



California ISO

RA Enhancements 4th Revised Straw Proposal – Stakeholder Call

March 24, 2020

Agenda

Time	Topic	Presenter
10-10:10am	Welcome and Introduction	Isabella Nicosia
10:10-11:30am	Portfolio Analysis	Karl Meeusen
11:30am-12pm	Planned Outage Process	Karl Meeusen
12-1pm	LUNCH	
1-1:45pm	Planned Outage Process (Continued)	Karl Meeusen
1:45-3pm	RA Import Provisions	Chris Devon
3-3:50pm	CPM Modifications	Gabe Murtaugh
3:50-4pm	Next Steps	Isabella Nicosia
4pm	Conclude	

SYSTEM RESOURCE ADEQUACY

The CAISO proposes moving from an NQC based RA accounting to a UCAP accounting

- Resource deliverability under stressed system conditions remains an essential part of the RA program
 - CAISO will continue performing NQC calculations as it does today, including deliverability studies
- CAISO proposes to establish UCAP values for use in system, local, and flexible RA showings/assessments
 - NQC discounted for units' forced outage rates
- Resource's RA value would be measured by its UCAP value
 - Individual LSE sufficiency tests would be measured based on meeting UCAP requirements each month
- Additional details will be provided in the next proposal

SYSTEM RA SHOWINGS AND SUFFICIENCY TESTING

Stakeholder feedback

- Most stakeholders support the CAISO developing a portfolio assessment for only RA resources
- Stakeholders were generally not supportive of the CAISO's proposed deterministic model
 - Favor utilizing stochastic modeling to develop a more robust assessment under a variety of different conditions
- The CAISO has determined that it is possible to utilize one of its existing production simulation platforms to conduct the portfolio analysis

Stakeholder feedback

- Stakeholders continue to request additional information about establishing up-front rules and/or guidance to minimize the risk of backstop and backstop cost allocations
- The CAISO is doing two things
 - Coordinating with the CPUC and will work with other LRAs to set up-front requirements for their jurisdictional LSEs.
 - Working to provide some preliminary results to help further inform market participants.

CAISO will conduct two sufficiency tests for system capacity

1. Individual deficiency test
2. Portfolio deficiency test

Designed to ensure:

- Adequate UCAP to maintain reliability for peak load, and
- A portfolio of resources that work together to provide reliable operations during all hours when combined and considered together.

CAISO will conduct an assessment of LSE RA showings and resource supply plans

- Ensure there is sufficient UCAP shown to meet identified reliability needs
- LSEs and resources need only submit and show UCAP
 - Once shown, CAISO will consider each resource UCAP value to conduct UCAP assessment
- Partial RA resources will receive a proportional UCAP value reflecting proportion shown for RA purposes
 - For example: A 100 MW resource with a 10 percent forced outage rate that has been shown for 50 MW of NQC will be assessed as being shown for 45 MW of UCAP RA

LSEs cannot simply procure only the unforced capacity from a resource

- Cannot buy 90 MW of NQC and UCAP from a 100 MW resource with a 10 percent forced outage rate
 - UCAP accounting method relies on the probability that some resources will be out at various times to eliminate substitution requirements
 - In CAISO's review of best practices in other ISO's such practices are not permitted

LSEs that fail to meet the UCAP requirement will be notified of the deficiency, provided an opportunity to cure, and may be subject to backstop cost allocation or UCAP deficiency charges if the deficiency is not cured

CAISO will conduct a portfolio deficiency test of only RA resources under various conditions

- Objective of a portfolio analysis is to assess if CAISO can serve load with shown RA fleet
 - CAISO will test forecasted gross, net-load peaks, and all other hours
 - CAISO will also test the ability to maintain adequate reserves and load following
- Need for this assessment is similar in concept to collective deficiency test CAISO conducts for local RA
 - CAISO must assess how the shown RA fleet works collectively to meet system needs
- Assessments conducted only on monthly RA showings
 - Only showing that provides 100 percent of the system, local, and flexible RA capacity requirements

CAISO will leverage an existing stochastic production simulation model to develop the portfolio analysis

- CAISO considered a variety of deterministic, stochastic, and hybrid modelling approaches
- A stochastic approach allows the CAISO to assess the widest array of load, wind, and solar profiles as well as various outage profiles for other resource types
- Utilizing an existing model provides at least two benefits
 - Helps the CAISO expedite testing and implementation
 - CAISO can utilize an accepted and vetted model that has been relied on for other CAISO published studies

The CAISO proposes to use the production simulation tool that it currently uses for the Summer Loads and Resources Assessment (Summer Assessment) study

- CAISO has used its production simulation tool to conduct this study since 2016
 - Model updated annually to create a robust tool for CAISO to convey potential risks for the upcoming summer needs.

The 2019 Summer Loads and Resources Assessment (“Assessment”) provides an assessment of the upcoming summer supply and demand outlook for the California Independent System Operator (CAISO) balancing authority area. The CAISO works with state agencies, generation and transmission owners, load serving entities, and other balancing authorities to formulate the summer forecast and identify any issues regarding upcoming operating conditions. The Assessment considers the supply and demand conditions across the entire CAISO balancing authority area (representing about 80 percent of California).

Summer Assessment's core modelling functions are identical to what the needs for the portfolio analysis

- The model is a detailed representation of loads and resources characteristics across the CAISO
- It can model resources across the WECC, allowing imports into the CAISO
- Commits resources based on load, unit specific forced outage rates, ramp rates, start times, and minimum down times
- Model looks to meet CAISO needs, including
 - Operating reserves
 - Regulation
 - Load following (analysis is run on hourly blocks)
- The model can run both stochastically and deterministically
 - Allows CAISO to develop robust statistical results while still testing various sensitivities

Model will differ from that of the Summer Assessment to align with the objective of a RA portfolio assessment

- The primary difference is only RA resources will be scheduled by the model
 - The Summer Assessment assumes that all resources are available to the CAISO to meet peak summer loads
- Additional energy provided in DA or RT markets represent energy substitutes in those markets
 - Not needed in portfolio assessment to determine if RA fleet is adequate
- CAISO will coordinate with the CPUC and CEC to develop a common set of hourly load profiles
 - Ensures CAISO and the CPUC are using consistent distribution of load profiles for their respective modeling purposes

Deficiencies in the portfolio assessment may result in backstop procurement

- If the portfolio is adequate, the CAISO will take no additional actions
- If the RA portfolio fails the portfolio assessment, then
 - CAISO will declare a collective deficiency
 - Provide a cure period
 - if the deficiency remains, conduct backstop procurement using the CPM competitive solicitation process to find the least cost solution to resolve any uncured deficiency.

A stochastic monthly assessment of the RA fleet creates unique challenges that do not exist under the simple accounting tools currently used for RA

- The two primary challenges are
 1. Establishing the defined reliability criteria that triggers the need for backstop procurement
 2. Establishing the quantity of capacity needed to cure the portfolio deficiency
- As part of this stakeholder initiative, the CAISO will propose solutions to both of these challenges
 - CAISO only provides additional details regarding each challenge at this time
 - Specific solutions will be proposed in subsequent proposals within this stakeholder process

CAISO proposes an operations based standard for determining if a capacity shortfall exists

- Agreement needed on specific criteria and triggering thresholds
- What constitutes an actionable capacity shortfall X probability of utilizing any ancillary services
 - X probability of dropping below 6 percent operating reserves
 - Dropping below three percent reserves – when the CAISO must initiate firm load shedding

Model can only determine if there is a capacity shortage

- The challenge is determining the best unit(s) to CPM
- If backstop procurement is warranted, there is insufficient time to run multiple simulations to determine the best unit(s) to procure
- CAISO will develop and propose a methodology for determining the best unit(s) to procure
 - Must establish a means for determining the minimum amount of additional capacity needed either through a capacity cure period or through CAISO backstop procurement

It is not feasible to adequately develop individual LSE load profiles and determine how a specific LSE's RA portfolio contributed to the collective deficiency

- The CAISO considered additional assessments of individual RA showings
- The CAISO supports, and is committed to, working with the LRAs to establish up-front procurement requirements
 - Similar to the CPUC's MCC buckets
 - Helps ensure collective procurement of a resource portfolio with the best possibility of passing the portfolio assessment

PLANNED OUTAGE PROCESS ENHANCEMENTS

Stakeholder feedback

- Stakeholders express significant concerns about
 - The burden of providing replacement capacity
 - Potential incentives created for withholding capacity from the bilateral capacity markets
- CAISO will no longer pursue either of the options identified in the third revised straw proposal
- CAISO will explore two options suggested by stakeholders
 - Both options maintain opportunities for short duration and off-peak opportunity outages

Stakeholder feedback

- Stakeholders also continue to comment on the CAISO's current policy position on “planned-to-forced” outages
 - *i.e.* That it can violate the tariff for a generator or transmission operator to submit a forced outage after the CAISO has rejected the same outage when submitted as a maintenance outage
- As a result of stakeholder feedback and the appeals committee's decision on this appeal, the CAISO will start an expedited tariff clarification process
 - CAISO will review whatever tariff amendments are made in that expedited initiative continue to review this policy as part of this stakeholder process
 - Given that the CAISO is not advancing the UCAP at this time, it will defer further details to the next straw proposal

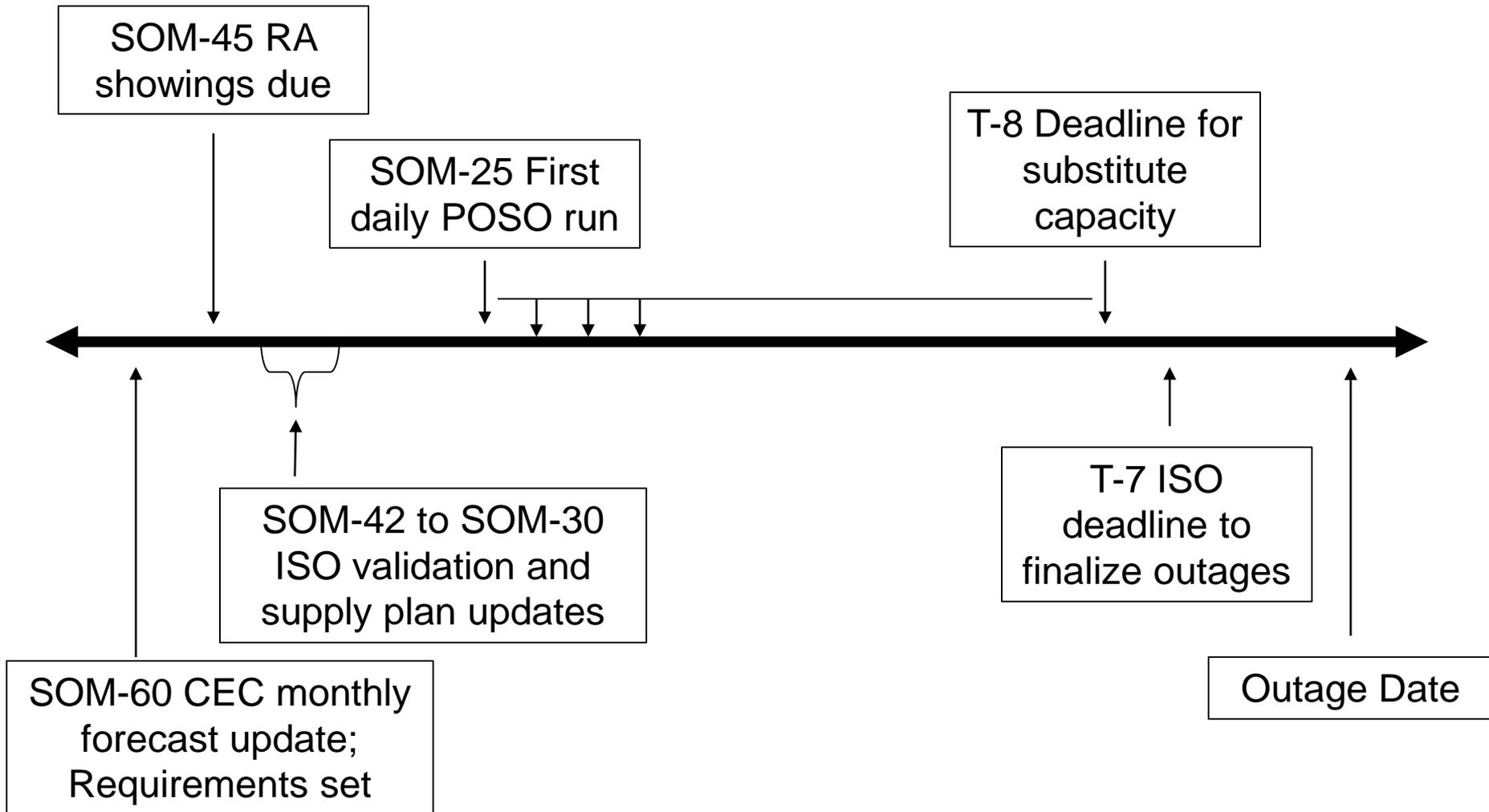
CAISO currently uses POSO for planned outages

- RA resources currently enter planned outages into the CAISO outage system
- CIRA runs a daily POSO report with determination for a planned outage need for substitution
- Resources may submit outages between 25 and 8 days before for POSO consideration
- POSO compares the total amount of operational RA Capacity to the total system requirement
 - Requirements are established by CEC forecasts and are updated 60 days prior to the start of the month
 - Considering outages, if less capacity is available than requirements, CAISO assigns substitution obligations

Planned outage process modifications

- Stakeholders requested changes to the current planned outage system
- Most stakeholders were interested in redesigning the current framework around the following principles:
 - Encourage resource owners to enter outages early
 - Generally not cancel approved planned outages
 - Identify specific replacement requirements for a resource
 - Allow owners to self-select replacement capacity
 - Include CAISO system for procuring replacement capacity

Current planned outage substitution obligation timeline



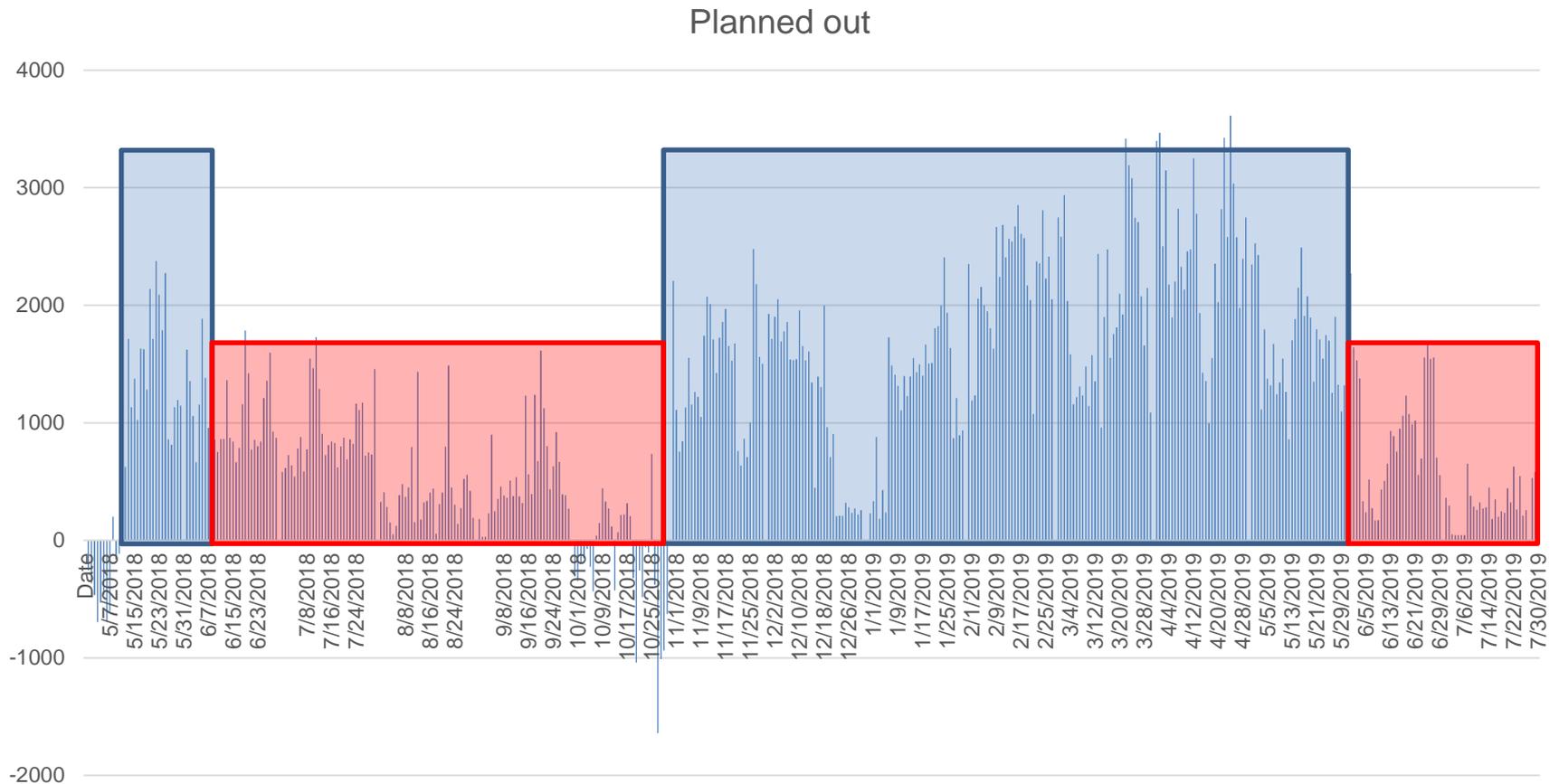
The CAISO is considering two options to facilitate outage coordination and provide the greater certainty regarding the timing of planned outages

- Option 1 (CalCCA): Establish a planned outage reserve margin for off-peak months
- Option 2 (SDG&E): Establish a replacement marketplace conducted by the CAISO
- Under both options, the CAISO will
 - Eliminate RAAIM
 - Retain complete discretion to grant or deny all off-peak and/or short-term opportunity outages

Option 1: Include planned outages procurement requirements

- CAISO would establish two new elements of the RA program
 1. CAISO would no longer allow for anything other than short-term and off-peak opportunity outages between June 1 and October 31
 - Most planned outages occur in off-peak months
 2. Establish planned outage reserve margin for off-peak months
 - Provides the greatest opportunity to procure low cost capacity

Option 1: Include planned outages procurement requirements



Under Option 1, the UCAP capacity requirement would increase during the non-summer months

- Creates a well-defined planned outage reserve margin
- No substitute capacity is allowed or required for an outage
- CAISO's proposed capacity outage calendar would track all planned outages for each day until RA showings are made for a given month
 - Once RA showings are made, the CAISO will track how much additional capacity can take a planned outage under the planned outage reserve margin
- CAISO will review outage requests when submitted

Outage requests submitted prior to RA showings approved or denied based on reliability assessment

- CAISO will not wait for RA showings to make this determination
- CAISO will no longer issue POSO notifications at T-22 days prior to the month for outages requested by T-25

When RA showings are made, the CAISO will subtract all planned outages on RA showings from the planned outage reserve margin for each day in the RA month

- If approved planned outages for RA resources exceeds the planned outage reserve margin
 - Then CAISO will not allow additional planned outages that day
- Approved planned outages are less than the planned outage reserve margin
 - Then CAISO will allow for additional planned outages on a given day for up to the remaining difference
 - Once planned outage requests reach the remaining planned outage reserve margin, CAISO will automatically reject all additional planned outage requests
- All planned outages are subject to reliability assessment and may be denied for potential adverse reliability impacts
 - Even if additional planned outage reserve margin remains

Examples of how CAISO will assess planned outages with a planned outage reserve margin

Timing of submission	Outage Calendar requests	Remaining planned outage reserve margin	Approved or rejected
Request made January 1 for outage on June 1	0 MW	NA	Rejected
60 days prior to month	2,500 MW	NA	Based on reliability assessment
60 days prior to month	3,500 MW	NA	Based on reliability assessment
20 days prior to outage date	2,000 MW	1,000	Based on reliability assessment
20 days prior to outage date	2,800 MW	200	Rejected
1 day prior to requested outage	3,000 MW	0	At the discretion of the CAISO

Pros and cons of Option 1

- Any outage approved by the CAISO will not impact the resource's UCAP calculation
 - All rejected planned outages, if taken, may count against the resource in its UCAP calculation
 - Regardless of the timing of the outage request or the ultimate RA status of a resource
- Eliminates all planned outage substitution
 - Removing any incentive for LSEs to withhold capacity from the market to provide substitute capacity
- Would appear to require higher overall procurement since substitution capacity is procured up front
 - Focuses on off-peak months to minimize the potential for increased capacity prices to LSEs

Option 2: CAISO procures all planned outage substitution capacity

- CAISO would develop a new procurement tool designed to procure planned outage substitution capacity
- Procurement would take place for daily substitute capacity obligations
- Procurement option and the tool would be separate from its existing CPM authority
- Resource participation to provide daily substitute capacity via a competitive solicitation process would be completely voluntary

Option 2: CAISO procures all planned outage substitution capacity

- There are numerous complex policy issues that must be resolved
- CAISO does not attempt to address all of these issues at this time
 - Instead, will attempt to identify core policy questions and will work with stakeholders to address them should this be the preferred option

Option 2: CAISO procures all planned outage substitution capacity

- CAISO will continue allowing resources to submit planned outages requests at any time prior to eight days before the start of the outage
- Starting 44 days prior to the RA month, the CAISO will run a daily substitute capacity procurement market
- All resources that submitted a planned outage request prior to RA showing submission that are included on an RA showing will automatically be included in this market as substitute capacity demand

Option 2: CAISO procures all planned outage substitution capacity

- Resources may submit a price, in \$/kW-day, above which they are not willing to procure substitute capacity
 - All planned outage capacity requests with no price will be price takers, meaning they are willing to pay whatever price for substitute capacity
- CAISO's proposal will not extend to forced outages
 - SDG&E proposed CAISO develop this tool for both planned and forced outages

CAISO must determine the timeline for submitting bids and if/when bids can be revised

- All non-RA capacity would be submitted as a daily bid into the CAISO to provide substitute capacity
- Under this planned outage option, the CAISO would be facilitating daily transactions for two counter parties
 - Not monthly, 30, or 60 days transactions for system or local reliability needs
- There may be reasons for altering capacity bids on a daily basis in response to previous days' awards.
- CAISO requests stakeholder feedback on
 - When bids should be submitted and
 - How and when they could be changed
 - What are the implications different bidding options

Another key policy element that requires resolution for this option is bid price caps and monthly award caps

- CAISO monthly soft offer cap is \$6.31/kW-month in the CSP or a total of \$75.68/kW-year
- CAISO could pro-rate this amount to a daily value of \$0.21/kW-day to establish the daily capacity price
- It is not clear to the CAISO that this logic should hold for a daily product as opposed to a monthly product

Should CAISO impose a monthly cap on total revenues a resource can earn?

- If the resource bids and clears at \$1 for seven days of planned outages, should there be a cap comparable to the \$6.31/kW-month CPM soft offer cap?
- Further, if a monthly cap is imposed and reached, should the resource be
 - Required to bid into the daily market at \$0 for the remainder of a 30 days rolling window
 - Simply treated as RA capacity
 - Added to the planned outage reserve margin, allowing other resources to take planned outages

Each day is assessed independently of other days

- CAISO will compare supply, demand, and system reliability needs to determine approve or deny requests
- Any approved planned outage substitution will settle at the price for that day
 - The outage will be incorporated into subsequent assessments.
 - For example, a resource is approved on day 5, it will pay the price of substitute capacity on day 5
- Creates incentive for resources to submit outages early
 - Potentially get access to lower cost substitution when there is more capacity available
- The CAISO has considered multiday assessments
 - Adds a level of complexity such that the CAISO believes the costs of implementing such a solution would exceed the benefit

The CAISO may deny the planned outage request under this option for one of two reasons

1. The resource requesting the outage has not submitted a demand bid that clears
 - The resource requesting a planned outage puts in a demand bid for \$0.20/kW-day and the lowest supply bid is \$0.25/kW-day
2. Adequate substitute capacity cannot be found, regardless of price
 - There are locational concerns such that the CAISO cannot identify a resource that would provide adequate capacity to meet its reliability needs

CAISO must resolve how to manage outages that only clear for part of the requested outage under this option

- How should the CAISO handle the scenario when a resource submits a week long planned outage request and the CAISO is only able to find substitute capacity for four of the seven days?
 - The whole outage should be denied
 - It should be approved with UCAP penalties
 - Some other means to resolve this scenario
- Provides a significant incentive to submit long duration planned outages as soon as possible
 - Unlikely to resolve the challenge completely
- The CAISO, therefore, seeks stakeholder input on how such a scenario should be handled

This option does not resolve the issue of LSEs withholding capacity to self-insure against replacement

- The resource SC will be charged directly for the substitute capacity
- Provides an incentive for that SC to have additional capacity on hand to minimize the price and maximize the probability that capacity is available when requesting planned outages
 - For example, it is possible that an LSE could submit both the demand and supply bids on days when they are requesting planned outages
- Allows the LSE to get low cost substitute capacity and avoid true market price risk

Is there still a need for a planned outage bulletin board?

- In previous proposals, the CAISO proposed to develop a bulletin board to facilitate planned outage substitution
- Given the two options it is not clear that such a bulletin board is needed
 - Under option 1, planned outages replacement would no longer be required and
 - Under Option 2, the CAISO would facilitate substitute capacity procurement
- CAISO seeks stakeholder feedback regarding whether or not this element is necessary and, if so, why given the effort to develop and maintain

RA IMPORT PROVISIONS

RA import background

- Import RA resources were used to meet an average of around 3,600 MW (or around 7 percent) of system RA requirements during the peak summer hours of 2017
- Summer of 2018, this increased to an average of around 4,000 MW (or around 8 percent) of system resource adequacy requirements
- Import RA quantities are significant and affect the RA program and its ability to ensure reliability
- Current general RA provisions and regulations require internal RA to be resource specific yet allow for non-specified import RA contracts to qualify as RA resources
 - This difference has consequences and allows some reliability risk

RA import resources are not required to be resource specific or to specify they represent supply from a specific balancing area

- RA import resources are only required to be shown on RA supply plans with associated maximum import capability (MIC) allocations
- Non-Resource Specific RA imports can be bid at any price below the offer cap and do not have any further obligation to bid into real-time market if not scheduled in day-ahead market processes
- Because of tightening supply in the West, CAISO is increasingly concerned about the potential Non-Resource Specific RA imports are not supported by real, physical capacity and are not secured at the time of RA showings

RA Import rules issues and concerns

Two main issues for Import RA rules:

1. Double counting

- CAISO should be able to ensure resources shown as import RA are not also relied upon by native BA to serve native load or otherwise be sold to a third party or relied upon to meet capacity needs of others in addition to CAISO load – not possible to be sure today

2. Speculative supply

- Speculative RA import supply occurs when RA imports shown on RA supply plans have no physical resource backing the showing or no firm contractual delivery obligation secured at time of the showing
- RA import provisions should foreclose (or at a minimum, discourage) speculative RA import supply

Continued reliance on non-specified import RA contracts adds reliability risk

- Accepting this practice allows possibility that non-specified import RA contracts do not represent real physical supply at time of RA showings
 - Results in CAISO BA relying on marketers to source energy after making commitments
- Exposes system reliability to availability of residual supply in short-term bilateral markets across the west
 - CAISO and other areas are most likely to call for and rely on potentially speculative RA supply when it is least likely to be available in the short-term bilateral markets
 - Current rules provide no assurance that all qualifying supply represents real physical resources at the time of showings
- Supply in the west is tightening and current provisions run counter to the tenets of the RA program

Import RA requirements must be carefully considered and coordinated

1. Clear requirements, with supporting information and documentation for imports to qualify at time of RA showings
2. Verification of availability/information in operational timeframe
3. Requirements for participation in CAISO markets
 - All three components interact and must work together

Resource Adequacy program must ensure the forward commitment of real physical resources

- CAISO tariff and CPUC RA program requirements should align and require forward commitment of real, physical resources to meet capacity requirements
- Specification of supply source(s) at time of RA showing is vital and necessary
- Forward commitment of physical external RA supply mitigates reliability risks and creates a level playing field:
 - Internal and external RA supply should be held to similar standards
 - Ensures external BAAs truly have excess supply
 - Requires external BAs and suppliers situate resource commitments and fuel to provide real supply to CAISO

Firm energy contracts alone should not qualify as RA

- Forward energy contracts are beneficial, but do are not sufficient for ensuring reliability alone
 - For RA purposes also need assurance that supplier is providing a real physical resource with surplus physical capacity
- Self scheduling requirement for energy contracts does not address reliance on residual short-term bilateral market supply
- Inclusion of energy contracting requirements can help address high energy bidding concerns but need to be combined with forward source specification requirement
 - Energy contracting requirements may help address economic withholding concerns, but they do not address potential physical withholding from the CAISO or potential for double counting unless combined with source specification

Non-specified energy contracts that have no requirements to specify the source at the time of showings allow potential for speculative supply and double counting to continue

- LD energy contracts have been disallowed by the CPUC unless they are imports
 - LD contracts do not qualify because physical source is not specified in advance, therefore they allow potential double-counting of RA resources
 - The same concern over double counting can occur with non-specified import RA including firm energy contracts , but the double counting of the same source(s) being relied upon by other BA or LSE

Import RA supply must demonstrate that real physical capacity is committed in support of an RA contract

- Creates more consistent treatment between external and internal resources
 - CAISO believes this is the best option to address speculative supply and double counting concerns
- Ensures that identifiable, real, physical capacity will be available to the CAISO system when needed
- Source specification should be required at time of RA showings
 - Does not have to be a single unit
 - A system or aggregation of generating units can be designated as a specified source at RA showing (Resource Specific System Resource, non-dynamic)
 - Changes can be made to existing tariff definitions

CAISO tariff and CPUC regulations should be amended for import RA resource qualification

1. Require all import RA resources consist of capacity from identified physical generation
 - Can be individual resources or aggregations of generating units
2. Ensure that designated import RA supply is surplus to the source BA's needs and is not committed to any other external BA or entity
 - Attestation and ability for verification needs to be required
 - Suppliers should no longer be allowed to rely on available supply in the short-term bilateral market
3. Require delivery to CAISO via firm transmission
 - Additional discussion of this issue should occur and consideration of new tagging requirements may need to be considered to ensure most reliable delivery of import RA

CAISO proposes RA import rule changes to support these goals

- Require attestations that all import resource adequacy supply included on resource adequacy supply plans is surplus, has not been committed to others, and will not be otherwise sold or relied upon to meet other area's needs after monthly showings
- Modify CAISO tariff-defined import market participation models to extend Must Offer Obligations to the Real-Time Market for all MWs included on resource adequacy showings
- Require verification to ensure RA import supply remains available to the CAISO markets through the operational timeframe

Attestation and contract submission

- CAISO proposes to require an attestation and supporting documentation in the form of actual contracts to verify that RA import supply represent real, physical supply to be submitted at the time of month ahead RA showings
- CAISO proposes to require that LSEs with import RA on supply plans also submit their contracts with external supply, listing the actual physical source(s) of the capacity
- Required attestations should indicate:
 1. The physical source(s) of capacity being included on RA showings with attestation that it has been secured at the time of RA showings
 2. Is in excess of the supplier's existing commitments, i.e., has not been sold to others, and
 3. It will not be used to meet another area's needs after the time of showings

Requirements for import RA supply participation in CAISO markets

- CAISO has been considering the impact, benefits, and consequences of requirements for market participation requirements:
 - Must-offer obligation in the CAISO Real-Time market for the full shown RA contract quantity regardless of Day-Ahead awards
- CAISO will extend must offer obligations to the Real-Time Market for all MWs included on resource adequacy showings consistent with existing rules for internal resources and pseudo ties
 - Ensures import RA supply is required to remain available to the CAISO balancing authority area through the real-time and would continue to be subject to any physical constraints on physical resources that can be modeled in the CAISO's systems

Firm transmission delivery requirements help to ensure more comparable treatment with internal supply

- Requirements for suppliers to deliver energy from designated physical resources over firm transmission rights to specified CAISO intertie points
- Requirements for firm transmission along entire delivery path minimizes delivery risk
- Transmission of external supply can be cut for reliability reasons and is an inherent risk involved with import RA
 - Requirements for firm transmission delivery coupled with forward demonstration of physical supply will drive more comparable treatment between internal and external RA resources

Availability of firm rights for RA imports should not be conflated with quality of firm transmission service and its degree of dependability

- Some stakeholders have expressed concerns that imposing firm transmission requirements might create competitive advantages for holders of firm transmission on major paths – particularly in the PNW
 - CAISO understands that a firm transmission requirement might restrict the number of eligible parties that can contract for such services based on whom has invested in or otherwise secured such service to date
- This concern has nothing to do with whether resource adequacy imports backed by firm transmission service have the same priority as native load – only firm transmission service can provide this comparability

Although there currently may be a limited number of long-term firm transmission rights holders on certain paths or areas, rights may be traded or developed

- The firm transmission concept has not been a requirement for RA imports in the past and therefore parties have not made investments or purchase of firm rights
 - Prior practices should not be a barrier to changing the status quo
- There is firm transmission in the West to support resource adequacy imports that can be secured
 - Entities can request and pay for long-term firm transmission service and build new transmission
 - Firm transmission procured through such secondary markets retains the firmness of the service traded

Although firm transmission requirements might affect the cost of obtaining RA imports, it may be necessary to ensure California is served by dependable imports

- Strong precedence exists for firm transmission requirements for RA imports in other regions
 - Other ISO/RTOs have required that resource adequacy imports be supported like native load in the host balancing authority areas
- Sends signal for parties to procure that service, either from transmission providers or secondary markets
 - If firm transmission is not available, also signals there is a need for enhancements on existing external transmission systems
- External system enhancements may be necessary if California intends to count RA imports to reliably meet its requirements

Compliance with these commitments should be bolstered by monitoring real-time performance of designated units

- Availability of committed capacity should be demonstrated
 - Even when it does not receive a CAISO schedule for the full quantity, or when delivery on the schedule does not occur for other reasons outside of the seller's control (e.g., transmission outages)
- Ensure committed resource capability remains available to the CAISO through the operational timeframe
 - Can be accomplished via telemetry or other acceptable verification/sharing of data
- CAISO evaluating the modifications needed to support verification for various RA import participation models

BACKSTOP CAPACITY PROCUREMENT PROVISIONS

Backstop authority, via CPM, exists for a number of procurement scenarios

Existing CAISO CPM authority

1. System annual/monthly deficiency
2. Local annual/monthly deficiency
3. Local collective deficiency
4. Cumulative flexible annual/monthly deficiency
5. Significant event
6. Exceptional dispatch

With changes to the resource adequacy additional CPM authority is necessary

- **Portfolio deficiency CPM**
 - Procure deficiencies identified in the ISO portfolio analysis, when procured resources cannot meet system energy and reliability needs
 - Costs will be allocated on a load ratio share basis
- **Local availability limited deficiency test (extension of collective)**
 - If Load shapes in local capacity technical studies reveal deficiencies
- **System UCAP test**
 - System UCAP deficiencies would trigger CPM procurement, with cost allocation to deficient LSEs
 - Similar to CPM today, tests are performed on annual and monthly resource adequacy showings

Example of CPM designations for UCAP deficiencies

LSE	Req.	Shown	Shortage	Cost Allocation
1	100 MW	125 MW	-	
2	100 MW	80 MW	20 MW	20/45
3	100 MW	75 MW	25 MW	25/45
TOTAL	300 MW	280 MW	45 MW	

- UCAP CPM designations would work similar to existing “collective deficiency” designations
 - Cost assessed and allocated by deficiency share
 - A period to cure deficiencies will be offered to deficient LSEs
 - ISO will procure 20 MW with a CPM designation

Expand CPM authority to procure for deficiencies identified in the system portfolio assessment

- It is essential that CAISO has resources available to reliably operate the grid
 - May not align with UCAP analysis
- CAISO may make backstop designations to ensure that aggregate energy needs for the system are met
 - This analysis will not focus only on peak needs
- As discussion continues on the portfolio analysis, the backstop mechanism will continue to develop as well
 - ISO and CPUC are working to update MCC bucket for procurement to help align the RA program with portfolio needs
- CAISO will continue to publish study information behind CPM designations made as a result of this authority

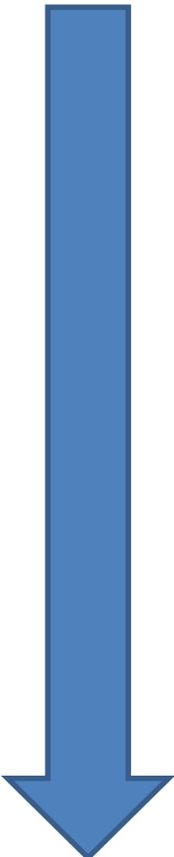
The ISO may procure CPM capacity for either UCAP or NQC shortfalls, but the CSP will remain unchanged

- Authority will still be available to procure for NQC deficiencies, in addition to UCAP
 - These may occur for curing local deficiencies
- Bids are available for NQC capacity in the competitive solicitation process for CPM designations
 - The bidding rules and the soft offer cap will remain unchanged
- Least cost options will still be awarded designations
 - The conversion between UCAP and NQC will be applied
- CPM bidding rules and requirements will be retained

	NQC	UCAP	UCAP:NQC	Bid (\$/kW-month NQC)	Effective UCAP Bid (\$/kW-month UCAP)
Resource 1	200	100	0.5	\$5	\$10
Resource 2	150	125	0.8	\$6	\$7.20



System CPM costs will be allocated first for shortfalls in portfolio procurement then UCAP and finally NQC

- 
- Procurement necessary to backstop for UCAP deficiencies, allocated to entities with deficiencies
 - Credit will be given for attributes of resources procured, allocated on same basis
 - Procurement for “traditional” system NQC shortages, with same cost allocation
 - Local deficiencies will be cured and allocated to deficient entities (similar to allocation today)
 - Including Local “load shape” deficiencies are allocated locally
 - Any additional procurement necessary as a result of the portfolio analysis will be made and allocated on a load ratio share basis

This proposal includes the removal of the RAAIM tool, which is currently applied to RMR resources

- Removal of the RAAIM tool, will remove the incentive mechanism currently in place for RMR resources
 - RAAIM currently has a 96.5% monthly availability target, with a +/-2% dead band for determining incentive or penalty payments
- May propose that performance mechanism is negotiated with each RMR contract struck
 - Remove incentive payments for performance
 - Use monthly or seasonal targets for availability
 - Based on historic performance of resources
 - Use load as counter-party for penalties collected for non-performance
 - Set the penalty price at the RMR fixed payment

UCAP deficiency tool will incentivize LSEs to procure UCAP at least up to and beyond requirements

- Backstop authority is used to ensure that enough UCAP is procured to meet system needs
- The UCAP deficiency tool will incentivize LSEs to show as much capacity as possible, to receive payments
 - Dis-incentivizes LSEs from ‘free riding’ on neighbors
- Tool will prevent leaning between LSEs, by charging deficient LSEs the soft offer cap for the CPM
- Tool helps reduce backstop procurement
- Is not duplicative of any CPM procurement costs
- Self funded and settled in the month-ahead and year-ahead time frame with RA showings

In addition to the expanded CPM authority a mechanism to prevent LSE leaning is proposed

- Uniform mechanism applied to all load serving entities across all local regulatory authorities
- LSEs that show below requirements would be charged a penalty price
 - The price will be set at the soft offer cap for CPM
- Penalties distributed to LSEs that show above requirements
 - Rates will not exceed the soft offer cap
- The capacity incentive mechanism would work in tandem with the system UCAP test

Examples of UCAP deficiency tool

- System deficiency of 20 MW, which is cured through CPM, and LSE 1 and 2 leaning on LSE 3

LSE	Req.	Shown	Shortage	Backstop	Cost Allocation
1	100 MW	110 MW	-	-	4 MW * \$6.31
2	100 MW	115 MW	-	-	6 MW * \$6.31
3	100 MW	90 MW	10 MW	-	-10 MW * \$6.31

NEXT STEPS

Next steps

- Comments template is available on the initiative webpage
- Comments due April 7, 2020 to initiativecomments@caiso.com