

Comments on Resource Adequacy Enhancements Fifth Revised Straw Proposal

Department of Market Monitoring

August 13, 2020

I. Summary

The Department of Market Monitoring (DMM) appreciates the opportunity to comment on the *Resource Adequacy Enhancements Fifth Revised Straw Proposal*.¹ DMM provides comments on the following aspects of the proposal:

- DMM does not support the ISO's planned outage process enhancements proposal to move forward with Option 1 or otherwise maintain the status quo if stakeholders reject Option 1. DMM believes Option 1 is flawed because it removes incentives for resource-controlling entities to maintain highly available capacity and removes incentives for LSEs to contract for highly available capacity in non-summer months. Increasing the planning reserve margin to cover potential planned outages is likely to significantly increase procurement costs and incentivize LSEs to lean on other LSEs without improving the reliability of the CAISO system. However, the status quo is also flawed as suppliers face significant risk when planned outages, often scheduled far in advance, are subsequently cancelled by the ISO. DMM recommends that the ISO work with stakeholders to further develop an alternative planned outage framework.
- DMM continues to support the ISO's efforts to develop a resource-specific framework for import resource adequacy. However, having rules specifying that other BAAs cannot recall or curtail energy backing resource adequacy imports will be important to ensure that external supply is truly dedicated to the ISO. Rules should also be in place to ensure import resource adequacy will bid competitively into ISO markets.
- DMM would oppose a policy in this initiative to remove the real-time must-offer obligation for resource adequacy resources. This proposal is contingent upon changes proposed in the Day-Ahead Market Enhancements (DAME) initiative. Therefore, the proposal to remove the real-time must-offer obligation should not be considered within the scope of RA Enhancements.
- DMM does not support the ISO's proposal to subject battery resources providing resource adequacy to minimum charge constraints in the real-time market based on day-ahead awards. DMM believes that the ISO's proposal will unnecessarily restrict the flexibility of batteries in the real-time market. The ISO's proposal could also prevent batteries from responding to meet real-time reliability needs that were not predicted by the day-ahead

¹ *Resource Adequacy Enhancements Fifth Revised Straw Proposal*, California ISO, July 7, 2020: <http://www.caiso.com/InitiativeDocuments/FifthRevisedStrawProposal-ResourceAdequacyEnhancements.pdf>

market. DMM also has concerns about bid cost recovery rules under the ISO's proposal. Given the battery capacity will increase significantly on the ISO system in the next few years, DMM believes it would be worthwhile for the ISO to consider more durable solutions for better modeling and optimizing storage resources in ISO markets.

- DMM continues to question the incremental benefits of the proposed UCAP deficiency tool and remains concerned that the UCAP deficiency tool could interfere with bilateral resource adequacy procurement. DMM recommends that the ISO instead focus on other aspects of the RA Enhancements proposal that could better address issues of entities not showing or withholding capacity from the bilateral market.
- DMM continues to suggest that the ISO evaluate all hours in a season in its UCAP calculations and apply a weighting to hours based on severity of the difference between available resource adequacy and load plus reserve margins.
- DMM remains concerned that local resource adequacy resources will have little incentive to increase availability under a UCAP framework if the ISO removes RAAIM and local resource adequacy requirements continue to be defined in terms of NQC. If the ISO continues to base local requirements on NQC, DMM suggests that the ISO maintain a separate incentive mechanism for local resources. Under the ISO proposal, pivotal resources (which typically are local resources needed to meet specific reliability criteria) would have little incentive to increase availability if capacity will be needed to meet NQC-based local requirements, regardless of resources' UCAP values.
- DMM appreciates the ISO considering suppliers' use of operational constraints which may limit the availability of battery capacity in its determination of UCAP values for battery resources. However, DMM is concerned that the ISO's proposal for determining UCAP values for battery resources may be too restrictive. There are several scenarios that the ISO should consider where its proposals may be excessively punitive for battery resources.
- DMM supports the ISO conducting portfolio assessments to evaluate the resource adequacy fleet's ability to meet system energy requirements. Ideally, the ISO's energy requirements would be reflected in forward procurement requirements so that resources effective in meeting the ISO's capacity and energy needs are procured in advance, and reliance on the ISO's backstop mechanisms is minimized.

DMM provides additional comments on these issues below.

II. Planned outage process enhancements

DMM does not support the ISO's planned outage process enhancements proposal to move forward with Option 1 or otherwise maintain the status quo if stakeholders reject Option 1.

DMM believes Option 1 is flawed because it removes incentives for resource-controlling entities to maintain highly available capacity and removes incentives for LSEs to contract for highly available capacity in non-summer months by simply relying on increased procurement across all LSEs. DMM is concerned that by removing financial incentives associated with taking planned outages and instead increasing procurement requirements for all LSEs, cheaper but less available resource adequacy may make up a greater share of the resource adequacy fleet in non-summer months. Having a less reliable resource adequacy fleet in non-summer months may cause the ISO to further increase the off-peak month reserve margin in subsequent years. As a result, the increased capacity and capacity costs may not increase the overall reliability provided by the resource adequacy program. Instead, Option 1 significantly reduces the monetary rewards that high quality capacity could expect from resource adequacy compensation relative to low quality capacity.

However, the status quo is also flawed as suppliers face significant risk when planned outages, often scheduled far in advance, are subsequently cancelled by the ISO. This uncertainty over planned outage substitution obligations creates incentives for resource-controlling entities to withhold capacity from the bilateral resource adequacy market. If the ISO maintains the status quo, it would also fail to deliver on its directive to address planned-to-forced outage reporting issues as determined under PRR 1122.²

DMM suggests that the ISO instead design outage process enhancements that mitigate major problems with the current outage process without undermining incentives for resources to remain highly available. DMM believes the most significant problem that the ISO should try to address is the fact that uncertainty over planned outage substitution obligations creates incentives for resource-controlling entities to withhold capacity from bilateral resource adequacy markets. Several stakeholders have offered alternative designs over the course of this initiative that the ISO could use as a basis to develop a more complete solution to improve the planned outage substitution process.

For example, the ISO could consider making changes to the existing planned outage substitution timeline. There may be adjustments to the timeline that could allow resource providers to sell resource adequacy capacity in a bilateral market after being informed of whether or not they need to provide substitution for planned outages. Some stakeholders have suggested increasing the runway for monthly resource adequacy showings in prior comments.³ DMM would support proposals to increase the runway for monthly resource adequacy showings or create a “preliminary” showing window in an earlier timeframe where substitution

² *Decision on Appeal of PRR 1122*, BPM Appeals Committee, March 11, 2020:

<http://www.caiso.com/Documents/ExecutiveAppealsCommitteeDecision-PRR1122-Mar112020.pdf>

³ *Calpine comments on RA Enhancements Straw Proposal*, Calpine, July 24, 2019, pp. 4-5:

<http://www.caiso.com/InitiativeDocuments/CalpineComments-ResourceAdequacyEnhancements-RevisedStrawProposal.pdf>

obligations for planned outages would be determined. After this preliminary showing and study period, the ISO could inform suppliers of substitution obligations and entities would have a window before monthly showings are finalized to trade excess capacity.

Today, suppliers face significant risks associated with uncertain substitution obligations. Substitution obligations may also be communicated to suppliers very close to the start of the outage, allowing suppliers little time to find substitute capacity. Under the status quo, suppliers are exposed to financial risks associated with procuring substitute capacity, financial risks associated with RAAIM penalties if outages must be re-submitted as forced, and regulatory risks associated with re-submitting cancelled planned outages as forced outages if outages cannot be delayed and suppliers cannot find substitute capacity. The ISO could mitigate these risks by increasing certainty that planned outages will not be cancelled and alleviating suppliers of the direct responsibility for finding substitute capacity for planned outages approved far in advance which are subsequently cancelled by the ISO. By mitigating these risks, the ISO could reduce incentives for suppliers to withhold capacity from the bilateral resource adequacy market.

DMM recommends that the ISO also continue to consider a replacement marketplace that could be used to procure substitute capacity. Various stakeholders have expressed support for the ISO facilitating a market for substitution capacity or extending its CPM framework to procure substitute capacity.⁴ The ISO may be able to further reduce incentives to withhold capacity from bilateral resource adequacy markets by designing a more targeted substitute capacity cost allocation. Today, suppliers are fully responsible for substitute capacity costs. The ISO could instead allocate substitute capacity costs to entities that drove the need for the ISO to seek additional capacity.

In the fifth revised straw proposal, the ISO stated it would not pursue an Option 2 approach citing several unresolved design issues and concerns. However, DMM believes the ISO's dismissal of an Option 2 framework is premature. For example, the ISO cites concerns that substitute capacity costs will drive suppliers to either command high risk premiums in resource adequacy contracts, or cause resource owners to continue to withhold capacity to self-insure against replacements costs. These concerns are based on the assumption that the ISO would simply replace supplier substitution obligations with a substitution marketplace. However, as discussed above and in other stakeholder comments, other design changes could supplement an Option 2 approach that could mitigate the ISO's concerns such as creating more certainty about substitution obligations before showing deadlines and allowing additional time for resource owners to transact for substitution capacity before showings are due. Additionally, modifying cost allocation rules such that suppliers may not be exposed to the cost of

⁴ *SDG&E comments on RA Enhancements Fourth Revised Straw Proposal*, April 14, 2020, pp. 4-6:
<http://www.caiso.com/InitiativeDocuments/SDG&EComments-ResourceAdequacyEnhancements-FourthRevisedStrawProposal.pdf>

Six Cities comments on RA Enhancements Fourth Revised Straw Proposal, April 14, 2020, pp. 2-4:
<http://www.caiso.com/InitiativeDocuments/SixCitiesComments-ResourceAdequacyEnhancements-FourthRevisedStrawProposal.pdf>

substitution capacity if they did not drive the need for additional procurement could further reduce incentives for suppliers to withhold capacity for self-insurance purposes.

III. Resource adequacy imports

DMM continues to support the ISO's efforts to develop a resource-specific framework for import resource adequacy. DMM appreciates the ISO discussing the need to consider "[p]rovisions to ensure RA import cannot be recalled or curtailed to meet a source or intervening BAA's own needs"⁵ Rules specifying that other BAAs cannot recall or curtail energy backing resource adequacy imports will be important to ensure that external supply is truly dedicated to the ISO. DMM also continues to support a real-time must offer obligation for import resource adequacy.

While DMM supports the ISO's direction in developing a resource-specific framework, there are many parts of the ISO's proposal that require further development and detail. These include requirements for firm transmission, the ISO's proposal to ensure resource-specific import characteristics are reflected in the master file, and the ISO's proposal to collect and monitor source operational data to ensure external resources remain available to the ISO.

DMM and other parties supported the CPUC's decision (D.20-06-028) on resource adequacy import requirements⁶ as a viable interim measure to improve the reliability of resource adequacy imports as the ISO further developed a resource-specific framework. In order to effectively replace the CPUC's decision, the ISO's proposal should ensure that import capacity is both real and reliable, and rules should be in place to ensure import resource adequacy would be bid competitively into ISO markets.

Requiring firm transmission rights would enhance the reliability of resource adequacy imports. However, the ISO should consider further whether such requirements would limit the competitive supply of resource adequacy imports.

DMM agrees with the ISO that requiring import resource adequacy to be paired with firm transmission from source to the ISO border would enhance the reliability of resource adequacy imports, by ensuring imports will not be curtailed by external BAAs in the presence of transmission congestion.

However, DMM and other stakeholders have expressed that more discussion on different BAAs' processes for the release and acquisition of firm transmission rights would be helpful to better understand the potential impacts of firm transmission requirements. In the last stakeholder meeting, parties discussed involving external transmission owners in future discussions on

⁵ *RA Enhancements Fifth Revised Straw Proposal*, July 14-16, 2020, Slide 98:

<http://www.caiso.com/InitiativeDocuments/Presentation-ResourceAdequacyEnhancements-FifthRevisedStrawProposal.pdf>

⁶ *Decision Adopting Resource Adequacy Import Requirements*, D.20-06-028, CPUC, June 25, 2020:

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M342/K516/342516267.PDF>

import resource adequacy to help clarify BAA processes for the release and acquisition of firm transmission rights. DMM believes such discussions would be helpful for stakeholders to develop a common understanding of external BAA processes for the release and acquisition of firm transmission rights.

At this point, it is still not clear that firm transmission requirements would not create competitive advantages for suppliers of import resource adequacy that hold significant long-term firm rights, or potential opportunities for the exercise of market power in the process of securing firm transmission rights. DMM ultimately supports the ISO's efforts to ensure import resource adequacy is backed by actual resources instead of spot market purchases. However, further discussion on firm transmission requirements is still warranted.

DMM supports a real-time must offer obligation for import RA.

DMM continues to support the ISO's proposal to enforce a real-time must-offer obligation for import resource adequacy resources. DMM has recommended that the ISO consider a real-time must-offer obligation which would address concerns that non-resource specific import resource adequacy today can bid themselves out of the day-ahead market process and have no further obligation to be available in real-time. Requiring import resource adequacy to have a real-time must offer obligation could be a significant enhancement to current resource adequacy import rules.

IV. Removal of the real-time must-offer obligation for resource adequacy resources

DMM would oppose a policy in this initiative to remove the real-time must-offer obligation for resource adequacy resources. This proposal is contingent upon changes that the ISO is proposing in the Day-Ahead Market Enhancements (DAME) initiative. Therefore, the proposal to remove the real-time must-offer obligation should not be considered within the scope of RA Enhancements.

While DMM believes this proposal should not be within the scope of RA Enhancements, DMM has also expressed concerns about replacing the current resource adequacy real-time must offer obligations with obligations from reliability capacity and imbalance reserve awards in comments on the ISO's day-ahead market enhancements revised straw proposal.⁷

V. Minimum charge requirement proposal for storage resources

⁷ DMM comments on day-ahead market enhancements revised straw proposal, July 13, 2020, p. 5: <http://www.caiso.com/InitiativeDocuments/DMMComments-Day-AheadMarketEnhancementsRevisedStrawProposal.pdf>

The ISO proposes to enforce minimum state of charge constraints on resource adequacy battery resources in the real-time market to ensure that batteries will always have sufficient state of charge to meet day-ahead discharge schedules.

DMM does not support the ISO's proposal to subject batteries providing resource adequacy to minimum charge constraints in the real-time market. DMM is concerned about the impacts of applying minimum charge constraints to a significant amount of battery capacity that is expected to begin participating in ISO markets in the next few years. Given the anticipated increase in battery capacity on the ISO system, it will be worthwhile to consider more durable solutions for better modeling and optimizing storage resources in ISO markets, including extending the real-time look ahead horizon. Stakeholder support for extending the real-time look ahead horizon has come up in both the RA Enhancements and ESDER initiatives.

The ISO's proposal could significantly restrict the flexibility of batteries in real-time.

DMM believes the ISO's proposal will unnecessarily restrict the flexibility of batteries in the real-time market. The ISO could potentially restrict batteries from responding to meet real-time needs due to the ISO holding a minimum state of charge on a significant portion of the battery fleet. Batteries are very fast ramping and flexible resources, and the ISO's proposal could significantly limit the benefits that the resource adequacy battery fleet could provide to resolve the ISO's flexibility needs in real-time.

The ISO's proposal could result in inefficient use of storage resources and cause the ISO to rely on more expensive and carbon intensive generation to resolve real-time needs.

The ISO suggests that the minimum charge requirement proposal would be more efficient than using exceptional dispatch to position batteries to be able to meet the ISO's reliability needs.⁸ DMM, however, believes that the minimum charge requirement proposal could result in inefficient use of storage resources on a regular basis. The ISO's proposal could result in the ISO holding significant charge on battery resources in real-time, when that level of charge may not actually be needed in real-time.

For example, suppose a battery resource was scheduled to discharge in peak net load hours in the day-ahead market. In real-time, system conditions could change such that the battery resource would no longer be economic and would otherwise be backed off its day-ahead discharge schedule (e.g. day-ahead load may be over-forecasted or day-ahead renewables may be under-forecasted). However, the ISO's proposal would force the resource to continue to maintain a state of charge necessary to meet day-ahead discharge schedules that are no longer economic or needed in real-time.

The ISO's proposal may also force resources to charge in real-time to meet day-ahead discharge awards when charging may also be uneconomic in real-time. DMM sees these outcomes as being far less efficient than allowing storage resources to be re-optimized in real-time on most

⁸ RA Enhancements Fifth Revised Straw Proposal, p. 76.

days, and positioning resources for exceptional dispatch only when the ISO anticipates needing to rely on certain battery capacity.

The ISO also suggests that its minimum charge requirement proposal would be more reliable than using exceptional dispatches for battery resources.⁹ DMM disagrees with the ISO's conclusion and sees the minimum charge requirement proposal as potentially preventing storage resources from being able to meet ISO reliability needs in real-time which were not predicted in the day-ahead market.

For example, suppose several storage resources are scheduled in the day-ahead market to discharge in hours 18-22 and are subject to minimum charge constraints in real-time. Suppose a reliability issue arises in hour 17 in real-time such that additional generation is needed on the system. If battery resources are held to minimum state of charge constraints in hour 17 to meet schedules starting hour 18, these resources may be restricted from discharging and potentially more expensive and carbon intensive generation would be instructed to ramp up or start instead. This would not only be an inefficient outcome but could also pose reliability issues if there is limited generation available to meet the ISO's needs in hour 17.

Enforcing minimum charge constraints on storage resources to maintain day-ahead discharge schedules presents bid cost recovery gaming concerns.

The ISO notes that exceptional dispatch of battery resources could "...significantly increase bid cost recovery, as storage resources would generally be procured in the most expensive periods at times when they could be far out of the money."¹⁰ However, DMM believes the ISO's proposal could also contribute to increased bid cost recovery (BCR) and introduces new gaming opportunities. Since minimum charge constraints would be ISO-imposed constraints, DMM presumes that resources would be eligible for BCR should the ISO's constraints cause resources to operate uneconomically.

Because minimum charge requirements would be known far in advance of the real-time market (after the day-ahead market close), scheduling coordinators could submit very low charge bids in real-time in the hours the minimum state of charge constraints are enforced. If resources are forced to charge in real-time incremental to day-ahead charging schedules in order to honor the ISO's minimum charge constraints, scheduling coordinators could recover significant BCR.

DMM adds that the current market design allows scheduling coordinators to submit daily initial state of charge values to the ISO which are used to optimize battery schedules in the day-ahead market. If initial state of charge values are higher than actual state of charge values observed in real-time, battery resources may be forced to charge significantly more in real-time than was predicted in the day-ahead market to meet real-time minimum state of charge constraints. The potential use of initial state-of-charge bids to force incremental charging in real-time

⁹ RA Enhancements Fifth Revised Straw Proposal, p. 76.

¹⁰ RA Enhancements Fifth Revised Straw Proposal, p. 76.

contributes further to DMM's concerns about BCR gaming opportunities under the minimum charge constraint proposal.

DMM does not support the ISO's suggestion that scheduling coordinators could economically withhold from the day-ahead market in order to avoid being subject to minimum charge constraints in real-time.

In the ISO's presentation on the fifth revised straw proposal, the ISO states that, "[b]idding at high prices in the DA market, may result in schedules only on the highest need days and thus relatively small MCR requirements."¹¹ DMM does not support the ISO's suggestion that scheduling coordinators could avoid being subject to minimum charge constraints if they simply bid high or economically withhold capacity from the day-ahead market.

This suggestion also does not seem to be aligned with the ISO's efforts in the ESDER 4 initiative to develop default energy bids for storage resources and subject these resources to local market power mitigation. Whatever adder the ISO is contemplating would be acceptable for resources to submit in day-ahead bids to avoid being subject to real-time minimum charge constraints is not a proposed component of storage default energy bids under ESDER 4.

DMM requests that the ISO further explain its rationale for being unable to exceptionally dispatch storage resources.

DMM questions the ISO's rationale for not being able to exceptionally dispatch storage resources. The ability to exceptionally dispatch storage resources will be important as storage resources begin to replace thermal capacity in local areas.

The ISO states that "[f]irst, like the solution discussed previously, this would also require that either the real-time market or a tool running in parallel with the real-time market be developed with the capability to look out and forecast with accuracy several hours in advance."¹² DMM asks the ISO clarify why it would need a completely new tool with a longer look-ahead horizon in order to exceptionally dispatch storage. Today, operators issue exceptional dispatches to other resource types often far in advance of actual operating times. If operators expect changes to the load forecast in future hours they are able to preemptively issue exceptional dispatches to provide additional ramping capacity to the system. The ISO should explain further why it cannot do the same for storage resources. The ISO is also proposing to develop biddable end-of-hour state of charge constraints under ESDER 4 which could help position storage resources to meet exceptional dispatch instructions.

The ISO also states that "[f]inally, such a tool would need to be run each 5-minute interval, so that the real-time market does not 'undo' the instructions sent to the storage resources from

¹¹ *RA Enhancements Fifth Revised Straw Proposal*, July 14-16, 2020, Slide 131:
<http://www.caiso.com/InitiativeDocuments/Presentation-ResourceAdequacyEnhancements-FifthRevisedStrawProposal.pdf>

¹² *RA Enhancements Fifth Revised Straw Proposal*, p. 75.

this new tool.”¹³ To support the end-of-hour state of charge feature proposed under ESDER 4, the ISO is also developing a solution for ensuring the 5-minute market does not unwind schedules set in the 15-minute market which may be impacted by end-of-hour state-of-charge constraints. DMM asks that the ISO explain further why it cannot use end-of-hour state of charge constraints and similar methodologies for ensuring alignment between 15 and 5-minute market schedules, to be able to exceptionally dispatch storage resources.

VI. UCAP deficiency tool

DMM continues to question the incremental benefits of the ISO’s proposed UCAP deficiency tool. DMM is concerned that the UCAP deficiency tool could interfere with bilateral procurement and the CPUC’s penalty framework for system resource adequacy filings. LSEs are already incentivized to trade resource adequacy among each other to avoid being exposed to local regulatory authority penalties and potential ISO backstop procurement costs. It is not clear that the UCAP deficiency tool directly enhances the existing procurement framework.

Additionally, the ISO’s design could result in LSEs being forced to cure for individual deficiencies at the soft offer cap when there may be more economic supply available. This is illustrated in the ISO’s example on Slide 142.¹⁴ In this example, there would be a collective deficiency regardless of how resource adequacy was shown among LSEs. The ISO’s UCAP deficiency tool in this case resulted in a payment at the soft offer cap to the LSE that was long 5 MW, and charges to LSE1 and LSE2 for the 5 MW. Additionally LSE1 and LSE2 would be allocated CPM costs proportionate to their share of the remaining 15 MW of collective deficiency. There are two potential issues with this outcome: 1) Absent the UCAP deficiency tool, LSE1 and LSE2 would still have incurred CPM costs for 10 and 15 MW respectively. If there was CPM capacity available at prices less than the soft offer cap, the ISO’s outcome with the deficiency tool would result in higher overall costs for these LSEs; 2) Absent the UCAP deficiency tool, there would still be an incentive for LSE1 and LSE2 to trade with LSE3 to avoid their shares of potential CPM costs. Additionally, LSE3 seems to benefit by withholding from trading bilaterally with other LSEs below the soft offer cap.

DMM believes the ISO should focus instead on other aspects of the RA Enhancements proposal that could better address issues of entities withholding capacity from the bilateral resource adequacy market. In particular, the ISO should focus on enhancing the planned outage substitution process as staff was directed to do under PRR 1122.

¹³ *RA Enhancements Fifth Revised Straw Proposal*, p. 75.

¹⁴ *RA Enhancements Fifth Revised Straw Proposal*, July 14-16, 2020, Slide 142:
<http://www.caiso.com/InitiativeDocuments/Presentation-ResourceAdequacyEnhancements-FifthRevisedStrawProposal.pdf>

VII. UCAP weighting

DMM continues to suggest that the ISO apply a weighting to hours used in UCAP assessments and to consider all hours in a season.¹⁵ The ISO suggested that selecting the top 20% of hours with the tightest supply margin may capture the same effect as a weighting mechanism applied to all hours. DMM interprets this as the ISO assuming that the top 20% of supply cushion hours would be weighted the heaviest and uniformly if all hours were considered by the ISO.

However, DMM clarifies that there should be discrepancy in weighting among hours even within the top 20% of supply cushion hours. The ISO has shown that the range of supply cushion observed in the top 20% of supply cushion hours can be very wide ranging between shortages of 1,500 MW to surpluses of 9,000 MW in peak months of 2019.¹⁶ Instead of treating these scenarios equally, there should be a greater incentives for resources to be available when the ISO actually incurs capacity shortages or when available resource adequacy capacity is insufficient to cover load plus reserve margins.

VIII. UCAP for local resource adequacy

Under the ISO proposal, local capacity studies will continue to be based on NQC. Local requirements assigned to local regulatory authorities will then be translated to UCAP. However, resource sufficiency to meet local requirements will ultimately be assessed by the ISO based on NQC as it is today.

The UCAP conversion process does not appear to add efficiency to the local procurement process. The conversion process may even add uncertainty to the local procurement process if UCAP and NQC values diverge significantly in local areas. Instead of the UCAP conversion process, the ISO should consider further whether local requirements can be defined in terms of UCAP to maintain consistency with system resource adequacy procurement requirements.

DMM remains concerned that local resource adequacy resources will have little incentive to increase availability if the ISO removes RAIM and local resource adequacy requirements continue to be defined in terms of NQC.¹⁷ Under the ISO proposal, pivotal resources (which typically are local resources needed to meet specific reliability criteria) would have little incentive to increase availability if capacity will be needed to meet NQC-based local requirements, regardless of resources' UCAP values. If the ISO cannot develop UCAP-based

¹⁵ *DMM comments on RA Enhancements third revised straw proposal*, January 30, 2020, p. 5: <http://www.caiso.com/InitiativeDocuments/DMMComments-ResourceAdequacyEnhancements-ThirdRevisedStrawProposal.pdf>

¹⁶ *Fifth Revised Straw Proposal*, p. 20.

¹⁷ *DMM comments on RA Enhancements third revised straw proposal*, January 30, 2020, pp. 5-6: <http://www.caiso.com/InitiativeDocuments/DMMComments-ResourceAdequacyEnhancements-ThirdRevisedStrawProposal.pdf>

requirements, DMM recommends that the ISO maintain a separate availability incentive mechanism for local resources.

IX. UCAP calculations for batteries

DMM appreciates the ISO considering suppliers' use of operational constraints which may limit the availability of battery capacity in its determination of UCAP values for battery resources. However, DMM is concerned that the ISO's proposal for determining UCAP values for battery resources may be too restrictive.

DMM notes that certain market parameters that exist today and parameters that are being proposed by the ISO can be used to significantly limit how resources operate in the market, but these parameters are not considered under the ISO's current resource adequacy availability incentive mechanism (RAAIM) framework. These parameters include maximum state-of-charge and the proposed end-of-hour state of charge constraints for battery resources, and maximum run time constraints for demand response resources.

DMM has already observed that some storage resources' 4-hour resource adequacy values have been limited by daily maximum state-of-charge bids. Because these resources' P_{MAX} values are not de-rated through outage submissions, these resources are not exposed to RAAIM penalties. By limiting maximum state of charge values through a daily operational constraint, a resource would never be able to reach a state of charge that would allow it to provide four consecutive hours at its resource adequacy value. DMM suggested that the ISO determine whether supplier's use of the maximum state of charge constraint, or the end-of-hour state of charge constraint proposed under ESDER 4, should constitute a type of outage or de-rate or be linked to RAAIM if a resource's charge is limited by these constraints going into peak net load hours.¹⁸

DMM supports the ISO considering suppliers' use of operational constraints in determining UCAP values. However, there are several scenarios that the ISO should consider where its current proposal for determining battery resource UCAP values may be excessively punitive for battery resources. DMM described these scenarios in comments on the June 10, 2020 RA Enhancements working group.¹⁹

X. Portfolio assessments

DMM supports the ISO conducting portfolio assessments to evaluate the resource adequacy fleet's ability to meet system energy requirements. DMM has concerns about energy and availability-limited resources comprising a greater portion of the resource adequacy fleet as

¹⁸ *Comments on ESDER 4 Revised Straw Proposal*, DMM, November 25, 2019, pp. 6-7:

<http://www.caiso.com/InitiativeDocuments/DMMComments-EnergyStorageDistributedEnergyResourcesPhase4-RevisedStrawProposal.pdf>

¹⁹ *DMM comments on resource adequacy enhancements working group June 10, 2020*, DMM, June 26, 2020, p. 5-6:

<http://www.caiso.com/InitiativeDocuments/DMMComments-ResourceAdequacyEnhancementsWorkingGroup-Jun102020.pdf>

these resources may have limited output during hours when net loads – and the potential for uncompetitive supply conditions – are highest.

Ideally, the ISO's energy requirements would be reflected in forward procurement requirements so that resources effective in meeting the ISO's capacity and energy needs are procured in advance, instead of the ISO relying on backstop procurement to cure energy deficiencies. To account for resource energy limitations to the extent possible in up front procurement requirements, it will be important for the ISO, CPUC and other LRAs to accurately account for the availability of various resource types. For example, resources may reflect operational use-limitations such as limited run hours to the ISO. Additionally, certain resource types such as demand response may only be available and bid into ISO markets for a subset of hours each day based on program requirements. These types of resource limitations should be considered in ISO portfolio assessments and ultimately in LRA procurement requirements.