



Market Disruption Report Oct 16, 2021 to Nov 15, 2021

December 15, 2021

CAISO Market Analysis and Forecasting

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I. Background

A Market Disruption is an action or event that causes a failure of a CAISO Market, related to system operation issues or System Emergencies.¹ Pursuant to Section 7.7.6 of the CAISO Tariff, the California Independent System Operator Corporation (ISO or CAISO) can take one or more of a number of specified actions in the event of a Market Disruption, to prevent a Market Disruption, or to minimize the extent of a Market Disruption. The CAISO reports Market Disruption occurrence in any of the following circumstances:

- When any of the CAISO market processes fail to publish, including the Integrated Forward Market (IFM), Residual Unit Commitment (RUC), the Real-Time Market, which includes the Hour-Ahead Scheduling Process (HASP), Fifteen Minute Market (FMM), and the Real-Time Dispatch (RTD) processes;
- When the CAISO manually overrides the closing of the Day-Ahead Market; or
- Any time that the CAISO removes Bids from a CAISO Market to prevent a Market Disruption or to minimize the extent of a Market Disruption.

The Market Disruption report contains the following information:

- The frequency and types of actions taken by the CAISO pursuant to Section 7.7.6;
- The nature of the Market Disruptions that caused the CAISO to take action, or the Market Disruptions that were successfully prevented or minimized by the CAISO as a result of taking action, and the CAISO's rationale for taking such actions pursuant to Section 7.7.6;
- Information about the Bids (including Self-Schedules) removed pursuant to Section 7.7.6 (*i.e.*, megawatt quantity, point of interconnection, specification of the Day-Ahead versus Real-Time Bid, and Energy or Ancillary Services Bid); and
- The CAISO's rationale for its removal of Bids (including Self-Schedules) pursuant to Section 7.7.6.²

¹ Section 7.6 and 7.7 of the CAISO Tariff refer to these system operation issues or System Emergencies, respectively. CAISO Tariff, Appendix A, definition of Market Disruption. Capitalized terms not otherwise defined herein have the meanings set forth in the CAISO Tariff.

² *Id.* at P 29 & n.29.

II. Report on Market Disruptions Occurring from October 16, 2021 through November 15, 2021

The CAISO’s report on Market Disruptions that occurred from October 16, 2021 through November 15, 2021, is provided in Table 1 and Attachment A below. Attachment A includes an entry for each reportable Market Disruption event and each indicates:

- (1) The date of the Market Disruption;
- (2) The hour and Dispatch Interval when the Market Disruption ended;
- (3) The type of CAISO Market in which the Market Disruption occurred; and
- (4) A description of the nature of the Market Disruption, the nature of any actions taken by the CAISO, the rationale for such actions, and the Market Disruption prevented or minimized as a result of taking such actions.

For each of the CAISO Markets, Table 1 lists the number of Market Disruptions during the time period covered by this report. As shown in Table 1, there were a total of 18 Market Disruptions for the reporting period.

Table 1: Summary of Market Disruption Report

Type of CAISO Market	Market Disruption or Reportable Events
Day-Ahead	
IFM	0
RUC	0
Real-Time	
Fifteen Minute Market Interval 1	2
Fifteen Minute Market Interval 2	1
Fifteen Minute Market Interval 3	1
Fifteen Minute Market Interval 4	0
Real-Time Dispatch	14

Table 1 above shows the market disruptions in the real time market in order to incorporate the FMM binding intervals.

The frequency of RTD failures decreased from 45 to 14 in comparison to the report for the period of September 16, 2021 through October 15, 2021. RTD failures accounted for approximately 78 percent of all of the Market Disruptions during this reporting period.

Planned Maintenance occurred on October 21st and October 28th. On October 21st there were 3 (RTD) disruptions and on October 28th there were 8 (7 RTD, 1 FMM) disruptions due to IFM/RTN patching.

The CAISO made a resource non-participating in IFM due to market failures on October 16th. The resource was made non-participating strictly to resolve the IFM issues and not due to bidding concerns.

The CAISO made resources non-participating in FMM due to market failures on following days - October 17th, October 26th, November 3rd, November 5th, November 9th, and November 15th. The resources were made non-participating strictly to resolve the FMM issues and not due to bidding concerns. Different resources were made non-participating for each day.

The CAISO made resources non-participating in RTD due to market failures on following days – November 1st November 7th, and November 15th. The resources were made non-participating strictly to resolve the RTD issues and not due to bidding concerns. Different resources were made non-participating for each day.

On November 2, 2021, for the day-ahead market run for the November 3, 2021 trading day, there was an issue with obtaining an AC market solution. The CAISO determined after the market close that a significant bid set was missing. Accordingly the CAISO reopened the market to allow for submission of the missing bid set and obtained the AC solution. Specifically, for the day-ahead market run, the ISO's software performs a power flow for the entire West in order to properly account for losses. For the day-ahead run for trade date November 3rd, a Scheduling Coordinator's schedule/bid of load was missing, which generated 24 hours of DC solution. The CAISO re-opened the market to all market participants to get the required data and achieve an AC power flow solution. The ISO will implement additional checks prior to or soon after the close of the market so that this condition is detected earlier.

There was an issue on August 5th in HE 15 in HASP market. The HASP market did not fail, results were produced but not transferred through IDS to SCs. The CAISO informed SCs of the issue and how to obtain the market results. Some SCs did not follow the HASP results and the CAISO is reviewing the circumstances.

Market Disruption for Unique Pricing Feature

The CAISO implemented a feature to ensure unique pricing under a degenerate condition in November 2015, which was implemented along with other pricing enhancements to improve market efficiency.

Table 2 captured below shows the dates and market in which the pricing feature was disabled between October 16, 2021 until November 15, 2021. The uniqueness feature was enabled for all other intervals across all the markets for the timeframe captured in this report.

Table 2: Status of Unique Pricing Feature across Various Markets

The pricing feature was not disabled between October 16, 2021 and November 15, 2021.

ATTACHMENT A

**California Independent System Operator Corporation
Market Disruption Report
December 15, 2021**

Table 3: Market Disruptions, Nature of Actions Taken by the CAISO, Rationale and/or Market Disruption Prevented or Minimized as a Result of such Actions

Count	Date	Hour	Interval	Market	Nature of Actions, Nature of Market Disruption, Rationale and/or Market Disruption Prevented or Minimized as a Result of such Actions
1	10/17/2021	10	7	RTD	RTD results were blocked and previous solution used.
2	10/18/2021	16	9	RTD	RTD results were blocked and previous solution used.
3	10/21/2021	16	1	FMM	FMM did not run due to application problem.
4	10/21/2021	15	7	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
5	10/21/2021	15	8	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
6	10/21/2021	15	9	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
7	10/28/2021	16	1	FMM	FMM did not run due to application problem.

Count	Date	Hour	Interval	Market	Nature of Actions, Nature of Market Disruption, Rationale and/or Market Disruption Prevented or Minimized as a Result of such Actions
8	10/28/2021	15	7	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
9	10/28/2021	15	8	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
10	10/28/2021	15	9	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
11	10/28/2021	15	10	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
12	10/28/2021	15	11	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
13	10/28/2021	15	12	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
14	10/28/2021	16	2	HASP	HASP did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
15	10/28/2021	16	1	RTD	RTD did not run due to patch related system issues. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
16	10/28/2021	16	3	FMM	FMM did not run due to application problem.

Count	Date	Hour	Interval	Market	Nature of Actions, Nature of Market Disruption, Rationale and/or Market Disruption Prevented or Minimized as a Result of such Actions
17	10/28/2021	16	2	RTD	RTD Broadcast failed. The market results for this interval were filled based on the tariff sections 7.7.9 and 29.7(j).
18	11/7/2021	1	3	RTD	RTD results were blocked and previous solution used.

Notes:

Integrated Forward Market (IFM): The Day-Ahead Market run in which the CAISO conducts the market for purchases and sales of Energy for all hours of the next Trading Day based on submitted supply and demand bids, and performs the procurement of Ancillary Services.

Residual Unit Commitment (RUC): The Day-Ahead Market run in which the CAISO conducts unit commitment of additional resources based on submitted availability bids and the forecast of demand for every hour of the next Trading Day.

Fifteen Minute Market (FMM) Interval 1: The first of a series of four market runs conducted every Trading Hour in advance of the Operating Hour. In this run the CAISO conducts the Market Power Mitigation for submitted Bids, which applies to all of the Real-Time Market processes for the given Trading Hour. In this interval the CAISO also conducts the procurement of incremental Ancillary Services from internal resources and dynamic external resources.

Fifteen Minute Market (FMM) Interval 2: The second of a series of four market runs conducted every Trading Hour in advance of the Operating Hour during which the CAISO conducts the HASP. In the HASP, the CAISO conducts the procurement and sale of Energy and Ancillary services from non-dynamic System Resources based on submitted Bids and the CAISO Forecast of CAISO Demand. In this interval the CAISO also conducts the advisory procurement of incremental Ancillary Services from internal resources and dynamic external resources from T to T+60 minutes and procurement for the given Trading Hour.

Fifteen Minute Market (FMM) Interval 3: The third of a series of four market runs conducted every Trading Hour. During this interval the CAISO conducts the commitment of internal Short-Start and Fast Start Units for the Time Horizon of T-30 minutes to T+240 minutes. In this interval the CAISO also conducts the procurement of incremental Ancillary Services from internal resources and dynamic external resources for the given Trading Hour.

Fifteen Minute Market (FMM) Interval 4: The fourth of a series of four market runs conducted every Trading Hour. This interval is for the Fifteen Minute Market for the T-105 minutes to T+60 minutes time horizon. In this interval the CAISO also conducts 15-minute Ancillary Service Awards for non-Hourly System Resources, internal resources and dynamic external resources for the given Trading Hour.

Real-Time Dispatch (RTD): The five-minute interval of any given Operating Hour during which the CAISO conducts the market for Energy based on submitted bids and the CAISO Forecast of CAISO Demand.