's findings.

D. The Commission Should Set Policy Direction that Considers a Variety of Concerns.

In the CAISO's observation of RESOLVE outputs, the model tends to favor large scale solar resource additions, supplemented with short-duration battery storage, with the selection based predominantly on capital and operating cost comparisons. The Commission should not consider these results the "optimal" portfolio that the state should pursue—rather, it is simply a solution based on the quantitative inputs and the modeling optimization algorithm seeking to achieve very limited, specific and overarching policy objectives (*i.e.*, greenhouse gas constraints at least capital and operating cost). The model itself does not consider other relevant limitations and factors that warrant objective qualitative consideration. Accordingly, through the course of the 2019-2020 IRP process and future IRP proceedings, the Commission should provide policy direction to:

[7] *See* CAISO opening comments on Administrative Law Judge's Ruling Seeking Comment on Proposed Reference System Portfolio and Related Policy Actions, December 17, 2019.
[8] Proposed Decision, p. 34.

- **Diversify the resource fleet** – Solar resources—both behind-the-meter and largescale—have significantly helped California reduce its carbon footprint and meet RSP targets. However, as solar resources begin to replace existing resources, the state must ensure either that (1) solar resources can provide the same level of reliable service or (2) the fleet is diversified enough to collectively meet energy needs across all 8760 hours in the year. In fact, the CAISO is at the forefront of testing these capabilities.[9] Physically diversifying the fleet also provides mitigation against permitting, siting, supply chain and other logistical limitations related to one dominant resource. Geographic diversity, especially for intermittent resources, allows for more efficient risk-mitigated use of a larger pool of resources across space and time. The CAISO's energy imbalance market has a mechanism to unlock some of this potential, but resource procurement should also include resource diversity as a guiding principle.
- **Intentionally test a limited and manageable quantity of new(er) technologies to prove these resources at scale before transitioning away from current technology** – The CAISO successfully integrated over 12,000 MW of large-scale solar and manages the system with over 8,000 MW of behind-the-meter solar that impacts the grid. During this evolution, the CAISO has learned many operational lessons, made major market changes, and worked closely with market participants to change and influence resource behavior and participation. Even with these changes, the CAISO still relies heavily on current hydro, gas-fired, and import resources to manage daily ramping and flexibility needs. Hydro, gas, and import resources also provide the bulk of the essential grid services necessary to maintain grid reliability. This is even more pronounced under stressed conditions. As the grid transitions to new resources, such as short-duration battery storage or "hybridized" storage and intermittent renewable resources, the CAISO will need a period of

[9] *See* https://www.caiso.com/Documents/UsingRenewablesToOperateLowCarbonGrid-FAQ.pdf

testing to ensure they (1) can provide the necessary capabilities to maintain reliability and (2) have the appropriate incentives to make those capabilities available at scale. The CAISO has and will continue to provide engineering-based and operational feedback to help the Commission refine policy direction. For example, the CAISO can provide feedback on the types of resource characteristics needed, new resource testing results, and reliability issues that arise with certain new technologies.

- **Set clear direction on how and when to reduce reliance on the existing gas-fired generation fleet so that stakeholders can consider and implement concrete plans to ensure system and local area reliability** - Currently, the modeling framework is based on a system-wide analysis even though the bulk of the gas-fired fleet on the CAISO grid is located in the local capacity areas. Based on the current trending of resource adequacy procurement, local capacity area generation closely matches the local need requirement. In other words, it is difficult to retire existing resources without falling below the local capacity need requirement. Further, gas-fired resources within the local capacity areas may retire for other reasons such as when they reach their physical end of life, or mature out of long-term commercial contracts. Although transmission solutions can increase the transfer capability into local areas and the CAISO remains supportive of considering transmission solutions, such upgrades face numerous permitting, siting, and construction challenges. Resources that have more flexibility regarding location, such as battery storage, can provide some mitigation of planned or unplanned retirements, at least in the short term, although the ability of the local system to recharge storage in the off peak periods must also be taken into account. The Commission should set the policy direction for an orderly reduction in the existing gas-fired generation fleet considering CAISO reliability analyses for local capacity areas in the CAISO's footprint. In the meantime, the CAISO is already taking steps to analyze battery charging capability in local

capacity areas and will continue to explore the efficacy of various transmission solutions that can both offset some of the on peak needs in local capacity areas, and augment charging capabilities to enable storage to also play a larger role as needed.

- **Due to the long lead times for transmission projects, proactively consider the potential benefits and costs of transmission-related projects** – New transmission projects may be necessary to interconnect large-scale in-state renewables, access offshore wind, or enable out-of-state resource development or other policy-driven considerations, in addition to local capacity needs discussed above. However, the transmission permitting, siting and construction processes can take 10 years or more. Therefore, planning for transmission-dependent projects should start as soon as possible. If the Commission sets the policy direction and intent, the CAISO can provide feedback on the technical feasibility of transmission-dependent policies.
- **In the meantime, strategically maintain the natural gas-fired fleet and delivery infrastructure** – During the transition to a cleaner grid, the state may need to retain portions of the current gas-fired fleet to provide both energy and reliability services. Specifically, reliability services include, but are not limited to: regulation; frequency response; spinning and non-spinning reserves; inertia; fault current; and grid forming capability. Although other resources, including renewable resources, can provide a sub-set of these services, they cannot yet provide these services on a large scale. In addition, renewable resources often have policy and commercial incentives that run counter to providing grid services. The Commission should also consider how to appropriately maintain necessary gas delivery infrastructure, which may be used less overall but will be more heavily relied upon during shorter periods, such as during steep ramping events.[10]

[10] See CAISO comments at: http://www.caiso.com/Documents/Feb26-2020-Comments-ScopeProceedingSafeandReliableGasSystems-R20-01-007.pdf

III. Conclusion

The CAISO appreciates the opportunity to provide comments and supports the Proposed Decision and looks forward to working with the Commission on the foregoing actions the Commission should take.

Respectfully submitted,

By: *<u>/s/ Jordan Pinjuv</u>*

Roger E. Collanton
General Counsel
Anthony J. Ivancovich
Deputy General Counsel
Anna A. McKenna
Assistant General Counsel
Jordan Pinjuv
Senior Counsel
California Independent System
250 Outcropping Way
Folsom, CA 95630
Tel: (916) 351-4429
Fax: (916) 608-7222
Email: jpinjuv@caiso.com

Attorneys for the California Independent System Operator Corporation

Date: March 12, 2020