



Memorandum

To: ISO Board of Governors

From: Anna McKenna, Vice President, Market Policy and Performance

Date: July 7, 2021

Re: Decision on RAIM Exemption Option for Variable-Output Demand Response

This memorandum requires Board action

EXECUTIVE SUMMARY

Management proposes that variable-output demand response resources be exempt from the resource adequacy availability incentive mechanism (RAAIM)¹ if their resource adequacy qualifying capacity as determined by the local regulatory authority is established using a methodology that meets the following principles:

1. Assesses the resource's contribution to reliability across all hours of the year or seasons as a variable-output resource; and
2. Assesses the resource's interactive effects with other similarly-situated resources.

These principles can be met using an Effective Load Carrying Capability counting or similar "contribution to reliability" methodology that assesses a demand response resource's capacity value. The use of an effective load carrying capability methodology or similar methodology takes into account the variable nature of demand response resources, including their use and availability limitations. Most demand response resources are available like a fuel-backed resource that can deliver a fixed megawatt quantity when dispatched. Rather, a demand response resource's load curtailment capability depends significantly on factors such as temperature, occupancy, day of the week, time of day, production schedules, program design, etc. As a result, under this new methodology the demand response resources' qualifying capacity is adjusted to reflect its contribution to reliability considering the extent of its variability, use, and availability limitations. A demand response provider electing this option for their

¹ RAIM is an incentive mechanism that rewards or charges resources based on their performance related to offering their resource adequacy obligated capacity amounts into the ISO market.

demand response resource is not expected to always be offered into the ISO market at their shown resource adequacy qualifying capacity. Instead, their market bids should reflect the actual capabilities of the resource in those market timeframes based on current conditions and resultant load curtailment capability, up to their shown resource adequacy value.

Moved, that the ISO Board of Governors approves the tariff revisions necessary to recognize variable-output demand response valued under an effective load carrying capability or similar methodology and provide them with the option to be exempted from RAIM as described in the memorandum dated July 7, 2021; and

Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposal, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed tariff amendment.

DISCUSSION AND ANALYSIS

The ISO defines variable-output demand response resources as those demand response resources whose maximum output can vary over the course of a day, month, or season due to production schedules, duty cycles, availability, seasonality, temperature, occupancy, etc. Many demand response resources also have energy limitations that affect a resource's ability to provide the energy associated with the resource adequacy capacity they provide. These limitations include hours of operability- such as only weekdays, duration, or number of event calls. As California transitions to a decarbonized grid, the ISO will likely rely more heavily on both variable and energy limited resources. As such, it is critical to assess the ability of the new resource fleet, including preferred resources, to displace carbon-emitting generation while maintaining system reliability and serving energy needs every hour of the year.

The central tenet of the resource adequacy program is to ensure sufficient energy is available and deliverable when and where needed. If a resource cannot bid its full shown qualifying capacity and deliver it under its must offer obligation, it jeopardizes the central tenet of the resource adequacy program. Additionally, resources incapable of meeting their shown net qualifying capacity value during the availability assessment hours will be assessed charges through the RAIM.

A majority of demand response resources have dependencies that result in having a variable output (curtailment capability) even though they are treated under CPUC current resource adequacy rules as capable of delivering their claimed qualifying capacity value whenever dispatched. This potentially overstates their resource adequacy qualifying capacity value and jeopardizes the CPUC's resource adequacy program and ISO reliability.

To address this issue, the demand response resource adequacy and market participation rules need to be modified to align with the following principles:

1. The qualifying capacity valuation methodology for demand response resources must consider variable-output demand response resources' reliability contribution to system resource adequacy needs across the year;
2. Assess how demand response resource's reliability contribution saturates as other similarly situated use- and availability-limited resources are added to the system; and
3. Market participation and must offer obligations must align with demand response resource capabilities.

Increasing penetrations of variable resources, including certain types of demand response, make it important to accurately quantify the contribution of these resources and their ability to serve system load when they are needed. For wind and solar resources, this assessment is done by determining the resources' effective load carrying capability. Once an appropriate qualifying capacity value is determined for wind and solar by applying the effective load carrying capability, the resource can fulfill its must offer obligation by bidding the amount it is physically capable of providing per its forecast.

Management's proposal to provide demand response with a new RAIM exempt capacity valuation methodology is a result of work significantly vetted in the ISO's energy storage and distributed energy resources phase 4 (ESDER 4) initiative stakeholder process. This topic was included in the energy storage and distributed energy resources phase 4 initiative to explore a new and more appropriate qualifying capacity valuation method applicable to the variable-output nature of demand response resources. The initiative included a study performed by Energy and Environmental Economics, Inc. (E3) that proposed an analytical framework for evaluating the resource adequacy value of demand response using an ELCC methodology. The results of the E3 study were publicly released in December 2020 and submitted in the CPUC's resource adequacy program proceeding in support of the ISO's proposal that the CPUC adopt an effective load carrying capability methodology to calculate qualifying capacity values for variable-output demand response resources. The proposed decision in the CPUC's resource adequacy proceeding recognizes demand response as a variable resource and proposes that the qualifying capacity methodology be re-evaluated for resource adequacy year 2023 and beyond. In addition, a recent ruling from CPUC President Batjer allows the ISO and CPUC jurisdictional load serving entities to file a refreshed effective load carrying capability study for use as the qualifying capacity methodology for resource adequacy year 2022, subject to CPUC review and approval. These anticipated changes pave the way for Management's proposal to treat certain demand response resources as a variable output resources.

Demand response resources that are not variable may continue using existing counting methodologies for determining the quantity capacity value of their demand response programs (*i.e.*, traditional load impact protocol evaluation). These resources will continue to be subject to RAAIM as the counting methodologies do not meet the principles stated previously. Management recognizes that it may not be necessary to apply an effective load carrying capability value or provide alternative market participation options for demand response resources that are not variable or energy limited if they can provide a fixed load reduction value over the course of the resource adequacy month. The effective load carrying capability or similar methodology with RAAIM exemption proposed here is not exclusive or a replacement, but an additional methodology that can be employed as an alternative to current demand response counting methodologies.

POSITIONS OF THE PARTIES

Stakeholders generally support the RAAIM exemption for demand response with variable load reduction capability but do not support a potential reduction in capacity value or a pre-condition that capacity valuation be assessed using an effective load carrying capability or similar contribution to reliability methodology.

Stakeholders expressed concern that applying an effective load carrying capability methodology for demand response would be a fundamental shift in how demand response is treated because it may reduce the qualifying capacity of demand response resources as resource adequacy resources, and that additional details need to be developed.

Finally, several stakeholders commented that the ISO should not have sole discretion as to whether an alternative counting methodology meets the principles included in the proposal. In response to this concern, Management modified the proposed provisions to include language to indicate that any alternative qualifying capacity methodologies (effective load carrying capability or similar), be developed and/or accepted in consultation with the local regulatory authority.

CONCLUSION

Management requests the Board of Governors approve the proposal to exempt variable-output demand response resources from RAAIM if their qualifying capacity value is established using an effective load carrying capability, or similar contribution to reliability methodology that considers saturation effects of the resources variable-output nature. The proposal will provide a more accurate accounting of these resources' contribution to serving load. Demand response resources that continue to use another valuation methodology (*i.e.*, load impact protocol) will have that choice and continue to be subject to RAAIM like other non-variable output resource adequacy resources.