

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

Order Instituting Rulemaking to Oversee the  
Resource Adequacy Program, Consider  
Program Refinements, and Establish Forward  
Resource Adequacy Procurement Obligations

Rulemaking 19-11-009  
(Filed November 7, 2019)

**INFORMAL COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM  
OPERATOR CORPORATION**

The California Independent System Operator Corporation (CAISO) appreciates this opportunity to provide comments on the Track 3B.2 Resource Adequacy Reform Workshops held on September 22, 2021 and November 3, 2021. These comments focus on the principles and chief areas of concern that the CAISO identified during the workshop.

**I. Discussion**

The CAISO recognizes that the presentations at the workshop are preliminary and may not represent thorough proposals. In all cases, however, the CAISO continues to advocate for simplicity, both from a contracting and validation perspective. A proposal that emphasizes simplicity is more likely to result in a framework that clearly meets the needs of the system and promotes compliance. The CAISO offers the following comments as guiding principles for the consideration of any proposals.

**A. Any Framework Must Ensure Sufficient Resources and Planning Reserve  
Margin During All Hours.**

With potentially complicated program frameworks and a range of time periods proposed, there is an inherent risk that shown resources may be insufficient to meet expected needs during some. Any slice of day proposal must consider the impact of the hours in each slice to ensure sufficient resources and planning reserve margin (PRM) during all hours, but most especially during the net load peak. Additionally, the resources must continue to be shown to the CAISO

and the must offer obligation must remain 24/7 so that the CAISO can properly operationalize the resources, regardless of slices.

Generally, the CAISO suggests that an hourly evaluation is preferable to a multi-hour evaluation. Multi-hour time slices have the potential to over- or under-value resources during critical periods. For instance, four hour time slices during the net load peak could still count solar in hours when there is zero solar output. Any averaging of capacity values over an extended time, be it four or six hours, has the potential to overvalue resource capacity in certain critical hours, such as at 8pm or 9pm when solar is no longer contributing. This is a major gap in such a methodology that could impact the dependability of the framework.

Ultimately, although an hourly approach may be best to ensure proper resource counting and contribution, any approach needs sufficient evaluation to determine whether the resulting RA program procurement can meet the most critical operating conditions. The program should also consider scenarios such as a prolonged hot summer and a bad hydro year, or a west wide heat wave. The added granularity of hourly slices is beneficial, but changes over the course of the year, including shifts in critical hours, must be considered as well. Monthly versus seasonal intervals may be more adaptable to changing grid conditions and may limit the need to update slices on a regular basis as resource mix and load shapes change over time. Evaluation of the proposals must take a variety of scenarios into consideration if the Commission is seeking a long term solution versus something to meet a short term needs.

### **B. Any Framework Should Include Realistic Resource Counting.**

Second, key to any RA program framework is ensuring that various resource technologies are valued appropriately. The CAISO supports more realistic resource counting to match what is actually seen in the operational horizon. The CAISO offers the following observations and initial recommendations for specific resource types:

**Thermal generation:** The CAISO continues to advocate for an unforced capacity (UCAP) methodology over a methodology based on exceedance or Pmax for thermal generation. A UCAP methodology, importantly, accounts for both ambient issues and plant trouble, both of which create non-trivial impacts to thermal resource capacity values. Further, a UCAP methodology provides a better framework in which to distinguish availability between resources, which is beneficial to guide future investments and retirements as the generation fleet transitions. Finally, a UCAP methodology better preserves the integrity of the PRM by dynamically

changing capacity values to correspond with the fleet forced outage rate. This means the PRM only needs to cover forecast error and operating reserves, better ensuring this buffer functions as intended.

**Non-dispatchable generation:** Today, the qualifying capacity value of non-dispatchable resources is based on historic output during the peak hours of the day HE17-21. The CAISO agrees that this methodology does a reasonable job of valuing these resources and could be utilized in the future reformed RA framework. However, should PG&E's suggestions for multi-hour slices be adopted, the CAISO recommends utilizing an exceedance methodology for each slice for non-dispatchable resources. With larger time slices there is a greater risk of the over- or under-counting of capacity in each slice and it may be more important to reflect the differing capabilities of non-dispatchable resources over the operating day. However, with SCE's hourly slice proposal, the risk of over- or under-counting capacity of other resources in each hour is reduced, and thus that approach may be an appropriate simplification for non-dispatchable resources to be valued based on historic output during peak hours, as is done today.

**Storage:** Storage resources should be considered based on the physical constraints of the resource. The CAISO is concerned with some parties' assertion that storage resources be allowed to count for more than one cycle per day and thus could qualify for capacity in more slices. It is not a reasonable assumption to allow storage resources to count for multiple cycles if the physical resource is designed to perform less than that. Most resources on the system today are only designed to perform one cycle per day.<sup>1</sup> Should this change in the future, the CAISO recommends that the Commission adopt a process to require storage assets to provide documentation that they have been specifically designed for multiple cycles per day.

It is critical that storage resources be capable of charging under various grid conditions and varying levels of congestion, not only based on the availability of energy to charge. This is especially important for local storage resources. Additionally, parties should discuss explicitly how storage round trip efficiencies are accounted for within the RA framework. Non-physical constraints may also impact storage capacity. Under the current investment tax credit (ITC) program, limitations on charging from the grid may diminish or jeopardize availability. The RA

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<sup>1</sup> Comments in the CAISO stakeholder processes suggest that many storage resources could physically cycle more than once per day, the costs associated with charging and discharging beyond the first cycle are significantly higher due to the increased likelihood cell replacement prior to existing warranties.

counting framework for storage should reflect actual storage availability.

**Wind and Solar:** For intermittent resources such as wind and solar, the timing of slices could result in potential over- or under-counting issues, as discussed above. Any framework must reflect the actual availability of these resources and what contributions can be reasonably expected. For example, if the slices are four hours (such as 5pm-9pm), using an exceedance methodology will still significantly over count solar availability for the last hour of the slice, which is the same issue that we are experiencing today. On the other hand, if the slices are one hour, the risks to grid reliability posed are significantly lessened. Further, the CAISO recommends that whether an Effective Load Carrying Capability (ELCC) or exceedance methodology is ultimately selected to determine the qualifying capacity of wind and solar resources, both methodologies should more explicitly account for the effect that the geographical differences, as well as different technology characteristics, may have on a resource's average output. This will not only produce more realistic capacity values, but could also send better market signals to invest in certain technology types or build resources in certain areas.

**Co-located:** CAISO disagrees with the assertion that co-located and hybrid resources are similar enough to be given the same counting methodology. Under the new RA framework, co-located resources should have a different counting methodology from hybrid resources. Co-located resources have two resource IDs and can be dispatched separately, and thus should have two qualifying capacity (and net qualifying capacity) values that are based on the respective technology type. Further, co-located resources are modeled and dispatched identically to stand-alone counterparts. As noted above, investment tax credits could impact the performance and availability of storage and these impacts should be included in any counting process for storage.

**Hybrid resources:** There is a very small amount of capacity using the hybrid model today. It is difficult to predict how hybrid resources may perform in the future, when more resources employ this model. The CAISO suggests an hourly exceedance methodology for the entire hybrid resource, without separating out the independent underlying components. The CAISO suggests that this methodology is more straightforward than the current counting rules in place, will account actual availability of specific hybrid resources, and will incentivize hybrid resources to be available as much as possible during critical operating hours.

**Hydro resources:** The CAISO supports maintaining the current methodology as it reasonably accounts for low hydro years and uses an exceedance methodology.

**Demand response:** The CAISO continues to advocate for an ELCC or similar “contribution to reliability” methodology to establish QC values for variable output demand response resources. Any assessment of demand response QC valuation should consider its variable output nature, availability limitations, and use limitations. In light of the changing grid and evolving RA needs, the CAISO continues to recommend that any new QC value, including that considered for demand response, reflects the following assessments: (1) reflects the resource’s contribution to reliability across all hours of the year or seasons as a variable-output resource; and (2) reflects the resource’s interactive effects with other similarly-situated resources. Operationally, any new method should require the resources to be on RA supply plans, and ensure that the demand response availability to the CAISO, via bids, reflects what is shown on those plans. The CAISO believes an ELCC best meets these principles and reflects the variable, use-limited, and energy limited nature of demand response.

Finally, the CAISO notes that in D.21-06-029 the Commission requested the California Energy Commission (CEC) launch a stakeholder working group to develop recommendations for a comprehensive and consistent measurement and verification strategy, including a new QC counting methodology, for demand response resources. Pursuant to that decision, the Commission requested the CEC to submit recommendations no later than March 18, 2022, at which time the Commission will consider the recommendations for implementation in the 2023 resource adequacy compliance year.<sup>2</sup> The Commission should not undermine the effectiveness of the CEC process by either pre-judging its outcome in the Slice of Day Workshops or to request that the CEC conform to a resource adequacy program design that is still under development.

**C. Deliverability Modifications Should be Discussed in a CAISO-Led Stakeholder Process.**

Lastly, while the workshop discussed deliverability reform, any modifications to deliverability should be discussed in a CAISO led stakeholder process. The discussion at this workshop steered towards conflating the CPUC’s concern with “availability” and the CAISO’s charge of managing “deliverability.” Historically, the CPUC has used Maximum Cumulative Capacity (MCC) “buckets” to reduce reliance on resources with limited availability over the day

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<sup>2</sup> D.21-06-029, pp. 35-36.

or week. These new slice of day proposals seek to meet that same goal of recognizing and accounting for different resource availability over the day and seasons – this time not necessarily because of contractual limitations, as was the case when MCC was first introduced, but because of new technologies and their limitations. The focus of availability is on the physical capabilities of the resource during critical times, and speaks to the energy accounting of the resource. This differs from the deliverability assessment and allocation performed by the CAISO.

Deliverability, while required for a resource to count towards RA, focuses on the ability of the resource to serve load during critical times and under certain grid conditions, and speaks to the capacity accounting of the resource.

It is not feasible for the CAISO to run deliverability studies for every slice or every hour of the day, nor would that level of complication benefit the RA framework. Binding deliverability to system peak is meant to ensure that the resource is able to deliver, *from a grid standpoint*, during the most critical times; and thus the resource would have the capability to serve load at any other time. Imagine, instead, the contracting and validation chaos that would follow if a resource had full capacity deliverability status for four hours a day, partial capacity deliverability status (PCDS) to 60% another part of the day, PCDS to 20% another part of day, and was energy-only for the final part of the day. In this proceeding, the Commission should not conflate energy accounting with capacity accounting in its proposed solutions.

## **II. Conclusion**

The CAISO appreciates this opportunity to comment on this Resource Adequacy Reform Workshop and provide guiding principles for the Commission’s consideration.

Dated: November 10, 2021