Comments on Resource Adequacy Enhancements Draft Final Proposal Phase 1

Department of Market Monitoring

January 21, 2021

I. Summary

The Department of Market Monitoring (DMM) appreciates the opportunity to comment on the *Resource Adequacy Enhancements Draft Final Proposal and Sixth Revised Straw Proposal*.[1] DMM provides comments on the following aspects of the draft final proposal:

- DMM supports the ISO's efforts to develop a resource-specific framework for import resource adequacy. The ISO's proposed rules should help ensure that import resource adequacy contracted with CAISO load serving entities is not double counted (or double contracted) across the West and is backed by dedicated supply. DMM understands that it may not be effective to embed non-recallability rules within import resource adequacy contracts since ultimately BAAs retain authority over their export curtailment rules. However, DMM believes that continued coordination among the ISO and other WECC BAAs to clarify export curtailment priorities remains important to ensure that import resource adequacy is truly dedicated to the ISO, especially when WECC BAAs may face concurrent supply shortages.
- DMM does not support the ISO's phase 1 planned outage process enhancements proposal which would require that all planned outages have full substitution in order to be approved starting summer 2021. DMM is concerned that the ISO's proposal could deter suppliers from taking planned outages when needed, does not address entities' concerns about suppliers withholding capacity, could tighten the resource adequacy market unnecessarily, and could remain in effect indefinitely if a viable replacement design is not developed on schedule. DMM believes that while the status quo is flawed, current rules are preferable over the ISO's proposal. To address immediate planned to forced outage issues while a more viable planned outage solution is developed, the ISO could allow for more transparent discussion and documentation around entities' need to move forward with planned outages when the ISO determines it must cancel or not approve a planned outage if substitute capacity cannot be found.
- DMM does not support the ISO's proposal to subject battery resources providing resource adequacy to minimum state of charge constraints in the real-time market based on day-ahead awards. While the ISO has pared down its proposal and would only enforce minimum

[1] *Resource Adequacy Enhancements Draft Final Proposal – Phase 1 and Sixth Revised Straw Proposal*, California ISO, December 17, 2020: http://www.caiso.com/InitiativeDocuments/DraftFinalProposal-SixthRevisedStrawProposal-ResourceAdequacyEnhancements.pdf

state of charge constraints when non-storage cannot meet 110% of net load, DMM believes that the ISO's proposal still has the potential to unnecessarily restrict the flexibility of batteries in the real-time market. Given 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. In the meantime and for summer 2021, the DMM suggests that the ISO focus on improving processes and operational tools for efficiently managing storage resources through exceptional dispatches.

- DMM supports the ISO extending its authority to issue CPMs to ensure that local capacity resources can meet energy needs in local areas and sub-areas.

DMM provides additional comments on these issues below.

II. Resource adequacy imports

DMM supports the ISO's proposal to develop a resource-specific framework for import resource adequacy. The ISO's proposed rules should help ensure that import resource adequacy capacity contracted with CAISO load serving entities is not double counted (or double contracted) across the West, is backed by a dedicated source, and is unlikely to be curtailed in the presence of transmission congestion. DMM supports the ISO developing a framework for entities to attest that underlying import resource adequacy contracts meet various requirements under the ISO's new rules. The attestation is a critical component of the overall import resource adequacy proposal, but DMM offers some suggestions on the ISO's proposed attestation process. DMM also supports the ISO developing a real-time must offer obligation for import resource adequacy.

DMM supports the ISO's development of an attestation framework to ensure that entities agree that shown import capacity meets the ISO's new standards for qualifying as import resource adequacy. However, DMM offers some suggestions for modifying the ISO's proposed attestation process in CIRA.

DMM supports the ISO's proposal to develop attestations that entities must agree to in order for supply to qualify as import resource adequacy. DMM appreciates the ISO developing detailed guidelines and committing to auditing and monitoring attestation submissions.

The ISO proposes that the scheduling coordinator (SC) showing the import capacity as resource adequacy be responsible for completing import resource adequacy attestations. DMM supports the ISO in its approach and believes that requiring the scheduling coordinator to sign attestations could help ensure that the showing entity takes steps to ensure that its contracted capacity meets various ISO requirements. However, to ease the potential regulatory risk on a

scheduling coordinator that is not the actual supplier of the resource adequacy import, the ISO should further consider allowing the selling entity to complete the attestation.

The ISO proposes that the attestation process would entail entities completing checklists in CIRA. While DMM understands this approach could help streamline the attestation process, DMM believes that collecting more detailed information up front from scheduling coordinators and suppliers would be much more useful for facilitating any ex post audits or investigations if necessary. Furthermore, the scheduling coordinator may not have firsthand knowledge about whether or not the supplier has, for example, double sold the capacity supporting import RA. The ISO should therefore consider requiring that the proposed attestations be formally signed by representatives of either the scheduling coordinator or the supplier. If the scheduling coordinator does not sign the currently proposed attestation, the scheduling coordinator may need to sign a different attestation to confirm that the scheduling coordinator has submitted attestations for all potential suppliers of the resource adequacy import capacity in question.

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

DMM supports the ISO's proposal to enforce a real-time must-offer obligation for import resource adequacy resources. The ISO's proposal 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 by ensuring import capacity remains available to the ISO through real-time.

The ISO's proposed transmission delivery requirements are reasonable, but potential issues related to the acquisition of firm transmission and impact on import resource adequacy prices should continue to be tracked.

The ISO's proposal to require that resource adequacy imports be delivered on firm transmission on the last leg to the CAISO, and at minimum, on monthly non-firm point-to-point service on all other transmission legs is reasonable. DMM agrees with the ISO that requiring import resource adequacy to be supported by firm transmission would enhance the reliability of resource adequacy imports, by ensuring imports will not be curtailed by external BAAs in the presence of transmission congestion.

DMM has raised concerns about whether firm transmission requirements could create competitive advantages for suppliers that hold significant long term firm rights.[2] Throughout this policy development, the ISO and other entities have provided data on the composition of

[2] *DMM comments on resource adequacy enhancements fifth revised straw proposal*, DMM, August 13, 2020, pp. 5-6: http://www.caiso.com/InitiativeDocuments/DMMComments-ResourceAdequacyEnhancements-FifthRevisedStrawProposal.pdf

firm rights holders on the major interties from the Northwest, showing that several different entities have held firm rights on these interties at different points in time and suggesting that competitive conditions may exist should entities seek to procure firm transmission to support resource adequacy imports for the last transmission leg into CAISO.[3] DMM has also looked at this data and is generally comfortable with these conclusions. While not all firm rights reflected in these analyses would likely be available for resale if they are used to support other commitments, it is reasonable to assume at this point that firm rights holders on these paths would be willing to sell transmission rights to potential importers to CAISO for the right price.

While DMM supports the ISO's proposal for transmission delivery requirement at this time, potential issues related to the acquisition of transmission to support delivery of import resource adequacy and impacts on import resource adequacy prices should continue to be tracked.

Continued coordination among the ISO and other WECC BAAs to clarify export curtailment priorities remains important to ensure that import resource adequacy is truly dedicated to the ISO, especially when WECC BAAs may face concurrent supply shortages.

In prior comments, DMM recommended that the ISO require that the energy backing import resource adequacy not be recallable by external BAAs. After further discussion with the ISO, DMM agrees that it may not be effective to embed energy non-recallability rules within import resource adequacy contracts since ultimately the BAAs retain authority over their export curtailment rules.

While the ISO will not address BAA export priorities in this initiative, ensuring that the energy backing import resource adequacy is not recallable by external BAAs and is treated with the same priority as other BAAs' native load remains important in order to ensure that import capacity contracted by CAISO load serving entities is truly dedicated to the ISO. Assurance that import resource adequacy cannot be recalled for BAAs' own needs is especially important when the CAISO and other BAAs may face concurrent supply shortages. DMM understands that export priorities will continue to be discussed in its Market Enhancements for Summer 2021

[3] *Resource Adequacy Enhancements Draft Final Proposal – Phase 1 and Sixth Revised Straw Proposal, CAISO, pp.47-51:* *http://www.caiso.com/InitiativeDocuments/DraftFinalProposal-SixthRevisedStrawProposal-ResourceAdequacyEnhancements.pdf*
Comments of Powerex Corp. on Resource Adequacy Enhancements Fourth Revised Straw Proposal, Powerex Corp, April 14, 2020, pp. 6-8: *http://www.caiso.com/InitiativeDocuments/PowerexComments-ResourceAdequacyEnhancements-FourthRevisedStrawProposal.pdf*
Morgan Stanley Capital Group, Inc. Comments on Resource Adequacy Enhancements Fifth Revised Straw Proposal, Morgan Stanley Capital Group, Inc., August 7, 2020, pp. 11-12 : http://www.caiso.com/InitiativeDocuments/MSCGComments-ResourceAdequacyEnhancements-FifthRevisedStrawProposal.pdf

Readiness initiative[4] and has suggested that the ISO prioritize export and load priority issues in that venue.

III. Planned outage process enhancements

DMM does not support the ISO's phase 1 planned outage process enhancements proposal which would require that starting summer 2021, all planned outages must come with full substitution in order to be approved. DMM is concerned that the ISO's proposal could deter suppliers from taking planned outages when needed, does not address entities' concerns about suppliers withholding capacity, could tighten the resource adequacy market unnecessarily, does not efficiently address planned to forced outage issues, and could remain in effect for an indefinite period of time if a viable replacement design is not developed on schedule.

DMM believes it is overly burdensome to require that suppliers procure substitute capacity to take any planned outage or else take a forced outage – imposing such costs on suppliers could deter suppliers from conducting necessary maintenance even when the system does not need substitute capacity. Additionally, instead of deterring entities from withholding supply to hedge against potential cancelations of planned outages, the ISO's policy would likely encourage entities to hold onto even more excess supply, further tightening the bilateral resource adequacy market. The ISO's proposal also does not efficiently address planned to forced outage issues, and may even increase the likelihood that suppliers would have to take forced outages if substitute capacity becomes more difficult to find.

DMM believes that while the status quo is flawed, current rules are preferable over the ISO's proposal. The ISO has discretion today to approve or cancel planned outages contingent upon the supplier finding substitute capacity. In the extreme case, the ISO could request that entities provide substitute capacity in order for any planned outage to be approved. However, DMM believes that there are various circumstances under which planned outages should be permitted without substitution if system conditions can accommodate such outages (e.g. a low load subset of days in a month or in shoulder months). In short, the ISO could use its existing discretion under the status quo to approve planned outages contingent upon finding substitute capacity, while still allowing flexibility for suppliers to take planned outages without substitution when it is clear that the system can accommodate the outage.

However, as discussed in PRR 1122[5], under the status quo suppliers face significant risk when planned outages are subsequently cancelled by the ISO. To address immediate planned to forced outage issues while a more viable planned outage solution is developed, the ISO could

[4] *Market enhancements for summer 2021 readiness initiative*: https://stakeholdercenter.caiso.com/StakeholderInitiatives/Market-enhancements-for-summer-2021-readiness

[5] *Decision on Appeal of PRR 1122,* BPM Appeals Committee, March 11, 2020: http://www.caiso.com/Documents/ExecutiveAppealsCommitteeDecision-PRR1122-Mar112020.pdf

allow for more transparent discussion and documentation around entities' need to move forward with planned outages when the ISO determines it must cancel or not approve a planned outage if substitute capacity cannot be found.

The ISO estimates that a longer-term (phase 2) planned outage proposal would be developed for resource adequacy year 2023 and beyond. The ISO suggests that it would also take up planned to forced outage issues under phase 2. DMM encourages the ISO take some measures to mitigate planned to forced outage issues now as it committed to under PRR 1122, while it continues to develop a more viable long-term planned outage process that comprehensively addresses the planned to forced outage issues as well as issues concerning capacity withholding.

IV. Minimum state of charge proposal for storage resources

DMM shares the ISO's concerns that storage resources may have limited charge and thus limited energy going into peak net load hours. DMM agrees with the ISO that this issue becomes more relevant as batteries begin to comprise a larger portion of the resource adequacy fleet. DMM has observed that on most days, most resource adequacy batteries do not have sufficient state of charge to provide resource adequacy values across four consecutive peak net load hours. While this lack of charge may not be an issue on most days, DMM believes that it will be important that the ISO enhance its processes for issuing exceptional dispatches storage resources to ensure resources have sufficient state of charge to deliver energy across peak net load hours when needed.

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 have sufficient state of charge to meet day-ahead discharge schedules. These constraints would be activated when the ISO forecasts that non-storage resources would not be able to meet 110% of net load.

While DMM shares the ISO's concerns about increased reliance on batteries with limited energy, DMM does not support the ISO's proposal to subject batteries providing resource adequacy to minimum state of charge constraints in the real-time market based on day-ahead awards. DMM is concerned about the impacts of applying minimum charge constraints based on day-ahead conditions to a significant amount of battery capacity that is expected to begin participating in ISO markets this summer. The ISO's proposal could significantly limit the flexibility of the battery fleet in real-time and prevent these resources from responding to real-time system needs that may occur between the net load trough and the start of day-ahead discharge awards.

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. However in the shorter term and for summer 2021, DMM suggests that the ISO focus on enhancing its processes and tools for efficiently managing storage resources through exceptional dispatches.

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 by limiting movement on resources based on day-ahead conditions. 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 generally 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 and ramping 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 state of charge requirement proposal would be more efficient than using exceptional dispatch to position batteries to be able to meet the ISO's reliability needs.[6] DMM, however, believes that the minimum charge requirement proposal could result in inefficient use of storage resources on a more frequent basis. The ISO's proposal could result in the ISO holding significant charge on battery resources in real-time based on potentially much different day-ahead conditions, when that level of charge may not actually be needed in real-time, or more economic supply may become available 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 suggests that its minimum state of charge requirement proposal would be more reliable than using exceptional dispatches for battery resources.[7] DMM disagrees with the ISO's conclusion and sees the minimum charge requirement proposal as potentially preventing storage resources from being able to respond to system needs in real-time that were not predicted in the day-ahead market, particularly between the net load trough and the start of day-ahead discharge awards. The ISO may have to rely on potentially more expensive and more

[6] *RA Enhancements Draft Final Proposal and Sixth Revised Straw Proposal*, p. 67.
[7] *Ibid.*, p. 67.

carbon intensive fast responding resources if storage resources cannot respond due to being subject to minimum state of charge constraints.

The ISO's proposal would not obviate the need for operators to have the flexibility to issue exceptional dispatches to storage resources in real-time.

DMM believes that operators would still need the flexibility to be able to issue exceptional dispatches to storage resources in real-time, particularly if real-time conditions became more constrained than was predicted in the day-ahead market. For example if a 100 MWh resource was scheduled to discharge 20 MWh across hours 19 and 20, the ISO would enforce a minimum SOC of 20 MWh starting in the last hour with a charge schedule or lowest price hour observed in the day-ahead market, whichever is later. However if real-time load is higher than predicted in the day-ahead market, the ISO may want to position the storage resource to have an even greater minimum SOC than 20 MWh going into hour 19. The ISO's proposal would not replace entirely the need for the ISO to have the ability to issue exceptional dispatches to storage resources.

For summer 2021 and in the nearer-term, DMM recommends that the ISO focus on enhancing its processes for issuing exceptional dispatches to storage resources.

DMM recommends that the ISO work on enhancing its processes and operational tools for issuing exceptional dispatches to storage resources. The ISO has the ability to issue exceptional dispatches to storage resources today. However, DMM has observed that the ISO's current functionality and processes are very inflexible and could be significantly improved.

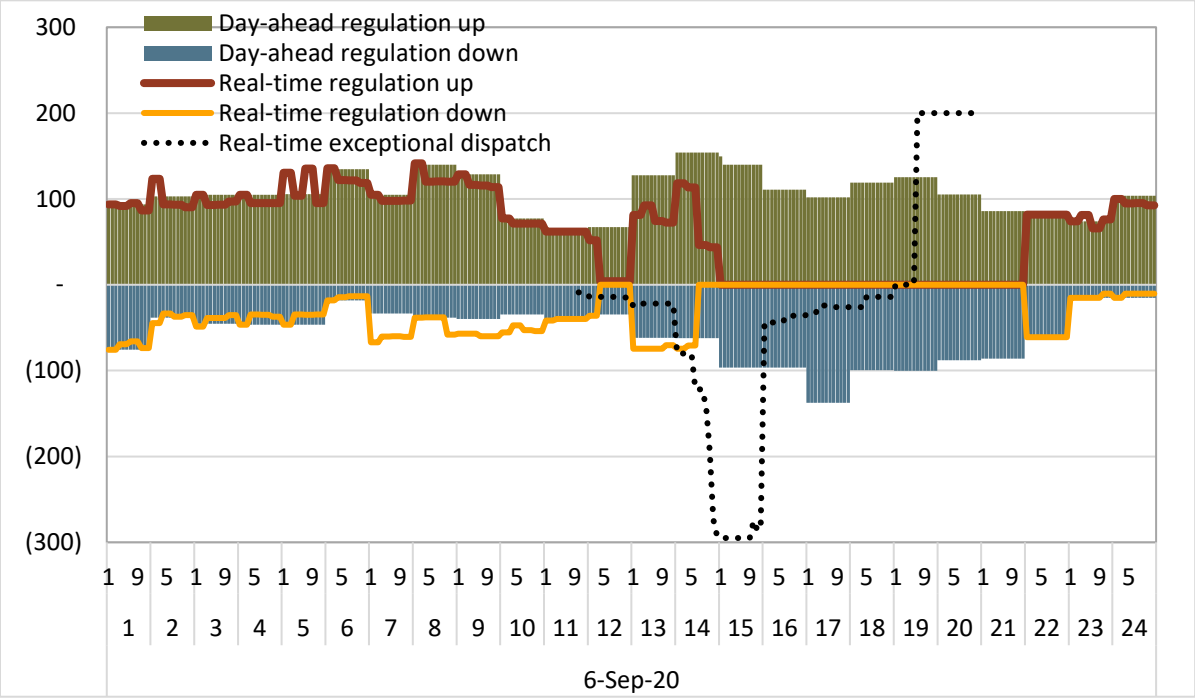
For example, on September 6, 2020, the ISO issued exceptional dispatches for a large portion of the battery fleet to charge in hour ending 15 (2-3pm) and discharge across the net load peak. To ensure that these resources maintained sufficient state of charge between hour ending 15 and net load peak, the ISO also issued instructions for batteries to operate at 0 megawatts for multiple hours. Currently, the ISO issues static megawatt operating instructions as it does for other generation types, rather than state of charge instructions to storage resources.

DMM observed several apparent inefficiencies in the current process for issuing exceptional dispatches to storage resources:

- The megawatt exceptional dispatch instructions did not appear to consider current state of charge, so some resources nearing full state of charge could not completely follow exceptional dispatch instructions to charge more.
- Battery resources on this day were largely scheduled for regulation up and down. When the ISO issued static megawatt instructions, these resources were also backed off their regulation awards (no longer had upward or downward headroom), forcing the market to find a significant amount of regulation capacity on other resources.

- Issuing static zero megawatt instructions prevented battery resources from providing either energy or ancillary services between hour ending 15 and about hour ending 18.

September 6, 2020 – Aggregate day-ahead and real-time regulation awards and exceptional dispatch of battery resources



While DMM believes the new ESDER4 end-of-hour state of charge functionality can help the ISO better position battery resources to meet system needs, this functionality is not scheduled to be implemented until fall 2021. For summer 2021, DMM recommends that the ISO consider the following to enhance its processes for issuing exceptional dispatches to storage resources, instead of moving forward with its proposed minimum state of charge proposal:

- Use real-time forecasts and real-time system conditions instead of day-ahead conditions to determine the need to issue minimum state of charge instructions to battery resources, instead of being informed only by day-ahead conditions. Potentially conduct such assessments starting midday to capture the lowest net load/lowest prices where it would be most economic for storage resources to start charging.
- The ISO could consider deriving system or local minimum energy needs from storage resources on stressed system days based on real-time conditions (stepped in across the net load ramp) and assign minimum state of charge requirements to individual resources by allocating total energy requirements across battery resources that can meet each requirement. Stepping in minimum state of charge constraints across the evening ramp could help maintain flexibility on resources to potentially respond to real-time needs during

the net load ramp. This approach is in contrast to the ISO's proposal which would hold a minimum state of charge value to meet a resource's day-ahead discharge schedule, between the last hour with a charge schedule or lowest price hour observed in the day-ahead market and the start of the day-ahead discharge schedule.

- Issue exceptional dispatches as a minimum state of charge values instead of static megawatt values. This would allow storage resources to better maintain any existing operating reserve awards. Issuing exceptional dispatches as minimum state of charge values would also allow the market to assign more feasible awards given resources' existing state of charge.