

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Managing Transmission Line Ratings

Docket No. AD19-15

**Prepared Statement of Dede Subakti
on behalf of the California Independent System Operator Corporation**

My name is Dede Subakti. I serve as Director, Operations Engineering Services at the California ISO (CAISO).¹ In this role, I oversee various functions, including completing resource adequacy assessments, seasonal operating studies, outage coordination studies, day-ahead reliability analysis, and real-time operations engineering analysis, as well as developing operating procedures, tools, and other engineering needs to support system operations. My remarks today address topics identified in Panel III of this technical conference: *Possible Requirement for Transmission Owners to Implement Ambient Adjusted Line Ratings (AARs)*. I briefly explain that the CAISO incorporates AARs into its operations. I also address how AARs may enhance reliable and efficient market operations but also identify the potential challenges that could arise with greater use of AARs. The Commission must weigh the benefits and challenges associated with adopting any requirement for transmission owners to implement AARs. The CAISO recommends that the Commission allow

¹ Prior to joining the CAISO, I worked with OATI, Inc. managing project development for various transmission system applications for transmission service providers in both the Western and Eastern Interconnections. Prior to my work with OATI, I served as Manager of Regional Operations Engineering at the Midwest ISO (now Midcontinent ISO) where I managed real-time operations engineers providing control room operations support. I have also worked with representatives of both the North American Electric Reliability Corporation and the Western Electricity Coordinating Council to develop reliability standards and support operation of the Western Interconnection. I am a licensed Professional Engineer with the State of Minnesota and a certified NERC System Operator. I received a Master of Business Administration from the Carlson School of Management at the University of Minnesota and Master of Electrical Engineering from Iowa State University with an emphasis in power systems. I also earned a Bachelor of Science in Electrical Engineering from Iowa State University.

transmission providers to determine whether it is operationally practical to use AARs for all or even some transmission facilities. If a transmission provider elects to use AARs, the Commission *should not* direct the adoption of a specific communications technology to accommodate AARs or dynamic Total Transfer Capability into their operations. Transmission providers should have the flexibility to leverage existing technology and use the most efficient means to incorporate this information into their operations.

The CAISO implements transmission equipment ratings provided by participating transmission owners. In some cases, participating transmission owners do provide temperature adjusted ratings. Some of these adjustments are relatively static, *i.e.*, they are seasonal and do not change on a day-ahead or real-time basis, and some are more dynamic, *i.e.*, they may change on a daily basis. The CAISO believes it is appropriate for participating transmission owners to continue to determine whether to use temperature adjusted ratings for transmission equipment placed under the operational control of the CAISO. In addition, participating transmission owners should remain the responsible entities for communicating the operationally appropriate adjusted ratings to the CAISO.

The principal benefit of using AARs is a more accurate understanding of the transfer capability of the transmission system at any point in time. This may include increased or decreased availability that the transmission provider can model in its day-ahead and real-time operations. All else being equal, this information should promote more reliable and efficient transmission operations. Although the CAISO has the capability to receive AARs using Inter-Control Center Communications Protocol (ICCP) or through the CAISO's Outage Management System, the fundamental challenge is to

forecast this availability accurately and transmit it to entities like the CAISO in a timeframe in which this adjusted rating can be incorporated into the Energy Management System and market operations.

A significant concern that the Commission should consider in weighing any requirement for transmission owners to implement AARs is whether this more accurate calculation will enhance or distort market efficiency. For example, an AAR for a particular transmission line may well provide greater Total Transfer Capability and permit a more efficient security constrained economic dispatch. In this case, an adjusted rating has the potential to create or resolve congestion rising on the transmission system.

On the other hand, calculating and implementing an AAR for a specific transmission facility may not in all cases result in a more efficient market solution if no congestion exists on a line or there exist other limitations that prevent utilization of increased transfer capability, such as stability or voltage issues. In addition, changes to transmission equipment ratings in the day-ahead timeframe may create variances to how the CAISO has modeled its system for purposes of issuing congestion revenue rights. Implementing AARs in the real-time market may give rise to variances between Total Transfer Capability used in the CAISO's hour-ahead scheduling process for intertie transactions and the CAISO's fifteen minute market or 5-minute real-time dispatch. These variances may result in pricing impacts that create unexpected market outcomes. The Commission would need to explore whether it is more efficient to reflect these variances or if they create unnecessary uncertainty with respect to how market participants schedule and bid their resources. The Commission would also need to

weigh these considerations in connection with the Energy Imbalance Market.

Significant real-time changes to temperature adjusted ratings of transmission facilities may give rise to dispatch outcomes that vary significantly from how EIM Entities have positioned their resources to serve load using base schedules. In addition, the Commission would need to consider how AARs may impact a look-ahead optimization in which the transmission provider is modeling supply and demand not just in a binding market interval but based on forecasted system needs in subsequent market intervals. Accordingly, the CAISO urges the Commission to balance the increased efficiency and reliability benefits associated with AARs against the increased volatility such ratings may create in market outcomes.

Transmission providers should continue to determine whether it is operationally practical to use the AARs for all or even some transmission facilities. The Commission should also provide these entities with the latitude to structure their systems in a way that leverages existing technology to receive these AARs and incorporate them into their Energy Management Systems and/or market systems.