

March 15, 2017

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Re: California Independent System Operator Corporation
Docket Nos. ER06-615-_____ and ER07-1257-_____
Market Disruption Report**

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) hereby submits its January/February report covering Market Disruption reportable events under Section 7.7.15 of its Tariff that occurred from January 16, 2017 to February 15, 2017.¹

Please contact the undersigned with any questions.

Respectfully submitted,

By: /s/ Anna A. McKenna

Roger E. Collanton

General Counsel

Anna A. McKenna

Assistant General Counsel

California Independent System

Operator Corporation

250 Outcropping Way

Folsom, CA 95630

Tel: (916) 608-7182

Fax: (916) 608-7222

amckenna@caiso.com

¹ The CAISO submits the Market Disruption report pursuant to *California Independent System Operator Corp.*, 126 FERC ¶ 61,211 (2009), and Section 7.7.15.4 of the CAISO Tariff.



Market Disruption Report January 16, 2017 to February 15, 2017

March 15, 2017

CAISO Market Quality and Renewable Integration

California ISO
250 Outcropping Way
Folsom, California 95630
(916) 351-4400

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 Under Section 7.7.15 of the CAISO Tariff, the California Independent System Operator Corporation (CAISO) can take one or more of several specified actions if a Market Disruption occurs, to prevent a Market Disruption, or to minimize the extent of a Market Disruption. The CAISO reports Market Disruption occurrence in any of these 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 closing 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 this information:

- The frequency and types of actions taken by the CAISO under Section 7.7.15 of the CAISO Tariff;
- The nature of the Market Disruptions that caused the CAISO to take action, or the Market Disruptions successfully prevented or minimized by the CAISO because of taking action, and the CAISO's rationale for taking such actions under Section 7.7.15 of the CAISO Tariff;
- Information about the Bids (including Self-Schedules) removed under Section 7.7.15 of the CAISO Tariff (*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) under Section 7.7.15 of the CAISO Tariff.²

¹ These system operation issues or System Emergencies are referred to in Sections 7.6, 7.7, and 34.10, respectively, of the CAISO Tariff. 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 January 16, 2017 through February 15, 2017

Table 1 in Attachment A provides, the CAISO’s report on Market Disruptions that occurred during the time from January 16, 2017 through February 15, 2017. Attachment A includes an entry for each reportable Market Disruption event and indicates:

- (1) The date of the Market Disruption;
- (2) The hour and Dispatch Interval when the Market Disruption ended;
- (3) The 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 because of taking such actions.

For each of the CAISO Markets, Table 1 lists the number of Market Disruptions and the number of times that the CAISO removed Bids (including Self-Schedules) during the period of time covered by this report. As shown in Table 1, there were 42 Market Disruptions for the reporting period. Table 1 also indicates that the CAISO removed no Bids (including Self-Schedules) in any of its markets during the reporting period.

Table 1: Summary of Market Disruption Report

Type of CAISO Market	Market Disruption or Reportable Events	Removal of Bids (including Self-Schedules)
Day-Ahead		
IFM	0	0
RUC	0	0
Real-Time		
Fifteen Minute Market Interval 1	1	0
Fifteen Minute Market Interval 2	0	0
Fifteen Minute Market Interval 3	2	0
Fifteen Minute Market Interval 4	3	0
Real-Time Dispatch	36	0

Table 1 above shows the market disruptions in the real time market to incorporate the Fifteen Minute Market (FMM) binding intervals.

Software patches caused application problems in several of the Real-Time Dispatch (RTD) and FMM intervals. The frequency of RTD failures increased from 15 to 36 failures compared to the January 2017 Report. RTD failures

accounted for approximately 86 percent of all of the Market Disruptions during this reporting period.

Planned Maintenance occurred on January 26th and February 7th. On January 26th there were 7 (2 FMM, 5 RTD) disruptions and on February 7th there were 3 (1 FMM, 2 RTD) disruptions due to IFM/RTN Patching.

On January 18th there were 2 contingency dispatches and 4 RTD disruptions due to a major transmission line de-rate. On January 19th there was 1 contingency dispatch and 3 RTD disruptions due to renewable deviation. On January 23rd there were 2 contingency dispatches and 4 RTD disruptions due to a major transmission line de-rate. On January 26th there were 2 contingency dispatches and 5 RTD disruptions for testing purposes. On February 5th there was 1 contingency dispatch and 2 RTD disruptions due to renewable deviation. On February 6th there were 2 contingency dispatches and 6 RTD disruptions due to the loss of 500kV lines.

On January 27th the CAISO removed Bids for 17 resources that caused market issues due to an issue scheduling Ancillary Services that caused RUC startups. The CAISO removed resource's Bids strictly to resolve the issue with startups and not due to bidding concerns.

ATTACHMENT A

**California Independent System Operator Corporation
Market Disruption Report
March 15, 2017**

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

Count	Date	Hour	Interval	Market	Nature of Actions, Nature of Market Disruption, Rationale and/or Market Disruption Prevented or Minimized because of such Actions
1	1/18/2017	21	9	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
2	1/18/2017	21	10	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
3	1/18/2017	21	11	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
4	1/18/2017	21	12	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
5	1/18/2017	22	3	FMM	FMM did not run due to application problem. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
6	1/19/2017	10	3	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
7	1/19/2017	10	4	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.

Count	Date	Hour	Interval	Market	Nature of Actions, Nature of Market Disruption, Rationale and/or Market Disruption Prevented or Minimized because of such Actions
8	1/19/2017	10	5	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
9	1/23/2017	18	8	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
10	1/23/2017	18	9	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
11	1/23/2017	18	11	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
12	1/23/2017	18	12	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
13	1/26/2017	12	6	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
14	1/26/2017	12	7	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
15	1/26/2017	12	8	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
16	1/26/2017	12	9	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
17	1/26/2017	12	10	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.

Count	Date	Hour	Interval	Market	Nature of Actions, Nature of Market Disruption, Rationale and/or Market Disruption Prevented or Minimized because of such Actions
18	1/26/2017	16	4	FMM	FMM was run in manual due to patching. Planned maintenance.
19	1/26/2017	16	7	RTD	RTD was run in manual due to patching. Planned maintenance.
20	1/26/2017	16	8	RTD	RTD was run in manual due to patching. Planned maintenance.
21	1/26/2017	16	9	RTD	RTD was run in manual due to patching. Planned maintenance.
22	1/26/2017	16	10	RTD	RTD was run in manual due to patching. Planned maintenance.
23	1/26/2017	16	11	RTD	RTD was run in manual due to patching. Planned maintenance.
24	1/26/2017	17	1	FMM	FMM was run in manual due to patching. Planned maintenance.
25	2/5/2017	21	5	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
26	2/5/2017	21	6	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
27	2/6/2017	13	5	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.

Count	Date	Hour	Interval	Market	Nature of Actions, Nature of Market Disruption, Rationale and/or Market Disruption Prevented or Minimized because of such Actions
28	2/6/2017	13	6	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
29	2/6/2017	14	3	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
30	2/6/2017	14	4	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
31	2/6/2017	14	5	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
32	2/6/2017	14	6	RTD	RTD did not run due to RTCD. Loss clearing payload and LMP filled from previous good interval.
33	2/7/2017	15	4	FMM	FMM was run in manual due to patching. Planned maintenance.
34	2/7/2017	15	7	RTD	RTD was run in manual due to patching. Planned maintenance.
35	2/7/2017	15	8	RTD	RTD was run in manual due to patching. Planned maintenance.
36	2/8/2017	12	5	RTD	RTD results were blocked and previous solution used.
37	2/10/2017	6	6	RTD	RTD Broadcast failed. Loss clearing payload and LMP filled from previous good interval.

Count	Date	Hour	Interval	Market	Nature of Actions, Nature of Market Disruption, Rationale and/or Market Disruption Prevented or Minimized because of such Actions
38	2/10/2017	6	8	RTD	RTD Broadcast failed. Loss clearing payload and LMP filled from previous good interval.
39	2/15/2017	24	3	FMM	FMM did not run due to application problem. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
40	2/15/2017	24	4	FMM	FMM did not run due to application problem. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
41	2/15/2017	24	11	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
42	2/15/2017	24	12	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.

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 four market runs conducted every Trading Hour before 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 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 four market runs conducted every Trading Hour before 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 Trading Hour.

Fifteen Minute Market (FMM) Interval 3: The third 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 Trading Hour.

Fifteen Minute Market (FMM) Interval 4: The fourth 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 Trading Hour.

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

CERTIFICATE OF SERVICE

I certify that I have served the foregoing document upon the parties listed on the official service list in the captioned 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 March 2017.

/s/ Grace Clark
Grace Clark