

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

Order Instituting Rulemaking to Oversee
the Resource Adequacy Program, Consider
Program Refinements, and Establish
Annual Local and Flexible Procurement
Obligations for the 2019 and 2020
Compliance Years.

Rulemaking 17-09-020
(Filed September 28, 2017)

**CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION
COMMENTS ON RESOURCE ADEQUACY PROPOSALS**

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I. Introduction

The Commission issued its Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge (Scoping Memo) on January 18, 2018. The CAISO and other parties submitted resource adequacy related proposals on February 16, 2018, and the Commission held a workshop on the proposals on February 22 and 23, 2018 (February Workshop). The Scoping Memo provides an opportunity for parties to submit comments on proposed modifications to the resource adequacy program and responses to comments made at the February Workshop. The California Independent System Operator Corporation (CAISO) hereby submits comments on party proposals and clarifies its own proposals.

II. Discussion

A. Local and Flexible Capacity Requirements

At the February workshop, Energy Division presented two options for how the Commission should address the delay in finalizing the Local Capacity Requirements (LCR) and Flexible Capacity Requirements (FCR) studies. Energy Division proposed either (1) delaying a final decision in this proceeding until July 12, 2018 or (2) adopting local and flexible capacity requirements based on draft study results with a deadband designed to address any deviations between the draft and final results. The CAISO supports delaying the final decision in this proceeding until July 12, 2018. The CAISO understands this may compress the contracting period for local resource adequacy capacity by two weeks; however, (1) the needs and available resources in the local areas are generally known and understood, and (2) the CAISO believes it is best to procure resources based on final results rather than draft results. This is the only way to prevent

potential over- or under-procurement and an outcome that could necessitate reallocating requirements across LSEs.

B. Availability-Limited Resource Proposal

i. The CAISO's Availability-Limited Resource Proposal Enables Continued Preferred Resource Integration While Maintaining Local Reliability.

The CAISO's proposal for analyzing characteristics of availability-limited local capacity resources (Availability-Limited Proposal) supports the Commission's advancement of preferred resources while ensuring reliability.¹ Availability-limited resources are those resources that may have a variety of limitations such as duration hours (per year, seasonal, month or day) or event calls (per year, season, month or consecutive days). The transmission planning analysis the CAISO filed with the Commission on February 16, 2018 articulates a methodology to establish minimum requirements for availability-limited resources as they increase as a percentage of total capacity within a local area. The CAISO first presented transmission planning analysis methodology and results in October 2016² at a joint Commission-CAISO workshop. In addition, the CAISO used this methodology as the basis for analyzing alternatives to the Puente Power Plant in the California Energy Commission's siting proceeding.³ The CAISO presented the methodology at a subsequent joint Commission-CAISO workshop in October 2017.⁴ Per the Availability-Limited Proposal, the CAISO will continue to rely on and refine its transmission planning analysis to provide the Commission and parties an early indication of these evolving availability requirements.

Commenters at the February Workshop noted that CAISO's proposal is a paradigm shift for the industry and thus should be considered in Track 2 of this proceeding rather than Track 1. However, grid evolution is already well underway. The resource adequacy program must reflect new system realities as soon as possible to remain viable and must provide the CAISO with the resources it needs to maintain reliability in a rapidly evolving environment. Under the current resource adequacy program, the CAISO provides a technical analysis detailing the peak megawatt

¹ The proposal submitted on February 16 referred to the resources as "use-limited." To avoid confusion with the CAISO's tariff defined "use-limited resource" term, the CAISO will use "availability-limited" instead.

² Presentation, materials, and stakeholder comments for the workshops are available at: <http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=9457D220-D7EE-4828-94F4-1D9A30B6E812>.

³ California Independent System Operator, Moorpark Sub-Area Local Capacity Alternative Study, August 16, 2017, http://www.caiso.com/Documents/Aug16_2017_MoorparkSub-AreaLocalCapacityRequirementStudy-PuentePowerProject_15-AFC-01.pdf.

⁴ Presentation, materials, and stakeholder comments for the workshops available at: <http://www.caiso.com/Pages/documentsbygroup.aspx?GroupID=9457D220-D7EE-4828-94F4-1D9A30B6E812>.

(MW) need for each local capacity area or sub-area studied. The Commission considers the CAISO's analysis and procures capacity to address the identified needs. The need for resource attributes such as duration hours is not new, but in a system with an overwhelming majority of conventional generation resources, these attributes were simply "bundled" with capacity such that resource availability was neither a concern nor a constraint. Therefore, the CAISO did not separately analyze resource attributes such as duration times and total annual availability hours in its transmission planning analyses. However, as the penetration of availability-limited resources increases, the CAISO's planning analysis shows that there are a range of resource attributes that may become a binding reliability need as dependence on availability-limited resources grows. The CAISO's current analysis highlights several local capacity areas or sub-areas where consecutive duration hours, *i.e.* daily availability, is the most limiting and needed attribute.

The CAISO presents its Availability-Limited Proposal in two phases. In the first phase, the Commission should adopt the CAISO-developed methodology for determining the maximum amount of availability-limited resources in each local capacity area and sub-area based on current resource adequacy program requirements. This proposal is conceptually similar to the Commission's existing maximum cumulative capacity (MCC) approach for use-limited resources. However, under the CAISO's proposal the MCC for availability-limited resources is based on actual transmission planning analysis to identify local capacity limitations.

The first phase proposal, targeted for a Track 1 decision, is intended to minimize the disruption to current resource adequacy program rules and contracting practices, *i.e.*, it preserves the Commission's existing standard availability requirements for resources like storage and demand response. Thus, the proposed approach under the first phase is necessarily simplistic and designed to facilitate faster compliance for the 2020 compliance year. For the purposes of the Track 1 proposal, the CAISO methodology assumes current resource adequacy program rules and contracting practices remain in place to determine the maximum level of availability-limited capacity in each local capacity area and sub-area. In other words, maintaining the Commission's existing resource availability requirements translates into a maximum procurement of those resources in the different local capacity areas and sub-areas. In the near term, this assumption is appropriate because it requires no changes to the existing resource adequacy rules or programs, and it ensures that the resources are sufficient to meet local capacity needs. In addition, this

methodology demonstrates that existing availability-limited resources are currently effective to meet local capacity constraints and therefore will be counted toward local requirements.⁵

In the second phase, targeted for a Track 2 decision, the Commission and stakeholders can consider different approaches and refinements to the CAISO's transmission planning analysis. Track 2 could consider changes to the resource adequacy program rules, different contracting possibilities, and technological advancements or improvements that could more effectively meet local capacity requirements. For example, the Commission could consider minimum duration requirements longer than the existing four-hour standard, thereby increasing the amount of availability-limited capacity that would be effective in meeting local capacity requirements. The CAISO recommends the Commission and the CAISO work together to establish a framework that accommodates an increasing amount of availability-limited and preferred resources to meet local capacity requirements.

In response to questions and discussion at the February Workshop regarding CAISO's Availability-Limited Proposal, the following comments delineate the slow response versus availability-limited issues. Although some resources may be both slow response and availability-limited, the availability requirements are separate and distinct from the slow response issue. In other words, even if there were no slow response resources, the increasing penetration of availability-limited resources would lead to the same conclusions under the transmission planning analysis.

ii. The CAISO's Availability-Limited Resource Proposal Is Distinct from the Need for "Fast Response" Resources to Meet Contingency Requirements.

The CAISO's Availability-Limited Proposal is not directly related to response time requirements for demand response resources to address contingencies. The CAISO and the Commission have been working to ensure that both "fast" and "slow" demand response resources are capable of meeting local capacity requirements. Slow response resources are those resources that cannot respond within 20 minutes post-contingency, and therefore, must be dispatched pre-contingency to meet local capacity requirements. Fast resources are those that can respond within 20 minutes following a contingency event. The availability-limited resource issue discussed in the previous section was clearly revealed in the CAISO and investor-owned utility slow response study.

⁵ Slow responding Reliability Demand Response Resources (RDRR) being the only exception. Slow RDRR is not effective at resolving local contingencies due to its unique dispatch limitations agreed to in the settlement agreement adopted in D.10-05-034. Pursuant to that decision, RDRR can only be dispatched in the event of an actual emergency.

The study highlighted a broader concern about relying on availability-limited resources in local capacity areas and sub-areas, and ensuring the overall resource portfolio has sufficient run-time duration to meet local capacity requirements. Whether a resource is “fast” or “slow” responding has no bearing on its availability, *i.e.*, availability requirements.

At the February Workshop, the California Large Energy Consumers Association (CLECA) and Southern California Edison Company (SCE) urged the Commission consider SCE’s “partial fast-response” proposal before considering the CAISO’s proposal. However, SCE’s “partial fast-response” proposal does not address the duration issue identified in the CAISO analysis. SCE previously proposed “that the Commission create a process whereby scheduling coordinators for [demand response] DR resources will get Local RA credit based on the expected performance within [a 20 minute] timeframe, even if the contractual response time is greater than 20 minutes.”⁶ SCE’s proposal only attempts to address the slow response issue; it does not address or negate the additional requirements triggered by the availability-limitations.

As the CAISO noted in response to SCE’s Phase 3 proposal, there are a host of technical concerns and unanswered questions regarding how the Commission’s resource adequacy program would account for such a “partial fast-response” resource, *i.e.*, a resource that could qualify as a partially local and partially system resource adequacy resource.⁷ No such resource exists today under the Commission’s resource adequacy program. Regardless, addressing the availability requirements is neither derivative of, nor dependent upon, the resolution of the SCE’s specific proposal or finding a pathway to pre-contingency dispatch slow response resources. As noted in the CAISO’s initial proposal, the CAISO will address the operational-side of pre-contingency dispatch of slow response proxy demand response resources in a CAISO stakeholder initiative.

iii. Resources Can Be Aggregated to Meet Minimum Availability Requirements.

At the February Workshop, several commenters advocated that wholly unrelated resources should be combined to collectively meet the identified availability requirements in a local capacity area or sub-area. The CAISO systems recognize resources by a unique Resource ID. Individual resources can aggregate under a single Resource ID and operational characteristics provided to the CAISO will be based on the aggregation. For example, several combustion turbines can aggregate to comprise a combined cycle power plant or various customers can be aggregated into a single

⁶ SCE Proposals, p. 13.

⁷ California Independent System Operator Corporation, California Independent System Operator Corporation Comments on Preliminary Phase 3 Proposals, Rulemaking 14-10-010, January 13, 2017, pp. 9-10.

demand response resource or a distributed energy resource aggregation. However, distinct resources with separate Resource IDs are not connected in the market optimization software. The CAISO’s market systems and optimization does not have the ability to “stage” distinct and unrelated resources so that one resource is used after another, or resources are used collectively to serve a single purpose or outcome. Aggregations are allowed in the CAISO market, but the individual sub-resources must be combined under a single Resource ID within a sub-LAP, with the operational characteristics of the aggregate resource conveyed to the CAISO. The CAISO can then optimize the resource based on its collective attributes. There are examples of such aggregate resources operating in the CAISO market today, including SCE’s Center Peaker and Grapeland Peaker gas-battery hybrid projects. The battery resources are meant to operate in coordination with the gas peakers to reduce emissions and increase the resource’s overall response time—not as a means to complement an unrelated availability-limited resource. Opportunities exist for Scheduling Coordinators to manage their resources to meet availability requirements. For example, a 1 MW battery with four hour duration could also be shown to the CAISO as a 0.5 MW battery with eight hour duration.

In comments filed after the February Workshop, the Center for Energy Efficiency and Renewable Technology (CEERT) suggests that the CAISO’s proposal is flawed because it is “not thinking about how to tweak its ‘optimizer’ to deal with use-limited characteristics of a portfolio.”⁸ However, the CAISO’s market optimization software is not the limiting factor if resources are properly aggregated to meet local capacity requirements. Later in its comments, CEERT correctly acknowledges this fact, stating that “all sub-pieces of the portfolio that directly depend on each other to present the required characteristics should at least have the same resource ID.”⁹ The CAISO agrees and stresses that such an approach is consistent with resource adequacy procurement as well. The CAISO proposal is specifically designed to ensure that a highly-diverse portfolio with a significant amount of use-limited resources can effectively meet those needs.

Commenters also asked how the CAISO would treat duration limited resources such gas-fired resources limited by emissions or other permits. What resources are impacted by availability limits and the limits themselves are defined by the proposed transmission planning analysis. In other words, the analysis determines the availability limitation, and the consequent availability-

⁸ CEERT Comments, p. 5.

⁹ CEERT Comments, p. 6.

limited resources are any resource that could not meet the identified limitation. For example, a local area with a duration need of eight hours could be met with a natural gas-fired resource with a 100-hour annual emission limitation but not so with a four hour demand response program.¹⁰ Track 2 should address refinements to the CAISO’s analysis to provide an early indication of what availability limits will be binding in future.

iv. Transmission Solutions to Reduce Local Capacity Requirements Will Be Explored in the Transmission Planning Process.

CEERT criticized the CAISO’s proposal because it does not explicitly consider transmission upgrades to reduce local capacity requirements. The CAISO agrees that such transmission solutions can and should be considered, but the appropriate vehicle for considering them is the CAISO’s Transmission Planning Process (TPP). For example, the CAISO has already reviewed and recommended for approval PG&E’s Oakland Clean Energy Initiative, which aims to meet local capacity requirements through CAISO-approved transmission upgrades—including a battery operated as a transmission asset—and a portfolio of preferred resources.¹¹ CEERT fundamentally misunderstands the purpose of the CAISO’s Availability-Limited Proposal, which is narrowly focused on articulating availability requirements based on the unique combination of resources and load in each local capacity area or sub-area. The CAISO will conduct this under the broader Local Technical Capacity Study. The CAISO will analyze whether and how to reduce the local capacity need under the annual TPP. These two processes are coordinated but distinct.

C. Availability Assessment Hours Proposal

The CAISO urges the Commission to approve its proposal to align the Commission’s resource adequacy assessment hours with the CAISO’s availability assessment hours. As stated in the proposal, the CAISO recommends that the Commission adopt the availability assessment hours by reference. However, the CAISO clarifies that it intends to submit its annual availability assessment hours study into the Commission’s annual resource adequacy proceeding on roughly the same timeline as the flexible capacity requirements study.

¹⁰ Note that the CAISO studies contingencies during peak load conditions during the day. The example of a night time noise permit limit would also not be treated as an availability limitation.

¹¹ California Independent System Operator, *DRAFT 2017-2018 Transmission Plan*, February 1, 2018. See Non-Transmission Alternatives and Preferred Resource discussion for projects such as the Oakland Clean Energy Initiative and the Moorpark and Santa Clara sub-area local capacity requirements. Available at: http://www.caiso.com/Documents/Draft2017-2018_Transmission_Plan-Feb1_2018.pdf

D. Multi-Year Resource Adequacy Procurement Proposals

The CAISO believes establishing multi-year local resource adequacy requirements is essential and timely to maintaining the resources needed for local reliability. Numerous proposals for multi-year local requirements were discussed at the February Workshop. However, the CAISO focuses on the two proposals developed by Energy Division Staff and the Independent Energy Producers Association (IEP) proposal. The CAISO believes these three options provide the greatest opportunity to implement multi-year local resource adequacy procurement on the most expedited timeline.

For near-term purposes, the CAISO recommends the Commission adopt Energy Division's "Solution 2," which requires load-serving entities to bilaterally procure 100 percent of local capacity requirements for two years forward and 80 percent in the subsequent three years. For short-term purposes, Solution 2 strikes the appropriate near-term balance by establishing a simple structure that (1) leverages existing contracting practices, (2) ensures that local resources are procured in the near-term, and (3) mitigates the risk of stranded costs due to load migration. Although Energy Division Staff's Solution 2 and IEP proposals are very similar, Solution 2 will ensure procurement of marginal local resources at least two years out. IEP's proposal would continue to leave marginal local resources uncontracted and at risk of retirement.

In the longer-term, continued disaggregation of load serving responsibilities and load migration will require a more coordinated approach, especially the ability to efficiently and cost-effectively transact small capacity lots. Energy Division Staff's "Solution 1," which directs procurement by the utility distribution companies, requires more time to thoroughly vet, and it could not be as timely implemented as Solution 2.

The CAISO supports establishing multi-year local resource adequacy requirements as soon as possible; and leveraging the current bilateral procurement framework in the near-term is the most effective way to ensure multi-year local capacity requirements can be in place expeditiously. Going forward, the CAISO recommends that the Commission consider a more coordinated procurement process, and any coordinated procurement must also include system and flexible capacity requirements. The CAISO recommends the Commission adopt Energy Division Staff's Solution 2 in Track 1 of this proceeding to ensure local reliability while allowing for future consideration of a coordinated procurement framework.

E. ELCC Refinement Proposals

SCE and several other parties presented or agreed that refinements to the Commission's ELCC calculation are necessary to address (1) average vs marginal ELCC values and (2) the impact of behind-the-meter solar on ELCC. The CAISO agrees that refinements are warranted on both counts.

The CAISO previously supported, and continues to support, using marginal ELCC values for new wind and solar resources.¹² Using the average ELCC over-values new resources in terms of the incremental resource adequacy value they provide. By comparison, using the marginal ELCC will correctly capture the impact that incremental solar or wind additions will have on the loss of load expectation, thereby accurately reflecting a resource adequacy value. As a result, using the marginal ELCC values would likely lead to procurement that more efficiently meets system needs.

“Vintaging” wind and solar resources ensures that the existing resource adequacy values are not impacted by future resource additions. This will be particularly important because the procurement activities of an individual load-serving entity in year 2 could impact the ELCC value of resources procured by another LSE in year 1. Under marginal ELCC counting, the LSE procuring first will do so at a capacity value that is independent of future procurement by other LSEs. In short, marginal ELCC counting mitigates the impact of one LSE's procurement on another LSE's procurement.

Regarding the treatment of behind-the-meter solar, the CAISO believes three viable options have been put forward. Although the CAISO does not have a strict preference for one of these methods, it agrees with the principle behind each: behind-the-meter solar must be explicitly considered in the resource adequacy framework. As such, the CAISO strongly recommends that the Commission adopt one these methodologies. Specifically, the Commission received proposals from Energy Division Staff and Calpine Corporation (Calpine) in R.14-10-010. Additionally, Pacific Gas & Electric Company (PG&E) recommends (1) “treating behind-the-retail-meter (BTM) photovoltaic (PV) resources as supply-side resources in calculating ELCC values, and (2) adjusting the load requirements appropriately in setting system and local RA requirements.”¹³ Any of these three proposals would adequately account for the impact of behind-the-meter solar on ELCC values. One of the three proposals should be adopted in Track 1.

¹² <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M088/K666/88666439.PDF> at p 7.

¹³ PG&E comments, February 16, 2018, p.9.

F. System Load Proposal

At the February Workshop, Calpine presented a proposal to increase the planning reserve margin outside of summer peak months.¹⁴ The CAISO believes Calpine's proposal is directionally the same as the CAISO's proposal to use a 1-in-5 monthly load forecast plus a fixed 15 percent planning reserve margin for shoulder months. The actual months that warrant adjustment will be determined based on further analysis. The CAISO and Calpine proposals drive towards the same intent, but the CAISO believes that revising the planning reserve margin by month, as proposed by Calpine, will require additional modeling from Energy Division staff, engagement from parties to understand and discuss complex modeling results, and for the Commission to make a decision. On the other hand, the CAISO's 1-in-5 proposal is easier to develop and understand because it relies on historical monthly peak loads, which the CAISO has and can provide into the record. The CAISO can provide the full analysis in Track 2 of this proceeding.

III. Conclusion

The CAISO appreciates this opportunity to provide proposals in this resource adequacy proceeding and looks forward to presenting additional details at the Commission's upcoming workshops.

Respectfully submitted,

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¹⁴ Barmack, Matt, "Calpine PRM Proposal," February 23, 2018.