Exceptional Dispatch Report

Table 1: April 2017

CAISO Market Quality and Renewable Integration **June 15, 2017**

CAISO
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Introduction

This report is filed pursuant to FERC's September 2, 2009 and July 4, 2010 orders in ER08-1178. These orders require two monthly Exceptional Dispatch reports—one issued on the 15th of each month and one issued on the 30th of each month. This report provides data on the frequency and reasons for Exceptional Dispatches issued in March 2017.

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 April 2017 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 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

[1] The CAISO can issue exceptional dispatch instructions subject to authority of the CAISO Tariff Section 34.9 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**

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. There were a few other reasons used to explain exceptional dispatch instructions in April 2017, 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 238 exceptional dispatches in April 2017, as compared to 267 exceptional dispatches in March 2017. Exceptional dispatches issued for the following reasons accounted for approximately 51 percent of the total exceptional dispatches during the reporting period: planned transmission outages, software limitations, and operating procedure number 7110 (along with 6410, 7500, 7510 and 7820). Many of the exceptional dispatches with the reason "Other Reliability Requirement" were due to Real Time Contingency Analysis.

[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 that will be available when the CAISO files the Table 2 report for the reporting period.

Table 1: Exceptional Dispatches in April 2017

California Independent System Operator Corporation
Exceptional Dispatch Report
June 15, 2017

Chart 1: Table of Exceptional Dispatches for Period 01/April/2017 - 30/April/2017

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
1	RT	Conditions beyond the control of the CAISO	PG&E	Fresno	4/3/2017	160-190	No	DEC	5	19:10	23:59
2	RT	Conditions beyond the control of the CAISO	PG&E	Fresno	4/3/2017	160	No	INC	5	19:20	23:59
3	RT	Conditions beyond the control of the CAISO	PG&E	Fresno	4/4/2017	170-510	No	DEC	16	6:30	21:59
4	RT	Conditions beyond the control of the CAISO	PG&E	Fresno	4/4/2017	339-589	No	INC	16	6:30	21:59
5	RT	Conditions beyond the control of the CAISO	PG&E	N/A	4/1/2017	278	No	DEC	3	20:29	22:59
6	RT	Conditions beyond the control of the CAISO	PG&E	N/A	4/6/2017	207	No	DEC	2	6:57	8:25
7	RT	Conditions beyond the control of the CAISO	PG&E	N/A	4/8/2017	160-196	No	DEC	16	6:37	21:59
8	RT	Conditions beyond the control of the CAISO	PG&E	N/A	4/9/2017	222	No	INC	2	6:40	8:17
9	RT	Conditions beyond the control of the CAISO	PG&E	N/A	4/9/2017	150-222	No	DEC	16	6:35	22:02
10	RT	Conditions beyond the control of the CAISO	PG&E	N/A	4/10/2017	205	No	DEC	4	18:45	21:59
11	RT	Conditions beyond the control of the CAISO	PG&E	Sierra	4/14/2017	22	No	DEC	5	17:25	21:29
12	RT	Contingency Dispatch	PG&E	Bay Area	4/24/2017	360	No	INC	1	8:45	9:44
13	RT	Contingency Dispatch	PG&E	Fresno	4/7/2017	1218	No	INC	1	8:10	8:59
14	RT	Contingency Dispatch	SCE	LA Basin	4/24/2017	45	No	INC	1	8:45	9:44
15	RT	Fast Start Unit Management	PG&E	Bay Area	4/14/2017	0	No	INC	2	11:15	12:49
16	RT	Fast Start Unit Management	PG&E	Bay Area	4/24/2017	0	No	INC	2	10:45	11:49

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
17	RT	Fast Start Unit Management	PG&E	N/A	4/30/2017	0	No	INC	1	2:30	3:29
18	RT	Fast Start Unit Management	SCE	LA Basin	4/7/2017	0	No	INC	1	7:45	8:29
19	RT	Fast Start Unit Management	SCE	LA Basin	4/18/2017	0	No	INC	1	11:45	12:44
20	RT	Fast Start Unit Management	SCE	LA Basin	4/24/2017	0	No	INC	1	9:55	10:54
21	RT	Incomplete or Inaccurate Transmission	PG&E	N/A	4/6/2017	85	No	DEC	2	7:15	8:44
22	RT	Incomplete or Inaccurate Transmission	PG&E	Sierra	4/6/2017	140-155	No	DEC	6	18:25	23:59
23	RT	Incomplete or Inaccurate Transmission	PG&E	Sierra	4/6/2017	160	No	INC	1	17:45	18:44
24	RT	Incomplete or Inaccurate Transmission	PG&E	Sierra	4/7/2017	100-125	No	DEC	18	1:19	18:29
25	RT	Incomplete or Inaccurate Transmission	PG&E	Sierra	4/7/2017	140-150	No	INC	11	1:19	11:59
26	RT	Incomplete or Inaccurate Transmission	PG&E	Sierra	4/22/2017	140-150	No	DEC	5	12:45	16:59
27	RT	Incomplete or Inaccurate Transmission	PG&E	Stockton	4/18/2017	50	No	DEC	4	1:55	5:44
28	RT	Incomplete or Inaccurate Transmission	PG&E	Stockton	4/18/2017	48- 50	No	INC	5	1:08	5:44
29	RT	Incomplete or Inaccurate Transmission	PG&E	Stockton	4/19/2017	0	No	INC	1	23:15	23:59
30	RT	Incomplete or Inaccurate Transmission	PG&E	Stockton	4/20/2017	0	No	INC	1	0:00	0:19
31	RT	Incomplete or Inaccurate Transmission	PG&E	Stockton	4/29/2017	30	No	DEC	1	23:55	23:59
32	RT	Incomplete or Inaccurate Transmission	PG&E	Stockton	4/30/2017	27- 62	No	DEC	5	0:00	4:59
33	RT	Incomplete or Inaccurate Transmission	PG&E	Stockton	4/30/2017	62	No	INC	2	3:18	4:59
34	RT	Incomplete or Inaccurate Transmission	SCE	LA Basin	4/7/2017	300-303	No	INC	3	1:41	4:29
35	RT	Incomplete or Inaccurate Transmission	SDG&E	San Diego-IV	4/6/2017	495	No	INC	5	11:00	15:59
36	RT	Load Forecast Uncertainty	PG&E	Bay Area	4/14/2017	360	No	INC	1	10:05	10:29
37	RT	Load Forecast Uncertainty	SCE	Big Creek-Ventura	4/7/2017	16- 140	No	INC	6	8:35	13:59
38	RT	Load Forecast Uncertainty	SCE	LA Basin	4/7/2017	0	No	INC	1	8:35	9:00
39	RT	Load Forecast Uncertainty	SCE	LA Basin	4/14/2017	92	No	INC	1	10:05	10:29
40	RT	Load Forecast Uncertainty	SDG&E	San Diego-IV	4/5/2017	63	No	INC	6	16:00	21:59

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
41	RT	Load Pull	PG&E	Fresno	4/7/2017	83	Yes	INC	3	8:00	10:59
42	RT	Load Pull	PG&E	Fresno	4/17/2017	300-400	No	INC	1	17:05	17:59
43	RT	Load Pull	PG&E	Fresno	4/30/2017	3	No	DEC	8	9:50	16:59
44	RT	Operating Procedure Number and Constraint (6410)	PG&E	Fresno	4/23/2017	-323	No	DEC	1	5:00	5:29
45	RT	Operating Procedure Number and Constraint (6410)	SDG&E	San Diego-IV	4/23/2017	440	No	INC	1	5:10	5:14
46	RT	Operating Procedure Number and Constraint (6410)	SDG&E	San Diego-IV	4/24/2017	400	No	INC	1	1:50	2:29
47	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/1/2017	12	No	DEC	18	6:33	23:59
48	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/1/2017	12- 30	No	INC	24	0:00	23:59
49	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/2/2017	16	No	INC	6	18:05	23:59
50	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/3/2017	12- 24	No	DEC	17	7:45	23:59
51	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/3/2017	12- 36	No	INC	24	0:00	23:59
52	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/4/2017	15- 45	No	DEC	13	7:50	19:59
53	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/4/2017	15- 30	No	INC	13	7:50	19:59
54	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/5/2017	12	No	DEC	15	8:00	22:59
55	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/5/2017	12	No	INC	15	8:00	22:59
56	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/6/2017	24	No	DEC	4	20:45	23:59
57	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/6/2017	24- 28	No	INC	7	17:00	23:59

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
58	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/7/2017	12- 30	No	DEC	10	12:45	21:59
59	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/7/2017	26- 117	No	INC	11	8:00	18:59
60	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/8/2017	16	No	DEC	12	7:35	18:59
61	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/8/2017	15- 30	No	INC	17	7:35	23:59
62	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/9/2017	15	No	DEC	14	9:33	23:29
63	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/9/2017	15- 31	No	INC	24	0:00	23:59
64	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/10/2017	10	No	DEC	2	17:40	19:39
65	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/10/2017	10- 30	No	INC	13	7:05	19:39
66	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/11/2017	15- 30	No	DEC	14	6:16	19:59
67	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/11/2017	15- 120	No	INC	18	6:16	23:58
68	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/12/2017	45- 51	No	DEC	7	16:15	22:59
69	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/12/2017	30- 51	No	INC	8	16:15	23:59
70	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/13/2017	12- 60	No	DEC	12	12:40	23:59
71	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/13/2017	12- 60	No	INC	24	0:00	23:59
72	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/14/2017	24- 132	No	INC	24	0:00	23:59
73	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/15/2017	15- 105	No	INC	24	0:00	23:59

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
74	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/16/2017	22- 28	No	DEC	16	8:25	23:59
75	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/16/2017	22- 44	No	INC	24	0:00	23:59
76	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/17/2017	16- 31	No	DEC	12	12:05	23:59
77	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/17/2017	16- 85	No	INC	24	0:00	23:59
78	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/18/2017	16- 55	No	DEC	24	0:00	23:14
79	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/18/2017	16- 55	No	INC	24	0:00	23:59
80	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/19/2017	14	No	DEC	6	5:45	11:24
81	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/19/2017	10- 30	No	INC	24	0:00	23:59
82	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/20/2017	12- 30	No	DEC	24	0:35	23:59
83	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/20/2017	12- 30	No	INC	24	0:00	23:59
84	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/21/2017	12- 15	No	DEC	16	0:00	15:49
85	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/21/2017	10- 60	No	INC	24	0:00	23:59
86	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/22/2017	10- 43	No	DEC	23	0:45	23:29
87	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/22/2017	10- 43	No	INC	24	0:45	23:59
88	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/23/2017	22	No	DEC	2	17:30	19:29
89	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/23/2017	12- 30	No	INC	24	0:00	23:59

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
90	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/24/2017	32- 74	No	DEC	17	7:05	23:59
91	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/24/2017	20- 44	No	INC	19	5:30	23:59
92	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/25/2017	15- 48	No	DEC	18	6:35	23:59
93	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/25/2017	20- 48	No	INC	24	0:00	23:59
94	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/26/2017	15	No	DEC	20	0:00	19:59
95	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/26/2017	15- 47	No	INC	24	0:00	23:59
96	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/27/2017	15- 16	No	DEC	24	0:00	23:29
97	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/27/2017	12- 40	No	INC	24	0:00	23:59
98	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/28/2017	21- 24	No	DEC	6	18:35	23:59
99	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/28/2017	10- 49	No	INC	24	0:00	23:59
100	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/29/2017	15- 16	No	DEC	24	0:40	23:59
101	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/29/2017	10- 31	No	INC	24	0:00	23:59
102	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/30/2017	15- 28	No	DEC	24	0:00	23:59
103	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	4/30/2017	15- 32	No	INC	24	0:00	23:59
104	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	5/1/2017	32	No	INC	8	0:00	7:29
105	RT	Operating Procedure Number and Constraint (7410)	PG&E	Stockton	4/23/2017	240	No	INC	1	22:10	22:59

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
106	RT	Operating Procedure Number and Constraint (7430)	PG&E	Fresno	4/1/2017	70- 74	No	DEC	24	0:25	23:59
107	RT	Operating Procedure Number and Constraint (7430)	PG&E	Fresno	4/2/2017	72	No	INC	1	0:00	0:59
108	RT	Operating Procedure Number and Constraint (7500)	SCE	Big Creek-Ventura	4/30/2017	600	No	DEC	4	20:01	23:59
109	RT	Operating Procedure Number and Constraint (7510)	SCE	Big Creek-Ventura	4/17/2017	650	No	DEC	4	20:35	23:59
110	RT	Operating Procedure Number and Constraint (7820)	SDG&E	San Diego-IV	4/11/2017	155	No	INC	7	10:00	16:59
111	RT	Operating Procedure Number and Constraint (7820)	SDG&E	San Diego-IV	4/12/2017	155-290	No	INC	9	8:00	16:59
112	RT	Operating Procedure Number and Constraint (7820)	SDG&E	San Diego-IV	4/13/2017	290	No	INC	10	10:00	19:59
113	RT	Operating Procedure Number and Constraint (7820)	SDG&E	San Diego-IV	4/22/2017	155-290	No	INC	3	8:00	10:44
114	RT	Other Reliability Requirement	N/A	N/A	4/10/2017	16	No	DEC	6	11:05	16:59
115	RT	Other Reliability Requirement	N/A	N/A	4/28/2017	0	No	DEC	6	11:15	17:14
116	RT	Other Reliability Requirement	N/A	N/A	4/29/2017	8- 10	No	DEC	9	9:37	17:44
117	RT	Other Reliability Requirement	N/A	N/A	4/30/2017	7- 14	No	DEC	8	9:50	16:59
118	RT	Other Reliability Requirement	N/A	N/A	4/30/2017	7- 14	No	INC	8	9:50	16:59
119	RT	Other Reliability Requirement	PG&E	Bay Area	4/8/2017	24	No	INC	1	12:12	12:26
120	RT	Other Reliability Requirement	PG&E	Fresno	4/4/2017	200	No	DEC	1	6:30	6:59
121	RT	Other Reliability Requirement	PG&E	Fresno	4/9/2017	-314	No	DEC	1	8:55	8:59
122	RT	Other Reliability Requirement	PG&E	Fresno	4/10/2017	26- 49	No	DEC	7	10:30	16:59
123	RT	Other Reliability Requirement	PG&E	Fresno	4/10/2017	4	No	INC	7	10:30	16:59
124	RT	Other Reliability Requirement	PG&E	Fresno	4/12/2017	0	No	INC	1	16:00	16:59
125	RT	Other Reliability Requirement	PG&E	Fresno	4/20/2017	47	No	DEC	1	13:35	13:39
126	RT	Other Reliability Requirement	PG&E	Fresno	4/23/2017	-320	No	DEC	3	5:45	7:59
127	RT	Other Reliability Requirement	PG&E	Fresno	4/27/2017	28	No	DEC	7	10:14	16:44

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
128	RT	Other Reliability Requirement	PG&E	Fresno	4/27/2017	28- 36	No	INC	8	10:14	17:59
129	RT	Other Reliability Requirement	PG&E	Fresno	4/28/2017	4	No	DEC	5	12:30	17:14
130	RT	Other Reliability Requirement	PG&E	Fresno	4/28/2017	36- 86	No	INC	6	11:15	17:14
131	RT	Other Reliability Requirement	PG&E	Fresno	4/29/2017	25- 30	No	DEC	9	9:37	17:44
132	RT	Other Reliability Requirement	PG&E	Fresno	4/29/2017	30	No	INC	8	10:10	17:44
133	RT	Other Reliability Requirement	PG&E	Fresno	4/30/2017	12- 25	No	DEC	8	9:50	16:59
134	RT	Other Reliability Requirement	PG&E	Fresno	4/30/2017	13- 24	No	INC	8	9:50	16:59
135	RT	Other Reliability Requirement	PG&E	N/A	4/30/2017	10	No	DEC	6	11:50	16:59
136	RT	Other Reliability Requirement	PG&E	Sierra	4/2/2017	140	No	DEC	2	20:20	21:29
137	RT	Other Reliability Requirement	PG&E	Sierra	4/2/2017	140	No	INC	2	20:20	21:29
138	RT	Other Reliability Requirement	PG&E	Sierra	4/13/2017	35	No	DEC	5	14:55	18:59
139	RT	Other Reliability Requirement	PG&E	Sierra	4/13/2017	30- 35	No	INC	6	13:35	18:59
140	RT	Other Reliability Requirement	PG&E	Sierra	4/14/2017	25- 150	No	DEC	17	2:20	18:59
141	RT	Other Reliability Requirement	PG&E	Sierra	4/14/2017	20	No	INC	8	11:00	18:59
142	RT	Other Reliability Requirement	PG&E	Sierra	4/18/2017	30	No	DEC	7	13:35	19:59
143	RT	Other Reliability Requirement	PG&E	Sierra	4/19/2017	15- 50	No	DEC	14	10:05	23:59
144	RT	Other Reliability Requirement	PG&E	Sierra	4/20/2017	30	No	DEC	17	0:00	16:29
145	RT	Other Reliability Requirement	PG&E	Sierra	4/28/2017	153	No	DEC	4	12:22	15:59
146	RT	Other Reliability Requirement	PG&E	Sierra	4/29/2017	130-148	No	DEC	12	10:47	21:59
147	RT	Other Reliability Requirement	PG&E	Stockton	4/3/2017	201-205	No	INC	16	8:20	23:59
148	RT	Other Reliability Requirement	PG&E	Stockton	4/4/2017	201	No	DEC	4	6:55	10:44
149	RT	Other Reliability Requirement	PG&E	Stockton	4/4/2017	201	No	INC	4	6:55	10:44
150	RT	Other Reliability Requirement	PG&E	Stockton	4/18/2017	30	No	INC	1	14:26	14:59
151	RT	Other Reliability Requirement	PG&E	Stockton	4/19/2017	20	No	DEC	2	10:52	11:59
152	RT	Other Reliability Requirement	PG&E	Stockton	4/20/2017	60	No	DEC	1	15:20	15:59
153	RT	Other Reliability Requirement	PG&E	Stockton	4/21/2017	201	No	INC	10	7:00	16:59
154	RT	Other Reliability Requirement	PG&E	Stockton	4/29/2017	70	No	DEC	3	5:45	8:44

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
155	RT	Planned Transmission Outage and Constraint	PG&E	Bay Area	4/8/2017	25- 50	No	INC	7	10:05	16:29
156	RT	Planned Transmission Outage and Constraint	PG&E	Bay Area	4/15/2017	23	No	DEC	7	7:55	14:32
157	RT	Planned Transmission Outage and Constraint	PG&E	Bay Area	4/15/2017	48- 635	No	INC	8	7:55	14:59
158	RT	Planned Transmission Outage and Constraint	PG&E	Bay Area	4/21/2017	141	No	INC	1	23:00	23:59
159	RT	Planned Transmission Outage and Constraint	PG&E	Bay Area	4/22/2017	141	No	INC	19	0:00	18:14
160	RT	Planned Transmission Outage and Constraint	PG&E	Fresno	4/19/2017	30- 80	No	DEC	9	8:40	16:59
161	RT	Planned Transmission Outage and Constraint	PG&E	Fresno	4/20/2017	10- 50	No	DEC	7	13:40	19:59
162	RT	Planned Transmission Outage and Constraint	PG&E	Humboldt	4/12/2017	29- 50	No	DEC	4	5:45	9:44
163	RT	Planned Transmission Outage and Constraint	PG&E	Humboldt	4/12/2017	48- 93	No	INC	12	5:45	16:59
164	RT	Planned Transmission Outage and Constraint	PG&E	Humboldt	4/19/2017	14	No	DEC	6	6:15	11:44
165	RT	Planned Transmission Outage and Constraint	PG&E	Humboldt	4/19/2017	14- 45	No	INC	12	6:15	17:59
166	RT	Planned Transmission Outage and Constraint	PG&E	N/A	4/11/2017	518	No	DEC	2	20:45	21:59
167	RT	Planned Transmission Outage and Constraint	PG&E	Sierra	4/4/2017	140	No	DEC	20	4:15	23:59
168	RT	Planned Transmission Outage and Constraint	PG&E	Sierra	4/4/2017	46- 206	No	INC	3	19:50	21:59
169	RT	Planned Transmission Outage and Constraint	PG&E	Sierra	4/5/2017	50- 100	No	DEC	14	10:00	23:59
170	RT	Planned Transmission Outage and Constraint	PG&E	Sierra	4/6/2017	70- 150	No	DEC	16	0:00	15:59

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
171	RT	Planned Transmission Outage and Constraint	PG&E	Stockton	4/7/2017	125	No	DEC	4	19:25	22:29
172	RT	Planned Transmission Outage and Constraint	PG&E	Stockton	4/8/2017	128-201	No	DEC	5	19:20	23:59
173	RT	Planned Transmission Outage and Constraint	PG&E	Stockton	4/8/2017	128-201	No	INC	5	19:20	23:59
174	RT	Planned Transmission Outage and Constraint	PG&E	Stockton	4/9/2017	128	No	INC	3	0:00	2:29
175	RT	Planned Transmission Outage and Constraint	PG&E	Stockton	4/10/2017	128	No	DEC	7	5:45	11:59
176	RT	Planned Transmission Outage and Constraint	PG&E	Stockton	4/10/2017	128	No	INC	7	5:45	11:59
177	RT	Planned Transmission Outage and Constraint	PG&E	Stockton	4/11/2017	160	No	INC	3	1:55	3:59
178	RT	Planned Transmission Outage and Constraint	SCE	LA Basin	4/13/2017	46	No	DEC	12	5:45	16:59
179	RT	Planned Transmission Outage and Constraint	SCE	LA Basin	4/13/2017	46- 91	No	INC	12	5:45	16:59
180	RT	Planned Transmission Outage and Constraint	SDG&E	San Diego-IV	4/5/2017	20- 63	No	INC	10	6:00	15:59
181	RT	Planned Transmission Outage and Constraint	SDG&E	San Diego-IV	4/19/2017	12	No	DEC	6	11:25	17:14
182	RT	Planned Transmission Outage and Constraint	SDG&E	San Diego-IV	4/19/2017	10- 15	No	INC	9	10:08	18:59
183	RT	Planned Transmission Outage and Constraint	SDG&E	San Diego-IV	4/27/2017	12- 20	No	DEC	8	9:20	17:14
184	RT	Planned Transmission Outage and Constraint	SDG&E	San Diego-IV	4/27/2017	12- 60	No	INC	15	9:13	23:59
185	RT	Planned Transmission Outage and Constraint	SDG&E	San Diego-IV	4/28/2017	12- 20	No	DEC	3	14:18	17:14
186	RT	Planned Transmission Outage and Constraint	SDG&E	San Diego-IV	4/28/2017	12- 40	No	INC	18	0:00	17:14

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
187	RT	Pump Management	PG&E	Fresno	4/23/2017	-320	No	DEC	3	4:00	6:59
188	RT	Software Limitation	PG&E	Bay Area	4/10/2017	0	No	INC	2	21:30	22:34
189	RT	Software Limitation	PG&E	Bay Area	4/17/2017	0	No	INC	1	8:45	8:59
190	RT	Software Limitation	PG&E	Bay Area	4/21/2017	75	No	DEC	4	17:40	20:59
191	RT	Software Limitation	PG&E	Bay Area	4/21/2017	75	No	INC	4	17:40	20:59
192	RT	Software Limitation	PG&E	Fresno	4/20/2017	-320	No	INC	1	10:30	11:14
193	RT	Software Limitation	PG&E	N/A	4/7/2017	0	No	INC	2	12:00	13:34
194	RT	Software Limitation	PG&E	N/A	4/24/2017	196	No	INC	1	9:20	9:39
195	RT	Software Limitation	PG&E	Stockton	4/20/2017	96	No	DEC	1	18:00	18:59
196	RT	Software Limitation	SCE	Big Creek-Ventura	4/6/2017	16	No	INC	1	23:40	23:54
197	RT	Software Limitation	SCE	Big Creek-Ventura	4/7/2017	0	No	INC	1	5:40	6:39
198	RT	Software Limitation	SCE	LA Basin	4/1/2017	0	No	INC	5	19:00	23:04
199	RT	Software Limitation	SCE	LA Basin	4/2/2017	250	No	INC	1	22:10	22:59
200	RT	Software Limitation	SCE	LA Basin	4/6/2017	140	No	INC	1	23:40	23:54
201	RT	Software Limitation	SCE	LA Basin	4/7/2017	0	No	INC	1	5:35	6:34
202	RT	Software Limitation	SCE	LA Basin	4/11/2017	150	No	INC	4	20:10	23:59
203	RT	Software Limitation	SCE	LA Basin	4/12/2017	0	No	INC	1	0:00	0:44
204	RT	Software Limitation	SCE	LA Basin	4/13/2017	0	No	INC	1	0:00	0:59
205	RT	Software Limitation	SCE	LA Basin	4/18/2017	0	No	INC	1	11:45	12:44
206	RT	Software Limitation	SCE	LA Basin	4/22/2017	0	No	INC	1	0:15	0:44
207	RT	Software Limitation	SCE	LA Basin	4/23/2017	0	No	INC	1	20:05	20:59
208	RT	Unit Testing	PG&E	Fresno	4/1/2017	47	No	INC	1	20:30	20:49
209	RT	Unit Testing	PG&E	N/A	4/8/2017	158	No	DEC	1	7:28	7:37
210	RT	Unit Testing	PG&E	N/A	4/27/2017	100	No	INC	2	9:30	10:59
211	RT	Unit Testing	PG&E	Sierra	4/28/2017	50	No	INC	1	2:01	2:44
212	RT	Unit Testing	SCE	LA Basin	4/1/2017	150	No	INC	1	21:15	22:14
213	RT	Unit Testing	SCE	LA Basin	4/5/2017	40	No	INC	3	9:00	11:44

Number	Market Type	Reason	Location	Local Reliability Area	Trade Date	MW	Commitment	INC_DEC	Hours	Begin Time	End Time
214	RT	Unit Testing	SCE	LA Basin	4/11/2017	150	No	INC	1	19:15	19:54
215	RT	Unit Testing	SCE	LA Basin	4/22/2017	150	No	INC	1	12:00	12:39
216	RT	Unit Testing	SCE	LA Basin	4/25/2017	300	No	INC	4	0:01	3:04
217	RT	Unit Testing	SCE	N/A	4/26/2017	380	No	INC	1	3:15	3:59
218	RT	Unit Testing	SDG&E	San Diego-IV	4/11/2017	345	No	INC	1	16:35	16:44
219	RT	Unplanned Outage	PG&E	Fresno	4/14/2017	0	No	INC	8	9:45	17:14
220	RT	Unplanned Outage	SCE	N/A	4/24/2017	172	No	INC	8	14:00	21:14
221	RT	Voltage Support	PG&E	Fresno	4/2/2017	-310	No	DEC	1	8:30	8:59
222	RT	Voltage Support	PG&E	Fresno	4/8/2017	83	Yes	INC	7	17:38	23:59
223	RT	Voltage Support	PG&E	Fresno	4/9/2017	83- 166	Yes	INC	24	0:00	23:59
224	RT	Voltage Support	PG&E	Fresno	4/10/2017	83	Yes	INC	5	0:00	4:59
225	RT	Voltage Support	PG&E	Fresno	4/16/2017	-656--328	No	DEC	12	5:30	17:24
226	RT	Voltage Support	PG&E	Fresno	4/16/2017	-328	No	INC	12	5:50	17:24
227	RT	Voltage Support	PG&E	Fresno	4/17/2017	-328- 83	No	DEC	24	0:30	23:59
228	RT	Voltage Support	PG&E	Fresno	4/17/2017	-328- 83	No	INC	7	0:30	7:04
229	RT	Voltage Support	PG&E	Fresno	4/18/2017	-328--308	No	DEC	24	0:00	23:59
230	RT	Voltage Support	PG&E	Fresno	4/19/2017	-308	No	DEC	5	0:00	4:44
231	RT	Voltage Support	PG&E	Fresno	4/19/2017	-308	No	INC	5	0:00	4:44
232	RT	Voltage Support	PG&E	Fresno	4/20/2017	-320	No	INC	3	11:00	13:44
233	RT	Voltage Support	PG&E	Fresno	4/24/2017	-320	No	DEC	1	3:45	4:44
234	RT	Voltage Support	PG&E	Fresno	4/24/2017	-320	No	INC	1	3:45	4:44
235	RT	Voltage Support	PG&E	Sierra	4/1/2017	45	No	INC	6	12:40	17:44
236	RT	Voltage Support	PG&E	Sierra	4/2/2017	45	No	INC	9	8:05	16:59
237	RT	Voltage Support	SCE	N/A	4/12/2017	172	No	INC	21	3:00	23:59
238	RT	Voltage Support	SCE	N/A	4/13/2017	172	No	INC	3	0:00	2:44

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 for the given reason, 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