

**UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION**

Climate Change, Extreme Weather, and
Electric System Reliability

Docket No. AD21-13-000

Comments of the California Independent System Operator Corporation

The California Independent System Operator Corporation (CAISO) submits these comments in response to the Commission’s March 21, 2021 supplemental notice inviting comments on various issues surrounding the threat to electric system reliability posed by climate change and extreme weather events.¹ In recent years, the CAISO has experienced drought, wildfire, and extreme heat events. These conditions have posed a threat to reliable electric service and, to some degree, have exposed issues in connection with CAISO market rules, resource planning, and resource capabilities. The CAISO and affected stakeholders are working to address these issues, but these events provide opportunities to rethink strategies to enhance electric grid reliability.

Recognizing that some activities are more appropriately subject to state authority, the Commission should identify strategies in this proceeding for the electric industry to prepare for, adapt to, and mitigate the threat to electric system reliability posed by climate change and extreme weather events. In identifying any strategies, the Commission should consider regional differences, the need for regional flexibility, and the efforts already underway in the various regions to address the threat posed climate change and extreme weather events.

¹ *Supplemental Notice of Technical Conference Inviting Comments* dated March 15, 2021 in Docket AD21-13.

I. Background

The CAISO is a nonprofit public benefit corporation domiciled in the State of California. Under the functional model administered by the North American Electric Reliability Corporation, the CAISO is registered as a Balancing Authority, Transmission Operator, Planning Authority and Reliability Coordinator. As a Balancing Authority and Transmission Operator, the CAISO operates wholesale electricity markets for the benefit of approximately 80 percent of electric demand in California and small portion of electric demand in the state of Nevada. The CAISO also serves as the market operator for the western Energy Imbalance Market, which provides real-time market services to participating balancing authorities throughout the Western Interconnection. In its role as a Planning Authority, the CAISO plans for and approves additions to the CAISO controlled grid. As RC West, the CAISO serves as the Reliability Coordinator for 41 balancing authorities and transmission operators in the western United States.

The questions set forth in the Commission's notice seek perspectives on the challenges posed to electric system reliability by climate change and extreme weather. The questions span multiple topics across the planning and operational time horizons. To some extent, the questions echo the Commission's inquiry into grid resilience regions operated by regional transmission owners (RTOs) and independent system operators (ISOs).² In response to those questions, the CAISO recommended the Commission take a holistic approach that also considers the unique circumstances and conditions facing each region.³ The same holds true here. Climate change and

² Order Terminating Rulemaking Proceeding, Initiating New Proceeding, and Establishing Additional Procedures issued January 8, 2018 in Commission Docket AD18-7.

³ CAISO comments in AD18-7 dated March 9, 2018.
<https://elibrary.ferc.gov/eLibrary/filedownload?fileid=14838222>

extreme weather will affect different parts of the country differently. Ensuring electric grid reliability will require different approaches and solutions. Nevertheless, the objective of the Commission's inquiry should be to identify common strategies to help the electric industry prepare for, operate through, and recover from reliability threats arising from climate change or extreme weather.

II. The experience of RTOs/ISOs will help guide the conversation to identify strategies to ensure electric grid reliability

The CAISO's experiences with drought, wild fire and extreme heat events in recent years offer an opportunity to assess what practices the electric industry should pursue to prepare for, adapt to and mitigate the threat to electric grid reliability. Drought has affected the availability of hydroelectric facilities in some years and revealed the value provided by a portfolio of geographically diverse resources with different fuel types. This fact is especially true as policymakers seek to develop a carbon neutral grid. Wildfire threats have forced the CAISO to adapt its dispatch of resources to account for de-energization programs administered by transmission owners and forced transmission outages. Extreme heat events have revealed the need for clarity regarding rules for transmission operations across the Western Interconnection during tight supply conditions. They have also exposed the need to evolve resource planning decisions and appropriately assess resource capabilities so that we are energy sufficient in all hours. At the same time, the extreme heat events revealed an untapped resource in the ability of electric demand to respond to conservation signals.

The answers to questions regarding how to prepare for, operate through, and recover from threats to electric grid reliability posed by climate change and extreme weather will require input from all affected stakeholders and the willingness to learn

from lessons in other regions. In some cases, states are already examining these questions with respect to their electric utilities. For example, the California Public Utilities Commission (CPUC) has initiated a proceeding to integrate adaptation strategies involving climate change into relevant proceedings involving electric and gas utilities.⁴ A critical role that RTOs/ISOs play is to increase transparency about operational needs on the bulk power system to inform these state proceedings. In addition, RTOs/ISOs have primary responsibility in their regions for planning processes, market design rules, operating plans, real-time coordination, and system restoration efforts. Based on identified and accepted strategies, RTOs/ISOs can evolve these processes as appropriate to address threats to electric reliability posed by climate change and extreme weather.

III. The Commission should facilitate a dialogue to identify strategies to address the threat to electric grid reliability posed by climate change and extreme weather events

As referenced, the Commission has identified a broad category of questions for consideration at its upcoming technical conference. In addition to exploring these questions over the course of this proceeding, the Commission should seek to identify strategies to address the threat to electric grid reliability posed by climate change and extreme weather events. These strategies might inform a number of different activities to prepare for, adapt to and mitigate climate change, and could include:

- Diversifying portfolios in integrated resource-planning decisions made by state and local regulatory authorities.
- Encouraging steps to make physical assets more resilient to mitigate impacts of extreme weather conditions on electricity transmission and supply

⁴ *Order Instituting Rulemaking to Consider Strategies and Guidance for Climate Change Adaptation*, Rulemaking 18-04-019, April 26 26, 2018. More information about this effort is available on the CPUC's website: <https://www.cpuc.ca.gov/climatechangeadaptation/>

- Assessing resource adequacy rules and requirements for load serving entities and resources to ensure energy sufficiency in all hours and meet atypical demand during extreme weather events.
- Developing local or regional planning assessments to identify electric transmission infrastructure needs in the face of climate events.
- Revising interconnection policies to support onboarding resources needed to support state policies seeking to transition to a carbon neutral electricity grid.
- Enhancing electricity market design to integrate resources needed to transition to a carbon neutral electricity grid and ensure they are available to meet electric demand throughout critical operating hours.
- Improving coordination between electric transmission and natural gas operators.
- Enhancing visibility on the operation of distributed energy resources and improving coordination between transmission and distribution system operators.
- Encouraging common communication protocols for flexible demand such as electric vehicles and supply equipment, smart devices, and other distributed energy resources to respond to coordinated dispatch signals.
- Assessing the feasibility of sectionalizing transmission and sub-transmission systems (manually or automatically) into smaller systems to enhance resilience and recovery capabilities.
- Ensuring new technologies are capable of providing essential reliability services.
- Enhancing system restoration planning to identify potential common mode failures and consider various resource operating requirements to support restoration needs.
- Establishing communication protocols to ensure grid users have advance notice of extreme weather events and can modify operations when practicable.
- Encouraging coordinated tabletop exercises to ensure grid operators have prepared to operate through and recover from extreme weather events.

IV. Conclusion

The CAISO supports the Commission's effort to facilitate a dialog to identify how each region can best address the risk to electric grid reliability associated with climate change and extreme weather events. In the context of its upcoming technical conference, the CAISO recommends the Commission work to identify strategies to guide how each region can best meet this challenge.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service lists in the above referenced proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010)

Dated at Folsom California this 15th day of April, 2021.

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