Resource Adequacy Modeling & Program Design
RAAIM and Outage Substitution (Track 2)
Revised Straw Proposal

July 17, 2026

Contents

Executive Summary

California's resource adequacy (RA) framework relies on a clear division of responsibilities: local regulatory authorities (LRAs) establish planning requirements, counting rules, and procurement obligations, while the ISO is responsible for ensuring that capacity shown as RA is visible and operationally available in the ISO markets. This revised proposal maintains that structure while further developing operational tools intended to improve resource availability during stressed system conditions.

Stakeholders concluded in the working group effort that the current Resource Adequacy Availability Incentive Mechanism (RAAIM) requires reexamination. Static availability assessment hours, many exemptions, monthly averaging, the existing deadband, and relatively low non-availability charges can reduce accountability for unavailability during critical hours. At the same time, scheduling coordinators have provided limited substitute capacity for resources on forced outage, and the cost of obtaining substitute capacity may exceed current RAAIM penalties. These conditions support continued development of a more targeted availability incentive and improved outage-substitution processes.

To address these concerns, the ISO proposed to replace the current static, monthly RAAIM structure with a more targeted, event-based availability framework. The revised design would focus incentives on periods of elevated reliability risk, provide advance notice where possible, and assess availability using rules that reflect different operating characteristics of RA resources. The ISO is also exploring measures that could provide greater predictability regarding overall financial exposure while preserving a meaningful availability incentive.

The proposal recognizes that UCAP-based accreditation and revised RAAIM would serve related but distinct functions. UCAP reflects historical availability in a resource's forward RA counting value and revised RAAIM would assess whether shown RA capacity is operationally available during identified reliability events. In this way, UCAP improves the capacity value used for forward planning, while revised RAAIM provides an additional operational incentive for shown RA capacity to be available when the ISO is relying on it.

These reforms would be supported by related changes to system RA bidding and outage-management rules. The proposal clarifies the relationship among resource accreditation, shown RA, must-offer obligations, and revised RAAIM exposure. It also seeks to improve the process for obtaining substitute capacity and to better align outage classifications with operational conditions and reliability needs.

Together, these changes are intended to improve visibility and availability of RA capacity, support necessary maintenance, and strengthen accountability during stressed system conditions. The proposal also identifies other areas for continued development such as the potential future development of a complementary performance assessment.

1 Background

All Regional Transmission Organizations and Independent System Operators (RTOs/ISOs) across North America have resource adequacy functions within their balancing authority areas, but the entity responsible for these functions is different in each RTO/ISO footprint. Some RTOs/ISOs have a stronger role in forward planning and procurement including the direct procurement of resources multiple years forward. Others defer more to their constituent regulatory authorities (state public utility commissions, etc.) in conducting integrated resource planning and procurement.

In California today, LRAs, load serving entities (LSEs), scheduling coordinators (SCs) and the ISO all perform critical roles in ensuring a well-functioning RA program. This revised straw proposal builds on that framework by further developing operational rules for availability incentives, system RA bidding requirements, outage substitution, and outage coordination, while maintaining the existing division of responsibilities. In general, the LRAs have the primary roles in setting system requirements and counting rules, conducting integrated resource planning, and directing procurement of new and existing resources. The ISO, in turn, has the responsibilities in the shorter term to ensure resource adequacy capacity is available and performing reliably in ISO markets. Key responsibilities within the scope of the ISO's operational role in resource adequacy include:

1. Accounting for RA capacity via supply plans and RA plans
2. Imposing must-offer obligations in the ISO market
3. Assessing availability incentives
4. Coordinating and approving outages
5. Procuring backstop capacity to meet gaps or deficiencies in resource adequacy procurement

Given the ISO's unique role in operating the grid, it is appropriate for the ISO to stay closely coordinated with LRA program designs and provide insight into the operational needs of the system.

Each design element included in the ISO's scoped RA reform initiative is intended either to improve an existing ISO operational process or to provide LRAs with information

relevant to reliable and efficient planning. Track 2 of RAMPD focuses on event-based RA availability incentives, system RA bidding requirements, outage substitution, and outage definitions. These reforms are intended to improve the availability and visibility of shown RA capacity during stressed system conditions while maintaining the respective planning and operational roles of LRAs and the ISO. Related issues that require additional development, including a potential future performance assessment and the longer-term treatment of Flexible RA, are identified separately in this proposal.

2 Availability Incentives

History of the Resource Adequacy Availability Incentive Mechanism (RAAIM)

RAAIM is the ISO's primary mechanism to incent resources counted toward resource adequacy obligations to be actually available when system reliability depends on them. Resources compensated for providing RA capacity should be operationally available in all hours, but particularly during the hours when the system is most at risk. RAAIM provides that link by creating a measurable availability metric and associated financial consequences for underperforming.

RAAIM was created and enhanced as a part of a multi phase reform process and was designed to replace the Standard Capacity Product (SCP) framework. The SCP attempted to standardize RA capacity by attaching defined availability requirements and performance incentives to capacity counted toward RA. The SCP framework had both operational and policy challenges and was largely viewed as ineffective in targeting critical periods and created administrative complexity. RAAIM's key design was meant to simplify the process and make the design more effective in targeting availability incentives

Under the current RAAIM design, each year, the ISO designates a set of Availability Assessment Hours (AAH) intended to represent periods of elevated reliability risk for both system (also known as generic) and flexible resource adequacy. The hours are typically concentrated on peak demand hours on non-holiday weekdays and periods of high ramping need morning/evening ramp for meeting the flexibility needs. The ISO evaluates whether RA resources subject to RAAIM satisfied their must-offer obligations based on submitted bids. In order to avoid RAAIM penalties during outages, RA resources must provide substitute capacity during an outage period. The current evaluation focuses on availability (self-scheduled or economic bids) rather than dispatch or performance.

Each month, the ISO calculates an availability performance metric for each resource based on its availability across applicable availability assessment hours. This produces a monthly availability percentage compared against a defined performance standard, including applicable deadband provisions to allow minimal periods of unavailability without consequences. Resources performing below this standard incur non-availability charges tied to 60% of the CPM soft offer cap which, when collected, are used to fund payments to resources that are available more than the performance standard requires.

RAAIM serves several policy purposes to ensure the ISO's operational abilities and to align incentives with LSE contracts.

RAAIM is designed:

1. To encourage resource owners to plan and conduct maintenance to ensure resources are available
2. To incent timely return to service following unplanned outages, or procurement of replacement capacity, reducing the duration of RA deficiencies, and
3. To provide assurance to LSEs that RA capacity will be reliable

So, by giving RAAIM "teeth," the design was intended to support LRA's RA programs by providing a consistent method of penalizing non-availability. This allows for consistent incentives, which leads to more fungible capacity by reducing the complications that would come with each LSE and LRA needing their own availability incentives for capacity contracted to their respective programs.

Despite improvements, stakeholders have identified limitations in RAAIM as it exists today, partly by the design but also by limitations in the objectives:

From a design perspective, averaging availability across all AAH in a given month is seen to dilute accountability signals, as a resource could be unavailable during the most critical hours but still achieve an acceptable monthly average by performing well across lower-risk hours. This is further exacerbated by the deadband around the performance standard which can weaken incentives and a RAAIM incentive level that is tied neither to system conditions or the implicit reliability consequence costs of grid emergency conditions. Resources that are unavailable during grid emergencies or high stressed intervals face the same RAAIM settlement as those unavailable during lower risk hours.

The CAISO Department of Market Monitoring along with other stakeholders also highlighted a potential challenge with the RAAIM construct in examining only day ahead availability. DMM's and the ISO's analyses have shown a potential gap between resource availability day-ahead and actual real time performance. DMM recommended pairing a day ahead availability incentive with a complementary real time and

performance incentive mechanism, with similar functions where the real time performance incentive should be assessed specifically during tight grid conditions.

Problem Statements and Objectives

As a part of the 2023-2024 RAMPD working groups, the following sub-issues related to RAAIM were identified as a part of the larger RA problem statement:

- *In light of a tight RA market, high RA prices, and market incentives, RAAIM may be an ineffective incentive mechanism to ensure capacity is bid into the market. For example, RAAIM is applied only to a fraction of the RA fleet, the current deadband provides insufficient incentive to be available and both the monthly netting process and carry-forward provisions mute incentives. In some cases, this can result in incentivizing less reliable generation to be contracted and discouraging scheduling coordinators from showing all of their RA resources to the ISO. Additionally, when RAAIM does not incent capacity to be available, it creates operational backstop challenges for the ISO, as substitute capacity has not been shown, resulting in potential reliability risks.*
- *RAAIM should be assessed to see if it is meeting its intended objectives, what new objectives should be established, and if a new mechanism is needed to incent availability and/or performance. The need for either RAAIM reform or RAAIM elimination as well as any exploration of a new availability and performance mechanism should be done in concert/consideration of any counting rule changes to encourage all RA-eligible resources to be shown.*

To address these and other concerns, the ISO has embarked on this multi-part effort to evaluate reforms to its resource adequacy processes and tools. As part of Track 2 of this effort, the ISO seeks to address widespread stakeholder and ISO concerns about the current availability incentive mechanism, the resource adequacy availability incentive mechanism (RAAIM). Based on stakeholder feedback, the ISO seeks to design mechanisms that ensure resource availability and performance while aligning with California's hybrid regulatory structure. Maintaining this structure means that LRAs continue to play the primary role in setting resource accreditation and planning reserve margins, and the ISO, in turn, has the primary role in "operationalizing" RA capacity to ensure it is available in the energy markets when needed.

In the November 2024 RAMPD issue paper, the ISO discussed how to effectively balance LRA UCAP designs and other accreditation methods that can provide availability incentives with reforms to the ISO's availability and performance incentives. As the CPUC moves forward with its UCAP accreditation methodology, the ISO and stakeholders have discussed if, or the extent to which, an additional availability and

performance incentive is still needed to provide even a stronger incentive during critical periods or to align cost allocation with cost causation. Stakeholders recognized that there might be differences across the CAISO BAA with UCAP implementation, since it is likely that not all LRAs will adopt UCAP, and LRAs likely would not apply this QC methodology to all resources. While the newly proposed default methodology generally allows for a resource-specific adjustment to a class-based QC value based on individual resource performance, it is unclear which LRAs will adopt these default rules. In any case, FERC has recognized that having both a capacity performance/availability derate via accreditation and an availability incentive mechanism (like RAAIM) does not necessarily constitute a double penalty for capacity resources. The ISO's current RAAIM design provides an incentive to offer capacity that has been sold into the energy markets, whereas the capacity derate from methods such as UCAP reflects the quantity of dependable capacity going forward.[1]

The RAMPD Track 2 initiative also has the objective of aligning availability mechanism design with outage and substitution rules. In the recent past, the ISO's RAAIM penalty price has been far below the cost of finding substitute capacity. This means there has been little incentive to replace capacity that is subject to a forced outage. This initiative seeks to align incentives for availability so that there is sufficient capacity to operate a reliable grid.

Considering the various RA functions described above, the ISO believes a good design, between accreditation process and availability incentives, should incent RA resources to:

1. Reduce forced outage rates from all resource types particularly during stressed grid conditions
    a. Perform planned maintenance and, as needed, invest in larger capital upgrades
    b. Return quickly from forced and planned outages in advance of forecasted extreme conditions
2. Align shown RA shown values with the expected ability of those shown resources to bid and perform
3. Offer into the energy market day in, day out in accordance with their must-offer obligations; particularly during critical hours

[1] For example, if a number of resources are close to retirement or in need of major capital upgrades, a UCAP only incentive might not be sufficient and "real time" penalties might be more appropriate.

These three behaviors could be encouraged by a combination of energy market price signals, a RAAIM-like operational tool, and QC methodologies.

Data Analysis

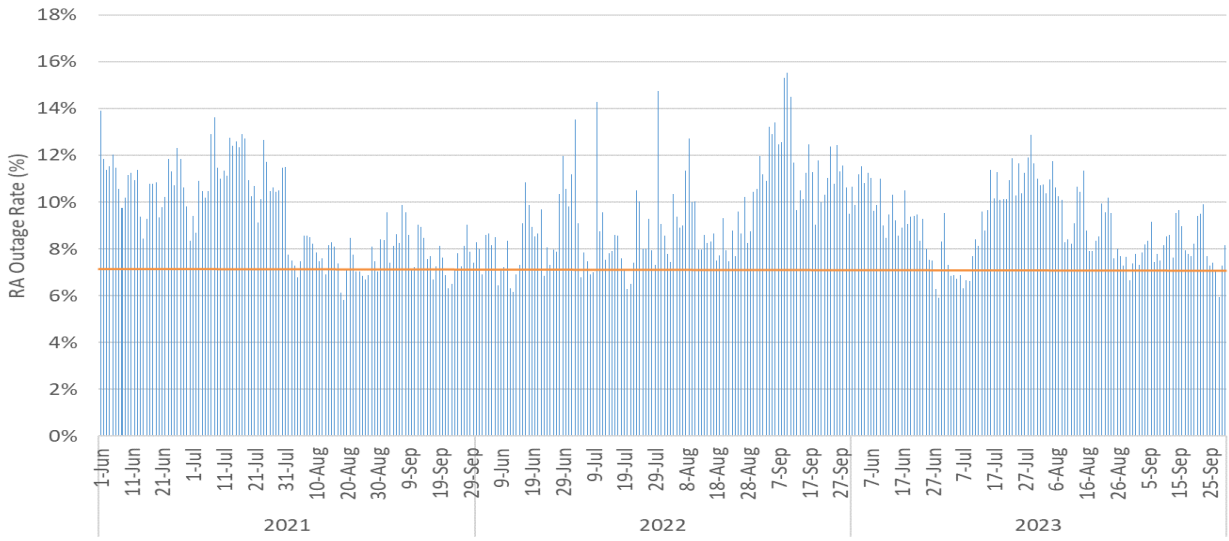
In the 2024 RAMPD Issue Paper, ISO staff analyzed recent historic RA capacity resource availability and performance data. At a high level, the takeaways from this analysis are:

1. The current RAAIM penalty ($4.40/kW-month) is far below bilateral trading prices
2. Forced outage rates for RA resources have increased

This section serves as a summary of that data analysis which provides useful context for evaluating the existing RAAIM framework. This includes the relationship between penalty levels and substitute capacity costs, the effect of monthly averaging, and the extent to which forced-outage substitution occurred during the periods reviewed.

Regarding the increase in forced outage rates for RA resources, this trend may be consistent with several contributing factors, including limited opportunities and incentives to schedule planned maintenance, difficulty obtaining substitute capacity, other limitations to dispatch that show up as outages in the ISO system or a decision to accept the RAAIM penalty where the cost of replacement capacity exceeds the expected penalty price.

Figure 1: Summer 2021-2023 Planned and Forced Outage Rates[2]



In Figure 1, showing combined outage rates for planned and forced outages, forced outages account for 97-98% of all outages in summer months. The orange line indicates the 7.5% forced outage rate assumption made in the 2024 Summer Assessment. In light of higher outage rates, this number has since been updated in both the 2025 and 2026 Summer Assessments and is now assumed to be higher than 7.5%. Figure 2 shows the assumptions used in the most recent ISO Summer Assessment.

Figure 2: Capacity-weighted average forced outage rate assumptions in 2026 Summer Loads & Resources Assessment by resource type (based on 2022-2025 data)[3]

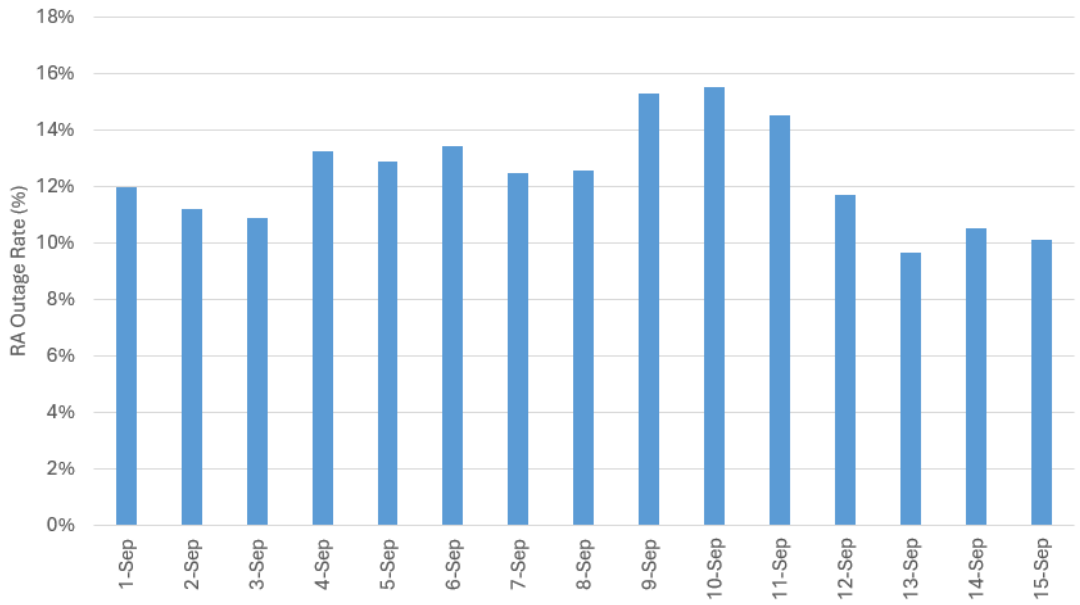
Capacity-weighted average forced outage rate (%)	Battery storage	Thermal combined cycle	Thermal gas turbine	Hybrid
	10.7%	5.3%	7.7%	11.4%

[2] https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-Resource-Adequacy-Modeling-and-Program-Design-Mar-03-2025.pdf

[3] Does not include ambient derates due to temperature

Figure 3 shows an even higher outage rate for RA resources during the first half of September 2022, a time when the ISO grid experienced extreme conditions from a late-summer heat wave.

Figure 3: September 1-15, 2022 Daily RA Resource Outage Rates (both planned and forced)



In the November 2024 RAMPD issue paper,[4] ISO staff reviewed performance (metered output relative to market award) and availability (forced outages and bids) of RA resources during September 2022. Note that there was only about 2,500 MW of energy storage capacity on the ISO grid during this period, but it represents the most recent period of significant capacity constraints during a CAISO EEA.

Below are two key data visualizations from this time period, including the September 2022 heat wave.

[4] See pages 53-62: https://stakeholdercenter.caiso.com/InitiativeDocuments/Issue-Paper-Resource-Adequacy-Modeling-and-Program-Design-Nov-07-2024.pdf

Figure 4: September 2022 Daily RA Availability and Performance

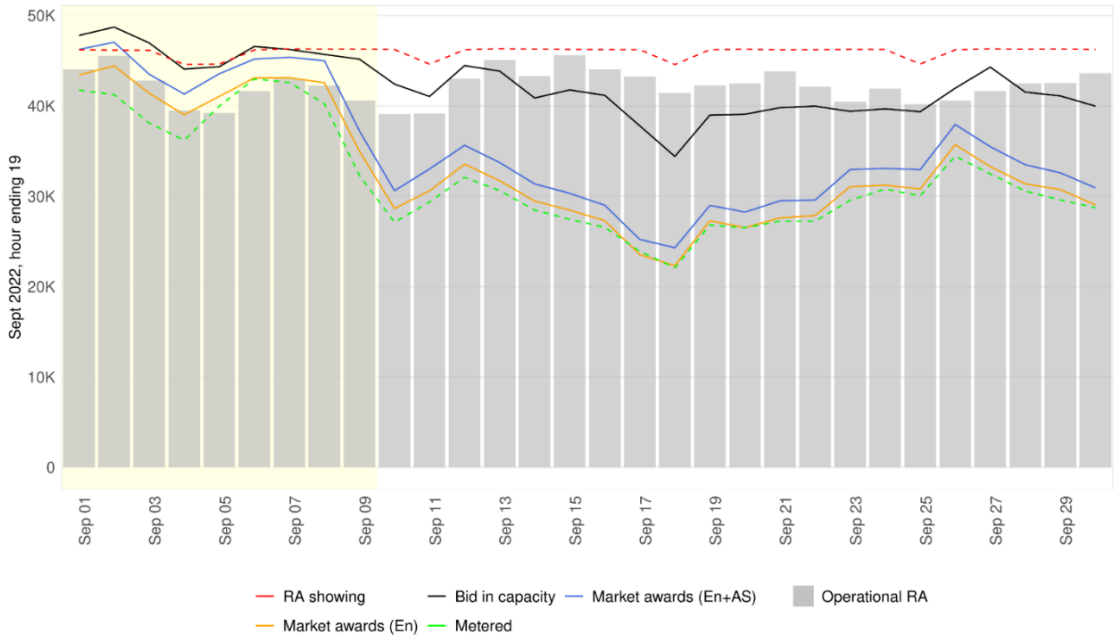
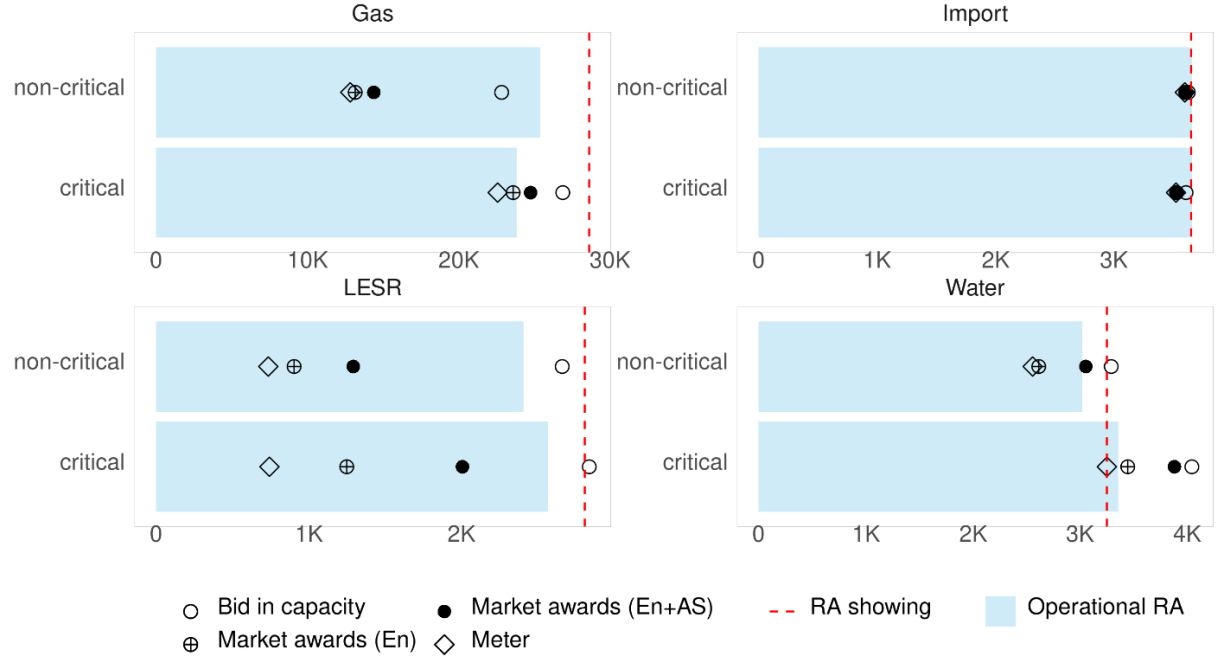


Figure 5: September 2022 RA Availability and Performance for Gas, LESR, Import, and Water Resources



The ISO summer market performance report for September 2022 indicated that "on average, resource adequacy resources performed to their expected output, including new resources on the grid such as battery storage." In figures 4 and 5, bid-in capacity generally matched RA showings at the system level on critical days (early in the month of September 2022), though for gas resources, there was a gap between bid-in capacity and shown RA for critical periods. However, operational RA was below shown RA for thermal and storage resources during both critical and non-critical periods, which was likely caused by forced outages. Additionally, actual metered performance fell below energy awards, with thermal and storage showing weaker performance than hydro and imports on a relative basis.

This data also shows that a meaningful share of system RA resources *did* in fact operate inside the current RAAIM deadband (94.5 – 98.5% availability during AAH) across the *entire* month of September 2022. In this case, RAAIM's incentive signal is diluted during extreme conditions, which generally last days, not the whole month. If a resource were available for 95% of the month's availability assessment hours, it would not be subject to RAAIM charges. However, it may have been on a forced outage during the five hours of the month that were the most critical for the grid.

Beyond September 2022, RAAIM non-availability charges have been rising on a monthly basis over time, especially for thermal resources. This may reflect broader trends of difficulties in taking maintenance outages or a preference to suffer the RAAIM penalty rather than find higher-priced substitute capacity in the bilateral market.

Regarding replacement of RA capacity on outage, forced outages were not replaced with substitute RA capacity in the summer months of 2022 and 2023.[5] For June to October 2022 the average substitution for forced outages ranged between zero to one percent. For June to October 2023 the average substitution ranged from one to 11 percent. However, when only looking at the summer months of June, July, and August in 2023 the substitution rate averaged one to three percent. It appears that RAAIM is either not providing enough of an incentive for resources to provide substitute capacity during forced outages, or there was simply not enough excess capacity to provide replacement for forced outages during these periods.

[5] The forced outage data on the page above represents the worst outage of the day for a resource minus what was substituted on a daily basis which was later averaged over the number of days in that month.

Figure 6: Average June - October 2022 Forced Outage RA Substitutions

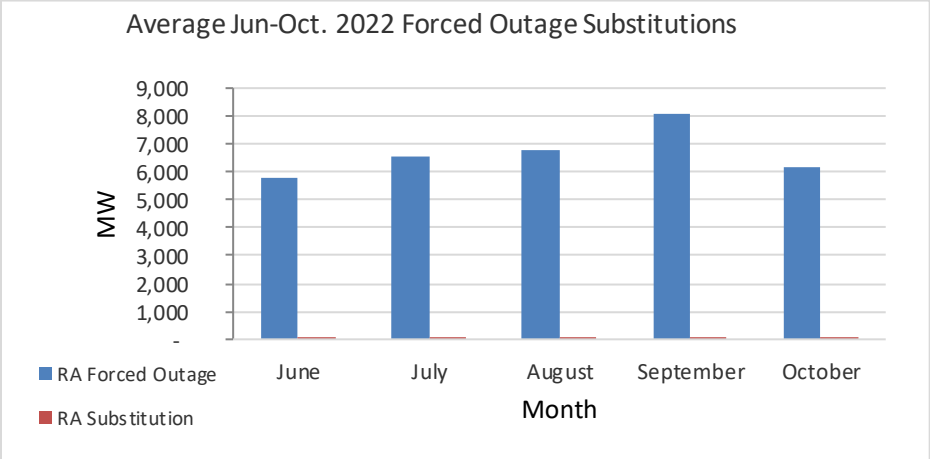
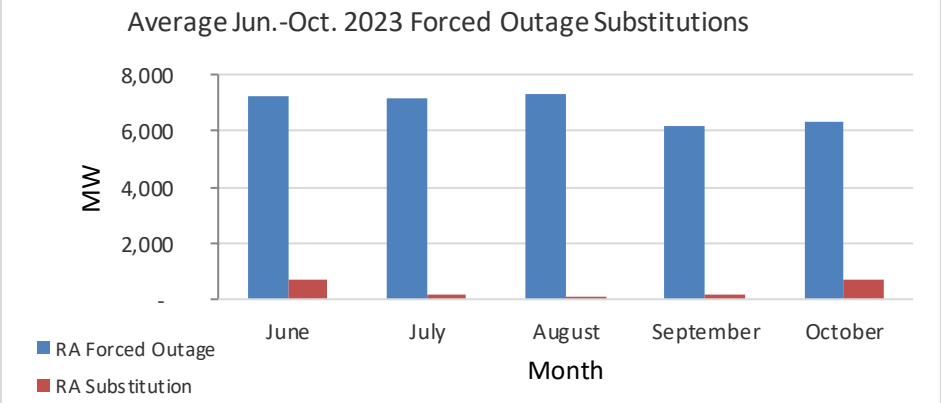


Figure 7: Average June – October 2023 Forced Outage RA Substitutions



Taken together, this evidence indicates potential concerns where the price and timing of incentives might not align well with reliability needs during the hours and days that matter most for the grid. While it appears that those resources that were *not* experiencing a forced outage generally had bidding behavior and performance that met planning assumptions, forced outage rates for thermal and storage RA resources in September 2022 were higher than shown RA values. To some extent, this is to be expected due to current LRA QC methodology, which currently does not account for forced outages or performance for these resource types at all, but it also reveals

potential questions about market tools to incentivize performance at the resource-specific level.

Accordingly, the ISO views this historical analysis as relevant context for evaluating the availability incentive framework, rather than as the sole basis for any final trigger, penalty, or settlement design. The analysis helps identify the types of design questions addressed later in this paper, including how incentives should account for the timing of non-availability, the cost of substitute capacity, and periods of elevated reliability risk.

Stakeholder Feedback

Throughout 2025 and in March 2026, the ISO held stakeholder meetings and received feedback on conceptual options for reforming or replacing RAAIM. That earlier feedback identified broad concerns with the current framework, including static assessment hours, monthly averaging, the current penalty level, and the extent of categorical exemptions. Following the May 15, 2026, stakeholder meeting and straw proposal, comments focused less on whether availability incentives matter, and more on the scope, sequencing, calibration, and implementation of the proposed reforms.

Several stakeholders generally supported, or expressed qualified support for, a more targeted availability incentive framework that would focus on stressed system conditions and complement evolving LRA accreditation methods such as UCAP. CalCCA, PG&E, CPUC Energy Division, DMM, SCE, and Six Cities supported the continued development of availability incentives that are more closely tied to periods of reliability risk. At the same time, other stakeholders urged the ISO to better explain how revised RAAIM would interact with UCAP, LRA program rules, bilateral RA contracts, and existing energy market incentives before adopting broader redesign. AReM, WPTF, NextEra, MRP, NCPA, SVP, CESA, and ACP raised concerns about sequencing, potential duplication with UCAP, and the need to preserve the distinction between forward accreditation and operational availability incentives. This feedback reflects a common theme in the comments: stakeholders generally recognize the importance of RA availability but differ on whether the previous straw proposal has sufficiently defined the incremental role of RAAIM after UCAP implementation.

Comments on the proposed event-based penalty structure focused on whether the framework can provide an actionable and predictable signal while remaining tied to actual system needs. CalCCA, Six Cities, SCE, CESA, DMM, CPUC Energy Division, and others requested additional clarity on how elevated reliability risk would be identified and how often the framework would expect to apply. With respect to EDAM-related scarcity conditions, WPTF, MRP, Six Cities, Calpine, ACP, and SCE encouraged the ISO to further explain how an EDAM RSE failure would be connected to

RA resource availability. The comments inform the ISO's continued work to better explain the relationship between advance notice, event triggers, and cost-causation.

Because penalty levels and revenue allocation affect both the strength of the incentive and the distribution of customer and supplier impacts, commenters offered different views on how to balance those objectives. DMM recommended that penalty levels be calibrated so that the incentive is meaningful relative to RA market economics. CPUC `Energy Division and Six Cities emphasized that load bears the financial impacts associated with high prices and RSE penalty assessments when RA capacity is unavailable, while others emphasized the value of providing payments to resources that are available during stressed conditions. Several commenters also request additional settlement examples, greater predictability in penalty exposure, and further explanation of how RAAIM revenues would interact with EDAM RSE cost allocation.

The comments on must-offer obligations reflected the importance of distinguishing shown RA, operational capability, and potential RAAIM exposure. DMM and SCE generally supported aligning must-offer obligations with operational capability, including in circumstances where UCAP accreditation may reduce the RA counting value of a resource. Other commenters, including WPTF, NCPA, SVP, CDWR, WAPA, NextEra, and Ormat, urged the ISO to further clarify how any must-offer obligation (MOO) above shown RA would align with contractual commitments, LRA accreditation values, substitution obligations, and settlement exposure.

Furthermore, application of RAAIM that recognizes the resource's type (e.g. Variable Energy Resource, storage resource) was a central theme in recent stakeholder comments from ACP, CalWEA, LSA, Clearway, Pattern, and NextEra. These entities emphasized that any availability assessment for wind and solar must distinguish controllable plant trouble from weather variability, forecast error, curtailment, and transmission limitations outside the resource owner's control. Those commenting on storage focused on duration, state of charge, nonlinearity, and the relationship between this proposal and the ISO's Storage Design and Modeling initiative. Demand response, participating load, hydro, CHP/QF, MSS and hydro commenters similarly requested that the ISO account for differing obligations depending on resource type, program limits, contractual limits, water constraints, portfolio scheduling rules, and other physical or operational limitations.

On outage and substitution, stakeholders generally supported improving visibility into available substitute capacity, while offering different views on whether the proposed "shopping cart" approach would materially improve the current bilateral process. SCE, CPUC Energy Division, CalCCA, PG&E, Pattern, and others saw value in a participant-driven tool that could improve transparency. DMM, Cal Advocates, WPTF, MRP,

CESA, and others encouraged the ISO to further explain how the approach would improve liquidity, transaction speed, and participation compared with existing tools. Stakeholders also continue to emphasize the importance of preserving maintenance flexibility.

The ISO appreciates the detailed feedback provided on the May 15th stakeholder discussion and straw proposal. The proposal below reflects continued development of these issues and seeks further feedback on event trigger design, EDAM RSE cost allocation interaction, must-offer obligations under UCAP, differential RAAIM treatment depending on resource type, and outage substitution.

Proposal

There are a variety of methods to reflect the availability of plants in modeling, accreditation and incentives. Until UCAP is implemented at the CPUC and/or adopted by other LRAs potentially via the ISO's default rules, the CPUC or other LRAs account for the impact that forced outages and unit derates have on system reliability at a resource-specific QC level for a majority of the units in the CAISO footprint.[6] Instead, the ISO relies on LRA PRMs to account for forced outages at a portfolio-wide level. The ISO also relies on operational tools such as planned outage substitution rules and RAAIM to discipline capacity in the operational timeframe. However, the introduction of a UCAP QC methodology at the CPUC will eventually capture some of the variability in availability in the forward planning period for the applicable set of resources.

However, even a resource-specific UCAP accreditation methodology is not a silver bullet to quantify all facets of RA resource availability. By itself, resource-specific UCAP will not recreate the benefits of a layered approach that combines QC methodology with availability and performance incentives. Other ISOs/RTOs also combine up-front availability in resource accreditation with penalties assessed in the operational timeframe if resources do not bid or perform. Any RAAIM reform option will have to consider how UCAP is adopted by each LRA, which resources it applies to, and if there is still a need to incentivize capacity though an availability or performance mechanism.

[6] CPUC Decision (D.) 26-07-008 adopts a UCAP framework beginning with the 2028 RA compliance. D.26-07-008 explains that certain implementation issues remain under development, including how UCAP-based values would interact with CAISO tariff and RA processes. For the purposes of this straw proposal, the CAISO will refer the resulting capacity value due to any urgent and forced outage-related derate to counting values – whether they apply in CPUC's RA program, CAISO's RA processes, or both – as "UCAP accreditation values".

Reforms to RAAIM could take a multitude of approaches. If the ISO were to remove the current RAAIM tool, it could be replaced with, on one end of the spectrum, a reliance on market prices or, on the other end, with strict non-performance penalties. A middle ground could look like a more focused availability incentive, which the ISO proposes here. Consistent with that approach, the ISO proposes that revised RAAIM remain focused on operational availability for shown RA capacity. The proposal does not alter LRA authority to establish RA counting methodologies or LSE procurement requirements, and is intended to complement, rather than replace, LRA accreditation frameworks such as UCAP.

Figure 8: Overview of proposed RAAIM reforms

Design Element	Today's RAAIM	Proposed RAAIM Reform
Criterion	Status quo: assess **availability** by comparing a resource's shown RA to its day-ahead (and in some cases, real-time) energy offers and outage status	
Assessment period	AAH (5 consecutive clock hours on each weekday – hours determined for each season based on CAISO annual study)	Two assessment triggers: Tier 1 – an energy reliability assessment Tier 2 – capacity scarcity conditions (CAISO BAA day-ahead RSE upward sufficiency failure)
Price	$4.40/kW-month (set to 60% of CAISO's CPM soft offer cap)	Tiered pricing: Tier 1 – day ahead LMP Tier 2 – $2,000/MWh
Assessment frequency	Netted across each calendar month – resources that are bidding between 94.5% and 98.5% of intervals are not paid or penalized	"Per event" – assess energy offers in each day-ahead hour individually
Exemptions	Numerous (resource type-specific; contract-based; outage-based; MOO-based; and Flex RA-only capacity)	See Figure 8 and resource type-specific discussion below; Section 3 addresses related MOO and bidding rules. Refine categorical exemptions through resource type-specific treatment, with revised RAAIM exposure based on shown RA.. Eliminate <1MW exemption
Allocation of non-availability charge funds	Charges collected from unavailable resources is allocated back to resources that demonstrate a reasonable level of availability and to load	

The ISO proposes key reforms to RAAIM based on stakeholder feedback and the challenges with RAAIM's current design as described above. RAAIM should remain an availability assessment tool that compares offers, schedules, and outage status to a resource's shown RA capacity during reliability-critical event intervals. Separately, the ISO is proposing must-offer obligation rules to preserve requirements and market visibility into operational capability, including circumstances where a resource's MOO may exceed shown RA because its accredited RA value is below its physical operating capability. A MOO above shown RA would support reliability, operational visibility and dispatchability but would not by itself increase the MW quantity subject to revised RAAIM charges.

With that distinction, the ISO proposes to refine categorical RAAIM exemptions by moving, where appropriate, toward availability assessments that vary based on the resource type. Under this approach, each resource generally would be assessed against the shown RA capacity it was obligated and physically capable of making available during the relevant Tier event. Applicable offers, schedules, outage status, physical limitation, program and dispatch limitations, water or fuel availability limitations, and other operational constraints will be used in determining whether non-availability should create RAAIM exposure.

The ISO does not intend this approach to impose a uniform dispatchable-resource availability test on all resource types. Rather, the ISO intends the approach to reduce broad exemptions where shown RA capacity is unavailable due to controllable plant trouble or failure to meet applicable bidding or scheduling obligations, while retaining or developing tailored treatment in cases when a resource type has a valid basis for different treatment.

The ISO recognizes that additional implementation details will need to be developed as the proposal is further refined. Those details will address how the ISO identifies applicable availability obligations, the role of the must-offer obligation, and the resource type limitations recognized in the availability assessment. This further development will be guided by the principles that revised RAAIM charge exposure remains capped at shown RA and that the assessment reflects the applicable obligations and operating characteristics of each resource type.

Figure 9 summarizes the proposed basis for assessing availability by resource type. Revised RAAIM charge exposure would remain capped at shown RA, while the information used to determine whether that shown RA was available would vary by resource type. The subsections below provide additional detail.

Figure 9: Alignment Between Resource Types and RAAIM Exposure

Resource Type	Current RAAIM Assessment or Exemption	Enhanced RAAIM Assessment
Thermal Resources	Assessment based on shown RA	Assess shown RA using applicable bids, schedules, and outage or derate status.
Storage Resources	Obligation based on shown RA	Assess shown RA using applicable bids and outage status. Specific treatment for resource type limitations
VERs	Exempt based on variability	Assess documented outages against shown RA. Expected wind and solar variability would not create revised RAAIM exposure.
Run-of River Hydro	Exemption if applicable accreditation methodology is used	Assess variability based on shown RA, expected water availability or expected energy, and outage status. Legitimate hydrology limitation would not create exposure.
Dispatchable Hydro	Exemption for certain outage natures of work relative to QC	Assess shown RA using applicable bids and outage status.
Participating Load/ Pumping Load	Currently exempt	Retain current exemption status
Demand Response	Exemptions based on program and dispatch limitations[7]	Retain existing program and dispatch-limitation framework. Revised RAAIM would assess only the existing tariff or program obligation for each DR resource type.
Load-Following MSS	Exempt due to portfolio scheduling constraints	Retain current exemption status

[7] CAISO Tariff Section: 40.8.1.13. A Proxy Demand Resource must have the ability to (i) be dispatched for at least twenty-four hours per month, (ii) be dispatched on at least three consecutive days, and (iii) respond for at least four hours per dispatch in order to qualify as Resource Adequacy Capacity.

<1 MW Resources	Exempted for administrative simplification	Eliminate the blanket size-based exemption and assess shown RA under the otherwise applicable resource type rules

Resource Type Application of Revised RAAIM

The ISO tariff applies different bidding, scheduling, and availability requirements across RA resource types, reflecting differences in dispatchability, physical and energy limitations, program rules, and LRA counting methodologies. Resources may also be subject to bid insertion, outage reporting, and RAAIM, but those requirements do not operate identically across the RA fleet. A revised RAAIM framework therefore cannot rely on a single availability assessment for all resource types.

Current RAAIM relies on categorical exemptions for certain resource types for a variety of reasons. The current rules recognized availability in the AAH hours may be affected by weather, hydrology, SOC, or other operational limitations. The ISO proposes to refine those exemptions where available information can distinguish controllable non-availability from legitimate operating limitations, while retaining current treatment where a standard resource-level assessment would not accurately reflect the resource's obligation. The following discussion describes the current obligations and RAAIM treatment for resource types, the proposed assessment, and any remaining implementation concerns.

At the March 2, 2026 stakeholder meeting, the ISO reviewed several alternative possible relationships between a resource's QC value, its NQC value, its MOO, and the value at which RAAIM is assessed. Figure 14 shows a table from that discussion at the March 2 stakeholder meeting for reference. Under current ISO rules, RAAIM non-availability penalties are assessed based on a resource's MOO, which is set based on RA capacity, also known as shown RA. In addition, RAAIM is assessed during periods when resources take outages without providing substitute capacity. Today, dispatchable RA resources such as generating resources and NGRs have a bidding requirement to offer all shown RA when physically available, or in other words, not on outage. At the March 2 meeting, the ISO introduced a new concept for discussion purposes called the performance benchmark megawatt (PBMW), which is designed to represent the physical energy capabilities of a resource, as opposed to a UCAP-based accreditation value which is derived from a resource's historic forced outage rate over time.

Figure 10: Possible differentiation between MOO and RA Performance Benchmark for RAAIM (from discussion slides at March 2, 2026 stakeholder meeting)

Resource Type	LRA RA Counting	MOO Qty	RA Performance Benchmark MW	Rationale
Thermal	UCAP	PMAX[8]	PMAX – Ambient derate	UCAP reflects statistical availability across the year, not a daily operating limit. Thermals can physically provide PMAX each day, so the MOO is based on PMAX. Should assessment of performance account for ambient derates?
Stand-Alone Storage	UCAP	PMAX	PMAX – foldback	UCAP reflects physical energy limits (duration, SOC). Storage has structural/physical limits that impact what it can provide, resulting in a MOO based on UCAP. Should assessment of performance account for foldback?

Note that Figure 10 is included here as a citation from materials the ISO presented at a March 2026 stakeholder meeting incorporating open questions that were initially posed to stakeholders in advance of the ISO publishing this revised straw proposal.

1. Thermal / Dispatchable Gas

Thermal resources with RA contracts are subject to applicable must-offer obligations in the day-ahead and real-time markets. In the day-ahead market, these resources generally must submit economic energy bids or self-schedule for the RA capacity in applicable Integrated Forward Market intervals, and the ISO applies applicable bid-insertion or reliability capacity rules where bids are not submitted. In the real-time market, thermal resources must submit bids consistent with their applicable real-time must-offer obligations and outage status.

Thermal dispatchable resources are fully subject to RAAIM today. The current RAAIM framework measures availability against the applicable availability standard during Availability Assessment Hours (AAHs) and applies non availability charges where a resource falls below the performance standard, subject to applicable deadband and substitution rules.

Under the revised RAAIM framework, the ISO proposes to assess thermal resources during Tier events based on shown RA MW. A thermal resource would be required to

[8] This table for simplicity, assumes a PMAX for a fully shown and fully deliverable resource

bid the full amount of its available shown RA to meet its MOO and accurately report any outage through the applicable outage process. Revised RAAIM exposure would apply to any portion of shown RA that is unavailable during a Tier event and is not covered by substitute capacity or applicable outage or derate treatment.

2. Non-Generator Resources

Storage resources participate under the Non-Generator Resource (NGR) pathway. Today, NGRs bid economically by submitting a monotonically nondecreasing bid curve with up to ten MW-$/MWh pairings to indicate their willingness to charge or discharge. Stand-alone battery storage resources with RA contracts are subject to the must-offer obligation for the full amount of their RA capacity. In the day-ahead market, the resource must submit economic energy bids covering the full RA capacity, which, for System RA, relates to the discharging range of these resources.

Today, battery storage resources with RA contracts are subject to RAAIM on the same terms as thermal dispatchable resources: the 94.5 to 98.5 percent availability standard, the Non-Availability Charge at 60 percent of the CPM soft-cap price for underperformance, and the Availability Incentive Payment for overperformance. As with other resource types, RAAIM applies based on submitted bids and outages. RAAIM exposure for storage resources does not depend on either the resource's state-of-charge parameters or the off-grid charge indicator bid parameter. This creates a known structural tension between the physical reality of duration-limited storage resources, and a categorical obligation structure designed for resources without energy constraints.

Under the revised RAAIM framework, the ISO proposes to retain a shown RA-based availability assessment for storage resources. Nonlinearity and foldback would be addressed through the Storage Design and Modeling initiative, and feasible dispatch limits produced by the modeled solution would not automatically create revised RAAIM exposure because no outage would be recorded once the modeled nonlinearity solution is in place. This approach is intended to preserve storage accountability for bidding, outage status, and plant trouble, while avoiding treatment of modeled physical feasibility limits as ordinary non-availability.

This is not dissimilar to how the market currently considers the limitations imposed by a shared point of interconnection (POI) for a co-located resource. In that context, co-located storage resources can submit a full bid curve, and the market is able to economically dispatch the asset while respecting the limits of the shared POI. Similarly, with the modeled nonlinearity solution, the asset will be able to bid a full bid curve and, if the market identifies that the asset may enter its nonlinear SOC range, the asset would

be dispatched by the market on a manner that respects those limitations without the need for outage.

Regarding co-located and hybrid configurations, some stakeholders inquired about whether penalties would apply to the hybrid as a whole, to individual components, or to separate resource IDs. This depends on the configuration. For co-located resources, the ISO can see each underlying resource as a separate asset with its own resource ID. As such, any exposure would be determined at the underlaying resource level. For hybrid resources, in contrast, all underlaying components are represented to the ISO as a single resource with a single resource ID. Therefore, exposure would be determined for the entire hybrid asset.

3. Variable Energy Resources (VERs)

VERs providing RA capacity are treated differently from dispatchable resources because their output depends on wind and solar conditions. VERs do not have a day-ahead must-offer obligation in the same manner as dispatchable RA resources. Instead, their market participation and real-time obligations are tied to available capability and forecasted generation. Their RA value is established through LRA counting methodologies such as exceedance-based values, but those accreditation values do not create a dispatchable day-ahead energy offer obligation.

VERs are currently categorically exempt from generic RAAIM. The rationale is that availability incentives are meaningful only where a resource can control its availability in response to the incentive. A solar resource cannot increase its availability at night, and a wind resource cannot produce during a sustained calm period regardless of the penalty structure.

Under the revised RAAIM framework, the ISO proposes to evaluate VER availability based on expected capability and reportable unavailability during Tier events. Outputs below shown RA or forecasted value would not, by itself, create RAAIM exposure. VERs would not be required to submit outage cards for lack of wind, low irradiance, nighttime solar, or other ambient conditions reflected in the forecast. However, forced and urgent outages should be reported through the outage management process, and that reported unavailability will be used in the revised RAAIM assessment. This approach avoids inferring plant trouble from low output alone while preserving accountability for controllable equipment unavailability.

4. Hydro resources – Run-of-River and Dispatchable Hydro

Hydro resources require treatment that reflects both the source of the resource's capability and the source of any limitation. Run-of-river hydro resources generally

depend on expected water availability and expected energy. These resources must reflect current water conditions in their schedules or bids and update their market submissions when expected energy deliveries change. Dispatchable hydro resources with reservoir storage capability may have greater operational control, but their availability can still be limited by water budgets, release requirements, environmental restrictions, licensing requirements, and use-limited conditions.

Run-of-river hydro resources are exempt from system and local RAAIM under Section 40.9.2(b)(1)(C) when the applicable qualifying capacity methodology accounts for hydrological availability. This treatment recognized that run-of-river output is constrained by streamflow and expected water availability, rather than controllable plant availability. Separately, the tariff provides outage-based RAAIM treatment for certain non-run-of-river hydro resources when the resources QC reflects historical hydro conditions and outage or derate is associated with water-related operational or regulatory limitations.

Dispatchable hydro with reservoir storage is subject to RAAIM for its dispatchable capacity. However, if their QC was set based on historic hydrological conditions, then, per tariff section 40.9.3.4(d), any outage taken to reflect limitations from managing hydrology is exempt from RAAIM. Pumping load that is also Participating Load is fully exempt from all RAAIM provisions reflecting the bilateral nature of pumped storage and the scheduling complexity of the pumping obligation.

Under the revised RAAIM framework, run-of-river hydro resources would not be required to submit outage cards solely because water availability or other water-related constraints reduce expected capability. Those limitations are part of the resource's expected operating capability. However, if a hydro resource is unavailable due to forced or urgent outages, then that unavailability should be reported through the outage management process and will be used in the revised RAAIM assessment. This distinction will allow the ISO to recognize legitimate hydrology and water-management limitations while preserving accountability for physical plant unavailability.

Dispatchable hydro with reservoir storage would be treated more similarly to thermal resources when water and operating capability are available. These resources would be expected to bid or schedule the portion of shown RA they are physically and operationally capable of providing during a Tier event. Forced and urgent outages will create revised RAAIM exposure. The ISO recognizes stakeholder concerns regarding water, environmental, licensing, and use-limited constraints and seeks feedback on how those constraints should be reflected under the revised RAAIM framework.

5. Participating Load / Pumping Load

Participating Load provides reliability value through load reduction rather than generation output and the programs. This creates a different availability question than for generation resources. Pumping Load is a type of Participating Load that provides reliability value by reducing or curtailing pumping operations when underlying pump load is available. Because the resource's reliability value depends on load available to curtail, Participating Load cannot be measured in the same way as a generator that failed to offer energy.

Today, Participating Load is exempt from RAAIM exposure. For these resources, it is difficult to assess under a conventional RAAIM framework because its availability depends on both the pumping schedule and whether load is available to curtail during the relevant interval. We propose to maintain the RAAIM exemption for Participating Load (PL) under the reformed mechanism, paired with ongoing availability monitoring and further consideration in Phase 2. The ISO historically exempted pumping load because of its unique role in managing the water systems and its associated unique must-offer requirement with real-time energy offers if the resource receives a day-ahead ancillary service award. We note that CDWR proposed potential applications of a RAAIM assessment that could apply to PL (e.g. in real time where the demand schedule exceeds zero). In the next phase of this initiative focused on real-time availability and performance, we can consider whether some type of availability measured as capped non-spin bids against a must-offer quantity equal to the lesser of RA capacity and the day-ahead demand schedule.

As such, subject to stakeholder feedback, the ISO is not proposing to apply revised RAAIM to Participating Load or Pumping Load in this iteration. If stakeholders or the ISO identify evidence that a revised availability assessment is needed, the ISO will evaluate whether a Participating Load-specific framework could be developed that reflects the resource's load-reduction capability and operational constraints.

6. Demand Response – PDR and RDRR

Demand response resources are subject to program and tariff-specific availability obligations that differ from those applicable to supply-side resources. These obligations vary across PDR and RDRR participation models. The discussion below explains how the existing demand response framework would inform the application of revised RAAIM.

In practice, Investor Owned Utility (IOU) demand response portfolios are not included on ISO RA Supply Plans under the current CPUC framework.[9] Because revised RAAIM would be assessed against shown RA, those portfolios would not be subject to revised RAAIM while they remain outside the supply-plan process. The ISO is not proposing in this initiative to establish the DR-specific RAAIM exemption described in the CPUC decision.

The ISO Department of Market Monitoring has observed and documented differences between bid availability and delivered load reduction across demand response participation models. The observations illustrate that DR availability depends on program design, customer participation, dispatch conditions, and the distinction between bid availability and delivered load reduction and provide directional context for evaluating how revised RAAIM should apply to DR resources.

10The ISO proposes to apply revised RAAIM to a demand response resource only when a Tier event overlaps the resource's designated Availability Assessment Hours (AAHs). The designated AAHs would define when the resource is expected to be available, while the Tier event would determine whether revised RAAIM is triggered. During those overlapping Tier-event and AAH intervals, resource availability would be assessed based on the existing requirements applicable to each demand response resource type. Those requirements continue to reflect the operational characteristics of the underlying demand response program, including applicable dispatch limitations, event limits, emergency-only operating provisions, and other resource-specific operating parameters. As a result, the proposal preserves the existing distinctions among demand response resource types rather than replacing them with a single standardized availability requirement.

This approach is generally consistent with the current demand response framework. Existing demand response resources are already subject to AAH under today's RAAIM framework. Those hours establish when resources are expected to be available and are also used in determining the resource's RA counting value. Retail demand response programs are generally designed around these availability requirements and are not necessarily capable of responding at all hours of the year.

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[9] D.21-06-029, p. 31.

[10] DMM Report on Demand Response Issues and Performance 2024, https://www.caiso.com/documents/demand-response-issues-and-performance-2024-mar-14-2025.pdf

Unlike most supply-side resources, the RA contribution of a demand response resource is based on its expected availability during its designated AAH rather than its ability to be available year-round. Applying RAAIM performance assessments during Tier 1 or Tier 2 events that occur outside the resource's AAH could therefore evaluate the resource during hours for which it did not receive RA credit and was not expected to be available. Consequently, limiting revised RAAIM assessments to the applicable AAH and recognizing LRA DR program design aligns performance measurement with the hours used to establish the resource's RA obligation and counting value.

7. Load-Following MSS Resources

These resources operate under special portfolio-based arrangements in the CAISO BA rather than resource-level must-offer obligations. Their scheduling and reliability obligations are not necessarily tied to a resource-level Pmax or MOO construct. Current RAAIM treatment reflects this special framework. Because MSS resources operate through a broader portfolio structure, applying revised RAAIM at the individual-resource level could require changes that are more complex than the targeted availability reforms proposed here.

As such, the ISO is proposing to retain current exemption treatment for load-following MSS resources. This approach recognizes that MSS resources may not fit the same assessment structure used for individually dispatched RA resources, while preserving the ability to evaluate more targeted changes if specific reliability or implementation needs are identified.

8. Under 1 MW Resources

Resources with a maximum operating level of less than 1 MW are currently exempt from RAAIM. This exemption was originally based on administrative simplification and the practical difficulty of monitoring availability for very small entities.

Under the revised RAAIM framework, the ISO proposes to eliminate the blanket exemption for resources smaller than 1 MW. Resources shown as RA should not be excluded from the availability framework solely based on resource size. Any otherwise applicable outage, physical limitation, program limitation, or resource type treatment would continue to apply. This change would remove the size-based exemption while preserving the broader principle that revised RAAIM exposure should reflect the resource’s shown RA obligation and applicable limitations.

Assessment Period

Instead of assessing availability across the same static, annually updated weekday availability assessment hours, revised RAAIM would apply only during event-based assessment intervals when system conditions indicate elevated reliability risk or critical upward capacity insufficiency. The assessment would be limited to the specific hours associated with the triggering condition, rather than applying to every hour of the trade date. This would better align the availability incentive with the period of identified reliability need.

Based on stakeholder feedback, the ISO is refining the proposed two-tier framework to provide clearer notice, more targeted assessment intervals, and stronger cost-causation logic. Tier 1 would provide an advance reliability signal based on forecasted system conditions and would apply only to identified stressed hours. Tier 2 would apply during a more acute upward sufficiency condition associated with the EDAM Resource Sufficiency Evaluation (RSE). Tier 1 and Tier 2 may be triggered independently, and the ISO does not propose to require Tier 1 advisory or confirmation before Tier 2 can apply.

Tier 1 – Elevated Reliability Risk Condition

- Purpose: Identify stressed hours in advance of the trade date when available RA may be insufficient to meet forecasted system needs and reserve requirements
- Trigger: The ISO is proposing a forecast-based operational margin test that would compare forecasted demand plus reserves to available RA where:

$$\text{CAISO forecast demand} + \text{reserves} + \text{uncertainty buffer} > \text{available RA}$$

- Timing: The ISO would provide an advisory signal from T-8 through T-4 where the operational margin indicated potential elevated reliability risk. Furthermore, the ISO would provide a binding Tier 1 confirmation at T-3 identifying the applicable assessment hours for the trade date.
- Assessment interval: Tier 1 would apply only to the identified stressed hours, not to every hour of the trade date
- Inputs: The trigger will consider forecasted load, reserve requirements, available RA,
- Penalty price: Day-ahead hourly LMP prices for the trade date

The primary goal of Tier 1 is to provide incentives (and advance notice of stressed system conditions early enough) for RA resources to take operationally meaningful actions, including returning from outage, updating outage status, or securing substitute capacity before the applicable trade date. To preserve that early-warning function while

reducing concerns that penalty exposure could be based on stale forecasts, the ISO is proposing a staged notice structure. Under this approach, the ISO would provide advisory notices from T-8 through T-4, those advisory notices would not create Tier 1 penalty exposure. A binding Tier 1 confirmation would occur at T-3, based on updated forecast, reserve, and available RA information, and would identify the specific stressed hours subject to assessment.

While we anticipate that RA resources will generally take actions and have incentives to maintain availability, this staged structure preserves the advance-notice value of Tier 1 while ensuring that the binding assessment is based on updated information closer to the trade date. Advisory notices from T-8 through T-4 would provide time for scheduling coordinators to evaluate outages, substitution, and bidding plans, while the T-3 confirmation would identify the stressed hours subject to assessment. Under the proposed structure, the Tier 1 assessment hours confirmed at T-3 would remain fixed for settlement purposes. Subsequent changes in forecast conditions would continue to inform ISO operations but would not reduce the confirmed assessment hours. This provides scheduling coordinators with a stable assessment window after making outage, substitution, and bidding decisions. Limiting Tier 1 to those hours better aligns penalty exposure with the forecasted reliability need and avoids applying the assessment hours outside of the identified risk window. The ISO will continue to refine the definition of the uncertainty buffer and minimum assessment hours.

Figure 11: Tier 1 illustrative example – daily rolling advisory study from T-8 through T-4, and T-3 binding confirmation.

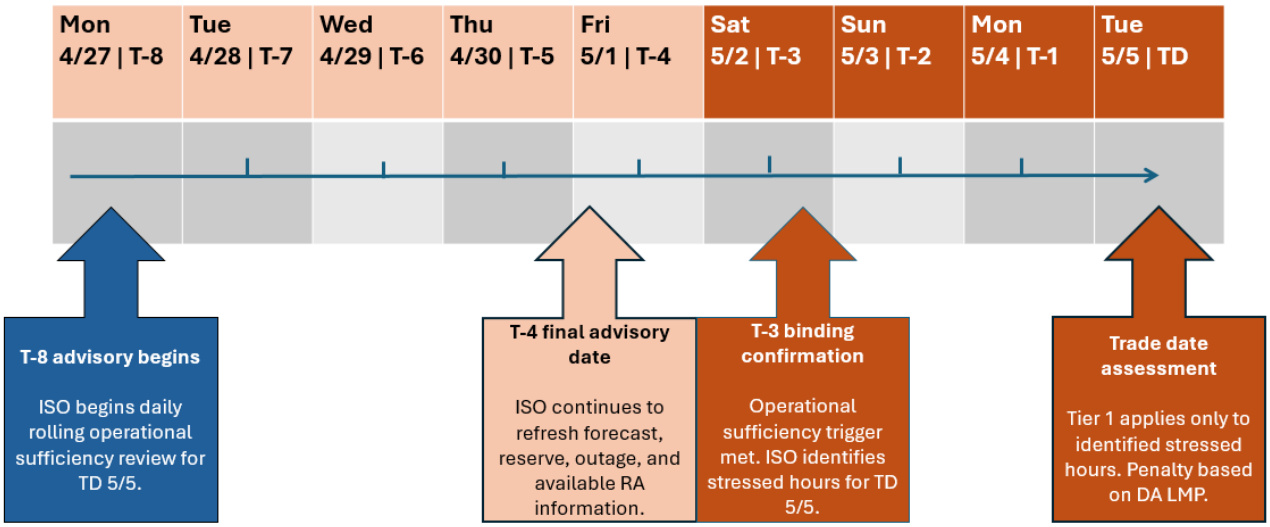

Figure 11 illustrates how the Tier 1 advisory and binding confirmation process would apply for a single trade date. For Tier 1, the non-availability charge would be based on the applicable day-ahead LMP for each identified stressed hour. In effect, this design would apply the existing day-ahead energy market price signal as a non-availability charge for shown RA capacity that is not available during the identified stressed hours. This price signal is intended to incent resources to be available including returning from outage or procuring substitute capacity before the applicable trade date and before the EDAM resource sufficiency evaluation is performed.

Tier 2 - Critical Capacity Insufficiency Condition

- Purpose: incentivize RA resources to be available when they are needed most – during the tightest capacity conditions.
- Trigger: when the CAISO BAA fails the EDAM resource sufficiency evaluation category associated with insufficient upward capacity
- Evaluation: compare each resource's shown RA against applicable bids in the deficient day-ahead upward interval, subject to the resource type applicability, outage, and availability rules described in the preceding section.
- Penalty price: $2,000/MWh

The RAAIM Tier 2 charge and the EDAM RSE failure charge are connected but ultimately designed to address distinct reliability objectives, even when both arise from an event involving insufficient capacity. While a resource's unavailability may contribute to both assessments, the two mechanisms serve different purposes and are based on different principles.

The RAAIM Tier 2 charge is intended to provide a standardized reliability incentive by reflecting the cost of failing to provide resource adequacy capacity when that capacity is needed for system reliability. In contrast, the EDAM RSE failure charge for a load that fails the EDAM Resource Sufficiency Evaluation (RSE) has a cost structure that varies and depends on factors beyond the quantity of unavailable RA capacity. The fixed Tier 2 charge may differ from the amount that would result if total EDAM RSE failure costs allocated to the CAISO BAA were divided among the unavailable shown RA MW assessed under Tier 2. To understand how that hypothetical calculation, which we term a "RSE penalty-based charge" relates to the proposed fixed $2,000/MWh value, we consider two different scenarios:

- $2,000/MWh may be less than the RSE penalty-based charge when the shortage occurs during highly stressed system conditions with significant scarcity costs reflected in hub prices or when the unavailable RA represents a relatively small share of an event that produces substantial system-wide reliability costs.

- Conversely, $2,000/MWh may be greater than the RSE penalty-based charge when other resources are available to offset the deficiency, such that the unavailable RA constitutes a large portion of the deficient capacity, but the overall operational consequences remain modest.

A principal benefit of maintaining a fixed Tier 2 charge is predictability and incentive stability. The fixed design avoids tying compliance incentives to potentially volatile prices. The fixed price of $2000/MWh would ensure that the incentive reflects a meaningful amount of the reliability value of RA capacity rather than the specific operational costs incurred during a particular event.

Tier 2 applies during the most acute capacity conditions, when the CAISO BAA has not demonstrated sufficient upward capability to meet its EDAM obligations. In these hours, incremental RA availability is particularly valuable because additional bid-in capacity may help avoid or reduce the consequences of an EDAM RSE failure.

For purposes of the settlement examples below, the Tier 2 RAAIM charge is illustrated as:

$$\text{Tier 2 RAAIM Charge} = \text{RA Shortfall MW} * \frac{\$2{,}000}{\text{MWh}} * \text{Assessment Hours}$$

where RA shortfall MW is the difference between the resource's shown RA obligation and its day-ahead bid MW in the deficient hour.

Figure 12: Illustrative example of proposed net RSE exposure depending on bilateral trading hub price spread

Scenario	Max Mid-C / Palo Verde Price	CAISO LMP credit	RSE surcharge	Tier 2 RAAIM charge	Net RSE exposure
Low hub-price spread	$30/MWh	$21/MWh	$15,469	$40,000	-$24,531
High hub-price spread	$250/MWh	$21/MWh	$345,469	$40,000	$305,469

Illustrative assumptions: 93.75 MW adjusted RSE deficiency, 16-hour on-peak strip, one on-peak RSE failure hour, 15 hours receiving LMP credit, 20 MW RA resource shortfall.

Figure 12 illustrates how the EDAM RSE surcharge can vary with external hub prices, while the Tier 2 RAAIM penalty remains fixed for the same RA shortfall. In the EDAM

RSE surcharge calculation, the CAISO LMP credit is the applicable load-weighted average CAISO day-ahead LMP, which is subtracted from the Mid-C or Palo Verde reference price. The examples hold the RSE quantity and RA shortfall constant to isolate the effect of the Mid-C / Palo Verde price relative to the CAISO LMP credit.

Charges and Payments

Regarding non-availability penalty levels, the ISO proposes setting the price for Tier 1 equivalent to the day-ahead price and for Tier 2 at $2,000/MWh, applied to RA resources based on resource adequacy capacity (shown RA). If RA resources are available for *less* than their shown RA capacity during a Tier 1 or Tier 2 period, they will be charged based on the difference between their shown RA for the month in which RAAIM is assessed and their bids.

The ISO proposes maintaining the self-funding element of the availability incentive payment process, but modifying the allocation of collected non-availability charges to align with the revised event-based RAAIM framework. The availability standard would no longer be set between 94.5 percent and 98.5 percent of the monthly assessment period. Instead, non-availability charges would be calculated and allocated on a per-event basis.

For Tier 1, collected non-availability charges would be allocated to load and eligible available RA resources using a common per-MW allocation rate. Eligible available RA would consist of the portion of each resource's shown RA determined to be available during the applicable Tier 1 assessment hours. Eligible MW would be capped at shown RA. If a resource is only partially available, the unavailable shown RA MW would be assessed the Tier 1 charge and excluded from the allocation base, while the available shown RA MW would remain eligible for an allocation.

This approach provides an additional incentive for each MW of shown RA to be available during stressed hours, beyond simply avoiding the non-availability charge. It also recognizes partial availability by charging the unavailable portion while allocating revenues to the portion that remains available. Including load in the allocation recognizes that customers fund RA procurement and may bear additional reliability-related costs when procured capacity is unavailable.

The ISO would calculate the per-MW allocation rate by dividing total Tier 1 charges collected for the event by the combined MW of load and eligible available RA during the applicable Tier 1 assessment hour. Each recipient's allocation would then equal its MW share multiplied by the common per-MW allocation rate.

Figure 13A: Illustrative example of system-wide penalty revenue allocation

Settlement Step	Calculation	Result
Tier 1 non-availability MW		10MW
Tier 1 price	Day-ahead LMP	$100/MWh
Tier 1 charge collected	10 MW * $100/MWh	$1,000
Load during Tier 1 hour		45,000 MW
Eligible available RA during Tier 1 hour		50,000 MW
Total allocation base	45,000 MW+50,000 MW	95,000 MW
Per-MW allocation rate	$1,000/95,000 MW	$0.0105/MW
Load allocation	45,000 MW * $0.0105/MW	$473.68
Eligible available RA allocation	50,000 MW * $0.0105/MW	$526.32
Total		$1,000

Figure 13A illustrates the system-wide allocation of Tier 1 revenues for a simplified one-hour event. Because eligibility is determined on a per-MW basis, a partially available resource may be assessed a charge on its unavailable shown RA MW while the portion that remains available stays eligible for the common per-MW allocation. Figure 13B illustrates this treatment for an individual resource.

Figure 13B: Illustrative Settlement treatment of a partially available resource

Settlement Step	Calculation	Result
Shown RA		100 MW
Available shown RA		95 MW
Tier 1 shortfall	100 MW – 95 MW	5 MW

Non-availability charge	5 MW * $100/MWh	$500
Eligible RA allocation quantity	95 MW * per-MW allocation rate[11]	$0.9975

In this example, the 5 MW shortfall would be assessed the Tier 1 non-availability charge, while the remaining 95 MW would remain in the eligible available RA allocation base. The resource's payment for those 95 MW would be calculated using the common per-MW allocation rate shown in Figure 13A.

This MW-based approach provides more proportional treatment than the current monthly RAAIM framework. The current design averages availability across the month and applies a deadband, which can allow availability during lower-risk hours to offset a shortfall during a critical hour. Under the proposed event-based design, each unavailable MW would be charged during the applicable stressed hours, while each available shown RA MW would remain eligible for an allocation. This helps us eliminate some of the current challenges with including a deadband for resource performance and some of the inequities that could arise if the allocation was all or nothing for a resource to be eligible for a share of the allocation.

For Tier 2, we are proposing an identical structure as tier 1 but also recognized that some stakeholders advocated that collected non-availability charges could be treated separately due to being tied to the EDAM RSE failure. Tier 2 revenues could be used to offset these failure costs allocated to the CAISO BAA. If Tier 2 collections are less than the applicable EDAM RSE costs, remaining costs could continue to be allocated under applicable EDAM settlement rules. In some circumstances, Tier 2 collections may exceed the applicable EDAM RSE costs allocated to the CAISO BAA. The ISO seeks stakeholder feedback on whether such an alternative would better meet cost causation principles.

As part of the continued development of the event-based assessment framework, and to respond to stakeholder feedback regarding bounded penalty exposure, the ISO intends to explore design features that could provide greater certainty regarding potential monthly financial exposure. One option is to establish criteria that would likely effectuate a minimum amount of hours and/or a rule that would cap a maximum amount of cumulative Tier event penalties in a given month. Alternatively, the ISO

[11] Allocation rate of $0.0105/MW used from Figure 13A.

could apply a maximum monthly cap (e.g. at some percent or multiple of CPM) that would provide RA resources assurance that the exposure would be capped in the event of a significant resource failure combined with a significant number of RAAIM events. This could preserve a meaningful availability incentive while making potential exposure more predictable for market participants.

Before developing this approach, the ISO would need to perform a historical assessment for the proposed Tier event methodologies. This would aid in understanding how often Tier events would have occurred, how long they would have lasted, and the resulting financial exposure. The ISO seeks stakeholder feedback on how bounded monthly exposure should be structured, including the appropriate minimum and maximum levels and how they should interact with Tier 1 and Tier 2 assessments.

RAAIM reform as complement to LRA QC methodologies

Given the CPUC's current UCAP implementation path for a substantial portion of RA resources, the key question becomes what, if any, incremental incentives are necessary to ensure operational availability. UCAP and revised RAAIM serve related but distinct functions. UCAP reflects historical availability in forward counting values, while revised RAAIM would assess whether shown RA capacity is available in the operational timeframe. In this way, UCAP improves the forward planning value assigned to a resource, while revised RAAIM provides an operational incentive for that shown capacity to be available when the ISO is relying on it.

RAAIM should be reformed to strengthen the operational availability incentive for shown RA during stressed hours. Energy and reserve prices provide market-wide signals reflecting system conditions, but they do not directly determine whether capacity procured and shown as RA met its availability obligation. Revised RAAIM would complement those market signals by applying targeted non-availability charges to shown RA that is unavailable during Tier events. The proposed penalty levels are intended to provide a more meaningful availability inventive than current RAAIM without attempting to replicate the full reliability cost of load curtailment or reserve shortages.

The ISO recognizes stakeholders' concerns that the same outage could affect a resource's future UCAP accreditation value and also create revised RAAIM exposure if the outage occurs during a Tier event. The ISO views these consequences as addressing different reliability functions. A UCAP derate affects the amount of capacity credited to the resource in a future forward RA showing, while revised RAAIM would apply only when shown RA capacity is unavailable during a specific operational assessment hour, subject to applicable outage, substitution, and resource-specific

treatment. This distinction preserves UCAP's role in forward accreditation while maintaining an operations availability incentive during the hours when reliability risk is elevated.

In doing so, this proposal aims to create stronger incentives for resources to take actions that improve availability, including performing maintenance (both normal short-term maintenance and capital upgrades) in advance of tight conditions, returning from outages more quickly, and avoiding what could be discretionary outages during periods of system stress.

Flexible Resource Adequacy and RAAIM

Throughout the RAMPD working group process and policy development, the ISO has recognized that reforms to its various program elements, including potential changes to RAAIM, should be evaluated in the broader context of both System (generic) and Flexible (flex) RA. Today, RAAIM applies to both generic and Flexible RA capacity, but those two products use different availability assessment hours and penalty constructs. As the ISO enhances the System RA availability incentive framework to focus on identified stressed hours and critical capacity insufficiency conditions, maintaining the existing Flex RA penalty framework could create overlapping or poorly aligned availability incentives for the same resources.

The ISO is continuing to evaluate the longer-term role of Flex RA, including whether the program should be retained, redesigned, or retired as market products and RA contracting and procurement evolve. In the interim, the ISO proposes to retain the Flex RA showing requirements and associated must-offer obligations, while suspending Flex RA-specific RAAIM penalties during a transitional period. This interim approach preserves the procurement and operational visibility functions of Flexible RA, while avoiding a separate Flex RA penalty construct that may not align with the enhanced System RA RAAIM framework. This approach is intended to allow the System RA RAAIM reforms to move forward without requiring parallel redesign of Flexible RA in the same initiative.

The ISO will continue to assess the future of Flex RA through a separate analysis and stakeholder process. That process will consider whether a Flex RA performance mechanism should be reinstated, redesigned, or eliminated, and whether any longer-term Flex RA framework should be aligned with the enhanced System RA availability incentive design. During the transition period, the ISO will monitor whether suspending Flex RA-specific penalties creates operational or bidding concerns that require further action.

Performance Assessment

The ISO is not proposing a new performance incentive mechanism as part of this revised straw proposal. Revised RAAIM is focused on availability – whether shown RA capacity is made available through applicable bids, schedules, and outage status during identified assessment hours. A performance mechanism would address separate questions on whether a resource ultimately is available in real time and performs consistent with the schedule or dispatch instruction it receives.

Comments on the May 2026 straw proposal reflected different views on whether and how a complementary performance mechanism should be developed. DMM continued to recommend a performance incentive that would complement the availability framework, while other stakeholders raised questions about whether performance should be addressed only for RA resources or as a broader market issue.[12] The ISO therefore proposes to address the design of any performance mechanism through future policy development rather than as part of the current revised RAAIM proposal.

Any future performance framework would need to account for differences across resource types, systems conditions, dispatch instructions, deliverability constraints, and other operational limitations that may affect a resource's ability to perform. That work would also need to determine whether a performance incentive should apply only to RA resources and shown RA capacity or more broadly to resources receiving market awards.

[12] Department of Market Monitoring, Comments on RAMPD Track 2 – Straw Proposal, June 4, 2026, California ISO - All comments

3 Bidding Requirements for System RA Resources

Problem Statement and Objectives

As LRA accreditation methodologies evolve, the relationship among a resource's NQC, shown RA, operating capability, and MOO require greater clarity. The following problem statement frames the issue addressed in this section:

The existing system RA bidding framework may not preserve the intended MOO when a dispatchable resource's accreditation value is lower than its operating capability. If the MOO is set directly equal to shown RA, an accreditation derate may reduce the capacity visible to the ISO market even where the resource remains capable of offering additional capacity. The framework also needs to provide clear treatment for:

- *Resources that are only partially shown as RA or have partial capacity deliverability status;*
- *Resources shown under multiple LRA programs; and*
- *The distinction between MOO, revised RAAIM exposure, and substitute capacity requirements*

The ISO's objective is to develop a MOO framework that addresses the following:

Operational visibility: The framework should preserve visibility into the operating capability associated with a dispatchable resource's RA showing.

Consistent application: The methodology should remain workable as LRAs use different accreditation approaches and should rely on values established through the existing CAISO RA process.

Proportional treatment: The bidding obligation should scale with the portion of the resource shown as RA, including for partially shown partial capacity deliverability status (PCDS) resources.

Clear separation of obligations: The MOO would establish the applicable bidding obligation, while revised RAAIM charges and substitute capacity requirements would continue to be based on a shortfall below shown RA.

Stakeholder Feedback

Comments on the May 2026 straw proposal generally supported providing greater clarity regarding a system RA MOO as accreditation methodologies evolve. Several stakeholders recognized the value of preserving ISO visibility into a dispatchable

resource's operating capability rather than treating a statistical accreditation value as the resource's daily operating limit.

In the June 4th comments, there were also requests for additional explanation of how the proposed framework would apply under different accreditation methodologies and resource configurations. In particular, the comments identified partially shown, PCDS, contract-limited, and multi-LRA resources as areas where additional implementation detail would be useful. A related theme was the need to clearly distinguish the MOO bidding obligation from revised RAAIM and outage-substitution exposure.

Bidding Requirements

The ISO proposes to calculate the MOO for dispatchable system RA resources using the relationship among shown RA, NQC, and the resource's applicable Pmax or Pmax-equivalent value. This approach would preserve the proportional relationship between the resource's RA showing and its operational capability as accreditation methodologies change. Where NQC is reduced below the applicable operating capability value, the resulting MOO may exceed shown RA.

The MOO would define the quantity the resource must make available through applicable bids or schedules. Revised RAAIM charges and substitute capacity requirements would remain based on the resource's shortfall below shown RA and would not increase because MOO exceeds shown RA. The calculation and treatment of partially shown, PCDS, contract limited, and multi-LRA resources are described below.

This framework would apply to dispatchable system RA resources. It would not establish a conventional MOO for VERs or other resources whose bidding and availability obligations are established through separate tariff, forecast, or program-specific rules.

Application of the Proposed MOO Framework

Within this MOO framework, if a dispatchable resource has full capacity deliverability status and shows its full NQC as RA in the CAISO BAA, its MOO would equal its applicable Pmax or Pmax-equivalent value. Not all resources, however, are fully shown or have full capacity deliverability status. These cases include resources with PCDS and resources that show less than their full NQC in the CAISO BAA, including where the remaining capacity is sold outside the CAISO BAA.

A resource may also be shown under multiple LRA programs that use different QC methodologies. The existing NQC process resolves those LRA-specific QC inputs and establishes a single monthly NQC value for the resource before RA showing and MOOs

are determined. The NQC is determined based on the LRA with the highest NQC. That NQC value is used in the CAISO RA process and sets the maximum total RA that may be shown for the resource. The ISO therefore proposes to use the resource's final NQC, total shown RA in the CAISO BAA, and applicable Pmax or Pmax-equivalent in the MOO calculation, rather than calculate separate MOO values for each LRA showing.

To address these different resource configurations, the ISO will use the defined MOO in the preceding subsection. The calculation would scale the resource's bidding obligation in proportion to its shown RA through the following formula:

$$\text{must-offer obligation (MW)} = \text{shown RA (MW)} \times \frac{\text{Pmax (MW)}}{\text{NQC (MW)}}$$

Figure 14: Examples of proposed MOO based on NQC, Pmax, and Shown RA

Resource	NQC (MW)	Pmax (MW)	Shown RA (MW)	MOO (MW)
Plant 1	100	100	100	100
Plant 2	80	100	80	100
Plant 3	80	100	40	50

Figure 15 provides three illustrative example resources to demonstrate this relationship.

The shown RA value for these resources would continue to be limited by the applicable QC or accreditation value, including any derates reflected through UCAP or other LRA counting methodologies. The purpose of the MOO calculation is to preserve ISO visibility into operational capability where a resource's accreditation value is below its physical operating capability. However, the ISO proposes that revised RAAIM exposure and outage substitution obligations remain based on shown RA. If a resource offers less than its shown RA during an applicable assessment hour, the RAAIM shortfall and any substitution obligation would be measured against shown RA. If a resource offers at least its shown RA but less than its MOO, the resource would not incur revised RAAIM penalties for the MW above shown RA. The resource would nevertheless remain subject to its full MOO under the applicable tariff bidding requirements.

4 Outage Substitution Enhancements for RA Resources

Problem Statements and Objectives

As a part of the RA Modeling & Program Design working groups that began in fall 2023, the following sub-issue was identified as a part of the greater RA problem statements:

The ISO's existing outage substitution mechanisms should be reassessed. Both initial analysis and working group feedback indicate that the current processes and procedures likely result in:

- *Inefficiencies as multiple SCs hold back RA capacity for outage substitution for a partial-month outage.*
- *Artificial tightness in the RA bilateral market due to holding back capacity for outage substitution.*
- *Potential maintenance delays if substitute capacity is not available.*
- *Higher forced outage rates because planned outages cannot be scheduled and the resource ultimately experiences a forced outage.*

To address the problem statement above, CAISO aims to enhance the RA capacity substitution process to meet the following attributes:

Efficient: The process should be efficient so that capacity is available to substitute without significant effort by participants or exceptions to the RA substitute capacity process.

Reliable process for resources: The process should promote reliability by allowing resources to perform needed maintenance to reduce future forced outages and reliability events at the ISO.

Reliable process for CAISO: After factoring in resources on planned outage, there should be sufficient capacity to reliably operate the grid.

Incent showing resources: CAISO's process should not incentivize individual scheduling coordinators to hold back substitute capacity for their own needs as it creates a tighter RA market, limited substitution opportunities for other scheduling coordinators, and reduces the visibility CAISO operators have to available capacity. Similarly, the RAAIM and MOO requirement should not create risks or uncompensated burdens to an LSE showing resources beyond what is needed for reliability. LSE contracted resources should be visible and operational to the market. There should be efficient processes for potential non-contracted resources to be available as substitute capacity.

Alignment with LRA programs: The ISO seeks alignment with LRAs on any outage and substitution policies. The ISO would also like better insight into whether any LRA planning reserve margins account for planned outages.

Stakeholder Feedback

In August 2025, the ISO issued a straw proposal related to outage substitution reforms for RA resources. ISO stakeholders are generally in agreement that the current outage substitution management processes need to be improved. The goal is to have outage management processes that are more efficient and reliable, particularly given a recently tight RA market and the importance of timely maintenance so resources can remain dependable and fully operational.

The August 2025 straw proposal, consistent with stakeholder feedback in the working group, explored options for an outage substitution pool, and included a recommended approach for a decentralized substitute capacity pool that functions like an open marketplace for peer-to-peer transactions of substitute capacity between scheduling coordinators. The proposal also reviewed two alternative approaches to enhance the substitute capacity procurement process that the ISO did not recommend. Both of these involved the ISO matching buyers and sellers by clearing bids in an auction and, in the absence of a standardized substitute capacity product with defined duration and MW value, prioritizing either the highest bid price for capacity (Alternative 1) or the largest outages by MW (Alternative 2).

Stakeholder feedback on the August 2025 meeting generally supported improving the visibility and transactability of substitute capacity, but reflected different views on the appropriate level of ISO involvement. Some stakeholders supported the decentralized "shopping cart" approach as an implementable improvement to the existing bilateral process, while others preferred or encouraged the ISO the continue evaluating a more centralized or optimized matching mechanism. Stakeholders also requested additional detail on the information displayed in the platform, the duration and granularity of available products, and how the proposed tool would improve upon the existing bulletin board.[13]

Comments on the May 2026 straw proposal similarly focused on whether the proposed workflow would materially reduce the search and coordination frictions that limit substitution today. DMM requested that the ISO more clearly explain how the shopping

[13] https://stakeholdercenter.caiso.com/Comments/AllComments/4f0bef9a-392a-4089-8925-76626f9af90f#org-14f8cc77-5a9d-4f1c-b62c-755c1214054a

cart approach would address the reasons entities do not currently procure replacement capacity, particularly given the time and resources required to develop the tool.[14] The ISO has considered this feedback in further developing the transaction workflow described below.

Stakeholders have also supported allowing planned maintenance outages without substitution when system conditions do not present reliability risk. The ISO is not proposing to unconditionally approve planned maintenance outages without substitute capacity because monthly RA showings and applicable planning assumptions do not account for all planned outages. Instead, the proposed shopping cart workflow is intended to reduce the burden of finding and transacting for substitute capacity where substitution remains required.

Outage Substitution Enhancements: Shopping Cart Approach

The ISO proposes to advance the decentralized "shopping cart" approach described in the August 2025 straw proposal as a structured transaction workflow rather than a contact board. Sellers would post RA-eligible substitute capacity by date, MW quantity, price, and applicable terms. Buyers would filter and select posted capacity through a streamlined workflow within CIRA. Following seller confirmation, the ISO would remove the sold capacity from the available pool and apply the substitution through the RASC process. Contracting and financial settlement would remain bilateral and outside the ISO. The MW quantity requiring substitution would continue to be based on the applicable shown RA shortfall due to the outage impact as per the current RASC process.

The proposed workflow is intended to reduce search and administrative friction by replacing free form contact postings with standardized, searchable offers and a common selection and confirmation process. It would not create a centrally cleared CAISO market or establish a market-clearing price, and scheduling coordinators would retain control over transactional terms and bilateral contracting.

The August 2025 straw proposal described several key challenges with a more optimized ISO-administered substitute capacity pool. First, buyers and sellers would lose direct control over transactions in a centralized exchange. This means SCs offering substitute capacity may not have their offers selected unless matched by CAISO's optimization. Additionally, the matching process would have to occur at fixed intervals in advance of the RA month. Though not impossible, the ability to provide capacity for a

[14] https://stakeholdercenter.caiso.com/Comments/AllComments/0e34e687-e290-4afa-92a2-7dd9ebbeeb52

period of less than 24 hours would be difficult. SCs looking to purchase substitute capacity would likely need to be willing to purchase capacity for longer periods than their outage requires. For example, for a 36-hour outage, SCs may need to purchase a week-long strip of substitute capacity for the sake of simplifying the optimization. Alternatively, a daily product could be offered, where SCs looking to buy capacity could have their substitution needs met down to the nearest day, but this would require a complicated optimization and may not be feasible without significant policy and solution development.

Under the proposed shopping cart approach, substitute capacity would be posted for specified dates or date ranges rather than cleared through a single standardized product. Sellers will identify the MW quantity, price, and duration (dates the capacity is available for substitution). Buyers will select the dates and MW needed for their outage, subject to the seller's stated terms. The initial workflow would support both single-day and multi-day postings..

Based on the stakeholder feedback summarized above and the relative implementation complexity of the alternative, the ISO proposes to move forward with the shopping-cart approach described in the August 2025 proposal. The approach is intended to reduce search and administrative friction for scheduling coordinators seeking substitute capacity while preserving bilateral control over transaction terms.

5 Outage Definitions

In the RAMPD working group process, the ISO received questions and feedback regarding the clarity of existing outage definitions and the timing requirements for submitting different outage types. The ISO proposes to distinguish planned, urgent, and forced outages based primarily on the operating condition of the resource, the reason for the outage, and whether the resource can remain in service while the outage is coordinated.

Generally, the proposed definitions align with the RC West outage coordination framework, which distinguishes planned, urgent, and forced outages and establishes related study and coordination timelines. This proposal uses those operational classifications as a starting point, while separately defining the substitution and revised RAAIM treatment associated with each outage type.[15]

Planned outages

Today, planned (also known as maintenance) generation outages are defined as a period of time during which a generation operator limits the capability of a plant or takes it out of service for the purposes of carrying out routine planned maintenance, or for the purposes of new construction work.

Consistent with the RC West outage coordination framework, the ISO proposes to define a planned outage as an outage for maintenance or construction work that can reasonably be scheduled with sufficient advance notice to meet the applicable short-range study and coordination requirements. Planned outages would be submitted in accordance with the applicable RC West and CAISO outage coordination procedures.[16]

This proposal retains off-peak opportunity outages as a subset of planned outages that provides a route for RA resources to take a planned outage without needing to provide replacement capacity. Off-peak opportunity outages help preserve flexibility for maintenance of RA resources during CAISO-determined low-risk hours since these

[15] See RC West Reliability Coordinator Procedure RC0630, *Outage Coordination Process*, and applicable CAISO Outage Management BPM provisions for outage classifications, priorities, study windows, and submission requirements.

[16] CAISO Operating Procedure 3220 currently expects scheduling coordinators to submit generation outage requests five business days before the RC West short-range submission deadline. RC West Procedure RC0630 generally establishes that deadline at 0001 on the Monday preceding the week being studied, subject to applicable holiday adjustments.

outages do not require substitute capacity and can be submitted with enough advance notice to be studied. Today, the low-risk hours include weekdays from hour ending 23 to hour ending 06 and all day on Saturdays, Sundays, and holidays.

Urgent outages

This proposal introduces a new type of outage called an urgent outage. An urgent outage would apply when facility or equipment remains operable but carries an increased risk of a forced outage. The facility or equipment would remain in service until personnel, equipment, or system conditions allow the outage to occur.

A scheduling coordinator should submit an urgent outage as soon as it becomes aware of the condition. An urgent outage may be submitted before or after the applicable planned-outage study-window deadline; timing alone would not determine the outage classification. The classification would depend on the operating condition of the facility and the need for the outage to occur in the near term. Urgent outages would be prioritized similar to forced outages for conflict resolution purposes.

An urgent outage should have a justification of its urgency documented in the balancing authority/transmission operator comments section of the outage submission. Under the ISO's default qualifying capacity methodology, urgent outages would count towards a unit's UCAP-based QC value just as forced outages do. A plant on an urgent outage would also be subject to revised RAAIM penalties, as urgent outages would be considered equivalent to forced outages for availability purposes. Thus, urgent outages would not require replacement substitute capacity.

This proposal also introduces the elimination of short-notice opportunity outages. A short-notice opportunity outage is a forced outage on an RA resource that can be accommodated on short notice without providing substitute capacity. Short-notice opportunity outages must be requested no more than seven days prior to the outage start date and cannot last for more than five days. Today, short-notice opportunity outages requested three days or less in advance of the start of the outage must be necessary to undertake repairs that are needed to maintain system or resource reliability and that require immediate attention to prevent equipment damage or failure. This timeline is duplicative of the urgent outage definition proposed in this section. Finally, short-notice opportunity outages are not subject to the same RAAIM provisions that other forced outages are.

Short-notice opportunity outages can undermine the purpose of the resource adequacy program because they provide relief from penalties that are designed to encourage generation owners to plan ahead and undergo planned outages to perform the

maintenance required to minimize forced outages. Generators should utilize planned maintenance within the outage study windows to ensure availability in the RA month. In addition to being redundant with the urgent outage definition, short-notice opportunity outages have the added complication of causing challenges with the outage study window timelines.

Forced outages

This proposal includes a new forced outage definition to clarify and distinguish the timelines for forced outages, urgent outages, and planned outages.

Today, a forced outage is defined as outage for which sufficient notice cannot be given to allow the outage to be factored into the day-ahead market or real-time market bidding processes. Today, any request for a maintenance outage that is submitted seven days or less prior to the outage start date is classified as a forced outage.

The ISO proposes a new forced outage definition to reflect that a plant needs to be removed from service in real time with very limited or no notice. Forced outages should be submitted as soon as the SC becomes aware that the unit is or will about to be offline. Today, the ISO sets requirements for notifying the control center in advance of a forced outage beginning, depending on how much notice the SC can give the control center. In a future with urgent *and* forced outages, the ISO would need to establish new outage notification and coordination guidelines to distinguish between forced and urgent outages consistent with the needs of CAISO BA operators.

6 Governing Body Role

This straw proposal includes proposed amendments to three categories of tariff rules: revised RAAIM; system RA must-offer and bidding requirements; and outage reporting and coordination. The decisional classifications described below are preliminary and will be confirmed as the specific tariff amendments are developed under the Charter for WEIM and EDAM governance.

Revised RAAIM provisions would apply only to CAISO balancing authority area RA resources and settlements. Because these provisions would not establish obligations for WEIM or EDAM entities or market participants in those capacities, ISO staff preliminarily expects the RAAIM amendments to fall outside of the WEM Governing Body's primary authority. The final decisional role will be confirmed when the specific tariff amendments are developed.

The proposal also includes specific changes to system RA must offer and bidding requirements. Because these requirements would apply only to CAISO balancing authority area RA resources, ISO staff preliminarily expects them to fall outside the WEM Governing Body's primary authority. To the extent the final tariff amendments establish or modify bidding requirements that apply in the day-ahead or real-time market, ISO staff preliminarily expects the WEM Governing Body to have an advisory role. The final classification will be confirmed when the specific tariff amendments are developed.

Outage-related amendments may require different decisional classifications depending on their scope. To the extent the final tariff amendments change outage reporting or coordination rules applicable to WEIM or EDAM balancing authority areas, entities, or market participants, those elements would fall within the WEM classification, while substitute-capacity and revised RAAIM treatment would remain outside primary authority.

These preliminary classifications reflect the current proposal and may be refined as tariff language is developed. Stakeholders are encouraged to comment on the proposed classifications.

7 Next Steps

Please submit comments on this Revised Straw Proposal and the July 22, 2026 workshop by August 5, 2026 using the comment template on the ISO stakeholder website.