

**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)

**CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION'S
CONSOLIDATED REPLY COMMENTS ON PRELIMINARY SCOPING MEMO AND
OPENING COMMENTS ON ADMINISTRATIVE LAW JUDGE'S RULING SEEKING
COMMENTS ON PROPOSED PROCEEDING SCHEDULE**

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I. Introduction

The California Independent System Operator Corporation (CAISO) hereby provides reply comments on the Preliminary Scoping Memo (Scoping Memo) and opening comments on the *Administrative Law Judge's Ruling Scheduling Prehearing Conference and Seeking Comments on Proposed Proceeding Schedule* (Ruling). In response to both the Scoping Memo opening comments and Ruling, the CAISO recommends that the Commission address the following priority outcomes:

- In the procurement track, issuing a procurement decision to replace the Diablo Canyon Power Plant (Diablo Canyon) by the end of summer 2020.
- In the planning track:
 - Adhering to the current two-year integrated resource plan (IRP) cycle rather than extending the cycle to three years;
 - Continuing to address near-, mid-, and long-term planning and procurement needs holistically in the IRP process;
 - Developing policy guidance on natural gas-fired resource retention and retirement with sufficient locational and resource specificity for the CAISO to conduct modeling; and
 - Taking steps to improve modeling issues in the IRP process.

II. Discussion

A. Procurement Track Priorities

1. The Commission Should Issue a Procurement Decision to Replace Diablo Canyon by the End of Summer 2020.

Parties agree with the CAISO that the Commission should address the impending need for a procurement decision to replace Diablo Canyon.¹ Although the California Energy Storage Alliance (CESA) advocates for a procurement decision by the end of 2020,² the CAISO urges the Commission to authorize procurement even sooner, by the end of summer 2020. Taking earlier action on procurement authorization will allow load serving entities (LSEs) to conduct competitive solicitations that include a more diverse set of resources.³

The Commission should not delay authorizing procurement to replace Diablo Canyon until after the next Preferred System Portfolio (PSP), as some parties recommend, because the Commission previously identified the need for additional capacity but has yet to authorize any procurement to meet that need.⁴ It is unlikely that the aggregation of individual LSE IRPs will meet or exceed the level of procurement found necessary in the Commission's previously adopted RESOLVE portfolios.

Table 1, below, shows the cumulative new resource build in the 2019-2020 Reference System Portfolio (RSP) based on the 46 MMT target.⁵ That portfolio identified the need for a substantial buildout of wind, solar, battery storage, and demand response between 2020 and 2024, for a total nameplate capacity of 14,258 MW. Between 2024 and 2026, the 2019-2020 RSP shows a need for 973 MW of long-duration pumped storage and 2,828 MW of battery storage, at least in part to address the retirement of Diablo Canyon. *To date, the Commission has not authorized procurement for any of this capacity.*

¹ California Environmental Justice Alliance, Sierra Club, Natural Resources Defense Council, and Union of Concerned Scientists (CEJA *et. al.*) Opening Comments, p.7; CESA Opening Comments, p. 8; California Wind Energy Association (CalWEA) Opening Comments, p. 12-13; Center for Energy Efficiency and Renewable Technologies (CEERT) Opening Comments, p. 4.

² CESA Opening Comments, p. 8

³ *Id.*, p.10; CalWEA Opening Comments, p. 15.

⁴ For example, San Diego Gas & Electric (SDG&E) Opening Comments, p. 3; CalWEA Opening Comments, p.17; City of San Francisco Opening Comments, p. 3.

⁵ See California Public Utilities Commission, *2019-2020 Electric Resource Portfolios*, Decision 20-03-028, *Table 5: New Resource Buildout of 2019-2020 RSP (Cumulative MW)*, R.16-02-007, April 6, 2020. (CPUC Electric Resource Portfolios).

Table 1. New Resource Buildout in the 2019-2020 RSP - 46 MMT (Cumulative MW)⁶

Resource Type	2020	2021	2022	2023	2024	2026	2030
Wind	-	34	1,950	1,950	2,737	2,737	2,837
Wind on New Out-of-State Transmission	-	-	-	-	-	-	606
Utility-Scale Solar	2,000	4,000	6,000	8,000	8,000	8,000	11,017
Battery Storage	152	2,453	2,453	2,453	3,299	6,127	8,873
Pumped (long-duration) Storage	-	-	-	-	-	973	973
Shed Demand Response	-	222	222	222	222	222	222
Natural Gas Capacity Not Retained	-	-	-	-	-	-	(30)

Table 2, below, shows the cumulative new resource build in the 2019-2020 RSP based on the 38 MMT target.⁷ The results indicate similar large-scale incremental resource needs in the 2020 to 2026 timeframe. Between 2020 and 2024, the 38 MMT RSP demonstrates the need for a substantial buildout of wind, solar, battery storage, and demand response, for a total nameplate capacity of 15,140 MW. Between 2024 and 2026 the 38 MMT RSP shows a need for 684 MW of utility-scale solar, 1,929 MW of battery storage, and 1,605 MW of long-duration pumped storage, at least in part to address the retirement of Diablo Canyon.

Table 2. New Resource Buildout in the 2019-2020 RSP - 38 MMT (Cumulative MW)⁸

Resource Type	2020	2021	2022	2023	2024	2026	2030
Wind	-	34	2,924	2,924	3,811	3,811	5,279
Wind on New Out-of-State Transmission	-	-	-	-	-	-	3,000
Utility-Scale Solar	2,000	4,000	6,000	8,000	8,000	8,684	11,995
Battery Storage	152	2,453	2,453	2,453	3,107	5,036	9,714
Pumped (long-duration) Storage	-	-	-	-	-	1,605	1,605
Shed Demand Response	-	222	222	222	222	222	222
Natural Gas Capacity Not Retained	-	-	-	-	-	-	(2,046)

⁶ Reproduced from CPUC Electric Resource Portfolios, *Table 5: New Resource Buildout of 2019-2020 RSP (Cumulative MW)*.

⁷ See CPUC Electric Resource Portfolios, *Table 8. New Resource Buildout of 38 MMT by 2030 Portfolio (Cumulative MW)*.

⁸ Reproduced from CPUC Electric Resource Portfolios, *Table 8. New Resource Buildout of 38 MMT by 2030 Portfolio (Cumulative MW)*

Again, to date, the Commission has not authorized procurement for any of this capacity. The CAISO urges the Commission to issue a procurement decision by end of summer 2020 to replace Diablo Canyon.

B. Planning Track Priorities

1. The Commission Should Adhere to the Current Two-year IRP Cycle Rather than Extending the Cycle to Three Years.

Both the CAISO and Southern California Edison (SCE) have serious concerns with extending the IRP cycle beyond two years. SCE notes that a longer cycle will result in the “reduction in opportunities to submit plans for and procure long-lead time resources and build any needed transmission infrastructure ahead of 2030... and [the] potential inability to transmit an up-to-date resource plan to the CAISO [Transmission Planning Process] TPP.”⁹

Furthermore, the Ruling’s proposed three-year IRP schedule creates disconnects between interagency process alignment. For example, it is not clear which vintage of the California Energy Commission’s Integrated Energy Policy Report (IEPR) demand forecast the Commission would use in the RSP, individual IRPs, or the PSP. It is also unclear which vintage the Commission will transmit to the CAISO for transmission planning purposes. The entire proposed IRP process can span almost four years¹⁰ and the underlying forecasts can vary widely in hourly profiles used in production cost modeling-based reliability validations as the state increases penetration of load modifiers such as fuel substitution. The CAISO is concerned that portfolios based on outdated IEPR demand forecasts will cause unnecessary discrepancies, when instead there should be close coordination between the Commission’s IRP, the CAISO’s TPP, and the CEC’s IEPR.¹¹ The CAISO also agrees with party comments that IRP and TPP coordination is critical for long lead-time resources and reliable, renewable procurement.¹²

The CAISO disagrees with Pacific Gas and Electric’s (PG&E’s) proposal and SDG&E’s recommendation to extend the IRP cycle beyond two years. SDG&E recommends extending the

⁹ SCE Opening Comments, p. 7.

¹⁰ For example, a “three year” cycle starts with the 2022 RSP in Q3 2021 and ends with a decision on the 2024 PSP transmitted to the 2025-26 CAISO TPP in Q1 2025.

¹¹ As suggested in SCE Opening Comments, p. 20; CEERT Opening Comments, p. 2; CESA Opening Comments, p.4; Vote Solar, the Large Scale Solar Association, and the Solar Energy Industries (*Vote Solar et. al.*) Opening Comments, p. 1; American Wind Energy Association (AWEA) Opening Comments, p. 11.

¹² CEERT Opening Comments, p. 3; CESA Opening Comments, p. 4-5; *Vote Solar et. al.* Opening Comments, p. 2; AWEA Opening Comments, p. 11.

IRP cycle because more time is needed “to complete the robust analysis necessary... in the IRP proceeding.”¹³ The CAISO disagrees with this conclusion, and instead recommends ways to streamline the existing two-year cycle.

First, the Commission should consider eliminating either the RSP or the PSP from the IRP cycle. Several parties agree with the CAISO this is possible.¹⁴ Second, parties also support the CAISO’s recommendation that the Commission should provide actionable guidance to LSEs on procurement,¹⁵ which will also help streamline the process and maintain a two-year cycle. Specifically, SCE explains that, “[w]ithout clear guidance on how LSEs’ IRPs will be operationalized, LSEs’ responsibilities to enact their plans, and requirements for ensuring that LSEs are pursuing the procurement and other action plans set forth in their IRPs and that those resources are coming online, it is not clear whether the IRP proceeding’s planning activities will actually translate into the procurement and new resource development needed to maintain grid reliability and reach California’s decarbonization goals.”¹⁶ Lastly, PG&E and SCE advocate for need-based procurement and cost allocation.¹⁷ The CAISO believes this is a workable solution that help to further streamline the IRP process.

2. The IRP Proceeding Should Continue to Holistically Address Near-, Mid-, and Long-term Planning and Procurement Needs.

The CAISO disagrees with PG&E’s and SDG&E’s proposal to fragment the IRP planning and procurement process into near-term, mid-term, and long-term segments and designate them to specific proceedings and tracks.

For example, PG&E proposes to address near-term reliability needs in the resource adequacy proceeding.¹⁸ Similarly, SDG&E urges the Commission to fragment the IRP into separate timeframes with near-term need completely removed from the IRP procurement process.¹⁹ SDG&E explains that “the goal of the IRP process should be to procure at least 3 to 5 years ahead of need so that there are enough resources available for each LSE to use to comply

¹³ PG&E Opening Comments, p. 6; SDG&E Opening Comments, p. 5.

¹⁴ CAISO Opening Comments, p. 9; SCE Opening Comments, p.7; SDG&E Opening Comments, p.6; PG&E Opening Comments, p.5-6.

¹⁵ CAISO Opening Comments, p. 8-9; SCE Opening Comments, p. 11.

¹⁶ SCE Opening Comments, p. 11.

¹⁷ SCE Opening Comments, p.4; PG&E Opening Comments, p. 4.

¹⁸ PG&E Opening Comments, p. 5.

¹⁹ SDG&E Opening Comments, p. 7.

with its near-term Resource Adequacy... contractual requirements.”²⁰ Neither of these approaches will ensure reliable near-term procurement.

First, the resource adequacy proceeding does not fully consider energy needs and does not have reliability testing—such as production cost modeling—like the IRP. Instead, the resource adequacy proceeding seeks to ensure that there is sufficient capacity (in MW) to meet gross load. The resource adequacy proceeding relies on proxies, such as the maximum cumulative capacity (MCC) buckets, to approximate energy requirements. The lack of a more sophisticated reliability check likely led to the system capacity shortfall ultimately addressed in the IRP proceeding.²¹ Furthermore, the resource adequacy program does not currently authorize incremental procurement. Even if it did, the Commission and LSEs would not be able to optimize that procurement to meet both reliability and policy goals. Thus, near-term needs should be within the scope of the IRP proceeding with explicit feedback to the resource adequacy program.²² For example, the IRP proceeding should inform the resource adequacy proceeding on the appropriate planning reserve margin, the definition of the maximum cumulative capacity buckets, resource characteristics needed to address reliability or meet state goals such as renewable energy requirements, effective load carrying capabilities, and natural gas-fired resource retention or retirement.

The CAISO also disagrees with PG&E’s recommendation to conduct long-term (10 years or more into the future) reliability and policy planning only every four years.²³ PG&E believes this extension is necessary to afford “more time for the [Commission] and stakeholders to pursue longer-term planning objectives and for LSEs to explore and present their longer-term planning outlook.”²⁴ Contrary to PG&E’s assertion, analyzing longer-term needs only every four years will mean there is less time and flexibility to study those needs or make course corrections along the way. This is particularly critical for consideration of long-lead time transmission projects and associated transmission-dependent resources in the planning and procurement processes. Furthermore, assessing long-term needs every four years may not capture the pace of change in load such as fuel substitution and other important load modifiers. An integrated approach

²⁰ SDG&E Opening Comments, p. 7.

²¹ California Public Utilities Commission, *Electric System Reliability Procurement 2021-2023*, Decision 19-11-016, R.16-02-007, November 7, 2019.

²² CAISO Opening Comments, p. 7; SCE Opening Comments, p. 16-17.

²³ PG&E Opening Comments, p. 6.

²⁴ PG&E Opening Comments, p. 6.

ensures a stable trajectory between the near- and mid-term to meet long-term policy goals and ensure reliability. Thus, it is critical that the Commission maintain the current two-year cycle that considers near-, mid-, and long-term needs holistically.

3. The Commission Should Develop Policy Guidance on Natural Gas-fired Resource Retention and Retirement with Sufficient Locational and Resource Specificity for the CAISO to Conduct Modeling.

The CAISO agrees with numerous party comments that the Commission should develop policy guidance on natural gas-fired resource retention and retirement.²⁵ Such policy guidance, especially in local areas and sub-areas, should have sufficient locational and resource granularity for the CAISO to conduct modeling. The CAISO also agrees with parties that the IRP proceeding should consider local capacity requirements, and that the resource adequacy and IRP proceedings should not be fragmented by system and local needs.²⁶ However, CAISO notes that, especially with tightening supply conditions, the Commission must consider the interdependence between local and system needs.²⁷

To start the process, California Environmental Justice Alliance, Sierra Club, Natural Resources Defense Council, and Union of Concerned Scientists (*CEJA et. al.*) and the California Wind Energy Association (CalWEA) suggest the Commission request information from the CAISO to develop local area procurement signals for LSEs.²⁸ The CAISO agrees and has already produced analyses that address *CEJA et. al.*'s immediate concerns. The 2021 and 2025 Local Capacity Technical Studies provide battery characteristics (capacity, duration, and energy) and natural gas-fired resources that batteries can displace in each local area and sub-area. For longer-term local capacity area considerations, the CAISO also conducts a 10-year Local Capacity Technical Study as part of the TPP, which the Commission and stakeholders can use to inform mid- to long-term procurement, as noted by the Public Advocates Office (CalAdvocates).²⁹ These already-completed analyses address two retirement-related questions. First, the analyses assess the necessary discharge characteristics for batteries to replace gas-fired

²⁵ *CEJA et. al.* Opening Comments, p. 3-4; CalWEA Opening Comments, p. 3-4; CESA Opening Comments, p. 5-6; CalAdvocates Opening Comments, p. 2-3; AWEA Opening Comments, p. 3-4; Bioenergy Association of California Opening Comments, 4.

²⁶ CAISO Opening Comments, p. 7; SCE Opening Comments, p.16-17; CalAdvocates Opening Comments, p.1-2; CEERT Opening Comments, p.4; AWEA Opening Comments, p. 4; CESA Opening Comments, p.6.

²⁷ CalAdvocates opening comments, p. 5; CalWEA opening comments, p. 9; *CEJA et. al.* opening comments, p. 3.

²⁸ *CEJA et. al.* Opening Comments, p. 6 and CalWEA Opening Comments, p. 11.

²⁹ CalAdvocates Opening Comments, p.2.

generation. Second, the analyses also exclude natural gas facilities that would no longer be required for local capacity needs (and could be allowed to retire) in assessing the ability to recharge the battery storage consistent with local capacity requirements.

Any additional CAISO analysis would require modeling unit-specific resource characteristics and locations, the validation of which is critical given the complexities of the resources being procured and the system conditions being studied. To conduct these additional assessments, LSEs should have completed their procurement solicitation processes to determine the resource types, characteristics, and siting locations being contemplated. The CAISO would need these details to validate that the procured resources meet local capacity requirements. For example, the CAISO's Moorpark study (cited by CEJA *et. al.*) determined local area resource needs based on the specific gas-fired generation that was scheduled to retire.³⁰ Based on that retirement information, the CAISO determined generic capacity, duration, and energy requirements for replacement resources. The last and most detailed step was the CAISO's subsequent assessment of the specific suite of resources that SCE considered as replacement resources in response to its request for offers. This assessment considered the specific locations and interconnections for the proposed replacement resources. These analyses are time consuming and resource intensive. In the context of the IRP, they will require the CAISO to analyze a comprehensive portfolio that preferably aggregates all LSE procurement in the local area or sub-area of interest.

The CAISO appreciates the thoughtfulness of CEJA *et. al.*'s proposal of screens and other technical factors for the Commission to consider in conducting targeted procurement analysis.³¹ Based on the CAISO's understanding, CEJA *et. al.*'s intent is to consider potential siting of system needs, such as Diablo Canyon replacement capacity, as part of a longer-term strategy to facilitate retirement of natural gas-fired generation currently required for local capacity needs. The CAISO also understands that short of retirement, such procurement efforts may seek to reduce generation from those units providing emission reduction benefits within the local capacity areas. Although the CAISO agrees that these are worthwhile efforts, the timing of any future retirement depends heavily on whether the natural gas-fired generation in the local areas may also be needed for system or reliability needs. The bulk of the natural gas-fired

³⁰ CEJA *et. al.* Opening Comments, p. 12.

³¹ CEJA *et. al.* Opening Comments, p.8, 11-12.

generation that is currently providing local resource adequacy capacity is also required for system adequacy. System needs will continue to require these resources even after accounting for the 3,300 MW of incremental procurement authorized in D.19-11-016 and any procurement to replace Diablo Canyon unless replacement capacity and essential reliability services provided by the natural gas-fired generation fleet is thoughtfully considered. As noted above, the IRP has yet to authorize any procurement for system needs based on the adopted portfolios. Thus, LSEs must procure additional system resources to ensure this strategy enables natural gas-fired plant retirement and delivers air quality benefits to local communities. Furthermore, it is unclear what type and volume of replacement resources can in fact be sited within local areas or sub-areas, as some are urban environments with siting limitations for larger or more diversified resources that provide significant energy and capacity, especially after sunset.

In considering alternatives to enable future retirement of natural gas-fired resources, a clear trajectory for expectations and priorities for natural gas-fired generation retirement as part of the resource planning effort will be invaluable in considering not only storage, but also combinations of other types of alternatives. This could include combinations of storage and transmission working collectively. Not only can transmission additions reduce local capacity requirements at peak load periods, they can provide additional charging capacity in the off-peak periods to enable more storage as a local capacity replacement resource. Given long permitting lead times and the level of coordination this entails with procurement strategies, the efficacy of this approach hinges on timely and proactive long-term resource planning. Therefore, in order to retire and replace natural gas-fired resources, the Commission must not only authorize new procurement for system needs, which it has yet to do, but also analyze and plan for replacement strategies that may have long-lead times. The CAISO has conducted such analyses to help guide Commission and party discussion.³²

³² In the 2018-19 and 2019-20 TPP, the CAISO undertook an extensive analysis to value local capacity requirement reductions. See 4.3.4 *Valuing Local Capacity Requirement Reductions* in http://www.caiso.com/Documents/ISO_BoardApproved-2018-2019_Transmission_Plan.pdf and 4.9 *Local Capacity Requirement Reduction Benefit Evaluation* in <http://www.caiso.com/Documents/ISOBoardApproved-2019-2020TransmissionPlan.pdf>.

4. The Commission Should Take Steps to Improve Modeling Issues Currently in the IRP Process.

The CAISO agrees with several other parties on steps to improve inputs and assumption for modeling to assess optimal portfolios, the choice of models and modeling techniques, and model calibration techniques. First, the CAISO agrees with SCE that the Commission should consider conducting “an assessment of alternative capacity expansion modeling platforms that could replace RESOLVE.”³³ As described in opening comments, the CAISO has found inexplicable discrepancies in the RESOLVE model that may need manual workarounds to ensure calibration.³⁴ Second, the CAISO agrees with SCE that the Commission should establish “stronger reliability planning standards... that can inform LSEs’ IRP filings and allocation of any identified procurement needs”³⁵ and those may further strain the RESOLVE model capability. Third, the CAISO echoes CEJA *et. al.*’s request that the Commission ensure modeled GHG emissions are benchmarked against actual emissions and any differences are well understood so that the state can meet state policy goals.³⁶ Fourth, the CAISO agrees with parties that the planning horizon for IRP modeling should be extended to 2045 to ensure consistency with Senate Bill 100 (SB100).³⁷

III. Conclusion

In sum, in the procurement track the CAISO urges the Commission to authorize procurement by the end of summer 2020 to address the impending Diablo Canyon Power Plant retirement. In the planning track, the Commission should maintain the current two-year cycle by streamlining the process, providing actionable policy guidance to LSEs, and continue to address near-, mid-, and long-term planning and procurement needs holistically. The Commission should prioritize developing policy guidance on natural gas-fired resource retention and retirement with sufficient locational and resource specificity for the CAISO to conduct modeling. Lastly, the Commission should take steps to address modeling concerns.

³³ SCE Opening Comments, p. 8.

³⁴ CAISO Opening Comments, p. 10.

³⁵ SCE Opening Comments, p. 5.

³⁶CEJA *et. al.* Opening Comments, p.14-15.

³⁷ CESA Opening Comments, p. 2; AWEA Opening Comments, p. 4; Vote Solar *et. al.* Opening Comments, p. 4; SDG&E Opening Comments, p. 7.

The CAISO appreciates the opportunity to file these reply comments and looks forward to working with the Commission and parties to reform the IRP planning and procurement tracks.

Respectfully submitted

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