

Memorandum

To: ISO Board of Governors

From: Neil Millar, Vice President of Infrastructure and Operations Planning

Date: January 25, 2023

Re: **Decision on ISO Planning Standards**

This memorandum requires ISO Board of Governors action.

EXECUTIVE SUMMARY

Management is seeking the Board of Governors' approval of the ISO Planning Standards which update the RAS Guidelines, Attachment 1. The ISO is the most prolific user of remedial action schemes (RAS) in the West, and among ISOs and RTOs in North America. Over the years, the ISO has selected RAS over new transmission facilities primarily due to faster implementation timelines, lower costs, increased utilization of existing facilities and a more efficient use of scarce transmission resources associated with the RAS. RAS proved particularly useful in addressing multiple-contingency-related needs associated with renewable generation interconnection, which also led to more RAS being developed and implemented in the ISO than other jurisdictions with less aggressive renewable generation goals. The ISO's use of the RAS has been shaped by guidelines that are part of the California ISO Planning Standards. The current guidelines focus more or less exclusively on the complexity of the RAS itself, but not on the potential interaction with other actions, particularly interaction with the ISO market.

Very straightforward RAS require no coordination with the market. More complex RAS are often managed through the use of nomogram constraints in the market. As the complexity has continued to grow, the ISO has developed even more refined "Generation Contingency and Remedial Action Scheme Modeling."

The ISO Planning Standards, however, require additional enhancements to limit the level of logic complexity through combining multiple features that were acceptable individually but that could compound to a level that cannot be integrated into market operation while still adhering to the established market clearing rules. These can create real reliability risks to the system if the current trajectory is not changed on RAS deployment.

The overarching concern is that oscillatory behavior in the market converging on a solution could be introduced when the RAS is conditionally triggered. For example, a resource may be scheduled with a relatively high output that creates a binding constraint that triggers the

RAS. To mitigate this issue, the resource would be scheduled at a lower value to avoid triggering the RAS. At this lower value, however, the monitored condition would not be violated in the next market iteration, and so the RAS may no longer be applied. Then, without the RAS applied, the resource would again be scheduled at a high output and the cycle would repeat. Updating the ISO Planning Standards is needed to address these issues and ensure system reliability is not compromised by lack of coordination with market operation.

To avoid this oscillatory behavior, the RAS guideline update includes setting limits for generation armed on a particular RAS at any time based on the maximum interconnection service capacity of the generation instead of the actual dispatched level at that time, connecting only the most effective generation to the RAS rather than connecting all possible generation. This will help mitigate complication of the RAS arming and market modeling process, and avoid the use of dynamic arming and generation tripping based on generation levels and transmission flow levels.

Management recommends the following motion:

Moved, that the ISO Board of Governors approves the ISO Planning Standards, as described in the memorandum dated January 25, 2023, and as included as Attachment 1 thereto.

DISCUSSION AND ANALYSIS

The current planning standards have been in effect since September 2018, and the RAS guidelines have not changed since 2002 in the early ISO Planning Standards. A stakeholder process to review and update the RAS guidelines was initiated in June 2021. The following proposed changes were developed through the ISO stakeholder process:

- Updating the current System Protection Schemes (SPS) guidelines in the ISO Planning Standards to align with and complement NERC Reliability Standards. The SPS Guidelines will be updated as Remedial Action Schemes (RAS) guidelines in accordance with the NERC terminology. With the implementation of NERC Standard PRC-012, redundant language was removed from the ISO guidelines.
- Setting the limits for generation armed on a particular RAS at any time based on the maximum interconnection service capacity of the generation instead of the dispatched level at that time, connecting only the most effective generation to the RAS rather than connecting all possible generation and complicating the RAS arming and market modeling process, and avoiding the use of dynamic arming and generation tripping based on generation levels and transmission flow levels.

- Setting out, subject to limited exceptions, that generation or load that is to be tripped has at least a 10% effectiveness factor, and avoiding the monitoring of facilities more than 1 substation away from the point of interconnection of the generation to be tripped.
- Specifying that RAS can be designed to trip storage in the discharging mode or in the charging mode but not both.
- Allowing a temporary relaxation of the guidelines during the time needed to complete an approved transmission upgrade. In addition, for multiple element contingences that are not in the ISO market model, the guidelines can be considered to be more flexible.

POSITION OF PARTIES

The ISO received generally supportive comments and detailed questions throughout the stakeholder process.

The ISO received comments on the Draft Final Proposal from San Diego Gas & Electric (SDG&E) and from AES Clean Energy (AES). SDG&E recommended that some of the guidelines be classified as standards, or that a tracking process should be established to document any RAS that do not meet the guidelines. The ISO discussed these comments with SDG&E and agreed to work with Participating Transmission Owners on a tracking process for all new RAS and their alignment with the RAS guidelines. The ISO also agreed to review existing RAS as part of the annual transmission planning process or as part of the NERC PRC-012 standard review. AES raised concerns with the guideline to avoid the monitoring of facilities more than 1 substation away. The ISO explained that remote monitoring of facilities can add complexity to system operation due to the need for telecommunication facilities, and that remote facilities tend to be less effective for mitigating the problem. To further address AES' concerns, the ISO modified this guideline language to allow relaxing this guideline if the generation to be tripped is highly effective in providing loading relief and there is no issue with operational complexity or RAS implementation. A detailed comment response matrix has been posted on the ISO website.¹

CONCLUSION

Management recommends the ISO Board of Governors approve the attached ISO Planning Standards which update the RAS Guidelines. Upon Board approval, Management will apply the updated planning standards in the 2022-2023 transmission planning process that is underway.

¹ <https://stakeholdercenter.caiso.com/StakeholderInitiatives/Planning-standards-remedial-action-scheme-guidelines-update>