

# Memorandum

**To:** ISO Board of Governors  
**From:** Anna McKenna, Vice President of Market Design and Analysis  
**Date:** March 15, 2023  
**Re:** **Decision on minimum state of charge extension**

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*This memorandum requires ISO Board of Governors.*

## EXECUTIVE SUMMARY

Management proposes to extend the minimum state of charge constraint that was developed as part of the enhancements for summer 2021 readiness initiative. The proposal extends the effective date of the minimum state of charge until the software developments associated with the replacement tools developed in the energy storage enhancements initiative are implemented, currently expected fall 2023.

The minimum state of charge constraint was developed and approved by the Board of Governors in April 2021 as an interim solution to address the challenge of operating storage resources in the real-time market during tight system conditions. The constraint was developed to ensure that storage resources remain sufficiently charged during critical conditions, and do not discharge prematurely when needed later in the day, such as during net load peak hours. The constraint was triggered on a limited number of days during very tight supply conditions and has worked as intended.

The goal is to no longer have to use the minimum state of charge constraint because it will be replaced by a more comprehensive set of tools to ensure storage resource availability that were approved by the ISO Board of Governors and WEIM Governing Body in December 2022. These more comprehensive set of tools, when implemented, will provide ISO operators with enhanced state of charge visibility and control via exceptional dispatch functionality. These enhancements also provide opportunity cost compensation for resources that are exceptionally dispatched to hold state of charge.

To address stakeholder concerns and ensure the minimum state of charge tool expires even in the event of implementation delays, Management proposes to sunset the minimum state of charge constraint no later than September 30, 2023.

This proposal falls under the WEIM Governing Body's advisory role authority which they will be considering at its March 21, 2023 meeting.

***Moved, that the ISO Board of Governors approve Management's proposal pertaining to the minimum state of charge extension as described in the memorandum dated March 15, 2023; and***

***Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement these changes, including any filings that implement the overarching initiative policy but contain discrete revisions to incorporate Commission guidance in any initial ruling on the proposed tariff amendment.***

## **BACKGROUND and PROPOSAL**

The minimum state of charge constraint was developed as part of the initial market enhancements for summer 2021 readiness initiative. It was designed to help manage storage resources during tight conditions and address concerns with operating storage resources in the real-time market. Specifically, the constraint mitigates the risk storage resources may be unable to meet day-ahead discharge schedules in the real-time market because they were either insufficiently charged or discharged prematurely, leaving them unable to meet their day-ahead schedules for later hours when their energy may be essential to maintain reliability. These challenges were evident during summer 2022, including during the September 2022 heatwave event, when the minimum state of charge constraint was used to help manage reliability. Because storage capacity has will continue to grow significantly, this constraint or its replacement will play an increasingly critical role in maintaining reliability.

Because the minimum state of charge constraint helps manage the way resources operate and is not a market based mechanism, the constraint was developed to be used only under very limited circumstances. The ISO enforces the minimum state of charge constraint only during critical hours when the reliability unit commitment process projects a supply shortfall. These conditions occurred on only 14 days in 2020, 6 days in 2021, and 14 days in 2022. The minimum state of charge requirement is limited by design in that it: 1) only applies to resource adequacy resources, 2) is only applied on the most constrained days, and 3) is only applied to discharge awards during critical hours.

When used, the minimum state of charge constraint ensures state of charge for storage resources during the most critical hours of the day. If the minimum state of charge constraint had not been in place during recent summer heatwave events, storage resources would have been further depleted and required considerable manual effort by operators to preserve the necessary state of charge for later in the day. Though operators took manual actions when the constraint was enforced, the constraint obviated the need to take other significant manual actions, including determining the current state of charge, the target state of charge, and the amount of time needed to

reach the target state of charge for each storage resource, followed by entering an exceptional dispatch to charge the resource and updating the exceptional dispatch once the storage resource achieves the target state of charge. Overall, the minimum state of charge constraint worked as designed, ensuring that storage resources with resource adequacy obligations maintain state of charge during critical hours, and operators did not have to issue even more manual dispatches than necessary with the requirement.

The minimum state of charge constraint was developed as a temporary measure to be in place for summer 2021 and 2022, which would allow time for the development and implementation of energy storage enhancements that would replace the need for the minimum state of charge constraint. The replacement tools provide operators with greater state of charge visibility and increased abilities to issue exceptional dispatches rapidly and efficiently. It also includes opportunity cost compensation for storage resources exceptionally dispatched and required to hold state of charge for use later. These tools can replace the minimum state of charge constraint and continue to ensure reliable operation on days with the tightest conditions.

Although the policy development work to replace the minimum state of charge constraint was completed in the energy storage enhancements initiative, the software development for these improvements will not be fully implemented until fall 2023. Because these replacement features will not be in place before summer 2023, Management proposes to continue to apply the existing minimum state of charge constraint under limited specified conditions until development and implementation of the new tool and market rules is complete, but no later than September 30, 2023.

## **STAKEHOLDER POSITIONS**

Several stakeholders expressed support for the extension of the minimum state of charge constraint provided the ISO minimizes the duration of the extension. Other stakeholders—primarily storage operators and generation representatives—generally opposed the extension of the minimum state of charge constraint. These stakeholders requested the ISO develop the replacement tools prior to summer 2023, asserting that the minimum state of charge constraint disadvantages storage resources, and the ISO already expressly committed to retire the requirement after two years of use.

In response to stakeholder feedback, Management updated the proposed sunset date from September 30, 2024 to September 30, 2023 in the final proposal. The ISO is committed to developing and implementing the replacement tools as expeditiously as possible, and has prioritized the software development for these tools. Management originally proposed the September 30, 2024 sunset date to ensure continuity in the event of unanticipated delays in the software development process. However, given stakeholder concerns and the ISO's focus on prioritizing the development of the replacement tools, the final proposal specifies that the minimum state of charge requirement will not extend beyond September 30, 2023. This will ensure that operators have tools to reliably operate the grid this summer, and will allow time for development of the replacement tools in fall 2023.

## **CONCLUSION**

Management requests the ISO Board of Governors approve Management's minimum state of charge extension proposal described in this memorandum. This proposal will extend the use of the minimum state of charge constraint until September 30, 2023, allowing time for the implementation of new exceptional dispatch functionality and associated settlement rules from the energy storage enhancements initiative.