



Exceptional Dispatch Report

Table 2: December 2017

Market Quality and Renewable Integration

March 30, 2018

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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 issued on the 30th of each month. This report provides data on the frequency, reasons and costs for Exceptional Dispatches issued in December 2017.

This report contains a price impact analysis as prescribed by FERC in its September 2 order. The price impact analysis for the month of December is presented in Appendix B. This report also includes mitigation analysis for December 2017 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 December 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 publicly on the CAISO website; however, all of the transmission procedures are available on the CAISO website.¹

The following additional reason for exceptional dispatch instructions in 2017 includes 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 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 December, 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 December 2017. 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:

- 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.

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 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.

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. Many of the exceptional dispatches with the reason “Other Reliability Requirement” were due to Real Time Contingency Analysis.

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.

Table 1: Exceptional Dispatches in December 2017

California Independent System Operator Corporation Exceptional Dispatch Report March 30, 2018																					
Chart 2: Table of Exceptional Dispatches for Period 01/December/2017 - 31/December/2017																					
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	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/5/2017	20-638	No	INC	12	12:00	23:59	366.68	179691.96	0.00	-20124.77	465.26	-24229.18	0.00	-308862.70	0.00	0.00
2	RT	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/6/2017	245-479	No	INC	24	0:00	23:59	287.58	564634.39	0.00	-12678.54	655.48	-21554.20	868.67	-877877.98	0.00	0.00
3	RT	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/7/2017	265-419	No	INC	24	0:00	23:59	-456.51	685838.99	0.00	12366.84	417.76	-17606.03	1124.13	101256.178	0.00	0.00
4	RT	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/8/2017	228-428	Yes	INC	24	0:00	23:59	80.69	747527.16	0.00	-3923.77	402.60	-14607.86	0.00	650564.38	0.00	0.00
5	RT	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/9/2017	54-101	No	INC	6	14:00	19:59	25.30	67583.00	531.15	-721.06	0.02	-0.53	0.00	-28.36	0.00	0.00
6	RT	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/9/2017	239-529	No	INC	24	0:00	23:59	-70.40	619948.99	460.33	2529.97	150.11	-3810.41	0.00	448304.69	0.00	0.00
7	RT	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/10/2017	190-460	Yes	INC	24	0:00	23:59	-67.37	632708.36	1381.00	1982.50	368.30	-10643.64	0.00	450216.53	0.00	0.00
8	RT	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/11/2017	267-430	No	INC	24	0:00	23:59	7.57	700801.88	0.00	-33201.58	373.37	-11796.42	68.20	473134.49	0.00	0.00
9	RT	Conditions beyond the control of the CAISO	SCE	Big Creek-Ventura	12/12/2017	40-454	No	INC	24	0:00	23:59	427.72	495223.71	0.00	-33043.86	399.93	-14019.92	0.00	495677.99	0.00	0.00
10	RT	Contingency Dispatch	PG&E	Bay Area	12/21/2017	240	No	INC	2	15:49	16:59	175.87	6293.33	0.00	-3562.42	0.00	0.00	0.00	0.00	0.00	0.00
11	RT	Contingency Dispatch	SCE	Big Creek-Ventura	12/21/2017	63-80	No	INC	2	15:49	16:59	46.26	4149.75	428.83	-917.58	3.45	-70.09	0.00	0.00	0.00	0.00
12	RT	Contingency Dispatch	SCE	LA Basin	12/21/2017	232-234	No	INC	2	15:49	16:59	183.85	14545.75	1923.63	-3716.25	0.45	-9.36	0.00	0.00	0.00	0.00
13	RT	Contingency Dispatch	SDG&E	San Diego-IV	12/21/2017	30	No	INC	2	15:49	16:59	19.58	1993.16	0.00	-396.71	0.00	0.00	0.00	0.00	0.00	0.00
14	RT	Incomplete or Inaccurate Transmission	PG&E	Bay Area	12/5/2017	20	No	DEC	8	7:00	14:14	-12.97	0.00	0.00	0.00	-0.65	0.00	8.77	0.00	-23.03	0.00
15	RT	Incomplete or Inaccurate Transmission	PG&E	Bay Area	12/5/2017	20	No	INC	8	7:00	14:14	-1.97	0.00	0.00	58.42	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
16	RT	Incomplete or Inaccurate Transmission	SCE	Big Creek-Ventura	12/9/2017	101	No	INC	5	19:40	23:59	52.27	58286.58	920.67	-1777.79	0.07	-2.28	0.00	-1.44	-9.52	0.00
17	RT	Incomplete or Inaccurate Transmission	SCE	Big Creek-Ventura	12/10/2017	54-101	No	INC	3	0:00	2:29	-13.51	28003.38	0.00	428.15	0.00	0.00	0.00	0.00	-5.39	0.00
18	RT	Load Forecast Uncertainty	PG&E	Fresno	12/2/2017	83	No	INC	1	15:45	16:14	106.61	1542.09	0.00	-50352.39	0.00	0.00	0.00	0.00	0.00	0.00
19	RT	Load Forecast Uncertainty	PG&E	Fresno	12/3/2017	200	No	DEC	1	17:00	17:14	7.14	0.00	0.00	-263.68	0.00	0.00	0.00	0.00	0.00	0.00
20	RT	Load Forecast Uncertainty	SCE	N/A	12/21/2017	180	No	INC	24	0:00	23:59	686.69	180314.30	0.00	-16020.95	0.00	0.00	0.00	0.00	0.00	0.00
21	RT	Load Forecast Uncertainty	SCE	N/A	12/22/2017	305	No	INC	24	0:00	23:59	1056.65	435478.19	0.00	-31595.61	7.81	-180.79	0.00	0.00	0.00	0.00
22	RT	Load Forecast Uncertainty	SDG&E	San Diego-IV	12/8/2017	20	No	INC	22	2:00	23:59	-97.82	155209.66	0.00	8663.44	0.00	0.00	0.00	0.00	0.00	0.00
23	RT	Load Pull	SCE	LA Basin	12/5/2017	190	No	INC	7	13:50	19:59	-111.35	0.00	0.00	5743.23	37.15	-2143.44	0.00	0.00	0.00	0.00
24	RT	Load Pull	SCE	LA Basin	12/6/2017	190	No	DEC	6	14:55	19:59	-32.25	0.00	0.00	1459.45	0.00	0.00	0.00	0.00	0.00	0.00
25	RT	Load Pull	SCE	LA Basin	12/6/2017	190	No	INC	6	14:55	19:59	2.93	0.00	0.00	-1930.99	36.09	-2411.55	0.00	0.00	0.00	0.00
26	RT	Load Pull	SDG&E	San Diego-IV	12/5/2017	63	No	INC	3	17:00	19:59	8.06	17440.99	0.00	-467.33	0.00	0.00	0.00	0.00	0.00	0.00
27	RT	Load Pull	SDG&E	San Diego-IV	12/6/2017	126	No	INC	4	16:00	19:59	-46.06	30817.87	0.00	2000.64	0.00	0.00	0.00	0.00	0.00	0.00
28	RT	Load Pull	SDG&E	San Diego-IV	12/11/2017	63	No	INC	5	15:00	19:59	9.77	46536.71	0.00	-1470.28	0.06	-4.73	0.00	0.00	0.00	0.00
29	RT	Market Disruption	Intertie	N/A	12/22/2017	0	No	INC	1	11:00	11:59	-142.00	0.00	0.00	918.67	-48.33	0.00	1999.60	0.00	0.00	0.00
30	RT	Market Disruption	PG&E	Bay Area	12/21/2017	800-960	No	INC	1	15:42	16:39	-17.85	1105.16	0.00	-19.05	3.89	-80.19	0.00	-18.34	0.00	0.00
31	RT	Market Disruption	PG&E	Bay Area	12/22/2017	295	No	DEC	2	11:01	12:14	267.46	0.00	0.00	-4905.35	0.00	0.00	0.00	0.00	0.00	0.00
32	RT	Market Disruption	PG&E	Fresno	12/21/2017	83	No	DEC	1	15:52	16:29	70.52	0.00	0.00	-1390.52	0.00	0.00	0.00	0.00	0.00	0.00
33	RT	Market Disruption	PG&E	Fresno	12/21/2017	83	No	INC	1	15:52	16:29	-8.63	0.00	0.00	184.82	0.00	0.00	0.00	0.00	0.00	0.00

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34	RT	Market Disruption	PG&E	Fresno	12/22/2017	200-404	No	INC	2	11:40	12:59	-5.56	5345.90	0.00	-1683.91	27.20	-411.20	-266.29	-988.06	0.00	0.00
35	RT	Market Disruption	PG&E	Fresno	12/22/2017	-314	No	DEC	1	11:50	12:29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	RT	Market Disruption	SCE	N/A	12/21/2017	140	No	INC	1	15:30	16:09	58.66	0.00	0.00	-1167.83	83.78	-1673.86	0.00	-4553.31	0.00	0.00
37	RT	Operating Procedure Number and Constraint (7110)	PG&E	Fresno	12/29/2017	14	No	INC	1	7:00	7:14	2.98	203.86	0.00	-744.20	2.98	-744.20	0.00	0.00	0.00	0.00
38	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/5/2017	30	No	DEC	14	6:30	19:44	-7.38	0.00	0.00	354.30	-3.41	0.00	158.67	0.00	-128.24	0.00
39	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/5/2017	30	No	INC	14	6:30	19:44	26.94	-6469.36	0.00	-716.79	0.00	0.00	0.00	0.00	0.00	0.00
40	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/6/2017	16-64	No	DEC	14	10:50	23:59	15.21	-4388.94	0.00	-492.06	0.00	0.00	0.00	0.00	0.00	0.00
41	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/6/2017	16-160	No	INC	17	6:45	23:29	54.23	-14729.31	0.00	-2513.87	32.53	-1101.85	0.00	0.00	0.00	0.00
42	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/7/2017	16	No	DEC	1	6:30	7:29	-1.43	-518.31	0.00	108.85	0.00	0.00	0.00	0.00	0.00	0.00
43	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/7/2017	15-30	No	INC	3	21:45	23:59	6.04	1382.17	0.00	-213.86	0.00	0.00	0.00	0.00	0.00	0.00
44	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/7/2017	16-30	No	DEC	24	0:00	23:29	-0.02	-518.31	0.00	85.08	0.00	0.00	0.00	0.00	0.00	0.00
45	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/8/2017	14-42	No	INC	17	7:45	23:59	58.83	0.00	95.44	-2152.38	0.00	0.00	0.00	0.00	0.00	0.00
46	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/8/2017	15-29	No	DEC	15	0:00	14:59	-16.28	-708.29	0.00	596.11	0.00	0.00	0.00	0.00	0.00	0.00
47	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/9/2017	15-28	No	INC	23	0:00	22:59	-7.73	-2251.20	11.35	181.89	-0.58	0.00	0.00	0.00	0.00	0.00
48	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/10/2017	16-32	No	DEC	4	20:35	23:59	8.54	-606.33	0.00	-366.76	0.00	0.00	0.00	0.00	0.00	0.00
49	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/10/2017	16-32	No	INC	4	20:35	23:59	0.93	-1352.14	0.00	-19.91	2.80	-94.11	0.00	0.00	0.00	0.00
50	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/11/2017	16-48	No	INC	24	0:00	23:59	48.55	-8281.86	0.00	-1728.25	26.22	-713.27	0.00	0.00	0.00	0.00
51	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/11/2017	32-48	No	DEC	23	0:00	22:59	3.81	0.00	0.00	-782.98	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
52	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/12/2017	16	No	DEC	3	0:30	2:59	-0.96	-172.55	0.00	22.30	-0.09	0.00	0.00	0.00	0.00	0.00
53	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/12/2017	30	No	INC	1	0:00	0:44	3.63	-345.09	0.00	-112.34	0.98	-30.93	0.00	0.00	0.00	0.00
54	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/13/2017	15-45	No	DEC	10	10:55	20:44	7.16	-2559.56	0.00	-133.17	0.64	-17.78	0.00	0.00	0.00	0.00
55	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/13/2017	30-45	No	INC	14	10:55	23:59	12.02	-4556.79	0.00	-330.79	7.12	-227.43	0.00	0.00	0.00	0.00
56	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/14/2017	14-60	No	INC	18	6:14	23:59	107.86	654.54	0.00	-7906.07	5.85	-183.04	0.00	0.00	0.00	0.00
57	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/14/2017	30-60	No	DEC	4	20:55	23:59	12.64	161.38	0.00	-355.41	0.00	0.00	0.00	0.00	0.00	0.00
58	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/15/2017	16-45	No	DEC	17	0:00	16:59	0.45	0.00	0.00	-9.23	-0.06	0.00	0.70	0.00	0.00	0.00
59	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/15/2017	45	No	INC	9	8:00	16:59	36.21	-6086.97	0.00	-1196.12	2.25	-66.52	0.00	0.00	0.00	0.00
60	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/17/2017	15-30	No	INC	4	20:45	23:59	15.75	0.00	0.00	-541.84	0.00	0.00	0.00	0.00	0.00	0.00
61	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/17/2017	30	No	DEC	1	20:45	21:44	2.69	0.00	0.00	-88.88	0.00	0.00	0.00	0.00	0.00	0.00
62	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/18/2017	15-32	No	DEC	24	0:00	23:59	13.40	0.00	0.00	-381.01	0.00	0.00	0.00	0.00	0.00	0.00
63	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/18/2017	16	No	INC	3	21:50	23:59	1.71	0.00	0.00	-75.81	1.50	-68.55	0.00	0.00	0.00	0.00
64	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/19/2017	15-28	No	DEC	24	0:00	23:59	4.19	0.00	0.00	-61.40	0.00	0.00	0.00	0.00	0.00	0.00
65	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/19/2017	15-30	No	INC	24	0:00	23:59	16.42	-1534.97	0.00	-358.01	0.41	-8.29	0.00	0.00	0.00	0.00
66	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/20/2017	28-85	No	INC	18	6:30	23:44	24.88	-13576.35	0.00	-2585.62	5.45	-343.08	0.00	0.00	0.00	0.00
67	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/21/2017	28-30	No	DEC	17	7:45	23:59	72.59	-180.49	0.00	-2005.47	0.00	0.00	0.00	0.00	0.00	0.00
68	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/21/2017	28-30	No	INC	17	7:45	23:59	34.98	-4930.87	0.00	-449.80	0.00	0.00	0.00	0.00	0.00	0.00
69	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/22/2017	28	No	INC	1	0:00	0:59	0.00	-505.06	0.00	0.00	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/December/2017 - 31/December/2017

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
70	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/23/2017	15	No	INC	8	16:40	23:59	8.18	0.00	0.00	-390.75	0.66	-30.08	0.00	0.00	0.00	0.00
71	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/24/2017	30	No	INC	4	9:51	12:59	4.69	-2020.80	0.00	-136.27	3.02	-89.69	0.00	0.00	0.00	0.00
72	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/25/2017	48	No	INC	3	21:05	23:59	16.05	-1515.60	0.00	-537.68	9.39	-300.00	0.00	0.00	0.00	0.00
73	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/27/2017	16	No	INC	2	22:00	23:59	-0.55	0.00	0.00	25.45	1.50	-57.13	0.00	0.00	0.00	0.00
74	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/28/2017	16-48	No	INC	24	0:00	23:59	28.66	-2264.13	0.00	-845.78	15.21	-415.92	0.00	0.00	0.00	0.00
75	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/28/2017	32	No	DEC	10	6:45	16:29	9.31	0.00	0.00	-245.02	0.00	0.00	0.00	0.00	0.00	0.00
76	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/29/2017	14-48	No	INC	18	6:25	23:59	20.35	-3260.93	0.00	-717.03	3.87	-173.20	0.00	0.00	0.00	0.00
77	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/30/2017	32	No	INC	14	8:00	21:44	33.58	-7338.03	0.00	-1131.53	17.09	-426.41	0.00	0.00	0.00	0.00
78	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/31/2017	15-32	No	DEC	2	21:10	22:29	11.60	-539.51	0.00	-476.16	-0.40	0.00	2.07	0.00	0.00	0.00
79	RT	Operating Procedure Number and Constraint (7110)	PG&E	Humboldt	12/31/2017	32	No	INC	2	21:10	22:14	-2.07	-174.71	0.00	88.80	-0.09	0.00	0.00	0.00	0.00	0.00
80	RT	Other Reliability Requirement	Intertie	N/A	12/21/2017	114	Yes	INC	1	15:00	15:59	36.00	0.00	0.00	-687.08	114.00	-2175.77	0.00	-2912.92	0.00	0.00
81	RT	Other Reliability Requirement	PG&E	Bay Area	12/16/2017	110	No	INC	3	17:08	19:59	-22.22	0.00	0.00	-3243.64	-7.53	0.00	-956.35	0.00	0.00	0.00
82	RT	Other Reliability Requirement	PG&E	Fresno	12/8/2017	83	No	INC	2	21:15	22:29	296.62	1459.84	0.00	-24610.80	0.00	0.00	0.00	0.00	0.00	0.00
83	RT	Other Reliability Requirement	PG&E	Fresno	12/21/2017	0	No	INC	1	15:40	16:39	-26.80	0.00	0.00	573.98	0.00	0.00	0.00	0.00	0.00	0.00
84	RT	Other Reliability Requirement	PG&E	Fresno	12/21/2017	-317-0	No	DEC	2	15:15	16:39	0.00	-2631.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85	RT	Other Reliability Requirement	PG&E	Humboldt	12/22/2017	32-96	No	DEC	17	7:55	23:59	5.55	0.00	0.00	-136.06	0.00	0.00	0.00	0.00	0.00	0.00
86	RT	Other Reliability Requirement	PG&E	Humboldt	12/22/2017	32-96	No	INC	17	7:55	23:59	334.61	-2619.56	0.00	-9158.07	73.48	-2042.12	0.00	0.00	0.00	0.00
87	RT	Other Reliability Requirement	PG&E	Humboldt	12/23/2017	32-80	No	INC	3	0:00	2:59	20.05	-2975.91	0.00	-562.98	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
88	RT	Other Reliability Requirement	PG&E	N/A	12/2/2017	27	No	INC	5	1:45	6:29	11.83	0.00	0.00	-561.69	0.00	0.00	0.00	0.00	0.00	0.00
89	RT	Other Reliability Requirement	PG&E	N/A	12/7/2017	30	No	INC	3	7:35	9:59	0.08	0.00	0.00	-5.64	0.00	0.00	0.00	0.00	0.00	0.00
90	RT	Other Reliability Requirement	PG&E	N/A	12/18/2017	10-53	No	DEC	3	7:40	10:29	-4.56	0.00	0.00	-49.64	-6.80	0.00	3.84	0.00	0.00	0.00
91	RT	Other Reliability Requirement	PG&E	N/A	12/18/2017	43	No	INC	3	7:40	10:29	0.17	0.00	0.00	-3.60	0.00	0.00	0.00	0.00	0.00	0.00
92	RT	Other Reliability Requirement	SCE	Big Creek-Ventura	12/5/2017	215	No	INC	1	14:30	15:14	106.02	760.00	0.00	-6364.40	96.02	-6159.02	0.00	0.00	0.00	0.00
93	RT	Other Reliability Requirement	SCE	Big Creek-Ventura	12/5/2017	20-450	No	INC	4	11:30	14:44	145.93	3793.43	0.00	-8116.60	115.40	-7476.35	0.00	0.00	0.00	0.00
94	RT	Other Reliability Requirement	SDG&E	San Diego-IV	12/5/2017	0	No	INC	1	19:45	20:44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	RT	Planned Transmission Outage	PG&E	Humboldt	12/1/2017	14-90	No	DEC	19	5:20	23:59	18.84	-5879.82	0.00	-549.17	0.00	0.00	0.00	0.00	0.00	0.00
96	RT	Planned Transmission Outage	PG&E	Humboldt	12/1/2017	16-90	No	INC	24	0:30	23:59	258.06	-11694.99	0.00	-6733.19	33.25	-826.12	0.00	0.00	-2.57	0.00
97	RT	Planned Transmission Outage	PG&E	Humboldt	12/2/2017	14-28	No	DEC	24	0:00	23:59	-2.37	-348.78	0.00	26.70	0.00	0.00	0.00	0.00	0.00	0.00
98	RT	Planned Transmission Outage	PG&E	Humboldt	12/2/2017	28-130	No	INC	24	0:00	23:59	493.71	-5929.26	0.00	-38695.57	17.77	-1083.72	0.00	0.00	-0.08	0.00
99	RT	Planned Transmission Outage	PG&E	Humboldt	12/3/2017	14-60	No	DEC	24	0:00	23:59	2.72	0.00	0.00	-236.66	0.83	-37.17	0.00	0.00	0.00	0.00
100	RT	Planned Transmission Outage	PG&E	Humboldt	12/3/2017	28-80	No	INC	24	0:00	23:59	136.27	-4533.69	0.00	-3112.66	18.61	-559.80	0.00	0.00	-33.09	0.00
101	RT	Planned Transmission Outage	PG&E	Humboldt	12/4/2017	14-74	No	DEC	24	0:00	23:59	13.74	-10775.64	0.00	-310.64	0.00	0.00	0.00	0.00	0.00	0.00
102	RT	Planned Transmission Outage	PG&E	Humboldt	12/4/2017	32-98	No	INC	24	0:00	23:59	50.98	-24528.47	0.00	-1264.27	12.42	-364.54	0.00	0.00	-30.34	0.00
103	RT	Planned Transmission Outage	PG&E	Humboldt	12/5/2017	30-60	No	INC	24	0:00	23:59	20.67	-8159.55	0.00	-576.48	1.45	-295.32	89.00	0.00	-40.60	0.00
104	RT	Planned Transmission Outage	PG&E	Humboldt	12/5/2017	60	No	DEC	3	19:25	21:59	-1.30	-3838.79	0.00	90.20	-3.41	0.00	158.67	0.00	-442.65	0.00
105	RT	Planned Transmission Outage	PG&E	Humboldt	12/12/2017	16	No	DEC	3	3:00	5:59	-0.95	0.00	0.00	42.25	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
106	RT	Planned Transmission Outage	PG&E	Humboldt	12/12/2017	16-78	No	DEC	22	2:40	23:59	1.54	0.00	0.00	107.29	0.00	0.00	0.00	0.00	0.00	0.00
107	RT	Planned Transmission Outage	PG&E	Humboldt	12/12/2017	28-78	No	INC	19	5:30	23:59	92.66	-5693.99	0.00	-2129.62	38.48	-957.98	0.00	0.00	-15.31	0.00
108	RT	Planned Transmission Outage	PG&E	Humboldt	12/13/2017	60-90	No	INC	12	0:00	11:29	58.86	-8075.32	0.00	-1388.51	6.50	-159.38	0.00	0.00	-5.04	0.00
109	RT	Planned Transmission Outage	PG&E	Humboldt	12/15/2017	15	No	DEC	3	17:00	19:29	0.42	0.00	0.00	-1.56	0.00	0.00	0.00	0.00	0.00	0.00
110	RT	Planned Transmission Outage	PG&E	Humboldt	12/15/2017	15-45	No	INC	7	17:00	23:59	28.34	0.00	0.00	-670.50	0.00	0.00	0.00	0.00	0.00	0.00
111	RT	Planned Transmission Outage	PG&E	Humboldt	12/16/2017	30-65	No	INC	24	0:00	23:59	41.71	-12134.88	0.00	-1226.95	32.98	-1061.57	0.00	0.00	-26.49	0.00
112	RT	Planned Transmission Outage	PG&E	Humboldt	12/17/2017	32	No	INC	10	0:00	9:59	19.99	-7018.75	0.00	-375.31	19.99	-375.31	0.00	0.00	-133.90	0.00
113	RT	Planned Transmission Outage	PG&E	Humboldt	12/18/2017	90	No	DEC	9	8:45	17:29	4.57	0.00	0.00	-47.91	0.00	0.00	0.00	0.00	0.00	0.00
114	RT	Planned Transmission Outage	PG&E	Humboldt	12/18/2017	90	No	INC	9	8:45	17:29	31.01	-7339.80	0.00	-587.09	7.49	-131.35	0.00	0.00	-59.31	0.00
115	RT	Planned Transmission Outage	PG&E	Humboldt	12/27/2017	16-32	No	INC	7	7:37	13:59	6.23	0.00	0.00	-356.62	2.90	-102.85	0.00	0.00	0.00	0.00
116	RT	Planned Transmission Outage	PG&E	Humboldt	12/28/2017	32	No	DEC	13	7:00	19:59	1.48	0.00	0.00	-54.35	0.00	0.00	0.00	0.00	0.00	0.00
117	RT	Planned Transmission Outage	PG&E	Humboldt	12/28/2017	32	No	INC	13	7:00	19:59	19.95	-2207.53	0.00	-519.54	12.40	-312.29	0.00	0.00	0.00	0.00
118	RT	Planned Transmission Outage	PG&E	NCNB	12/12/2017	15-20	No	INC	1	7:00	7:44	3.34	0.00	0.00	-161.67	0.00	0.00	0.00	0.00	-341.08	0.00
119	RT	Planned Transmission Outage	PG&E	NCNB	12/12/2017	53-140	No	DEC	18	6:45	23:59	-9.59	0.00	0.00	142.98	-35.97	0.00	1235.00	0.00	-	48174.79
120	RT	Planned Transmission Outage	PG&E	NCNB	12/13/2017	52-130	No	DEC	14	0:00	13:59	-1.93	0.00	0.00	-50.00	-15.67	0.00	401.57	0.00	-	35230.84
121	RT	Planned Transmission Outage	PG&E	Sierra	12/17/2017	20	No	INC	15	6:00	20:59	-79.43	21288.75	0.00	2760.58	0.00	0.00	0.00	0.00	0.00	0.00
122	RT	Planned Transmission Outage	PG&E	Sierra	12/18/2017	20	No	INC	1	8:00	8:29	0.00	709.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
123	RT	Planned Transmission Outage	SCE	Big Creek-Ventura	12/3/2017	510-600	No	DEC	1	9:05	9:44	-38.63	0.00	0.00	381.48	-5.92	0.00	42.73	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
124	RT	Planned Transmission Outage	SCE	LA Basin	12/26/2017	10-20	No	INC	21	3:00	23:59	-230.51	60729.84	29361.43	11319.44	0.00	0.00	0.00	0.00	0.00	0.00
125	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/3/2017	185-205	No	INC	11	5:00	15:59	162.16	130336.50	0.00	-5537.70	0.00	0.00	0.00	0.00	0.00	0.00
126	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/7/2017	25-50	No	INC	5	12:05	16:59	12.03	22497.75	0.00	-2941.49	0.00	0.00	0.00	0.00	0.00	0.00
127	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/16/2017	63	No	INC	13	7:00	19:59	21.94	62058.38	0.00	-3425.69	0.00	0.00	0.00	0.00	-2.76	0.00
128	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/18/2017	68	No	DEC	13	7:00	19:59	-6.60	0.00	0.00	-3367.00	0.00	0.00	0.00	0.00	0.00	0.00
129	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/18/2017	68	No	INC	13	7:00	19:59	37.37	7670.32	0.00	-2655.83	0.00	-0.18	0.00	0.00	-3.89	0.00
130	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/19/2017	20-136	No	INC	14	6:00	19:59	-227.07	143772.06	0.00	4560.91	0.02	-0.85	0.00	0.00	-0.84	0.00
131	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/20/2017	286	No	INC	9	10:50	18:59	44.64	0.00	0.00	-5634.70	26.91	-1930.70	0.00	0.00	-	77853.07
132	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/21/2017	290-800	No	DEC	4	16:05	19:59	-19.91	0.00	0.00	3644.38	-68.37	0.00	4596.82	0.00	-	18378.79
133	RT	Planned Transmission Outage	SDG&E	San Diego-IV	12/27/2017	185	No	DEC	6	9:05	14:14	-0.52	0.00	0.00	8.09	0.00	0.00	0.00	0.00	0.00	0.00
134	RT	Planned Transmission Outage and Constraint	PG&E	Humboldt	12/2/2017	16	No	DEC	3	9:25	12:24	0.63	0.00	0.00	-16.79	0.00	0.00	0.00	0.00	0.00	0.00
135	RT	Planned Transmission Outage and Constraint	PG&E	Humboldt	12/2/2017	16-61	No	INC	7	6:10	12:24	15.55	-2848.37	0.00	-411.42	7.22	-212.60	0.00	0.00	-14.87	0.00
136	RT	Planned Transmission Outage and Constraint	SDG&E	San Diego-IV	12/20/2017	64	No	INC	2	6:50	8:49	26.20	0.00	0.00	-1493.24	0.36	-10.12	0.00	0.00	-55.10	0.00
137	RT	Pump Management	PG&E	Fresno	12/5/2017	-317	No	INC	2	12:00	13:29	-317.01	0.00	0.00	7035.66	0.00	0.00	0.00	0.00	0.00	0.00
138	RT	Software Limitation	PG&E	Bay Area	12/11/2017	175	No	DEC	3	2:30	4:44	609.65	0.00	0.00	-20493.61	0.00	0.00	0.00	0.00	0.00	0.00
139	RT	Software Limitation	PG&E	Bay Area	12/21/2017	0	No	INC	2	22:30	23:34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	RT	Software Limitation	PG&E	Fresno	12/12/2017	83	No	INC	1	7:00	7:14	20.22	0.00	750.07	-931.01	0.00	0.00	0.00	0.00	0.00	0.00
141	RT	Software Limitation	PG&E	Fresno	12/15/2017	83	No	DEC	1	16:00	16:59	0.36	0.00	0.00	-40.84	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
142	RT	Software Limitation	PG&E	Humboldt	12/7/2017	28-42	No	DEC	10	7:15	16:59	24.16	0.00	0.00	-118.32	0.00	0.00	0.00	0.00	0.00	0.00
143	RT	Software Limitation	PG&E	Humboldt	12/7/2017	28-56	No	INC	10	7:15	16:59	18.25	-3282.61	0.00	-375.87	0.00	0.00	0.00	0.00	0.00	0.00
144	RT	Software Limitation	PG&E	Humboldt	12/8/2017	32	No	INC	1	23:35	23:59	-14.89	0.00	0.00	410.37	0.00	0.00	0.00	0.00	0.00	0.00
145	RT	Software Limitation	PG&E	Humboldt	12/9/2017	32	No	INC	1	0:00	0:29	2.96	0.00	0.00	-88.67	-0.29	0.00	0.00	0.00	0.00	0.00
146	RT	Software Limitation	PG&E	Humboldt	12/19/2017	0	No	INC	1	0:45	1:44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147	RT	Software Limitation	PG&E	Humboldt	12/30/2017	16	No	DEC	1	21:45	21:59	-7.85	0.00	0.00	349.91	0.00	0.00	0.00	0.00	0.00	0.00
148	RT	Software Limitation	PG&E	N/A	12/10/2017	212-232	No	INC	2	16:45	18:14	-48.53	1599.36	0.00	1580.01	0.00	0.00	0.00	0.00	0.00	0.00
149	RT	Software Limitation	SCE	Big Creek-Ventura	12/21/2017	0	No	INC	1	20:15	21:14	-11.78	0.00	0.00	0.00	-11.78	0.00	0.00	0.00	0.00	0.00
150	RT	Software Limitation	SCE	LA Basin	12/1/2017	150	No	INC	12	12:20	23:59	-0.87	6285.63	0.00	-62.13	-5.00	0.00	0.00	0.00	0.00	0.00
151	RT	Software Limitation	SCE	LA Basin	12/2/2017	0	No	INC	2	0:00	1:19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
152	RT	Software Limitation	SCE	LA Basin	12/21/2017	0	No	INC	1	20:30	21:29	-11.22	0.00	0.00	0.00	-11.22	0.00	0.00	0.00	0.00	0.00
153	RT	Software Limitation	SCE	N/A	12/12/2017	300	No	INC	2	11:10	12:44	40.36	-1589.47	0.00	-1217.80	33.47	-1068.76	0.00	0.00	0.00	0.00
154	RT	Software Limitation	SCE	N/A	12/31/2017	476	No	DEC	1	17:05	17:59	-4.97	0.00	0.00	147.20	0.00	0.00	0.00	0.00	0.00	0.00
155	RT	Software Limitation	SDG&E	San Diego-IV	12/21/2017	0	No	INC	1	20:30	21:29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
156	RT	Unit Testing	Intertie	N/A	12/11/2017	10	No	INC	9	8:00	16:59	2.50	0.00	0.00	-90.69	87.50	-2385.58	0.00	0.00	0.00	0.00
157	RT	Unit Testing	Intertie	N/A	12/12/2017	18	No	INC	9	8:00	16:59	20.00	0.00	0.00	-398.93	78.00	-1448.16	0.00	0.00	0.00	0.00
158	RT	Unit Testing	Intertie	N/A	12/15/2017	21	No	INC	9	8:50	16:59	38.19	0.00	0.00	-890.74	165.81	-5519.57	0.00	0.00	0.00	0.00
159	RT	Unit Testing	Intertie	N/A	12/16/2017	21	Yes	INC	10	7:00	16:59	32.31	0.00	0.00	-1216.27	199.79	-6913.52	0.00	0.00	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/December/2017 - 31/December/2017

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
160	RT	Unit Testing	Intertie	N/A	12/17/2017	21	Yes	INC	10	7:00	16:59	90.59	0.00	0.00	-2021.92	199.79	-4819.17	0.00	0.00	0.00	0.00
161	RT	Unit Testing	Intertie	N/A	12/18/2017	21	No	INC	10	7:00	16:59	156.94	0.00	0.00	-3211.35	207.00	-4957.09	0.00	0.00	0.00	0.00
162	RT	Unit Testing	Intertie	N/A	12/19/2017	45	Yes	INC	11	6:00	16:59	173.64	0.00	0.00	-2768.59	494.53	-10959.70	0.00	0.00	0.00	0.00
163	RT	Unit Testing	Intertie	N/A	12/20/2017	45	No	INC	11	6:00	16:59	182.65	0.00	0.00	-5355.78	494.53	-21620.56	0.00	0.00	0.00	0.00
164	RT	Unit Testing	Intertie	N/A	12/21/2017	45	No	INC	11	6:00	16:59	203.19	0.00	0.00	-41205.55	479.92	-5921.09	0.00	0.00	0.00	0.00
165	RT	Unit Testing	Intertie	N/A	12/22/2017	45	No	INC	11	6:00	16:59	42.41	0.00	0.00	-1214.94	494.06	-12006.32	0.00	0.00	0.00	0.00
166	RT	Unit Testing	Intertie	N/A	12/23/2017	45	No	INC	11	6:00	16:59	162.95	0.00	0.00	-6299.30	494.53	-18445.89	0.00	0.00	0.00	0.00
167	RT	Unit Testing	Intertie	N/A	12/24/2017	45	No	INC	11	6:00	16:59	228.34	0.00	0.00	-6505.28	494.53	-13913.26	0.00	0.00	0.00	0.00
168	RT	Unit Testing	Intertie	N/A	12/25/2017	45	No	INC	11	6:00	16:59	195.67	0.00	0.00	-5671.63	494.53	-15268.36	0.00	0.00	0.00	0.00
169	RT	Unit Testing	Intertie	N/A	12/26/2017	45	No	INC	11	6:00	16:59	160.95	0.00	0.00	-4138.06	494.53	-13090.13	0.00	0.00	0.00	0.00
170	RT	Unit Testing	Intertie	N/A	12/27/2017	45	No	INC	11	6:00	16:59	170.96	0.00	0.00	-3424.15	494.53	-11892.30	0.00	0.00	0.00	0.00
171	RT	Unit Testing	Intertie	N/A	12/28/2017	45	No	INC	11	6:00	16:59	231.81	0.00	0.00	-5236.91	494.53	-11749.95	0.00	0.00	0.00	0.00
172	RT	Unit Testing	Intertie	N/A	12/29/2017	45	No	INC	11	6:00	16:59	231.83	0.00	0.00	-5173.91	494.53	-11783.38	0.00	0.00	0.00	0.00
173	RT	Unit Testing	Intertie	N/A	12/30/2017	45	No	INC	11	6:00	16:59	231.61	0.00	0.00	-4651.94	494.53	-10919.29	0.00	0.00	0.00	0.00
174	RT	Unit Testing	Intertie	N/A	12/31/2017	45	No	INC	11	6:00	16:59	142.78	0.00	0.00	-3809.41	494.53	-13734.89	0.00	0.00	0.00	0.00
175	RT	Unit Testing	PG&E	Bay Area	12/31/2017	216-500	No	INC	13	11:45	23:59	331.98	39107.11	0.00	-10864.31	439.22	-14444.30	0.00	0.00	0.00	0.00
176	RT	Unit Testing	PG&E	Bay Area	1/1/2018	384	No	INC	6	0:00	5:14	0.00	3154.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177	RT	Unit Testing	PG&E	Fresno	12/25/2017	15	No	INC	6	10:50	16:29	84.97	0.00	0.00	-2241.95	84.22	-2220.56	0.00	0.00	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/December/2017 - 31/December/2017

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	Unit Testing	PG&E	Fresno	12/26/2017	20	No	INC	8	8:40	16:29	156.50	0.00	0.00	-4183.25	156.50	-4183.25	0.00	0.00	0.00	0.00
179	RT	Unit Testing	PG&E	Fresno	12/27/2017	15	Yes	INC	8	9:00	16:59	119.65	0.00	0.00	-3216.37	119.40	-3210.88	0.00	0.00	0.00	0.00
180	RT	Unit Testing	PG&E	Fresno	12/28/2017	20-40	No	INC	8	9:10	16:59	190.83	0.00	0.00	-4752.99	190.83	-4752.99	0.00	0.00	0.00	0.00
181	RT	Unit Testing	SCE	Big Creek-Ventura	12/22/2017	99	No	INC	14	10:15	23:59	1310.42	0.00	0.00	-59775.38	1310.42	-59775.38	0.00	0.00	0.00	0.00
182	RT	Unit Testing	SCE	Big Creek-Ventura	12/23/2017	25	No	INC	17	7:35	23:59	410.42	0.00	0.00	-23709.66	410.42	-23709.66	0.00	0.00	0.00	0.00
183	RT	Unit Testing	SCE	Big Creek-Ventura	12/24/2017	25	No	INC	24	0:00	23:59	1199.01	0.00	0.00	-34479.66	1192.71	-34302.39	0.00	0.00	0.00	0.00
184	RT	Unit Testing	SCE	Big Creek-Ventura	12/25/2017	25	No	INC	24	0:50	23:59	653.17	0.00	0.00	-20556.54	578.39	-17840.12	0.00	0.00	0.00	0.00
185	RT	Unit Testing	SCE	Big Creek-Ventura	12/26/2017	2-50	No	INC	24	0:00	23:59	245.42	0.00	0.00	-6887.06	245.42	-6887.06	0.00	0.00	0.00	0.00
186	RT	Unit Testing	SCE	Big Creek-Ventura	12/27/2017	1	No	INC	24	0:45	23:59	19.67	0.00	0.00	-637.48	19.67	-637.48	0.00	0.00	0.00	0.00
187	RT	Unit Testing	SCE	Big Creek-Ventura	12/28/2017	10-30	No	INC	24	0:20	23:59	565.14	0.00	0.00	-16055.60	547.22	-15602.57	0.00	0.00	0.00	0.00
188	RT	Unit Testing	SCE	Big Creek-Ventura	12/29/2017	10	Yes	INC	24	0:00	23:59	239.86	0.00	0.00	-6508.08	239.81	-6506.85	0.00	0.00	0.00	0.00
189	RT	Unit Testing	SCE	Big Creek-Ventura	12/30/2017	10-90	No	INC	24	0:35	23:59	1043.15	0.00	0.00	-33184.14	810.62	-26560.70	0.00	0.00	0.00	0.00
190	RT	Unit Testing	SCE	Big Creek-Ventura	12/31/2017	1-50	No	INC	24	0:35	23:59	1294.33	0.00	0.00	-36939.19	1294.33	-36939.19	0.00	0.00	0.00	0.00
191	RT	Unit Testing	SCE	Big Creek-Ventura	1/1/2018	1	No	INC	24	0:00	23:14	23.25	0.00	0.00	-838.51	23.25	-838.51	0.00	0.00	0.00	0.00
192	RT	Unit Testing	SCE	LA Basin	12/1/2017	150	No	INC	1	11:26	11:59	56.25	0.00	0.00	-1953.31	0.00	0.00	0.00	0.00	0.00	0.00
193	RT	Unit Testing	SDG&E	San Diego-IV	12/5/2017	76	No	INC	1	16:20	16:39	30.47	0.00	0.00	-1466.92	14.80	-957.66	0.00	0.00	0.00	0.00
194	RT	Unit Testing	SDG&E	San Diego-IV	12/7/2017	7	No	INC	1	9:31	9:49	-1.01	0.00	0.00	46.03	0.57	-41.62	0.00	0.00	0.00	0.00
195	RT	Unit Testing	SDG&E	San Diego-IV	12/9/2017	27	No	INC	1	7:34	7:54	0.06	0.00	0.00	-154.50	4.43	-262.75	0.00	0.00	0.00	0.00

**California Independent System Operator Corporation
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Chart 2: Table of Exceptional Dispatches for Period 01/December/2017 - 31/December/2017

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
196	RT	Unit Testing	SDG&E	San Diego-IV	12/27/2017	14	No	INC	1	9:15	9:49	7.86	0.00	0.00	-518.44	4.37	-297.50	0.00	0.00	0.00	0.00
197	RT	Voltage Support	PG&E	Fresno	12/2/2017	-312	No	DEC	2	14:55	15:59	26.75	0.00	0.00	-27065.69	0.00	0.00	0.00	0.00	0.00	0.00
198	RT	Voltage Support	PG&E	Fresno	12/2/2017	-312	No	INC	2	14:55	15:59	-9.63	0.00	0.00	643.28	0.00	0.00	0.00	0.00	0.00	0.00
199	RT	Voltage Support	PG&E	Fresno	12/11/2017	-318	No	DEC	1	4:15	4:44	22.19	0.00	0.00	-810.34	0.00	0.00	0.00	0.00	0.00	0.00
200	RT	Voltage Support	PG&E	Fresno	12/16/2017	-318	No	DEC	9	1:05	9:59	-58.42	0.00	0.00	1896.66	0.00	0.00	0.00	0.00	0.00	0.00
201	RT	Voltage Support	PG&E	Fresno	12/17/2017	-318	No	DEC	8	1:00	8:59	-73.84	0.00	0.00	2231.20	0.00	0.00	0.00	0.00	0.00	0.00
202	RT	Voltage Support	PG&E	Fresno	12/18/2017	320	No	INC	1	1:40	1:44	-2.77	0.00	0.00	79.08	3.00	0.00	0.00	0.00	0.00	0.00
203	RT	Voltage Support	PG&E	Fresno	12/18/2017	-320	No	DEC	4	1:45	5:29	-123.42	0.00	0.00	3791.68	0.00	0.00	0.00	0.00	0.00	0.00
204	RT	Voltage Support	PG&E	Fresno	12/25/2017	83	Yes	INC	9	15:30	23:59	26.32	5016.93	0.00	-669.96	0.00	0.00	0.00	0.00	0.00	0.00
205	RT	Voltage Support	PG&E	Fresno	12/25/2017	-318-83	No	DEC	19	5:10	23:59	-10.31	0.00	0.00	296.89	0.00	0.00	0.00	0.00	0.00	0.00
206	RT	Voltage Support	PG&E	Fresno	12/26/2017	83	Yes	INC	1	0:00	0:59	6.42	0.00	0.00	-191.50	0.00	0.00	0.00	0.00	0.00	0.00
207	RT	Voltage Support	PG&E	Fresno	12/26/2017	-634--317	No	DEC	5	0:30	5:29	-97.53	0.00	0.00	2647.98	0.00	0.00	0.00	0.00	0.00	0.00
208	RT	Voltage Support	PG&E	Fresno	12/31/2017	-321	No	DEC	15	1:30	15:44	-73.90	0.00	0.00	2603.75	0.00	0.00	0.00	0.00	0.00	0.00
209	RT	Voltage Support	PG&E	Sierra	12/4/2017	20	No	INC	14	7:00	20:59	-40.95	20145.81	791.99	1587.20	0.00	0.00	0.00	0.00	0.00	0.00
210	RT	Voltage Support	PG&E	Sierra	12/25/2017	20	No	INC	5	11:35	15:59	4.84	4857.68	812.31	-132.90	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 costs⁷. 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 for the reason, 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 through

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.

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 as 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 *(\$100/MWh-\$10/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 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 there might be hours between the begin time and end time where there were no exceptional dispatch instructions for the reason. Both volume and cost information columns are the summation for all the respective columns for resource 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 is equal to 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 is equal to \$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 of these 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 of these resources 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. Out of the 8,064 five-minute intervals in December, this resource was issued exceptional dispatch instructions in 389 five-minute intervals. This resource was eligible to set the LMP in 199 intervals. Out of the 199 intervals, resource calculated LMP was larger than the market LMP in 0 intervals. Out of the 199 intervals, resource calculated LMP was less than the market LMP in 199 intervals. In the 199 intervals, the average decrease in five minute LMP was \$21.04/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 \$21.04/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. Out of the 8,064 five-minute intervals in December, this resource was issued exceptional dispatch instructions in 345 five-minute intervals. This resource was eligible to set the LMP in 132 intervals. Out of the 132 intervals, resource calculated LMP was larger than the market LMP in 125 intervals. In the 125 intervals, the average increase in five minute LMP was \$61.41/MWh. Out of the 132 intervals, resource calculated LMP was less than the market LMP in 7 intervals. In the 7 intervals, the average decrease in five minute LMP was \$491.77/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 increase of \$32.07/MWh

Table 8: Price Impact Analysis Information for Pricing Node A in PG&E LAP

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
1	12/1/2017	7	1	24.81	Yes	11.82	-12.99
2	12/1/2017	7	2	25.00	Yes	11.82	-13.18
3	12/1/2017	7	3	25.83	Yes	11.82	-14.01
4	12/1/2017	7	4	33.18	Yes	11.82	-21.36
5	12/1/2017	7	5	33.16	Yes	11.82	-21.34
6	12/1/2017	7	6	35.16	Yes	11.82	-23.34
7	12/1/2017	7	7	41.43	Yes	11.82	-29.61
8	12/1/2017	7	8	45.21	Yes	11.82	-33.39
9	12/1/2017	7	9	45.21	Yes	11.82	-33.39
10	12/1/2017	7	10	45.61	Yes	11.82	-33.79
11	12/1/2017	7	11	45.66	Yes	11.82	-33.84
12	12/1/2017	7	12	40.14	Yes	11.82	-28.32
13	12/1/2017	8	1	41.59	Yes	11.82	-29.77
14	12/1/2017	8	2	41.24	Yes	11.82	-29.42
15	12/1/2017	8	3	42.88	Yes	11.82	-31.06
16	12/1/2017	8	4	38.65	Yes	11.82	-26.83
17	12/1/2017	8	5	38.74	Yes	11.82	-26.92
18	12/1/2017	8	6	33.26	Yes	11.82	-21.44
19	12/1/2017	8	7	23.41	Yes	11.82	-11.59
20	12/1/2017	8	8	22.39	Yes	11.82	-10.57
21	12/1/2017	8	9	20.24	Yes	11.82	-8.42
22	12/1/2017	8	10	18.67	Yes	11.82	-6.85
23	12/1/2017	8	11	18.15	Yes	11.82	-6.33
24	12/1/2017	8	12	16.05	Yes	11.82	-4.23
25	12/3/2017	18	1	27.97	Yes	11.74	-16.23
26	12/3/2017	18	2	31.38	Yes	11.74	-19.64
27	12/3/2017	18	3	39.09	Yes	11.74	-27.35
28	12/3/2017	18	4	44.10	Yes	11.74	-32.36
29	12/3/2017	18	5	45.21	Yes	11.74	-33.47
30	12/3/2017	18	6	47.07	Yes	11.74	-35.33
31	12/3/2017	18	7	45.73	Yes	11.74	-33.99
32	12/4/2017	8	3	42.08	Yes	11.74	-30.34
33	12/4/2017	8	4	40.32	Yes	11.74	-28.58
34	12/4/2017	8	6	37.30	Yes	11.74	-25.56

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
35	12/4/2017	8	7	24.77	Yes	11.74	-13.03
36	12/4/2017	8	8	24.39	Yes	11.74	-12.65
37	12/4/2017	8	9	20.58	Yes	11.74	-8.84
38	12/4/2017	8	10	20.79	Yes	11.74	-9.05
39	12/4/2017	8	11	17.86	Yes	11.74	-6.12
40	12/4/2017	8	12	16.31	Yes	11.74	-4.57
41	12/4/2017	19	1	33.60	Yes	11.74	-21.86
42	12/4/2017	19	2	33.38	Yes	11.74	-21.64
43	12/4/2017	19	3	33.51	Yes	11.74	-21.77
44	12/4/2017	19	4	34.92	Yes	11.74	-23.18
45	12/4/2017	19	5	34.83	Yes	11.74	-23.09
46	12/4/2017	19	6	31.99	Yes	11.74	-20.25
47	12/4/2017	19	7	30.87	Yes	11.74	-19.13
48	12/4/2017	19	8	29.32	Yes	11.74	-17.58
49	12/4/2017	19	9	38.32	Yes	11.74	-26.58
50	12/4/2017	19	10	34.54	Yes	11.74	-22.80
51	12/4/2017	19	11	32.62	Yes	11.74	-20.88
52	12/4/2017	19	12	31.75	Yes	11.74	-20.01
53	12/4/2017	20	1	38.05	Yes	11.74	-26.31
54	12/4/2017	20	2	26.07	Yes	11.74	-14.33
55	12/4/2017	20	3	26.39	Yes	11.74	-14.65
56	12/4/2017	20	4	32.90	Yes	11.74	-21.16
57	12/4/2017	20	5	29.66	Yes	11.74	-17.92
58	12/4/2017	20	6	37.79	Yes	11.74	-26.05
59	12/4/2017	20	7	36.56	Yes	11.74	-24.82
60	12/4/2017	20	8	29.79	Yes	11.74	-18.05
61	12/4/2017	20	9	29.49	Yes	11.74	-17.75
62	12/4/2017	20	10	29.00	Yes	11.74	-17.26
63	12/4/2017	20	11	28.39	Yes	11.74	-16.65
64	12/4/2017	20	12	26.69	Yes	11.74	-14.95
65	12/6/2017	21	3	44.56	Yes	11.56	-33.00
66	12/6/2017	21	4	41.78	Yes	11.56	-30.22
67	12/6/2017	21	5	41.91	Yes	11.56	-30.35
68	12/6/2017	21	6	40.47	Yes	11.56	-28.91
69	12/6/2017	21	7	39.44	Yes	11.56	-27.88
70	12/6/2017	21	8	39.44	Yes	11.56	-27.88
71	12/6/2017	21	9	39.44	Yes	11.56	-27.88
72	12/6/2017	21	10	38.90	Yes	11.56	-27.34

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
73	12/6/2017	21	11	39.44	Yes	11.56	-27.88
74	12/6/2017	21	12	40.55	Yes	11.56	-28.99
75	12/7/2017	22	1	40.80	No	11.62	-29.18
76	12/7/2017	22	2	39.48	No	11.62	-27.86
77	12/7/2017	22	3	34.84	No	11.62	-23.22
78	12/7/2017	22	4	35.91	No	11.62	-24.29
79	12/7/2017	22	5	35.59	No	11.62	-23.97
80	12/7/2017	22	6	36.39	No	11.62	-24.77
81	12/7/2017	22	7	33.75	No	11.62	-22.13
82	12/7/2017	22	8	34.35	No	11.62	-22.73
83	12/7/2017	22	9	30.61	No	11.62	-18.99
84	12/7/2017	22	10	28.60	No	11.62	-16.98
85	12/7/2017	22	11	30.36	No	11.62	-18.74
86	12/7/2017	22	12	28.60	No	11.62	-16.98
87	12/7/2017	23	1	35.09	Yes	11.62	-23.47
88	12/7/2017	23	2	35.78	Yes	11.62	-24.16
89	12/7/2017	23	3	35.04	Yes	11.62	-23.42
90	12/7/2017	23	4	39.25	Yes	11.62	-27.63
91	12/7/2017	23	5	38.59	Yes	11.62	-26.97
92	12/7/2017	23	6	38.86	Yes	11.62	-27.24
93	12/7/2017	23	7	25.34	Yes	11.62	-13.72
94	12/7/2017	23	8	27.18	Yes	11.62	-15.56
95	12/7/2017	23	9	25.68	Yes	11.62	-14.06
96	12/7/2017	23	10	24.02	Yes	11.62	-12.40
97	12/7/2017	23	11	28.59	Yes	11.62	-16.97
98	12/7/2017	23	12	26.66	Yes	11.62	-15.04
99	12/7/2017	24	3	25.78	No	11.62	-14.16
100	12/7/2017	24	4	38.84	No	11.62	-27.22
101	7-Dec-17	24	5	\$36.01	No	\$11.62	(\$24.39)
102	12/7/2017	24	6	30.04	No	11.62	-18.42
103	12/7/2017	24	7	27.74	No	11.62	-16.12
104	12/7/2017	24	8	25.09	No	11.62	-13.47
105	12/7/2017	24	9	25.14	No	11.62	-13.52
106	12/7/2017	24	10	24.30	No	11.62	-12.68
107	12/7/2017	24	11	23.96	No	11.62	-12.34
108	12/7/2017	24	12	24.71	No	11.62	-13.09
109	12/8/2017	8	1	71.40	No	11.35	-60.05
110	12/8/2017	8	2	52.37	No	11.35	-41.02

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
111	12/8/2017	8	3	52.37	No	11.35	-41.02
112	12/8/2017	8	4	45.21	No	11.35	-33.86
113	12/8/2017	8	5	47.57	No	11.35	-36.22
114	12/8/2017	8	6	45.07	No	11.35	-33.72
115	12/8/2017	8	7	47.05	No	11.35	-35.70
116	12/8/2017	8	8	47.05	No	11.35	-35.70
117	12/8/2017	8	9	40.46	No	11.35	-29.11
118	12/8/2017	8	10	26.23	No	11.35	-14.88
119	12/8/2017	8	11	21.59	No	11.35	-10.24
120	12/8/2017	8	12	21.66	No	11.35	-10.31
121	12/10/2017	22	1	41.04	Yes	11.35	-29.69
122	12/10/2017	22	7	37.94	Yes	11.35	-26.59
123	12/10/2017	22	8	35.34	Yes	11.35	-23.99
124	12/10/2017	22	9	34.42	Yes	11.35	-23.07
125	12/10/2017	22	10	32.23	Yes	11.35	-20.88
126	12/10/2017	22	11	36.66	Yes	11.35	-25.31
127	12/10/2017	22	12	27.99	Yes	11.35	-16.64
128	12/11/2017	8	1	78.16	Yes	11.35	-66.81
129	12/11/2017	8	2	41.84	Yes	11.35	-30.49
130	12/11/2017	8	3	37.86	Yes	11.35	-26.51
131	12/11/2017	8	4	41.04	Yes	11.35	-29.69
132	12/11/2017	8	5	37.95	Yes	11.35	-26.60
133	12/11/2017	8	6	33.30	Yes	11.35	-21.95
134	12/11/2017	8	7	35.85	Yes	11.35	-24.50
135	12/11/2017	8	8	35.84	Yes	11.35	-24.49
136	12/11/2017	8	9	35.50	Yes	11.35	-24.15
137	12/11/2017	8	10	35.50	Yes	11.35	-24.15
138	12/11/2017	8	11	22.03	Yes	11.35	-10.68
139	12/11/2017	8	12	20.31	Yes	11.35	-8.96
140	12/11/2017	22	1	36.90	No	11.35	-25.55
141	12/11/2017	22	2	36.89	No	11.35	-25.54
142	12/11/2017	22	3	33.64	No	11.35	-22.29
143	12/11/2017	22	4	36.79	No	11.35	-25.44
144	12/11/2017	22	5	40.84	No	11.35	-29.49
145	12/11/2017	22	6	40.83	No	11.35	-29.48
146	12/11/2017	22	7	35.79	No	11.35	-24.44
147	12/11/2017	22	10	169.95	No	11.35	-158.60
148	12/11/2017	22	11	180.80	No	11.35	-169.45

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
149	12/11/2017	22	12	378.19	No	11.35	-366.84
150	12/12/2017	1	9	26.62	No	11.61	-15.01
151	12/12/2017	1	10	27.36	No	11.61	-15.75
152	12/12/2017	1	11	27.58	No	11.61	-15.97
153	12/12/2017	1	12	26.80	No	11.61	-15.19
154	12/12/2017	3	1	42.13	Yes	11.61	-30.52
155	12/12/2017	3	2	42.51	Yes	11.61	-30.90
156	12/12/2017	3	3	42.13	Yes	11.61	-30.52
157	12/12/2017	3	4	37.76	Yes	11.61	-26.15
158	12/12/2017	3	5	42.01	Yes	11.61	-30.40
159	12/12/2017	3	6	38.87	Yes	11.61	-27.26
160	12/12/2017	3	7	37.50	Yes	11.61	-25.89
161	12/12/2017	3	8	36.11	Yes	11.61	-24.50
162	12/12/2017	3	9	36.11	Yes	11.61	-24.50
163	12/12/2017	3	10	36.10	Yes	11.61	-24.49
164	12/12/2017	3	11	36.10	Yes	11.61	-24.49
165	12/12/2017	3	12	37.49	Yes	11.61	-25.88
166	12/12/2017	4	1	35.94	Yes	11.61	-24.33
167	12/12/2017	4	2	37.58	Yes	11.61	-25.97
168	12/12/2017	4	3	35.94	Yes	11.61	-24.33
169	12/12/2017	4	4	35.88	Yes	11.61	-24.27
170	12/12/2017	4	5	35.88	Yes	11.61	-24.27
171	12/12/2017	4	6	37.54	Yes	11.61	-25.93
172	12/12/2017	4	7	35.24	Yes	11.61	-23.63
173	12/12/2017	4	8	35.24	Yes	11.61	-23.63
174	12/12/2017	4	9	35.24	Yes	11.61	-23.63
175	12/12/2017	4	10	35.91	Yes	11.61	-24.30
176	12/12/2017	4	11	35.91	Yes	11.61	-24.30
177	12/12/2017	4	12	38.49	Yes	11.61	-26.88
178	12/12/2017	9	6	23.58	Yes	11.61	-11.97
179	12/12/2017	9	7	23.28	Yes	11.61	-11.67
180	12/12/2017	20	1	28.86	No	11.61	-17.25
181	12/12/2017	20	2	29.17	No	11.61	-17.56
182	12/12/2017	20	3	30.53	No	11.61	-18.92
183	12/12/2017	20	4	30.76	No	11.61	-19.15
184	12/12/2017	20	5	32.19	No	11.61	-20.58
185	12/12/2017	20	6	32.06	No	11.61	-20.45
186	12/12/2017	20	7	32.97	No	11.61	-21.36

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
187	12/12/2017	20	8	29.26	No	11.61	-17.65
188	12/12/2017	20	9	30.18	No	11.61	-18.57
189	12/12/2017	20	10	31.98	No	11.61	-20.37
190	12/12/2017	20	11	30.72	No	11.61	-19.11
191	12/12/2017	20	12	29.26	No	11.61	-17.65
192	12/12/2017	22	1	34.76	No	11.61	-23.15
193	12/12/2017	22	2	34.60	No	11.61	-22.99
194	12/12/2017	22	3	33.49	No	11.61	-21.88
195	12/12/2017	22	4	31.41	No	11.61	-19.80
196	12/12/2017	22	5	27.14	No	11.61	-15.53
197	12/12/2017	22	6	-24.34	No	11.61	35.95
198	12/12/2017	22	7	29.23	No	11.61	-17.62
199	12/12/2017	22	8	41.56	No	11.61	-29.95
200	12/12/2017	22	9	138.75	No	11.61	-127.14
201	12/12/2017	22	10	21.91	No	11.61	-10.30
202	12-Dec-17	22	11	\$14.69	No	\$11.61	(\$3.08)
203	12/12/2017	22	12	-57.99	No	11.61	69.60
204	12/13/2017	12	12	23.81	Yes	11.64	-12.17
205	12/13/2017	20	6	34.38	Yes	11.64	-22.74
206	12/13/2017	20	7	34.39	Yes	11.64	-22.75
207	12/13/2017	20	8	34.40	Yes	11.64	-22.76
208	12/13/2017	20	9	34.43	Yes	11.64	-22.79
209	12/13/2017	20	10	34.61	Yes	11.64	-22.97
210	12/13/2017	20	11	35.04	Yes	11.64	-23.40
211	12/13/2017	20	12	35.55	Yes	11.64	-23.91
212	12/14/2017	21	1	27.54	Yes	11.45	-16.09
213	12/14/2017	21	2	27.04	Yes	11.45	-15.59
214	12/14/2017	21	3	27.19	Yes	11.45	-15.74
215	12/14/2017	21	4	33.17	Yes	11.45	-21.72
216	12/14/2017	21	5	33.19	Yes	11.45	-21.74
217	12/14/2017	21	6	33.19	Yes	11.45	-21.74
218	12/14/2017	21	12	23.63	Yes	11.45	-12.18
219	12/14/2017	22	10	25.21	No	11.45	-13.76
220	12/14/2017	22	11	26.67	No	11.45	-15.22
221	12/14/2017	22	12	32.99	No	11.45	-21.54
222	12/15/2017	1	1	34.38	No	11.36	-23.02
223	12/15/2017	1	2	33.02	No	11.36	-21.66
224	12/15/2017	1	3	31.73	No	11.36	-20.37

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
225	12/15/2017	1	4	32.28	No	11.36	-20.92
226	12/15/2017	1	5	32.29	No	11.36	-20.93
227	12/15/2017	1	6	33.29	No	11.36	-21.93
228	12/15/2017	1	7	32.13	No	11.36	-20.77
229	12/15/2017	1	8	30.93	No	11.36	-19.57
230	12/15/2017	1	9	30.67	No	11.36	-19.31
231	12/15/2017	1	10	30.15	No	11.36	-18.79
232	12/15/2017	1	11	29.47	No	11.36	-18.11
233	12/15/2017	1	12	28.69	No	11.36	-17.33
234	12/15/2017	17	9	27.75	Yes	11.36	-16.39
235	12/15/2017	17	10	29.45	Yes	11.36	-18.09
236	12/15/2017	17	11	29.58	Yes	11.36	-18.22
237	12/15/2017	17	12	30.16	Yes	11.36	-18.80
238	12/15/2017	18	1	32.71	No	11.36	-21.35
239	12/15/2017	18	2	30.40	No	11.36	-19.04
240	12/15/2017	18	3	27.69	No	11.36	-16.33
241	12/15/2017	18	4	33.04	No	11.36	-21.68
242	12/15/2017	18	5	27.99	No	11.36	-16.63
243	12/15/2017	18	6	27.63	No	11.36	-16.27
244	12/15/2017	18	7	27.42	No	11.36	-16.06
245	12/15/2017	18	8	26.24	No	11.36	-14.88
246	12/15/2017	18	9	25.70	No	11.36	-14.34
247	12/15/2017	18	10	29.87	No	11.36	-18.51
248	12/15/2017	18	11	29.57	No	11.36	-18.21
249	12/15/2017	18	12	29.87	No	11.36	-18.51
250	12/17/2017	21	1	37.46	No	11.31	-26.15
251	12/17/2017	21	2	35.97	No	11.31	-24.66
252	12/17/2017	21	3	37.47	No	11.31	-26.16
253	12/17/2017	21	4	35.64	No	11.31	-24.33
254	12/17/2017	21	5	33.34	No	11.31	-22.03
255	12/17/2017	21	6	38.17	No	11.31	-26.86
256	12/17/2017	21	10	33.49	No	11.31	-22.18
257	12/17/2017	21	11	33.54	No	11.31	-22.23
258	12/17/2017	21	12	32.88	No	11.31	-21.57
259	12/18/2017	1	1	29.43	Yes	11.31	-18.12
260	12/18/2017	1	4	29.94	Yes	11.31	-18.63
261	12/18/2017	1	5	30.23	Yes	11.31	-18.92
262	12/18/2017	1	6	30.50	Yes	11.31	-19.19

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
263	12/18/2017	1	7	28.65	Yes	11.31	-17.34
264	12/18/2017	1	8	28.65	Yes	11.31	-17.34
265	12/18/2017	1	9	28.64	Yes	11.31	-17.33
266	12/18/2017	1	10	29.83	Yes	11.31	-18.52
267	12/18/2017	1	11	29.83	Yes	11.31	-18.52
268	12/18/2017	1	12	29.89	Yes	11.31	-18.58
269	12/18/2017	9	1	18.04	Yes	11.31	-6.73
270	12/18/2017	9	2	17.62	Yes	11.31	-6.31
271	12/18/2017	9	3	16.25	Yes	11.31	-4.94
272	12/18/2017	9	4	15.54	Yes	11.31	-4.23
273	12/18/2017	9	5	15.14	Yes	11.31	-3.83
274	12/18/2017	9	6	14.62	Yes	11.31	-3.31
275	12/18/2017	9	7	12.54	Yes	11.31	-1.23
276	12/18/2017	9	8	12.49	Yes	11.31	-1.18
277	12/18/2017	9	9	11.88	Yes	11.31	-0.57
278	12/18/2017	9	10	12.80	Yes	11.31	-1.49
279	12/18/2017	9	11	12.62	Yes	11.31	-1.31
280	12/18/2017	9	12	12.70	Yes	11.31	-1.39
281	12/18/2017	22	1	36.85	No	11.31	-25.54
282	12/18/2017	22	2	35.93	No	11.31	-24.62
283	12/18/2017	22	3	33.22	No	11.31	-21.91
284	12/18/2017	22	4	34.28	No	11.31	-22.97
285	12/18/2017	22	5	34.97	No	11.31	-23.66
286	12/18/2017	22	6	34.96	No	11.31	-23.65
287	12/18/2017	22	7	35.74	No	11.31	-24.43
288	12/18/2017	22	8	32.83	No	11.31	-21.52
289	12/18/2017	22	9	27.12	No	11.31	-15.81
290	12/18/2017	22	10	23.09	No	11.31	-11.78
291	12/18/2017	22	11	24.66	No	11.31	-13.35
292	12/18/2017	22	12	42.85	No	11.31	-31.54
293	12/21/2017	8	1	210.12	No	11.43	-198.69
294	12/21/2017	8	2	78.91	No	11.43	-67.48
295	12/21/2017	8	3	34.91	No	11.43	-23.48
296	12/21/2017	8	4	34.50	No	11.43	-23.07
297	12/21/2017	8	5	33.63	No	11.43	-22.20
298	12/21/2017	8	6	46.46	No	11.43	-35.03
299	12/21/2017	8	7	25.65	No	11.43	-14.22
300	12/21/2017	8	8	11.16	No	11.43	0.27

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
301	12/21/2017	8	9	11.16	No	11.43	0.27
302	12/21/2017	8	10	11.18	No	11.43	0.25
303	21-Dec-17	8	11	\$5.73	No	\$11.43	\$5.70
304	12/21/2017	8	12	25.62	No	11.43	-14.19
305	12/21/2017	23	1	32.78	No	11.43	-21.35
306	12/21/2017	23	2	31.53	No	11.43	-20.10
307	12/21/2017	23	7	35.58	No	11.43	-24.15
308	12/21/2017	23	8	34.74	No	11.43	-23.31
309	12/21/2017	23	9	35.57	No	11.43	-24.14
310	12/21/2017	23	10	31.74	No	11.43	-20.31
311	12/21/2017	23	11	31.34	No	11.43	-19.91
312	12/21/2017	23	12	30.63	No	11.43	-19.20
313	12/22/2017	8	1	40.02	No	11.31	-28.71
314	12/22/2017	8	2	31.41	No	11.31	-20.10
315	12/22/2017	8	3	36.22	No	11.31	-24.91
316	12/22/2017	8	4	31.35	No	11.31	-20.04
317	12/22/2017	8	5	30.70	No	11.31	-19.39
318	12/22/2017	8	6	31.33	No	11.31	-20.02
319	12/22/2017	8	7	32.39	No	11.31	-21.08
320	12/22/2017	8	8	31.17	No	11.31	-19.86
321	12/22/2017	8	9	25.79	No	11.31	-14.48
322	12/22/2017	8	10	23.38	No	11.31	-12.07
323	12/22/2017	8	11	22.64	No	11.31	-11.33
324	12/22/2017	8	12	24.08	No	11.31	-12.77
325	12/22/2017	20	1	30.20	Yes	11.31	-18.89
326	12/22/2017	20	2	31.88	Yes	11.31	-20.57
327	12/22/2017	20	3	35.81	Yes	11.31	-24.50
328	12/22/2017	20	4	36.22	Yes	11.31	-24.91
329	12/22/2017	20	5	33.96	Yes	11.31	-22.65
330	12/22/2017	20	6	33.29	Yes	11.31	-21.98
331	12/22/2017	20	7	36.97	Yes	11.31	-25.66
332	12/22/2017	20	8	33.99	Yes	11.31	-22.68
333	12/22/2017	20	9	32.56	Yes	11.31	-21.25
334	12/22/2017	20	10	32.39	Yes	11.31	-21.08
335	12/22/2017	20	11	32.42	Yes	11.31	-21.11
336	12/22/2017	20	12	32.31	Yes	11.31	-21.00
337	12/22/2017	21	1	32.11	Yes	11.31	-20.80
338	12/22/2017	21	2	30.84	Yes	11.31	-19.53

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
339	12/22/2017	21	3	32.97	Yes	11.31	-21.66
340	12/22/2017	21	4	31.43	Yes	11.31	-20.12
341	12/22/2017	21	5	30.45	Yes	11.31	-19.14
342	12/22/2017	21	6	30.45	Yes	11.31	-19.14
343	12/22/2017	21	7	30.20	Yes	11.31	-18.89
344	12/22/2017	21	8	30.25	Yes	11.31	-18.94
345	12/22/2017	21	9	30.39	Yes	11.31	-19.08
346	12/22/2017	21	10	30.92	Yes	11.31	-19.61
347	12/22/2017	21	11	31.01	Yes	11.31	-19.70
348	12/22/2017	21	12	29.33	Yes	11.31	-18.02
349	12/22/2017	22	1	36.89	No	11.31	-25.58
350	12/22/2017	22	2	34.08	No	11.31	-22.77
351	12/22/2017	22	3	37.98	No	11.31	-26.67
352	12/22/2017	22	4	30.16	No	11.31	-18.85
353	12/22/2017	22	5	29.41	No	11.31	-18.10
354	12/22/2017	22	6	30.08	No	11.31	-18.77
355	12/22/2017	22	7	37.93	No	11.31	-26.62
356	12/22/2017	22	8	35.72	No	11.31	-24.41
357	12/22/2017	22	9	33.29	No	11.31	-21.98
358	12/22/2017	22	10	28.04	No	11.31	-16.73
359	12/22/2017	22	11	28.27	No	11.31	-16.96
360	12/22/2017	22	12	29.96	No	11.31	-18.65
361	12/22/2017	24	1	29.36	No	11.31	-18.05
362	12/22/2017	24	2	29.36	No	11.31	-18.05
363	12/22/2017	24	3	28.69	No	11.31	-17.38
364	12/22/2017	24	4	28.98	No	11.31	-17.67
365	12/22/2017	24	5	28.33	No	11.31	-17.02
366	12/22/2017	24	6	26.51	No	11.31	-15.20
367	12/22/2017	24	7	26.57	No	11.31	-15.26
368	12/22/2017	24	8	25.26	No	11.31	-13.95
369	12/22/2017	24	9	25.03	No	11.31	-13.72
370	12/22/2017	24	10	25.18	No	11.31	-13.87
371	12/22/2017	24	11	24.43	No	11.31	-13.12
372	12/22/2017	24	12	23.50	No	11.31	-12.19
373	12/30/2017	22	10	38.19	Yes	11.76	-26.43
374	12/30/2017	22	11	41.97	Yes	11.76	-30.21
375	12/30/2017	22	12	53.49	Yes	11.76	-41.73
376	12/31/2017	22	1	33.87	No	11.76	-22.11

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
377	12/31/2017	22	4	36.68	No	11.76	-24.92
378	12/31/2017	22	5	37.01	No	11.76	-25.25
379	12/31/2017	22	6	36.52	No	11.76	-24.76
380	12/31/2017	22	7	32.37	No	11.76	-20.61
381	12/31/2017	22	8	31.51	No	11.76	-19.75
382	12/31/2017	22	9	31.63	No	11.76	-19.87
383	12/31/2017	22	10	31.46	No	11.76	-19.70
384	12/31/2017	22	11	31.57	No	11.76	-19.81
385	12/31/2017	22	12	32.89	No	11.76	-21.13
386	12/31/2017	23	3	46.17	No	11.76	-34.41
387	12/31/2017	23	4	53.79	No	11.76	-42.03
388	12/31/2017	23	5	52.05	No	11.76	-40.29
389	12/31/2017	23	6	51.95	No	11.76	-40.19

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	12/5/2017	22	1	35.56	Yes	120.69	85.13
2	12/5/2017	22	2	32.85	Yes	120.69	87.84
3	12/5/2017	22	3	31.85	Yes	120.69	88.84
4	12/5/2017	22	4	35.90	Yes	120.69	84.79
5	12/5/2017	22	5	33.77	Yes	120.69	86.92
6	12/5/2017	22	6	29.61	Yes	120.69	91.08
7	12/5/2017	22	7	42.09	Yes	120.69	78.60
8	12/5/2017	22	8	29.69	Yes	120.69	91.00
9	12/5/2017	22	9	33.33	Yes	120.69	87.36
10	12/5/2017	22	10	40.63	Yes	120.69	80.06
11	12/5/2017	22	11	53.59	Yes	120.69	67.10
12	12/5/2017	22	12	47.25	Yes	120.69	73.44
13	12/5/2017	23	1	49.77	Yes	64.84	15.07
14	12/5/2017	23	2	53.12	Yes	64.84	11.72
15	12/5/2017	23	3	48.65	Yes	64.84	16.19
16	12/5/2017	23	4	39.24	Yes	64.84	25.60
17	12/5/2017	23	5	29.67	Yes	64.84	35.17
18	12/5/2017	23	6	29.91	Yes	64.84	34.93
19	12/5/2017	23	7	29.53	Yes	64.84	35.31
20	12/5/2017	23	8	27.87	Yes	64.84	36.97
21	12/5/2017	23	9	25.80	Yes	64.84	39.04
22	12/5/2017	23	10	25.65	Yes	64.84	39.19
23	12/5/2017	23	11	25.46	Yes	64.84	39.38
24	12/5/2017	23	12	24.46	Yes	64.84	40.38
25	12/6/2017	1	1	22.53	Yes	93.35	70.82
26	12/6/2017	1	2	24.82	Yes	93.35	68.53
27	12/6/2017	1	3	28.00	Yes	93.35	65.35
28	12/6/2017	1	4	28.40	Yes	93.35	64.95
29	12/6/2017	1	5	29.00	Yes	93.35	64.35
30	12/6/2017	1	6	29.00	Yes	93.35	64.35
31	12/6/2017	1	7	29.68	Yes	93.35	63.67
32	12/6/2017	1	8	29.00	Yes	93.35	64.35
33	12/6/2017	1	9	30.53	Yes	93.35	62.82
34	12/6/2017	1	10	29.99	Yes	93.35	63.36

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
35	12/6/2017	1	11	27.57	Yes	93.35	65.78
36	12/6/2017	1	12	24.68	Yes	93.35	68.67
37	12/6/2017	22	1	47.14	Yes	93.35	46.21
38	12/6/2017	22	2	40.34	Yes	93.35	53.01
39	12/6/2017	22	3	35.14	Yes	93.35	58.21
40	12/6/2017	22	4	39.85	Yes	93.35	53.50
41	12/6/2017	22	5	36.85	Yes	93.35	56.50
42	12/6/2017	22	6	34.48	Yes	93.35	58.87
43	12/6/2017	22	7	32.54	Yes	93.35	60.81
44	12/6/2017	22	8	29.65	Yes	93.35	63.70
45	12/6/2017	22	9	29.33	Yes	93.35	64.02
46	12/6/2017	22	10	27.71	Yes	93.35	65.64
47	12/6/2017	22	11	29.03	Yes	93.35	64.32
48	12/6/2017	22	12	36.44	Yes	93.35	56.91
49	12/7/2017	7	1	36.22	Yes	93.35	57.13
50	12/7/2017	7	2	32.42	Yes	93.35	60.93
51	12/7/2017	7	3	34.35	Yes	93.35	59.00
52	12/7/2017	7	4	32.34	Yes	93.35	61.01
53	12/7/2017	7	5	37.38	Yes	93.35	55.97
54	12/7/2017	7	6	37.44	Yes	93.35	55.91
55	12/7/2017	7	7	37.32	Yes	93.35	56.03
56	12/7/2017	7	8	37.37	Yes	93.35	55.98
57	12/7/2017	7	9	40.41	Yes	93.35	52.94
58	12/7/2017	7	10	41.48	Yes	93.35	51.87
59	12/7/2017	7	11	80.98	Yes	93.35	12.37
60	12/7/2017	7	12	57.77	Yes	93.35	35.58
61	12/7/2017	10	1	24.10	Yes	93.35	69.25
62	12/7/2017	10	2	27.09	Yes	93.35	66.26
63	12/7/2017	10	3	27.09	Yes	93.35	66.26
64	12/7/2017	10	4	25.10	Yes	93.35	68.25
65	12/7/2017	10	5	24.93	Yes	93.35	68.42
66	12/7/2017	10	6	25.04	Yes	93.35	68.31
67	12/7/2017	10	7	15.12	Yes	93.35	78.23
68	12/7/2017	10	8	15.12	Yes	93.35	78.23
69	12/7/2017	10	9	14.41	Yes	93.35	78.94
70	12/7/2017	10	10	15.00	Yes	93.35	78.35
71	12/7/2017	10	11	17.89	Yes	93.35	75.46
72	12/7/2017	10	12	19.31	Yes	93.35	74.04

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
73	12/7/2017	13	1	21.22	Yes	93.35	72.13
74	12/7/2017	13	2	20.39	Yes	93.35	72.96
75	12/7/2017	13	3	20.32	Yes	93.35	73.03
76	12/7/2017	13	4	21.45	Yes	93.35	71.90
77	12/7/2017	13	5	20.39	Yes	93.35	72.96
78	12/7/2017	13	6	19.04	Yes	93.35	74.31
79	12/7/2017	13	7	20.37	Yes	93.35	72.98
80	12/7/2017	13	8	20.76	Yes	93.35	72.59
81	12/7/2017	13	9	20.76	Yes	93.35	72.59
82	12/7/2017	13	10	21.09	Yes	93.35	72.26
83	12/7/2017	13	11	19.59	Yes	93.35	73.76
84	12/7/2017	13	12	18.66	Yes	93.35	74.69
85	12/7/2017	15	1	19.32	Yes	93.35	74.03
86	12/7/2017	15	2	19.16	Yes	93.35	74.19
87	12/7/2017	15	3	19.16	Yes	93.35	74.19
88	12/7/2017	15	4	19.17	Yes	93.35	74.18
89	12/7/2017	15	5	19.37	Yes	93.35	73.98
90	12/7/2017	15	6	20.54	Yes	93.35	72.81
91	12/7/2017	15	7	19.80	Yes	93.35	73.55
92	12/7/2017	15	8	20.60	Yes	93.35	72.75
93	12/7/2017	15	9	21.46	Yes	93.35	71.89
94	12/7/2017	15	10	22.28	Yes	93.35	71.07
95	12/7/2017	15	11	22.70	Yes	93.35	70.65
96	12/7/2017	15	12	23.64	Yes	93.35	69.71
97	12/8/2017	1	1	30.78	No	97.90	67.12
98	12/8/2017	1	2	32.74	No	97.90	65.16
99	12/8/2017	1	3	31.68	No	97.90	66.22
100	12/8/2017	1	4	28.00	No	97.90	69.90
101	12/8/2017	1	5	27.38	No	97.90	70.52
102	12/8/2017	1	6	26.00	No	97.90	71.90
103	12/8/2017	1	7	25.64	No	97.90	72.26
104	12/8/2017	1	8	24.80	No	97.90	73.10
105	12/8/2017	1	9	24.80	No	97.90	73.10
106	12/8/2017	1	10	25.13	No	97.90	72.77
107	12/8/2017	1	11	24.54	No	97.90	73.36
108	12/8/2017	1	12	23.72	No	97.90	74.18
109	12/8/2017	13	1	19.95	No	97.90	77.95
110	12/8/2017	13	2	20.23	No	97.90	77.67

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
111	12/8/2017	13	3	20.23	No	97.90	77.67
112	12/8/2017	13	4	20.01	No	97.90	77.89
113	12/8/2017	13	5	20.21	No	97.90	77.69
114	12/8/2017	13	6	20.24	No	97.90	77.66
115	12/8/2017	13	7	20.00	No	97.90	77.90
116	12/8/2017	13	8	19.28	No	97.90	78.62
117	12/8/2017	13	9	20.70	No	97.90	77.20
118	12/8/2017	13	10	20.30	No	97.90	77.60
119	12/8/2017	13	11	20.44	No	97.90	77.46
120	12/8/2017	13	12	20.57	No	97.90	77.33
121	12/9/2017	12	1	19.88	No	84.24	64.36
122	12/9/2017	12	2	20.43	No	84.24	63.81
123	12/9/2017	12	3	20.23	No	84.24	64.01
124	12/9/2017	12	4	20.56	No	84.24	63.68
125	12/9/2017	12	5	20.56	No	84.24	63.68
126	12/9/2017	12	6	20.72	No	84.24	63.52
127	12/9/2017	12	7	20.78	No	84.24	63.46
128	12/9/2017	12	8	20.59	No	84.24	63.65
129	12/9/2017	12	9	20.45	No	84.24	63.79
130	12/9/2017	12	10	20.31	No	84.24	63.93
131	12/9/2017	12	11	20.31	No	84.24	63.93
132	12/9/2017	12	12	20.10	No	84.24	64.14
133	12/9/2017	13	1	20.88	No	84.24	63.36
134	12/9/2017	13	2	20.97	No	84.24	63.27
135	12/9/2017	13	3	21.14	No	84.24	63.10
136	12/9/2017	13	4	21.02	No	84.24	63.22
137	12/9/2017	13	5	20.96	No	84.24	63.28
138	12/9/2017	13	6	20.89	No	84.24	63.35
139	12/9/2017	13	7	20.76	No	84.24	63.48
140	12/9/2017	13	8	20.55	No	84.24	63.69
141	12/9/2017	13	9	19.38	No	84.24	64.86
142	12/9/2017	13	10	20.40	No	84.24	63.84
143	12/9/2017	13	11	20.40	No	84.24	63.84
144	12/9/2017	13	12	20.52	No	84.24	63.72
145	12/9/2017	24	1	24.66	No	79.16	54.50
146	12/9/2017	24	2	24.72	No	79.16	54.44
147	12/9/2017	24	3	26.24	No	79.16	52.92
148	12/9/2017	24	4	26.68	No	79.16	52.48

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
149	12/9/2017	24	5	26.56	No	79.16	52.60
150	12/9/2017	24	6	26.12	No	79.16	53.04
151	12/9/2017	24	7	23.50	No	79.16	55.66
152	12/9/2017	24	8	23.50	No	79.16	55.66
153	12/9/2017	24	9	22.29	No	79.16	56.87
154	12/9/2017	24	10	21.76	No	79.16	57.40
155	12/9/2017	24	11	21.56	No	79.16	57.60
156	12/9/2017	24	12	17.65	No	79.16	61.51
157	12/10/2017	1	1	22.86	No	79.16	56.30
158	12/10/2017	1	2	26.05	No	79.16	53.11
159	12/10/2017	1	3	30.58	No	79.16	48.58
160	12/10/2017	1	4	31.05	No	79.16	48.11
161	12/10/2017	1	5	31.31	No	79.16	47.85
162	12/10/2017	1	6	31.31	No	79.16	47.85
163	12/10/2017	1	7	30.53	No	79.16	48.63
164	12/10/2017	1	8	27.80	No	79.16	51.36
165	12/10/2017	1	9	28.31	No	79.16	50.85
166	12/10/2017	1	10	27.46	No	79.16	51.70
167	12/10/2017	1	11	26.05	No	79.16	53.11
168	12/10/2017	1	12	24.08	No	79.16	55.08
169	12/10/2017	7	1	23.89	No	81.84	57.95
170	12/10/2017	7	2	24.30	No	81.84	57.54
171	12/10/2017	7	3	26.51	No	81.84	55.33
172	12/10/2017	7	4	27.73	No	81.84	54.11
173	12/10/2017	7	5	28.14	No	81.84	53.70
174	12/10/2017	7	6	26.52	No	81.84	55.32
175	12/10/2017	7	7	31.14	No	81.84	50.70
176	12/10/2017	7	8	26.44	No	81.84	55.40
177	12/10/2017	7	9	26.41	No	81.84	55.43
178	12/10/2017	7	10	26.39	No	81.84	55.45
179	12/10/2017	7	11	27.18	No	81.84	54.66
180	12/10/2017	7	12	28.23	No	81.84	53.61
181	12/10/2017	8	1	51.42	No	84.24	32.82
182	12/10/2017	8	2	46.70	No	84.24	37.54
183	12/10/2017	8	3	45.81	No	84.24	38.43
184	12/10/2017	8	4	45.00	No	84.24	39.24
185	12/10/2017	8	5	52.61	No	84.24	31.63
186	12/10/2017	8	6	57.41	No	84.24	26.83

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
187	12/10/2017	8	10	46.29	No	84.24	37.95
188	12/10/2017	8	11	59.17	No	84.24	25.07
189	12/10/2017	8	12	45.58	No	84.24	38.66
190	12/10/2017	9	1	44.34	No	84.24	39.90
191	12/10/2017	9	2	41.02	No	84.24	43.22
192	12/10/2017	9	3	42.33	No	84.24	41.91
193	12/10/2017	9	4	45.44	No	84.24	38.80
194	12/10/2017	9	5	36.54	No	84.24	47.70
195	12/10/2017	9	6	22.84	No	84.24	61.40
196	12/10/2017	9	7	22.75	No	84.24	61.49
197	12/10/2017	9	8	22.45	No	84.24	61.79
198	12/10/2017	9	9	20.29	No	84.24	63.95
199	12/10/2017	9	10	19.38	No	79.16	59.78
200	12/10/2017	9	11	19.91	No	79.16	59.25
201	12/10/2017	9	12	16.70	No	79.16	62.46
202	12/10/2017	10	1	21.77	No	84.24	62.47
203	12/10/2017	10	2	21.94	No	84.24	62.30
204	12/10/2017	10	3	22.95	No	84.24	61.29
205	12/10/2017	10	4	26.29	No	84.24	57.95
206	12/10/2017	10	5	23.90	No	84.24	60.34
207	12/10/2017	10	6	25.85	No	84.24	58.39
208	12/10/2017	10	7	22.30	No	84.24	61.94
209	12/10/2017	10	8	22.40	No	84.24	61.84
210	12/10/2017	10	9	22.30	No	84.24	61.94
211	12/10/2017	10	10	22.41	No	84.24	61.83
212	12/10/2017	10	11	22.55	No	84.24	61.69
213	12/10/2017	10	12	22.17	No	84.24	62.07
214	12/11/2017	1	1	26.54	No	84.24	57.70
215	12/11/2017	1	2	30.68	No	84.24	53.56
216	12/11/2017	1	3	31.33	No	84.24	52.91
217	12/11/2017	1	4	30.53	No	84.24	53.71
218	12/11/2017	1	5	30.41	No	84.24	53.83
219	12/11/2017	1	6	30.41	No	84.24	53.83
220	12/11/2017	1	7	30.42	No	84.24	53.82
221	12/11/2017	1	8	29.09	No	84.24	55.15
222	12/11/2017	1	9	27.64	No	84.24	56.60
223	12/11/2017	1	10	26.89	No	84.24	57.35
224	12/11/2017	1	11	26.47	No	84.24	57.77

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
225	12/11/2017	1	12	26.14	No	84.24	58.10
226	12/11/2017	22	1	30.86	No	84.24	53.38
227	12/11/2017	22	2	31.07	No	84.24	53.17
228	12/11/2017	22	3	29.14	No	84.24	55.10
229	12/11/2017	22	4	31.45	No	81.84	50.39
230	12/11/2017	22	5	33.90	No	81.84	47.94
231	12/11/2017	22	6	34.06	No	81.84	47.78
232	12/11/2017	22	7	33.47	No	81.84	48.38
233	12/11/2017	22	8	32.42	No	84.24	51.82
234	12/11/2017	22	9	89.81	No	84.24	-5.57
235	12/11/2017	22	10	1084.83	No	84.24	-1000.59
236	12/11/2017	22	11	1084.83	No	84.24	-1000.59
237	12/11/2017	22	12	1003.11	No	84.24	-918.87
238	12/11/2017	23	1	1090.46	No	84.24	-1006.22
239	12/11/2017	23	2	79.89	No	84.24	4.35
240	12/11/2017	23	3	77.80	No	84.24	6.44
241	12/11/2017	23	4	45.83	No	84.24	38.41
242	12/11/2017	23	5	41.99	No	84.24	42.25
243	12/11/2017	23	6	41.99	No	84.24	42.25
244	12/11/2017	23	7	103.27	No	81.84	-21.43
245	12/11/2017	23	8	59.41	No	81.84	22.43
246	12/11/2017	23	9	59.36	No	81.84	22.48
247	12/11/2017	23	10	25.25	No	81.84	56.59
248	12/11/2017	23	11	23.93	No	81.84	57.91
249	12/11/2017	23	12	22.24	No	81.84	59.60
250	12/12/2017	1	1	26.42	Yes	90.90	64.48
251	12/12/2017	1	2	30.60	Yes	90.90	60.30
252	12/12/2017	1	3	31.48	Yes	90.90	59.42
253	12/12/2017	1	4	30.38	Yes	90.90	60.52
254	12/12/2017	1	5	30.38	Yes	90.90	60.52
255	12/12/2017	1	6	30.38	Yes	90.90	60.52
256	12/12/2017	1	7	28.54	Yes	90.90	62.36
257	12/12/2017	1	8	27.76	Yes	90.90	63.14
258	12/12/2017	1	9	26.58	Yes	90.90	64.32
259	12/12/2017	1	10	26.09	Yes	90.90	64.81
260	12/12/2017	1	11	26.30	Yes	90.90	64.60
261	12/12/2017	1	12	25.56	Yes	90.90	65.34
262	12/12/2017	5	1	30.87	No	90.90	60.03

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
263	12/12/2017	5	2	30.81	No	90.90	60.09
264	12/12/2017	5	3	31.29	No	90.90	59.61
265	12/12/2017	5	4	25.94	No	90.90	64.96
266	12/12/2017	5	5	26.40	No	90.90	64.50
267	12/12/2017	5	6	27.47	No	90.90	63.43
268	12/12/2017	5	7	30.00	No	90.90	60.90
269	12/12/2017	5	8	30.41	No	90.90	60.49
270	12/12/2017	5	9	30.41	No	90.90	60.49
271	12/12/2017	5	10	32.50	No	90.90	58.40
272	12/12/2017	5	11	32.50	No	90.90	58.40
273	12/12/2017	5	12	38.86	No	90.90	52.04
274	12/12/2017	6	1	27.08	No	90.90	63.82
275	12/12/2017	6	2	26.35	No	90.90	64.55
276	12/12/2017	6	3	27.11	No	90.90	63.79
277	12/12/2017	6	4	31.99	No	90.90	58.91
278	12/12/2017	6	5	34.68	No	90.90	56.22
279	12/12/2017	6	6	30.85	No	90.90	60.05
280	12/12/2017	6	7	31.86	No	90.90	59.04
281	12/12/2017	6	8	31.34	No	90.90	59.56
282	12/12/2017	6	9	35.72	No	90.90	55.18
283	12/12/2017	6	10	45.37	No	90.90	45.53
284	12/12/2017	6	11	49.27	No	90.90	41.63
285	12/12/2017	6	12	61.11	No	90.90	29.79
286	12/12/2017	7	1	60.88	No	93.35	32.47
287	12/12/2017	7	2	51.63	No	93.35	41.72
288	12/12/2017	7	3	37.28	No	93.35	56.07
289	12/12/2017	7	4	63.22	No	93.35	30.13
290	12/12/2017	7	5	92.61	No	93.35	0.74
291	12/12/2017	7	6	1103.29	No	93.35	-1009.94
292	12/12/2017	7	7	92.55	No	93.35	0.80
293	12/12/2017	7	8	425.88	No	93.35	-332.53
294	12/12/2017	7	9	1103.25	No	93.35	-1009.90
295	12/12/2017	7	10	90.89	No	93.35	2.46
296	12/12/2017	7	11	84.66	No	93.35	8.69
297	12/12/2017	7	12	71.91	No	93.35	21.44
298	12/12/2017	17	1	27.92	No	93.35	65.43
299	12/12/2017	17	2	27.10	No	93.35	66.25
300	12/12/2017	17	3	50.60	No	93.35	42.75

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
301	12/12/2017	17	4	50.14	No	93.35	43.21
302	12/12/2017	17	5	53.27	No	93.35	40.08
303	12/12/2017	17	6	56.33	No	93.35	37.02
304	12/12/2017	17	7	51.58	No	93.35	41.77
305	12/12/2017	17	8	57.12	No	93.35	36.23
306	12/12/2017	17	9	54.89	No	93.35	38.46
307	12/12/2017	17	10	62.79	No	93.35	30.56
308	12/12/2017	17	11	62.85	No	93.35	30.50
309	12/12/2017	17	12	68.02	No	93.35	25.33
310	12/12/2017	18	1	53.39	No	93.35	39.96
311	12/12/2017	18	2	72.67	No	93.35	20.68
312	12/12/2017	18	3	74.56	No	93.35	18.79
313	12/12/2017	18	4	73.27	No	93.35	20.08
314	12/12/2017	18	5	91.39	No	93.35	1.96
315	12/12/2017	18	6	115.71	No	93.35	-22.36
316	12/12/2017	18	7	88.81	No	93.35	4.54
317	12/12/2017	18	8	72.27	No	93.35	21.08
318	12/12/2017	18	9	70.47	No	93.35	22.88
319	12/12/2017	18	10	71.03	No	93.35	22.32
320	12/12/2017	18	11	71.03	No	93.35	22.32
321	12/12/2017	18	12	74.35	No	93.35	19.00
322	12/12/2017	22	1	32.75	Yes	93.35	60.60
323	12/12/2017	22	2	32.50	Yes	93.35	60.85
324	12/12/2017	22	3	31.05	Yes	93.35	62.30
325	12/12/2017	22	4	60.89	Yes	93.35	32.46
326	12/12/2017	22	5	48.81	Yes	93.35	44.54
327	12/12/2017	22	6	1090.97	Yes	93.35	-997.62
328	12/12/2017	22	7	138.28	Yes	93.35	-44.93
329	12/12/2017	22	8	193.87	Yes	93.35	-100.52
330	12/12/2017	22	9	1002.12	Yes	93.35	-908.77
331	12/12/2017	22	10	104.15	Yes	93.35	-10.80
332	12/12/2017	22	11	132.12	Yes	93.35	-38.77
333	12/12/2017	22	12	1434.31	Yes	93.35	-1340.96
334	12/12/2017	23	1	63.59	Yes	93.35	29.76
335	12/12/2017	23	2	54.07	Yes	93.35	39.28
336	12/12/2017	23	3	54.11	Yes	93.35	39.24
337	12/12/2017	23	4	47.94	Yes	93.35	45.41
338	12/12/2017	23	5	51.84	Yes	93.35	41.51

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Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
339	12/12/2017	23	6	49.96	Yes	93.35	43.39
340	12/12/2017	23	7	49.90	Yes	93.35	43.45
341	12/12/2017	23	8	49.01	Yes	93.35	44.34
342	12/12/2017	23	9	47.56	Yes	93.35	45.79
343	12/12/2017	23	10	29.16	Yes	93.35	64.19
344	12/12/2017	23	11	27.57	Yes	93.35	65.78
345	12/12/2017	23	12	24.49	Yes	93.35	68.86

Appendix C: Exceptional Dispatch Bid Mitigation Analysis

In December 2017, the ISO applied the exceptional dispatch bid mitigation to the exceptional dispatches. **Error! Reference source not found.** shows the costs by instruction type in December. With exceptional dispatch bid mitigation, the costs for these types of exceptional dispatches were \$ 0. Without the exceptional dispatch bid mitigation, the costs for these types of exceptional dispatches would be \$ 0. The cost saving from the exceptional dispatch bid mitigation was \$ 0.

Table 10: Bid Mitigation Analysis for December 2017

Type	Number of Resources	Costs without Bid Mitigation	Costs with Bid Mitigation	Cost Saving
NONTMOD	1	\$ 0	\$ 0	\$ 0
Total	1	\$ 0	\$ 0	\$ 0