

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Resource Adequacy Developments in the
Western Interconnection

Docket No. AD21-14-000

**POST-TECHNICAL CONFERENCE COMMENTS OF THE
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION**

I. INTRODUCTION

The California Independent System Operator Corporation (CAISO) supports the Commission's active inquiry into how resource adequacy frameworks are developing in the western interconnection and welcomes this opportunity to provide post-technical conference comments. In the two-day technical conference held this past June, the CAISO's representatives defined the CAISO's view of resource adequacy, provided a functional overview of California's resource adequacy program, and explained that the rapidly evolving resource mix across the western interconnection requires continued regional coordination.

The CAISO highlights four key arenas in which the resource adequacy paradigm in California and other parts of the West will continue to evolve to ensure continued reliability in California and the western interconnection.

1. California Public Utilities Commission (CPUC) actions in its ongoing resource adequacy proceeding and other related proceedings.
2. CAISO stakeholder initiatives on resource adequacy issues.
3. Continued progress in implementing reforms to the CAISO's interconnection and transmission planning processes to align more effectively with expected procurement.

4. Continued regional collaboration on resource adequacy and other reliability issues.

The CAISO is optimistic continued progress in these areas will put us on a path to a more reliable, efficient, and cost-effective resource adequacy construct.

II. Continued Developments at the California Public Utilities Commission

California's resource adequacy program includes roles for both the CAISO and the local regulatory authorities within its balancing authority area, most notably the CPUC.¹ Several pending matters before the CPUC will help evolve the resource adequacy framework to meet emerging needs. In particular, a resource adequacy program designed merely to meet the highest forecast load of a month (*i.e.*, the gross peak) plus a planning reserve margin is no longer sufficient to ensure reliability outside of the gross peak period. In addition to the gross peak, the resource adequacy program should also at a minimum plan towards meeting peak demand net of solar and wind generation (*i.e.*, the net peak) with a sufficient planning reserve margin. More generally, an effective resource adequacy program must ensure sufficient resources are available to operate the grid reliably outside of the gross peak period, especially when demand is still high, but solar and other resources are unavailable. Ensuring the resource adequacy program provides the CAISO with adequate supply to meet reliability across all hours of the year is critically important. The CAISO balancing authority area is rapidly transitioning from a resource fleet made almost entirely of conventional thermal resources to a fleet comprised largely of renewable, storage, and availability-limited

¹ *Resource Adequacy Developments in the Western Interconnection*, Prepared Statement of Delphine Hou on behalf of the California Independent System Operator Corporation, FERC Docket No. AD21-14-000 (June 23, 2021).

resources that are not available 24 x 7. The challenges to the grid from the rapid pace of the transition from conventional to new resource technologies has been further exacerbated by the impacts of climate change that have resulted in extreme heat, drought, and wildfire.

The past two summers have demonstrated that setting program requirements based on the gross peak fails to establish a sufficient reliability margin within the CAISO balancing authority area. The CAISO has experienced challenges managing the system at the net peak in summer months, when demand remains relatively high but solar generation drops below resources' resource adequacy values. In response to these challenges, in 2021 the CPUC issued two emergency procurement orders to facilitate additional contracting and buildout of supply and demand-side resources capable of being available in the net peak period.² The CPUC intended this additional procurement to meet an "effective planning reserve margin" between 17.5 percent and 22.5 percent, which is higher than the formally adopted 15 percent planning reserve margin. These emergency procurement orders specified that incremental resources must be available during the net peak period, helping to address challenges the CAISO has faced managing the system after sunset.

In addition to incremental supply and demand-side resources procured by CPUC-jurisdictional load serving entities, the CAISO declared a "significant event"

² Cal. Pub. Utils. Comm'n, D.21-12-015 (Dec. 6, 2021); Cal. Pub. Utils. Comm'n, D.21-03-056 (Mar. 26, 2021).

under its capacity procurement mechanism (CPM).³ This significant event was a confluence of extreme weather events and recognition that resources used to meet gross peak under California’s resource adequacy program were not adequately supporting reliability in the net peak period. By declaring the significant event, the CAISO was able to procure additional capacity to help it operate reliably across the summer.

Although the CPUC’s emergency procurement orders and CAISO backstop procurement helped to address reliability needs in the very short term, these are not sustainable solutions to allow for a reliable and efficient resource adequacy program.⁴ Recognizing the need for more durable solutions, the CPUC is considering significant reforms to its resource adequacy program.

In the Reform Track of the CPUC’s current resource adequacy proceeding, the CPUC is developing a resource adequacy framework based on a “slice-of-day” approach that would establish resource adequacy requirements for multiple “slices” of the day.⁵ In its decision to move forward with significant reforms to its resource adequacy framework the CPUC noted, “the current RA framework considers the

³ Information on the events leading to issuing the CPM designations is available at <http://www.caiso.com/Documents/CapacityProcurementMechanismSignificantEvent-JointStatementandLetter.pdf> and <http://www.caiso.com/Documents/Presentation-CapacityProcurementMechanismSignificantEvent-Jul2-2021.pdf>

⁴ CAISO noted in its written comments for the technical conference that California stakeholders were exploring longer-term changes to address issues with setting capacity requirements based on the gross peak. Prepared Statement of Delphine Hou at 3 (California stakeholders already are exploring “whether the existing planning reserve margins based on monthly peak load forecasts and stacking resource capacity values to meet each month’s peak forecast are adequate to ensure sufficient capacity and energy is available across all operating hours.”)

⁵ Cal. Pub. Utils. Comm’n, Assigned Commissioner’s Scoping Memo And Ruling, R.21-10-002 (Dec. 2, 2021).

monthly gross peak load but may not address other hours of the day when load may still be high and variable resources provide little or no value” and “[w]ith the growing penetration of renewable resources, the [CPUC] seeks a framework that can better manage reliance on use-limited resources to meet reliability needs.”⁶ The CAISO has identified challenges implementing some aspects of a slice-of-day approach as proposed in the CPUC proceeding but is actively engaged in the CPUC process and is optimistic that reforms considered by the CPUC will improve on the status quo.⁷

The Integrated Resource Planning (IRP) process is another area where the CPUC is helping address longer-term reliability issues. The IRP is a long-term resource planning process intended to ensure that California’s electric sector meets its greenhouse gas reduction goals while maintaining reliability at the lowest cost. The IRP process is an iterative process that works hand-in-hand with the CAISO’s Transmission Planning Process (TPP). The CAISO utilizes resource portfolios developed through the IRP to inform various transmission planning analyses and studies. Recently, under the IRP proceeding, the CPUC ordered utilities to procure 11,500 MW of new electricity resources to come online between the years 2023 and 2026, the largest procurement authorization to date.⁸ In addition, the CPUC continues to propose improvements in its IRP process to develop more predictable and systematic processes for issuing procurement and retaining resources.⁹ The CAISO supports these efforts and

⁶ Cal. Pub. Utils. Comm’n, D.21-07-014-015, at 27 (July 16, 2021).

⁷ See Opening Comments On Proposed Decision On Track 3b.2 Issues: Restructure of the Resource Adequacy Program of the California Independent System Operator Corporation, CPUC R.19-11-009 (June 30, 2021).

⁸ See Decision Requiring Procurement to Address Mid-Term Reliability (2023-2026), CPUC Decision 21-06-035 (Jun. 24, 2021).

⁹ See Proposed Decision Adopting 2021 Preferred System Plan, CPUC R.20-05-003 (Dec. 22, 2021).

continues to work with the CPUC to enhance IRP processes and ensure this process will secure resources necessary to meet electric reliability and California's energy policy goals.

III. CAISO Tariff Enhancements on Resource Adequacy

In late 2018, the CAISO embarked on a multi-year, multi-phase Resource Adequacy Enhancements stakeholder initiative to address changing needs on its system.¹⁰ The CAISO implemented the first phase of the initiative in summer 2021, with new rules specifying when capacity resources on a planned outage must provide substitute capacity. The CAISO also adopted, on an interim basis, rules requiring storage resources providing resource adequacy capacity to reserve a minimum state of charge to ensure they can meet discharge schedules on the most critical operational days. Since 2020, the CAISO has seen a tenfold increase in battery storage capacity on its grid, and these new resources have been helpful in meeting needs at the net peak. As California shifts to a resource mix increasingly comprised of battery storage, the CAISO faces a new challenge ensuring these resources can sufficiently charge to meet reliability needs. The minimum state of charge requirement is a first step towards meeting this challenge. This requirement, which will expire on June 1, 2023, was proposed through the Resource Adequacy Enhancements initiative as a tool the CAISO could implement quickly while it developed a more refined, market-based solution to the issue of ensuring storage resources have sufficient charge to meet their discharge

¹⁰ Details on the RA Enhancements stakeholder initiative are available at: <https://stakeholdercenter.caiso.com/StakeholderInitiatives/Resource-adequacy-enhancements>

schedules. The more durable approach is being explored in the CAISO's ongoing Energy Storage Enhancements stakeholder initiative.¹¹

The second phase of the Resource Adequacy Enhancements initiative is considering adjustments and clarifications to: resource adequacy must-offer obligations; the CAISO's authority to generate bids for resource adequacy resources that do not submit required bids; and the continued need for separate flexible resource adequacy requirements, given changes the CAISO is considering in its separate day-ahead market enhancements initiative.

The CAISO also determined it is necessary to update the CAISO's backstop capacity procurement authority under its CPM and recently announced its intent to commence a stakeholder initiative early in 2022.¹² This initiative would, among other things, consider changing pricing provisions regarding the CPM soft offer cap and expanding the CAISO's procurement authority to align with changing operational needs.

IV. Progress on Improving the CAISO's Interconnection and Transmission Planning Processes

The CAISO has several important interconnection and transmission planning initiatives both planned and under way that will aid reliability. These enhancements will help ensure that resources identified through the resource adequacy program and the IRP can actually be built and interconnected to the grid.

¹¹ Details of the Energy Storage Enhancements stakeholder initiative are available at: <https://stakeholdercenter.caiso.com/StakeholderInitiatives/Energy-storage-enhancements>

¹² The draft catalog is available at: <http://www.caiso.com/InitiativeDocuments/2022RevisedDraftPolicyInitiativesCatalog.pdf>. CAISO Management is scheduled to brief the CAISO Board of Governors on its latest policy roadmap for 2022 at the February meeting.

The CAISO emphasizes that California is already taking positive steps to address the need for new resources. A total of 79 projects went through the CAISO's New Resource Implementation process and achieved commercial operation in calendar year 2021. These 79 projects total approximately 5,200 MW, with approximately 2,800 MW eligible to count in the resource adequacy program.¹³ Of these 79 projects, 48 were transmission-connected storage resources totaling approximately 1,500 MW. As mentioned above, battery storage can be particularly helpful at addressing reliability issues across all hours of the day.

Building on the progress shown in 2021, the CAISO has identified almost 5 GW of specific interconnections that require no transmission upgrades, an additional 6 GW that could be supported using non-wires Remedial Action Schemes, and another 2 GW supported by transmission that has already been approved and is under development.¹⁴ The CAISO has shared this review with its partners in California government through a multi-agency task force formed with the CPUC, the California Energy Commission, the California Governor's Office of Business and Economic Development (GO-Biz), the California Air Resources Board, and the CAISO. This group was formed to address barriers to procurement through tracking, identifying, and resolving issues with individual projects critical for the transition to a clean energy future. The goal of this ongoing effort is to work with project developers, LSEs, utilities, and/or local officials to

¹³ The CAISO applies the "net qualifying capacity" approach to determine how much a resource's nameplate capacity can qualify for resource adequacy counting purposes. This includes adjustments for deliverability across transmission constraints and availability limitations for variable resources and demand response resources.

¹⁴ Details on the CAISO's analysis of resources available for near-term interconnection is available at: <http://www.aiso.com/Documents/Briefing-ResourcesAvailable-NearTermInterconnection.pdf>.

help mitigate problems quickly, before they can impede a project's ability to reach commercial operation.

The CAISO is also considering interconnection process improvements. One important CAISO effort underway is the Interconnection Process Enhancements (IPE) Initiative.¹⁵ Through this initiative the CAISO is exploring potential changes to address the rapidly accelerating pace of new resources needing connection to the grid to meet system reliability needs and the exponentially increasing levels of competition among developers, which has resulted in a dramatic increase in the number of new interconnection requests being submitted to the CAISO. The ultimate goal is to move new resources through the interconnection queue more quickly and efficiently.

As a complement to interconnection process actions, for longer term planning the CAISO has extended its transmission planning process to include a 20-year transmission outlook. This will better enable the CAISO to identify the long lead time transmission projects needed to support California's climate goals; inform and enable a coordinated integrated resources planning process; and provide context and support for transmission approved in the 10-year time frame.¹⁶ Engaging in a 20-year outlook will provide a longer term context for framing issues in the 10-year transmission planning process and allow transparency to receive information responsive to supporting and informing the CPUC's IRP and the CEC's SB 100 and Integrated Energy Policy Report efforts. This process will better align resource adequacy procurement decisions with

¹⁵ Details on the Interconnection Process Enhancements stakeholder initiative are available at: <https://stakeholdercenter.caiso.com/StakeholderInitiatives/Interconnection-process-enhancements-2021>.

¹⁶ Details on the 20-year transmission outlook project are available at: <https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/20-Year-transmission-outlook>.

the transmission planning and interconnection processes and allow for regional alternatives that require longer lead time transmission investments to be factored in the resource procurement processes.

V. Regional Reliability Developments

Regional coordination can better enable states to meet their reliability needs. An initial approach to this coordination is for the region to develop information sharing protocols for resource adequacy programs so administrators of resource adequacy programs understand what capacity is committed for resource adequacy purposes and for what timeframes. Sharing information will help mitigate the risk of double-counting capacity and two balancing authority areas relying on the same MW simultaneously. Also, exploring regional resource planning may allow states to best meet their electric demand needs and policy objectives with a diverse set of resources, as well as share the costs of new resource development and transmission. This coordination is important because exploring regional resource planning decisions may allow states to best meet their electric demand needs with a diverse set of resources that meet their policy objectives as well as share the costs of new resource development and transmission. Finally, an important development outside the CAISO balancing authority area is the Northwest Power Pool's exploration of a resource adequacy program. The CAISO remains engaged with others in the region to discuss these important matters.

VI. Conclusion

The CAISO supports the Commission's active inquiry into resource adequacy in the western interconnection. In these comments, the CAISO has highlighted several arenas in which the resource adequacy paradigm will continue to evolve to ensure

continued reliability in CAISO. The CAISO remains hopeful that further progress will lead to a more reliable, efficient, and cost-effective resource adequacy construct.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I certify that I have served the foregoing document upon the parties listed on the official service list in the captioned proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California, this 31st day of January, 2022.

Is/ Anna Pascuzzo
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