



California ISO

Reliability Demand Response Resource

Minimum on time

Final Proposal

January 18, 2024

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1. Executive Summary

A June CPUC resource adequacy (RA) decision clarified the CAISO should be allowed to use a reliability demand response resource upon declaration of an Energy Emergency Alert (EEA) Watch.¹ This clarification allows the CAISO to enable bids for the resources into the market before an EEA 1. Enabling bids allows the real-time market to optimize the use of reliability demand response resources (RDRRs) on their operational characteristics and economic bids.

Following the CPUC decision, stakeholders expressed concern regarding increased chances of economic dispatch and potential attrition of customers from their retail programs, resulting in reduced RDRR capacity. Stakeholders have also expressed that in order for the CAISO to effectively optimize the dispatch of RDRR, resources' physical operating characteristics should be accurately reflected.

To mitigate these risks, stakeholders have requested that the CAISO allow RDRRs to reflect minimum on times greater than one hour, to more accurately reflect RDRR run times in CAISO's market optimization and dispatch.

In response, a narrowly scoped policy initiative titled "RDRR minimum on time" is being undertaken to make a change to the current requirement for an RDRR minimum run time value,² to be less than or equal to one hour. Section 4.13.5.3 of the CAISO tariff establishes the dispatch parameters for RDRRs including the requirement that "each reliability demand response resource ... have a minimum run time of no more than one hour."

Through this initiative, we will develop a requirement that will more effectively reflect an RDRR's operational minimum on time (MOT) while maintaining its ability to perform as a Short Start Unit.³ This will ensure that the real-time market optimization horizon can consider both the amount of time it takes for the resource to reach its maximum load curtailment (start-up) along with its minimum on time.

¹ CPUC Decision (D.) 23-06-029, June 29, 2023, p.96: "To provide consistency between the Commission's established principle for RDRR and CAISO's dispatch practices, the Commission clarifies that CAISO should be allowed to use RDRR, as an RA resource, for economic or exceptional dispatch upon the declaration of a day-of EEA Watch (or when a day-ahead EEA Watch persists in the day-of)."

² The RDRR parameter to establish the minimum time the resource must run (demand curtail) when dispatched is defined in the Masterfile as its minimum on time and is therefore the naming convention that will be utilized for the initiative and clarified in the draft tariff language.

³ Short Start Unit is defined in the CAISO Tariff as "a Generating Unit that has a cycle time less than or equal to 255 minutes (Start-Up Time plus Minimum Run Time is less than or equal to 255 minutes and can be fully optimized with respect to this cycle time)."

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This initiative is being undertaken to:

1. Provide operational benefit by more accurately reflecting RDRRs' minimum on time in the markets during stressed conditions;
2. Maintain the preferred operational dispatch order of RDRRs directed by the CPUC allowing CAISO "...to use RDRR, as an RA resource, for economic or exceptional dispatch upon the declaration of a day-of [Energy Emergency Alert ("EEA")] Watch (or when a day-ahead EEA Watch persists in the day of)"⁴; and
3. Mitigate concerns with continued participation in the retail programs integrated as RDRRs and retain demand reduction capacity they provide.

2. Stakeholder Engagement Plan

Date	Milestone
December 4	Publish consolidated Issue/Draft Final Proposal paper with proposed tariff amendment included
December 18	Comments due on combined Issue Paper/Draft Final Proposal including drafted tariff amendment
December 20	Stakeholder call
January 18	Publish Final Proposal
January 24	Stakeholder call
February 7	CAISO Board and WEIM Governing Body approval request
March	Upon approval, file tariff amendment with FERC

3. Background

On June 24, 2010, in D.10-06-034 the CPUC approved a multi-party settlement in its demand response proceeding (R.07-01-041) that required investor-owned utilities to transition their CPUC-approved retail reliability emergency-triggered demand response programs into a CAISO

⁴ CPUC decision D.23-06-029 [document link](#), at p. 96

reliability demand response product.⁵ The settlement specified the minimum operating and technical requirements for retail emergency-triggered demand response resources.

To fulfill the terms of the CPUC settlement, the CAISO developed the reliability demand response resource product.⁶ The policy design was compatible with, and enabled integration of, the California investor owned utilities' retail emergency-triggered demand response programs existing at that time, including their:

- Base Interruptible Program, or BIP
- A/C Cycling program
- Agriculture and Interruptible Pumping program

In addition to accommodating the integration of utility retail programs, the policy was designed to enable integration of any Demand Response Provider (DRP) large-single or aggregated demand response program to offer load curtailment economically in the day-ahead market, to offer load curtailment in the real-time market, and to respond to a reliability event under the terms and conditions of the RDRR policy.

Qualifications established in the policy included a set of dispatch parameters that had to be met including the resource being “capable of delivering reliability energy in real-time, reaching its full curtailment in no longer than 40-minutes,”⁷ and requiring that “the length of dispatch (aka the Sustained Response Period) of a [RDRR] may be up to four (4) hours per event and a [RDRR] cannot have minimum run time of greater than one (1) hour.”⁸

On October 26, 2010, the CAISO Board of Governors approved authorization of the RDRR product. In its August 19, 2013 final FERC RDRR compliance filing,⁹ the CAISO's proposed tariff section 4.13.5.3 included the dispatch parameters set forth by the RDRR policy including limiting their minimum run time to that of “no more than one (1) hour”. This language was accepted by FERC in March of 2014, remaining in effect to date.

The 2014 implementation of RDRR policy provided CAISO operators the ability to either enable RDRR bids for optimal market dispatch within the real-time market or to manually “force” a response through an Exceptional Dispatch. The initial RDRR design only accommodated bid enablement into the Real-Time Dispatch (RTD)¹⁰ process, with an advisory horizon extending approximately sixty-five minutes. Only considering these resources in RTD required them to have a more restrictive startup and minimum run time. However, when combined, an RDRR maximum 40-minute startup time and a minimum run [on] time no greater than one-hour could

⁵ *Decision Adopting Settlement Agreement on Phase 3 Issues Pertaining to Emergency Triggered Demand Response Programs*, June 25, 2010, available at [document link](#).

⁶ Reliability Demand Response Product (RDRP) policy initiative webpage, [webpage link](#)

⁷ RDRP revised straw proposal at page 5 paragraph 3, [RDRR Straw Proposal](#)

⁸ RDRP revised straw proposal at page 6 paragraph 2, [RDRR Straw Proposal](#)

⁹ *Cal. Indep. Sys. Operator Corp.*, 146 FERC ¶ 61,233 (2014). [FERC Filing](#)

¹⁰ Often referred to as the 5-minute market

still extend beyond the optimization horizon, potentially limiting its effective market dispatch.

In its 2021 Summer Readiness initiative, the CAISO proposed and obtained FERC approval to “dispatch RDRRs in real-time pre-dispatch (RTPD)¹¹ so they can be optimally dispatched within a longer horizon. Ensuring that the optimization horizon at a minimum captures the RDRR startup and maximum minimum run times will increase the efficiency of the market dispatch.”¹² Enablement of RDRR bids in RTPD changed how the market could optimize these resources in real-time consistent with the dispatch parameters set by the existing policy and allowed RDRRs to set the market clearing price in the fifteen-minute market. This enhancement became effective June 1, 2021.

4. Final Proposal and Rationale

The CAISO proposes removing the current restriction for an RDRR to have a minimum run time of no more than one (1) hour. Now that RDRRs are enabled into RTPD, there is flexibility as to what the resources’ minimum on time could be within limits.

The RDRR minimum on time in combination with its start-up time must be optimized within a real-time market (RTM) process Time Horizon. The RTM applications that have Unit Commitment capabilities can commit resources optimally within their Time Horizon; however, because their Time Horizon is short, only Short Start Units can be committed. A Short Start Unit was defined as one that can be committed in the RTM Short-Term Unit Commitment (STUC) process.

The STUC runs once at the beginning of each hour and looks ahead eighteen 15-minute intervals, i.e., a Time Horizon of four hours and 30 minutes (i.e., 270 minutes).¹³ However, only 255 minutes are available to perform the unit commitment process. Therefore, a Short Start Unit must have a Start-Up Time plus Minimum Run Time less than or equal to 255 minutes.

To ensure that an RDRR remains dispatchable in RTPD and considered in the STUC process, while extending its minimum on time beyond 1 hour, the CAISO proposes to align the RDRR requirement with the definition established for a Short Start Unit. Alignment with the definition of a Short Start Unit makes the RDRR minimum on time requirement synonymous with the Minimum Run Time requirement for Short Start Units.

The CAISO proposes that an RDRR have a minimum on time that combined with its Start-Up Time does not exceed 255 minutes.

5. Clarification of RDRR real-time market treatment

Effective June 1, 2021, the CAISO completed implementation of the RDRR enhancements proposed in its 2021 Summer Readiness initiative. The implementation allowed RDRRs to be

¹¹ Often referred to as the 15-minute market (FMM)

¹² March 19, 2021 Final Report at page 33, paragraph 3 [Summer 2021 Readiness document link](#)

¹³ See Business Practice Manual for Market Operations, Section 7.3.3

considered for economic dispatch in RTPD. RDRRs are not considered for commitment in STUC; however, STUC does recognize the minimum on time of RTPD committed RDRRs in the consideration of other unit commitments. Therefore, aligning the minimum on time requirement for RDRRs with those of short start units committed in STUC is necessary so as not to impact the performance of its unit commitment process.

The final proposal to specify minimum on time requirements does not change how RDRR real-time bids, if enabled in the market, are considered in RTPD for dispatch. A longer minimum on time does not decrease its likelihood of dispatch within RTPD, it only guarantees that when dispatched the longer minimum on time will be respected.

Resources with a Pmin of zero, including RDRRs, do not have their minimum on time considered in RTPD economic evaluation today. The economic RTPD evaluation will evaluate whether RDRR is economic to commit based on the resources' real-time bid MW quantity and price. If economic for even a 15 minute window in the RTPD horizon, the RDRR could get committed, and if committed, it would be kept on in forward intervals through its minimum on time.

This will be most impactful for RDRRs registered with the discrete¹⁴ dispatch option. When dispatched, the discrete RDRR will remain dispatched at or near their maximum bid quantity for their registered minimum on time.¹⁵ RDRRs registered as continuous (non-discrete) will continue to be economically dispatched between their Pmin (0 MW) and their maximum bid quantity. Once committed, the resources minimum on time will be respected. Because the Pmin is 0 MW for RDRR, the resources is considered "on" even at 0 MW. This proposal does not change how the optimization considers non-discrete RDRRs: the optimization would have the option to dispatch a non-discrete RDRR resource down to 0 MW throughout its minimum on time.

Additionally, there will be no changes to how RDRRs enabled into RTPD can set market prices. RDRRs have the ability to register as 5-, 15-, or 60-minute dispatchable. As detailed in the CAISO BPM for Market Operations¹⁶, RDRRs registered for 15-minute dispatch can set the marginal energy price in RTPD, the fifteen-minute market, whether they are registered as continuous (non-discrete) or discrete. Resources registered for 5- minute dispatch can set the marginal energy price in RTD, the five-minute market. A 60-minute dispatchable resource can only be committed and dispatched in HASP and cannot set the price in RTPD and RTD. Resources cleared in HASP will receive a fifteen-minute market schedule and will settle at the corresponding locational marginal price during each fifteen-minute market interval. This is consistent with how all hourly block energy resources are currently treated within the CAISO markets.

¹⁴ RDRRs have had the ability to register as either continuous or discrete. Discrete registration indicates the resource has one bid segment and when dispatched will generate to its Pmax. Continuous (non-discrete) registration indicates that a resource can operate anywhere between its Pmin and Pmax, based on the cleared bid quantity.

¹⁵ For more information on the Pmin re-rate feature for discrete RDRRs see the RDRR Bidding Enhancements Final Proposal, April 12, 2022 starting at page 5. [RDRR bidding enhancements Final Proposal](#)

¹⁶ CAISO BPM for Market Operations, version 93, section 2.5.7 page 124 [CAISO BPM for Market Operations](#)

Lastly, there will also be no changes to RDRRs' current eligibility for Bid Cost Recovery (BCR). Resources registered for 5-minute or 15-minute dispatch are eligible for BCR. Resources registered for 60-minute are ineligible to receive BCR.

6. Proposed Tariff Change

The CAISO proposes to modify CAISO tariff Section 4.13.5.3 to remove the RDRR current minimum run time restriction and establish a combined Start-Up Time plus minimum on time requirement aligned with those for Short Start Units. The proposed tariff modifications are shown in yellow below:

4.13.5.3 Dispatch Parameters for RDRRs

Each Reliability Demand Response Resource shall be capable of reaching its maximum Load curtailment within forty (40) minutes after it receives a Dispatch Instruction, and shall be capable of providing Demand Response Services for at least four (4) consecutive hours per Demand Response Event. Each Reliability Demand Response Resource shall have a **combined Start-Up Time and minimum on time less than or equal to of no more than one (1) hour 255 minutes.**

The CAISO proposes to request that this tariff modification become effective by summer 2024.

7. Stakeholder Comments on Draft Final Proposal

The CAISO received formal comments from six (6) stakeholders including the California Large Energy Consumers Association (CLECA); California Efficiency and Demand Management Council (CEDMC); Department of Market Monitoring (DMM); Enel X North America, Incorporated (Enel); Pacific Gas and Electric (PG&E); and Southern California Edison (SCE). Stakeholder comments generally were supportive of the CAISO's proposal removing the ≤ 1 hour minimum on time restriction by allowing for a RDRR minimum on time that, combined with its Start-Up Time, does not exceed 255 minutes. Comments expressed desire for RDRRs to more accurately reflect this operational characteristic and see benefit in a longer minimum on time being properly accounted for when market or exceptionally dispatched.

The CAISO appreciates the time and effort spent by all stakeholders in reviewing the issue paper/draft final proposal, participating in the stakeholder conference calls and providing written comments to the CAISO for consideration.

The following provides CAISO responses addressing specific stakeholder comments submitted:

Stakeholder Feedback: Both CEDMC and Enel suggested revisions to the proposed tariff language.

The Council recommended a revision to specify that the minimum on time will be respected when economically or exceptionally dispatched. Enel revision suggested requiring an RDRR dispatch be for no longer than an EEA Watch is in effect.

Response: By definition, the minimum on time registered as a resource parameter in the Masterfile will be respected when the resource is dispatched through the market or exceptionally dispatched by CAISO operators. Therefore, CEDMC's suggested revisions in the tariff are not necessary. In response to Enel's comment, the CPUC decision clarified that CAISO can access RDRRs for economic or exceptional dispatch upon declaration of an EEA Watch that exists the day-of. The CAISO will respect the operating parameters reflected by scheduling coordinators for their resources if an RDRR is dispatched economically or exceptionally and the CAISO has issued an EEA Watch or higher. If RDRRs reflect a minimum on time that extends beyond the window of an EEA Watch, the CAISO will respect the operating parameter submitted. Scheduling coordinators should accurately reflect their operating parameters to the CAISO.

Stakeholder Feedback: CLECA would like to see fixed costs associated with customer curtailment included in RDRR policy.

Response: From the market perspective, fixed costs would be contemplated as part of the RDRR's minimum load cost. However, reflecting these minimum load costs as a consideration when dispatching RDRR would change the nature of RDRR from a reliability resource to a cost-based resource similar to a Proxy Demand Resource, CAISO's cost-based market model for economically dispatchable demand response. If the desire is to still participate as RDRR, the CAISO sees the need for both the CPUC approved multi-party settlement and the underlying retail tariffs to reflect this updated nature of RDRR as a cost-based resource rather than a reliability-triggered resource.

Stakeholder Feedback: Department of Market Monitoring (DMM) highlighted the need for scheduling coordinators and the CAISO to ensure that the minimum on time parameter registered is accurate representation of the resource's operation.

Response: CAISO Tariff section 4.6.4 requires all information provided to the CAISO registered in the Masterfile accurately reflect the operational and technical constraints of the resource. The CAISO is committed to using the processes currently in place to ensure compliance with the tariff.

Stakeholder Feedback: SCE requests clarification on what start up time should be used in establishing a minimum on time for 15-minute and 60-minute dispatchable RDRRs.

Response: The start-up time used in establishing the minimum on time should be the start-up time of the resource registered in the Masterfile (GRDT). It does not need to reflect the default notification time used in the real time markets for 15-minute or 60-minute dispatchable RDRRs.

Per the following example:

RDRR start-up time (GRDT): 15 minutes

Bid Option: 60 minutes (default notification time = 52.5 minutes)

Where, start-up time + minimum on time ≤ 255

Then, Minimum on Time $\leq 255 - 15 = \underline{240 \text{ minutes}}$

Stakeholder Feedback: SCE included the following suggestions for RDRR enhancements as requested in the comment template.

- 1) Utilizing start-up time listed in the GRDT instead of the defaulted values used in committing 60-minute and 15-minute dispatchable RDRRs
- 2) Removing discrete dispatching cap of 100 MW
- 3) Notification to Market Participants when RDRRs are enabled

Response: These suggestions warrant more discussion and consideration than the current accelerated timeline – chosen to enable a discrete improvement prior to next summer – provides. Assuming these enhancements require tariff changes, the CAISO suggests SCE submit these items as discretionary policy initiative proposals during the policy catalog submission window in February 2024 for consideration of inclusion in the policy initiative catalog and subsequent 2025-2027 policy roadmap. The CAISO frequently bundles smaller topics with larger initiatives, and stakeholders will have the opportunity to identify priorities and potential groupings after proposals are submitted. Submitting these topics as a discretionary policy initiative proposal is the official means by which they can be incorporated in the catalog/roadmap process.

A policy initiative proposal template is scheduled to be released on January 31st which stakeholders can use to submit a description of the issue and the issue's impact on stakeholders/market participants.

8. WEIM Governing Body Role

This initiative proposes a change to an established policy element of RDRR: removing the current 1 hour restricted minimum on time requirement. CAISO staff believes that the WEIM Governing Body has joint authority with the Board of Governors over this change.

The Board and the WEIM Governing Body have joint authority over any proposal to change or establish any CAISO tariff rule(s) that would apply to the WEIM Entity balancing authority areas, EIM Entities, or other market participants within the WEIM Entity balancing authority areas, in their capacity as participants in WEIM. This scope excludes from joint authority, without limitation, any proposals to change or establish tariff rule(s) applicable only to the CAISO balancing authority area or to the CAISO-controlled grid. Charter for EIM Governance § 2.2.1. The tariff amendment needed to implement changes to the RDRR minimum on time requirement would be “applicable to EIM Entity balancing authority areas, EIM Entities, or other market participants within EIM Entity balancing authority areas, in their capacity as participants in EIM.” WEIM balancing authority areas may use the RDRR model assuming they have approval from their local regulatory authority and meet the requirements of RDRR participation. Accordingly, the proposed changes to the RDRR model fall within the scope of joint authority.

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This proposed classification reflects the current state of the initiative and is not expected to change as the stakeholder process moves ahead. However, stakeholders are encouraged to submit a response to this proposed classification as described above in their written comments, particularly if they have concerns or questions.

9. Next Steps

The CAISO will discuss the final proposal paper and address any additional verbal comments with stakeholders during a conference call on January 24, 2024. The RDRR minimum on time (MOT) proposal will go before the WEIM Governing Body and ISO Board of Governors for approval at their joint session meeting scheduled for February 7, 2024.