September 17, 2018

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 June/July report covering Market Disruption reportable events under Section 7.7.6 of the CAISO Tariff that occurred from July 16, 2018, to August 15, 2018.[1]

Please contact the undersigned with any questions.

Respectfully submitted,

By: */s/ Anna A. McKenna*
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[1]   The CAISO submits the Market Disruption report pursuant to *California Independent System Operator Corp.*, 126 FERC ¶ 61,211 (2009), and Section 7.7.6(d) of the CAISO Tariff (CAISO Tariff Section 7.7.15 was moved into Section 7.7.6 in the CAISO's Administrative Pricing tariff amendment, *see Cal. Indep. Sys. Operator Corp.,* 158 FERC ¶ 61,085 (2016)).

Market Disruption Report
July 16, 2018 to August 15, 2018

September 17, 2018

CAISO Market Quality and Renewable Integration

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 (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]

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[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 July 16, 2018 through August 15, 2018

The CAISO's report on Market Disruptions that occurred from July 16, 2018 through August 15, 2018, 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 and the number of times that the CAISO removed Bids (including Self-Schedules) during the time period covered by this report. As shown in Table 1, there were a total of 84 Market Disruptions for the reporting period. Table 1 also indicates that the CAISO did not remove any 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	2	0
Fifteen Minute Market Interval 2	3	0
Fifteen Minute Market Interval 3	5	0
Fifteen Minute Market Interval 4	5	0
Real-Time Dispatch	69	0

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 increased from 36 to 69 in comparison to the July 2018 Report. RTD failures accounted for approximately 82 percent of all of the Market Disruptions during this reporting period.

Planned Maintenance occurred on August 1st, August 2nd, August 8th, and August 14th. On August 1st there were 4 (3 RTD, 1 FMM) disruptions, on August 2nd there were 10 (6 RTD, 4 FMM) disruptions, on August 8th there were 8 (5 RTD, 3 FMM) disruptions, and on August 14th there were 4 (3 RTD, 1 FMM) disruptions due to IFM/RTN patching.

On July 27th there were a total of 7 (6 RTD, 1 FMM) disruptions due to a market software issue. On August 14th there were a total of 14 (RTD) disruptions due to a market software issue.

On July 18th there was a contingency dispatch due to the loss of transfer capability resulting in 3 (RTD) disruptions. On August 2nd there was a contingency dispatch to recover system frequency resulting in 3 (RTD) disruptions. On August 5th there were 2 contingency dispatches due to the loss of transfer capability resulting in 8 (RTD) disruptions. On August 13th there was a contingency dispatch due to the loss of generation resulting in 2 (RTD) disruptions.

ATTACHMENT A

	California Independent System Operator Corporation Market Disruption Report September 15, 2018				
	Table 3: Market Disruptions, Nature of Actions Taken by the California ISO, 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	7/17/2018	22	1	RTD	RTD Broadcast failed. Loss clearing payload and LMP filled from previous good interval.
2	7/17/2018	24	1	DSTUC	DSTUC 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.
3	7/18/2018	16	9	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
4	7/18/2018	16	10	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
5	7/18/2018	16	11	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
6	7/18/2018	17	4	RTD	RTD Broadcast failed. Loss clearing payload and LMP filled from previous good interval.
7	7/18/2018	17	5	RTD	RTD did not run due to application problem. 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 as a Result of such Actions
8	7/20/2018	23	1	RTD	RTD results were blocked and previous solution used.
9	7/26/2018	8	3	RTD	RTD results were blocked and previous solution used.
10	7/26/2018	8	5	RTD	RTD results were blocked and previous solution used.
11	7/26/2018	8	6	RTD	RTD Broadcast failed. Loss clearing payload and LMP filled from previous good interval.
12	7/27/2018	23	9	RTD	RTD failed due application problem. Loss clearing payload and LMP filled from previous good interval.
13	7/27/2018	23	10	RTD	RTD failed due application problem. Loss clearing payload and LMP filled from previous good interval.
14	7/27/2018	23	11	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
15	7/27/2018	23	12	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
16	7/27/2018	24	1	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
17	7/27/2018	24	2	RTD	RTD did not run due to application problem. 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 as a Result of such Actions
18	7/27/2018	24	2	HASP	HASP 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.
19	7/28/2018	24	1	DSTUC	DSTUC 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.
20	7/29/2018	1	1	DSTUC	DSTUC 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.
21	8/1/2018	14	4	FMM	FMM did not run due to IFM/RTN Fallback. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
22	8/1/2018	14	7	RTD	RTD did not run due to IFM/RTN Fallback. Loss clearing payload and LMP filled from previous good interval.
23	8/1/2018	14	8	RTD	RTD did not run due to IFM/RTN Fallback. Loss clearing payload and LMP filled from previous good interval.
24	8/1/2018	14	9	RTD	RTD did not run due to IFM/RTN Fallback. Loss clearing payload and LMP filled from previous good interval.
25	8/1/2018	23	1	RTD	RTD results were blocked and previous solution used.
26	8/2/2018	1	6	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
27	8/2/2018	1	7	RTD	RTD did not run due to RTCD run. 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 as a Result of such Actions
28	8/2/2018	1	8	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
29	8/2/2018	15	4	FMM	FMM did not run due to patch related system issues. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
30	8/2/2018	15	7	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
31	8/2/2018	15	8	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
32	8/2/2018	15	9	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
33	8/2/2018	15	10	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
34	8/2/2018	15	11	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
35	8/2/2018	16	1	FMM	FMM did not run due to patch related system issues. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
36	8/2/2018	16	2	HASP	HASP did not run due to patch related system issues. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.

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
37	8/3/2018	22	4	FMM	FMM did not run due to patch related system issues. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
38	8/3/2018	22	7	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
39	8/5/2018	21	1	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
40	8/5/2018	21	2	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
41	8/5/2018	21	3	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
42	8/5/2018	21	4	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
43	8/5/2018	21	5	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
44	8/5/2018	21	6	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
45	8/5/2018	21	7	RTD	RTD did not run due to RTCD run. 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 as a Result of such Actions
46	8/5/2018	21	8	RTD	RTD did not run due to RTCD run. Loss clearing payload and LMP filled from previous good interval.
47	8/5/2018	23	1	RTD	RTD results were blocked and previous solution used.
48	8/5/2018	24	1	DSTUC	DSTUC 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.
49	8/6/2018	1	1	DSTUC	DSTUC 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.
50	8/8/2018	15	4	FMM	FMM did not run due to patch related system issues. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
51	8/8/2018	15	7	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
52	8/8/2018	15	8	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
53	8/8/2018	15	9	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
54	8/8/2018	15	10	RTD	RTD did not run due to patch related system issues. 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 as a Result of such Actions
55	8/8/2018	16	1	FMM	FMM did not run due to patch related system issues. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
56	8/8/2018	16	2	HASP	HASP did not run due to patch related system issues. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
57	8/8/2018	16	4	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
58	8/10/2018	1	8	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
59	8/13/2018	18	1	RTD	RTD Broadcast failed. Loss clearing payload and LMP filled from previous good interval.
60	8/13/2018	18	2	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
61	8/14/2018	12	12	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
62	8/14/2018	13	2	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
63	8/14/2018	13	5	RTD	RTD did not run due to application problem. 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 as a Result of such Actions
64	8/14/2018	13	6	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
65	8/14/2018	13	7	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
66	8/14/2018	16	4	FMM	FMM did not run due to patch related system issues. This interval was filled either automatically or interactively. MQS published Pnode clearing and resource awards for this interval.
67	8/14/2018	16	7	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
68	8/14/2018	16	8	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
69	8/14/2018	16	9	RTD	RTD did not run due to patch related system issues. Loss clearing payload and LMP filled from previous good interval.
70	8/14/2018	17	1	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
71	8/14/2018	17	2	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
72	8/14/2018	17	3	RTD	RTD failed due to application time-out. 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 as a Result of such Actions
73	8/14/2018	17	4	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
74	8/14/2018	17	5	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
75	8/14/2018	17	6	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
76	8/14/2018	17	7	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
77	8/14/2018	17	8	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
78	8/14/2018	17	9	RTD	RTD did not run due to application problem. Loss clearing payload and LMP filled from previous good interval.
79	8/15/2018	12	12	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
80	8/15/2018	13	3	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
81	8/15/2018	14	1	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
82	8/15/2018	14	2	RTD	RTD failed due to application time-out. 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 as a Result of such Actions
83	8/15/2018	16	1	RTD	RTD failed due to application time-out. Loss clearing payload and LMP filled from previous good interval.
84	8/15/2018	16	2	RTD	RTD Broadcast failed. 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 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.

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 17th day of September, 2018.

/s/ Anna Pascuzzo

Anna Pascuzzo