

May 27, 2020

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Re: California Independent System Operator Corporation
Docket No. ER20-____-000**

**Tariff Amendment to Update Requirements for Proxy Demand
Resources to Provide Flexible Resource Adequacy Capacity**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) proposes two amendments to tariff provisions covering how proxy demand resources (PDRs) provide flexible resource adequacy (RA) capacity.¹ The first amendment changes the CAISO's methodology for calculating how much flexible RA capacity a PDR can provide. This amendment is necessary because the CAISO cannot feasibly administer the current methodology as reflected in its tariff. The second amendment would require that to be eligible to provide flexible RA capacity, a PDR must elect the five-minute bidding option, rather than the fifteen-minute or hourly options. This amendment aligns the flexible RA capacity tariff provisions with more recent tariff amendments that generally address how PDRs participate in the CAISO markets.

Although both amendments address how PDRs provide flexible RA capacity, the two amendments are discrete and severable from the other and are not integrated, interrelated, interdependent, or affected by the Commission's actions on the other amendment. The Commission should evaluate the justness and reasonableness of each proposed amendment based on its individual merits and not as an integrated package. The CAISO respectfully requests that the Commission issue an order accepting the proposed revisions by July 29, 2020, with an effective date of August 1, 2020. This effective date coincides with the expiration of an existing tariff waiver.

¹ The CAISO submits this filing pursuant to section 205 of the Federal Power Act (FPA), 16 U.S.C. § 824d.

I. Background

A. California's Resource Adequacy Program

California's RA program, which the CAISO administers jointly with the California Public Utilities Commission (CPUC) and other local regulatory authorities in the CAISO balancing authority area, seeks to secure sufficient capacity when and where needed to support the safe and reliable operation of the CAISO grid.

Through the RA program, load serving entities (LSEs) procure two main categories of RA capacity: generic capacity and flexible capacity. Resources providing *generic RA capacity* generally must submit either an economic bid or self-schedule 24 hours a day, seven days a week,² although some resource types have less than a 24x7 must-offer obligation.³ Resources providing *flexible RA capacity* must submit economic bids and may not self-schedule for designated hours and days because flexible RA capacity meets the CAISO's need for the resources' flexibility, *i.e.*, ability to ramp up and down as needed and start up and shut down potentially multiple times per day. If the resource submits a self-schedule during the hours in which the CAISO anticipates it will need such flexibility, it would cancel the benefit the resource was procured to provide.

The amount of generic capacity and flexible capacity a resource can provide is established by that resource's net qualifying capacity (NQC) and effective flexible capacity (EFC) value, respectively. The starting point of both calculations is the resource's qualifying capacity (QC) value. The CPUC and other local regulatory authorities set each resource's QC value. This value represents the maximum capacity a resource theoretically can provide. To derive NQC values, the CAISO performs a deliverability assessment to determine how much of a resource's QC is deliverable to the aggregate CAISO load. The NQC value is the QC value adjusted downward to reflect those deliverability limitations. For EFC values, section 40.10.4.1(a) of the CAISO tariff provides a formula that incorporates a resource's start-up time, ramp rate, and NQC.⁴ The tariff also provides technology-specific EFC methodologies for several resource types, including PDRs. Section 40.10.4.1(c) states that a PDR's EFC value must "be based on the resource's actual MWs of load modification in response to a dispatch by the CAISO during a test event" and that the CAISO must "conduct the test at a random time during the flexible capacity must-offer obligation period for the resource"

² LSEs must procure certain amounts of their generic capacity from resources in defined local capacity areas (*i.e.*, local capacity). The balance of their capacity can be procured from resources anywhere on the CAISO system or from imports (*i.e.*, system capacity). For purposes of this filing, it is unnecessary to distinguish between the two types of generic capacity.

³ See CAISO tariff, section 40.6.4.1.

⁴ CAISO tariff, section 40.10.4.1.

B. Waivers on Applying the Test-Based Methodology for Proxy Demand Resources

In May 2019, the Commission granted the CAISO a limited waiver of section 40.10.4.1(c), allowing the CAISO to calculate PDR EFCs using the general formula from section 40.10.4.1(a) instead of the PDR-specific methodology from section 40.10.4.1(c).⁵ The waiver petition explained that the CAISO “identified a gap in how it implemented section 40.10.4.1” and that it “did not develop the test procedures called for under section 40.10.4.1(c).”⁶ Instead, the CAISO “erroneously established a practice of calculating PDR EFCs using the general formula in section 40.10.4.1(a).” The petition further explained that the CAISO needed time to develop and implement the necessary testing procedures but while that was pending, it “would be unable to calculate any new EFC values”⁷ Accordingly, the CAISO requested the waiver pending “successful development and implementation of the needed test procedures”⁸ but lasting no later than December 31, 2019.

On December 31, 2019, the CAISO petitioned for an extension of the initial waiver.⁹ During the initial waiver period, the CAISO performed an impact assessment on the processes and systems needed to implement an effective random testing and performance evaluation for use in a test-based calculated EFC for PDRs. The CAISO’s December 31 petition explained that a broad testing program for substantially all PDRs could not be accomplished without costly system enhancements. Such enhancements would enable system operators to issue test instructions without relying on manual processing of a large number of PDR resources required to test. Without the updated system functionality, operators could be distracted, potentially significantly, from their primary real-time operational responsibilities. The CAISO explained that evaluating these costs also required the CAISO to consider whether the costs were justified “in light of the rationale for setting test-based EFC values for PDRs.”¹⁰ The flexible RA capacity program, including the PDR EFC testing requirement, was developed through the flexible resource adequacy criteria

⁵ *Cal. Indep. Sys. Operator Corp.*, 167 FERC ¶ 61,199 (2019).

⁶ *Cal. Indep. Sys. Operator Corp.*, Petition for Limited Tariff Waiver, at 5, FERC docket no. ER19-1690 (Apr. 26, 2019).

⁷ *Id.* at 2.

⁸ *Id.*

⁹ *Cal. Indep. Sys. Operator Corp.*, Petition for Limited Tariff Waiver, FERC docket no. ER20-725 (Dec. 31, 2019).

¹⁰ *Id.* at 7.

and must-offer obligation (FRACMOO) initiative, which became effective in November 2014.¹¹

The FRACMOO initiative did not discuss at length the rationale for setting test-based EFC values for PDRs, with the only plausible issue being concern that PDRs were a “new resource type whose performance capabilities were uncertain.”¹² In the December 31 waiver request, the CAISO pointed out that this testing requirement “does not align neatly with how NQC for these same resources is established” and questioned “why the flex capacity values for PDR should be set in such a drastically different way from their NQC values.”¹³ With these serious questions about the existing tariff provision, the CAISO explained that a second waiver, extending through August 1, 2020, would provide the CAISO with needed time to “confer with stakeholders to explore potential alternatives and any appropriate Tariff amendments.” The Commission granted this second waiver on February 28, 2020, and granted the requested additional limited tariff waiver through August 1, 2020.¹⁴

C. Third Phase of the Energy Storage and Distributed Energy Resource Stakeholder Initiative

The third phase of the CAISO’s Energy Storage and Distributed Energy Resource Stakeholder Initiative (ESDER3) focused on ways to enhance demand response participation in the CAISO markets. A major element of this initiative was to provide demand response resources with hourly and fifteen-minute scheduling options in the real-time market, in addition to the existing five-minute bidding opportunity. This change provided demand response resources with the same type of bidding flexibility that the CAISO already offered “intertie resources” that import and export through the CAISO balancing authority area (BAA). Granting these new bidding options to demand response resources was important because the nature of many such resources made it challenging to respond to real-time dispatch on a five-minute basis.

The CAISO submitted the ESDER3 proposal to the Commission on September 3, 2019.¹⁵ The Commission approved these changes through a letter order on November 6, 2019, with a November 13, 2019, effective date for the tariff amendments.¹⁶

II. Proposed Tariff Revisions

¹¹ *Cal. Indep. Sys. Operator Corp.*, 149 FERC ¶ 61,042 (2014); *Cal. Indep. Sys. Operator Corp.*, Transmittal Letter, FERC docket no. ER14-2574 (Aug. 1, 2014) (FRACMOO Filing).

¹² *Id.*

¹³ *Id.*

¹⁴ *Cal. Indep. Sys. Operator Corp.*, 170 FERC ¶ 61,173 (2020).

¹⁵ *Cal. Indep. Sys. Operator Corp.*, Transmittal Letter, FERC docket no. ER19-2733 (Sept. 3, 2019).

¹⁶ *Cal. Indep. Sys. Operator Corp.*, Letter Order, FERC docket no. ER19-2733 (Nov. 6, 2019).

A. Using the General Formula for Setting Effective Flexible Capacity Values for Proxy Demand Resources

The CAISO proposes to remove the text of subsection 40.10.4.1(c). This tariff language establishes the existing test-based EFC for PDRs. With this text removed, PDR EFC values would be set using the default approach outlined in subsection 40.10.4.1(a). This default approach applies to resources that do not have an alternative methodology outlined in the tariff.

The CAISO continues to believe performing the tests required under tariff subsection 40.10.4.1(c) would be very difficult to manage and require costly investments in system upgrades for no measurable benefit given the limited flexible RA capacity PDRs provide. The following table reflects the amount of effective flexible capacity PDRs have provided over the last 12 months and highlights the minimal contribution PDRs make towards meeting the CAISO's flexible RA capacity needs.

Table 1

| RA Month | Flex RA from PDRs (MW) | EFC from PDRs (MW) | % of PDR EFC Shown | Total Flex RA Requirement | % of Flex RA from PDRs |
|----------|------------------------|--------------------|--------------------|---------------------------|------------------------|
| May-19 | 35.50 | 1323.58 | 2.68% | 12,983.55 | 0.27% |
| Jun-19 | 35.00 | 1968.29 | 1.78% | 11,391.90 | 0.31% |
| Jul-19 | 35.00 | 1984.51 | 1.76% | 10,614.09 | 0.33% |
| Aug-19 | 5.00 | 1986.46 | 0.25% | 11,180.30 | 0.04% |
| Sep-19 | 5.00 | 1986.46 | 0.25% | 14,272.75 | 0.04% |
| Oct-19 | 5.00 | 1986.35 | 0.25% | 13,912.77 | 0.04% |
| Nov-19 | 5.00 | 1986.55 | 0.25% | 14,361.57 | 0.03% |
| Dec-19 | 5.00 | 1986.55 | 0.25% | 15,372.96 | 0.03% |
| Jan-20 | 0 | 1007.98 | 0.00% | 18,492.98 | 0.00% |
| Feb-20 | 0 | 1009.50 | 0.00% | 18,622.60 | 0.00% |
| Mar-20 | 0 | 1009.50 | 0.00% | 17,702.41 | 0.00% |
| Apr-20 | 0 | 1009.60 | 0.00% | 17,384.37 | 0.00% |
| May-20 | 0 | 1028.66 | 0.00% | 16,444.77 | 0.00% |

As mentioned in the December 31 waiver request, the CAISO cannot identify a specific legitimate reason why PDRs should be excluded from the general EFC formula or why, alone among all resource types, they should have their EFC value determined by a random test.

Consistent with most other resource types, it is more appropriate to set PDR EFC values using the general formula, which considers NQC, start-up time, and ramp rate. To that end, in late 2019 the CPUC released a decision refining its demand response auction mechanism (DRAM), which is the program through which much of the PDR resource

adequacy capacity is procured.¹⁷ That decision created new minimum performance requirements backed by a penalty structure¹⁸ and expanded testing to demonstrate a resource's ability to provide its QC.¹⁹ Because of these new rules for DRAM resources, many PDRs indirectly will have their EFC set through a test because their QC, which is an input to the NQC value and then the EFC value, will be a test-based value. Those tests will be conducted under the CPUC's jurisdiction as part of determining basic qualifications to provide any RA capacity. This approach of deferring to a local regulatory authority's QC approach is more consistent with how the RA program works for all other resources types and should apply to PDRs as well.

B. Requiring Proxy Demand Resources to Elect Five-Minute Bidding Option to Provide Flexible Resource Adequacy Capacity

The CAISO proposes to amend 40.10.3.6 to state that PDRs are ineligible to provide flexible RA capacity if they choose, per section 4.13.3, to be dispatched in the real-time market in hourly blocks or fifteen-minute intervals. PDRs only will be eligible to provide flexible RA capacity when they elect the five-minute dispatch option in the real-time market. This change is consistent with existing policy and addresses an inadvertent oversight from the ESDER3 initiative.

The FRACMOO policy paper stated that "Flexible capacity must be able to respond to five-minute dispatch instructions."²⁰ When the FRACMOO initiative was stakeholdered and the CAISO filed tariff language, inertia resources and imports were the only resource types that were not five-minute dispatchable; at that time the CAISO modeled all PDRs as resources able to respond to five-minute dispatches. Thus, section 40.10.3.6 identifies those resource types specifically as ineligible to provide flexible RA capacity.

The ESDER3 initiative provided PDRs and other demand response resources similar real-time bidding options to imports. In preparing the tariff language for ESDER3, the CAISO overlooked the interaction between that initiative and the flexible RA capacity eligibility issue in section 40.10.3.6. Through this filing, the CAISO

¹⁷ *Decision Refining the Demand Response Auction Mechanism*, Cal. Pub. Util. Comm'n, D.19-12-040 (Dec. 19, 2019).

¹⁸ *Id.* at §3.2.3 ("an Auction Mechanism resource must deliver at least 30 MWh per MW of average Qualifying Capacity" and "[i]f the energy delivery requirement is not met by the end of the contract term, Sellers will be assessed a penalty").

¹⁹ *Id.* at §3.9 (where a utility believes a demand response resource's qualifying capacity should be reduced "the Seller and Utility may proceed one of two ways: 1) reach an agreement on de-rating the Qualifying Capacity for the month disputed by the Utility or 2) accept the estimated Qualifying Capacity as reported by the Seller for the disputed month, but the Seller shall perform a test or market dispatch in each and every month in which a monthly Supply Plan Qualifying Capacity dispute arises to demonstrate its capability of delivering the Qualifying Capacity.")

²⁰ FRACMOO Revised Draft Final Proposal March 7, 2014, Section 6 p 36.

proposes to rectify that inadvertent omission.

Making hourly and fifteen-minute dispatchable PDRs ineligible to provide flexible RA capacity is just and reasonable because, like intertie resources that are not pseudoties or dynamically scheduled, they do not provide the operational flexibility that the flexible RA capacity program is meant to furnish the CAISO. PDRs that choose the five-minute dispatch option, however, can meet the need and will remain eligible to provide flexible RA capacity on the same terms as other resource types.

III. Stakeholder Engagement

The CAISO began the PDR EFC initiative by publishing a combined issue paper/straw proposal on March 27, 2020. The March 27 stakeholder document identified four topics in the scope of the initiative, some of which were not meant to lead to tariff amendments: (1) changing how the CAISO establishes PDR EFC values, including likely removal of the testing requirement; (2) considering how existing tariff provision can support unannounced testing of PDRs providing flexible RA capacity; (3) clarifying that PDRs must choose the five-minute bidding option to be eligible to provide flexible RA capacity; and (4) considering if clarifications are needed in a business practice manual to identify how PDRs providing flexible RA capacity can meet their must-offer obligations.

The CAISO hosted a teleconference on April 3, 2020, to discuss the issue paper/straw proposal and solicit stakeholder feedback. Through the April 3 call and subsequent written comments, stakeholders expressed general support for addressing all four topics. Stakeholders broadly supported the CAISO's suggestion to remove the testing requirement in section 40.10.4.1(c). Stakeholders also supported the CAISO's retaining the ability to test PDRs, but they requested there be more clarification about when testing might be warranted. Additionally, stakeholders supported the clarification of the five-minute dispatch requirement and must-offer obligation for PDRs providing flexible RA. Comments included input regarding additional clarification needed and suggestion that they be included in the Business Practice Manual for Demand Response.

The CAISO published a second stakeholder document on April 21, 2020, followed by a stakeholder teleconference on April 28, 2020.²¹ The most notable change from the first paper to the second was that the CAISO provided more detail about how it

²¹ The April 21 document also included the CAISO's final proposal on tariff changes regarding slow demand response. That subject matter will be addressed in a forthcoming Commission filing and is not addressed in any way by this filing.

would conduct PDR testing in the future. The CAISO clarified it was not proposing new testing authority to replace the existing test-based EFC methodology. The CAISO explained that future PDR testing would be conducted within existing tariff authority and CAISO business processes. The CAISO identified two likely avenues for testing. Under the CAISO tariff, all resources providing ancillary services are subject to unannounced testing to confirm their capability to provide ancillary services.²² Where PDRs provide ancillary services, they would be subject to such testing. The CAISO tariff also requires master file information for PDRs to “be accurate and actually based on physical characteristics of the resources” and that PDRs must provide “information regarding the capacity and the operating characteristics of the . . . Proxy Demand Resource as may be reasonably requested from time to time by the CAISO.”²³ This provision requires PDRs to offer and provide service consistent with capabilities they’ve registered. Where a PDR’s performance does not align with its registered master file values, the CAISO may request further information to validate the existing master file information. One way a PDR may be able to justify its master file parameters in response to a CAISO inquiry is to request a self-test under CAISO Operating Procedure 5330.²⁴

Several stakeholders submitted comments expressing support for the final proposal on the PDR EFC issues and none objected. Two stakeholders commented on the potential tests that PDRs might request in response to a master file validation inquiry. One stakeholder suggested that the CAISO conduct PDR tests in the month in which the resource has the highest NQC value for the year and the CAISO retain the tariff language in sections 40.10.4.1(c)(2) and (3) that describe the details of the existing test. Regarding the first suggestion, the CAISO is not proposing a set testing program to be conducted on a particular schedule. Instead, any tests would be one way of resolving *ad hoc* master file inquiries arising from CAISO monitoring efforts. As to this stakeholder’s second suggestion, the CAISO is removing section 40.10.4.1(c) in its entirety. As described above, any tests will follow the procedures described in Operating Procedure 5330. A second stakeholder suggested that the CAISO should methodically review all master file values for PDRs and develop more sophisticated methods of evaluating PDR performance. The CAISO has committed itself to reviewing the master file characteristics of all resources in its generation fleet, including PDRs. That effort has prioritized review of the most critical parameters and resources. The CAISO expects that review will come to encompass PDRs at some point. In the meantime, where the CAISO has a specific reason to question a given PDR’s parameters, the CAISO will seek further clarification from the PDR’s scheduling coordinator.

²² CAISO Tariff section 8.9.

²³ CAISO Tariff section 4.13.3.

²⁴ Details of the resource self-test processes are available in CAISO Operating Procedure 5330, Resource Testing Guidelines, available at: <http://www.aiso.com/Documents/5330.pdf>.

IV. Effective Date and Tariff Records

The CAISO respectfully requests that the Commission issue an order accepting the proposed revisions by July 29, 2020, with an effective date for the revisions of August 1, 2020. This effective date coincides with the current waiver excusing the CAISO from using a test-based approach to setting PDR EFCs. A Commission order by that date will provide the CAISO and its market participants needed regulatory certainty before the planned implementation.²⁵

V. Communications

Under Rule 203(b)(3),²⁶ the CAISO respectfully requests that all correspondence and other communications about this filing be served upon:

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VI. Service

The CAISO has served copies of this filing on the California Public Utilities Commission, the California Energy Commission, and all parties with scheduling coordinator agreements under the CAISO tariff. In addition, the CAISO has posted a copy of the filing on the CAISO website.

²⁵ Additionally, some of the language in tariff section 40.10.4 is currently pending Commission acceptance in the proceeding on the CAISO's Resources Adequacy Obligations from the Commitment Costs Enhancements Phase 3 Initiative (CCE3) tariff amendment (Docket No. ER20-1592). The CAISO has included pending language from that filing as part of the underlying language in the tariff records in this tariff amendment filing. To the extent the Commission does not accept the changes proposed in the CCE3 tariff amendment, the CAISO will make a subsequent compliance filing in the instant proceeding to reflect the non-acceptance of such CCE3 changes.

²⁶ 18 C.F.R. § 385.203(b)(3).

VII. Contents of Filing

Besides this transmittal letter, this filing includes these attachments:

- | | |
|--------------|--|
| Attachment A | Clean tariff language incorporating this tariff amendment; and |
| Attachment B | Red-lined tariff language showing the revisions in this tariff amendment. |

VIII. Conclusion

For the reasons set forth in this filing, the CAISO respectfully requests that the Commission issue an order accepting the tariff revisions in this filing effective August 1, 2020, and with an order by July 29, 2020.

Respectfully submitted,

/s/ David S. Zlotlow

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Attachment A – Clean Tariff

Proxy Demand Resource to Provide Flexible Resource Adequacy Capacity

California Independent System Operator Corporation

May 27, 2020

40.10.3 Flexible Capacity Categories

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40.10.3.6 Non-Eligible Resources

Intertie resources and imports, other than Pseudo-Ties and Dynamic Scheduled resources, and Proxy Demand Resources that have elected, per Section 4.13.3, to bid and be dispatched in the Real-Time Market in Hourly Blocks or fifteen (15) minute intervals, are not eligible to provide Flexible RA Capacity.

40.10.4 Effective Flexible Capacity

The CAISO shall calculate the Effective Flexible Capacity value for each resource. The CAISO shall publish the draft and final lists of the Effective Flexible Capacity values for such resources and the Flexible Capacity Categories for which each resource qualifies to provide Flexible Capacity on the CAISO Website each year in accordance with the schedule for publishing the Net Qualifying Capacity values, as set forth in the BPM, for use in the next calendar year.

40.10.4.1 Effective Flexible Capacity Calculation

- (a) **Flexible Resources.** The CAISO will calculate the Effective Flexible Capacity value of a resource, for use (i) if a Local Regulatory Authority has not established criteria for calculating the Effective Flexible Capacity value for eligible resource types, and (ii) for determining if a cumulative deficiency exists under Sections 43A.2.7(a) and (b), as follows, except as provided in Sections 40.10.4.1 (b) through (f) –

- (1) If the Start-Up Time of the resource is greater than 90 minutes, the Effective Flexible Capacity value shall be the weighted average ramp rate of the resource calculated from PMin to Net Qualifying Capacity multiplied by 180 minutes. The Effective Flexible Capacity shall not exceed the difference between the PMin and PMax of the resource.
- (2) If the Start-Up Time of the resource is less than or equal to 90 minutes, the Effective Flexible Capacity value shall be the resource's PMin plus the weighted average ramp rate of the resource calculated from PMin to Net Qualifying

Capacity multiplied by the difference between 180 minutes and the resource's Start-Up Time. The Effective Flexible Capacity shall not exceed the Net Qualifying Capacity of the resource.

- (b) **Hydroelectric Generating Unit.** The Effective Flexible Capacity of a hydroelectric generating unit will be the amount of capacity from which the resource can produce Energy consistently for 6 hours assuming that the resource's physical storage is at maximum capacity at the beginning of that six-hour period. The Effective Flexible Capacity of a hydroelectric generation unit cannot, however, exceed its Net Qualifying Capacity.
- (c) **[Not Used]**
- (d) **Energy Storage Resource.** The Effective Flexible Capacity value for an energy storage resource will be determined as follows –
 - (1) for an energy storage resource that provides Flexible RA Capacity but not Regulation Energy Management, the Effective Flexible Capacity value will be the MW output range the resource can provide over three hours of charge/discharge while constantly ramping.
 - (2) for an energy storage resource that provides Flexible RA Capacity and Regulation Energy Management, the Effective Flexible Capacity value will be the resource's 15-minute energy output capability.
- (e) **Multi-Stage Generating Resource.** The Effective Flexible Capacity value for a Multi-Stage Generating Resource will be calculated using the longest Start-Up Time of the resource's configuration that has the lowest PMin.
- (f) **Combined Heat and Power Resource.** The Effective Flexible Capacity value of a Combined Heat and Power Resource will be the lesser of (i) the resource's Net Qualifying Capacity, or (ii) the MW difference between the CHP resource's maximum output and its RMTMax, if the resource has a RMTMax, or its minimum operating level, such quantity not to exceed the quantity of generating capacity capable of being delivered over a three-hour period.

* * *

Attachment B – Redline Tariff

Proxy Demand Resource to Provide Flexible Resource Adequacy Capacity

California Independent System Operator Corporation

May 27, 2020

40.10.3 Flexible Capacity Categories

* * *

40.10.3.6 Non-Eligible Resources

Intertie resources and imports, other than Pseudo-Ties and Dynamic Scheduled resources, and Proxy Demand Resources that have elected, per Section 4.13.3, to bid and be dispatched in the Real-Time Market in Hourly Blocks or fifteen (15) minute intervals, are not eligible to provide Flexible RA Capacity.

40.10.4 Effective Flexible Capacity

The CAISO shall calculate the Effective Flexible Capacity value for each resource. The CAISO shall publish the draft and final lists of the Effective Flexible Capacity values for such resources and the Flexible Capacity Categories for which each resource qualifies to provide Flexible Capacity on the CAISO Website each year in accordance with the schedule for publishing the Net Qualifying Capacity values, as set forth in the BPM, for use in the next calendar year.

40.10.4.1 Effective Flexible Capacity Calculation

- (a) **Flexible Resources.** The CAISO will calculate the Effective Flexible Capacity value of a resource, for use (i) if a Local Regulatory Authority has not established criteria for calculating the Effective Flexible Capacity value for eligible resource types, and (ii) for determining if a cumulative deficiency exists under Sections 43A.2.7(a) and (b), as follows, except as provided in Sections 40.10.4.1 (b) through (f) –
- (1) If the Start-Up Time of the resource is greater than 90 minutes, the Effective Flexible Capacity value shall be the weighted average ramp rate of the resource calculated from PMin to Net Qualifying Capacity multiplied by 180 minutes. The Effective Flexible Capacity shall not exceed the difference between the PMin and PMax of the resource.
 - (2) If the Start-Up Time of the resource is less than or equal to 90 minutes, the Effective Flexible Capacity value shall be the resource's PMin plus the weighted average ramp rate of the resource calculated from PMin to Net Qualifying

Capacity multiplied by the difference between 180 minutes and the resource's Start-Up Time. The Effective Flexible Capacity shall not exceed the Net Qualifying Capacity of the resource.

- (b) **Hydroelectric Generating Unit.** The Effective Flexible Capacity of a hydroelectric generating unit will be the amount of capacity from which the resource can produce Energy consistently for 6 hours assuming that the resource's physical storage is at maximum capacity at the beginning of that six-hour period. The Effective Flexible Capacity of a hydroelectric generation unit cannot, however, exceed its Net Qualifying Capacity.
- (c) ~~**Proxy Demand Resource.** The Effective Flexible Capacity of a Proxy Demand Resource will be based on the resource's actual MWs of load modification in response to a dispatch by the CAISO during a test event. In determining the Effective Flexible Capacity of a Proxy Demand Resource, the CAISO will –~~
- ~~(1) — conduct the test at a random time during the flexible capacity must-offer obligation period for the resource;~~
 - ~~(2) — use the applicable baseline load data, as described in the CAISO Tariff or Business Practice Manual, to measure the load modification of the Proxy Demand Resource being tested; and~~
 - ~~(3) — pay the resource's bid price for the testing period. **[Not Used]**~~
- (d) **Energy Storage Resource.** The Effective Flexible Capacity value for an energy storage resource will be determined as follows –
- (1) for an energy storage resource that provides Flexible RA Capacity but not Regulation Energy Management, the Effective Flexible Capacity value will be the MW output range the resource can provide over three hours of charge/discharge while constantly ramping.
 - (2) for an energy storage resource that provides Flexible RA Capacity and Regulation Energy Management, the Effective Flexible Capacity value will be the resource's 15-minute energy output capability.

- (e) **Multi-Stage Generating Resource.** The Effective Flexible Capacity value for a Multi-Stage Generating Resource will be calculated using the longest Start-Up Time of the resource's configuration that has the lowest PMin.
- (f) **Combined Heat and Power Resource.** The Effective Flexible Capacity value of a Combined Heat and Power Resource will be the lesser of (i) the resource's Net Qualifying Capacity, or (ii) the MW difference between the CHP resource's maximum output and its RMTMax, if the resource has a RMTMax, or its minimum operating level, such quantity not to exceed the quantity of generating capacity capable of being delivered over a three-hour period.

* * *