January 15, 2020

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. ER08-1178-000 and EL08-88-000
November 2019 Exceptional Dispatch Reports (Charts 1 and 2)

Dear Secretary Bose:

The California Independent System Operator Corporation (CAISO) submits both its November 2019 (Chart 1) and November 2019 (Chart 2) Exceptional Dispatch reports as required by the Commission in the September 2, 2009 and May 4, 2010 orders. Because the necessary information is available, the CAISO is issuing the Chart 1 and Chart 2 reports on the 15th of the month. Previously, the Chart 2 report was filed on the 30th of the month.

Each report provides information that the Commission directed be included, as set forth in the September 2, 2009 and May 4, 2010 orders. The Chart 1 report (Attachment A), includes exceptional dispatch information except for cost data and the degree of mitigation and price impact analyses. The Chart 2 report (Attachment B), includes all of the information in the Chart 1 report as well as cost data and the degree of mitigation and price impact analyses.

Respectfully submitted,

By: *<u>/s/ Sidney L. Mannheim</u>*

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ATTACHMENT A

November 2019 Exceptional Dispatch Report
Chart 1 data

Exceptional Dispatch Report

Table 1: November 2019

CAISO Market Quality and Renewable Integration **January 15, 2020**

CAISO
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Introduction

This report is filed pursuant to FERC's September 2, 2009, and May 4, 2010, orders in Docket No. ER08-1178. These orders require two monthly Exceptional Dispatch reports—one issued on the 15th of each month and one originally issued on the 30th of each month. Both Table 1 and Table 2 reports will be issued on the 15th of each month due to the availability of necessary data. This report provides data on the frequency and reasons for Exceptional Dispatches issued in November 2019.

The Nature of Exceptional Dispatch

The CAISO can issue exceptional dispatch instructions for a resource as a pre-day-ahead unit commitment, which may also include an indicative exceptional dispatch energy schedule, a post-day-ahead unit commitment, or a real-time exceptional dispatch.[1] A pre-day-ahead commitment is an exceptional dispatch instruction that commits a resource at or above its physical minimum operating level in the day-ahead market. A post-day-ahead market commitment is an exceptional dispatch instruction that commits a resource at or above its physical minimum operating level in the real-time market. A real-time exceptional dispatch instruction is a dispatch of a resource at or above its physical minimum operating point. A real-time exceptional dispatch above the resource day-ahead award is an incremental exceptional dispatch instruction and an exceptional dispatch below the day-ahead award is a decremental dispatch instruction.

The CAISO issues exceptional dispatch instructions to maintain the reliability of the grid when the market software cannot do so. Whenever the CAISO issues an exceptional dispatch instruction, the operator logs the dispatch and the associated reason.

Many of the exceptional dispatches listed below in Table 1, were to satisfy either a local area or system reliability requirements, and are classified into local generation requirements, transmission management requirements, non-modeled transmission outages or other non-modeled constraints or requirements and intertie emergency assistance. All of the transmission procedures are available on the CAISO website.[2]

The following reason for exceptional dispatch instructions in November 2019 was not related to generation or transmission operating procedures: Software Limitation, when an exceptional dispatch instruction was used to bridge schedules across days for resources with a minimum down time of 24 hours, as the CAISO software does not handle multi day commitment. For instance, a

[1] The CAISO can issue exceptional dispatch instructions subject to authority of the CAISO Tariff Section 34.11 and in accordance with CAISO Operating Procedure 2330 (formerly M-402).

[2] A list of all of the CAISO's publicly available Operating Procedures are available at the following link: http://www.caiso.com/thegrid/operations/opsdoc/index.html

resource has a day-ahead schedule from 0600 till 2300, and then is shut down in 2400. If this resource had a minimum down time of 24 hours and it is required the following day, then the CAISO issues an exceptional dispatch to commit this resource in 2400 so it can be dispatched economically in the following day. Software limitation reason was also used for exceptional dispatches to manually issue shut down instructions to a resource because of a temporary Automatic Dispatch System ("ADS") failure, or similar issues. Interconnection Reliability Operating Limits (IROL) are system operating limits established to prevent instability, uncontrolled separation or cascading as described in operating procedure 3100. System Operating Limit (SOL) are the facility ratings, system voltage limits, transient stability limits, and voltage stability limits used in the operating horizon – any of which can be the most restrictive limit at any point in time, pre – or post – contingency. Control Point (CP) are imposed to protect the area transmission network against N – 1 contingencies. There were a few other reasons used to explain exceptional dispatch instructions in November 2019, which are self explanatory.

The data in Table 1 is based on a template specified in the September 2009 order.[3] Each entry in Attachment A is a summary of exceptional dispatches classified by (1) the reason for the exceptional dispatch; (2) the location of the resource by Participating Transmission Owner ("PTO") service area; (3) the Local Reliability Area ("LRA") where applicable; (4) the market in which the exceptional dispatch occurred (day-ahead vs. real-time); and (5) the date of the exceptional dispatch. For each classification the following information is provided: (1) Megawatts (MW); (2) Commitment (3) Inc or Dec (4) Hours; (5) Begin Time; and (6) End Time.

The MW column shows the range of exceptional dispatch instructions in MW for the classification. The Commitment column specifies if there was a unit commitment for the classification. The INC/DEC column specifies if there was an incremental dispatch or a decremental dispatch from the IFM schedule. The Begin Time column shows the start of exceptional dispatch for the classification and the End Time column shows the end of exceptional dispatch for the classification. The column Hours is the difference between end time and begin time rounded up to the next hour. The data shown is further explained by way of example in Attachment A.

Table 1 indicates there were 245 exceptional dispatches in November 2019, as compared to 302 exceptional dispatches in October 2019. Exceptional dispatches issued for the following reasons accounted for approximately 63 percent of the total exceptional dispatches during the reporting period: planned

[3] The data in Table 1 is principally SLIC information supplemented with data from the Market Quality System (MQS). It is the most accurate currently available and it is worth noting that this data has been through the T+38B initial statement process wherein many unresolved issues are fixed. The CAISO believes that this data will correlate well with the settlements data available in the Table 2 report for the reporting period.

transmission outages, software limitations, load forecast uncertainty, and operating procedure number 7110 (along with 7720). Many of the exceptional dispatches with the reason “Other Reliability Requirement” were due to Real Time Contingency Analysis. Exceptional dispatches with the reason “Real-Time Reliability Requirement” were due to Real Time Contingency Analysis, Voltage Stability Analysis, and operating procedure number 7110.

Table 1: Exceptional Dispatches in November 2019

California Independent System Operator Corporation
Exceptional Dispatch Report
January 15, 2020

Chart 1: Table of Exceptional Dispatches for Period 01/November/2019 - 30/November/2019

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
1	RT	Fast Start Unit Management	SCE	LA Basin	11/6/2019	0	No	INC	2	22:00	23:50
2	RT	Fast Start Unit Management	SCE	LA Basin	11/21/2019	0	No	INC	2	0:15	1:35
3	RT	Gas Limitations	PGAE	Bay Area	11/22/2019	120	No	INC	1	14:00	14:55
4	RT	Gas Limitations	PGAE	Fresno	11/22/2019	14 - 35	No	INC	1	14:00	14:55
5	RT	Gas Limitations	SCE	Big Creek-Ventura	11/22/2019	47.1	No	INC	1	14:00	14:55
6	RT	Gas Limitations	SCE	LA Basin	11/22/2019	5 - 48.36	No	INC	1	14:00	14:55
7	RT	Gas Limitations	SDGE	San Diego-IV	11/22/2019	30	No	INC	1	14:00	14:55
8	RT	Incomplete or Inaccurate Transmission	SCE	LA Basin	11/24/2019	98	No	INC	5	19:00	0:00
9	RT	Incomplete or Inaccurate Transmission	SCE	LA Basin	11/25/2019	98	No	INC	24	0:00	0:00
10	RT	Load Forecast Uncertainty	PGAE	Fresno	11/26/2019	84 - 407	No	INC	1	13:55	14:45
11	RT	Load Forecast Uncertainty	PGAE	NA	11/4/2019	49	No	INC	4	10:00	14:00
12	RT	Load Forecast Uncertainty	PGAE	NA	11/20/2019	48.95	No	INC	4	11:15	15:00
13	RT	Load Forecast Uncertainty	SCE	LA Basin	11/4/2019	10 -20	Yes	INC	12	12:00	0:00
14	RT	Load Forecast Uncertainty	SCE	LA Basin	11/5/2019	20	No	INC	24	0:00	0:00
15	RT	Load Forecast Uncertainty	SCE	LA Basin	11/6/2019	20	No	INC	12	0:00	12:00
16	RT	Load Forecast Uncertainty	SDGE	San Diego-IV	11/4/2019	24	No	INC	3	13:30	16:00
17	RT	Market Disruption	PGAE	Bay Area	11/13/2019	500 - 525	No	INC	1	15:00	15:30
18	RT	Market Disruption	PGAE	Bay Area	11/29/2019	600	No	DEC	1	9:40	10:00
19	RT	Market Disruption	PGAE	Fresno	11/11/2019	83 - 200	No	INC	1	15:05	16:00

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
20	RT	Market Disruption	SCE	Big Creek-Ventura	11/11/2019	200	No	INC	1	15:15	15:30
21	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/1/2019	45 - 60	No	INC	7	17:55	0:00
22	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/2/2019	15 - 45	No	INC	24	0:00	0:00
23	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/3/2019	45	No	DEC	2	20:00	22:00
24	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/3/2019	15 - 45	No	INC	25	0:00	0:00
25	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/4/2019	32	No	DEC	4	16:00	20:00
26	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/4/2019	15 - 32	No	INC	24	0:00	0:00
27	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/5/2019	30	No	DEC	6	14:00	20:00
28	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/5/2019	30	No	INC	24	0:00	0:00
29	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/6/2019	30 - 46	No	DEC	7	13:00	20:00
30	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/6/2019	15 - 48	No	INC	24	0:00	0:00
31	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/7/2019	48 - 60	No	DEC	6	14:00	20:00
32	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/7/2019	48 - 60	No	INC	24	0:00	0:00
33	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/8/2019	32 - 64	No	DEC	8	14:00	22:00
34	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/8/2019	32 - 64	No	INC	24	0:00	0:00
35	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/9/2019	32 - 48	No	DEC	5	15:00	20:00

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
36	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/9/2019	16 - 48	No	INC	24	0:00	0:00
37	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/10/2019	16	No	DEC	3	17:00	20:00
38	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/10/2019	16	No	INC	22	0:00	22:00
39	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/11/2019	15	No	DEC	7	14:00	21:00
40	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/11/2019	15	No	INC	8	6:30	14:00
41	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/12/2019	14	No	DEC	1	23:00	0:00
42	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/13/2019	14	No	INC	2	21:00	22:45
43	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/14/2019	30	No	INC	2	22:00	23:15
44	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/15/2019	30	No	INC	3	21:30	0:00
45	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/16/2019	14 - 30	No	INC	24	0:00	0:00
46	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/17/2019	14	No	DEC	2	20:45	22:00
47	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/17/2019	14	No	INC	24	0:00	0:00
48	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/18/2019	14 - 45	No	DEC	8	14:00	22:00
49	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/18/2019	14 - 45	No	INC	24	0:00	0:00
50	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/19/2019	14 - 45	No	INC	24	0:00	0:00
51	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/20/2019	14 - 32	No	INC	22	0:00	21:45

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
52	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/1/2019	405 - 430	No	DEC	24	0:00	0:00
53	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/1/2019	405 - 430	No	INC	8	9:00	17:00
54	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/2/2019	410 - 460	No	DEC	24	0:00	0:00
55	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/2/2019	450 - 460	No	INC	16	7:00	22:45
56	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/3/2019	425	No	DEC	22	1:00	22:00
57	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/3/2019	425	No	INC	25	0:00	0:00
58	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/4/2019	425	No	DEC	3	4:00	7:00
59	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/4/2019	425	No	INC	10	0:00	10:00
60	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/5/2019	411	No	DEC	7	16:15	23:00
61	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/5/2019	411	No	INC	1	23:00	0:00
62	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/6/2019	40 - 411	No	DEC	19	5:00	0:00
63	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/6/2019	411	No	INC	17	0:00	17:00
64	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/7/2019	310 - 410	No	DEC	24	0:00	0:00
65	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/7/2019	310 - 411	No	INC	13	2:40	15:00
66	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/8/2019	365 - 440	No	DEC	24	0:00	0:00
67	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/8/2019	400 - 440	No	INC	8	8:00	15:50

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
68	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/9/2019	365	No	DEC	24	0:00	0:00
69	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/9/2019	365	No	INC	7	8:00	15:00
70	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/10/2019	365 - 400	No	DEC	24	0:00	0:00
71	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/10/2019	400	No	INC	7	8:00	15:00
72	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/11/2019	390 - 410	No	DEC	24	0:00	0:00
73	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/11/2019	410	No	INC	6	8:00	14:00
74	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/12/2019	385 - 410	No	DEC	24	0:00	0:00
75	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/12/2019	410	No	INC	9	7:00	16:00
76	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/13/2019	370 - 410	No	DEC	24	0:00	0:00
77	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/13/2019	400	No	INC	1	15:40	16:00
78	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/14/2019	365 - 390	No	DEC	24	0:00	0:00
79	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/14/2019	365 - 390	No	INC	9	7:00	16:00
80	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/15/2019	365 - 415	No	DEC	24	0:00	0:00
81	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/15/2019	415	No	INC	10	0:55	10:00
82	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/16/2019	365	No	DEC	7	0:00	7:00
83	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/16/2019	365	No	INC	1	7:00	8:00

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
84	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/17/2019	370	No	DEC	9	15:40	0:00
85	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/18/2019	370 - 409	No	DEC	24	0:00	0:00
86	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/18/2019	375 - 409	No	INC	4	8:00	12:00
87	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/19/2019	400	No	DEC	7	0:00	7:00
88	RT	Other Reliability Requirement	PGAE	Bay Area	11/22/2019	290	No	DEC	1	14:30	15:00
89	RT	Other Reliability Requirement	PGAE	Fresno	11/1/2019	4 - 12	No	INC	7	0:00	6:15
90	RT	Other Reliability Requirement	PGAE	Humboldt	11/20/2019	48	No	INC	5	8:50	13:00
91	RT	Other Reliability Requirement	PGAE	Humboldt	11/21/2019	60	No	DEC	1	14:55	15:00
92	RT	Other Reliability Requirement	PGAE	NA	11/1/2019	38	No	INC	7	0:00	6:15
93	RT	Other Reliability Requirement	PGAE	NA	11/30/2019	225	No	INC	1	12:15	12:30
94	RT	Other Reliability Requirement	SCE	Big Creek-Ventura	11/22/2019	180 - 317	No	INC	1	14:25	15:00
95	RT	Other Reliability Requirement	SCE	LA Basin	11/12/2019	194	No	INC	10	11:05	21:00
96	RT	Other Reliability Requirement	SCE	LA Basin	11/20/2019	48.3	No	INC	6	11:30	17:00
97	RT	Other Reliability Requirement	SDGE	San Diego-IV	11/18/2019	40	No	DEC	1	16:15	16:30
98	RT	Planned Transmission Outage	PGAE	Bay Area	11/1/2019	480	No	DEC	1	8:25	9:00
99	RT	Planned Transmission Outage	PGAE	Bay Area	11/1/2019	480	No	INC	1	9:00	10:00
100	RT	Planned Transmission Outage	PGAE	Humboldt	11/1/2019	30 - 60	No	INC	23	0:00	23:00
101	RT	Planned Transmission Outage	PGAE	Humboldt	11/12/2019	30	No	DEC	1	14:00	15:00
102	RT	Planned Transmission Outage	PGAE	Humboldt	11/12/2019	30 - 45	No	INC	7	7:00	14:00
103	RT	Planned Transmission Outage	PGAE	Humboldt	11/13/2019	30	No	DEC	6	14:00	20:00
104	RT	Planned Transmission Outage	PGAE	Humboldt	11/13/2019	30	No	INC	7	7:25	14:00
105	RT	Planned Transmission Outage	PGAE	Humboldt	11/27/2019	43 - 48	No	DEC	7	15:10	22:00
106	RT	Planned Transmission Outage	PGAE	NCNB	11/7/2019	65 - 70	No	DEC	12	12:00	0:00
107	RT	Planned Transmission Outage	PGAE	NCNB	11/8/2019	65 - 70	No	DEC	24	0:00	0:00
108	RT	Planned Transmission Outage	PGAE	NCNB	11/9/2019	65 - 70	No	DEC	24	0:00	0:00

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
109	RT	Planned Transmission Outage	PGAE	NCNB	11/10/2019	65	No	DEC	24	0:00	0:00
110	RT	Planned Transmission Outage	PGAE	NCNB	11/11/2019	45 - 70	No	DEC	21	0:00	21:00
111	RT	Planned Transmission Outage	PGAE	NCNB	11/11/2019	80	No	INC	1	21:00	22:00
112	RT	Planned Transmission Outage	PGAE	Sierra	11/16/2019	42	No	INC	9	11:30	20:00
113	RT	Planned Transmission Outage	PGAE	Stockton	11/1/2019	220	No	DEC	2	0:00	2:00
114	RT	Planned Transmission Outage	PGAE	Stockton	11/4/2019	89	No	INC	1	8:00	8:30
115	RT	Planned Transmission Outage	PGAE	Stockton	11/21/2019	89 - 115	No	INC	15	9:00	0:00
116	RT	Planned Transmission Outage	PGAE	Stockton	11/22/2019	89	No	DEC	24	0:00	0:00
117	RT	Planned Transmission Outage	PGAE	Stockton	11/23/2019	192	No	DEC	9	15:00	0:00
118	RT	Planned Transmission Outage	PGAE	Stockton	11/23/2019	192	No	INC	6	9:00	15:00
119	RT	Planned Transmission Outage	PGAE	Stockton	11/24/2019	90	No	INC	17	7:00	0:00
120	RT	Planned Transmission Outage	PGAE	Stockton	11/25/2019	90	No	INC	24	0:00	0:00
121	RT	Planned Transmission Outage	PGAE	Stockton	11/26/2019	90	No	INC	16	8:00	0:00
122	RT	Planned Transmission Outage	PGAE	Stockton	11/27/2019	90	No	INC	24	0:00	0:00
123	RT	Planned Transmission Outage	PGAE	Stockton	11/28/2019	90	No	DEC	24	0:00	0:00
124	RT	Planned Transmission Outage	PGAE	Stockton	11/29/2019	90	No	DEC	23	0:00	22:15
125	RT	Planned Transmission Outage	PGAE	Stockton	11/29/2019	90 - 207	No	INC	11	3:20	14:00
126	RT	Planned Transmission Outage	PGAE	Stockton	11/30/2019	90	No	DEC	24	0:00	0:00
127	RT	Planned Transmission Outage	SCE	Big Creek-Ventura	11/12/2019	75 - 100	No	INC	8	16:10	23:30
128	RT	Planned Transmission Outage	SCE	Big Creek-Ventura	11/13/2019	30	No	DEC	1	20:45	21:30
129	RT	Planned Transmission Outage	SCE	Big Creek-Ventura	11/13/2019	35 - 100	No	INC	8	15:55	23:45
130	RT	Planned Transmission Outage	SCE	LA Basin	11/7/2019	45.24 - 45.56	No	DEC	3	15:00	18:00
131	RT	Planned Transmission Outage	SCE	LA Basin	11/7/2019	45.24 - 45.56	No	INC	10	6:00	16:00
132	RT	Planned Transmission Outage	SCE	LA Basin	11/18/2019	385	No	INC	2	10:45	12:45
133	RT	Planned Transmission Outage	SCE	LA Basin	11/23/2019	0 - 211	No	INC	5	11:10	15:30

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
134	RT	Planned Transmission Outage	SCE	LA Basin	11/24/2019	211	No	INC	13	7:00	20:00
135	RT	Planned Transmission Outage	SCE	LA Basin	11/25/2019	98	No	INC	9	11:00	20:00
136	RT	Planned Transmission Outage	SCE	LA Basin	11/30/2019	36 - 45	No	INC	5	9:05	14:00
137	RT	Planned Transmission Outage	SCE	NA	11/1/2019	550 - 600	No	DEC	15	7:50	22:00
138	RT	Planned Transmission Outage	SCE	NA	11/1/2019	600	No	INC	1	8:00	9:00
139	RT	Planned Transmission Outage	SCE	NA	11/4/2019	420 - 440	No	DEC	5	16:45	21:00
140	RT	Planned Transmission Outage	SCE	NA	11/4/2019	420	No	INC	3	21:00	0:00
141	RT	Planned Transmission Outage	SCE	NA	11/5/2019	420	No	DEC	2	5:00	7:00
142	RT	Planned Transmission Outage	SCE	NA	11/5/2019	420	No	INC	8	0:00	8:00
143	RT	Planned Transmission Outage	SCE	NA	11/6/2019	35 - 40	No	DEC	2	13:40	15:00
144	RT	Planned Transmission Outage	SCE	NA	11/15/2019	200	No	INC	8	8:00	16:00
145	RT	Planned Transmission Outage	SCE	NA	11/18/2019	270 - 290	No	DEC	2	14:00	15:45
146	RT	Planned Transmission Outage	SCE	NA	11/18/2019	270	No	INC	3	11:40	14:00
147	RT	Planned Transmission Outage	SCE	NA	11/26/2019	0 - 100	No	DEC	13	6:00	19:00
148	RT	Planned Transmission Outage	SCE	NA	11/26/2019	0 - 100	No	INC	7	9:15	16:00
149	RT	Planned Transmission Outage	SDGE	NA	11/11/2019	0	No	INC	2	11:40	13:15
150	RT	Planned Transmission Outage	SDGE	NA	11/26/2019	70	No	INC	1	7:50	7:55
151	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/6/2019	290	No	INC	9	7:00	16:00
152	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/18/2019	40	No	INC	2	19:10	21:00
153	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/19/2019	40	No	INC	12	10:15	22:00
154	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/20/2019	40	No	INC	12	10:10	22:00
155	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/27/2019	100 - 300	No	INC	5	12:00	16:45
156	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/30/2019	40	No	INC	4	18:40	22:00
157	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/20/2019	15	No	INC	8	1:45	8:50
158	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/21/2019	60	No	DEC	6	14:00	20:00

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
159	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/21/2019	60	No	INC	7	7:50	14:00
160	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/22/2019	14 - 60	No	INC	18	6:25	0:00
161	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/23/2019	14	No	DEC	4	0:00	3:15
162	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/23/2019	32 - 45	No	INC	16	8:40	0:00
163	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/24/2019	15 - 30	No	INC	16	8:05	0:00
164	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/25/2019	15	No	DEC	5	16:00	21:00
165	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/25/2019	15 - 30	No	INC	24	0:00	0:00
166	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/26/2019	28 - 48	No	DEC	8	14:00	22:00
167	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/26/2019	15 - 28	No	INC	14	0:00	14:00
168	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/27/2019	15	No	DEC	15	9:35	0:00
169	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/27/2019	15	No	INC	5	9:35	14:00
170	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/28/2019	15	No	DEC	20	0:00	20:00
171	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/28/2019	15	No	INC	1	22:00	23:00
172	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/29/2019	30	No	INC	7	17:45	0:00
173	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/30/2019	28 - 30	No	INC	21	0:00	21:00
174	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/21/2019	145 - 194	No	INC	4	20:00	0:00
175	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/22/2019	194	No	DEC	24	0:00	0:00
176	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/23/2019	194 - 237	No	DEC	20	0:00	20:00
177	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/23/2019	237	No	INC	9	15:35	0:00
178	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/25/2019	191.1	No	DEC	3	16:50	19:45
179	RT	Real-Time Reliability Requirement	SCE	LA Basin	11/23/2019	48 - 211	No	INC	10	11:20	20:30
180	RT	Real-Time Reliability Requirement	SCE	NA	11/23/2019	0 - 70	No	DEC	6	8:45	14:45
181	RT	Real-Time Reliability Requirement	SCE	NA	11/23/2019	150	No	INC	1	14:05	14:10
182	RT	Real-Time Reliability Requirement	SCE	NA	11/25/2019	0 - 100	No	DEC	7	10:05	16:45
183	RT	Real-Time Reliability Requirement	SCE	NA	11/25/2019	0 - 125	No	INC	7	9:40	16:00
184	RT	Real-Time Reliability Requirement	SDGE	NA	11/23/2019	0 - 80	No	INC	5	10:00	14:30
185	RT	Real-Time Reliability Requirement	SDGE	San Diego-IV	11/30/2019	24	No	INC	4	12:15	16:00

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
186	RT	Software Limitation	PGAE	Bay Area	11/18/2019	0	No	DEC	1	16:00	17:00
187	RT	Software Limitation	PGAE	Fresno	11/19/2019	83	No	INC	2	5:30	7:00
188	RT	Software Limitation	PGAE	Fresno	11/26/2019	83 - 94	No	INC	3	13:45	16:00
189	RT	Software Limitation	PGAE	Humboldt	11/19/2019	16 - 32	No	INC	6	9:00	15:00
190	RT	Software Limitation	PGAE	NA	11/7/2019	98	No	DEC	2	16:50	18:00
191	RT	Software Limitation	PGAE	NA	11/28/2019	0	No	INC	2	11:00	12:35
192	RT	Software Limitation	SCE	LA Basin	11/4/2019	10 - 190	No	INC	18	6:00	0:00
193	RT	Software Limitation	SCE	LA Basin	11/5/2019	10 - 194	No	INC	21	0:00	21:00
194	RT	Software Limitation	SCE	LA Basin	11/14/2019	194	No	INC	8	14:30	22:00
195	RT	Software Limitation	SCE	LA Basin	11/18/2019	10	Yes	INC	24	0:00	0:00
196	RT	Software Limitation	SCE	LA Basin	11/19/2019	210	No	DEC	3	6:00	9:00
197	RT	Software Limitation	SCE	LA Basin	11/19/2019	10	No	INC	8	0:00	8:00
198	RT	Software Limitation	SCE	LA Basin	11/20/2019	48	No	INC	6	11:00	17:00
199	RT	Software Limitation	SCE	LA Basin	11/22/2019	0	No	INC	2	0:15	1:35
200	RT	Software Limitation	SCE	LA Basin	11/25/2019	0 - 386	No	INC	16	8:20	0:00
201	RT	Software Limitation	SCE	LA Basin	11/26/2019	230 - 386	No	DEC	14	6:00	20:00
202	RT	Software Limitation	SCE	LA Basin	11/26/2019	230 - 386	No	INC	7	0:00	7:00
203	RT	Software Limitation	SDGE	San Diego-IV	11/18/2019	50	No	DEC	1	17:00	18:00
204	RT	Software Limitation	SDGE	San Diego-IV	11/20/2019	0	No	DEC	2	22:00	0:00
205	RT	Software Limitation	SDGE	San Diego-IV	11/25/2019	605	No	DEC	3	16:00	19:00
206	RT	Software Limitation	SDGE	San Diego-IV	11/25/2019	605	No	INC	6	14:40	20:00
207	RT	Unit Testing	Intertie	NA	11/14/2019	60	No	DEC	1	9:00	10:00
208	RT	Unit Testing	Intertie	NA	11/14/2019	60 - 65	No	INC	2	10:00	12:00
209	RT	Unit Testing	PGAE	Bay Area	11/16/2019	175	No	INC	2	10:35	12:15
210	RT	Unit Testing	PGAE	Bay Area	11/18/2019	125 - 195	No	INC	16	5:00	20:30

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
211	RT	Unit Testing	PGAE	Bay Area	11/19/2019	125 - 195	No	INC	17	5:00	22:00
212	RT	Unit Testing	PGAE	Bay Area	11/20/2019	125 - 195	No	INC	19	5:00	0:00
213	RT	Unit Testing	PGAE	Bay Area	11/21/2019	125 - 195	No	INC	24	0:00	0:00
214	RT	Unit Testing	PGAE	Bay Area	11/22/2019	125 - 195	No	INC	16	0:00	15:45
215	RT	Unit Testing	PGAE	Fresno	11/5/2019	21	No	DEC	1	18:45	19:00
216	RT	Unit Testing	PGAE	Fresno	11/5/2019	21	No	INC	1	19:00	19:45
217	RT	Unit Testing	PGAE	Fresno	11/6/2019	12.58	No	INC	1	18:30	19:30
218	RT	Unit Testing	PGAE	Sierra	11/7/2019	204	No	INC	1	10:05	10:40
219	RT	Unit Testing	SCE	LA Basin	11/5/2019	22	No	INC	1	19:15	19:45
220	RT	Unit Testing	SCE	LA Basin	11/12/2019	22.07	No	INC	1	16:45	17:00
221	RT	Unit Testing	SCE	LA Basin	11/27/2019	0	No	INC	1	8:40	9:40
222	RT	Unit Testing	SCE	NA	11/8/2019	143 - 211	No	INC	10	8:00	17:45
223	RT	Unit Testing	SCE	NA	11/9/2019	143 - 211	No	INC	13	7:15	20:00
224	RT	Unit Testing	SCE	NA	11/10/2019	143 - 220	No	INC	15	7:35	22:00
225	RT	Unit Testing	SCE	NA	11/15/2019	150	No	INC	1	17:40	17:45
226	RT	Unit Testing	SCE	NA	11/22/2019	150 - 575	No	INC	10	6:50	16:30
227	RT	Unit Testing	SDGE	San Diego-IV	11/12/2019	40	No	INC	3	19:05	21:10
228	RT	Unplanned Outage	PGAE	NA	11/23/2019	51	No	INC	1	4:05	4:10
229	RT	Unplanned Outage	PGAE	Stockton	11/23/2019	238	No	INC	1	4:00	4:10
230	RT	Unplanned Outage	SCE	Big Creek-Ventura	11/23/2019	390	No	INC	1	4:00	4:05
231	RT	Voltage Support	PGAE	Fresno	11/3/2019	-317 - -315	No	DEC	23	1:00	0:00

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
232	RT	Voltage Support	PGAE	Fresno	11/4/2019	-315	No	DEC	7	0:00	7:00
233	RT	Voltage Support	PGAE	Fresno	11/10/2019	-320	No	DEC	1	23:10	0:00
234	RT	Voltage Support	PGAE	Fresno	11/11/2019	-320	No	DEC	5	0:00	5:00
235	RT	Voltage Support	PGAE	Fresno	11/11/2019	83	No	INC	2	5:35	7:00
236	RT	Voltage Support	PGAE	Fresno	11/14/2019	-310	No	DEC	4	1:45	5:00
237	RT	Voltage Support	PGAE	Fresno	11/17/2019	-320	No	DEC	7	1:00	8:00
238	RT	Voltage Support	PGAE	Fresno	11/18/2019	-306	No	DEC	5	1:00	6:00
239	RT	Voltage Support	PGAE	Fresno	11/22/2019	-301	No	DEC	3	2:25	4:30
240	RT	Voltage Support	PGAE	Fresno	11/24/2019	-304	No	DEC	2	5:15	7:00
241	RT	Voltage Support	PGAE	Fresno	11/24/2019	83	No	INC	1	16:15	17:00
242	RT	Voltage Support	PGAE	Fresno	11/25/2019	-304	No	DEC	1	4:30	5:30
243	RT	Voltage Support	PGAE	Fresno	11/28/2019	-304	No	DEC	23	1:30	0:00
244	RT	Voltage Support	PGAE	Fresno	11/29/2019	-304	No	DEC	7	0:00	7:00
245	RT	Voltage Support	PGAE	Fresno	11/30/2019	-304	No	DEC	7	0:45	7:00

Appendix A: Explanation by Example

All examples listed below are based on fictitious data.

Example 1: Exceptional Dispatch Instructions Prior to DAM

In this fictitious example, the CAISO issued an exceptional dispatch instruction for resource A to be committed at its physical minimum (Pmin) of 50 MW from hours ending 5 through 10 for a generation procedure 7630. Similarly, the CAISO issued additional instructions to resources B and C for the same reason, as shown in Table 2. Generally, exceptional dispatches prior to the day-ahead market are commitments to minimum load. Here the dispatch levels are all at minimum load.

Table 2: Instructions Prior to Day-Ahead Market

Date	Market	Resource	Location	Local Reliability Area (LRA)	Begin Time	End Time	Dispatch Level (MW)	Reason
01-Jul-09	DA	A	SCE	LA BASIN	05:00	10:00	50	7630
01-Jul-09	DA	B	SCE	LA BASIN	08:00	20:00	30	7630
01-Jul-09	DA	C	SCE	LA BASIN	09:00	23:00	20	7630

This data is summarized as shown in Table 3, which is the prescribed format specified in the FERC order on September 02, 2009. This summary classifies the data by reason, resource location, local reliability area, and trade date. The MW column in Table 3 is the range of MW; in this case the minimum instruction MW is 20 MW for resource C which occurs from hours ending 21 through 23. The maximum instruction occurs in hour ending 10. In this hour resource A is committed at 50 MW, resource B is committed at 30 MW and resource C is committed at 20 MW. This adds up to 100 MW. The MW column shows the minimum and maximum of the overlaps of all the exceptional dispatch instructions. The Commitment column shows whether a resource was committed between the begin time and end time. Commitments are broken out separately from energy dispatches. In the day-ahead, however the exceptional dispatches are nearly always just commitments, as in this example. The Begin Time column shows hour ending 5 as this was the hour ending for first dispatch of the day, and the End Time column shows hour ending 23, as this was the hour with last dispatch. It is also possible that there might be hours between the begin time and the end time where there might not be exceptional dispatch instructions, meaning that the range between the begin time and end time can include null hours with no dispatch.

Table 3: FERC Summary of Instructions Prior to DAM

Number	Market Type	Reason	Location	Local Reliability Area (LRA)	Trade Date	MW	Commitment	INC/DEC	Hour	Begin Time	End Time
1	DA	7630	SCE	LA Basin	1-Jul-09	20-100	Yes	N/A	19	05:00	23:00

Example 2: Incremental Exceptional Dispatch Instructions in RTM

In this fictitious example, the CAISO issued an exceptional dispatch instruction to resource A to be committed at its Pmin of 30 MW from hours ending 7 through 11 after completion of the day-ahead market for the transmission procedure 7110. This resource had no day-ahead award in those hours. The CAISO issued another exceptional dispatch instruction to resource B, to be dispatched at 40 MW from hours ending 8 through 9 in real-time for the transmission procedure 7110. This resource had a day-ahead schedule of 20 MW from the day-ahead market, which implies that this exceptional dispatch instruction was an incremental instruction and the exceptional dispatch MW was 20 MW. Similarly, the details of exceptional dispatch (ED) instruction for resource C are shown in Table 4.

Table 4: Incremental Exceptional Dispatch Instructions in RTM

Date	Market	Resource	Location	Local Reliability Area (LRA)	Begin Time	End Time	Dispatch Level (MW)	Day-Ahead Award (MW)	Commitment	INC/DEC	ED (MW)	Reason
01-Jul-09	RT	A	PG&E	Humboldt	06:00	11:00	30	0	Yes	INC	30	7110
01-Jul-09	RT	B	PG&E	Humboldt	07:00	09:00	40	20	No	INC	20	7110
01-Jul-09	RT	C	PG&E	Humboldt	12:00	15:00	50	50	No	INC	0	7110
01-Jul-09	RT	C	PG&E	Humboldt	16:00	20:00	50	40	No	INC	10	7110

This data is summarized as shown in Table 5 and is classified by reason, resource location, local reliability area, and trade date. The MW column in Table 5 is the range of MW; in this case the minimum instruction MW is 0 MW for resource C which occurs from hours ending 13 through 15. The maximum instruction occurs in hours ending 8 & 9, as during these two hours both resources A and B have an ED MW of 30MW and 20MW, respectively. This adds up to 50 MW. The MW column shows the minimum and maximum of the overlaps of all the exceptional dispatch instructions. The Commitment column shows whether a resource was committed between the begin time and end time. This column shows a commitment if there was a single commitment in the entire interval of exceptional dispatch. The Begin Time column shows the time of the first dispatch of the day. This is a time not a range. Similarly the End Time column shows a time and not a range. Exceptional dispatches occurred between these two times. Since there was a commitment between the begin time and end time then the Commitment column displays yes for the summary. Similarly, the INC/DEC column shows an INC as there was an incremental dispatch between the begin time and end time. As mentioned in the previous example it is possible that there might be hours between the begin time and end time where there were no exceptional dispatch instructions for the given reason.

Table 5: FERC Summary of ED Instructions in RTM

Number	Market Type	Reason	Location	Local Reliability Area (LRA)	Trade Date	MW	Commitment	INC/DEC	Hour	Begin Time	End Time
1	RT	7110	PG&E	Humboldt	1-Jul-09	0-50	Yes	INC	15	06:00	20:00

Example 3: Decremental Exceptional Dispatch Instructions in RTM

This example highlights decremental exceptional dispatch instructions in the real-time market. In this fictitious example the CAISO issued an exceptional dispatch instruction to resource A to be committed at its Pmin of 20 MW from hours ending 15 through 20 after completion of the day-ahead market for the transmission procedure 7430. The CAISO issued additional exceptional dispatch instructions for resources B and C; details of those instructions are shown in Table 6.

Table 6: Decremental Exceptional Dispatch Instructions in RTM

Date	Market Type	Resource	Location	Local Reliability Area (LRA)	Begin Time	End Time	Dispatch Level (MW)	Day-Ahead Award (MW)	Commitment	INC/ DEC	ED (MW)	Reason
01-Jul-09	RT	A	PG&E	Fresno	15:00	20:00	20	0	Yes	INC	20	7430
01-Jul-09	RT	B	PG&E	Fresno	07:00	09:00	40	60	No	DEC	20	7430
01-Jul-09	RT	C	PG&E	Fresno	10:00	14:00	40	50	No	DEC	10	7430

This data is summarized according to FERC convention as shown in Table 7. This summary classifies the data by reason, resource location, local reliability area, and trade date. Please note that inc and dec are broken out separately. The inc entry is self-explanatory and similar to the previous example. Regarding the dec entry the MW column is the range of MW; in this case the minimum dec instruction is 10 MW (actually -10MW as it is a dec) for resource C which occurs from hours ending 10 through 14. The maximum instruction occurs from hours ending 7 through 9, when resource B was issued a dec instruction of 20 MW. The MW column shows the minimum and maximum of the overlaps of all the exceptional dispatch instructions. The Commitment column shows whether a resource was committed between the begin time and end time.

Table 7: FERC Summary of Decremental ED Instructions in RTM

Number	Market Type	Reason	Location	Local Reliability Area (LRA)	Trade Date	MW	Commitment	INC/DEC	Hour	Begin Time	End Time
1	RT	7430	PG&E	Fresno	1-Jul-09	20	Yes	INC	6	15:00	20:00
1	RT	7430	PG&E	Fresno	1-Jul-09	10-20	Yes	DEC	8	07:00	14:00

ATTACHMENT B

November 2019 Exceptional Dispatch Report
Chart 2 data

Exceptional Dispatch Report

Table 2: November 2019

Market Quality and Renewable Integration January 15, 2020

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

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Introduction

This report is filed pursuant to FERC's September 2, 2009, and May 4, 2010, orders in ER08-1178. These orders require two monthly Exceptional Dispatch reports—one issued on the 15th of each month and one originally issued on the 30th of each month. Both Table 1 and Table 2 reports will be issued on the 15th of each month due to the availability of necessary data. This report provides data on the frequency, reasons and costs for Exceptional Dispatches issued in November 2019.

This report contains a price impact analysis as prescribed by FERC in its September 2 order. The price impact analysis for November is presented in Appendix B. This report also includes mitigation analysis for November 2019 required by section 34.11.4 of the CAISO tariff. This analysis compares those Exceptional Dispatches subject to bid mitigation (i.e. Exceptional Dispatches to address noncompetitive constraints and Delta Dispatch), and determines the cost difference between the Exceptional Dispatch bid mitigation settlement rules and what the settlement amount would have been had the Exceptional Dispatches not been subject to bid mitigation. The Exceptional Dispatch bid mitigation analysis for November is presented in Appendix C.

The Nature of Exceptional Dispatch

The CAISO can issue exceptional dispatch instructions for a resource as a pre-day-ahead unit commitment, a post day-ahead unit commitment or a real-time exceptional dispatch. A pre-day-ahead unit commitment is an exceptional dispatch instruction committing a resource at or above its physical minimum (Pmin) operating level in the day-ahead market. A post-day-ahead unit commitment is an exceptional dispatch instruction committing a resource at or above its (Pmin) operating level in the real-time market. A real-time exceptional dispatch instructs a resource to operate at or above its physical minimum operating point. A real-time exceptional dispatch above the resource's day-ahead award is an incremental exceptional dispatch instruction and a real-time exceptional dispatch below the day-ahead award is considered a decremental dispatch instruction. The CAISO issues exceptional dispatch instructions to maintain the reliability of the grid when the market software cannot do so. Whenever the CAISO issues an exceptional dispatch instruction, the operator logs the dispatch and the associated reason. Reliability requirements are calculated for both local area and the system wide needs, and are classified into various requirements including local generation, transmission management, non-modeled transmission outages, ramping and intertie emergency assistance. Whenever the CAISO issues an exceptional dispatch instruction, the operators log these instructions and the associated reason for each instruction.

Most of the generation procedures are internal to the CAISO and not available publically on the CAISO website; however, all of the transmission procedures are available on the CAISO website.[1]

Additional reasons for exceptional dispatch instructions in 2019 include Software Limitation. Software Limitation is used when an exceptional dispatch instruction was issued to bridge schedules across days for resources with a minimum down time of 24 hours, as the CAISO software does not handle multi-day commitment. For instance, a resource has a day-ahead schedule from 0600 till 2300, and then is shut down in 2400. If this resource had a minimum down time of 24 hours and it is required the following day, then the CAISO issues an exceptional dispatch to commit this resource in 2400 so it can be dispatched economically in the following day. Software Limitation was also used for exceptional dispatches to manually issue shut down instructions to a resource because of a temporary Automatic Dispatch System ("ADS") failure, or similar issues. Interconnection Reliability Operating Limits (IROL) are system operating limits established to prevent instability, uncontrolled separation or cascading as described in operating procedure 3100. System Operating Limit (SOL) are the facility ratings, system voltage limits, transient stability limits, and voltage stability limits used in the operating horizon – any of which can be the most restrictive limit at any point in time, pre – or post – contingency. Control Point (CP) are imposed to protect the area transmission network against N – 1 contingencies. There were a few other reasons used to explain exceptional dispatch instructions in November, which are self-explanatory.

The data in Table 1 is based on a template specified in the September 2009 order.[2] This table contains all the information published in Table 1 of the first report for November 2019. In addition, it contains volume (MWh) and cost information. Each entry in Table 1 is a summary of exceptional dispatches classified by (1) the reason for the exceptional dispatch; (2) the location of the resource by Participating Transmission Owner (PTO) service area; (3) the Local Reliability Area (LRA) where applicable; (4) the market in which the exceptional dispatch occurred (day-ahead vs. real-time); and (5) the date of the exceptional dispatch. For each classification the following information is provided: (1) Megawatts (MW); (2) Commitment; (3) Inc or Dec; (4) Hours; (5) Begin Time; (6) End Time; (7) Total Volume (MWh); (8) Min Load Cost; (9) Start Up Cost; (10) CC6470; (11) ED Volume (MWh INC/DEC); (12) CC6470 INC; (13) CC6470 DEC; (14) CC6482; (15) CC6488; and (16) CC6620. Each column is defined:

[1] A list of all of the CAISO's Operating Procedures and all the publicly available Operating Procedures are available at the following link: http://www.caiso.com/thegrid/operations/opsdoc/index.html

[2] The data in Table 1 is principally SLIC information supplemented with data from the Market Quality System (MQS) and Settlements database. The volume and cost information is based on t+51B Recalculation Statements.

- The MW column shows the range of exceptional dispatch instruction in MW for the classification.
- The Commitment column specifies if there was a unit commitment for the classification.
- The INC/DEC/NA column specifies if there was an incremental dispatch (INC), a decremental dispatch (DEC), or only a unit commitment (NA). The Begin Time and End Time columns show the start and end time of exceptional dispatch for the classification respectively.
- The Hours column is the time difference between begin time and end time rounded up to the next hour.
- The total volume column shows the total MWh dispatch quantity dispatched for that classification. This quantity includes the minimum load quantity, the imbalance energy quantity, and the exceptional dispatch quantity.
- The Min-Load Cost column shows eligible minimum load cost for the classification.
- The Start-Up Cost column shows the eligible start up cost for the classification. The CAISO does not explicitly pay resources for its start up and minimum load costs; however, it ensures that resources are compensated adequately through its bid cost recovery.[3]
- The CC6470 column shows the total imbalance energy costs for the classification. This cost contains the portion of exceptional dispatch instruction settled as optimal energy due to its bid price being less than the LMP in the relevant settlement interval.
- The ED Volume MWh (MWh INC/DEC) column shows the incremental or the decremental portion of the real-time exceptional dispatch MWh for the classification. The CC6470-INC shows that portion of incremental exceptional dispatch instruction settled at the resource LMP.
- The CC6470-DEC column shows that portion of decremental exceptional dispatch instruction settled at the resource specific LMP. Both these charge codes are portions of the real-time instructed imbalance energy charge code (6470). [4]
- The CC6482 column shows the real-time excess cost for the classification.[5]
- The CC6488 column shows the real-time exceptional dispatch uplift settlement for the classification.[6] The CC6620 shows the bid cost recovery payment for the classification. This cost is shown for all pre-day-ahead unit commitments only.

[3] For further details regarding the Bid Cost Recovery process please refer to section 11.8 of the CAISO tariff.

[4] For further details please refer to the BPM configuration Guide: Real-Time Instructed Imbalance Energy Settlement published on the CAISO's website.

[5] For further details please refer to the BPM configuration Guide: Real Time Excess Cost for Instructed Energy Settlement published on the CAISO's website.

[6] For further details please refer to the BPM configuration Guide: Real Time Exceptional Dispatch Uplift Settlement published on the CAISO's website.

Charge codes 6470, 6470 INC, 6470 DEC, 6482 and 6488 are shown in Table 1 because all these charge codes pertain to real-time exceptional dispatch MWH quantities. The classification of data is further explained for example in Attachment A.

Exceptional dispatches issued for the following reasons accounted for approximately 63 percent of the total exceptional dispatches during the reporting period: planned transmission outages, software limitations, load forecast uncertainty, and operating procedure number 7110 (along with 7720). Many of the exceptional dispatches with the reason “Other Reliability Requirement” were due to Real Time Contingency Analysis. Exceptional dispatches with the reason “Real-Time Reliability Requirement” were due to Real Time Contingency Analysis, Voltage Stability Analysis, and operatin procedure number 7110.

Table 1: Exceptional Dispatches in November 2019

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2019 - 30/November/2019

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
1	RT	Fast Start Unit Management	SCE	LA Basin	11/6/2019	0	No	INC	2	22:00	23:50	-22.73	0.00	0.00	0.00	-22.73	0.00	0.00	0.00	0.00	0.00
2	RT	Fast Start Unit Management	SCE	LA Basin	11/21/2019	0	No	INC	2	0:15	1:35	-79.44	1829.28	0.00	0.00	-79.44	0.00	0.00	0.00	0.00	0.00
3	RT	Gas Limitations	PGAE	Bay Area	11/22/2019	120	No	INC	1	14:00	14:55	72.68	3289.53	963.75	-2054.68	0.00	0.00	0.00	0.00	0.00	0.00
4	RT	Gas Limitations	PGAE	Fresno	11/22/2019	14 - 35	No	INC	1	14:00	14:55	29.63	2248.23	48.53	-809.18	0.00	0.00	0.00	0.00	0.00	0.00
5	RT	Gas Limitations	SCE	Big Creek-Ventura	11/22/2019	47.1	No	INC	1	14:00	14:55	28.48	1601.56	65.49	-803.02	0.00	0.00	0.00	0.00	0.00	0.00
6	RT	Gas Limitations	SCE	LA Basin	11/22/2019	5 - 48.36	No	INC	1	14:00	14:55	68.72	4823.80	66.04	-3251.34	0.00	0.00	0.00	0.00	0.00	0.00
7	RT	Gas Limitations	SDGE	San Diego-IV	11/22/2019	30	No	INC	1	14:00	14:55	18.14	1669.61	47.06	-83.11	0.00	0.00	0.00	0.00	0.00	0.00
8	RT	Incomplete or Inaccurate Transmission	SCE	LA Basin	11/24/2019	98	No	INC	5	19:00	0:00	-92.12	57522.10	33623.16	9918.21	0.00	0.00	0.00	0.00	0.00	0.00
9	RT	Incomplete or Inaccurate Transmission	SCE	LA Basin	11/25/2019	98	No	INC	24	0:00	0:00	463.18	308596.56	0.00	-9843.77	0.00	0.00	0.00	0.00	0.00	0.00
10	RT	Load Forecast Uncertainty	PGAE	Fresno	11/26/2019	84 - 407	No	INC	1	13:55	14:45	52.78	4427.51	0.00	-3569.78	-4.46	-141.02	308.17	-27.99	0.00	0.00
11	RT	Load Forecast Uncertainty	PGAE	NA	11/4/2019	49	No	INC	4	10:00	14:00	44.50	10460.48	388.41	-1632.02	0.00	0.00	0.00	0.00	0.00	0.00
12	RT	Load Forecast Uncertainty	PGAE	NA	11/20/2019	48.95	No	INC	4	11:15	15:00	-32.56	11287.75	0.00	877.31	0.00	0.00	0.00	0.00	0.00	0.00
13	RT	Load Forecast Uncertainty	SCE	LA Basin	11/4/2019	10 - 20	Yes	INC	12	12:00	0:00	-24.07	107064.68	36108.80	-21038.25	4.36	-274.80	0.00	0.00	0.00	0.00
14	RT	Load Forecast Uncertainty	SCE	LA Basin	11/5/2019	20	No	INC	24	0:00	0:00	343.50	80509.00	28346.74	-31993.49	122.86	-8624.83	0.00	0.00	0.00	0.00
15	RT	Load Forecast Uncertainty	SCE	LA Basin	11/6/2019	20	No	INC	12	0:00	12:00	-1.86	0.00	0.00	-10.66	0.00	0.00	0.00	0.00	0.00	0.00
16	RT	Load Forecast Uncertainty	SDGE	San Diego-IV	11/4/2019	24	No	INC	3	13:30	16:00	2.68	3496.31	272.81	-21.51	0.00	0.00	0.00	0.00	0.00	0.00
17	RT	Market Disruption	PGAE	Bay Area	11/13/2019	500 - 525	No	INC	1	15:00	15:30	69.30	0.00	0.00	-2028.09	32.72	-849.94	0.00	-108.08	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2019 - 30/November/2019

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
18	RT	Market Disruption	PGAE	Bay Area	11/29/2019	600	No	DEC	1	9:40	10:00	3.00	560.17	0.00	-117.67	-2.72	0.00	0.00	0.00	0.00	0.00
19	RT	Market Disruption	PGAE	Fresno	11/11/2019	83 - 200	No	INC	1	15:05	16:00	-60.69	3495.40	0.00	2203.89	0.00	0.00	0.00	0.00	0.00	0.00
20	RT	Market Disruption	SCE	Big Creek-Ventura	11/11/2019	200	No	INC	1	15:15	15:30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/1/2019	45 - 60	No	INC	7	17:55	0:00	-1.38	-4183.81	0.00	12.79	1.75	-82.77	0.00	0.00	0.00	0.00
22	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/2/2019	15 - 45	No	INC	24	0:00	0:00	8.68	18532.71	901.52	-730.79	-2.65	0.00	25.84	0.00	0.00	0.00
23	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/3/2019	45	No	DEC	2	20:00	22:00	0.68	-1593.28	0.00	-17.27	0.00	0.00	0.00	0.00	0.00	0.00
24	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/3/2019	15 - 45	No	INC	25	0:00	0:00	-8.31	11325.44	0.00	227.06	0.00	0.00	0.00	0.00	0.00	0.00
25	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/4/2019	32	No	DEC	4	16:00	20:00	1.80	3088.76	0.00	-81.88	0.00	0.00	0.00	0.00	0.00	0.00
26	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/4/2019	15 - 32	No	INC	24	0:00	0:00	-3.86	18532.64	0.00	313.97	0.00	0.00	0.00	0.00	0.00	0.00
27	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/5/2019	30	No	DEC	6	14:00	20:00	0.18	0.00	0.00	30.06	0.00	0.00	0.00	0.00	0.00	0.00
28	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/5/2019	30	No	INC	24	0:00	0:00	-8.37	23801.01	0.00	329.42	0.00	0.00	0.00	0.00	0.00	0.00
29	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/6/2019	30 - 46	No	DEC	7	13:00	20:00	-3.82	-3775.81	0.00	140.37	0.00	0.00	0.00	0.00	0.00	0.00
30	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/6/2019	15 - 48	No	INC	24	0:00	0:00	36.30	16778.63	0.00	-1472.11	19.93	-745.58	0.00	0.00	0.00	0.00
31	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/7/2019	48 - 60	No	DEC	6	14:00	20:00	9.92	-9971.39	0.00	-147.83	-2.09	0.00	18.58	0.00	0.00	0.00
32	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/7/2019	48 - 60	No	INC	24	0:00	0:00	97.45	-4245.30	0.00	-3062.77	48.62	-1546.20	0.00	0.00	0.00	0.00
33	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/8/2019	32 - 64	No	DEC	8	14:00	22:00	34.58	-7834.86	0.00	-1754.29	-11.73	0.00	59.09	0.00	0.00	0.00
34	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/8/2019	32 - 64	No	INC	24	0:00	0:00	31.44	-13880.60	0.00	-1081.85	20.38	-742.81	0.00	0.00	0.00	0.00
35	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/9/2019	32 - 48	No	DEC	5	15:00	20:00	-1.39	-7114.37	0.00	-97.68	-6.78	0.00	35.15	0.00	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2019 - 30/November/2019

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
36	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/9/2019	16 - 48	No	INC	24	0:00	0:00	9.41	-14179.31	901.45	-266.26	9.42	-255.16	0.00	0.00	0.00	0.00
37	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/10/2019	16	No	DEC	3	17:00	20:00	2.30	0.00	0.00	-68.91	0.00	0.00	0.00	0.00	0.00	0.00
38	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/10/2019	16	No	INC	22	0:00	22:00	0.53	3416.70	0.00	-18.55	0.00	0.00	0.00	0.00	0.00	0.00
39	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/11/2019	15	No	DEC	7	14:00	21:00	4.89	-391.77	0.00	-58.89	0.00	0.00	0.00	0.00	0.00	0.00
40	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/11/2019	15	No	INC	8	6:30	14:00	9.13	4954.22	901.45	-317.62	0.00	0.00	0.00	0.00	0.00	0.00
41	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/12/2019	14	No	DEC	1	23:00	0:00	-2.28	-167.00	0.00	79.53	0.00	0.00	0.00	0.00	0.00	0.00
42	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/13/2019	14	No	INC	2	21:00	22:45	15.33	0.00	0.00	-513.83	0.00	0.00	0.00	0.00	0.00	0.00
43	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/14/2019	30	No	INC	2	22:00	23:15	3.28	0.00	0.00	-82.78	1.61	-46.53	0.00	0.00	0.00	0.00
44	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/15/2019	30	No	INC	3	21:30	0:00	13.90	0.00	0.00	-346.43	1.17	-36.04	0.00	0.00	0.00	0.00
45	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/16/2019	14 - 30	No	INC	24	0:00	0:00	25.53	0.00	0.00	-672.06	0.00	0.00	0.00	0.00	0.00	0.00
46	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/17/2019	14	No	DEC	2	20:45	22:00	2.68	0.00	0.00	-60.40	0.00	0.00	0.00	0.00	0.00	0.00
47	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/17/2019	14	No	INC	24	0:00	0:00	3.60	0.00	0.00	-94.59	0.00	0.00	0.00	0.00	0.00	0.00
48	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/18/2019	14 - 45	No	DEC	8	14:00	22:00	18.27	0.00	0.00	-413.89	0.00	0.00	0.00	0.00	0.00	0.00
49	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/18/2019	14 - 45	No	INC	24	0:00	0:00	127.46	-1648.97	0.00	-4021.00	2.25	-77.23	0.00	0.00	0.00	0.00
50	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/19/2019	14 - 45	No	INC	24	0:00	0:00	78.80	-17101.07	0.00	-2394.74	5.09	-162.70	0.00	0.00	0.00	0.00
51	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/20/2019	14 - 32	No	INC	22	0:00	21:45	26.56	0.00	0.00	-1279.42	3.20	-162.29	0.00	0.00	0.00	0.00
52	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/1/2019	405 - 430	No	DEC	24	0:00	0:00	-59.05	-53507.29	0.00	2347.00	-4.06	0.00	143.22	0.00	0.00	0.00
53	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/1/2019	405 - 430	No	INC	8	9:00	17:00	4.94	1263.60	0.00	28.98	-1.80	0.00	64.12	0.00	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2019 - 30/November/2019

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
54	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/2/2019	410 - 460	No	DEC	24	0:00	0:00	-13.52	-9350.34	12646.00	-95.15	0.00	0.00	0.00	0.00	0.00	0.00
55	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/2/2019	450 - 460	No	INC	16	7:00	22:45	38.72	-706.91	0.00	-968.22	0.00	0.00	0.00	0.00	0.00	0.00
56	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/3/2019	425	No	DEC	22	1:00	22:00	-33.70	-432.50	0.00	875.01	0.00	0.00	0.00	0.00	0.00	0.00
57	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/3/2019	425	No	INC	25	0:00	0:00	55.04	2599.19	0.00	-893.75	0.00	0.00	0.00	0.00	0.00	0.00
58	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/4/2019	425	No	DEC	3	4:00	7:00	-10.70	0.00	0.00	258.98	0.00	0.00	0.00	0.00	0.00	0.00
59	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/4/2019	425	No	INC	10	0:00	10:00	21.65	2526.60	0.00	-462.35	0.00	0.00	0.00	0.00	0.00	0.00
60	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/5/2019	411	No	DEC	7	16:15	23:00	-31.84	-5194.39	0.00	1152.68	-27.96	0.00	987.55	0.00	0.00	0.00
61	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/5/2019	411	No	INC	1	23:00	0:00	-0.81	0.00	0.00	32.06	0.00	0.00	0.00	0.00	0.00	0.00
62	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/6/2019	40 - 411	No	DEC	19	5:00	0:00	29.82	-20576.42	0.00	-1737.25	-3.24	0.00	8.40	0.00	0.00	0.00
63	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/6/2019	411	No	INC	17	0:00	17:00	55.92	60417.78	0.00	-1088.38	0.00	0.00	0.00	0.00	0.00	0.00
64	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/7/2019	310 - 410	No	DEC	24	0:00	0:00	-6.98	-89602.75	0.00	1166.27	-56.46	0.00	1797.07	0.00	0.00	0.00
65	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/7/2019	310 - 411	No	INC	13	2:40	15:00	-35.05	4558.08	0.00	1295.38	0.00	0.00	0.00	0.00	0.00	0.00
66	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/8/2019	365 - 440	No	DEC	24	0:00	0:00	-263.42	-63953.56	0.00	8203.71	-97.06	0.00	2003.54	0.00	0.00	0.00
67	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/8/2019	400 - 440	No	INC	8	8:00	15:50	-56.75	5601.01	0.00	2293.59	0.00	0.00	0.00	0.00	0.00	0.00
68	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/9/2019	365	No	DEC	24	0:00	0:00	-47.46	-77091.71	0.00	1331.99	-11.25	0.00	346.84	0.00	0.00	0.00
69	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/9/2019	365	No	INC	7	8:00	15:00	-16.16	5222.16	0.00	452.39	0.00	0.00	0.00	0.00	0.00	0.00
70	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/10/2019	365 - 400	No	DEC	24	0:00	0:00	10.12	-68225.75	0.00	-253.29	0.00	0.00	0.00	0.00	0.00	0.00
71	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/10/2019	400	No	INC	7	8:00	15:00	-9.80	5696.90	0.00	194.80	0.00	0.00	0.00	0.00	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2019 - 30/November/2019

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
72	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/11/2019	390 - 410	No	DEC	24	0:00	0:00	43.67	-58690.91	0.00	1092.45	-5.00	0.00	157.45	0.00	0.00	0.00
73	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/11/2019	410	No	INC	6	8:00	14:00	13.82	4510.05	0.00	222.39	0.00	0.00	0.00	0.00	0.00	0.00
74	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/12/2019	385 - 410	No	DEC	24	0:00	0:00	-127.49	-70989.66	24826.32	3618.69	-17.76	0.00	526.06	0.00	0.00	0.00
75	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/12/2019	410	No	INC	9	7:00	16:00	-93.37	0.00	0.00	2655.88	0.00	0.00	0.00	0.00	0.00	0.00
76	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/13/2019	370 - 410	No	DEC	24	0:00	0:00	-120.98	-41159.99	0.00	1243.87	-11.25	0.00	235.45	0.00	0.00	0.00
77	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/13/2019	400	No	INC	1	15:40	16:00	3.16	1257.64	0.00	-119.41	-1.67	0.00	49.62	0.00	0.00	0.00
78	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/14/2019	365 - 390	No	DEC	24	0:00	0:00	-12.66	-58948.26	24078.76	415.18	0.00	0.00	0.00	0.00	0.00	0.00
79	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/14/2019	365 - 390	No	INC	9	7:00	16:00	52.58	3900.85	0.00	-4516.11	0.00	0.00	0.00	0.00	0.00	0.00
80	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/15/2019	365 - 415	No	DEC	24	0:00	0:00	-98.24	-48371.66	0.00	3549.22	0.00	0.00	0.00	0.00	0.00	0.00
81	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/15/2019	415	No	INC	10	0:55	10:00	0.56	2599.08	0.00	-26.56	0.00	0.00	0.00	0.00	0.00	0.00
82	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/16/2019	365	No	DEC	7	0:00	7:00	-0.35	-30753.73	0.00	8.89	0.00	0.00	0.00	0.00	0.00	0.00
83	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/16/2019	365	No	INC	1	7:00	8:00	44.26	0.00	0.00	-1451.00	0.00	0.00	0.00	0.00	0.00	0.00
84	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/17/2019	370	No	DEC	9	15:40	0:00	-107.98	-35529.36	23881.79	3052.58	-6.67	0.00	202.87	0.00	0.00	0.00
85	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/18/2019	370 - 409	No	DEC	24	0:00	0:00	78.03	-64602.91	0.00	-2694.07	0.00	0.00	0.00	0.00	-887.62	0.00
86	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/18/2019	375 - 409	No	INC	4	8:00	12:00	-53.92	2970.81	0.00	288.30	0.00	0.00	0.00	0.00	0.00	0.00
87	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/19/2019	400	No	DEC	7	0:00	7:00	-7.74	-29073.40	0.00	215.93	0.00	0.00	0.00	0.00	0.00	0.00
88	RT	Other Reliability Requirement	PGAE	Bay Area	11/22/2019	290	No	DEC	1	14:30	15:00	-211.35	0.00	0.00	5926.73	-194.65	0.00	5463.34	0.00	0.00	0.00
89	RT	Other Reliability Requirement	PGAE	Fresno	11/1/2019	4 - 12	No	INC	7	0:00	6:15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
90	RT	Other Reliability Requirement	PGAE	Humboldt	11/20/2019	48	No	INC	5	8:50	13:00	49.22	0.00	0.00	-2398.50	4.87	-241.91	0.00	0.00	0.00	0.00
91	RT	Other Reliability Requirement	PGAE	Humboldt	11/21/2019	60	No	DEC	1	14:55	15:00	-0.08	0.00	0.00	1.99	0.00	0.00	0.00	0.00	0.00	0.00
92	RT	Other Reliability Requirement	PGAE	NA	11/1/2019	38	No	INC	7	0:00	6:15	-8.83	0.00	0.00	286.56	2.33	-85.76	0.00	0.00	0.00	0.00
93	RT	Other Reliability Requirement	PGAE	NA	11/30/2019	225	No	INC	1	12:15	12:30	73.31	0.00	0.00	-2968.36	1.75	-70.42	0.00	0.00	0.00	0.00
94	RT	Other Reliability Requirement	SCE	Big Creek-Ventura	11/22/2019	180 - 317	No	INC	1	14:25	15:00	18.38	0.00	0.00	-518.46	19.50	-550.97	0.00	-1449.81	0.00	0.00
95	RT	Other Reliability Requirement	SCE	LA Basin	11/12/2019	194	No	INC	10	11:05	21:00	18.22	0.00	0.00	-4164.30	31.21	-4428.36	0.00	0.00	0.00	0.00
96	RT	Other Reliability Requirement	SCE	LA Basin	11/20/2019	48.3	No	INC	6	11:30	17:00	6.27	22495.61	0.00	-366.16	0.00	0.00	0.00	0.00	0.00	0.00
97	RT	Other Reliability Requirement	SDGE	San Diego-IV	11/18/2019	40	No	DEC	1	16:15	16:30	10.00	-715.11	0.00	-491.13	0.00	0.00	0.00	0.00	0.00	0.00
98	RT	Planned Transmission Outage	PGAE	Bay Area	11/1/2019	480	No	DEC	1	8:25	9:00	31.15	0.00	0.00	1691.23	-0.15	0.00	7.71	0.00	0.00	0.00
99	RT	Planned Transmission Outage	PGAE	Bay Area	11/1/2019	480	No	INC	1	9:00	10:00	-6.28	-1222.62	0.00	243.16	0.00	0.00	0.00	0.00	0.00	0.00
100	RT	Planned Transmission Outage	PGAE	Humboldt	11/1/2019	30 - 60	No	INC	23	0:00	23:00	3.54	-15818.25	0.00	-196.63	5.73	-245.49	0.00	0.00	0.00	0.00
101	RT	Planned Transmission Outage	PGAE	Humboldt	11/12/2019	30	No	DEC	1	14:00	15:00	12.88	0.00	0.00	-252.34	0.00	0.00	0.00	0.00	0.00	0.00
102	RT	Planned Transmission Outage	PGAE	Humboldt	11/12/2019	30 - 45	No	INC	7	7:00	14:00	57.23	-4508.87	0.00	-1629.88	4.96	-160.25	0.00	0.00	0.00	0.00
103	RT	Planned Transmission Outage	PGAE	Humboldt	11/13/2019	30	No	DEC	6	14:00	20:00	5.45	-195.23	0.00	-105.44	0.00	0.00	0.00	0.00	0.00	0.00
104	RT	Planned Transmission Outage	PGAE	Humboldt	11/13/2019	30	No	INC	7	7:25	14:00	11.11	-4347.14	0.00	-287.80	8.92	-231.51	0.00	0.00	0.00	0.00
105	RT	Planned Transmission Outage	PGAE	Humboldt	11/27/2019	43 - 48	No	DEC	7	15:10	22:00	-3.34	-10342.50	0.00	96.37	-3.45	0.00	88.31	0.00	-5500.95	0.00
106	RT	Planned Transmission Outage	PGAE	NCNB	11/7/2019	65 - 70	No	DEC	12	12:00	0:00	-27.37	0.00	0.00	2900.97	-6.30	0.00	145.36	0.00	-7941.46	0.00
107	RT	Planned Transmission Outage	PGAE	NCNB	11/8/2019	65 - 70	No	DEC	24	0:00	0:00	-4.70	0.00	0.00	196.97	-4.33	0.00	183.96	0.00	-14231.07	0.00

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108	RT	Planned Transmission Outage	PGAE	NCNB	11/9/2019	65 - 70	No	DEC	24	0:00	0:00	-10.67	0.00	0.00	374.27	-10.67	0.00	372.65	0.00	-13787.13	0.00
109	RT	Planned Transmission Outage	PGAE	NCNB	11/10/2019	65	No	DEC	24	0:00	0:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-14274.51	0.00
110	RT	Planned Transmission Outage	PGAE	NCNB	11/11/2019	45 - 70	No	DEC	21	0:00	21:00	4.21	0.00	0.00	-141.93	-20.83	0.00	661.59	0.00	-35654.16	0.00
111	RT	Planned Transmission Outage	PGAE	NCNB	11/11/2019	80	No	INC	1	21:00	22:00	4.44	0.00	0.00	-166.44	0.00	0.00	0.00	0.00	-220.36	0.00
112	RT	Planned Transmission Outage	PGAE	Sierra	11/16/2019	42	No	INC	9	11:30	20:00	364.51	0.00	0.00	-9352.57	0.00	0.00	0.00	0.00	0.00	0.00
113	RT	Planned Transmission Outage	PGAE	Stockton	11/1/2019	220	No	DEC	2	0:00	2:00	-3.78	-2940.30	0.00	121.53	-3.78	0.00	121.53	0.00	-46.19	0.00
114	RT	Planned Transmission Outage	PGAE	Stockton	11/4/2019	89	No	INC	1	8:00	8:30	-7.64	4136.17	0.00	213.41	0.00	0.00	0.00	0.00	0.00	0.00
115	RT	Planned Transmission Outage	PGAE	Stockton	11/21/2019	89 - 115	No	INC	15	9:00	0:00	-38.15	64354.31	0.00	-584.57	0.47	-13.09	0.00	0.00	-17.71	0.00
116	RT	Planned Transmission Outage	PGAE	Stockton	11/22/2019	89	No	DEC	24	0:00	0:00	-5.60	-66446.75	0.00	609.53	-10.75	0.00	373.24	0.00	0.00	0.00
117	RT	Planned Transmission Outage	PGAE	Stockton	11/23/2019	192	No	DEC	9	15:00	0:00	31.69	1258.92	0.00	-1042.11	0.00	0.00	0.00	0.00	0.00	0.00
118	RT	Planned Transmission Outage	PGAE	Stockton	11/23/2019	192	No	INC	6	9:00	15:00	-30.14	51636.54	0.00	817.03	0.23	-5.94	0.00	0.00	-482.30	0.00
119	RT	Planned Transmission Outage	PGAE	Stockton	11/24/2019	90	No	INC	17	7:00	0:00	10.01	53709.98	0.00	-383.51	0.00	0.00	0.00	0.00	-69.32	0.00
120	RT	Planned Transmission Outage	PGAE	Stockton	11/25/2019	90	No	INC	24	0:00	0:00	-36.09	69051.60	0.00	1268.89	0.00	0.00	0.00	0.00	-97.34	0.00
121	RT	Planned Transmission Outage	PGAE	Stockton	11/26/2019	90	No	INC	16	8:00	0:00	-74.45	36827.17	0.00	3398.06	0.00	0.00	0.00	0.00	-3.11	0.00
122	RT	Planned Transmission Outage	PGAE	Stockton	11/27/2019	90	No	INC	24	0:00	0:00	-23.68	27430.73	0.00	780.58	0.00	0.00	0.00	0.00	-15.48	0.00
123	RT	Planned Transmission Outage	PGAE	Stockton	11/28/2019	90	No	DEC	24	0:00	0:00	-63.70	115362.89	0.00	-541.77	0.00	0.00	0.00	0.00	0.00	0.00
124	RT	Planned Transmission Outage	PGAE	Stockton	11/29/2019	90	No	DEC	23	0:00	22:15	-77.21	17573.17	0.00	3421.04	0.00	0.00	0.00	0.00	0.00	0.00
125	RT	Planned Transmission Outage	PGAE	Stockton	11/29/2019	90 - 207	No	INC	11	3:20	14:00	-12.12	38891.63	0.00	553.96	-11.04	0.00	610.82	0.00	-225.19	0.00

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126	RT	Planned Transmission Outage	PGAE	Stockton	11/30/2019	90	No	DEC	24	0:00	0:00	-18.84	753.69	0.00	648.06	0.00	0.00	0.00	0.00	0.00	0.00
127	RT	Planned Transmission Outage	SCE	Big Creek-Ventura	11/12/2019	75 - 100	No	INC	8	16:10	23:30	83.54	0.00	0.00	-2834.29	82.99	-2784.24	0.00	0.00	-34738.02	0.00
128	RT	Planned Transmission Outage	SCE	Big Creek-Ventura	11/13/2019	30	No	DEC	1	20:45	21:30	-0.41	0.00	0.00	14.75	0.00	0.00	0.00	0.00	0.00	0.00
129	RT	Planned Transmission Outage	SCE	Big Creek-Ventura	11/13/2019	35 - 100	No	INC	8	15:55	23:45	0.15	0.00	0.00	-1.88	0.45	-12.50	0.00	0.00	-4.90	0.00
130	RT	Planned Transmission Outage	SCE	LA Basin	11/7/2019	45.24 - 45.56	No	DEC	3	15:00	18:00	-14.00	0.00	0.00	1080.79	0.00	0.00	0.00	0.00	0.00	0.00
131	RT	Planned Transmission Outage	SCE	LA Basin	11/7/2019	45.24 - 45.56	No	INC	10	6:00	16:00	-43.72	46025.68	0.00	1553.57	0.00	0.00	0.00	0.00	0.00	0.00
132	RT	Planned Transmission Outage	SCE	LA Basin	11/18/2019	385	No	INC	2	10:45	12:45	499.20	0.00	0.00	-56323.66	0.00	0.00	0.00	0.00	0.00	0.00
133	RT	Planned Transmission Outage	SCE	LA Basin	11/23/2019	0 - 211	No	INC	5	11:10	15:30	-9.84	15805.58	40.00	869.93	14.00	-1067.43	0.00	0.00	-656.91	0.00
134	RT	Planned Transmission Outage	SCE	LA Basin	11/24/2019	211	No	INC	13	7:00	20:00	-151.98	163310.69	19729.29	5850.33	0.00	0.00	0.00	0.00	-819.98	0.00
135	RT	Planned Transmission Outage	SCE	LA Basin	11/25/2019	98	No	INC	9	11:00	20:00	-160.04	127861.74	0.00	4880.97	0.00	0.00	0.00	0.00	0.00	0.00
136	RT	Planned Transmission Outage	SCE	LA Basin	11/30/2019	36 - 45	No	INC	5	9:05	14:00	37.38	18013.80	394.01	-3075.27	8.20	-649.16	0.00	0.00	-2838.51	0.00
137	RT	Planned Transmission Outage	SCE	NA	11/1/2019	550 - 600	No	DEC	15	7:50	22:00	-129.26	0.00	0.00	4457.03	-107.44	0.00	4225.38	0.00	-17169.15	0.00
138	RT	Planned Transmission Outage	SCE	NA	11/1/2019	600	No	INC	1	8:00	9:00	27.70	22731.11	0.00	-1182.62	0.00	0.00	0.00	0.00	0.00	0.00
139	RT	Planned Transmission Outage	SCE	NA	11/4/2019	420 - 440	No	DEC	5	16:45	21:00	-26.74	-7758.53	0.00	2021.66	-13.12	0.00	595.71	0.00	-2648.64	0.00
140	RT	Planned Transmission Outage	SCE	NA	11/4/2019	420	No	INC	3	21:00	0:00	10.46	0.00	0.00	-409.17	0.00	0.00	0.00	0.00	0.00	0.00
141	RT	Planned Transmission Outage	SCE	NA	11/5/2019	420	No	DEC	2	5:00	7:00	-2.24	0.00	0.00	57.88	0.00	0.00	0.00	0.00	-2159.43	0.00
142	RT	Planned Transmission Outage	SCE	NA	11/5/2019	420	No	INC	8	0:00	8:00	20.17	5055.51	0.00	-233.16	0.00	0.00	0.00	0.00	0.00	0.00

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143	RT	Planned Transmission Outage	SCE	NA	11/6/2019	35 - 40	No	DEC	2	13:40	15:00	-5.02	0.00	0.00	99.35	-11.92	0.00	252.49	0.00	-500.31	0.00
144	RT	Planned Transmission Outage	SCE	NA	11/15/2019	200	No	INC	8	8:00	16:00	-59.11	159231.03	0.00	2186.19	0.00	0.00	0.00	0.00	0.00	0.00
145	RT	Planned Transmission Outage	SCE	NA	11/18/2019	270 - 290	No	DEC	2	14:00	15:45	29.93	-1825.93	0.00	-938.04	0.00	0.00	0.00	0.00	-1144.55	0.00
146	RT	Planned Transmission Outage	SCE	NA	11/18/2019	270	No	INC	3	11:40	14:00	-2.97	2132.89	0.00	-390.10	0.00	0.00	0.00	0.00	0.00	0.00
147	RT	Planned Transmission Outage	SCE	NA	11/26/2019	0 - 100	No	DEC	13	6:00	19:00	-100.50	-9089.72	0.00	-10149.27	-92.54	0.00	-9483.92	0.00	-18101.50	0.00
148	RT	Planned Transmission Outage	SCE	NA	11/26/2019	0 - 100	No	INC	7	9:15	16:00	-28.01	0.00	0.00	-2103.94	-15.00	0.00	-1187.23	0.00	0.00	0.00
149	RT	Planned Transmission Outage	SDGE	NA	11/11/2019	0	No	INC	2	11:40	13:15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	RT	Planned Transmission Outage	SDGE	NA	11/26/2019	70	No	INC	1	7:50	7:55	0.63	0.00	0.00	5.43	0.00	0.00	0.00	0.00	0.00	0.00
151	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/6/2019	290	No	INC	9	7:00	16:00	5.74	113502.35	0.00	-1262.19	0.00	0.00	0.00	0.00	0.00	0.00
152	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/18/2019	40	No	INC	2	19:10	21:00	23.33	4292.13	0.00	-929.59	0.00	0.00	0.00	0.00	0.00	0.00
153	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/19/2019	40	No	INC	12	10:15	22:00	15.91	39083.78	642.88	-555.41	0.00	0.00	0.00	0.00	0.00	0.00
154	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/20/2019	40	No	INC	12	10:10	22:00	23.80	40557.17	0.00	-1296.76	0.00	0.00	0.00	0.00	0.00	0.00
155	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/27/2019	100 - 300	No	INC	5	12:00	16:45	248.28	35818.91	0.00	-43757.57	51.33	-2540.47	0.00	0.00	-20140.91	0.00
156	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/30/2019	40	No	INC	4	18:40	22:00	16.00	5633.10	0.00	534.75	0.00	0.00	0.00	0.00	0.00	0.00
157	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/20/2019	15	No	INC	8	1:45	8:50	19.05	0.00	0.00	-6517.29	11.25	-5181.69	0.00	0.00	0.00	0.00
158	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/21/2019	60	No	DEC	6	14:00	20:00	0.38	0.00	0.00	-2.07	0.00	0.00	0.00	0.00	0.00	0.00
159	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/21/2019	60	No	INC	7	7:50	14:00	12.54	-12475.68	0.00	-375.27	7.83	-238.48	0.00	0.00	0.00	0.00

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160	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/22/2019	14 - 60	No	INC	18	6:25	0:00	77.58	-12934.60	0.00	-3058.65	24.05	-994.33	0.00	0.00	0.00	0.00
161	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/23/2019	14	No	DEC	4	0:00	3:15	0.87	0.00	0.00	-33.62	0.00	0.00	0.00	0.00	0.00	0.00
162	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/23/2019	32 - 45	No	INC	16	8:40	0:00	30.54	-11627.85	0.00	-1015.80	20.95	-695.77	0.00	0.00	0.00	0.00
163	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/24/2019	15 - 30	No	INC	16	8:05	0:00	12.62	0.00	0.00	-426.32	5.42	-183.47	0.00	0.00	0.00	0.00
164	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/25/2019	15	No	DEC	5	16:00	21:00	4.44	-11306.16	0.00	-189.16	0.00	0.00	0.00	0.00	0.00	0.00
165	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/25/2019	15 - 30	No	INC	24	0:00	0:00	14.63	0.00	0.00	-495.27	2.25	-82.35	0.00	0.00	0.00	0.00
166	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/26/2019	28 - 48	No	DEC	8	14:00	22:00	-27.70	-17075.89	0.00	302.69	-20.27	0.00	42.43	0.00	0.00	0.00
167	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/26/2019	15 - 28	No	INC	14	0:00	14:00	23.25	0.00	0.00	-1127.58	1.45	-73.32	0.00	0.00	0.00	0.00
168	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/27/2019	15	No	DEC	15	9:35	0:00	16.00	-33608.24	0.00	-588.42	-3.45	0.00	88.31	0.00	-5500.95	0.00
169	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/27/2019	15	No	INC	5	9:35	14:00	9.52	0.00	0.00	-416.51	0.67	-29.62	0.00	0.00	0.00	0.00
170	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/28/2019	15	No	DEC	20	0:00	20:00	-5.23	-29421.40	0.00	-666.07	-13.50	0.00	8.37	0.00	0.00	0.00
171	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/28/2019	15	No	INC	1	22:00	23:00	17.01	0.00	0.00	-720.13	0.81	-32.31	0.00	0.00	0.00	0.00
172	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/29/2019	30	No	INC	7	17:45	0:00	21.82	-4108.38	0.00	-1054.55	1.96	-94.18	0.00	0.00	0.00	0.00
173	RT	Real-Time Reliability Requirement	PGAE	Humboldt	11/30/2019	28 - 30	No	INC	21	0:00	21:00	10.31	-7502.25	0.00	-379.70	0.00	0.00	0.00	0.00	0.00	0.00
174	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/21/2019	145 - 194	No	INC	4	20:00	0:00	4.98	15815.45	0.00	-2918.95	0.00	0.00	0.00	0.00	0.00	0.00
175	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/22/2019	194	No	DEC	24	0:00	0:00	-5.60	-66446.75	0.00	609.53	-10.75	0.00	373.24	0.00	0.00	0.00
176	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/23/2019	194 - 237	No	DEC	20	0:00	20:00	43.12	-11330.28	0.00	-8916.79	0.00	0.00	0.00	0.00	0.00	0.00
177	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/23/2019	237	No	INC	9	15:35	0:00	27.64	1258.92	0.00	-1096.86	0.00	0.00	0.00	0.00	0.00	0.00

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Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
178	RT	Real-Time Reliability Requirement	PGAE	Stockton	11/25/2019	191.1	No	DEC	3	16:50	19:45	9.37	-15112.33	0.00	38.95	-2.94	0.00	0.00	0.00	0.00	0.00
179	RT	Real-Time Reliability Requirement	SCE	LA Basin	11/23/2019	48 - 211	No	INC	10	11:20	20:30	380.99	39725.49	108.89	-16870.05	305.27	-14176.56	0.00	0.00	-506.34	0.00
180	RT	Real-Time Reliability Requirement	SCE	NA	11/23/2019	0 - 70	No	DEC	6	8:45	14:45	-105.41	0.00	0.00	-10952.51	-94.37	0.00	-9523.89	0.00	0.00	0.00
181	RT	Real-Time Reliability Requirement	SCE	NA	11/23/2019	150	No	INC	1	14:05	14:10	0.06	0.00	0.00	5.22	0.00	0.00	0.00	0.00	0.00	0.00
182	RT	Real-Time Reliability Requirement	SCE	NA	11/25/2019	0 - 100	No	DEC	7	10:05	16:45	-225.55	0.00	0.00	-12837.57	-192.15	0.00	-11032.54	0.00	0.00	0.00
183	RT	Real-Time Reliability Requirement	SCE	NA	11/25/2019	0 - 125	No	INC	7	9:40	16:00	25.69	4831.62	0.00	-1440.35	-17.50	0.00	-0.18	0.00	0.00	0.00
184	RT	Real-Time Reliability Requirement	SDGE	NA	11/23/2019	0 - 80	No	INC	5	10:00	14:30	23.97	0.00	0.00	208.04	0.00	0.00	0.00	0.00	0.00	0.00
185	RT	Real-Time Reliability Requirement	SDGE	San Diego-IV	11/30/2019	24	No	INC	4	12:15	16:00	92.59	7791.03	0.00	-9697.24	0.00	0.00	0.00	0.00	0.00	0.00
186	RT	Software Limitation	PGAE	Bay Area	11/18/2019	0	No	DEC	1	16:00	17:00	-11.87	-1366.38	0.00	283.36	-5.00	0.00	0.00	0.00	0.00	0.00
187	RT	Software Limitation	PGAE	Fresno	11/19/2019	83	No	INC	2	5:30	7:00	-122.43	8430.09	0.00	3244.87	0.00	0.00	0.00	0.00	0.00	0.00
188	RT	Software Limitation	PGAE	Fresno	11/26/2019	83 - 94	No	INC	3	13:45	16:00	-135.11	10116.10	0.00	5924.02	-0.45	0.00	19.10	0.00	0.00	0.00
189	RT	Software Limitation	PGAE	Humboldt	11/19/2019	16 - 32	No	INC	6	9:00	15:00	2.56	0.00	0.00	-32.81	0.00	0.00	0.00	0.00	0.00	0.00
190	RT	Software Limitation	PGAE	NA	11/7/2019	98	No	DEC	2	16:50	18:00	15.84	-2680.47	0.00	-426.18	0.00	0.00	0.00	0.00	0.00	0.00
191	RT	Software Limitation	PGAE	NA	11/28/2019	0	No	INC	2	11:00	12:35	-62.95	5627.33	0.00	-1561.45	-93.33	0.00	0.00	0.00	0.00	0.00
192	RT	Software Limitation	SCE	LA Basin	11/4/2019	10 - 190	No	INC	18	6:00	0:00	-230.53	135631.94	28770.53	11820.27	4.36	-274.80	0.00	0.00	0.00	0.00
193	RT	Software Limitation	SCE	LA Basin	11/5/2019	10 - 194	No	INC	21	0:00	21:00	-198.77	114186.43	17323.01	3126.24	122.86	-8624.83	0.00	0.00	0.00	0.00
194	RT	Software Limitation	SCE	LA Basin	11/14/2019	194	No	INC	8	14:30	22:00	-2.82	0.00	0.00	-398.79	6.31	-468.49	0.00	0.00	0.00	0.00

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Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
195	RT	Software Limitation	SCE	LA Basin	11/18/2019	10	Yes	INC	24	0:00	0:00	31.24	67116.31	0.00	-883.22	0.00	0.00	0.00	0.00	0.00	0.00
196	RT	Software Limitation	SCE	LA Basin	11/19/2019	210	No	DEC	3	6:00	9:00	568.72	-6516.74	0.00	-15105.27	0.00	0.00	0.00	0.00	0.00	0.00
197	RT	Software Limitation	SCE	LA Basin	11/19/2019	10	No	INC	8	0:00	8:00	31.77	0.00	0.00	-1015.36	0.00	0.00	0.00	0.00	0.00	0.00
198	RT	Software Limitation	SCE	LA Basin	11/20/2019	48	No	INC	6	11:00	17:00	41.73	21275.84	0.00	-1555.71	0.15	-7.87	0.00	0.00	0.00	0.00
199	RT	Software Limitation	SCE	LA Basin	11/22/2019	0	No	INC	2	0:15	1:35	-68.09	1008.01	0.00	0.00	-68.09	0.00	0.00	0.00	0.00	0.00
200	RT	Software Limitation	SCE	LA Basin	11/25/2019	0 - 386	No	INC	16	8:20	0:00	-18.61	291454.39	0.00	-753.75	-0.83	0.00	0.00	0.00	0.00	0.00
201	RT	Software Limitation	SCE	LA Basin	11/26/2019	230 - 386	No	DEC	14	6:00	20:00	42.71	-69599.19	0.00	-4533.49	442.00	-23266.83	0.00	0.00	0.00	0.00
202	RT	Software Limitation	SCE	LA Basin	11/26/2019	230 - 386	No	INC	7	0:00	7:00	89.07	118583.35	0.00	-5719.57	0.00	0.00	0.00	0.00	0.00	0.00
203	RT	Software Limitation	SDGE	San Diego-IV	11/18/2019	50	No	DEC	1	17:00	18:00	-6.67	0.00	0.00	271.95	0.00	0.00	0.00	0.00	0.00	0.00
204	RT	Software Limitation	SDGE	San Diego-IV	11/20/2019	0	No	DEC	2	22:00	0:00	-3.58	0.00	0.00	-95.34	-6.13	0.00	5.74	0.00	0.00	0.00
205	RT	Software Limitation	SDGE	San Diego-IV	11/25/2019	605	No	DEC	3	16:00	19:00	-26.69	0.00	0.00	-275.38	0.00	0.00	0.00	0.00	0.00	0.00
206	RT	Software Limitation	SDGE	San Diego-IV	11/25/2019	605	No	INC	6	14:40	20:00	-4.63	-6196.10	0.00	504.99	0.00	0.00	0.00	0.00	0.00	0.00
207	RT	Unit Testing	Intertie	NA	11/14/2019	60	No	DEC	1	9:00	10:00	-14.09	0.00	0.00	346.30	0.00	0.00	0.00	0.00	0.00	0.00
208	RT	Unit Testing	Intertie	NA	11/14/2019	60 - 65	No	INC	2	10:00	12:00	5.28	0.00	0.00	-211.53	17.40	-476.28	0.00	0.00	0.00	0.00
209	RT	Unit Testing	PGAE	Bay Area	11/16/2019	175	No	INC	2	10:35	12:15	98.44	7831.71	0.00	-2107.85	0.00	0.00	0.00	0.00	0.00	0.00
210	RT	Unit Testing	PGAE	Bay Area	11/18/2019	125 - 195	No	INC	16	5:00	20:30	102.59	0.00	0.00	-3128.33	1.15	-41.12	0.00	0.00	0.00	0.00
211	RT	Unit Testing	PGAE	Bay Area	11/19/2019	125 - 195	No	INC	17	5:00	22:00	-10.81	121250.80	21526.54	415.79	0.00	0.00	0.00	0.00	0.00	0.00
212	RT	Unit Testing	PGAE	Bay Area	11/20/2019	125 - 195	No	INC	19	5:00	0:00	-5.84	0.00	0.00	514.03	0.00	0.00	0.00	0.00	0.00	0.00

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Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
213	RT	Unit Testing	PGAE	Bay Area	11/21/2019	125 - 195	No	INC	24	0:00	0:00	-35.00	0.00	0.00	1426.06	-35.00	0.00	1357.65	0.00	0.00	0.00
214	RT	Unit Testing	PGAE	Bay Area	11/22/2019	125 - 195	No	INC	16	0:00	15:45	22.91	124344.36	0.00	-872.44	29.16	-1219.02	0.00	0.00	0.00	0.00
215	RT	Unit Testing	PGAE	Fresno	11/5/2019	21	No	DEC	1	18:45	19:00	1.47	0.00	3.61	-94.80	1.47	-94.80	0.00	0.00	0.00	0.00
216	RT	Unit Testing	PGAE	Fresno	11/5/2019	21	No	INC	1	19:00	19:45	1.38	-241.20	10.84	-93.72	1.50	-96.99	0.00	0.00	0.00	0.00
217	RT	Unit Testing	PGAE	Fresno	11/6/2019	12.58	No	INC	1	18:30	19:30	4.37	0.00	0.00	-253.96	4.37	-253.96	0.00	0.00	0.00	0.00
218	RT	Unit Testing	PGAE	Sierra	11/7/2019	204	No	INC	1	10:05	10:40	101.40	0.00	0.00	-2898.00	101.40	-2898.00	0.00	0.00	0.00	0.00
219	RT	Unit Testing	SCE	LA Basin	11/5/2019	22	No	INC	1	19:15	19:45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
220	RT	Unit Testing	SCE	LA Basin	11/12/2019	22.07	No	INC	1	16:45	17:00	-3.31	0.00	0.00	110.83	0.00	0.00	0.00	0.00	0.00	0.00
221	RT	Unit Testing	SCE	LA Basin	11/27/2019	0	No	INC	1	8:40	9:40	-15.19	0.00	0.00	0.00	-15.19	0.00	0.00	0.00	0.00	0.00
222	RT	Unit Testing	SCE	NA	11/8/2019	143 - 211	No	INC	10	8:00	17:45	2025.98	0.00	0.00	-60916.67	602.67	-18022.33	0.00	0.00	0.00	0.00
223	RT	Unit Testing	SCE	NA	11/9/2019	143 - 211	No	INC	13	7:15	20:00	2360.38	0.00	0.00	-65432.60	650.17	-17500.45	0.00	0.00	0.00	0.00
224	RT	Unit Testing	SCE	NA	11/10/2019	143 - 220	No	INC	15	7:35	22:00	4825.25	0.00	0.00	-121443.21	1256.13	-30820.04	0.00	0.00	0.00	0.00
225	RT	Unit Testing	SCE	NA	11/15/2019	150	No	INC	1	17:40	17:45	6.10	0.00	0.00	-214.51	0.15	-5.12	0.00	0.00	0.00	0.00
226	RT	Unit Testing	SCE	NA	11/22/2019	150 - 575	No	INC	10	6:50	16:30	4117.10	0.00	0.00	-143129.24	2986.22	-104381.43	0.00	0.00	0.00	0.00
227	RT	Unit Testing	SDGE	San Diego-IV	11/12/2019	40	No	INC	3	19:05	21:10	41.33	0.00	0.00	-1334.67	0.00	0.00	0.00	0.00	0.00	0.00
228	RT	Unplanned Outage	PGAE	NA	11/23/2019	51	No	INC	1	4:05	4:10	3.52	0.00	0.00	-141.08	3.52	-141.08	0.00	-39.03	0.00	0.00
229	RT	Unplanned Outage	PGAE	Stockton	11/23/2019	238	No	INC	1	4:00	4:10	5.90	-279.76	0.00	-238.59	0.00	0.00	0.00	0.00	0.00	0.00
230	RT	Unplanned Outage	SCE	Big Creek-Ventura	11/23/2019	390	No	INC	1	4:00	4:05	8.83	0.00	0.00	-359.24	10.33	-419.90	0.00	-82.27	0.00	0.00

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Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488	CC6620
231	RT	Voltage Support	PGAE	Fresno	11/3/2019	-317 -315	No	DEC	23	1:00	0:00	-19.26	3372.03	0.00	150.04	0.00	0.00	0.00	0.00	0.00	0.00
232	RT	Voltage Support	PGAE	Fresno	11/4/2019	-315	No	DEC	7	0:00	7:00	0.01	0.00	0.00	-0.35	0.00	0.00	0.00	0.00	0.00	0.00
233	RT	Voltage Support	PGAE	Fresno	11/10/2019	-320	No	DEC	1	23:10	0:00	-81.00	0.00	0.00	2725.62	0.00	0.00	0.00	0.00	0.00	0.00
234	RT	Voltage Support	PGAE	Fresno	11/11/2019	-320	No	DEC	5	0:00	5:00	-25.00	0.00	0.00	831.68	0.00	0.00	0.00	0.00	0.00	0.00
235	RT	Voltage Support	PGAE	Fresno	11/11/2019	83	No	INC	2	5:35	7:00	-63.72	8944.11	3000.53	1978.65	0.00	0.00	0.00	0.00	0.00	0.00
236	RT	Voltage Support	PGAE	Fresno	11/14/2019	-310	No	DEC	4	1:45	5:00	-69.77	0.00	0.00	3803.11	0.00	0.00	0.00	0.00	0.00	0.00
237	RT	Voltage Support	PGAE	Fresno	11/17/2019	-320	No	DEC	7	1:00	8:00	-135.52	0.00	0.00	4058.07	0.00	0.00	0.00	0.00	0.00	0.00
238	RT	Voltage Support	PGAE	Fresno	11/18/2019	-306	No	DEC	5	1:00	6:00	-66.30	0.00	0.00	1952.23	0.00	0.00	0.00	0.00	0.00	0.00
239	RT	Voltage Support	PGAE	Fresno	11/22/2019	-301	No	DEC	3	2:25	4:30	-65.22	0.00	0.00	2958.71	0.00	0.00	0.00	0.00	0.00	0.00
240	RT	Voltage Support	PGAE	Fresno	11/24/2019	-304	No	DEC	2	5:15	7:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
241	RT	Voltage Support	PGAE	Fresno	11/24/2019	83	No	INC	1	16:15	17:00	-128.99	5366.47	0.00	5512.81	0.00	0.00	0.00	0.00	0.00	0.00
242	RT	Voltage Support	PGAE	Fresno	11/25/2019	-304	No	DEC	1	4:30	5:30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
243	RT	Voltage Support	PGAE	Fresno	11/28/2019	-304	No	DEC	23	1:30	0:00	-220.76	0.00	0.00	8462.84	0.00	0.00	0.00	0.00	0.00	0.00
244	RT	Voltage Support	PGAE	Fresno	11/29/2019	-304	No	DEC	7	0:00	7:00	-7.00	0.00	0.00	319.90	0.00	0.00	0.00	0.00	0.00	0.00
245	RT	Voltage Support	PGAE	Fresno	11/30/2019	-304	No	DEC	7	0:45	7:00	-76.00	0.00	0.00	3575.26	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A: Explanation by Example

All examples listed below are based on fictitious data. Many simplified assumptions are made to explain settlement charge codes, and not all assumptions are explicitly stated in these examples. For instance, settlement charge codes are calculated based on metered quantities, whereas in these examples, the dispatch quantities are assumed to be equal to metered quantities. These assumptions have been made to simplify the understanding of settlements calculations.

Example 1: Exceptional Dispatch Instructions Prior to DAM

In this fictitious example, the CAISO issued an exceptional dispatch instruction for resource A to be committed at its Pmin of 50 MW from hours ending 5 through 10 for a generation procedure 7630. Similarly, the CAISO issued additional instructions to resources B and C for the same reason in Table 2. Exceptional dispatches prior to the day-ahead market are commitments to minimum load. Here the dispatch levels are all at minimum load. Table 2 below also shows the commitment costs and the total volume (MWh) of exceptional dispatch instruction for each resource. The minimum load costs and start up costs, shown in Table 2 are the eligible minimum load and start up costs different from the bid-in minimum load and start up costs[7]. Only those quantities which relate to pre-day-ahead unit commitments are shown in this table.

Table 2: Instructions Prior to Day-Ahead Market

Date	Market	Resource	Location	Local Reliability Area (LRA)	Begin Time	End Time	Dispatch level (MW)	Reason	Total Volume (MWh)	Min-Load Cost	Start- Up Cost	CC6620 (BCR)
01-Jul-09	DA	A	SCE	LA BASIN	05:00	10:00	50	7630	300	$5000	$0	0
01-Jul-09	DA	B	SCE	LA BASIN	08:00	20:00	30	7630	390	$6000	$500	$4000
01-Jul-09	DA	C	SCE	LA BASIN	09:00	23:00	20	7630	300	$400	$1000	$1000

This data is summarized as shown in Table 3, which is the prescribed format specified in the FERC order on September 02, 2009. This summary classifies the data by reason, resource location, local reliability area, and trade date. The MW column in Table 3 is the range of MW; in this case the minimum instruction MW is 20 MW for resource C which occurs from hours ending 21 through 23. The maximum instruction occurs in hour ending 10. In this hour resource A is committed at 50 MW, resource B is committed at 30 MW and resource C is committed at 20 MW. This adds up to 100 MW. The MW column shows the minimum and maximum of the overlaps of all the exceptional dispatch instructions. The Commitment column shows whether a resource was committed between the begin time and end time. Commitments are broken out separately from energy dispatches. In the day-ahead however, the exceptional dispatches are nearly always just commitments, as in this example. The Begin Time column shows hour ending 5 as this was the hour ending for first dispatch of the day, and the End Time column shows hour ending 23, as this was the hour with last dispatch. It is also possible there might be hours between the begin time and the end time where there might not be exceptional dispatch instructions, meaning that the range between the begin time and end time can include null hours with no dispatch. The total volume (MWh) is the MWh quantity for each resource, which adds up to 990 MWh. Similarly, all cost information is sum of individual resource costs. Some resources bid-in zero start-up cost; as seen in this example, resource A bid in zero for its start up cost. Since the CAISO does not explicitly pay a resource for bid-in minimum load costs and start-up costs; these costs are recovered through the charge code CC6620 (Bid Cost Recovery), this table shows the summary of CC6620 for the classification. Here, it is the CC6620 for all three resources which adds up to $5000. This column shows the impact of exceptional dispatch on bid cost recovery for all pre-day-ahead exceptional dispatch commitments.

Table 3: FERC Summary of Instructions Prior to DAM

Number	Market Type	Reason	Location	Local Reliability Area (LRA)	Trade Date	MW	Commitment	INC/DEC	Hour	Begin Time	End Time	Total Volume (MWh)	Min-Load Cost	Start-Up Cost	CC6620
1	DA	7630	SCE	LA Basin	1-Jul-09	20-100	Yes	N/A	19	05:00	23:00	990	$11,400	$1,500	$5000

Example 2: Incremental Exceptional Dispatch Instructions in RTM

In this fictitious example the CAISO issued an exceptional dispatch instruction to resource A to be committed at its Pmin of 30 MW from hours 6:00 through 11:00 after completion of the day-ahead market for the transmission procedure 7110. This resource had no day-ahead award in those hours. The CAISO issued another exceptional dispatch instruction to resource B, to be dispatched at 40 MW from hours 7:00

[7] Please refer to the BPM configuration Guide: Bid Cost Recovery Settlements published on the CAISO's website for details about eligible minimum load and start up costs.

through 9:00 in real-time for the transmission procedure 7110. This resource had a day-ahead schedule of 20 MW from the day-ahead market, which implies this exceptional dispatch instruction was an incremental instruction and the exceptional dispatch MW was 20 MW. Similarly, the details of exceptional dispatch (ED) instruction for resource C are shown in Table 4. This table also shows volume (MWh) and various real-time charge codes associated with the exceptional dispatch instructions. The total MWh column for each resource shows all types of imbalance energy quantities for this resource between the begin time and end time which includes both the exceptional dispatch energy quantities and optimal energy quantities.

Resource A was committed at its Pmin, so its total volume (MWh) is equal to its Pmin times the number of hours, which is calculated as 30 MW times 6 hours and is equal to 180 MWh. The resource minimum load costs and the start up costs are its eligible commitment costs for that period. LMP at this resource is $10/MWh, so the charge code CC6470 is calculated at (180 MWh *$10/MWh) and is equal to $1,800. Since this resource is not dispatched above its Pmin, it has a zero volume (MWh) of exceptional dispatch. All charge codes associated with the exceptional dispatch increment or decrement quantities are zero.

Resource B is dispatched 20 MW above its day-ahead schedule, so its total volume (MWH) is calculated as 20 MW times 3 hours which is equal to 60 MWh. Since the resource was committed in the Day-Ahead Market there are no minimum load quantity and start up costs associated with this resource. The resource had a bid price of $100/MWh and the LMP at that resource was $10/MWh. All of 60 MWh is considered exceptional dispatch incremental quantity shown in ED Volume (MWH INC/DEC) column. The charge code CC6470 INC is calculated as 60 MWh * resource LMP ($10/MWh) which is equal to $600. Since the only imbalance energy in this timeframe was the exceptional dispatch volume, the charge code CC6470 is equal to CC6470 INC. The charge code CC6488 is calculated as MWH quantity *(bid price – LMP), which is equal to $5400 (60 MWh *($10/MWh-$100/MWh)). Similarly, volumes and real-time charge codes are calculated for resource C.

Table 4: Incremental Exceptional Dispatch Instructions in RTM

Date	Market	Resource	Location	Local Reliability Area (LRA)	Begin Time	End Time	Dispatch level (MW)	Day-Ahead Award (MW)	Commitment	INC/DEC	ED (MW)	Reason	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488
1-Jul-09	RT	A	PG&E	Humboldt	6:00	11:00	30	0	Yes	INC	30	7110	180	1000	50	1800	0	0	0	0	0
1-Jul-09	RT	B	PG&E	Humboldt	7:00	9:00	40	20	No	INC	20	7110	60	0	0	600	60	600	0	0	5400
1-Jul-09	RT	C	PG&E	Humboldt	12:00	15:00	50	50	No	INC	0	7110	0	0	0	0	0	0	0	0	0
1-Jul-09	RT	C	PG&E	Humboldt	16:00	20:00	50	40	No	INC	10	7110	50	0	0	300	20	300	0	0	200

This data is summarized as shown in Table 5 and is classified by reason, resource location, local reliability area, and trade date. The MW column in Table 5 is the range of MW; in this case the minimum instruction MW is 0 MW for resource C which occurs from hours ending 13 through 15. The maximum instruction occurs in hours ending 8 & 9, as during these two hours both resources A and B have an ED MW of 30MW and 20MW, respectively. This adds up to 50 MW. The MW column shows the minimum and maximum of the overlaps of all the exceptional dispatch instructions. The Commitment column shows whether a resource was committed between the begin time and end time. This column shows a commitment if there was a single commitment in the entire interval of exceptional dispatch. The Begin Time column shows the time of the first dispatch of the day. This is a time not a range. Similarly, the End Time column shows a time and not a range. Exceptional dispatches occurred between these two times. Since there was a commitment between the begin time and end time, the Commitment column displays yes for the summary. Similarly, the INC/DEC column shows an INC, as there was an incremental dispatch between the begin time and end time. As mentioned in the previous example, it is possible there might be hours between the begin time and end time where there were no exceptional dispatch instructions. Both volume and cost information columns are the summation for all the respective columns for resources A, B and C. For instance, the Total volume (MWh) column is calculated as summation of 180,60,0 and 50, which are the individual volumes (MWh) for resources A, B and C for time periods shown in Table 4.

Table 5: FERC Summary of ED Instructions in RTM

Number	Market Type	Reason	Location	Local Reliability Area (LRA)	Trade Date	MW	Commitment	INC/DEC	Hour	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488
1	RT	7110	PG&E	Humboldt	1-Jul-09	0-50	Yes	INC	15	6:00	20:00	290	1000	50	1700	140	1500	0	0	11000

It is possible that the CAISO would dispatch a particular resource, for instance at 10 MW from hours ending 1 through 4, and all or part of its energy might settle as optimal energy. This situation occurs when the LMP at the resource pricing node is above the resource bid price. This cost will only be captured in charge code 6470. It is also possible that CAISO issues an exceptional dispatch for the resource to operate at a minimum of 10 MW which is its Pmin; however the market application might dispatch this resource above Pmin because the resource is economical. When this occurs, the charge code CC6470 and the total MWh quantity might overstate the actual exceptional dispatch MWh quantities. So, to best estimate the cost and volume (MWH) of exceptional dispatch, it is appropriate to consider only the following columns: ED MWh (INC/DEC), CC6470 INC, CC6470 DEC, CC6482, CC6488.

Example 3: Decremental Exceptional Dispatch Instructions in RTM

This example highlights decremental exceptional dispatch instructions in the real-time market. In this fictitious example, the CAISO issued an exceptional dispatch instruction to resource A to be committed at its Pmin of 20 MW from hours ending 15 through 20 after completion of the day-ahead market for the transmission procedure 7430. The CAISO issued additional exceptional dispatch instructions for resources B and C; details of those instructions are shown in Table 6. This table also includes volume (MWh) and cost information.

Resource A is committed in real-time at its Pmin, its total volume (MWh) is 20MW *6 hours, which equals 120 MWh. This resource has a zero MW of incremental dispatch in all hours, so all other relevant cost and volume columns result in zeros. Resource B has a decremental MW of 20 MW in 3 hours, which results in 60 MWh of decremental volume. Since this resource is not committed in real-time, both the minimum load cost and start up costs are zero. This resource had a bid price of $50/MWh and LMP at the resource pricing node is $10/ MWh. Based on this information CC6470-Dec is calculated as 60 MWh *$10/MWh which equals $600. Since this resource has its ED volume (MWh) equal to its Total volume, CC6470 is equal to CC6470- DEC. The CC6488 is calculated as (60 MWh * ($50/MWh - $10/MWh)), which is equal to $2400. Resource C had a bid price of $10/MWh and the LMP at its pricing node is $50/MWh. Based on this information, volume and cost information is calculated for resource C.

Table 6: Decremental Exceptional Dispatch Instructions in RTM

Date	Market Type	Resource	Location	Local Reliability Area (LRA)	Begin Time	End Time	Dispatch level (MW)	Day-Ahead Award (MW)	Commitment	INC/DEC	ED (MW)	Reason	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488
1-Jul-09	RT	A	PG&E	Fresno	15:00	20:00	20	0	Yes	INC	20	7430	120	$ 120	$ 100	$ -	0	$ -	$ -	$ -	$ -
1-Jul-09	RT	B	PG&E	Fresno	7:00	9:00	40	60	No	DEC	20	7430	(60)	$ -	$ -	$ 600	-60	$ -	$ 600	$ -	$2,400
1-Jul-09	RT	C	PG&E	Fresno	10:00	14:00	40	50	No	DEC	10	7430	(50)	$ -	$ -	$ 500	-50	$ -	$ 500	$ -	$2,000

This data is summarized according to FERC convention in Table 7. This summary classifies the data by reason, resource location, local reliability area, and trade date. Incs and decs are broken out separately. The inc entry is self-explanatory and similar to the previous example. Regarding the dec entry the MW column is the range of MW; in this case the minimum dec instruction is 10 MW (actually -10MW as it is a dec) for resource C which occurs from hours ending 10 through 14. The maximum instruction occurs from hours ending 7 through 9, when resource B was issued a dec instruction of 20 MW. The MW column shows the minimum and maximum of the overlaps of all the exceptional dispatch instructions. The Commitment column shows whether a resource was committed between the begin time and end time. The volume and cost information are summarized by INC and DEC classification.

Table 7: FERC Summary of Decremental ED Instructions in RTM

Number	Market Type	Reason	Location	Local Reliability Area (LRA)	Trade Date	MW	Commitment	INC/DEC	Hour	Begin Time	End Time	Total MWH	Min Load Cost	Start Up Cost	CC6470	ED MWH (INC/DEC)	CC6470 INC	CC6470 DEC	CC6482	CC6488
1	RT	7430	PG&E	Fresno	1-Jul-09	20	Yes	INC	6	15:00	20:00	120	$ 120	$ 100	$ -	0	$ -	$ -	$ -	$ -
2	RT	7430	PG&E	Fresno	1-Jul-09	10-20	Yes	DEC	8	7:00	14:00	(110)	$ -	$ -	$ (1,100)	$ (110)	$ -	$ (1,100)	$ -	$ (4,400)

Appendix B: Price Impact Analysis

In the September 2 FERC order, FERC requested the CAISO to perform price impact analysis on two distinct pricing nodes for the entire reporting period. The order also mentioned that the CAISO must pick two pricing nodes for the entire reporting period that are most affected by the exceptional dispatch instructions, and the two pricing nodes must belong to two load aggregation points (LAPs).

Based on this requirement the CAISO implemented a methodology to perform price impact analysis. First, the CAISO identified a heavily affected pricing node from each of the Pacific Gas & Electric (PGAE) LAP and Southern California Edison (SCE) LAP. These two pricing nodes had the maximum amount of exceptional dispatch volume (MWh) in their respective LAP. Point A is in PGAE LAP and point B is in SCE LAP. Please note these two points correspond to an actual pricing node in the CAISO system. Only one resource was connected to each pricing nodes. For each resource the following input parameters were obtained to perform the analysis:

Exceptional dispatch information: constrained level, constraint type, start of exceptional dispatch instruction and end of exceptional dispatch instruction.
Real-Time LMPs for each of the five minute intervals for the month.
Real-Time hourly bid set for each trade hour.
Day-Ahead award for the resources.

The exceptional dispatch intervals have a begin time and an end time which can span as small as one minute to as large as 24 hours. Since the market application dispatches resources on five-minute basis, the exceptional dispatch instructions for each resource were broken down into five-minute intervals. If the begin time or end time for an instruction was in the middle of the five-minute interval, that instruction was rounded up to the next five-minute interval. These five-minute intervals were then coupled with resource five-minute LMPs calculated by the real-time market application. Also, the hourly bid information and the hourly day-ahead schedule were put together to create a dataset that had all the information to perform price impact analysis.

An exceptional dispatch instruction can be classified as a start up instruction, an instruction to be dispatched at or above the constrained level, an instruction to be dispatched at or below a constrained level, an instruction to be dispatched at a fixed constrained level, or a shut down instruction. The Locational Marginal Price (LMP) is set by a resource which can provide the next incremental MW of energy. Based on this definition of LMP and the classification of exceptional dispatches based on constraint type, a resource may set the LMP in only those intervals in which the resource is eligible to move either up or down from its constrained level. Hence, in those intervals in which the resource was constrained up at its Pmax or the resource was exceptionally dispatched to its Pmax and forced to generate at that level, the resource was ineligible to set the price as it had no room to move up. Similarly, if the resource was constrained down at its Pmin, then the resource was not eligible to set the price. All those intervals in which the resource was ineligible to set the price were dropped from the dataset under consideration. From this dataset of only eligible intervals, for both pricing nodes A and B, LMPs were calculated for all intervals based on the resource dispatch level and the its bid set. The calculated LMP is equal to that bid price corresponding to the constrained MW segment.

Table 8 shows the price impact analysis information for node A, which is in the PGAE area. This table shows all the five minute intervals in which the resource at PNode A was issued an exceptional dispatch instruction and was eligible to set the price. Out of the 8,640 five-minute intervals in November, this resource was issued exceptional dispatch instructions in 4281 five-minute intervals. This resource was eligible to set the LMP in 242 intervals. Out of the 242 intervals, resource calculated LMP was larger than the market LMP in 0 intervals. Out of the 242 intervals, resource calculated LMP was less than the market LMP in 242 intervals. In the 242 intervals, the average decrease in five minute LMP was $20.13/MWh. This implies that if the CAISO could model the constraint for this exceptional dispatch, then this resource and all other pricing nodes associated with that constraint would observe an average decrease of $20.13/MWh

Table 9 shows the price impact analysis information for node B, which is in the SCE area. This table shows all the five minute intervals in which the resource at PNode B was issued an exceptional dispatch instruction and was eligible to set the price. Out of the 8,640 five-minute intervals in November, this resource was issued exceptional dispatch instructions in 764 five-minute intervals. This resource was eligible to set the LMP in 335 intervals. Out of the 335 intervals, resource calculated LMP was larger than the market LMP in 2 intervals. In the 2 intervals, the average increase in five minute LMP was $15.61/MWh. Out of the 335 intervals, resource calculated LMP was less than the market LMP in 333 intervals. In the 333 intervals, the average decrease in five minute LMP was $67.78/MWh. This implies that if the CAISO could model the constraint for this exceptional dispatch, then this resource and all other pricing nodes associated with that constraint would observe an average decrease of $67.29/MWh

Table 8: Price Impact Analysis Information for Pricing Node A in PGAE LAP

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
1	11/7/2019	15	1	22.00	Yes	13.05	-8.95
2	11/7/2019	15	2	22.47	Yes	13.05	-9.42
3	11/7/2019	15	3	23.47	Yes	13.05	-10.42
4	11/7/2019	15	4	20.44	Yes	13.05	-7.39
5	11/7/2019	15	5	21.14	Yes	13.05	-8.09
6	11/7/2019	15	6	24.66	Yes	13.05	-11.61
7	11/7/2019	15	7	24.66	Yes	13.05	-11.61
8	11/7/2019	15	8	25.05	Yes	13.05	-12.00
9	11/7/2019	15	9	26.56	Yes	13.05	-13.51
10	11/7/2019	15	10	29.99	Yes	13.05	-16.94
11	11/7/2019	15	11	30.33	Yes	13.05	-17.28
12	11/7/2019	15	12	26.39	Yes	13.05	-13.34
13	11/7/2019	17	12	45.15	Yes	13.05	-32.10
14	11/7/2019	18	1	26.03	Yes	13.05	-12.98
15	11/7/2019	18	2	20.20	Yes	13.05	-7.15
16	11/7/2019	18	3	21.40	Yes	13.05	-8.35
17	11/21/2019	15	1	23.68	Yes	12.79	-10.89
18	11/21/2019	15	2	22.79	Yes	12.79	-10.00
19	11/21/2019	15	3	21.54	Yes	12.79	-8.75
20	11/21/2019	15	4	22.02	Yes	12.79	-9.23
21	11/21/2019	15	5	22.55	Yes	12.79	-9.76
22	11/21/2019	15	6	22.89	Yes	12.79	-10.10
23	11/21/2019	15	7	22.16	Yes	12.79	-9.37
24	11/21/2019	15	8	22.17	Yes	12.79	-9.38
25	11/21/2019	15	9	22.95	Yes	12.79	-10.16
26	11/21/2019	15	10	23.68	Yes	12.79	-10.89
27	11/21/2019	15	11	27.35	Yes	12.79	-14.56
28	11/21/2019	15	12	25.87	Yes	12.79	-13.08
29	11/21/2019	16	1	19.79	Yes	12.79	-7.00
30	11/21/2019	16	2	20.33	Yes	12.79	-7.54
31	11/21/2019	16	3	20.94	Yes	12.79	-8.15
32	11/21/2019	16	4	22.08	Yes	12.79	-9.29
33	11/21/2019	16	5	22.98	Yes	12.79	-10.19
34	11/21/2019	16	6	25.69	Yes	12.79	-12.90

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
35	11/21/2019	16	7	27.24	Yes	12.79	-14.45
36	11/21/2019	16	8	35.85	Yes	12.79	-23.06
37	11/21/2019	16	9	30.04	Yes	12.79	-17.25
38	11/21/2019	16	10	35.38	Yes	12.79	-22.59
39	11/21/2019	16	11	36.93	Yes	12.79	-24.14
40	11/21/2019	16	12	36.56	Yes	12.79	-23.77
41	11/26/2019	17	3	33.27	Yes	14.02	-19.25
42	11/26/2019	17	4	36.10	Yes	14.02	-22.08
43	11/26/2019	17	5	39.22	Yes	14.02	-25.20
44	11/26/2019	17	6	46.04	Yes	14.02	-32.02
45	11/26/2019	17	7	42.07	Yes	14.02	-28.05
46	11/26/2019	17	8	43.73	Yes	14.02	-29.71
47	11/26/2019	17	9	38.33	Yes	14.02	-24.31
48	11/26/2019	17	10	35.38	Yes	14.02	-21.36
49	11/26/2019	17	11	43.15	Yes	14.02	-29.13
50	11/26/2019	17	12	36.02	Yes	14.02	-22.00
51	11/26/2019	18	1	31.37	Yes	14.02	-17.35
52	11/26/2019	18	2	30.67	Yes	14.02	-16.65
53	11/26/2019	18	3	29.63	Yes	14.02	-15.61
54	11/26/2019	18	4	36.75	Yes	14.02	-22.73
55	11/26/2019	18	5	32.28	Yes	14.02	-18.26
56	11/26/2019	18	6	32.28	Yes	14.02	-18.26
57	11/26/2019	18	7	38.89	Yes	14.02	-24.87
58	11/26/2019	18	8	36.78	Yes	14.02	-22.76
59	11/26/2019	18	9	35.82	Yes	14.02	-21.80
60	11/26/2019	18	10	37.97	Yes	14.02	-23.95
61	11/26/2019	18	11	42.84	Yes	14.02	-28.82
62	11/26/2019	18	12	41.66	Yes	14.02	-27.64
63	11/26/2019	19	1	34.50	Yes	14.02	-20.48
64	11/26/2019	19	2	35.65	Yes	14.02	-21.63
65	11/26/2019	19	3	37.77	Yes	14.02	-23.75
66	11/26/2019	19	4	38.13	Yes	14.02	-24.11
67	11/26/2019	19	5	35.96	Yes	14.02	-21.94
68	11/26/2019	19	6	32.08	Yes	14.02	-18.06
69	11/26/2019	19	7	35.91	Yes	14.02	-21.89
70	11/26/2019	19	8	30.37	Yes	14.02	-16.35
71	11/26/2019	19	9	31.59	Yes	14.02	-17.57
72	11/26/2019	19	10	31.51	Yes	14.02	-17.49

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
73	11/26/2019	19	11	31.51	Yes	14.02	-17.49
74	11/26/2019	19	12	31.48	Yes	14.02	-17.46
75	11/26/2019	20	1	31.28	Yes	14.02	-17.26
76	11/26/2019	20	2	36.13	Yes	14.02	-22.11
77	11/26/2019	20	3	40.37	Yes	14.02	-26.35
78	11/26/2019	20	4	48.02	Yes	14.02	-34.00
79	11/26/2019	20	5	47.96	Yes	14.02	-33.94
80	11/26/2019	20	6	47.96	Yes	14.02	-33.94
81	11/26/2019	20	7	45.87	Yes	14.02	-31.85
82	11/26/2019	20	8	36.08	Yes	14.02	-22.06
83	11/26/2019	20	9	35.67	Yes	14.02	-21.65
84	11/26/2019	20	10	35.08	Yes	14.02	-21.06
85	11/26/2019	20	11	34.37	Yes	14.02	-20.35
86	11/26/2019	20	12	32.18	Yes	14.02	-18.16
87	11/26/2019	21	1	35.65	Yes	14.02	-21.63
88	11/26/2019	21	2	37.80	Yes	14.02	-23.78
89	11/26/2019	21	3	38.66	Yes	14.02	-24.64
90	11/26/2019	21	4	38.28	Yes	14.02	-24.26
91	11/26/2019	21	5	35.44	Yes	14.02	-21.42
92	11/26/2019	21	6	35.28	Yes	14.02	-21.26
93	11/26/2019	21	7	34.81	Yes	14.02	-20.79
94	11/26/2019	21	8	34.72	Yes	14.02	-20.70
95	11/26/2019	21	9	33.18	Yes	14.02	-19.16
96	11/26/2019	21	10	33.41	Yes	14.02	-19.39
97	11/26/2019	21	11	32.63	Yes	14.02	-18.61
98	11/26/2019	21	12	31.99	Yes	14.02	-17.97
99	11/26/2019	22	1	36.27	Yes	14.02	-22.25
100	11/26/2019	22	2	34.46	Yes	14.02	-20.44
101	11/26/2019	22	3	37.57	Yes	14.02	-23.55
102	11/26/2019	22	4	36.17	Yes	14.02	-22.15
103	11/26/2019	22	5	35.33	Yes	14.02	-21.31
104	11/26/2019	22	6	33.31	Yes	14.02	-19.29
105	11/26/2019	22	7	35.18	Yes	14.02	-21.16
106	11/26/2019	22	8	35.01	Yes	14.02	-20.99
107	11/26/2019	22	9	34.83	Yes	14.02	-20.81
108	11/26/2019	22	10	30.51	Yes	14.02	-16.49
109	11/26/2019	22	11	30.37	Yes	14.02	-16.35
110	11/26/2019	22	12	29.69	Yes	14.02	-15.67

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
111	11/27/2019	10	8	48.46	Yes	13.18	-35.28
112	11/27/2019	10	9	40.78	Yes	13.18	-27.60
113	11/27/2019	10	10	40.86	Yes	13.18	-27.68
114	11/27/2019	10	11	42.19	Yes	13.18	-29.01
115	11/27/2019	10	12	40.34	Yes	13.18	-27.16
116	11/27/2019	11	1	50.24	Yes	13.18	-37.06
117	11/27/2019	11	2	47.34	Yes	13.18	-34.16
118	11/27/2019	11	3	44.87	Yes	13.18	-31.69
119	11/27/2019	11	4	42.14	Yes	13.18	-28.96
120	11/27/2019	11	5	41.09	Yes	13.18	-27.91
121	11/27/2019	11	6	46.08	Yes	13.18	-32.90
122	11/27/2019	11	7	40.20	Yes	13.18	-27.02
123	11/27/2019	11	8	37.76	Yes	13.18	-24.58
124	11/27/2019	11	9	37.67	Yes	13.18	-24.49
125	11/27/2019	11	10	38.52	Yes	13.18	-25.34
126	11/27/2019	11	11	44.82	Yes	13.18	-31.64
127	11/27/2019	11	12	39.00	Yes	13.18	-25.82
128	11/27/2019	12	1	37.54	Yes	13.18	-24.36
129	11/27/2019	12	2	36.95	Yes	13.18	-23.77
130	11/27/2019	12	3	37.51	Yes	13.18	-24.33
131	11/27/2019	12	4	36.27	Yes	13.18	-23.09
132	11/27/2019	12	5	37.31	Yes	13.18	-24.13
133	11/27/2019	12	6	36.22	Yes	13.18	-23.04
134	11/27/2019	12	7	27.57	Yes	13.18	-14.39
135	11/27/2019	12	8	31.68	Yes	13.18	-18.50
136	11/27/2019	12	9	27.57	Yes	13.18	-14.39
137	11/27/2019	12	10	27.44	Yes	13.18	-14.26
138	11/27/2019	12	11	27.40	Yes	13.18	-14.22
139	11/27/2019	12	12	32.51	Yes	13.18	-19.33
140	11/27/2019	13	1	33.43	Yes	13.18	-20.25
141	11/27/2019	13	2	42.64	Yes	13.18	-29.46
142	11/27/2019	13	3	38.74	Yes	13.18	-25.56
143	11/27/2019	13	4	36.93	Yes	13.18	-23.75
144	11/27/2019	13	5	36.67	Yes	13.18	-23.49
145	11/27/2019	13	6	36.04	Yes	13.18	-22.86
146	11/27/2019	13	7	35.03	Yes	13.18	-21.85
147	11/27/2019	13	8	36.78	Yes	13.18	-23.60
148	11/27/2019	13	9	36.98	Yes	13.18	-23.80

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
149	11/27/2019	13	10	41.74	Yes	13.18	-28.56
150	11/27/2019	13	11	54.65	Yes	13.18	-41.47
151	11/27/2019	13	12	50.55	Yes	13.18	-37.37
152	11/27/2019	14	1	52.85	Yes	13.18	-39.67
153	11/27/2019	14	2	41.68	Yes	13.18	-28.50
154	11/27/2019	14	3	53.88	Yes	13.18	-40.70
155	11/27/2019	14	4	47.43	Yes	13.18	-34.25
156	11/27/2019	14	5	40.57	Yes	13.18	-27.39
157	11/27/2019	14	6	43.42	Yes	13.18	-30.24
158	11/27/2019	14	7	43.43	Yes	13.18	-30.25
159	11/27/2019	14	8	49.12	Yes	13.18	-35.94
160	11/27/2019	14	9	51.10	Yes	13.18	-37.92
161	11/27/2019	14	10	53.24	Yes	13.18	-40.06
162	11/27/2019	14	11	48.07	Yes	13.18	-34.89
163	11/27/2019	14	12	44.83	Yes	13.18	-31.65
164	11/27/2019	16	3	22.35	Yes	13.18	-9.17
165	11/27/2019	16	4	24.36	Yes	13.18	-11.18
166	11/27/2019	16	8	25.56	Yes	13.18	-12.38
167	11/27/2019	16	9	27.46	Yes	13.18	-14.28
168	11/27/2019	16	10	29.31	Yes	13.18	-16.13
169	11/27/2019	16	11	31.71	Yes	13.18	-18.53
170	11/27/2019	16	12	34.90	Yes	13.18	-21.72
171	11/27/2019	17	1	21.44	Yes	13.18	-8.26
172	11/27/2019	17	2	21.44	Yes	13.18	-8.26
173	11/27/2019	17	3	22.12	Yes	13.18	-8.94
174	11/27/2019	17	4	23.94	Yes	13.18	-10.76
175	11/27/2019	17	5	25.79	Yes	13.18	-12.61
176	11/27/2019	17	6	29.26	Yes	13.18	-16.08
177	11/27/2019	17	7	29.94	Yes	13.18	-16.76
178	11/27/2019	17	8	29.82	Yes	13.18	-16.64
179	11/27/2019	17	9	32.25	Yes	13.18	-19.07
180	11/27/2019	17	10	35.54	Yes	13.18	-22.36
181	11/27/2019	17	11	36.45	Yes	13.18	-23.27
182	11/27/2019	17	12	40.88	Yes	13.18	-27.70
183	11/27/2019	18	1	31.01	Yes	13.18	-17.83
184	11/27/2019	18	2	29.57	Yes	13.18	-16.39
185	11/27/2019	18	3	28.63	Yes	13.18	-15.45
186	11/27/2019	18	4	36.53	Yes	13.18	-23.35

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
187	11/27/2019	18	5	36.53	Yes	13.18	-23.35
188	11/27/2019	18	6	36.53	Yes	13.18	-23.35
189	11/27/2019	18	7	35.14	Yes	13.18	-21.96
190	11/27/2019	18	8	33.85	Yes	13.18	-20.67
191	11/27/2019	18	9	33.85	Yes	13.18	-20.67
192	11/27/2019	18	10	32.62	Yes	13.18	-19.44
193	11/27/2019	18	11	28.72	Yes	13.18	-15.54
194	11/27/2019	18	12	28.72	Yes	13.18	-15.54
195	11/27/2019	19	1	26.50	Yes	13.18	-13.32
196	11/27/2019	19	2	26.50	Yes	13.18	-13.32
197	11/27/2019	19	3	27.39	Yes	13.18	-14.21
198	11/27/2019	19	4	27.66	Yes	13.18	-14.48
199	11/27/2019	19	5	27.60	Yes	13.18	-14.42
200	11/27/2019	19	6	27.70	Yes	13.18	-14.52
201	11/27/2019	19	7	27.11	Yes	13.18	-13.93
202	11/27/2019	19	8	26.92	Yes	13.18	-13.74
203	11/27/2019	19	9	27.55	Yes	13.18	-14.37
204	11/27/2019	19	10	27.49	Yes	13.18	-14.31
205	11/27/2019	19	11	26.88	Yes	13.18	-13.70
206	11/27/2019	19	12	25.83	Yes	13.18	-12.65
207	11/27/2019	20	1	27.51	Yes	13.18	-14.33
208	11/27/2019	20	2	27.51	Yes	13.18	-14.33
209	11/27/2019	20	3	27.98	Yes	13.18	-14.80
210	11/27/2019	20	4	27.45	Yes	13.18	-14.27
211	11/27/2019	20	5	27.45	Yes	13.18	-14.27
212	11/27/2019	20	6	27.80	Yes	13.18	-14.62
213	11/27/2019	20	7	27.71	Yes	13.18	-14.53
214	11/27/2019	20	8	27.50	Yes	13.18	-14.32
215	11/27/2019	20	9	27.28	Yes	13.18	-14.10
216	11/27/2019	20	10	27.37	Yes	13.18	-14.19
217	11/27/2019	20	11	27.37	Yes	13.18	-14.19
218	11/27/2019	20	12	26.34	Yes	13.18	-13.16
219	11/27/2019	21	1	31.60	Yes	13.18	-18.42
220	11/27/2019	21	2	35.71	Yes	13.18	-22.53
221	11/27/2019	21	3	36.94	Yes	13.18	-23.76
222	11/27/2019	21	4	35.46	Yes	13.18	-22.28
223	11/27/2019	21	5	35.31	Yes	13.18	-22.13
224	11/27/2019	21	6	35.76	Yes	13.18	-22.58

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
225	11/27/2019	21	7	35.27	Yes	13.18	-22.09
226	11/27/2019	21	8	35.06	Yes	13.18	-21.88
227	11/27/2019	21	9	33.05	Yes	13.18	-19.87
228	11/27/2019	21	10	31.03	Yes	13.18	-17.85
229	11/27/2019	21	11	30.08	Yes	13.18	-16.90
230	11/27/2019	21	12	29.35	Yes	13.18	-16.17
231	11/27/2019	22	1	39.89	Yes	13.18	-26.71
232	11/27/2019	22	2	35.28	Yes	13.18	-22.10
233	11/27/2019	22	3	35.29	Yes	13.18	-22.11
234	11/27/2019	22	4	34.32	Yes	13.18	-21.14
235	11/27/2019	22	5	34.35	Yes	13.18	-21.17
236	11/27/2019	22	6	32.39	Yes	13.18	-19.21
237	11/27/2019	22	7	32.89	Yes	13.18	-19.71
238	11/27/2019	22	8	32.07	Yes	13.18	-18.89
239	11/27/2019	22	9	29.37	Yes	13.18	-16.19
240	11/27/2019	22	10	28.99	Yes	13.18	-15.81
241	11/27/2019	22	11	28.71	Yes	13.18	-15.53
242	11/27/2019	22	12	28.65	Yes	13.18	-15.47

Table 9: Price Impact Analysis Information for Pricing Node B in SCE LAP

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
1	11/18/2019	11	12	106.91	Yes	38.76	-68.15
2	11/18/2019	12	1	63.86	Yes	38.76	-25.10
3	11/18/2019	12	2	83.09	Yes	38.76	-44.33
4	11/18/2019	12	3	38.76	Yes	38.76	0.00
5	11/18/2019	12	4	107.79	Yes	38.76	-69.03
6	11/18/2019	12	5	101.12	Yes	38.76	-62.36
7	11/18/2019	12	6	119.22	Yes	38.76	-80.46
8	11/18/2019	12	7	119.57	Yes	38.76	-80.81
9	11/18/2019	12	8	108.17	Yes	38.76	-69.41
10	11/18/2019	12	9	115.67	Yes	38.76	-76.91
11	11/18/2019	12	10	116.13	Yes	38.76	-77.37
12	11/18/2019	12	11	115.10	Yes	38.76	-76.34
13	11/18/2019	12	12	109.37	Yes	38.76	-70.61
14	11/18/2019	13	1	105.60	Yes	38.76	-66.84
15	11/18/2019	13	2	105.60	Yes	38.76	-66.84
16	11/18/2019	13	3	106.01	Yes	38.76	-67.25
17	11/18/2019	13	4	140.62	Yes	38.76	-101.86
18	11/18/2019	13	5	137.43	Yes	38.76	-98.67
19	11/18/2019	13	6	131.18	Yes	38.76	-92.42
20	11/18/2019	13	7	131.67	Yes	38.76	-92.91
21	11/18/2019	13	8	131.53	Yes	38.76	-92.77
22	11/18/2019	13	9	141.47	Yes	38.76	-102.71
23	11/25/2019	15	3	20.18	Yes	51.41	31.23
24	11/25/2019	15	4	85.55	Yes	51.41	-34.14
25	11/25/2019	15	5	92.82	Yes	51.41	-41.41
26	11/25/2019	15	6	91.16	Yes	51.41	-39.75
27	11/25/2019	15	7	97.67	Yes	51.41	-46.26
28	11/25/2019	15	8	98.03	Yes	51.41	-46.62
29	11/25/2019	15	9	100.21	Yes	51.41	-48.80
30	11/25/2019	15	10	103.35	Yes	51.41	-51.94
31	11/25/2019	15	11	120.61	Yes	51.41	-69.20
32	11/25/2019	15	12	107.11	Yes	51.41	-55.70
33	11/25/2019	16	1	102.70	Yes	51.41	-51.29
34	11/25/2019	16	2	99.26	Yes	51.41	-47.85

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
35	11/25/2019	16	3	102.05	Yes	51.41	-50.64
36	11/25/2019	16	4	101.70	Yes	51.41	-50.29
37	11/25/2019	16	5	102.22	Yes	51.41	-50.81
38	11/25/2019	16	6	105.99	Yes	51.41	-54.58
39	11/25/2019	16	7	106.67	Yes	51.41	-55.26
40	11/25/2019	16	8	108.62	Yes	51.41	-57.21
41	11/25/2019	16	9	124.42	Yes	51.41	-73.01
42	11/25/2019	16	10	132.36	Yes	51.41	-80.95
43	11/25/2019	16	11	122.95	Yes	51.41	-71.54
44	11/25/2019	16	12	123.13	Yes	51.41	-71.72
45	11/25/2019	17	1	100.70	Yes	51.41	-49.29
46	11/25/2019	17	2	98.94	Yes	51.41	-47.53
47	11/25/2019	17	3	100.70	Yes	51.41	-49.29
48	11/25/2019	17	4	101.64	Yes	51.41	-50.23
49	11/25/2019	17	5	102.01	Yes	51.41	-50.60
50	11/25/2019	17	6	105.62	Yes	51.41	-54.21
51	11/25/2019	17	7	102.81	Yes	51.41	-51.40
52	11/25/2019	17	8	99.17	Yes	51.41	-47.76
53	11/25/2019	17	9	113.38	Yes	51.41	-61.97
54	11/25/2019	17	10	114.87	Yes	51.41	-63.46
55	11/25/2019	17	11	119.30	Yes	51.41	-67.89
56	11/25/2019	17	12	107.25	Yes	51.41	-55.84
57	11/25/2019	18	1	85.72	Yes	51.41	-34.31
58	11/25/2019	18	2	139.31	Yes	51.41	-87.90
59	11/25/2019	18	3	132.87	Yes	51.41	-81.46
60	11/25/2019	18	4	105.47	Yes	51.41	-54.06
61	11/25/2019	18	5	120.32	Yes	51.41	-68.91
62	11/25/2019	18	6	99.66	Yes	51.41	-48.25
63	11/25/2019	18	7	99.09	Yes	51.41	-47.68
64	11/25/2019	18	8	98.10	Yes	51.41	-46.69
65	11/25/2019	18	9	102.49	Yes	51.41	-51.08
66	11/25/2019	18	10	103.69	Yes	51.41	-52.28
67	11/25/2019	18	11	96.41	Yes	51.41	-45.00
68	11/25/2019	18	12	96.48	Yes	51.41	-45.07
69	11/25/2019	19	1	96.61	Yes	51.41	-45.20
70	11/25/2019	19	2	97.23	Yes	51.41	-45.82
71	11/25/2019	19	3	98.92	Yes	51.41	-47.51
72	11/25/2019	19	4	106.49	Yes	51.41	-55.08

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
73	11/25/2019	19	5	103.81	Yes	51.41	-52.40
74	11/25/2019	19	6	102.61	Yes	51.41	-51.20
75	11/25/2019	19	7	103.05	Yes	51.41	-51.64
76	11/25/2019	19	8	102.66	Yes	51.41	-51.25
77	11/25/2019	19	9	102.61	Yes	51.41	-51.20
78	11/25/2019	19	10	102.68	Yes	51.41	-51.27
79	11/25/2019	19	11	103.22	Yes	51.41	-51.81
80	11/25/2019	19	12	103.22	Yes	51.41	-51.81
81	11/25/2019	20	1	101.87	Yes	51.41	-50.46
82	11/25/2019	20	2	101.66	Yes	51.41	-50.25
83	11/25/2019	20	3	119.69	Yes	51.41	-68.28
84	11/25/2019	20	4	119.38	Yes	51.41	-67.97
85	11/25/2019	20	5	119.38	Yes	51.41	-67.97
86	11/25/2019	20	6	121.12	Yes	51.41	-69.71
87	11/25/2019	20	7	121.16	Yes	51.41	-69.75
88	11/25/2019	20	8	119.22	Yes	51.41	-67.81
89	11/25/2019	20	9	119.22	Yes	51.41	-67.81
90	11/25/2019	20	10	106.12	Yes	51.41	-54.71
91	11/25/2019	20	11	106.11	Yes	51.41	-54.70
92	11/25/2019	20	12	112.42	Yes	51.41	-61.01
93	11/25/2019	21	1	125.46	Yes	51.41	-74.05
94	11/25/2019	21	2	125.46	Yes	51.41	-74.05
95	11/25/2019	21	3	120.84	Yes	51.41	-69.43
96	11/25/2019	21	4	111.18	Yes	51.41	-59.77
97	11/25/2019	21	5	98.67	Yes	51.41	-47.26
98	11/25/2019	21	6	115.63	Yes	51.41	-64.22
99	11/25/2019	21	7	115.65	Yes	51.41	-64.24
100	11/25/2019	21	8	115.65	Yes	51.41	-64.24
101	11/25/2019	21	9	115.65	Yes	51.41	-64.24
102	11/25/2019	21	10	113.21	Yes	51.41	-61.80
103	11/25/2019	21	11	97.76	Yes	51.41	-46.35
104	11/25/2019	21	12	105.08	Yes	51.41	-53.67
105	11/25/2019	22	1	107.54	Yes	51.41	-56.13
106	11/25/2019	22	2	118.26	Yes	51.41	-66.85
107	11/25/2019	22	3	142.13	Yes	51.41	-90.72
108	11/25/2019	22	4	136.60	Yes	51.41	-85.19
109	11/25/2019	22	5	121.89	Yes	51.41	-70.48
110	11/25/2019	22	6	108.02	Yes	51.41	-56.61

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
111	11/25/2019	22	7	97.41	Yes	51.41	-46.00
112	11/25/2019	22	8	99.25	Yes	51.41	-47.84
113	11/25/2019	22	9	102.13	Yes	51.41	-50.72
114	11/25/2019	22	10	102.60	Yes	51.41	-51.19
115	11/25/2019	22	11	102.60	Yes	51.41	-51.19
116	11/25/2019	22	12	100.29	Yes	51.41	-48.88
117	11/25/2019	23	1	99.60	Yes	51.41	-48.19
118	11/25/2019	23	2	97.59	Yes	51.41	-46.18
119	11/25/2019	23	3	97.95	Yes	51.41	-46.54
120	11/25/2019	23	4	99.76	Yes	51.41	-48.35
121	11/25/2019	23	5	102.33	Yes	51.41	-50.92
122	11/25/2019	23	6	104.47	Yes	51.41	-53.06
123	11/25/2019	23	7	104.47	Yes	51.41	-53.06
124	11/25/2019	23	8	103.95	Yes	51.41	-52.54
125	11/25/2019	23	9	103.70	Yes	51.41	-52.29
126	11/25/2019	23	10	101.91	Yes	51.41	-50.50
127	11/25/2019	23	11	101.90	Yes	51.41	-50.49
128	11/25/2019	23	12	101.90	Yes	51.41	-50.49
129	11/25/2019	24	1	98.40	Yes	51.41	-46.99
130	11/25/2019	24	2	99.61	Yes	51.41	-48.20
131	11/25/2019	24	3	99.82	Yes	51.41	-48.41
132	11/25/2019	24	4	100.35	Yes	51.41	-48.94
133	11/25/2019	24	5	100.60	Yes	51.41	-49.19
134	11/25/2019	24	6	101.42	Yes	51.41	-50.01
135	11/25/2019	24	7	101.17	Yes	51.41	-49.76
136	11/25/2019	24	8	102.57	Yes	51.41	-51.16
137	11/25/2019	24	9	103.10	Yes	51.41	-51.69
138	11/25/2019	24	10	105.10	Yes	51.41	-53.69
139	11/25/2019	24	11	105.35	Yes	51.41	-53.94
140	11/25/2019	24	12	105.33	Yes	51.41	-53.92
141	11/26/2019	1	1	101.66	Yes	47.10	-54.56
142	11/26/2019	1	2	99.49	Yes	47.10	-52.39
143	11/26/2019	1	3	99.52	Yes	47.10	-52.42
144	11/26/2019	1	4	99.82	Yes	47.10	-52.72
145	11/26/2019	1	5	99.58	Yes	47.10	-52.48
146	11/26/2019	1	6	99.67	Yes	47.10	-52.57
147	11/26/2019	1	7	99.80	Yes	47.10	-52.70
148	11/26/2019	1	8	99.71	Yes	47.10	-52.61

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
149	11/26/2019	1	9	99.71	Yes	47.10	-52.61
150	11/26/2019	1	10	99.72	Yes	47.10	-52.62
151	11/26/2019	1	11	99.79	Yes	47.10	-52.69
152	11/26/2019	1	12	99.73	Yes	47.10	-52.63
153	11/26/2019	2	1	98.27	Yes	47.10	-51.17
154	11/26/2019	2	2	97.48	Yes	47.10	-50.38
155	11/26/2019	2	3	98.31	Yes	47.10	-51.21
156	11/26/2019	2	4	98.51	Yes	47.10	-51.41
157	11/26/2019	2	5	98.51	Yes	47.10	-51.41
158	11/26/2019	2	6	98.52	Yes	47.10	-51.42
159	11/26/2019	2	7	98.78	Yes	47.10	-51.68
160	11/26/2019	2	8	98.78	Yes	47.10	-51.68
161	11/26/2019	2	9	99.17	Yes	47.10	-52.07
162	11/26/2019	2	10	99.16	Yes	47.10	-52.06
163	11/26/2019	2	11	100.26	Yes	47.10	-53.16
164	11/26/2019	2	12	101.28	Yes	47.10	-54.18
165	11/26/2019	3	1	101.18	Yes	47.10	-54.08
166	11/26/2019	3	2	101.18	Yes	47.10	-54.08
167	11/26/2019	3	3	103.28	Yes	47.10	-56.18
168	11/26/2019	3	4	103.23	Yes	47.10	-56.13
169	11/26/2019	3	5	101.22	Yes	47.10	-54.12
170	11/26/2019	3	6	102.12	Yes	47.10	-55.02
171	11/26/2019	3	7	99.62	Yes	47.10	-52.52
172	11/26/2019	3	8	99.59	Yes	47.10	-52.49
173	11/26/2019	3	9	99.10	Yes	47.10	-52.00
174	11/26/2019	3	10	99.09	Yes	47.10	-51.99
175	11/26/2019	3	11	99.55	Yes	47.10	-52.45
176	11/26/2019	3	12	99.55	Yes	47.10	-52.45
177	11/26/2019	4	1	101.41	Yes	47.10	-54.31
178	11/26/2019	4	2	100.61	Yes	47.10	-53.51
179	11/26/2019	4	3	98.61	Yes	47.10	-51.51
180	11/26/2019	4	4	119.39	Yes	47.10	-72.29
181	11/26/2019	4	5	100.25	Yes	47.10	-53.15
182	11/26/2019	4	6	98.83	Yes	47.10	-51.73
183	11/26/2019	4	7	101.79	Yes	47.10	-54.69
184	11/26/2019	4	8	101.39	Yes	47.10	-54.29
185	11/26/2019	4	9	101.11	Yes	47.10	-54.01
186	11/26/2019	4	10	101.28	Yes	47.10	-54.18

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
187	11/26/2019	4	11	100.88	Yes	47.10	-53.78
188	11/26/2019	4	12	100.36	Yes	47.10	-53.26
189	11/26/2019	5	1	102.09	Yes	47.10	-54.99
190	11/26/2019	5	2	103.10	Yes	47.10	-56.00
191	11/26/2019	5	3	101.75	Yes	47.10	-54.65
192	11/26/2019	5	4	101.59	Yes	47.10	-54.49
193	11/26/2019	5	5	101.59	Yes	47.10	-54.49
194	11/26/2019	5	6	100.89	Yes	47.10	-53.79
195	11/26/2019	5	7	101.22	Yes	47.10	-54.12
196	11/26/2019	5	8	99.50	Yes	47.10	-52.40
197	11/26/2019	5	9	97.99	Yes	47.10	-50.89
198	11/26/2019	5	10	96.58	Yes	47.10	-49.48
199	11/26/2019	5	11	97.61	Yes	47.10	-50.51
200	11/26/2019	5	12	96.33	Yes	47.10	-49.23
201	11/26/2019	6	1	106.19	Yes	47.10	-59.09
202	11/26/2019	6	2	105.88	Yes	47.10	-58.78
203	11/26/2019	6	3	106.50	Yes	47.10	-59.40
204	11/26/2019	6	4	103.87	Yes	47.10	-56.77
205	11/26/2019	6	5	104.14	Yes	47.10	-57.04
206	11/26/2019	6	6	103.87	Yes	47.10	-56.77
207	11/26/2019	6	7	103.00	Yes	47.10	-55.90
208	11/26/2019	6	8	103.00	Yes	47.10	-55.90
209	11/26/2019	6	9	101.08	Yes	47.10	-53.98
210	11/26/2019	6	10	103.79	Yes	47.10	-56.69
211	11/26/2019	6	11	100.00	Yes	47.10	-52.90
212	11/26/2019	6	12	101.88	Yes	47.10	-54.78
213	11/26/2019	7	1	102.22	Yes	47.10	-55.12
214	11/26/2019	7	2	99.75	Yes	47.10	-52.65
215	11/26/2019	7	3	104.11	Yes	47.10	-57.01
216	11/26/2019	7	4	124.20	Yes	47.10	-77.10
217	11/26/2019	7	5	122.00	Yes	47.10	-74.90
218	11/26/2019	7	6	123.68	Yes	47.10	-76.58
219	11/26/2019	7	7	121.42	Yes	47.10	-74.32
220	11/26/2019	7	8	124.09	Yes	47.10	-76.99
221	11/26/2019	7	9	122.39	Yes	47.10	-75.29
222	11/26/2019	7	10	119.37	Yes	47.10	-72.27
223	11/26/2019	7	11	119.37	Yes	47.10	-72.27
224	11/26/2019	7	12	121.52	Yes	47.10	-74.42

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
225	11/26/2019	8	1	131.96	Yes	47.10	-84.86
226	11/26/2019	8	2	134.98	Yes	47.10	-87.88
227	11/26/2019	8	3	149.05	Yes	47.10	-101.95
228	11/26/2019	8	4	145.29	Yes	47.10	-98.19
229	11/26/2019	8	5	135.30	Yes	47.10	-88.20
230	11/26/2019	8	6	132.31	Yes	47.10	-85.21
231	11/26/2019	8	7	127.33	Yes	47.10	-80.23
232	11/26/2019	8	8	120.09	Yes	47.10	-72.99
233	11/26/2019	8	9	126.87	Yes	47.10	-79.77
234	11/26/2019	8	10	120.19	Yes	47.10	-73.09
235	11/26/2019	8	11	125.05	Yes	47.10	-77.95
236	11/26/2019	8	12	134.51	Yes	47.10	-87.41
237	11/26/2019	9	1	131.44	Yes	47.10	-84.34
238	11/26/2019	9	2	127.65	Yes	47.10	-80.55
239	11/26/2019	9	3	147.68	Yes	47.10	-100.58
240	11/26/2019	9	4	133.42	Yes	47.10	-86.32
241	11/26/2019	9	5	123.06	Yes	47.10	-75.96
242	11/26/2019	9	6	109.08	Yes	47.10	-61.98
243	11/26/2019	9	7	118.08	Yes	47.10	-70.98
244	11/26/2019	9	8	109.97	Yes	47.10	-62.87
245	11/26/2019	9	9	104.53	Yes	47.10	-57.43
246	11/26/2019	9	10	101.99	Yes	47.10	-54.89
247	11/26/2019	9	11	101.98	Yes	47.10	-54.88
248	11/26/2019	9	12	101.99	Yes	47.10	-54.89
249	11/26/2019	10	1	141.04	Yes	47.10	-93.94
250	11/26/2019	10	2	141.04	Yes	47.10	-93.94
251	11/26/2019	10	3	145.75	Yes	47.10	-98.65
252	11/26/2019	10	4	151.81	Yes	47.10	-104.71
253	11/26/2019	10	5	151.60	Yes	47.10	-104.50
254	11/26/2019	10	6	130.11	Yes	47.10	-83.01
255	11/26/2019	10	7	128.03	Yes	47.10	-80.93
256	11/26/2019	10	8	113.27	Yes	47.10	-66.17
257	11/26/2019	10	9	111.90	Yes	47.10	-64.80
258	11/26/2019	10	10	117.55	Yes	47.10	-70.45
259	11/26/2019	10	11	119.44	Yes	47.10	-72.34
260	11/26/2019	10	12	121.78	Yes	47.10	-74.68
261	11/26/2019	11	1	109.71	Yes	47.10	-62.61
262	11/26/2019	11	2	111.90	Yes	47.10	-64.80

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
263	11/26/2019	11	3	131.93	Yes	47.10	-84.83
264	11/26/2019	11	4	126.67	Yes	47.10	-79.57
265	11/26/2019	11	5	151.86	Yes	47.10	-104.76
266	11/26/2019	11	6	147.45	Yes	47.10	-100.35
267	11/26/2019	11	7	156.34	Yes	47.10	-109.24
268	11/26/2019	11	8	161.09	Yes	47.10	-113.99
269	11/26/2019	11	9	157.49	Yes	47.10	-110.39
270	11/26/2019	11	10	157.30	Yes	47.10	-110.20
271	11/26/2019	11	11	153.23	Yes	47.10	-106.13
272	11/26/2019	11	12	149.37	Yes	47.10	-102.27
273	11/26/2019	12	1	148.25	Yes	47.10	-101.15
274	11/26/2019	12	2	187.32	Yes	47.10	-140.22
275	11/26/2019	12	3	176.18	Yes	47.10	-129.08
276	11/26/2019	12	4	138.02	Yes	47.10	-90.92
277	11/26/2019	12	5	169.15	Yes	47.10	-122.05
278	11/26/2019	12	6	149.56	Yes	47.10	-102.46
279	11/26/2019	12	7	147.23	Yes	47.10	-100.13
280	11/26/2019	12	8	148.48	Yes	47.10	-101.38
281	11/26/2019	12	9	146.68	Yes	47.10	-99.58
282	11/26/2019	12	10	145.81	Yes	47.10	-98.71
283	11/26/2019	12	11	143.19	Yes	47.10	-96.09
284	11/26/2019	12	12	137.62	Yes	47.10	-90.52
285	11/26/2019	13	1	205.76	Yes	47.10	-158.66
286	11/26/2019	13	2	148.47	Yes	47.10	-101.37
287	11/26/2019	13	3	188.86	Yes	47.10	-141.76
288	11/26/2019	13	4	146.61	Yes	47.10	-99.51
289	11/26/2019	13	5	148.27	Yes	47.10	-101.17
290	11/26/2019	13	6	130.57	Yes	47.10	-83.47
291	11/26/2019	13	7	130.12	Yes	47.10	-83.02
292	11/26/2019	13	8	133.80	Yes	47.10	-86.70
293	11/26/2019	13	9	130.12	Yes	47.10	-83.02
294	11/26/2019	13	10	130.78	Yes	47.10	-83.68
295	11/26/2019	13	11	142.45	Yes	47.10	-95.35
296	11/26/2019	13	12	146.54	Yes	47.10	-99.44
297	11/26/2019	14	1	146.46	Yes	47.10	-99.36
298	11/26/2019	14	2	147.79	Yes	47.10	-100.69
299	11/26/2019	14	3	148.00	Yes	47.10	-100.90
300	11/26/2019	14	4	124.06	Yes	47.10	-76.96

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
301	11/26/2019	14	5	124.05	Yes	47.10	-76.95
302	11/26/2019	14	6	119.99	Yes	47.10	-72.89
303	11/26/2019	14	7	120.36	Yes	47.10	-73.26
304	11/26/2019	14	8	120.25	Yes	47.10	-73.15
305	11/26/2019	14	9	131.76	Yes	47.10	-84.66
306	11/26/2019	14	10	135.29	Yes	47.10	-88.19
307	11/26/2019	14	11	150.21	Yes	47.10	-103.11
308	11/26/2019	14	12	167.03	Yes	47.10	-119.93
309	11/26/2019	15	1	128.01	Yes	47.10	-80.91
310	11/26/2019	15	2	145.59	Yes	47.10	-98.49
311	11/26/2019	15	3	149.25	Yes	47.10	-102.15
312	11/26/2019	15	4	136.78	Yes	47.10	-89.68
313	11/26/2019	15	5	153.75	Yes	47.10	-106.65
314	11/26/2019	15	6	131.29	Yes	47.10	-84.19
315	11/26/2019	15	7	171.07	Yes	47.10	-123.97
316	11/26/2019	15	8	153.95	Yes	47.10	-106.85
317	11/26/2019	15	9	157.70	Yes	47.10	-110.60
318	11/26/2019	15	10	139.49	Yes	47.10	-92.39
319	11/26/2019	15	11	145.50	Yes	47.10	-98.40
320	11/26/2019	15	12	143.62	Yes	47.10	-96.52
321	11/26/2019	16	1	111.79	Yes	47.10	-64.69
322	11/26/2019	16	2	107.66	Yes	47.10	-60.56
323	11/26/2019	16	3	115.70	Yes	47.10	-68.60
324	11/26/2019	16	4	118.21	Yes	47.10	-71.11
325	11/26/2019	16	5	130.87	Yes	47.10	-83.77
326	11/26/2019	16	6	125.76	Yes	47.10	-78.66
327	11/26/2019	16	7	126.43	Yes	47.10	-79.33
328	11/26/2019	16	8	126.68	Yes	47.10	-79.58
329	11/26/2019	16	9	128.49	Yes	47.10	-81.39
330	11/26/2019	16	10	127.59	Yes	47.10	-80.49
331	11/26/2019	16	11	128.47	Yes	47.10	-81.37
332	11/26/2019	16	12	98.10	Yes	47.10	-51.00
333	11/26/2019	17	1	63.90	Yes	47.10	-16.80
334	11/26/2019	17	2	105.79	Yes	47.10	-58.69
335	11/26/2019	17	3	106.27	Yes	47.10	-59.17

Appendix C: Exceptional Dispatch Bid Mitigation Analysis

In November 2019, the ISO applied the exceptional dispatch bid mitigation to the exceptional dispatches. Table 10 shows the costs by instruction type in November. With exceptional dispatch bid mitigation, the costs for these types of exceptional dispatches were $ 5,293. Without the exceptional dispatch bid mitigation, the costs for these types of exceptional dispatches would be $ 12,217. The cost saving from the exceptional dispatch bid mitigation was $ 6,924.

Table 10: Bid Mitigation Analysis for November 2019

Type	Number of Resources	Costs without Bid Mitigation	Costs with Bid Mitigation	Cost Saving
NONTMOD	2	$ 472	$ 0	$ 472
TMODEL5	1	$ 11,745	$ 5,293	$ 6,452
Total	3	$ 12,217	$ 5,293	$ 6,924

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service lists in the above-referenced 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 January. 2020.

/s/ Anna Pascuzzo

Anna Pascuzzo