

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking on the
Commission's Own Motion to improve
distribution level interconnection rules and
regulations for certain classes of electric
generators and electric storage resources.

Rulemaking 11-09-011
(Filed April 7, 2021)

**OPENING COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION ON ADMINISTRATIVE LAW JUDGE'S RULING
SEEKING RESPONSES TO QUESTIONS ON LOAD MASKING WORKSHOP**

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I. Introduction

The California Independent System Operator Corporation (CAISO) submits comments on the *Administrative Law Judge's Ruling Seeking Responses to Questions on Load Masking Workshop* (Ruling). The CAISO appreciates the Commission, Commission Staff, and stakeholders' diligence in exploring these growing, critical issues. Parties must continue to monitor the proliferation of net energy metering (NEM) resources to avoid reliability issues and adverse market impacts. To ensure reliability, the Commission should direct the utilities to share telemetry and site-specific information (*e.g.*, resource technology type and capacity) with CAISO for both exporting and non-exporting transmission-connected resources with capacity greater than 1 MW under Rule 21.

In the January 26 workshop, the CAISO presented on the short-term load forecasting and operational challenges associated with a lack of visibility into the operation of distributed energy resources (DER) and behind-the-meter (BTM) resources. The CAISO's presentation was not limited to large transmission-connection resources under Rule 21. To coordinate on DER and BTM data needs more broadly, the CAISO recommends the Commission coordinate data needs

discussed in this proceeding with Phase 1 Track 2 of R.22-11-013. The intent of that proceeding track is to identify stakeholders' data needs for DERs and smart meters.¹ Coordinating across both proceedings will allow the Commission and parties to develop a consistent set of data requirements and establish a single data platform for DERs (including resources outside of Rule 21) that are invisible to the CAISO today.

II. Responses to Questions on Load Masking Workshop

Question 1) Is the definition for load masking, provided in this ruling, appropriate?

The November 13, 2022 Smart Invertor Working Group meeting defined “load masking” as “a situation in which the lack of generation output visibility prevents system operators and engineers from determining the real system load conditions which can inhibit the ability to plan and operate the distribution system.”² This definition *almost* is accurate. The CAISO takes exception to the definition’s specific reference to the distribution system alone.³ This reference implies that load masking only affects the distribution system. As well-documented in this proceeding, there is significant load masking directly on the transmission grid itself. But more critically, even load masking on the *distribution* system can “inhibit the ability to plan and operate” the *transmission* system. When NEM generation drops and masked loads suddenly appear, the effects reach the transmission system and the wholesale markets, which must suddenly respond to balance supply and demand. For this reason, the CAISO strongly recommends replacing the reference to “the distribution system” with a broader term such as “the grid” or the “distribution and transmission systems.”

¹ OIR to Consider Distributed Energy Resource Program Cost-Effectiveness Issues, Data Use and Access, and Equipment Performance Standards, R.22-11-013, November 23, 2022.

² Ruling at 3.

³ Additionally, the use of “which” either requires a preceding comma or should be replaced with “that.”

The CAISO also recommends the Commission add a reference to the impact of load masking on markets. The unexpected and sudden appearance of large load disrupts market schedules and outcomes set in the CAISO day-ahead and real-time markets. Sudden changes in load result in the need for the CAISO to procure additional generation through expedited means, often through exceptional dispatch. Fluctuations in load also increase the CAISO's need for regulation and ancillary services. The Commission thus should consider including a reference to market impacts in its definition of load masking. For example, the complete definition could be "a situation in which the lack of generation output visibility prevents system operators from determining the real system load conditions, which can inhibit the ability to plan and operate the grid and negatively impact wholesale markets."

Question 2) Have parties identified any circumstances where non-export systems create material operational challenges on the transmission grid that are not related to frequency, line loading, or voltage? Describe any identified challenges and the impact these challenges have on grid reliability and safety.

Non-exporting generation and exporting generation are entirely alike in their ability to create load masking.⁴ The CAISO agrees with PG&E's statement that, regardless of exports, customer generation masks load, and large, highly variable generation will mask highly variable load, making CAISO management more difficult even without exports to the grid.⁵ "Not related to frequency, line loading, or voltage" may not be possible to describe, because the sudden appearance of unexpected load invariably will have some impact on frequency, line loading, and voltage. The responsibility of a balancing authority is to balance load and generation. The sudden appearance of previously masked load results in supply and demand imbalances, and the reliability impacts take several forms that the CAISO must address immediately. These impacts

⁴ *I.e.* exporting generation with onsite load, such as NEM customers. Exporting generation with minimal onsite load, such as station power, does not create the load masking issues discussed herein.

⁵ Proposed Decision, p. 18 (citing PG&E Opening Comments to November Ruling at 2).

include frequency excursions, line loading, and voltage impacts, but also can include exacerbating contingencies, disrupting load forecast assumptions, causing outages, and drawing upon operating reserves that did not contemplate the masked loads.

Additionally, lack of visibility into large non-exporting resources can impact transmission planning for local areas. Without data on the magnitude of generation serving customer load, it is difficult for the CAISO to model local demand accurately in areas with high resource penetration, impacting the CAISO's assessments of transmission and resource capabilities needed to maintain reliability in local areas.

Question 3) If there are identifiable operational challenges impacting grid reliability and safety, can these impacts be mitigated through providing greater visibility of non-export system operations? What data points are required and at what frequency?

Yes, the CAISO can significantly mitigate the risks of load masking with sufficient visibility and data. The Commission recognized the importance of providing visibility to the CAISO in its July 2022 Decision directing the investor owned utilities (IOUs) to share Rule 21 telemetry data with the CAISO for exporting transmission-connected resources with capacity greater than 1 MW.⁶ As described above, non-exporting resources mask load and can cause the same forecasting and operational challenges as exporting resources. Accordingly, the Commission should direct the IOUs to share telemetry data collected under Rule 21 for non-exporting transmission-connected resources with capacity greater than 1 MW.

The CAISO also requests "site-specific" information to understand resource capabilities. Specifically, the Commission should direct the IOUs to share the following data for each resource for which they provide telemetry data: location (zip code/busbar); resource type (*e.g.*, solar, battery); date(s) active; system size (*e.g.*, AC and DC, if available); maximum and

⁶ Decision Modifying Rule 21, D.22-07-001, July 14, 2022.

minimum capacity (MW); and storage duration (MWh), if applicable. The CAISO also recommends that the Commission direct the IOUs to share available solar-specific attributes including mounting type (*e.g.*, fixed or tracking).⁷

Question 4) Some transmission-interconnected systems are smaller than the one-megawatt threshold that triggers a requirement for telemetry. Are there operational challenges impacting the reliability and safety of the grid resulting from non-export generation facilities smaller than one megawatt? Explain the nature of these challenges and propose mitigations for these challenges, including required data points.

Individually, the challenges small resources present are smaller. Nevertheless, many small resources can quickly present all the same challenges as a large resource, regardless of whether resources are interconnected to the distribution or transmission systems. This is true especially where small resources aggregate in a dense area or an area already facing reliability or deliverability challenges. The CAISO described its data needs for DERs and BTM resources in its January 26 workshop presentation.⁸ To help inform the CAISO's short-term load forecast and operations, the CAISO needs real time visibility into the MW impact of these resources, either via telemetry or other available methods. Ideally, the CAISO also needs resource data on maximum and minimum capacity, customer and tariff type, expected energy patterns, and trued-up actual energy production, aggregated by technology type and zip code. Trued-up actual production data is critical for training the CAISO's forecasting models to recognize underlying load behaviors. Trued-up actuals and other resource data should be updated at least monthly to maintain the accuracy of the CAISO's forecasting models.⁹

⁷ For a comprehensive summary of the CAISO's data needs by DER type, see slides 16-18 of the CAISO's presentation at the January 26, 2023 load masking workshop, available at: <https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M502/K756/502756408.PDF>

⁸ *Ibid.*

⁹ For more information on how this data is used, see: Comments of the CAISO on OIR, R.22-11-003, January 3, 2023.

The Commission should consider data needs for both distribution- and transmission-connected resources for reliable operation and planning of the grid. Operation of resources outside of the CAISO market connected to both the transmission and distribution systems ultimately have the same impacts to the CAISO's load forecast and operations. The scope of the Commission's R.22-11-013 proceeding focuses on DER data use and access in Phase 1 Track 2.¹⁰ The Commission should leverage Phase 1 Track 2 of R.22-11-013 to develop data requirements to help address load masking issues for aggregations of smaller DERs. The Commission also should coordinate data requirements, reporting, and access with other proceedings at the Commission and California Energy Commission (CEC).¹¹ The CAISO recommends the Commission coordinate data requirements and access across proceedings and with the CEC, and consider developing a common DER data platform for use by state agencies and other planning entities. The Commission can help the CAISO address the risks of load masking from small resources by expediting this coordination.

¹⁰ R.22-11-013

¹¹ *Distributed Energy Resources in the CAISO Market and Operational Awareness*, CEC Docket 22-OII-01, June 1, 2022:
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=243408&DocumentContentId=77214>

III. Conclusion

The CAISO appreciates the opportunity to provide comments in this proceeding.

Respectfully submitted

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