

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE  
STATE OF CALIFORNIA**

Order Instituting Rulemaking to Continue  
Electric Integrated Resource Planning and  
Related Procurement Processes.

Rulemaking 20-05-003  
(Filed May 7, 2020)

**COMMENTS OF THE CALIFORNIA INDEPENDENT  
SYSTEM OPERATOR CORPORATION ON PRELIMINARY SCOPING MEMO**

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](mailto:jpinjuv@caiso.com)

Dated: June 15, 2020

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**I. Introduction**

The CAISO appreciates the tremendous efforts that the Commission and Energy Division staff have put in to improve the Integrated Resource Planning (IRP) process year over year. The CAISO has worked collaboratively with Energy Division staff and parties and will be fully engaged in this new rulemaking, including informal discussions in the Modeling Advisory Group. The CAISO also appreciates the Commission's commitment to maintain process alignment between the resource and transmission planning processes. Although the CAISO broadly agrees with the issues detailed in the Commission's May 14, 2020 Order Instituting Rulemaking (OIR), the Commission must refocus efforts to ensure that it addresses the following priority outcomes:

- Authorizing sufficient procurement to replace the Diablo Canyon Power Plant (Diablo Canyon); and
- Developing actionable and directionally consistent policy guidance for procurement to be incorporated into the CAISO's 2021-2022 transmission planning process.

Both of these priority outcomes have reliability consequences that impact the CAISO's ability to plan and operate the grid. As the CAISO explains below, the Commission should authorize sufficient procurement to replace Diablo Canyon as part the procurement track in this proceeding. The planning track should develop policy guidance for the CAISO's 2021-2022 transmission planning process.

## **II. Discussion**

### **A. Procurement Track Priorities**

The OIR establishes a procurement track that will proceed in parallel with the regular planning cycle. The CAISO agrees that the procurement track should proceed in parallel with the planning track. In the procurement track, the Commission should prioritize sufficient energy procurement to replace Diablo Canyon. This procurement should be authorized by the end of summer 2020 based on RESOLVE optimized portfolio guidance. This would expedite the schedule included in the OIR, which currently outlines a procurement decision by spring 2021.

#### **1. The Commission Should Modify the OIR's Proposed Schedule to Issue a Procurement Decision by Summer 2020 to Replace the Diablo Canyon Power Plant.**

As the CAISO noted in previous comments in the predecessor IRP proceeding, the Commission should issue a procurement decision to address medium-term (2023-2026) reliability needs by end of summer 2020. The OIR currently provides that the Commission will issue a procurement decision by spring 2021, but this will not provide adequate time for resource procurement and construction prior to closing Diablo Canyon. The procurement decision should address energy resource needs sufficient to replace Diablo Canyon,<sup>1</sup> the full 2,280 MW of which will retire by August 26, 2025.<sup>2</sup>

Load-serving entities are currently continuing procurement efforts to fulfil the 3,300 MW near-term resource adequacy shortfall identified in D.19-11-016, but short-duration batteries appear to make up the predominance of procured resources.<sup>3</sup> Given the aggressive near-term online dates, this is the most likely outcome. Though short-duration storage has a role in a diversified portfolio, it cannot independently replace Diablo Canyon, which provides system baseload energy in addition to capacity. Therefore, it is

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<sup>1</sup> See CAISO comments <http://www.caiso.com/Documents/Jul22-2019-Comments-PotentialReliabilityIssues-R16-02-007.pdf>

<sup>2</sup> The first 1,140 MW unit at Diablo Canyon will retire on November 2, 2024. See: <https://www.nrc.gov/docs/ML1833/ML18331A553.pdf>.

<sup>3</sup> See, for example, recent procurement announcements from Southern California Edison and Pacific Gas & Electric, respectively: <https://newsroom.edison.com/releases/sce-grows-clean-energy-portfolio-enhances-system-reliability-with-770-megawatts-of-new-energy-storage-capacity> and <https://www.pgecurrents.com/2020/05/19/pge-poised-to-expand-battery-energy-storage-capacity-by-more-than-420-megawatts/>

critical that the Commission take action now to meet 2024 and 2025 and allow more time for competition across a broader and more diverse set of resources. The Commission already has numerous RESOLVE portfolios that address Diablo Canyon replacement and should use such portfolios as guidance. Further, the CAISO understands extensions to the Diablo Canyon retirements are not possible given the host of permitting issues associated with the facility, and further delays to the retirement of other generation, such as the once-through cooling (OTC) generation, is untenable.

In considering the expedited procurement, the CAISO encourages the Commission to consider other parameters to improve the efficacy of the ultimate procurement decision, such as the potential for new resources to reduce the use of—if not the need for the continued presence of— fossil-fueled generation relied upon in local capacity areas. The CAISO’s analysis to guide local capacity procurement is discussed in greater detail in section B.2 below.

## **B. Planning Track Priorities**

The CAISO broadly agrees with the issues outlined in the new OIR for the planning track, but recommends that the Commission prioritize developing actionable and directionally consistent policy guidance for LSE procurement to be incorporated into the CAISO’s 2021-2022 Transmission Planning Process (TPP) and future planning cycles. As part of this actionable policy guidance, the Commission should provide direction to LSEs that will lead to desired procurement to meet state policy goals and maintain reliability. Specifically, the Commission should provide: (1) actionable IRP plans for the CAISO to use in the transmission planning process to successfully accommodate long lead-time transmission projects and plan for grid reliability needs; (2) actionable policy guidance that meets state goals and maintains reliability; and (3) actionable procurement guidance for LSEs. Lastly, the CAISO agrees that several inter-related modeling issues should also be prioritized to ensure reliable results.

**1. The CAISO Requires Actionable IRP Plans to Authorize Long Lead-time Transmission Projects and Plan for Grid Reliability Needs.**

**a) Long Lead-time Transmission Projects May Require Ten Years or More Before Coming Online.**

Transmission projects, especially large-scale new builds, have very long lead-times. It is not uncommon for reliability- or policy-driven transmission projects to take ten years or more to progress through the approval, environmental review, permitting, siting, and construction processes, even with unchallenged needs assessments. Although the CAISO can move expeditiously to identify the need for new transmission infrastructure, multiple other processes present challenges. As a result, the transmission planning process requires an actionable plan immediately if the Commission wishes to consider transmission-dependent resource buildouts such as out-of-state resources, offshore wind, or efforts to reduce local capacity needs. Even smaller scale transmission to interconnect or integrate new resources (*e.g.*, battery and pumped storage resources identified in the recently approved Reference System Plan) may take several years to be completed.

The CAISO is concerned that transmission projects will lag resource development, stranding resources and potentially endangering reliability and other state goals. For example, the Commission's approved resource portfolios may require transmission-dependent resources for renewable integration, meeting renewable portfolio standard goals, or providing energy. Delaying transmission infrastructure development will delay capturing these benefits.

**b) The CAISO Requires an Actionable IRP Plan to Responsibly Assess a Broad Range of Reliability Needs.**

The CAISO conducts numerous grid reliability studies in the transmission planning process using the Commission-developed IRP portfolios. The CAISO uses these studies to fulfill the CAISO's obligations as a Planning Authority, a Transmission Operator, and a Balancing Authority pursuant to North American Electric Reliability Corporation requirements for those functional entities. The CAISO uses the IRP resource portfolios to develop planning base cases over a ten-year forward period to test for an array of reliability service needs. The CAISO identifies these needs based on load

growth, generation additions and retirements, and other emerging demands on the transmission system, taking into account an increasingly broad range of technical requirements including thermal power flow analysis, system stability, and voltage support.

The nature of the transition to renewable energy, and other primarily inverter-based resources, including storage, drives the need to revisit historical approaches not normally addressed in conventional transmission planning activities. This includes consideration of frequency response, black start service restoration planning, and protection and control coordination. To effectively conduct these analyses, the CAISO needs an actionable and directionally consistent resource portfolio that establishes a stable trajectory to meet long term policy.

In addition, the portfolios should include locational specificity for resource locations and retirements. The CAISO needs detailed locational mapping because resource locations impact power flow and reliability analysis results. For example, voltage support is highly location specific and resources located even one substation away from the area of need may not effectively resolve the reliability need.

Similarly, unit-specific resource retirements can have significant impacts on the need for additional reliability services. The current thermal fleet provides the vast majority of reliability services. A significant reduction in these resources can create reliability services shortfalls, which are especially dependent on the location of the retired resources. If IRP portfolios change significantly from one plan to the next (or lack resource-level specificity or guidance), the efficacy of the transmission planning process to meet future needs reliably and economically on a timely basis will suffer.

Given the timeline concerns expressed earlier for transmission reinforcement, and the emerging reliability issues associated with the transitions taking place in generation resources, it is critical that the Commission provide updated and actionable information to the CAISO as frequently as possible. In Section B.3 below the CAISO provides a suggestion on how to streamline the current process to maintain the two-year cycle.

## 2. **The Commission Should Develop Actionable Policy Guidance for Procurement for Load Serving Entities for Incorporation into CAISO’s Transmission Planning Process.**

Actionable policy guidance is direction from the Commission to the LSEs that will lead to desired procurement to meet state policy goals and maintain reliability. That procurement will, in turn, provide critical input into the CAISO’s transmission planning cycle. Lack of policy direction has stymied recent attempts to develop actionable IRP plans. For example, the OIR includes as a planning issue “[m]ethodologies for geographic busbar mapping of portfolio for TPP purposes.”<sup>4</sup> Though the CAISO agrees that a methodology should be developed, the underlying issue is the lack of actionable policy guidance (*i.e.*, the “why?”) rather than a mechanical methodology (*i.e.*, the “how?”). The CAISO provides several examples below:

- **Gas-fired resource retention and retirement** – The Commission should develop policy guidance on gas-fired resource retention and retirement with sufficient locational and resource specificity for the CAISO to conduct modeling. Policy guidance should be more expansive than RESOLVE’s current focus on economic viability and include metrics such as whether a resource is needed for reliability services or is negatively impacting a disadvantaged community. As the CAISO noted above, the lack of specificity hampers TPP efforts to assess and uncover reliability needs, identify transmission or renewable integration resources that may be needed to address reliability requirements and policy goals.
- **Consideration of local capacity requirements** – The OIR expects local reliability issues to be primarily addressed in the resource adequacy proceeding.<sup>5</sup> The CAISO disagrees because critical planning and procurement issues in the IRP proceeding are about local areas, such as gas-fired resource retention and retirement. The Commission should explicitly consider and model the local capacity area requirements or at minimum incorporate CAISO’s recent studies on

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<sup>4</sup> OIR, p. 7.

<sup>5</sup> OIR, pp. 9-10.



battery characteristics in the local areas and potential local capacity area requirement reduction.<sup>6</sup>

- **Integration with the resource adequacy proceeding** – There should be a feedback loop between the IRP and resource adequacy proceedings so that the IRP proceeding is setting the direction of incremental procurement to meet state goals and maintain reliability. Similarly, the IRP modeling assumptions and inputs should align with resource adequacy program requirements.
- **Short-duration storage mapping and duration** – The Commission should provide policy direction regarding where to develop short-duration battery storage (and potentially other non-renewable resources) to best meet state policy goals. Given the lack of policy direction, the CAISO and Energy Division staff developed a mapping methodology based largely on the CAISO’s interconnection queue, which maps short-duration battery storage largely as system resources closer to solar generation. As a separate point, the RESOLVE model found less than four-hour duration batteries optimal, even though that does not meet resource adequacy program minimum requirements.<sup>7</sup> The Commission should clarify how IRP outputs align with resource adequacy program rules.
- **Transmission-dependent solutions** - As discussed above, long lead-times for transmission infrastructure development require intentional policy guidance.
  - **Energy-only renewable generation and curtailment** – Using the “energy only” designation means in-state renewable energy does not need to be deliverable (*i.e.*, resource adequacy eligible) and can be curtailed if the transmission system is constrained. However, in practice LSEs have signed few energy-only renewable contracts. The Commission should

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<sup>6</sup> For battery characteristics in local capacity areas, see CAISO’s 2021 and 2022 local capacity technical studies, respectively: <http://www.caiso.com/Documents/Final2021LocalCapacityTechnicalReport.pdf> and <http://www.caiso.com/Documents/Final2025Long-TermLocalCapacityTechnicalReport.pdf>. For longer-term local capacity requirement reductions, see the 2018-2019 and 2019-2020 Transmission Planning Process discussions in Chapter 4, respectively: [http://www.caiso.com/Documents/ISO\\_BoardApproved-2018-2019\\_Transmission\\_Plan.pdf](http://www.caiso.com/Documents/ISO_BoardApproved-2018-2019_Transmission_Plan.pdf) and <http://www.caiso.com/Documents/ISOBoardApproved-2019-2020TransmissionPlan.pdf>.

<sup>7</sup> See “RA Eligibility Requirements for Energy Storage and Supply-Side DR” on page B-2 in Appendix B of: <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M097/K619/97619935.PDF>

articulate whether there is a policy drive to procure energy-only in-state renewables and whether increased renewable energy curtailment remains an acceptable outcome. Furthermore, the energy-only concept does not exist outside of California so the Commission should determine whether energy-only out-of-state renewables is realistic.

- **Out-of-state renewables and offshore wind** - Currently the Commission’s consideration of out-of-state renewable and offshore wind projects are narrowly focused on RESOLVE modeling inputs and outputs, which only considers 37 representative days and tends to “exhaust” procurement of one resource before selecting something different. Instead, the Commission should intentionally pursue resource diversification that can address energy needs, especially after sunset. Currently the Energy Division staff is compiling feedback from parties about out-of-state renewable generation and transmission interest, capabilities, and cost. The Commission should use this information to develop policy guidance. Similarly, there is already a body of work in California analyzing offshore wind.<sup>8</sup>
- **Local capacity area requirement reduction** – As mentioned above, the CAISO has already conducted analyses for the Commission to consider whether reducing the local capacity area requirements—either through standalone transmission projects or via projects that serve multiple purposes—will further state policy goals and ensure reliability.

**3. The Commission Should Develop Actionable Policy Guidance for Load Serving Entities that Adhere to the Current Two-Year Cycle.**

Specific procurement guidance from the IRP plans to LSEs is vague. In the past, this has led to more work for Energy Division staff when aggregated individual LSE IRP plans fail to collectively meet state policy goals or reliability needs.<sup>9</sup> Instead, the

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<sup>8</sup> See for example the joint Commission and California Energy Commission workshop on offshore wind: IEPR Commissioner Workshop on Offshore Wind, Docket No. 19-IEPR-07, October 3, 2019.

<sup>9</sup> See CAISO comments on the Hybrid Conforming Portfolio: [http://www.caiso.com/Documents/2019-01-31-Comments\\_ProductionCostModeling-IRPProceeding-R16-02-007.pdf](http://www.caiso.com/Documents/2019-01-31-Comments_ProductionCostModeling-IRPProceeding-R16-02-007.pdf).

Commission should consider providing more explicit guidance on LSE procurement with specific consequences for deviation. Articulation of what actions the Commission may take in case of LSE deviation is important for transparency but also because the RESOLVE optimized portfolio is interdependent on both the portfolio mix and timing of resource procurement. For example, the recently adopted Reference System Plan 46 MMT portfolio has over 11,000 MW of solar by 2030 but depends on the renewable integration services likely provided by other incremental resources in the portfolio.

One way the Commission can provide guidance is to allocate the RESOLVE optimized incremental generation portfolio to each LSE based on peak demand load-ratio share by year. Each applicable LSE must then file an IRP with the Commission showing incremental procurement that does not *exceed* the load share ratio-allocated capacity by year. The Commission should provide guidelines and consequences for when LSEs exceed or fall below their caps. There may be a first pass at an aggregated portfolio that shows despite some deviation, the overall LSE aggregated portfolio is within a reasonable range of the RESOLVE optimized portfolio. If there are excessive deviations, the Commission can then point to individual LSE impacts. For example, if an LSE exceeded its solar allocation in a particular year but did not show resources that could balance out this deviation, then that may lead the Commission to procure additional renewable integration services that will be cost allocated to all LSEs causing a similar deviation. On the other hand, if an LSE is well below the cap for a specific resource by year, the Commission can assess whether that would negatively impact the overall procurement and determine if additional procurement is needed.

The intent of such upfront guidance is to reduce the workload and complexity involved in creating an aggregated portfolio and is similar to guidance provided in the resource adequacy proceeding to limit procurement of use-limited resources. A clearer and more streamlined approach may even eliminate the need for a Preferred System Plan and help maintain the current two-year cycle. It is critical to the CAISO's reliability analysis and transmission planning process to not increase the lag between actionable and directionally consistent portfolios. While guidance to LSEs can and likely should be more sophisticated to incorporate energy needs, the CAISO hopes that a simplified approach can be applied to individual IRP filings due on September 1.

**4. The Commission Should Improve the RESOLVE Model or Increase the Planning Reserve Margin Used in RESOLVE**

The CAISO agrees with the OIR that the planning track should continue to consider the inputs and assumptions for modeling to assess optimal portfolios, the choice of models and modeling techniques, and model calibration techniques. Specifically, the CAISO has observed that the RESOLVE model does not seem to respect the power balance constraint, which is leading to anomalous results. This is further compounded by RESOLVE's use of only 37 representative days and the lack of multiple iterations between the RESOLVE and SERVVM modeling. To overcome these deficiencies, the Commission should either improve the RESOLVE model to respect the power balance constraint or consider increasing the planning reserve margin as Southern California Edison has done in its calibration testing in order for RESOLVE to produce reliable portfolios that will meet the loss of load expectations in production cost modeling.

**III. Conclusion**

The CAISO looks forward to working with the Commission and parties to improve the modeling framework and outputs in the procurement and planning tracks.

Respectfully submitted

**By: /s/ Jordan Pinjuv**

Roger Collanton

General Counsel

Anthony Ivancovich

Deputy General Counsel

Anna A. McKenna

Assistant General Counsel

Jordan Pinjuv

Senior Counsel

California Independent System

Operator Corporation

250 Outcropping Way

Folsom, CA 95630

T: (916) 351-4429

F: (916) 608-7222

[jpjuv@caiso.com](mailto:jpjuv@caiso.com)

Attorneys for the California Independent  
System Operator Corporation

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