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## Stakeholder Comments of the CAISO

Instructions: CEC staff is requesting stakeholder comments on the set of nine principles retained, combined, and/or reworded based on stakeholder discussion during the Principles WG meetings held on September 13 and 27. This discussion also resulted in some principles being dropped.<sup>1</sup> Each proposed principle is followed by three questions; please provide a response to each question, as applicable, in the space provided. Toward the end of this comments template, CEC staff is requesting comments, as applicable, in two other areas.

### Introduction:

The CAISO appreciates the opportunity to provide comments on the set of nine principles discussed during the Principles Working Group (WG) meetings and respond to the specific questions posed by California Energy Commission (CEC) staff. The CAISO also provides comments to inform the CEC and stakeholders on the importance of reliability-based counting to CAISO's grid operations.

### Discussion:

#### Background and context of reliability-based counting

One of the stated goals of the resource adequacy program is to “[t]o ensure the safe and reliable operation of the grid in real-time providing sufficient resources to the California Independent System Operator (CAISO) when and where needed.”<sup>2</sup> Therefore, reliability is central to the request of the California Public Utilities Commission (CPUC) in Decision (D.) 21-06-029 in requesting the creation of a CEC-led process to recommend a demand response counting methodology for the resource adequacy program.<sup>3</sup> It follows that the principles for selection of a Qualifying Capacity (QC) methodology developed through the Principles Working Group should align foundationally with the CPUC's request and prioritize reliability. This will in turn ensure that the selected methodology values resources' reliability contribution.

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<sup>1</sup> Principles #4, #7, #13, #14, #15, #16, #17, #18, #20, #21, #22 were dropped based on stakeholder discussion.

<sup>2</sup> California Public Utilities Commission, “Goals of the Resource Adequacy Program” available at: <https://www.cpuc.ca.gov/RA/>.

<sup>3</sup> The California Public Utilities Commission in D.21-06-029 stated, “CEC is requested to develop recommendations for a comprehensive and consistent M&V strategy, including a new capacity counting methodology for DR...” The seven issues on which the CEC is requested to make actionable recommendations all concern the selection and implementation of a QC methodology for demand response.

A key purpose of the resource adequacy program is to ensure that there is enough capacity and reserves for the CAISO to maintain a balanced supply and demand across the electric grid. The resource adequacy program was developed to address both day-to-day needs as well as ensure reliability under stressed grid conditions. Any resource providing resource adequacy capacity to the CAISO has an obligation to offer that capacity into the CAISO market so that the CAISO can manage and dispatch the system reliably.

Capacity valuation is critical to reliability. The QC values submitted via Load Serving Entity (LSE) Resource Adequacy Supply Plans inform the CAISO's ability to meet its operational and reliability needs. When the resource adequacy program was created in 2004, it was generally accepted that sufficient resource adequacy capacity to meet the peak load of each month (plus a planning reserve margin) was sufficient to meet the needs across all hours of the month. However, as the grid evolved with increasing penetrations of intermittent and use-limited resources, capacity valuation also evolved to better capture the reliability contribution of various resources. In recent years, the CPUC has updated its capacity valuation for wind and solar using an effective load carrying capability (ELCC) methodology<sup>4</sup> as well as for hydro resources to reflect potential drought conditions.<sup>5</sup> In the CPUC's integrated resource plan proceeding, ELCC is also applied to 4-hour duration storage resources<sup>6</sup> and the CAISO has proposed a counting methodology to reflect unit-specific outages.<sup>7</sup> All of these efforts are part of a greater need to articulate the actual reliability contribution of different resources across all or the most stressed hours of the year.

On the other hand, demand response counting has not evolved in the same manner to reflect the realities of the changing grid. Demand response resources are still valued based on what it can provide at peak; however, demand response resources are variable (*i.e.*, provide shaped bids and responses), use-limited (*i.e.*, have call limitations), and availability-limited (*i.e.*, do not bid in all hours). Therefore, the demand response resource cannot always bid and deliver its maximum QC value like a conventional resource. In actuality, the bids and response are shaped. The CAISO is pleased to see demand response's variability, use limitations, and availability limitations included as a principle. However, this is not the only issue when considering how a use-limited resource impacts reliability in CAISO's market. In fact, the independent Department of Market Monitoring at the CAISO also recommends re-examining demand response counting methodologies:

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<sup>4</sup> The CPUC in D.17-06-027 implemented an ELCC methodology for solar and wind resources, in accordance to Public Utilities Code Section 399.26(d) which directs the Commission to use "effective load carrying capacity values in establishing the contribution of wind and solar energy resources toward meeting the resource adequacy requirements."

<sup>5</sup> The CPUC in D.20-06-031 updated its QC methodology for hydro resources to reflect "capacity and energy availability considering variability of water availability from year to year."

<sup>6</sup> Administrative Law Judge's Ruling Seeking Comments on Proposed Preferred System Plan, R.20-05-003, August 17, 2021.

<sup>7</sup> Final Track 3.B Proposals of the CAISO, R.19-11-009, December 18, 2020, pp. 23-30.

*Utility demand response in particular appeared to be over-counted in terms of these resources' contribution toward meeting resource adequacy requirements. The [CA]ISO is currently examining different counting methodologies for demand response including methodologies which would better capture the variable nature of demand response availability. DMM continues to support efforts to better capture the capacity contribution of demand response whose load reduction capabilities vary across the day, depending on load profiles.<sup>8</sup>*

In 2020, half of resource adequacy capacity in CAISO's market was classified as use-limited. In other words, demand response sits alongside other variable, use-limited, and availability-limited resources. This "saturation" can result in incremental amounts of similar resource types adding less and less additional capacity value to the system. For example, the system can only take so many MWs of 4-hour demand response resources that only operate from 4-9PM, before the system needs to start procuring resources that can operate in longer time periods and do not have the same use limitations, variability, and availability limitations. CAISO urges the DR Principles Working Group to adopt a principle that considers how use- and availability-limited resources, like demand response, saturate alongside other similar resources (e.g., intermittent or energy limited resources).

In addition to reliability, accounting for demand response's contribution to reliability when valuing these resources enables the CPUC to procure the most dependable, reliable, and cost-effective resources. The loading order states, "(i) The electrical corporation shall first meet its unmet resource needs through all available energy efficiency and demand reduction resources that are cost effective, **reliable** [emphasis added], and feasible." The CAISO maintains that a QC valuation of demand response based in reliability can help meet the loading order's mandate to procure the most reliable resources.

Given the above concerns, the CAISO believes it is an imperative to include reliability as a foundational principle to developing QC values that will allow for the CAISO to effectively operate the grid.

### **Comments on the refined set of principles**

- I. Principles #1, #5, #11 combined – **"The QC methodology, including ex-post performance measurement, should be transparent, replicable, and understandable."**
  - a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*

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<sup>8</sup> Department of Market Monitoring, "Report on Demand Response Issues and Performance," February 2021, p. 3. Footnote omitted.

Requires re-wording and/or clarification to support.

- b. If your organization would require changes to support, what changes would your organization suggest? *Response:*

**“The QC methodology, including ex-post performance measurement, should be transparent, replicable, and understandable.”**

- c. Explain your organization’s support or opposition of this principle. *Response:*

The CAISO supports the principle that the performance measurement should be transparent and understandable but must be balanced with the use of appropriate analytical tools. In order to model the complex load drop response and interactions between demand response and the rest of the resource fleet, both the CEC and CPUC have used more sophisticated models. Many of the models are proprietary and only available with a license, but through open and transparent stakeholder processes have been well vetted and documented. Some examples include:

- The CEC uses the PLEXOS production cost model to assess portfolio reliability as was most recently the case for the Midterm Reliability Analysis adopted by the CEC.<sup>9</sup> PLEXOS is a highly complex model that is not publicly available without a license, but the methodology is well documented.
- The CPUC uses the SERVM model to assess the ELCC values for wind, solar, and storage resources. In addition, SERVM is used to validate the reliability, operability, and emissions of resource portfolios generated by RESOLVE. The model is not available without a license but the inputs, assumptions, and modeling methodology have been presented and vetted with stakeholders.<sup>10</sup>

The regulatory agencies can decide whether it is possible to make the models public or use an appropriately sophisticated model that can be made publicly available without a license.

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<sup>9</sup> Gil, Liz, Item 4: Midterm Reliability Analysis. Presented at the California Energy Commission business meeting September 30, 2021.

<sup>10</sup> See, for example, CPUC Energy Division Energy Resource Modeling Team, “Reliability and GHG Modeling Results Aggregated LSE Plans 38 MMT Core Scenario,” August 17, 2021. Available at: <https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/electric-power-procurement/long-term-procurement-planning/2019-20-irp-events-and-materials>.

Beyond modeling, the principle as written would likely also require making confidential bid and market data available to ensure model runs are replicable for the broader community. Stakeholders should consider whether this information can be publicly released and discussed.

II. Principles #2, #3 combined – **“The QC methodology should be forward-looking and use the most current information regarding resource capabilities, including historical performance data where possible.”**

- a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*

Requires re-wording and/or clarification to support.

- b. If your organization would require changes to support, what changes would your organization suggest? *Response:*

**“The QC methodology should ~~be forward-looking and~~ use the most current information regarding resource capabilities, including historical ~~or test~~ performance data ~~from the resources seeking a QC value~~ where possible.”**

- c. Explain your organization’s support or opposition of this principle. *Response:*

The proposal should clarify the meaning of “forward looking”. As written it is unclear if “forward looking” is intended to: a.) prioritize projections over use of historical data when determining a QC or if b.) it is intended to capture any program growth in the QC.

DR performance is a counter-factually derived value based on historic load consumption patterns and requires historic data to properly assess performance, and therefore, value. The CAISO supports using the most current historical performance and capturing program growth. In instances where historic data is not available, test data should be used based on resources that are seeking a QC value.

III. Principle #6 – **“The QC methodology should be sufficiently fast and easy to update to enable DR providers to participate in all capacity solicitations.”**

- a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*

Support, pending clarification.

- b. If your organization would require changes to support, what changes would your organization suggest? *Response:*

The CEC and working group should define “fast” and “easy” to update.

- c. Explain your organization’s support or opposition of this principle. *Response:*

The CAISO observes that this principle is a function of inputs to the methodology as well as CPUC regulatory timelines.

IV. Principle #8 – **“The QC methodology should be compatible with individual DR resources and aggregations of resources.”**

- a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*

Requires changes to support.

- b. If your organization would require changes to support, what changes would your organization suggest? *Response:*

From the working group discussion, the CAISO’s understanding is that the intent of the principle is focused on DR valuation across sub-LAP aggregation boundaries and not specific to valuation between a single versus multiple resources.

As a result, the CAISO suggests the principle be re-worded to read, **“The QC methodology should be compatible between valuations in a single sub-LAP or across multiple sub-LAPs.”**

- c. Explain your organization’s support or opposition of this principle. *Response:*

The QC method is intended to capture performance regardless of if the resource is an individual resource or an aggregation of DR resources. As written, this is an unnecessary principle. However, if the intent is to capture the nuance that the QC method should work if applied to one sub-LAP or multiple, it should be edited to reflect that specificity.

V. Principle #9 – **“The QC methodology should be consistent and compatible with the RA program.”**

- a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*

Supports.

b. If your organization would require changes to support, what changes would your organization suggest? *Response:*

c. Explain your organization's support or opposition of this principle. *Response:*

The CAISOs strongly supports alignment with the resource adequacy program. Any QC methodology should be consistent and compatible with the CPUC and CAISO's jointly administered resource adequacy program.

VI. Principle #10 – **"The QC methodology should account for all factors that substantially influence DR variability."**

a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*

The principle as written requires changes and is redundant with principle #12.

b. If your organization would require changes to support, what changes would your organization suggest? *Response:*

The CAISO recommends a rephrase to read, **"The QC methodology should account for all factors that ~~substantially~~ influence DR variability, use limitations, and availability."**

c. Explain your organization's support or opposition of this principle. *Response:*

The CAISO urges the CEC to also include the terms "use limitations and availability" in its principle. Below the CAISO clarifies what is captured when referring to availability limitations, use limitations, and the variable nature of demand response:

- Availability limitations capture that DR is not available 24 hours a day. Local Regulatory Authority rules often limit when DR is available to the resource adequacy availability assessment hours (i.e., 4-9 PM), even though DR has a CAISO obligation with resource adequacy (i.e., its resource adequacy must offer obligation) which requires it to bid into the market 24 hours a day 7 days a week. Any approved qualifying capacity valuation methodology must appropriately value the availability-limited nature of DR and how its limited availability affects system reliability at different times of the day and year.
- Use-limitations captures the call limitations for DR resources. Through a collaborative process the following use limitations were established and are now reflected in the CAISO's market:
  - DR can only be dispatched for 3 consecutive days



- DR can only be called 24 hours/month
- DR can only be called 4 hours per dispatch
- Variability captures DR's shaped bids and response. Any approved qualifying capacity valuation methodology must appropriately value the variable load curtailment nature of DR and how its variability affects system reliability at different times of the day and year.

VII. Principle #12 – **“The QC methodology should account for the use-limited, availability-limited, and variable-output nature of DR.”**

- a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*  
Support.
- b. If your organization would require changes to support, what changes would your organization suggest? *Response:*
- c. Explain your organization's support or opposition of this principle. *Response:*  
As stated above in response to section “VI”, the CAISO supports reflecting in the principles that the QC methodology must capture that DR is a use-limited, availability-limited, and variable resource.

VIII. Principle #19 – **“The QC methodology should accurately account for DR's contribution to reliability.”**

- a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*  
Support.
- b. If your organization would require changes to support, what changes would your organization suggest? *Response:*
- c. Explain your organization's support or opposition of this principle. *Response:*  
Reliability is central to the request of the CPUC in the creation of the CEC-led working group and as a result should be reflected in the principles. The CAISO relies on the resource adequacy counting rules to understand resource availability and therefore reliability conditions. The QC values submitted via Load Serving Entity (LSE) Resource Adequacy Supply Plans inform the CAISO's ability to meet its operational and reliability needs all hours of the year. A current

challenge is that the Resource Adequacy construct today uses a fixed QC value for CAISO's planning processes, however, DR resources are variable (i.e., provide shaped bids and responses), use-limited (i.e., have call limitations), and availability-limited (i.e., do not bid in all hours). The CAISO is pleased to see DR's variability, use limitations, and availability limitations included as a principle. However, this is not the only issue when considering how a use-limited resource impacts reliability in CAISO's market.

The California Public Utilities Commission in D.21-06-029 stated, "...CEC is requested to develop recommendations for a comprehensive and consistent M&V strategy, including a new capacity counting methodology for DR..." The seven issues on which the CEC is requested to make actionable recommendations all concern the selection and implementation of a QC methodology for demand response.

It follows that the principles for selection of a QC methodology developed through the Principles Working Group should align foundationally with the CPUC's request and prioritize reliability. This will in turn ensure that the selected methodology values resources' reliability contribution and the RA fleet transmitted to the CAISO is sufficient for reliable operation of the grid.

IX. Principle #23 – **"The QC methodology should, to the extent possible, rely on software or code that is available at nominal cost to DR providers."**

- a. Indicate whether your organization supports the principle as worded, would require changes to support, or opposes the principle. *Response:*

Opposes.

- b. If your organization would require changes to support, what changes would your organization suggest? *Response:*

The CAISO proposes removing this principle.

- c. Explain your organization's support or opposition of this principle. *Response:*

The CAISO believes that this proposed principle is too prescriptive and is written as a constraint, not as a principle. Rather than access to a software or code, the CAISO posits that the inputs and assumptions should be accessible. The CAISO believes that the methodology should be able to reproduce a reasonable estimation of the

QC value based on known variables utilized in determining its results, as highlighted in Section “I” which combined Principle #1, #5, and #11.

The CAISO opposes a principle based on access to software or code as the working group has not established a clear explanation of why a DRP, and not an entity like the CPUC or CEC, needs to run the software or code. As referenced earlier there are numerous examples of models used in other regulatory processes where access is limited or requires a license.

### **Comments about principles not included**

Please provide any comments concerning principles that your organization believes are missing from the refined set of principles.

*Response:* The CAISO proposes the working group adopt the principle, **“The QC methodology should reflect the evolving needs of the grid – by capturing the interactive and saturation effects of increased variable as well as use- and availability-limited resources.”**

As more variable supply and demand interconnects to the system, the CAISO requires resources that are more flexible and can quickly and flexibly respond to greater levels of supply and demand uncertainty. The CAISO recommends the working group adopt the principle, **“The QC methodology should reflect the evolving needs of the grid—by capturing the interactive and saturation effects of increased variable as well as use- and availability-limited resources.”** This principle posits that DR does not operate in isolation and accordingly should not be modeled without interactive effects in planning. DR sits alongside other variable, use-limited, and availability-limited resources. As a result, the QC method should also consider how use- and availability-limited resources, like DR, saturate alongside other similar resources (e.g., intermittent or energy limited resources). This “saturation” can result in incremental amounts of similar resource types (i.e., similar hours of operation and characteristics) adding less and less additional capacity value to the system. For example, the system can only take so many MWs of 4-hour DR resources that only operate from 4-9PM, before the system needs to start procuring/adding more resources that can operate in longer time periods and do not have the same use limitations, variability, and availability limitations.

Relatedly, CAISO urges the working group to not just focus on the availability assessment hours of 4-9PM for the evaluation period. Working group participants have raised concerns that looking beyond the availability assessment hours will hurt the value of DR. CAISO counters that the availability assessment hours (4-9 PM) are derived from the loss of load

events (LOLE) or in other words, the LOLE hours are during the net peak and coincide with the AAH, when DR programs operate. By using the LOLE, it can help guide when programs should be adjusted or changed to capture more loss of load event hours.

**Any additional comments**

Please provide any additional comments that your organization would like to make.

*Response:*