



CAISO BA Day-Ahead Sufficiency

Draft Final Proposal

January 14, 2025

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Introduction

The California Independent System Operator (CAISO) is preparing to launch its Extended Day-Ahead Market (EDAM) in the spring of 2026. The EDAM resource sufficiency evaluation (RSE) is designed to incentivize Balancing Authority Areas (BAAs) participating in EDAM, like the CAISO BA, to come to the market with sufficient supply to meet their next-day obligations prior to engaging in transfers with other participating BAAs. By requiring each participating BAA to demonstrate sufficient forward procured supply each day, the EDAM RSE discourages BAAs with insufficient capacity from inappropriately leaning on neighboring BAAs for supplemental capacity. The RSE is applied equally and uniformly across the EDAM BAAs. The processes and actions discussed below are equally applicable and available to any EDAM BAA that chooses to use them.

As established in the EDAM design, the final binding RSE will be conducted for each Balancing Authority in the EDAM every day at 10 a.m. prior to running the day-ahead market. The RSE will test whether the CAISO BA and other EDAM participating BAAs have sufficient supply for each hour of the next day. The RSE will test each BAA's offered supply¹ against its RSE obligation,² including its demand forecast, imbalance reserve requirements³ and ancillary services requirements.⁴ To perform the tests, the RSE application will run a unit-commitment optimization based upon each BAA's entire load and supply without considering transmission constraints. If the market optimization is not able to meet the RSE obligation with available supply (a condition where the test does not need to relax the power balance constraints to solve), then the BAA "passes" the RSE. If the optimization must relax constraints to solve, then the BAA "fails" the RSE. Failures can be in the upward and/or downward direction. An upward failure occurs when the optimization must relax the upward power balance constraint, upward imbalance reserve procurement constraint and/or upward ancillary services procurement constraint. A

¹ For variable energy resources (VERs), the RSE will take into account the full VER forecast. See EDAM Tariff Section 33.31.1.

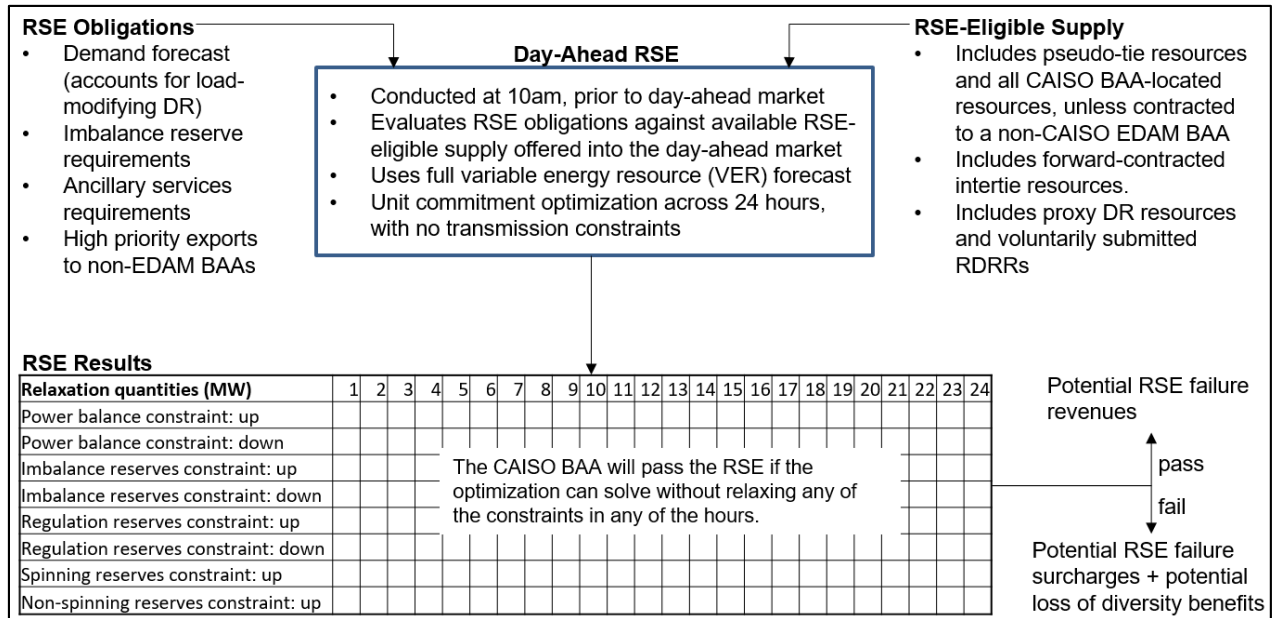
² For a full description of the RSE obligation components see [EDAM Tariff Section 33.31.1.2.1](#)

³ Imbalance reserves are a new day-ahead market product that the CAISO will implement as part of its [day-ahead market enhancements initiative](#). When implemented, the day-ahead market will procure imbalance reserves up and imbalance reserves down to meet the range of expected imbalances between the day-ahead and real-time net load forecasts.

⁴ For the CAISO BA, RSE obligations will also include any self-scheduled volumes of high priority exports to non-EDAM BAAs. For the CAISO BA, RSE-eligible supply will include forward-contracted intertie resources, pseudo-tie resources and all CAISO-BA located resources, unless contracted to a non-CAISO EDAM BAA through an EDAM bucket 1 transfer.

downward failure occurs when the optimization must relax the downward power balance constraint, downward imbalance reserve procurement constraint or downward ancillary services procurement constraint. The optimization will seek to minimize the sum of the constraint relaxation quantities across the 24 intervals. Figure 1 illustrates the RSE process applied to the CAISO as a participating Balancing Authority Area in the EDAM Area.

Figure 1: Illustration of Simplified RSE Applied to CAISO BA Participating in the EDAM



BAAs that fail the RSE in any hour of the 24-hour evaluation may incur at least one of the following types of financial surcharges: (1) on-peak upward failure surcharges; (2) off-peak upward failure surcharges; (3) downward failure surcharges. BAAs that fail the RSE by a *de minimis* amount will not be subject to financial surcharges. Upward failure surcharges are calculated on a tiered structure that incorporates the magnitude of the failure and any persistence in upward failures over a rolling thirty-day period. The downward failure surcharge is not tiered. In addition to incurring financial surcharges, deficient BAAs may be removed from the pool of passing entities and may lose diversity benefits in real-time. More specifically, BAAs that are deficient after the integrated forward market (IFM)⁵ or fail to comply with the

⁵ The integrated forward market (IFM) is the engine of the day-ahead market. It is a financial market where bid-in supply clears against bid-in load and ancillary service requirements. The IFM co-optimizes procurement of energy and ancillary services for each operating hour of the trading day seeking to minimize overall procurement costs, while respecting transmission constraints and inter-temporal resource constraints such as minimum run time and

tagging requirements will be evaluated individually in the western energy imbalance market (WEIM) RSE. BAAs that are sufficient and comply with the tagging requirements will be pooled together and evaluated as a whole.

As an EDAM participating BAA, the CAISO BA must be prepared to meet its RSE obligations at or before 10 a.m. each morning. As part of this process, the CAISO BA will evaluate its RSE position and take actions to ensure reliability if there is a significant projected supply shortfall. CAISO BA operators will monitor resource availability throughout the morning. The RSE obligation for the demand forecast and imbalance reserve requirements is finalized at 9 a.m. If there is a projected RSE shortfall at 9 a.m., the CAISO BA will still have approximately one hour before the binding RSE is performed at 10 a.m. For this reason, the focus of this initiative is to ensure the CAISO BA is on track to meet its RSE obligations by or before 9 a.m. To that end, this initiative addresses five topics:

1. Ensuring the advisory RSE results provide a realistic assessment of expected CAISO BA supply and demand obligations to support reliable operation
2. Accounting for reliability demand response resources
3. Accounting for strategic reliability reserve resources
4. Curing potential reliability concerns to the extent CAISO BA system operations determines they are correlated with upward RSE shortfalls
5. Ensuring day-ahead import tags are timely submitted

On May 6th, 2024 the ISO published a Straw Proposal addressing these topics, followed by a stakeholder meeting on May 13th and stakeholder comments submitted by May 28th. This Draft Final Proposal revisits the Straw Proposal in light of stakeholder feedback and further internal assessment.

Chapter 1: Making the 9 a.m. advisory RSE results more meaningful

Background and Objectives

As established in the EDAM design, the advisory RSE runs are periodic, non-binding supply and demand assessments that participating BAAs can access before 10 a.m. each morning. For each BAA, the advisory

start-up time. Beginning in the spring of 2026, the IFM will also procure and co-optimize imbalance reserves, as detailed in the CAISO's [day-ahead market enhancements initiative](#).

RSE results will show whether the BAA can meet its energy, imbalance reserve, and ancillary services requirements. The results will show whether the BAA is deficient in the upward and/or downward direction for each of the 24 intervals of the day-ahead market as well as the magnitude of any projected failures. An upward deficiency means the BAA has insufficient RSE-eligible supply to meet its upward energy requirements, upward imbalance reserve requirements, and/or upward ancillary services requirements. A downward deficiency means the BAA has insufficient RSE-eligible supply to meet its downward energy requirements, downward imbalance reserve requirements, and/or downward ancillary services requirements.⁶ The CAISO BA will use its advisory RSE results to determine gross upward shortfalls by adding the upward deficiencies, if any, in each hour. The upward deficiencies will consist of the relaxation quantities required to meet the upward power balance constraint, upward imbalance reserve procurement constraint, and the upward ancillary services procurement constraints.⁷

The advisory RSE results will provide the CAISO BA early insight into its ability to pass the RSE. However, these advisory results may not represent all of the CAISO BA's eligible RSE supply, because advisory results will not reflect the final volumes associated with offers submitted into the day-ahead market after each advisory RSE run prior to 10 a.m. For the CAISO BA, such volumes may be significant because the supply can bid into the day-ahead market until 10 a.m., which is the same time as the final binding RSE run.⁸

Figure 2 provides a breakdown of the RA capacity offered into the day-ahead market in July 2023.⁹ The chart shows that across the 31 days of July, approximately 75% of the capacity was offered to the CAISO BA by or before 9 a.m and thus would have been included in the CAISO BA's final advisory RSE run. However, approximately 25% of the capacity was offered to the CAISO BA after 9 a.m. and could not have been incorporated into the CAISO BA's final advisory RSE run had EDAM been live in July 2023. Capacity offered to the CAISO BA after 9 a.m. arrives too late to inform any action the CAISO BA may be

⁶ For example, during over-supply conditions when imbalance reserve down requirements cannot be met due to a high volume of self-schedules.

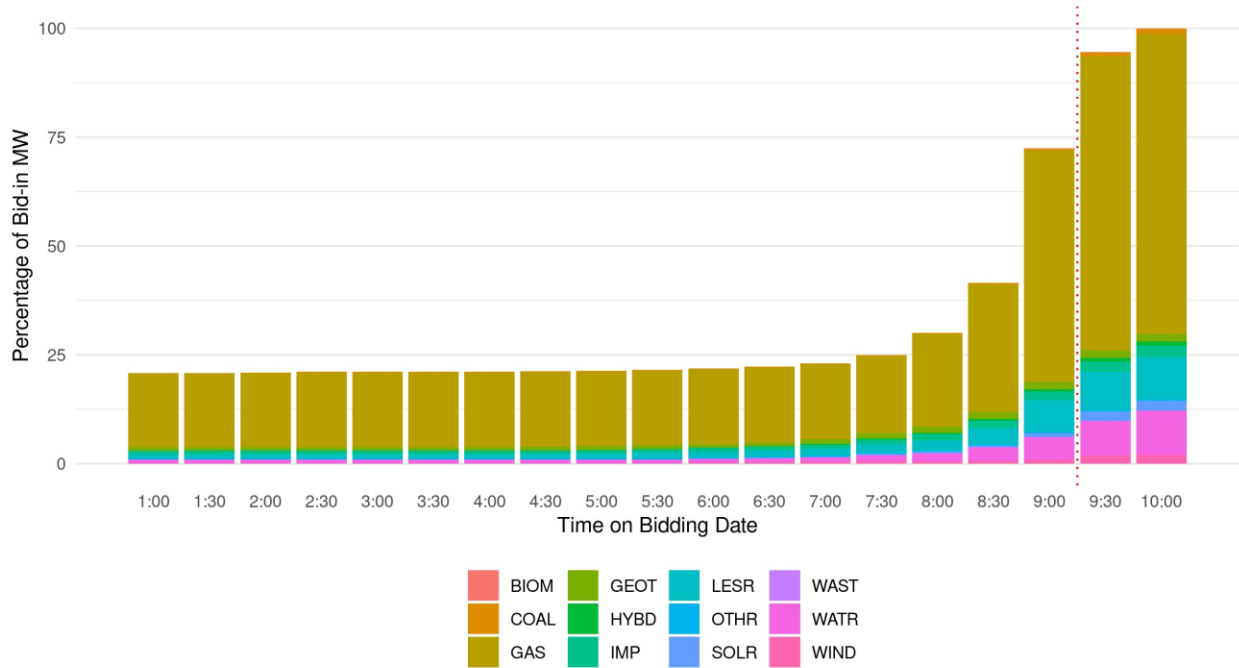
⁷ For the purpose of calculating a 9 a.m. RSE position, it is reasonable to take the sum of these relaxation quantities and treat energy, imbalance reserves and ancillary services interchangeably. It is reasonable to treat these RSE obligations interchangeably because the awarded supply for one type of obligation will likely free up supply for another type of obligation in the co-optimization.

⁸ There are exemptions to the RA day-ahead must offer obligations. For example, eligible intermittent resources may, but are not required to submit day-ahead offers.

⁹ The CAISO chose July as a reasonable representation of the summer months, when RA capacity is most critical.

taking to address any projected RSE shortfall. The chart provides details on the timing of offers by resource fuel types. Of the capacity offered after 9 a.m., the majority was natural gas-fired capacity, followed by energy storage capacity and hydroelectric capacity.

Figure 2: RA capacity offered into day-ahead market by time stamp, July 2023



Capacity offers in July 2024 show a similar pattern (Figure 3). On average, about 71% of RA capacity was offered to the day-ahead market by 9 a.m. However, as shown in Figure 3, this value varied from about 46% to 91% across individual days. For comparison, in the same month approximately 95% to 98% of RA capacity was consistently offered by 10 a.m.

Figure 3: RA capacity offered into the day-ahead market by 9 a.m. each day, July 2024 (MW)

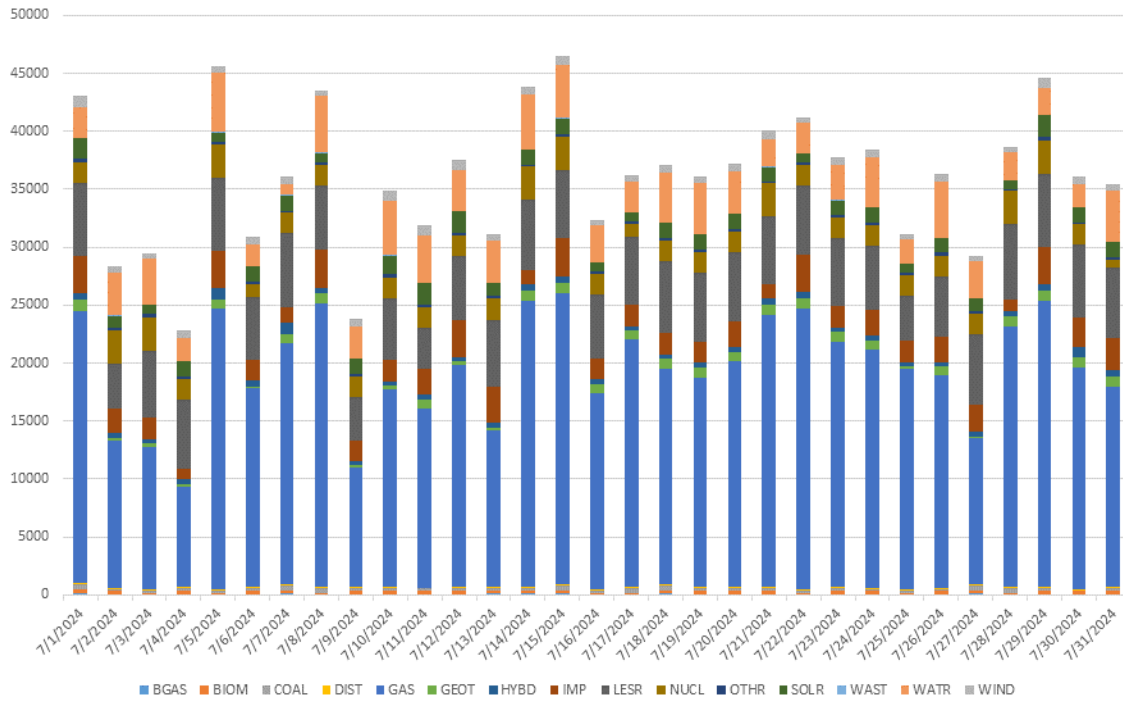
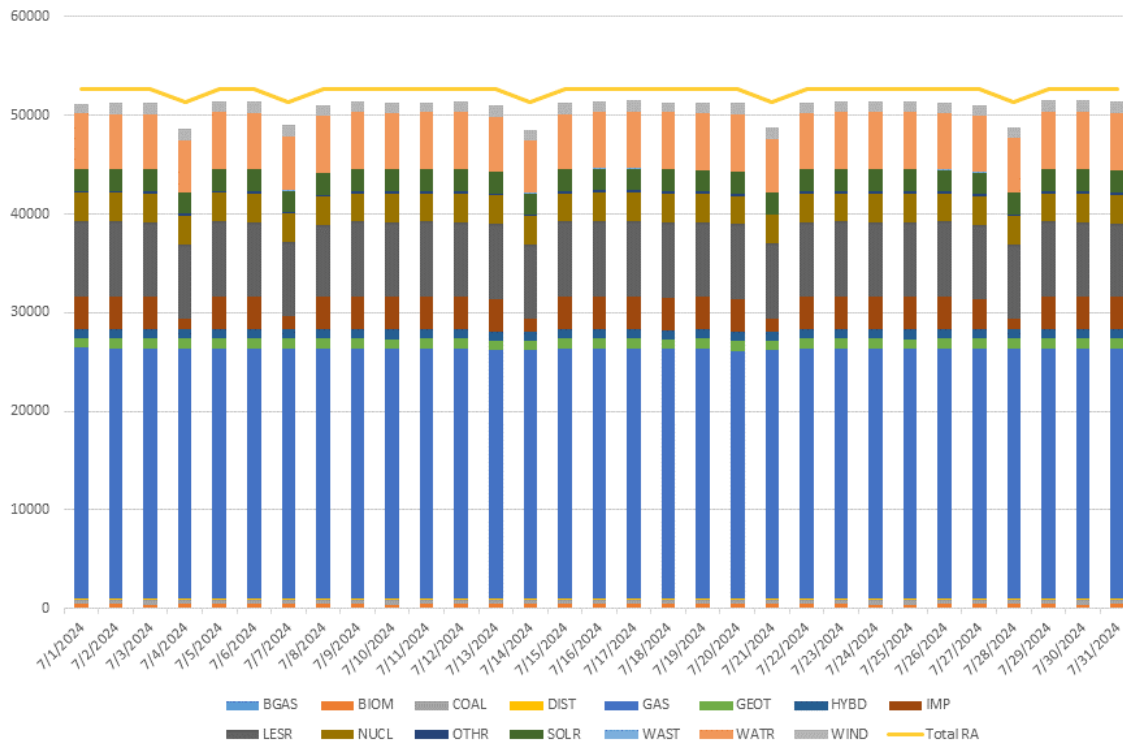


Figure 4: RA capacity offered into the day-ahead market by 10 a.m. each day, July 2024 (MW)



To the extent market participants can voluntarily submit day-ahead offers by 9 a.m., this will increase the accuracy of the advisory RSE runs. Submission prior to 9 a.m. would not prevent scheduling coordinators from further updating their offers until the day-ahead market closes at 10 a.m. To the extent these offers are not present at 9 a.m., the CAISO BA system operators will utilize existing tools and processes to estimate the CAISO BA's expected capacity position at 10 a.m.

In the Straw Proposal, the ISO previously proposed a three-step process by which bids submitted by 9 a.m. would be augmented with two types of estimates designed to collectively capture the additional capacity expected to bid by 10 a.m. For RA resources subject to bid-insertion that had not bid by 9 a.m., the existing bid-insertion rules would be applied at 9 a.m. For RA resources not subject to bid insertion that had not bid by 9 a.m., the ISO would insert advisory offers that would be used only for the 9 a.m. advisory RSE and discarded by 10 a.m. before the day-ahead market run.

Stakeholder Perspectives

Stakeholder comments on the estimation process in the Straw Proposal were largely positive with some suggestions.

- The California Community Choice Association (CalCCA), the Six Cities, San Diego Gas & Electric (SDG&E), and The Energy Authority (TEA) support this section of the Straw Proposal as written.
- The California Efficiency + Demand Management Council supports the advisory offer process for proxy demand response resources and does not take a stance on the broader estimation process.
- The Northern California Power Agency (NCPA) expressed concern over whether the estimation process might ever result in scheduling coordinators not being able to overwrite inserted bids or advisory offers not being discarded before the day-ahead market run. In order to prevent this NCPA suggested two alternatives to the estimation process: 1) limiting the advisory RSE obligation to the percentage of the RA fleet expected to bid before 9 a.m. rather than using the full obligation and 2) running the advisory RSE closer to 10 a.m. to capture a larger percentage of the actual bids that would be submitted by 10 a.m.
 - ISO response: Using a partial RSE obligation in the 9 a.m. advisory run carries too high a risk of missing potential shortfalls and leaving operators without sufficient time to address them before the binding RSE at 10 a.m. Running the advisory RSE closer to 10 a.m. would not provide enough time to take corrective action should operators

determine that a projected RSE shortfall was indicative of a reliability risk. However, the approach described in the Draft Final Proposal section below no longer uses early bid insertion or advisory offers, so these concerns are addressed.

- Pacific Gas & Electric (PG&E) raised concern that the current bid insertion rules may produce inaccurate results for energy-limited dispatchable hydro and battery storage RA resources, and recommended basing energy quantity parameters for the inserted bids on clean bids from the previous trade date instead.
 - ISO response: Energy-limited dispatchable hydro and battery storage resources are exempt from bid-insertion rules.¹⁰ They are thus part of the group of RA resources not subject to bid insertion for which, under the Straw Proposal, estimates would be derived based on their contracted RA capacity. However, this concern is also addressed by the changes to the proposed process described in the Draft Final Proposal section below.
- Southern California Edison (SCE) recommends including estimates of non-RA resources and short-term contracts at the interties in the advisory RSE process, and makes several data requests.
 - ISO response: The advisory RSE process will include all bids received in the day-ahead market by 9 a.m. Non-RA resources, short-term intertie contracts, and all other resources will thus be included in the advisory RSE to the extent they have bids in by 9 a.m. If a resource has neither a must-offer obligation nor a bid in the day-ahead market, reliably estimating its contribution beforehand is much harder. The Draft Final Proposal section below describes some sources operators may use to make this approximation.
- The California ISO Department of Market Monitoring (DMM), CPUC Energy Division, Public Advocates Office at the California Public Utilities Commission (Cal Advocates), and California Department of Water Resources (CDWR) make no comment on this section of the Straw Proposal.

Several stakeholders also requested analysis on how often RSE failures would happen when the RSE criteria are applied to past supply and demand conditions. ISO staff analyzed supply and demand information for summer 2023. When only RA resources are counted, there are RSE failures on eleven

¹⁰ Section 7.1 of the Reliability Requirements Business Practice Manual.

different dates totaling 53 cumulative failure hours (Figure 5). This comes to 2.4% of hours examined (Figure 6).

Figure 5: Hypothetical RSE results for summer 2023 using only RA resources (MW)

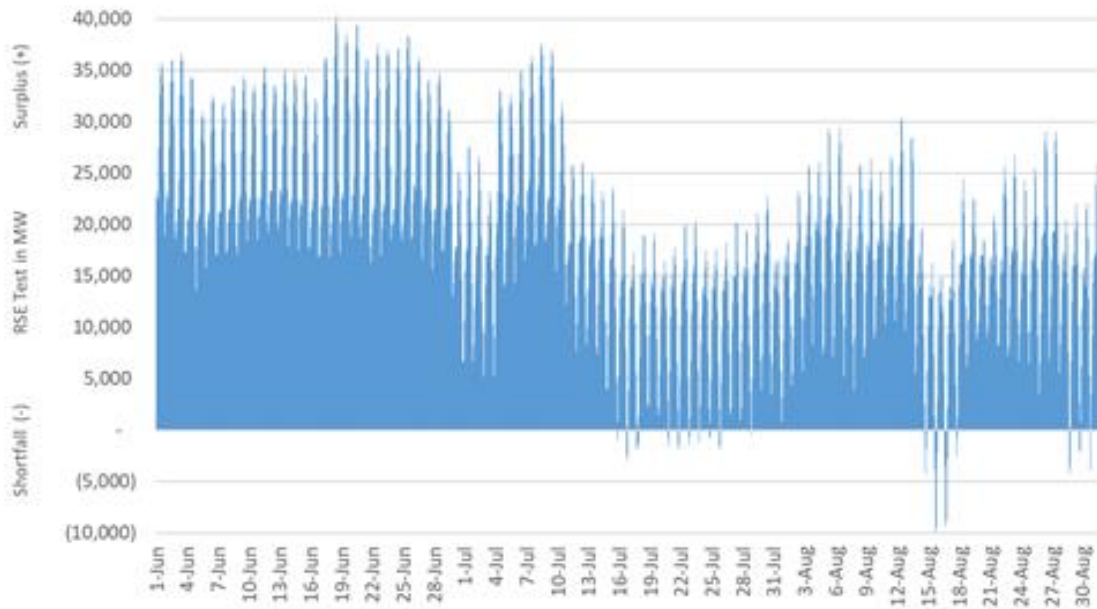
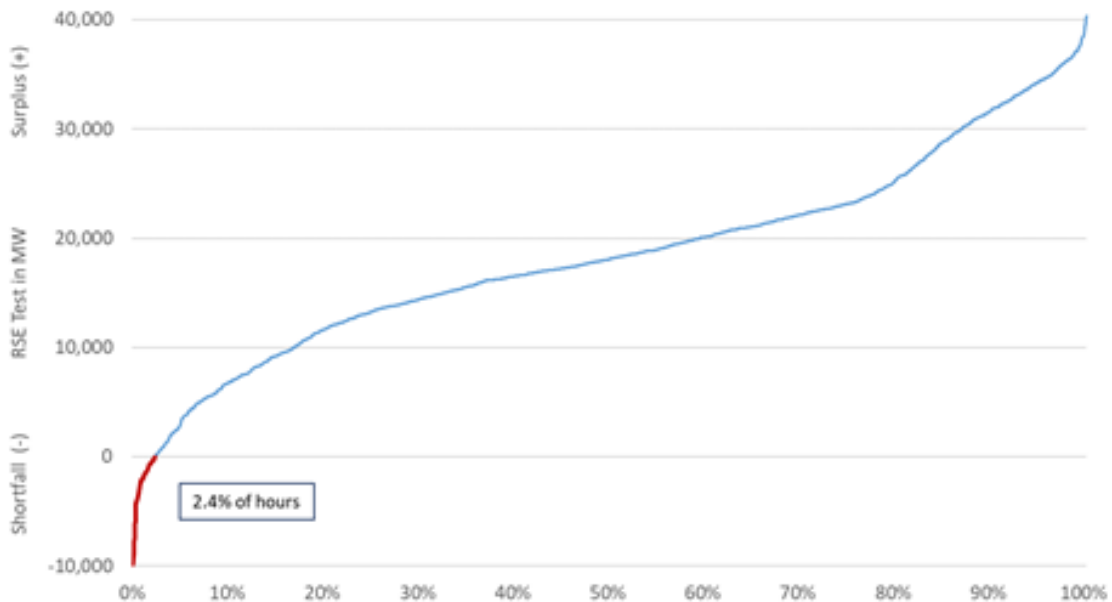


Figure 6: Hypothetical RSE results for summer 2023 using only RA resources (% failures)



Counting only supply that is contracted for RA represents a conservative estimate for RSE-eligible supply, as non-RA resources will also count towards the EDAM RSE as long as they bid into the day-

ahead market. If non-RA resources are included as well, hypothetical failures for summer 2023 drop to six hours over two dates, or 0.27% of hours analyzed (Figures 7 and 8).

Figure 7: Hypothetical RSE results for summer 2023 using both RA and non-RA resources (MW)

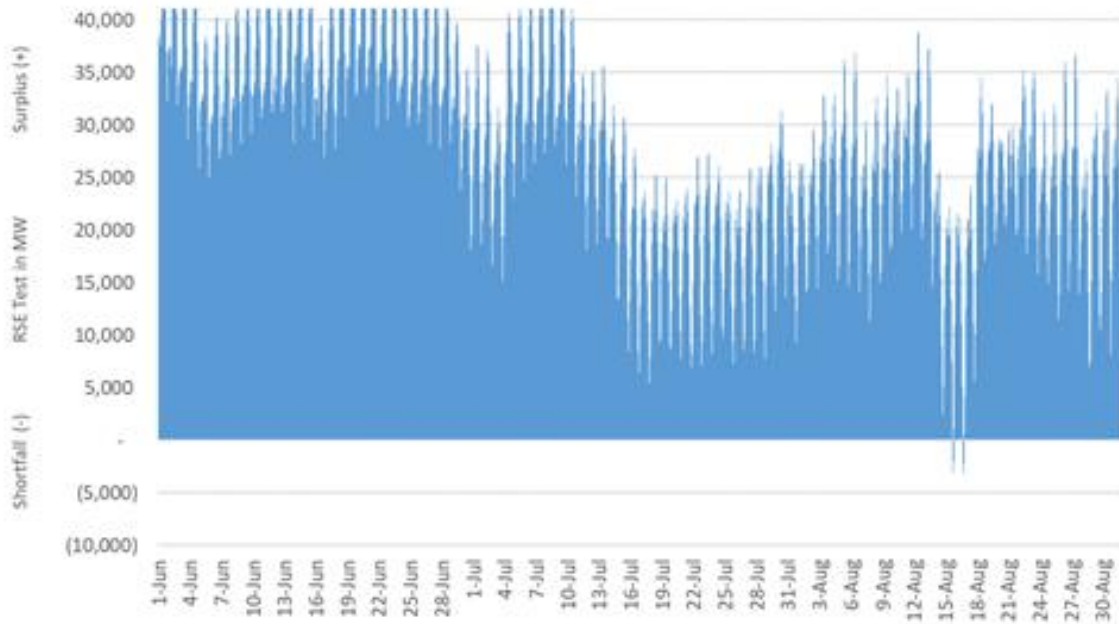
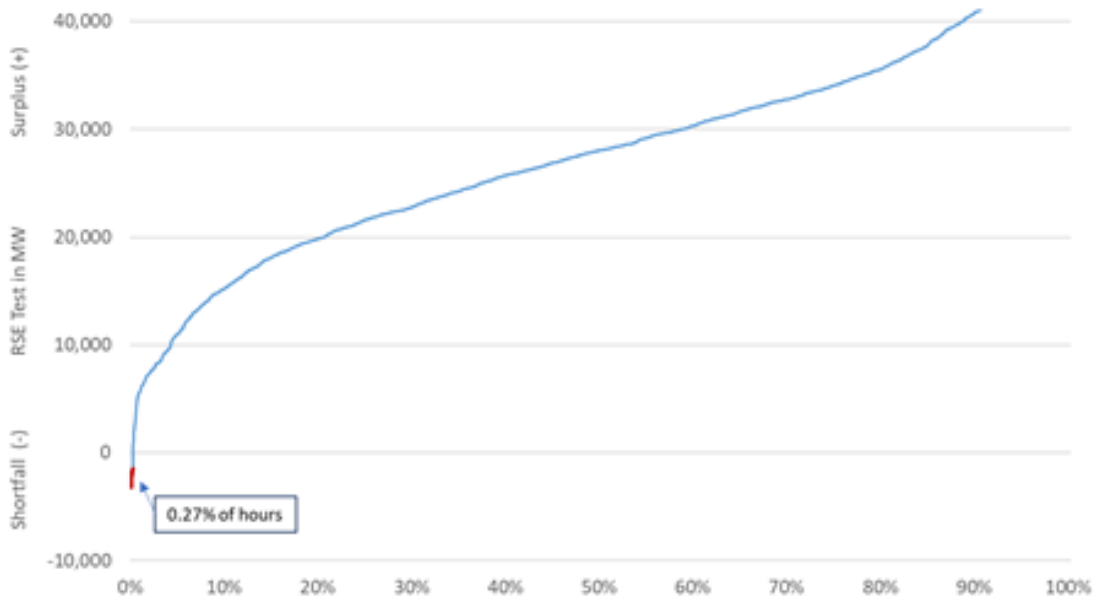


Figure 8: Hypothetical RSE results for summer 2023 using both RA and non-RA resources (% failures)



The contributions of non-RA resources are easier to quantify ex-post than estimate beforehand because they have no must-offer obligation in the market. However, as discussed further below, CAISO BA

operators will use all available inputs to make a best estimate early enough each morning to identify potential shortfalls and take corrective action to ensure reliability if necessary.

Looking ahead, the probabilistic modeling results published in the October 8, 2024 Resource Adequacy Modeling and Program Design (RAMPD) workshop may also provide some sense of how likely RSE failures could be in the future.¹¹ This modeling work estimates loss of load hour (LOLH) values for summer 2025 for three scenarios: LRA RA obligations only, all shown RA based on historical showing patterns, and all RA-eligible resources. Of these three, scenario 2 is most relevant to the RSE because all capacity shown as RA has a must-offer obligation and thus can be expected to bid into the day-ahead market and contribute to passing the RSE.

The comparison is only approximate, partly because the 4% imbalance reserve requirement included in the CAISO BA's RSE obligation will not be implemented until 2026. However, the scenario 2 portfolio reflects a 16.7% load-weighted average planning reserve margin across all LRAs in the CAISO BA plus any capacity shown in excess of LSE obligations.¹² This could be assumed to contribute capacity to meet the new imbalance reserve requirement plus the existing 6% reserve requirement, which will also be included in the CAISO BA's RSE obligation. If we assume this, the scenario 2 estimate of a 0.468 LOLH for 2025¹³ suggests a little less than a 50% chance of one hour of RSE failure. This is a lower estimated failure rate than the 2023 results, likely due to the significant amount of new, flexible capacity coming online between 2023 and 2025.

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Stakeholder concern and subsequent development of the Straw Proposal ideas suggests that there may be methods of estimating unoffered RA capacity preferable to inserting bids and advisory offers into the production day-ahead market environment. The ISO therefore offers this updated process:

The first step remains the same. The ISO encourages (but does not require) resource scheduling coordinators to submit all day-ahead offers by 9 a.m., and earlier if possible. To the extent this can be

¹¹ The presentation from the November 8, 2024 RAMPD workshop is available here: <https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-Resource-Adequacy-Modeling-and-Program-Design-Oct-08-2024.pdf>

¹² Id at 24.

¹³ November 8, 2024 [RAMPD workshop slides](#) at 67.

done, it will improve the accuracy of the advisory RSE runs because these resources will be directly represented by their offers and no estimation will be necessary. Importantly, scheduling coordinators will be able to modify these day-ahead offers until 10 a.m. CAISO BA operators will monitor the advisory RSE results throughout the morning and may use pre-9 a.m. results showing a significant shortfall to solicit additional pre-9 a.m. offers where needed.

Second, CAISO BA operators will monitor a variety of existing commonly available market results and processes to determine the likelihood of a shortfall. These include:

- 1) **The day-ahead market results from the previous day.** If necessary CAISO BA operators may look at offers from the previous D+2 day-ahead market run to estimate likely capacity offers from non-RA resources and RA resources not subject to bid insertion rules.
- 2) **The readiness alert system.** The readiness alert system produces a rolling capacity estimate from D+7 through real-time. CAISO BA operators will take this analysis into account when assessing the likelihood of an EDAM RSE shortfall.
- 3) **CAISO BA operator estimations of available RA.** CAISO BA operators will estimate remaining unoffered RA capacity, or other state contracted resources, likely to be offered by the 10 a.m. binding RSE run based on various inputs including RA supply plans, results from like days, and operator experience.

The ISO recognizes that this is a change from what was discussed in previous iterations of the initiative. However, the principle of accounting for the RA resources that are unoffered by 9 a.m. but will be offered by 10 a.m. using their contracted RA capacity remains unchanged, and will be supplemented with the full range of information CAISO BA operators have at their disposal for identifying potential RSE shortfalls and related risks to reliability. This will enable the CAISO BA to assess whether expected available and committed capacity will pass the binding RSE at 10 a.m. in time to act.

Chapter 2: Accounting for demand response resources

2.1: Reliability Demand Response

Background and Objectives

On principle the CAISO BA will look to include any RA, or otherwise forward contracted resources available for meeting operational needs, in the EDAM RSE. Reliability demand response resources (RDRRs) are a unique type of RA supply that does not have day-ahead participatory obligations.

Although RDRR may bid into the day-ahead market, the majority of RDRR is only available for use by the CAISO BA during real time reliability conditions when, at a minimum, an Energy Emergency Alert (EEA) Watch has been declared for the CAISO BA.¹⁴ In the CAISO BA, investor-owned utilities overseen by the California Public Utilities Commission manage RDRRs, which consist primarily of base interruptible program customers and agricultural and pumping loads. RDRRs are supply-side demand response resources, offered directly into the market, and the CAISO BA Demand Forecast is created to forecast the full Demand that will need to be served on the system. The Demand forecast therefore remains higher than the Demand Actuals on the system during times of RDRR/PDRR dispatches.

RDRRs may voluntarily submit offers into the CAISO day-ahead market, but they are not required to do so. Additionally, RDRR capacity is not shown on RA supply plans but instead is credited as reductions to the RA supply obligations for the applicable load-serving entities. RDRRs are required to submit real-time offers into the market at between 95% and 100% of the applicable bid cap.¹⁵ These RDRR offers may be released into the CAISO's real-time market in conjunction with a declared day-of transmission emergency, Energy Emergency Alert (EEA) Watch or other EEA notice. The EDAM policy design permits demand response programs that are not otherwise reflected in the day-ahead market through bids, including those that are accessible only during declared specific conditions such as EEA notifications, to count towards the day-ahead RSE.¹⁶ RDRR may be counted towards the day-ahead RSE of any other BAA.¹⁷

The Straw Proposal stated that if the 9 a.m. advisory RSE for the CAISO BA indicated an upward RSE shortfall in one or more intervals and the CAISO BA expected conditions in real-time that would trigger RDRR, then the CAISO BA could account for RDRR in the RSE at the discretion of CAISO BA operators. The Straw Proposal found this adjustment appropriate because it would allow the CAISO BA to account for RDRR capacity, which is forward contracted and a subset of RA capacity.¹⁸ Importantly, the adjustment would be limited to the available RDRR capacity that did not submit a day-ahead offer by 9

¹⁴ The RDRR participation model is available to other WEIM and EDAM BAAs. This issue paper discusses how the CAISO BA will use the California RA RDRR in its RSE, just as it may be used in the RSE by other WEIM and EDAM BAAs

¹⁵ CAISO Tariff section 30.6.2.1.2 Real-Time Dispatch Options

¹⁶ Extended Day-Ahead Market (EDAM) Final Proposal, page 69 (December 7, 2022).

¹⁷ The discussion here presents the implementation methodology for the CAISO BA. The implementation tools utilized to count RDRR in the day-ahead RSE may vary by BAA.

¹⁸ This is also reflected in the EDAM design. See proposed EDAM tariff 33.31.4.1.

a.m. Any available RDRR capacity offered into the day-ahead market by 9 a.m. would already be reflected as RSE-eligible supply. In addition, the CAISO BA would only make this adjustment to the extent it reasonably expects EEA Watch conditions to materialize in real-time based on its existing and anticipated supply conditions. The granularity on which RDRR is accounted for would be at the discretion of the CAISO BA operator.

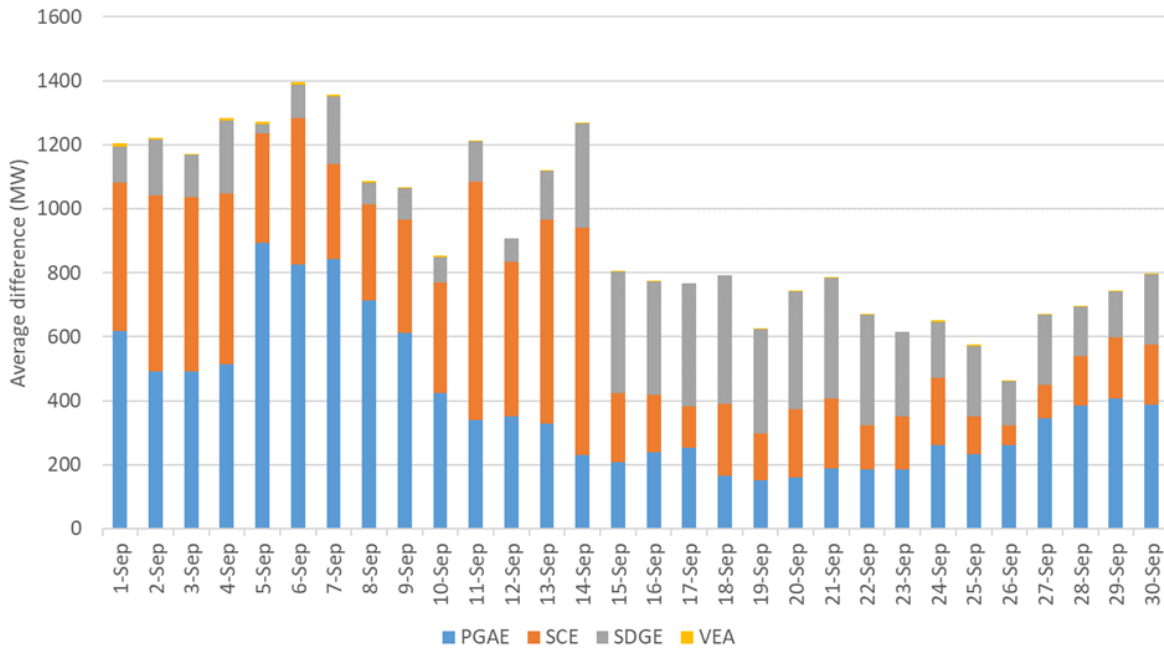
The Straw Proposal also proposed that the CAISO BA account for the potential use of RDRR in the formulation of any load conformance in the residual unit commitment (RUC) process. For example, if the CAISO BA needed 2,000 MW of upward load forecast adjustment to account for potential outage and fire risk and the CAISO BA was accounting for 500 MW of RDRR that was not bid into the IFM but is available in real-time, then the CAISO BA would only make a 1,500 MW adjustment instead of 2,000 MW, thus accounting for the use of 500 MW of RDRR.

The Straw Proposal also described that the CAISO BA plans to monitor the load bidding practices in the IFM to ensure that the day-ahead market is not clearing CAISO BA load that is regularly bid in excess of non RDRR resources available to the CAISO BA. These supply offers are inclusive of both supply counted for the RSE as well as voluntary intertie supply offers made at the CAISO BA's borders. To the extent intertie supply offers exceed the magnitude of the RDRR capacity, the day-ahead market results may avoid the type of real-time conditions that will trigger RDRR through scheduling supply available to the CAISO BA that was not accounted for in the EDAM RSE. Functionally, RDRR's availability in the real-time market to address any conditions that may materialize provides a reliability backstop on this additional non EDAM RSE eligible supply.

Previous analysis has indicated that during expected strained operating conditions, load in the IFM has been underbid compared to load that materializes in the real-time. An example of this can be found in Figure 31 of the CAISO's Summer Market Performance Report for September 2022,¹⁹ reproduced below as Figure 9. Figure 9 shows underbidding of between approximately 1,000 MW and 1,400 MW of load during stressed system operating conditions of the heat wave in the first nine days of September. These quantities of under-bid demand are in excess of expected RDRR program participation. The CAISO will monitor the usage of RDRR to ensure it remains consistent with the EDAM policy.

¹⁹ [CAISO Summer Market Performance Report for September 2022](#)

Figure 9: Average difference between IFM bid-in demand and metered load (MW)



Neither of these practices guarantees that if the CAISO BA accounts for RDRR in its RSE the RDRR programs will be dispatched in real-time. The RDRR trigger is determined by real-time reliability conditions (transmission emergency, EEA Watch, or energy emergency alert). Forecast conditions, e.g., resource availability, load or VEA changes, inertia supply offers, or other operating conditions, can change between day-ahead and real-time. Such factors may prevent real-time EEA Watch conditions and therefore the need to dispatch RDRR resources. The Straw Proposal was simply to ensure that EDAM market transfers from other participating EDAM BAAs are not inappropriately used to backfill and prevent the CAISO BA from having to use its RDRR resources.

Stakeholder Perspectives

Stakeholders unanimously supported the inclusion of RDRR in the RSE while raising several nuances and questions.

CalCCA and the California Efficiency + Demand Management Council recommend that the use limitations of RDRR be accounted for so as to optimize RDRRs' contribution and minimize shortfalls.

- ISO response: Within each day, operators will take RDRR limitations into consideration when evaluating their potential contribution and the likelihood of a shortfall. On longer time horizons,

use limitations will be accounted for via outage cards, with RDRR resources on outage becoming ineligible for RSE inclusion. The IOUs are responsible for accurately reflecting the use limitations of each RDRR resource in their outage cards. Finally, note that considering RDRR in the RSE is not the same as an actual dispatch, and only dispatches count towards use limitations. So inclusion of RDRR in the RSE will not by itself have any impact on each resource's remaining dispatchability that day and month.

CalCCA and SDG&E request more information on how operators will determine that emergency conditions are likely to occur in real time, allowing RDRR to be included in the RSE.

- ISO response: Consistent with good utility practice, CAISO BA operators will use all information available before 9 a.m. to determine whether EEA Watch conditions are expected in real time. The CAISO BA operators already review available capacity, expected demand obligations, transmission and generation outages, the ability to meet replacement reserves requirements, and protection for potential non-credible contingencies²⁰ to predict EEA Watch conditions.

The DMM identified a relationship between the proposal to account for RDRR within the RUC adjustment and the amount of low priority (LPT) exports cleared in the day-ahead market. Adjusting the RUC downward for RDRR could result in more LPT exports clearing the day-ahead market and, if EEA Watch conditions occur in real-time, either being curtailed or supported by dispatched RDRR. If the RUC is not adjusted for RDRR, more LPT exports may be curtailed in the day-ahead market instead and the capacity procured in RUC may prevent RDRRs from being dispatched even though RDRR resources were used to help pass the RSE.

- ISO response: The existing priority construct is designed to ensure that LPT exports are not supported in the real-time at the expense of ISO BA load. Including RDRR in the EDAM RSE but not adjusting the RUC would be inconsistent with the intent of the EDAM policy, because it would allow economic transfers from other EDAM BAAs to potentially replace RDRR dispatch even though RDRR was counted as an eligible resource in the RSE.

²⁰ Non-credible contingencies are not by default protected in the security constrained economic dispatch. Non-credible contingencies can be based on weather conditions (fires) or potential impacts to fuel availability (gas operational flow order /curtailments can lead to a reduction in generation capacity that significantly exceeds the most severe single contingency that is protected) and can be activated in the SCED as necessary.

The CPUC Energy Division recommends that RDRR resources be included in the RSE any time a potential shortfall is identified rather than only when there is a shortfall and emergency conditions are expected in real time.

- ISO response: The ISO understands that RDRR is a reliability program that triggers based on an EEA Watch, or more severe EEA notice. The EDAM tariff allows but does not require RDRR to be included as an RSE-eligible resource.²¹ Including RDRR in the RSE when both an RSE shortfall and EEA Watch conditions are expected is the approach that best meets the requirements of the EDAM tariff, the RA program, and the RDRR settlement as currently written.

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After considering stakeholder feedback, the ISO has determined that the treatment of RDRR resources articulated in the Straw Proposal remains the most appropriate approach. If the 9 a.m. advisory RSE for the CAISO BA along with other operator sources indicate an upward RSE shortfall in one or more intervals and the CAISO BA expects EEA Watch conditions in real-time, then the CAISO BA may account for RDRR in the RSE at the discretion of CAISO BA system operators. This treatment would be limited to the available RDRR capacity that did not submit a day-ahead offer by 9 a.m, because any available RDRR capacity offered into the day-ahead market by 9 a.m. would already be reflected as RSE-eligible supply. The CAISO BA would only include non-offered RDRR in the RSE to the extent it reasonably expects EEA Watch conditions to materialize in real-time based on its existing and anticipated supply conditions. The quantity of RDRR capacity included (up to the available, non-offered amount) and the hours to which it is applied in the RSE are at the discretion of the CAISO BA system operator.

The CAISO BA will account for the potential use of RDRR in the formulation of any load conformance in the residual unit commitment (RUC) process in a standardized and transparent manner. For example, if the CAISO BA needs 2,000 MW of upward load forecast conformance to account for potential outage and fire risk and the CAISO BA is accounting for 500 MW of RDRR that was not bid into the IFM but is available in real-time, then the CAISO BA may only make a 1,500 MW RUC adjustment instead of 2,000 MW, thus accounting for the use of 500 MW of RDRR.

²¹ See Section 33.31.4

2.2: Proxy Demand Resources and Load Modifying Demand Response Background and Objectives

There are two other types of demand response resources that should be considered in the context of the RSE. First, the Straw Proposal stated that proxy demand resources providing RA have a must-offer obligation into the day-ahead market, so the CAISO BA would count such day-ahead offers as RSE-eligible supply. Second, the Straw Proposal stated that load-modifying demand response would be accounted for when it has been communicated to the CAISO in the pre-day-ahead time frame as certain to be curtailed the day-of by the load serving entity.²²

Stakeholder Perspectives

The DMM points out that there are two types of proxy demand resources -- utility proxy demand resources and third-party proxy demand resources -- and that only the latter has a must offer obligation. The DMM "seeks clarification that utility proxy demand response resources will not be counted as RSE-eligible supply since the CAISO does not propose to insert advisory offers for resources without must offer obligations."

- ISO response: The ISO clarifies that demand response resources shown to the ISO on RA supply plans are subject to ISO must-offer obligations, and these are resources are generally scheduled by third-parties. Utilities' demand response programs are typically credited against RA obligations rather than shown on RA supply plans. The DMM is correct that the ISO does not intend to include any estimates on behalf of utility proxy demand resources in the RSE process. Although utility proxy demand resources do not appear on RA supply plans and thus do not have a must offer obligation at CAISO, they do have offer obligations associated with their program rules. These rules require them to bid into the day-ahead market, so their bids will be included in the binding RSE run at 10 a.m. To the extent that they bid in before 9 a.m. their bids will be counted as RSE-eligible alongside others bids in the advisory RSE results.

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The ISO maintains the Straw Proposal approach and, consistent with DMM's requested clarification, modifies it to clarify that utility proxy demand response resources that bid into the day-ahead market

²² CAISO Tariff section 31.5.3.1.2 Demand Response Adjustments

but are not shown on RA supply plans (which includes utility demand response programs), will be included in the advisory RSE results only if they bid into the day-ahead market before 9 a.m.²³ Proxy demand response resources shown on RA supply plans (which are generally scheduled by third-parties) will be included as RSE-eligible since they have an ISO must offer obligation. Load-modifying demand response will be accounted for in the CAISO BA day-ahead demand forecast used as the RUC procurement target when it has been communicated to the CAISO in the pre-day-ahead time frame as certain to be curtailed the day-of by the load serving entity.²⁴

Chapter 3: Accounting for strategic reliability reserve resources

Background and Objectives

In 2022, Assembly Bill (AB) 205 was signed into California law and created a strategic reliability reserve (SRR) to support grid reliability during extreme events. A subset of the SRR is the Electricity Supply Strategic Reliability Reserve Program (ESSRRP) managed by the California Department of Water Resources, which is comprised of generation assets available to maintain reliability during extreme events. As shown below, the ESSRRP currently includes 2,886.8 MW maximum capability of long-start resources in Table 1 and 192.7 MW maximum capability of short-start resources in Table 2. The dispatch of the ESSRRP resources for the use in the CAISO BA is described in Operating Procedure 4420.

Table 1: Long Start ESSRRP Resources

Host BAA	Site	Capacity (MW)
CAISO	CSUCI	27.5
CAISO	AES – Alamosa	1,141.2
CAISO	AES – Huntington Beach	226.8
CAISO	GenON	1,491.3

²³ If the Proxy demand response resources bid after 9 a.m., they will not be included in the 9 a.m. advisory results but will be included in the final binding RSE at 10 a.m.

²⁴ CAISO Tariff section 31.5.3.1.2 Demand Response Adjustments in the Day-Ahead Market.

Table 2: Short Start ESSRRP Resources

Host BAA	Site	Capacity (MW)
CAISO	Calpine Greenleaf 1	49.2
CAISO	ERock – City of Lodi	48.0
BANC	ERock – Modesto Irrigation District	48.0
TID	ERock – Turlock Irrigation District	47.5

3.1 Long Start Strategic Reserves

Background and Objectives

All long-start SRR resources are located within the CAISO BA. These long-start resources may be committed by the ISO multiple days in advance of a forecasted extreme event warranting grid support, to accommodate unit start-up times and to allow for unit testing in advance of an extreme event, as provided in Operating Procedure 4420. In the Straw Proposal, the ISO proposed that to the extent that bids have been submitted, long-start SRR resources would be accounted for as available supply in the RSE.

Stakeholder Perspectives

Stakeholders unanimously supported the inclusion of long-start ESSRRP resources in the RSE.

SDG&E requests further details on how the ISO will consider the ability for these resources to be accounted for by multiple EDAM BAAs located within California.

- ISO Response: The ISO continues to gain experience with the operation of strategic reserves in coordination with other BAAs in California, and operating procedures are subject to change. Currently, long-start ESSRRP resources are located in the CAISO BA and the ISO manages their operation. Additionally as discussed below, long-start ESSRRP resources are not currently required to bid into the day-ahead market when they are brought online. As the ISO gains experience with operationalizing long-start ESSRRP resources, the ISO will continue to work with EDAM BAAs in California on interactions with the EDAM RSE.

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Since the Straw Proposal was issued, Operating Procedure 4420 has been updated and long-start SRR resources are not required to bid into the day-ahead market when they are brought online. Rather than relying solely on day-ahead market bids, ISO market operators will monitor SRR activity and include long-start SRR resources in the RSE on days when they have been brought online and met operational requirements.²⁵

While the long start ESSRRP resources are physically located within the CAISO BA footprint and the CAISO manages their operation, the SRR is meant to support grid reliability across California. To ensure that these resources are accessible by other BAAs in California, the CAISO will support requests for emergency assistance as provided in Operating Procedure 4410.

3.2 Short-Start Strategic Reserves

Background and Objectives

Short-start ESSRRP resources are not committed before the day-ahead market and will not submit day-ahead offers, but instead may offer into the real-time market when the CAISO BA or other California BAs declare an EEA Watch or more severe EEA conditions. For this reason, the Straw Proposal proposed that short-start SRR resources not be accounted for in the EDAM RSE. For purposes of the WEIM RSE the EDAM footprint will be tested as whole, allowing short-start ESSRRP resources to be shared. By the EDAM design, a BA can be excluded from being tested as part of the EDAM pool in the WEIM RSE.²⁶ Depending on the physical location of the short start ESSRRP resources this creates the potential for irregularities on RSE crediting of these resources for BAs within the state of California. The Straw Proposal proposed to monitor both the extent to which this occurs as well as the potential for short start ESSRRP resources to be inequitably stranded.

Stakeholder Perspectives

CalCCA, PG&E, SDG&E, Six Cities, and SCE recommend including short-start ESSRRP resources in the RSE in addition to the long-start resources.

²⁵ Operating Procedure 4420, Version No. 15.7, effective 7/01/24. [System Emergency \(caiso.com\)](#)

²⁶ [EDAM Final Proposal §II.B.2h](#)

- ISO Response: Since short-start ESSRRP resources are not qualified as RA, do not bid into the day-ahead market, and do not have contracts creating must-offer obligations, they do not meet the requirements for RSE eligibility.²⁷

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The Straw Proposal continues to be the most appropriate approach because short-start ESSRRP resources are not qualified as RA, and neither bid into the day-ahead market nor have contracts creating must-offer obligations, and thus not meet the requirements for RSE eligibility. Short-start ESSRRP resources will not be included in the RSE.

Chapter 4: Curing expected upward RSE shortfalls

Background and Objectives

As explained in the chapters above, the CAISO BA will examine its RSE position throughout each morning. If by 9 a.m. the CAISO BA expects an upward RSE shortfall based on these results, it may need to act. If the shortfall reveals threats to system reliability, then the CAISO BA may use its existing Exceptional Dispatch authority similar to the Manual Dispatch authority of WEIM and EDAM BAAs. The CAISO BA does not plan to cure expected downward RSE shortfalls because this is expected to be a low risk due to how RA resources participate economically through the market, but the CAISO BA will monitor and develop remedial actions if necessary.

The basis for the CAISO BA's proposal to utilize its existing Exceptional Dispatch authority is the forecast of emergency conditions.²⁸ The RSE is testing the CAISO BA's expected day-ahead obligations against its available, forward contracted supply. To the extent an EDAM RSE shortfall is indicative of the CAISO BA potentially not having a reliable next-day operating plan, the advisory RSE is serving as an additional reliability indicator available to CAISO BA system operators as they exercise their existing discretionary authority to resolve potential reliability problems. The exercise of this Exceptional Dispatch authority will consider the economics and efficiency of the available supply to the extent possible, consistent with existing Exceptional Dispatch practices. While economy energy intertie supply offers may become

²⁷ See Section 33.31.1.2.

²⁸ Per CAISO Tariff section 43A.4.2.1 and section 43A.2.5, an Exceptional Dispatch may also result in a Capacity Procurement Mechanism (CPM) designation and payment.

available later in the day-ahead and real-time market processes, there is no guarantee as to their availability and/or volume and they would not prevent the CAISO BA from taking additional actions to maintain reliability, consistent with good utility practice.

Stakeholder Perspectives

CalCCA, Cal Advocates, the CPUC Energy Division, Six Cities, SCE, and TEA provided comments raising questions or expressing interest in alternatives to exceptional dispatch for curing RSE shortfalls. CalCCA and PG&E also expressed interest in revisiting the cost allocation methodology for RSE failure surcharges.

- ISO response: Both longer-term alternatives to exceptional dispatch and the failure surcharge cost allocation methodology have been scoped into Track 3 of the Resource Adequacy Modeling and Program Design (RAMPD) policy initiative. These issues surfaced in Track 4 of the RAMPD Working Group and were ultimately combined with the Track 3 issues into a single Track 3 in the policy initiative.²⁹ Stakeholders will have an opportunity to fully discuss these topics and present proposals within that forum.

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The Straw Proposal continues to be the best approach for addressing reliability issues associated with projected RSE shortfalls. Upon EDAM go-live the CAISO BA will use its existing Exceptional Dispatch authority to address any underlying reliability issues potentially informed by the EDAM RSE, just as other BAAs may utilize their internal processes to ensure RSE sufficiency. The CAISO BA will not act in response to expected downward RSE shortfalls.

Chapter 5: Incentives for tagging day-ahead imports

Background and Objectives

As established in the EDAM design, EDAM BAAs that pass the day-ahead RSE will be grouped together and evaluated as a pool for the WEIM RSE.³⁰ This is an important aspect of EDAM design, as it retains the

²⁹ The RAMPD initiative record is available at [California ISO - Resource adequacy modeling and program design](#)

³⁰ EDAM final proposal, section II.B.2(h), page 76.

diversity benefits for the BAAs that pass the day-ahead RSE. Grouped BAAs benefit significantly because their uncertainty requirements incorporate the diversity benefit. The diversity benefit reduces the overall reserve requirements, as the collective uncertainty is lower than the sum of individual uncertainties, enabling the grouped BAAs to procure fewer reserves.

EDAM BAAs that pass the day-ahead RSE must comply with tagging requirements to remain in the pool.³¹ As established by EDAM design, EDAM BAAs will have until approximately 5 hours before the start of the operating hour to submit e-tags and/or replace the un-tagged capacity with other firm schedules or physical resources (a responsibility that is carried out by scheduling coordinators in the CAISO BA). BAAs that fail to comply with these tagging requirements will be removed from the pool, thereby losing potential diversity benefits. There may be legitimate instances when an import does not tag by the EDAM deadline. For this reason, the EDAM design allows BAAs to replace the un-tagged capacity with other firm schedules or physical resources. This ability to re-supply is consistent with current industry and utility practice.³² Overall, the intent of the tagging requirement is to ensure the integrity of day-ahead RSE supply, especially when such supply includes non-resource specific inertia transactions.

In track A1 of the [EDAM ISO BAA participation rules](#) initiative, the CAISO Department of Market Monitoring (DMM) submitted comments recommending that the CAISO develop incentives to ensure day-ahead imports into the CAISO BA are tagged by the EDAM deadline (5 hours before the start of the operating hour).³³ As explained by the DMM, such incentives would help ensure that the CAISO BA remains within the pool and does not lose potential diversity benefits. As suggested by the DMM, one approach to developing such incentives would be to quantify the cost to the CAISO BA of being removed from the EDAM pool (i.e., the lost diversity benefits). The CAISO BA could then consider allocating such costs to scheduling coordinators that fail to tag by the EDAM deadline.

³¹ See proposed EDAM Tariff Section 33.31.1.6 (requiring compliance with the tagging protocols set forth in Section 33.30.8.3 and the Business Practice Manuals).

³² For example, a load serving entity relying on import supply, if not tagged by a certain time frame, will take steps to procure additional supply in advance of the operating hour to ensure it can serve its load.

³³ California ISO Department of Market Monitoring [comments](#) on the *Extended Day-Ahead Market ISO Balancing Authority Area Participation Rules* initiative, August 14th, 2023.

The creation of day-ahead e-tags is a standard practice across the western interconnection,³⁴ and is commonly performed by market participants within the CAISO BA. Empirical analysis has also shown the high reliability of economy energy imports that receive day-ahead market schedules from the CAISO.³⁵ The Straw Proposal proposed to wait to determine whether or not additional incentives are needed to ensure that day-ahead imports into the CAISO BA are tagged within the timeframe required by the EDAM design. The Straw Proposal noted that stakeholder comments on the Issue Paper did not identify this as a policy priority for the CAISO prior to the implementation of EDAM. The Straw Proposal further reasoned that any robust, cost causation-based incentive mechanism will require significant stakeholdering, and that it would be prudent to devote limited policy development and implementation bandwidth to demonstrated market design shortcomings and/or stakeholder priorities prior to the inception of EDAM.

Stakeholder Perspectives

Stakeholders largely supported the monitoring approach in the Straw Proposal.

CalCCA, the CPUC Energy Division, PG&E, SDG&E, and Six Cities expressed concern about the potential for the ISO to be excluded from the WEIM pool for de minimus tagging failures.

- ISO response: The current e-tagging rules were established in the EDAM tariff and are outside the scope of this initiative.³⁶ However, while it is possible for the CAISO BA to be excluded from the pool for de minimus failures, the CAISO BA will have an opportunity to substitute untagged day-ahead supply with incremental supply offers made into the real-time market.

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The ISO finds the monitoring approach described in the Straw Proposal remains the best path forward.

The ISO will monitor e-tagging compliance at EDAM go-live and wait to determine whether or not additional incentives are needed to ensure that day-ahead imports into the CAISO BA are tagged within the timeframe required by the EDAM design.

³⁴ See WECC Criterion INT-003-WECC-CRT-3.2

³⁵ See Figure B.37 on page 123 of the [Root Cause Analysis: Mid-August 2020 Extreme Heat Wave](#)

³⁶ See Section 33.31.1.6.

Next steps

The CAISO will host a virtual stakeholder meeting on January 21, 2025 from 9 a.m to 12 p.m. to discuss the key elements of this Draft Final Proposal. Please submit written comments on the Draft Final Proposal and stakeholder meeting by end of day February 4, 2025.