February 28, 2019

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

Re: California Independent System Operator Corporation
Docket Nos. ER08-1178-000 and EL08-88-000
November 2018 Exceptional Dispatch Report (Chart 2 Data)

Dear Secretary Bose:

Pursuant to the orders issued in the above-referenced dockets on September 2, 2009 and May 4, 2010, the California Independent System Operator Corporation (CAISO) submits the attached report. The report provides Exceptional Dispatch information that the Commission directed be included in "Chart 2," which is set forth in Appendix A to the September 2, 2009 order, as modified by the May 4, 2010 order.

The attached report provides Chart 2 data for the month of October 2018. The report also includes the price impact analysis as required by paragraph 44 of the September 2, 2009 order, as well as the degree of mitigation analysis required by CAISO tariff section 34.11.4 for November 2018.

Respectfully submitted,

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Exceptional Dispatch Report

Table 2: November 2018

Market Quality and Renewable Integration February 28, 2019

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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 November 2018.

This report contains a price impact analysis as prescribed by FERC in its September 2 order. The price impact analysis for the month of November is presented in Appendix B. This report also includes mitigation analysis for November 2018 required by section 34.11.4 of the CAISO tariff. This analysis compares those Exceptional Dispatches subject to bid mitigation (i.e. Exceptional Dispatches to address noncompetitive constraints and Delta Dispatch), and determines the cost difference between the Exceptional Dispatch bid mitigation settlement rules and what the settlement amount would have been had the Exceptional Dispatches not been subject to bid mitigation. The Exceptional Dispatch bid mitigation analysis for November is presented in Appendix C.

The Nature of Exceptional Dispatch

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

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

Additional reasons for exceptional dispatch instructions in 2018 include Software Limitation. Software Limitation is used when an exceptional dispatch instruction was issued to bridge schedules across days for resources with a minimum down time of 24 hours, as the CAISO software does not handle multi-day commitment. For instance, a resource has a day-ahead schedule from 0600 till 2300, and then is shut down in 2400. If this resource had a minimum down time of 24 hours and it is required the following day, then the CAISO issues an exceptional dispatch to commit this resource in 2400 so it can be dispatched economically in the following day. Software Limitation was also used for exceptional dispatches to manually issue shut down instructions to a resource because of a temporary Automatic Dispatch System ("ADS") failure, or similar issues. There were a few other reasons used to explain exceptional dispatch instructions in November, which are self explanatory.

The data in Table 1 is based on a template specified in the September 2009 order.[2] This table contains all the information published in Table 1 of the first report for November 2018. 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 November 2018

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2018 - 30/November/2018

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	LA Basin	11/15/2018	10 - 20	Yes	INC	24	0:00	0:00	-223.88	368975.12	56557.71	5964.49	0.00	0.00	0.00	0.00	0.00	0.00
2	RT	Conditions beyond the control of the CAISO	SDGE	San Diego-IV	11/1/2018	225	No	INC	7	0:00	7:00	233.87	0.00	0.00	-5896.34	0.00	0.00	0.00	0.00	0.00	0.00
3	RT	Contingency Dispatch	PGAE	Fresno	11/21/2018	141	No	INC	1	9:55	10:00	1.15	0.00	0.00	-60.13	4.58	-240.52	0.00	-235.37	0.00	0.00
4	RT	Contingency Dispatch	SCE	LA Basin	11/9/2018	147	No	INC	2	7:45	9:35	61.28	6284.30	0.00	-1888.91	0.00	0.00	0.00	0.00	0.00	0.00
5	RT	Fast Start Unit Management	SCE	LA Basin	11/10/2018	0	No	INC	2	0:45	1:50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	RT	Incomplete or Inaccurate Transmission	PGAE	Fresno	11/22/2018	4.1 - 13.6	No	DEC	3	10:45	13:00	-4.41	0.00	0.00	129.32	-2.57	0.00	90.95	0.00	-97.68	0.00
7	RT	Incomplete or Inaccurate Transmission	PGAE	Fresno	11/22/2018	4.1 - 13.6	No	INC	7	10:45	17:00	10.72	0.00	0.00	-390.86	-0.03	0.00	0.91	0.00	-0.67	0.00
8	RT	Load Forecast Uncertainty	PGAE	Bay Area	11/7/2018	141.02	No	INC	10	14:00	0:00	-126.74	109627.43	2228.13	3458.71	0.00	0.00	0.00	0.00	0.00	0.00
9	RT	Load Forecast Uncertainty	PGAE	Bay Area	11/9/2018	120	No	INC	1	7:30	8:20	218.54	5867.83	7805.09	-8673.85	0.00	0.00	0.00	0.00	0.00	0.00
10	RT	Load Forecast Uncertainty	SCE	LA Basin	11/9/2018	45.24 - 51.52	No	INC	1	7:30	8:20	66.70	1503.83	0.00	-2414.30	0.45	-21.06	0.00	-10.61	0.00	0.00
11	RT	Load Forecast Uncertainty	SCE	LA Basin	11/12/2018	20 - 194	No	INC	15	9:00	0:00	516.07	0.00	0.00	-27634.66	1.88	-126.66	0.00	-102907.31	0.00	0.00
12	RT	Load Forecast Uncertainty	SCE	LA Basin	11/13/2018	65 - 194	No	INC	9	12:00	21:00	-267.64	99454.40	0.00	15443.25	6.65	-326.08	0.00	-112057.52	0.00	0.00
13	RT	Load Forecast Uncertainty	SCE	LA Basin	11/14/2018	65 - 194	No	INC	9	12:00	21:00	-160.30	104993.28	0.00	4899.40	0.04	-2.27	0.00	-120798.91	0.00	0.00
14	RT	Load Forecast Uncertainty	SCE	LA Basin	11/16/2018	20	Yes	INC	24	0:00	0:00	-48.39	265185.12	0.00	5432.96	0.00	0.00	0.00	0.00	0.00	0.00
15	RT	Load Forecast Uncertainty	SCE	LA Basin	11/19/2018	20 - 98	No	INC	18	6:00	0:00	2.69	311456.76	23544.12	-13340.71	0.00	0.00	0.00	0.00	0.00	0.00
16	RT	Load Forecast Uncertainty	SCE	LA Basin	11/20/2018	65 - 191	No	INC	5	14:30	19:00	50.73	7143.10	0.00	-2640.57	43.23	-2093.29	0.00	-122299.90	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2018 - 30/November/2018

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
17	RT	Load Forecast Uncertainty	SCE	LA Basin	11/21/2018	190	No	INC	8	13:15	21:00	26.59	0.00	0.00	-2036.02	29.91	-2249.40	0.00	-205917.97	0.00	0.00
18	RT	Load Forecast Uncertainty	SCE	LA Basin	11/24/2018	190	No	INC	6	15:40	21:00	57.75	0.00	0.00	-2923.90	58.50	-2962.25	0.00	-112403.16	0.00	0.00
19	RT	Load Forecast Uncertainty	SCE	LA Basin	11/29/2018	190 - 194	No	INC	5	16:05	21:00	75.19	0.00	0.00	-6564.71	72.68	-4809.82	0.00	-202250.48	0.00	0.00
20	RT	Load Forecast Uncertainty	SCE	LA Basin	11/30/2018	190 - 194	No	INC	7	14:15	21:00	32.73	0.00	0.00	-1923.97	40.74	-1853.94	0.00	-293997.33	0.00	0.00
21	RT	Load Forecast Uncertainty	SDGE	San Diego-IV	11/8/2018	20	No	INC	23	1:30	0:00	0.04	28662.91	0.00	-2.18	0.00	0.00	0.00	0.00	0.00	0.00
22	RT	Load Forecast Uncertainty	SDGE	San Diego-IV	11/12/2018	20 - 68	No	INC	14	8:30	22:00	574.95	0.00	0.00	-30309.07	2.07	-110.77	0.00	-2.44	0.00	0.00
23	RT	Load Pull	PGAE	Bay Area	11/17/2018	23.6	No	DEC	1	17:00	18:00	29.04	0.00	0.00	-1230.16	0.00	0.00	0.00	0.00	0.00	0.00
24	RT	Load Pull	SCE	LA Basin	11/15/2018	190 - 194	No	INC	3	16:40	19:30	-271.38	27885.74	8423.49	25965.94	0.00	0.00	0.00	0.00	0.00	0.00
25	RT	Load Pull	SCE	LA Basin	11/19/2018	65 - 190	No	INC	7	13:55	20:00	60.57	108210.34	13120.00	-28911.52	56.92	-17847.12	0.00	0.00	0.00	0.00
26	RT	Market Disruption	PGAE	Bay Area	11/15/2018	554	No	DEC	2	18:00	19:15	-64.45	0.00	0.00	4144.21	-53.56	0.00	3389.54	0.00	0.00	0.00
27	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/2/2018	32	No	DEC	5	16:00	21:00	5.97	-2273.92	0.00	-122.13	0.00	0.00	0.00	0.00	0.00	0.00
28	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/2/2018	28 - 32	No	INC	18	6:25	0:00	30.00	-9916.77	0.00	-886.67	16.95	-499.83	0.00	0.00	0.00	0.00
29	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/3/2018	42	No	DEC	1	19:45	20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/3/2018	28 - 42	No	INC	23	0:00	23:00	27.42	-1264.80	0.00	-953.62	0.81	-27.46	0.00	0.00	0.00	0.00
31	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/4/2018	32	No	INC	4	20:35	0:00	7.52	-2349.78	0.00	-194.96	6.54	-164.72	0.00	0.00	0.00	0.00
32	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/5/2018	16	No	DEC	11	1:00	12:00	16.93	-7953.11	0.00	-326.59	0.00	0.00	0.00	0.00	0.00	0.00
33	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/5/2018	15 - 32	No	INC	24	0:00	0:00	9.62	2470.25	0.00	-268.88	3.71	-94.98	0.00	0.00	0.00	0.00

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34	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/6/2018	30 - 32	No	INC	18	6:40	0:00	6.28	-1686.90	0.00	-241.01	1.96	-67.41	0.00	0.00	0.00	0.00
35	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/7/2018	32	No	INC	3	21:25	0:00	11.02	-1596.44	0.00	-381.27	6.13	-222.08	0.00	0.00	0.00	0.00
36	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/8/2018	15	No	DEC	12	12:00	0:00	4.14	-797.28	0.00	-84.98	0.00	0.00	0.00	0.00	0.00	0.00
37	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/8/2018	32	No	INC	12	0:00	12:00	15.31	-4783.68	0.00	-570.75	14.05	-526.65	0.00	0.00	0.00	0.00
38	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/9/2018	15 - 32	No	DEC	17	0:00	16:45	6.51	0.00	0.00	-188.24	0.00	0.00	0.00	0.00	0.00	0.00
39	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/9/2018	32	No	INC	15	9:55	0:00	3.71	-2591.03	0.00	-137.06	7.70	-304.39	0.00	0.00	0.00	0.00
40	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/10/2018	30 - 32	No	INC	23	0:00	22:30	22.05	-1414.32	0.00	-888.94	4.00	-159.66	0.00	0.00	0.00	0.00
41	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/11/2018	14	No	INC	1	8:15	8:30	0.02	0.00	0.00	-0.72	0.00	0.00	0.00	0.00	0.00	0.00
42	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/12/2018	32	No	INC	9	6:05	15:00	17.53	0.00	0.00	-852.85	8.48	-476.33	0.00	0.00	0.00	0.00
43	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/13/2018	32	No	DEC	3	16:00	19:00	0.65	0.00	0.00	-23.36	0.00	0.00	0.00	0.00	0.00	0.00
44	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/13/2018	32	No	INC	7	9:00	16:00	14.49	-5612.42	0.00	-696.21	12.55	-611.99	0.00	0.00	0.00	0.00
45	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/15/2018	30 - 42	No	DEC	8	15:00	23:00	1.99	0.00	0.00	-78.10	0.00	0.00	0.00	0.00	0.00	0.00
46	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/15/2018	30 - 42	No	INC	17	7:05	23:45	31.29	-721.52	0.00	-1439.51	4.29	-175.59	0.00	0.00	0.00	0.00
47	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/17/2018	32	No	DEC	1	22:40	23:00	1.33	0.00	0.00	-69.75	0.00	0.00	0.00	0.00	0.00	0.00
48	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/17/2018	32	No	INC	1	23:00	0:00	8.17	-963.72	0.00	-595.18	0.00	0.00	0.00	0.00	0.00	0.00
49	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/18/2018	16	No	DEC	8	0:45	8:00	-0.84	-241.09	0.00	38.55	0.00	0.00	0.00	0.00	0.00	0.00
50	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/18/2018	32	No	INC	1	0:00	0:45	-0.09	-723.28	0.00	7.40	0.37	-17.12	0.00	0.00	0.00	0.00
51	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/25/2018	30	No	INC	5	17:05	22:00	8.45	-5138.65	0.00	-602.59	4.01	-287.68	0.00	0.00	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2018 - 30/November/2018

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)	PGAE	Humboldt	11/26/2018	32	No	DEC	8	15:00	23:00	-1.05	0.00	0.00	126.99	0.00	0.00	0.00	0.00	0.00	0.00
53	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/26/2018	32	No	INC	18	6:50	0:00	25.00	-8654.56	0.00	-1228.68	20.18	-887.44	0.00	0.00	0.00	0.00
54	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/27/2018	16	No	DEC	4	0:45	4:45	-0.79	-269.18	0.00	33.87	0.00	0.00	0.00	0.00	0.00	0.00
55	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/27/2018	0 - 32	No	INC	24	0:00	0:00	-6.96	-1794.50	0.00	-94.49	-3.66	-110.69	0.00	0.00	0.00	0.00
56	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/28/2018	16	No	DEC	2	0:15	1:45	6.47	-1067.72	0.00	-285.25	0.00	0.00	0.00	0.00	0.00	0.00
57	RT	Operating Procedure Number and Constraint (7110)	PGAE	Humboldt	11/28/2018	32	No	INC	1	0:00	0:15	-0.80	-266.93	0.00	45.36	0.00	0.00	0.00	0.00	0.00	0.00
58	RT	Operating Procedure Number and Constraint (7630)	SCE	LA Basin	11/15/2018	65	No	INC	6	13:35	19:00	15.54	47611.61	0.00	-4421.57	0.00	-0.15	0.00	0.00	0.00	0.00
59	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/1/2018	475	No	DEC	4	17:00	21:00	-37.99	-3490.21	0.00	1253.68	0.00	0.00	0.00	0.00	0.00	0.00
60	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/1/2018	475	No	INC	1	16:15	17:00	0.00	5039.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
61	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/2/2018	477	No	DEC	1	19:00	20:00	-9.02	0.00	0.00	246.53	0.00	0.00	0.00	0.00	0.00	0.00
62	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/2/2018	477 - 482	No	INC	2	20:00	22:00	2.96	0.00	0.00	-80.86	0.00	0.00	0.00	0.00	0.00	0.00
63	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/3/2018	240 - 412	No	DEC	3	18:00	20:30	-178.43	-18941.90	0.00	3855.68	-171.88	0.00	3533.85	0.00	0.00	0.00
64	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/4/2018	475 - 480	No	DEC	2	17:00	18:30	3.00	-2588.28	0.00	-155.92	-10.64	0.00	250.30	0.00	0.00	0.00
65	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/5/2018	465	No	DEC	7	17:00	0:00	-24.11	-3480.10	0.00	473.14	0.00	0.00	0.00	0.00	0.00	0.00
66	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/5/2018	465	No	INC	6	15:50	21:00	-60.05	415.26	0.00	1536.40	0.00	0.00	0.00	0.00	0.00	0.00
67	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/6/2018	470	No	DEC	7	17:00	0:00	-1.20	-11744.72	0.00	36.94	0.00	0.00	0.00	0.00	0.00	0.00
68	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/6/2018	470	No	INC	2	15:00	17:00	-28.10	4413.00	0.00	614.83	0.00	0.00	0.00	0.00	0.00	0.00
69	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/7/2018	475	No	DEC	7	17:00	0:00	-279.10	-9945.84	0.00	6958.18	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
70	RT	Operating Procedure Number and Constraint (7720)	SCE	NA	11/7/2018	475	No	INC	1	16:00	17:00	2.71	3553.22	0.00	-69.56	0.00	0.00	0.00	0.00	0.00	0.00
71	RT	Other Reliability Requirement	PGAE	Sierra	11/13/2018	30	No	DEC	4	8:35	12:00	-3.95	0.00	0.00	-124.70	-7.96	0.00	43.76	0.00	0.00	0.00
72	RT	Other Reliability Requirement	SCE	Big Creek-Ventura	11/13/2018	500	No	DEC	1	23:15	23:45	-103.45	0.00	0.00	3894.87	-43.23	0.00	1525.67	0.00	0.00	0.00
73	RT	Other Reliability Requirement	SCE	LA Basin	11/13/2018	65 - 195	No	INC	1	23:00	23:45	61.14	6302.38	0.00	-6869.60	27.28	-5266.06	0.00	0.00	0.00	0.00
74	RT	Other Reliability Requirement	SCE	NA	11/13/2018	500	No	DEC	1	23:15	23:45	-60.77	0.86	0.00	2110.66	-43.09	0.00	1308.44	0.00	0.00	0.00
75	RT	Other Reliability Requirement	SCE	NA	11/17/2018	475	No	DEC	1	20:00	21:00	-30.26	0.00	0.00	-781.97	0.00	0.00	0.00	0.00	0.00	0.00
76	RT	Other Reliability Requirement	SCE	NA	11/17/2018	475	No	INC	3	17:55	20:00	-41.24	0.00	0.00	-215.08	0.00	0.00	0.00	0.00	0.00	0.00
77	RT	Planned Transmission Outage	PGAE	Bay Area	11/30/2018	54	No	INC	6	9:45	15:00	-0.05	22940.45	10387.13	2.14	0.00	0.00	0.00	0.00	0.00	0.00
78	RT	Planned Transmission Outage	PGAE	Fresno	11/28/2018	40	No	DEC	3	16:00	19:00	-63.20	-621.64	0.00	10140.87	0.32	-14.46	0.00	0.00	-16.14	0.00
79	RT	Planned Transmission Outage	PGAE	Fresno	11/28/2018	40 - 98	No	INC	10	14:00	0:00	78.10	51039.91	401.51	-4263.47	74.22	-3909.93	0.00	0.00	-4032.89	0.00
80	RT	Planned Transmission Outage	PGAE	Fresno	11/29/2018	44 - 98	No	INC	5	0:00	5:00	10.12	30296.77	0.00	-300.75	29.07	-1376.87	0.00	0.00	-26675.96	0.00
81	RT	Planned Transmission Outage	PGAE	Humboldt	11/1/2018	32	No	DEC	6	16:00	22:00	-4.36	0.00	0.00	180.50	0.00	0.00	0.00	0.00	0.00	0.00
82	RT	Planned Transmission Outage	PGAE	Humboldt	11/1/2018	28 - 32	No	INC	18	6:25	0:00	18.79	-8472.31	0.00	-645.68	18.83	-654.55	0.00	0.00	0.00	0.00
83	RT	Planned Transmission Outage	PGAE	Humboldt	11/2/2018	28	No	INC	2	0:00	2:00	2.22	-1515.94	0.00	-63.85	0.00	0.00	0.00	0.00	0.00	0.00
84	RT	Planned Transmission Outage	PGAE	Humboldt	11/4/2018	32	No	INC	13	7:45	20:00	23.78	-8676.12	0.00	-584.47	21.88	-528.26	0.00	0.00	-25.45	0.00
85	RT	Planned Transmission Outage	PGAE	Humboldt	11/6/2018	42	No	INC	8	8:10	16:00	26.22	-6098.80	0.00	-735.61	0.46	-12.10	0.00	0.00	0.00	0.00
86	RT	Planned Transmission Outage	PGAE	Humboldt	11/7/2018	28	No	INC	15	6:05	21:00	9.80	798.22	0.00	-308.88	0.00	0.00	0.00	0.00	0.00	0.00
87	RT	Planned Transmission Outage	PGAE	Humboldt	11/10/2018	30	No	INC	2	22:00	0:00	1.80	-1616.36	0.00	-67.81	1.00	-42.73	0.00	0.00	0.00	0.00

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88	RT	Planned Transmission Outage	PGAE	Humboldt	11/11/2018	14 - 30	No	INC	24	0:00	0:00	56.15	0.00	0.00	-2296.17	9.02	-405.88	0.00	0.00	-19.74	0.00
89	RT	Planned Transmission Outage	PGAE	Humboldt	11/12/2018	32	No	DEC	1	22:35	23:00	1.09	0.00	0.00	-42.92	-0.94	0.00	36.73	0.00	-22.72	0.00
90	RT	Planned Transmission Outage	PGAE	Humboldt	11/12/2018	14 - 32	No	INC	24	0:00	0:00	6.17	0.00	0.00	-278.63	3.19	-138.26	0.00	0.00	0.00	0.00
91	RT	Planned Transmission Outage	PGAE	Humboldt	11/13/2018	16	No	DEC	2	1:35	3:00	-1.16	-138.58	0.00	43.34	-0.09	0.00	3.61	0.00	-7.52	0.00
92	RT	Planned Transmission Outage	PGAE	Humboldt	11/13/2018	32	No	INC	2	0:00	1:30	2.97	-1247.21	0.00	-129.37	2.30	-96.75	0.00	0.00	0.00	0.00
93	RT	Planned Transmission Outage	PGAE	Humboldt	11/14/2018	14	No	DEC	6	1:00	6:25	-4.43	0.00	0.00	192.54	0.00	0.00	0.00	0.00	0.00	0.00
94	RT	Planned Transmission Outage	PGAE	Humboldt	11/14/2018	30 - 45	No	INC	21	0:00	20:45	29.41	-11404.41	0.00	-1033.62	5.21	-207.08	0.00	0.00	0.00	0.00
95	RT	Planned Transmission Outage	PGAE	NA	11/3/2018	30 - 46	No	INC	6	17:30	23:00	15.99	13303.10	1606.98	-569.48	0.00	0.00	0.00	0.00	-2330.82	0.00
96	RT	Planned Transmission Outage	PGAE	NA	11/4/2018	30	No	INC	5	0:00	3:30	0.14	13303.10	0.00	-10.15	0.00	0.00	0.00	0.00	0.00	0.00
97	RT	Planned Transmission Outage	PGAE	NA	11/6/2018	32	No	INC	12	12:45	0:00	-8.73	18165.94	5401.56	227.70	0.00	0.00	0.00	0.00	0.00	0.00
98	RT	Planned Transmission Outage	PGAE	NA	11/7/2018	32	Yes	INC	24	0:00	0:00	-35.55	43194.00	0.00	887.07	0.00	0.00	0.00	0.00	0.00	0.00
99	RT	Planned Transmission Outage	PGAE	NA	11/8/2018	32	Yes	INC	24	0:00	0:00	-14.20	42963.84	0.00	374.34	0.00	0.00	0.00	0.00	0.00	0.00
100	RT	Planned Transmission Outage	PGAE	NA	11/9/2018	32	Yes	INC	24	0:00	0:00	-25.79	44324.16	0.00	715.98	0.00	0.00	0.00	0.00	0.00	0.00
101	RT	Planned Transmission Outage	PGAE	NA	11/10/2018	32	No	INC	24	0:00	0:00	-31.36	44737.92	0.00	865.01	0.00	0.00	0.00	0.00	0.00	0.00
102	RT	Planned Transmission Outage	PGAE	NA	11/11/2018	32	Yes	INC	24	0:00	0:00	-6.33	44745.36	0.00	179.94	0.00	0.00	0.00	0.00	0.00	0.00
103	RT	Planned Transmission Outage	PGAE	NA	11/12/2018	32	Yes	INC	24	0:00	0:00	-31.61	44745.36	0.00	774.09	0.00	0.00	0.00	0.00	0.00	0.00
104	RT	Planned Transmission Outage	PGAE	NA	11/13/2018	32	Yes	INC	24	0:00	0:00	5.99	50404.56	0.00	-220.05	0.00	0.00	0.00	0.00	0.00	0.00
105	RT	Planned Transmission Outage	PGAE	NA	11/14/2018	32	No	INC	12	0:00	11:45	-20.68	26175.47	0.00	664.33	0.00	0.00	0.00	0.00	0.00	0.00

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106	RT	Planned Transmission Outage	PGAE	Sierra	11/12/2018	42	No	INC	9	11:00	20:00	380.16	0.00	0.00	-17846.75	0.00	0.00	0.00	0.00	0.00	0.00
107	RT	Planned Transmission Outage	PGAE	Sierra	11/13/2018	42	No	INC	4	7:00	11:00	169.49	0.00	0.00	-5629.66	0.00	0.00	0.00	0.00	0.00	0.00
108	RT	Planned Transmission Outage	PGAE	Sierra	11/15/2018	24	No	DEC	4	15:00	19:00	0.75	0.00	0.00	-32.37	0.00	0.00	0.00	0.00	0.00	0.00
109	RT	Planned Transmission Outage	PGAE	Sierra	11/15/2018	24	No	INC	3	12:00	15:00	71.54	0.00	0.00	-2759.85	71.50	-2765.11	0.00	0.00	0.00	0.00
110	RT	Planned Transmission Outage	PGAE	Sierra	11/16/2018	5 – 15	No	INC	4	5:45	9:30	28.72	0.00	0.00	-3591.19	19.53	-2694.35	0.00	0.00	0.00	0.00
111	RT	Planned Transmission Outage	PGAE	Stockton	11/3/2018	50 - 67	No	INC	6	17:15	23:00	3.37	0.00	0.00	59.56	0.00	0.00	0.00	0.00	-5087.71	0.00
112	RT	Planned Transmission Outage	PGAE	Stockton	11/4/2018	10 - 30	No	INC	4	0:00	2:45	12.52	0.00	0.00	-395.86	0.00	0.00	0.00	0.00	0.00	0.00
113	RT	Planned Transmission Outage	PGAE	Stockton	11/28/2018	34 - 200	No	DEC	17	5:00	22:00	-14.19	0.00	3223.02	645.52	3.62	-174.39	0.00	0.00	-8.12	0.00
114	RT	Planned Transmission Outage	PGAE	Stockton	11/28/2018	34 - 200	No	INC	23	0:40	23:00	422.01	90551.81	7251.80	-22891.85	182.15	-10560.24	0.00	0.00	-236.74	0.00
115	RT	Planned Transmission Outage	SCE	Big Creek-Ventura	11/14/2018	54	No	INC	2	18:00	20:00	9.00	0.00	0.00	-624.82	0.03	-1.83	0.00	0.00	0.00	0.00
116	RT	Planned Transmission Outage	SCE	LA Basin	11/1/2018	46 - 247.1	Yes	INC	2	21:05	22:30	380.14	0.00	0.00	-14906.06	245.27	-9998.32	0.00	0.00	-34.74	0.00
117	RT	Planned Transmission Outage	SCE	LA Basin	11/3/2018	10 – 20	Yes	INC	19	4:30	23:00	6.96	84365.09	46487.79	-17.98	0.00	0.00	0.00	0.00	0.00	0.00
118	RT	Planned Transmission Outage	SCE	LA Basin	11/4/2018	10 – 20	Yes	INC	25	0:00	0:00	26.09	157556.25	0.00	-791.61	0.00	0.00	0.00	0.00	0.00	0.00
119	RT	Planned Transmission Outage	SCE	LA Basin	11/5/2018	10 - 70	Yes	INC	24	0:00	0:00	57.54	215896.30	0.00	-854.78	0.00	0.00	0.00	0.00	0.00	0.00
120	RT	Planned Transmission Outage	SCE	LA Basin	11/6/2018	70	No	INC	2	0:00	2:00	0.00	15936.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
121	RT	Planned Transmission Outage	SCE	LA Basin	11/12/2018	10 – 20	No	INC	2	22:25	0:00	65.44	0.00	0.00	-3191.38	0.00	0.00	0.00	0.00	0.00	0.00
122	RT	Planned Transmission Outage	SCE	LA Basin	11/13/2018	10 – 20	No	INC	24	0:00	0:00	186.36	116037.76	0.00	-11827.50	0.00	0.00	0.00	0.00	0.00	0.00
123	RT	Planned Transmission Outage	SCE	LA Basin	11/14/2018	10 – 20	No	INC	24	0:00	0:00	254.88	142612.71	0.00	-17364.96	0.00	0.00	0.00	0.00	0.00	0.00

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124	RT	Planned Transmission Outage	SCE	NA	11/1/2018	68	No	DEC	6	11:15	17:00	-49.48	0.00	0.00	-3820.93	-37.55	0.00	-2974.54	0.00	-846.58	0.00
125	RT	Planned Transmission Outage	SCE	NA	11/7/2018	125 - 300	No	INC	7	8:00	15:00	-17.58	79289.42	0.00	695.33	0.00	0.00	0.00	0.00	-7.46	0.00
126	RT	Planned Transmission Outage	SCE	NA	11/13/2018	200	No	DEC	24	0:00	0:00	281.12	38.48	0.00	-22673.85	-43.09	0.00	1308.44	0.00	0.00	0.00
127	RT	Planned Transmission Outage	SCE	NA	11/14/2018	125.1 - 200	No	DEC	24	0:00	0:00	-247.67	-64719.20	0.00	13543.18	-11.75	0.00	2630.54	0.00	-19704.61	0.00
128	RT	Planned Transmission Outage	SCE	NA	11/14/2018	150	No	INC	6	9:40	15:00	-4.62	43851.17	0.00	10.68	0.00	0.00	0.00	0.00	0.00	0.00
129	RT	Planned Transmission Outage	SCE	NA	11/15/2018	125.1 - 200	No	DEC	24	0:00	0:00	-60.34	-134235.14	0.00	882.52	0.00	0.00	0.00	0.00	-21162.76	0.00
130	RT	Planned Transmission Outage	SCE	NA	11/16/2018	200	No	DEC	24	0:00	0:00	-140.32	16.77	0.00	5076.50	0.00	0.00	0.00	0.00	0.00	0.00
131	RT	Planned Transmission Outage	SCE	NA	11/17/2018	200	No	DEC	24	0:00	0:00	109.64	33873.52	0.00	-5477.39	0.00	0.00	0.00	0.00	0.00	0.00
132	RT	Planned Transmission Outage	SCE	NA	11/18/2018	200	No	DEC	24	0:00	0:00	628.69	33992.86	0.00	-35248.70	0.00	0.00	0.00	0.00	0.00	0.00
133	RT	Planned Transmission Outage	SCE	NA	11/19/2018	200	No	DEC	24	0:00	0:00	-68.50	34108.83	0.00	185.36	0.00	0.00	0.00	0.00	0.00	0.00
134	RT	Planned Transmission Outage	SCE	NA	11/20/2018	200	No	DEC	24	0:00	0:00	-161.26	236.27	0.00	6148.48	0.00	0.00	0.00	0.00	0.00	0.00
135	RT	Planned Transmission Outage	SCE	NA	11/21/2018	200	No	DEC	18	0:00	17:45	46.48	-31900.59	0.00	-5080.76	0.00	0.00	0.00	0.00	0.00	0.00
136	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/1/2018	20 - 270	No	INC	17	5:30	22:00	-1.68	127917.66	25438.09	-9161.31	63.41	-3081.49	0.00	0.00	-42606.04	0.00
137	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/5/2018	20	No	INC	2	4:30	6:00	0.00	3943.47	0.00	-0.03	0.00	0.00	0.00	0.00	0.00	0.00
138	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/6/2018	20 - 155	No	INC	22	2:00	0:00	-780.34	353234.74	16624.74	57124.67	0.00	0.00	0.00	0.00	0.00	0.00
139	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/7/2018	20 - 68	No	INC	24	0:00	0:00	443.44	151755.29	0.00	-58999.03	2.11	-96.17	0.00	0.00	-3.78	0.00
140	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/8/2018	20 - 68	No	INC	22	0:00	22:00	1524.90	131901.98	0.00	-188465.74	0.00	0.00	0.00	0.00	0.00	0.00
141	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/19/2018	30	No	DEC	2	17:00	19:00	-2.43	-4277.61	429.00	135.83	1.90	-125.71	0.00	0.00	-109.02	0.00

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142	RT	Planned Transmission Outage	SDGE	San Diego-IV	11/19/2018	30	No	INC	1	16:30	17:00	0.69	0.00	0.00	0.30	3.76	-295.24	0.00	0.00	-160.72	0.00
143	RT	Software Limitation	PGAE	Bay Area	11/1/2018	0	No	INC	1	0:00	0:40	-30.00	0.00	0.00	0.00	-30.00	0.00	0.00	0.00	0.00	0.00
144	RT	Software Limitation	PGAE	Humboldt	11/1/2018	32.1	No	INC	1	23:30	0:00	-4.05	0.00	0.00	124.66	0.00	0.00	0.00	0.00	0.00	0.00
145	RT	Software Limitation	PGAE	NA	11/2/2018	0	No	DEC	1	20:30	21:10	-78.46	-3975.82	0.00	877.71	-75.32	0.00	769.50	0.00	0.00	0.00
146	RT	Software Limitation	SCE	LA Basin	11/9/2018	152	No	INC	2	9:35	11:00	4.66	26721.10	0.00	-211.69	4.64	-211.25	0.00	0.00	0.00	0.00
147	RT	Software Limitation	SDGE	San Diego-IV	11/5/2018	63	No	INC	3	6:00	9:00	18.10	8241.54	0.00	-639.72	0.00	0.00	0.00	0.00	0.00	0.00
148	RT	Unit Testing	SDGE	NA	11/6/2018	220 - 330	No	INC	2	13:05	15:00	196.09	0.00	0.00	-11487.38	193.80	-11354.39	0.00	0.00	0.00	0.00
149	RT	Unit Testing	SDGE	NA	11/7/2018	162 - 330	No	INC	6	10:25	16:00	319.57	0.00	0.00	-13183.35	227.73	-9531.56	0.00	0.00	0.00	0.00
150	RT	Unit Testing	SDGE	NA	11/15/2018	24 - 422	No	INC	13	7:10	19:30	1109.19	0.00	0.00	-57170.76	622.30	-35958.67	0.00	0.00	0.00	0.00
151	RT	Unit Testing	SDGE	NA	11/16/2018	105 - 422	No	INC	4	15:40	19:30	589.90	0.00	0.00	-38057.48	457.29	-29456.91	0.00	0.00	0.00	0.00
152	RT	Unit Testing	SDGE	NA	11/17/2018	105 - 422	No	INC	13	7:30	19:45	1167.80	0.00	0.00	-45402.65	899.82	-34931.57	0.00	0.00	0.00	0.00
153	RT	Unit Testing	SDGE	NA	11/18/2018	105 - 422	No	INC	10	12:45	22:15	946.42	0.00	0.00	-41718.29	729.27	-32145.67	0.00	0.00	0.00	0.00
154	RT	Unit Testing	SDGE	NA	11/19/2018	315 - 422	No	INC	6	10:00	16:00	71.57	0.00	0.00	-5979.07	116.73	-7902.97	0.00	0.00	0.00	0.00
155	RT	Unit Testing	SDGE	NA	11/20/2018	48 - 320	No	INC	10	7:00	16:10	143.61	0.00	0.00	-8181.31	166.63	-8178.71	0.00	0.00	0.00	0.00
156	RT	Unit Testing	SDGE	NA	11/26/2018	105 - 422	No	INC	10	11:15	20:30	893.29	0.00	0.00	-54225.77	733.64	-44521.15	0.00	0.00	0.00	0.00
157	RT	Unit Testing	SDGE	NA	11/27/2018	400	No	DEC	1	18:00	19:00	79.42	-8835.04	0.00	-5724.22	0.00	0.00	0.00	0.00	0.00	0.00
158	RT	Unit Testing	SDGE	NA	11/27/2018	100 - 400	Yes	INC	17	6:00	22:45	2354.79	-2208.76	0.00	-123144.03	2002.00	-104901.82	0.00	0.00	0.00	0.00
159	RT	Unit Testing	SDGE	NA	11/28/2018	100 - 400	Yes	INC	7	6:15	13:00	718.42	0.00	0.00	-38401.75	551.27	-29023.98	0.00	0.00	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2018 - 30/November/2018

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	SDGE	NA	11/30/2018	100	No	INC	3	14:00	17:00	-10.37	0.00	0.00	2251.25	17.96	-816.08	0.00	0.00	0.00	0.00
161	RT	Unplanned Outage	PGAE	Sierra	11/8/2018	42	Yes	INC	1	23:00	0:00	36.33	0.00	0.00	-1533.99	0.00	0.00	0.00	0.00	0.00	0.00
162	RT	Unplanned Outage	PGAE	Sierra	11/9/2018	42	No	INC	7	0:00	7:00	298.29	0.00	0.00	-11050.10	0.00	0.00	0.00	0.00	0.00	0.00
163	RT	Unplanned Outage	SDGE	San Diego-IV	11/8/2018	20	No	INC	2	22:00	0:00	136.00	0.00	0.00	-5769.26	0.00	0.00	0.00	0.00	0.00	0.00
164	RT	Unplanned Outage	SDGE	San Diego-IV	11/9/2018	20 - 290	No	INC	24	0:00	0:00	3870.23	125667.55	0.00	-160252.71	2.34	-82.54	0.00	-34.30	0.00	0.00
165	RT	Unplanned Outage	SDGE	San Diego-IV	11/10/2018	20	No	INC	22	0:00	22:00	1495.29	0.00	0.00	-49253.47	0.00	0.00	0.00	0.00	0.00	0.00
166	RT	Voltage Support	PGAE	Fresno	11/17/2018	83	No	INC	1	23:20	23:30	-2.77	0.00	0.00	185.25	0.00	0.00	0.00	0.00	0.00	0.00
167	RT	Voltage Support	PGAE	Fresno	11/18/2018	83	No	INC	8	0:00	8:00	75.20	83889.60	0.00	-5039.81	0.00	0.00	0.00	0.00	0.00	0.00
168	RT	Voltage Support	PGAE	Fresno	11/28/2018	-308	No	DEC	4	2:05	5:30	-44.73	0.00	0.00	2500.79	0.00	0.00	0.00	0.00	0.00	0.00
169	RT	Voltage Support	PGAE	Sierra	11/17/2018	1 - 25	Yes	INC	5	2:00	7:00	8.57	0.00	0.00	-397.33	9.18	-416.93	0.00	0.00	0.00	0.00
170	RT	Voltage Support	SCE	NA	11/1/2018	200	No	DEC	24	0:00	0:00	9.75	27937.91	0.00	-956.13	0.00	0.00	0.00	0.00	0.00	0.00
171	RT	Voltage Support	SCE	NA	11/2/2018	200	No	DEC	24	0:00	0:00	-45.78	-6.55	0.00	1012.18	0.00	0.00	0.00	0.00	0.00	0.00
172	RT	Voltage Support	SCE	NA	11/5/2018	200	No	DEC	7	17:20	0:00	-25.99	0.00	0.00	813.45	0.00	0.00	0.00	0.00	0.00	0.00
173	RT	Voltage Support	SCE	NA	11/6/2018	200	No	DEC	24	0:00	0:00	4240.37	-4827.22	0.00	-128100.54	0.00	0.00	0.00	0.00	-12433.90	0.00
174	RT	Voltage Support	SCE	NA	11/7/2018	200	No	DEC	10	14:00	0:00	-42.23	-4957.35	0.00	1840.35	0.00	0.00	0.00	0.00	0.00	0.00
175	RT	Voltage Support	SCE	NA	11/7/2018	200	No	INC	14	0:00	14:00	10.74	25679.24	0.00	-554.91	0.00	0.00	0.00	0.00	0.00	0.00
176	RT	Voltage Support	SCE	NA	11/8/2018	200	No	DEC	24	0:00	0:00	-188.96	31.07	0.00	2972.27	0.00	0.00	0.00	0.00	0.00	0.00
177	RT	Voltage Support	SCE	NA	11/9/2018	200	No	DEC	24	0:00	0:00	-582.04	12484.12	0.00	20403.77	0.00	0.00	0.00	0.00	0.00	0.00

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Chart 2: Table of Exceptional Dispatches for Period 01/November/2018 - 30/November/2018

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	Voltage Support	SCE	NA	11/10/2018	200	No	DEC	24	0:00	0:00	-84.95	-17.22	0.00	2612.06	0.00	0.00	0.00	0.00	0.00	0.00
179	RT	Voltage Support	SCE	NA	11/11/2018	200	No	DEC	24	0:00	0:00	91.93	0.00	0.00	-4367.60	0.00	0.00	0.00	0.00	0.00	0.00
180	RT	Voltage Support	SCE	NA	11/12/2018	200	No	DEC	24	0:00	0:00	-130.99	0.01	0.00	3406.16	0.00	0.00	0.00	0.00	0.00	0.00

Appendix A: Explanation by Example

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

Example 1: Exceptional Dispatch Instructions Prior to DAM

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

Table 2: Instructions Prior to Day-Ahead Market

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

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

Table 3: FERC Summary of Instructions Prior to DAM

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

Example 2: Incremental Exceptional Dispatch Instructions in RTM

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

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

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

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

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

Table 4: Incremental Exceptional Dispatch Instructions in RTM

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

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

Table 5: FERC Summary of ED Instructions in RTM

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

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

Example 3: Decremental Exceptional Dispatch Instructions in RTM

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

Resource A is committed in real-time at its Pmin, its total volume (MWh) is 20MW *6 hours which 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 resource were broken down into five-minute intervals. If the begin time or end time for an instruction was in the middle of the five-minute interval, that instruction was rounded up to the next five-minute interval. These five-minute intervals were then coupled with resource five-minute LMPs calculated by the real-time market application. Also, the hourly bid information and the hourly day-ahead schedule were put together to create a dataset that had all the information to perform price impact analysis.

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

Table 8 shows the price impact analysis information for node A, which is in the PGAE area. This table shows all the five minute intervals in which the resource at PNode A was issued an exceptional dispatch instruction. Out of the 8,064 five-minute intervals in November, this resource was issued exceptional dispatch instructions in 75 five-minute intervals. This resource was eligible to set the LMP in 75 intervals. Out of the 75 intervals, resource calculated LMP was larger than the market LMP in 72 intervals. In the 72 intervals, the average increase in five minute LMP was $97.51/MWh. Out of the 75 intervals, resource calculated LMP was less than the market LMP in 3 intervals. In the 3 intervals, the average decrease in five minute LMP was $111.51/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 $89.14/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 November, this resource was issued exceptional dispatch instructions in 853 five-minute intervals. This resource was eligible to set the LMP in 603 intervals. Out of the 603 intervals, resource calculated LMP was larger than the market LMP in 255 intervals. In the 255 intervals, the average increase in five minute LMP was $9.03/MWh. Out of the 603 intervals, resource calculated LMP was less than the market LMP in 348 intervals. In the 348 intervals, the average decrease in five minute LMP was $17.57/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 $6.32/MWh

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

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
1	11/28/2018	23	10	50.55	Yes	155.5	104.95
2	11/28/2018	23	11	52.24	Yes	155.5	103.26
3	11/28/2018	23	12	48.88	Yes	155.5	106.62
4	11/28/2018	24	1	54.69	Yes	96.22	41.53
5	11/28/2018	24	2	56.21	Yes	96.22	40.01
6	11/28/2018	24	3	55.03	Yes	96.22	41.19
7	11/28/2018	24	4	53.76	Yes	96.22	42.46
8	11/28/2018	24	5	54.28	Yes	96.22	41.94
9	11/28/2018	24	6	51.99	Yes	96.22	44.23
10	11/28/2018	24	7	49.98	Yes	96.22	46.24
11	11/28/2018	24	8	49.98	Yes	96.22	46.24
12	11/28/2018	24	9	49.98	Yes	96.22	46.24
13	11/28/2018	24	10	44.65	Yes	96.22	51.57
14	11/28/2018	24	11	44.65	Yes	96.22	51.57
15	11/28/2018	24	12	44.65	Yes	96.22	51.57
16	11/29/2018	1	1	44.65	Yes	159.5	114.85
17	11/29/2018	1	2	44.65	Yes	159.5	114.85
18	11/29/2018	1	3	44.65	Yes	159.5	114.85
19	11/29/2018	1	4	44.00	Yes	159.5	115.50
20	11/29/2018	1	5	51.10	Yes	159.5	108.40
21	11/29/2018	1	6	45.00	Yes	159.5	114.50
22	11/29/2018	1	7	45.53	Yes	159.5	113.97
23	11/29/2018	1	8	44.00	Yes	159.5	115.50
24	11/29/2018	1	9	38.93	Yes	159.5	120.57
25	11/29/2018	1	10	37.11	Yes	159.5	122.39
26	11/29/2018	1	11	35.80	Yes	159.5	123.70
27	11/29/2018	1	12	31.39	Yes	159.5	128.11
28	11/29/2018	2	1	51.73	Yes	159.5	107.77
29	11/29/2018	2	2	49.02	Yes	159.5	110.48
30	11/29/2018	2	3	45.53	Yes	159.5	113.97
31	11/29/2018	2	4	45.53	Yes	159.5	113.97
32	11/29/2018	2	5	45.00	Yes	159.5	114.50
33	11/29/2018	2	6	47.06	Yes	159.5	112.44
34	11/29/2018	2	7	48.69	Yes	159.5	110.81

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
35	11/29/2018	2	8	50.80	Yes	159.5	108.70
36	11/29/2018	2	9	54.66	Yes	159.5	104.84
37	11/29/2018	2	10	52.66	Yes	159.5	106.84
38	11/29/2018	2	11	54.53	Yes	159.5	104.97
39	11/29/2018	2	12	56.12	Yes	159.5	103.38
40	11/29/2018	3	1	52.82	Yes	159.5	106.68
41	11/29/2018	3	2	55.23	Yes	159.5	104.27
42	11/29/2018	3	3	52.82	Yes	159.5	106.68
43	11/29/2018	3	4	55.41	Yes	159.5	104.09
44	11/29/2018	3	5	52.12	Yes	159.5	107.38
45	11/29/2018	3	6	51.09	Yes	159.5	108.41
46	11/29/2018	3	7	51.94	Yes	159.5	107.56
47	11/29/2018	3	8	51.21	Yes	159.5	108.29
48	11/29/2018	3	9	50.01	Yes	159.5	109.49
49	11/29/2018	3	10	50.13	Yes	159.5	109.37
50	11/29/2018	3	11	50.26	Yes	159.5	109.24
51	11/29/2018	3	12	50.06	Yes	159.5	109.44
52	11/29/2018	4	1	53.13	Yes	159.5	106.37
53	11/29/2018	4	2	55.54	Yes	159.5	103.96
54	11/29/2018	4	3	54.85	Yes	159.5	104.65
55	11/29/2018	4	4	58.91	Yes	159.5	100.59
56	11/29/2018	4	5	57.17	Yes	159.5	102.33
57	11/29/2018	4	6	57.17	Yes	159.5	102.33
58	11/29/2018	4	7	58.90	Yes	159.5	100.60
59	11/29/2018	4	8	58.90	Yes	159.5	100.60
60	11/29/2018	4	9	58.96	Yes	159.5	100.54
61	11/29/2018	4	10	58.98	Yes	159.5	100.52
62	11/29/2018	4	11	58.92	Yes	159.5	100.58
63	11/29/2018	4	12	56.25	Yes	159.5	103.25
64	11/29/2018	5	1	322.37	Yes	159.5	-162.87
65	11/29/2018	5	2	329.62	Yes	159.5	-170.12
66	11/29/2018	5	3	161.05	Yes	159.5	-1.55
67	11/29/2018	5	4	54.42	Yes	159.5	105.08
68	11/29/2018	5	5	54.42	Yes	159.5	105.08
69	11/29/2018	5	6	54.42	Yes	159.5	105.08
70	11/29/2018	5	7	55.07	Yes	159.5	104.43
71	11/29/2018	5	8	57.03	Yes	159.5	102.47
72	11/29/2018	5	9	57.04	Yes	159.5	102.46

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
73	11/29/2018	5	10	58.15	Yes	159.5	101.35
74	11/29/2018	5	11	63.31	Yes	159.5	96.19
75	11/29/2018	5	12	57.74	Yes	159.5	101.76

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

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
1	11/1/2018	17	4	-17.24	No	35.95	53.19
2	11/1/2018	17	5	-16.73	No	35.95	52.68
3	11/1/2018	17	6	-6.32	No	35.95	42.27
4	11/1/2018	17	7	-75.67	No	35.95	111.62
5	11/1/2018	17	8	-15.25	No	35.95	51.20
6	11/1/2018	17	9	41.00	No	35.95	-5.05
7	11/1/2018	17	10	59.61	No	35.95	-23.66
8	11/1/2018	17	11	57.95	No	35.95	-22.00
9	11/1/2018	17	12	56.07	No	35.95	-20.12
10	11/1/2018	18	1	24.76	No	35.95	11.19
11	11/1/2018	18	2	26.71	No	35.95	9.24
12	11/1/2018	18	3	24.77	No	35.95	11.18
13	11/1/2018	18	4	28.02	No	35.95	7.93
14	11/1/2018	18	5	33.02	No	35.95	2.93
15	11/1/2018	18	6	37.14	No	35.95	-1.19
16	11/1/2018	18	7	39.28	No	35.95	-3.33
17	11/1/2018	18	8	38.38	No	35.95	-2.43
18	11/1/2018	18	9	39.02	No	35.95	-3.07
19	11/1/2018	18	10	39.84	No	35.95	-3.89
20	11/1/2018	18	11	39.46	No	35.95	-3.51
21	11/1/2018	18	12	40.47	No	35.95	-4.52
22	11/1/2018	19	1	38.75	No	35.95	-2.80
23	11/1/2018	19	2	38.24	No	35.95	-2.29
24	11/1/2018	19	3	38.26	No	35.95	-2.31
25	11/1/2018	19	4	38.50	No	35.95	-2.55
26	11/1/2018	19	5	37.34	No	35.95	-1.39
27	11/1/2018	19	6	38.53	No	35.95	-2.58
28	11/1/2018	19	7	46.25	No	35.95	-10.30
29	11/1/2018	19	8	41.63	No	35.95	-5.68
30	11/1/2018	19	9	38.49	No	35.95	-2.54
31	11/1/2018	19	10	33.33	No	35.95	2.62
32	11/1/2018	19	11	32.88	No	35.95	3.07
33	11/1/2018	19	12	38.49	No	35.95	-2.54
34	11/1/2018	20	1	47.56	No	35.95	-11.61

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
35	11/1/2018	20	2	40.51	No	35.95	-4.56
36	11/1/2018	20	3	39.78	No	35.95	-3.83
37	11/1/2018	20	4	40.51	No	35.95	-4.56
38	11/1/2018	20	5	40.51	No	35.95	-4.56
39	11/1/2018	20	6	41.37	No	35.95	-5.42
40	11/1/2018	20	7	-55.17	No	35.95	91.12
41	11/1/2018	20	8	37.01	No	35.95	-1.06
42	11/1/2018	20	9	35.59	No	35.95	0.36
43	11/1/2018	20	10	33.69	No	35.95	2.26
44	11/1/2018	20	11	32.27	No	35.95	3.68
45	11/1/2018	20	12	32.35	No	35.95	3.60
46	11/1/2018	21	1	44.10	No	35.95	-8.15
47	11/1/2018	21	2	41.44	No	35.95	-5.49
48	11/1/2018	21	3	36.84	No	35.95	-0.89
49	11/1/2018	21	4	34.40	No	35.95	1.55
50	11/1/2018	21	5	33.95	No	35.95	2.00
51	11/1/2018	21	6	32.78	No	35.95	3.17
52	11/1/2018	21	7	32.20	No	29.90	-2.30
53	11/1/2018	21	8	32.45	No	29.90	-2.55
54	11/1/2018	21	9	32.51	No	29.90	-2.61
55	11/1/2018	21	10	32.69	No	29.90	-2.79
56	11/1/2018	21	11	32.08	No	29.90	-2.18
57	11/1/2018	21	12	31.71	No	29.90	-1.81
58	11/2/2018	20	1	27.81	Yes	33.50	5.69
59	11/2/2018	20	2	27.50	Yes	33.50	6.01
60	11/2/2018	20	3	27.48	Yes	33.50	6.02
61	11/2/2018	20	4	27.60	Yes	33.50	5.90
62	11/2/2018	20	5	27.60	Yes	33.50	5.90
63	11/2/2018	20	6	25.98	Yes	33.50	7.52
64	11/2/2018	20	7	26.35	Yes	33.50	7.15
65	11/2/2018	20	8	26.56	Yes	33.50	6.94
66	11/2/2018	20	9	26.15	Yes	33.50	7.35
67	11/2/2018	20	10	25.97	Yes	33.50	7.53
68	11/2/2018	20	11	25.59	Yes	33.50	7.91
69	11/2/2018	20	12	25.13	Yes	33.50	8.37
70	11/2/2018	21	1	26.77	Yes	33.50	6.73
71	11/2/2018	21	2	54.63	Yes	33.50	-21.13
72	11/2/2018	21	3	32.60	Yes	33.50	0.90

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
73	11/2/2018	21	4	29.63	Yes	33.50	3.87
74	11/2/2018	21	5	29.84	Yes	33.50	3.66
75	11/2/2018	21	6	30.12	Yes	33.50	3.38
76	11/2/2018	21	7	30.68	Yes	33.50	2.82
77	11/2/2018	21	8	30.68	Yes	33.50	2.82
78	11/2/2018	21	9	29.64	Yes	33.50	3.86
79	11/2/2018	21	10	27.33	Yes	33.50	6.17
80	11/2/2018	21	11	27.33	Yes	33.50	6.17
81	11/2/2018	21	12	28.70	Yes	33.50	4.80
82	11/2/2018	22	1	31.81	Yes	33.50	1.69
83	11/2/2018	22	2	33.23	Yes	33.50	0.27
84	11/2/2018	22	3	33.23	Yes	33.50	0.27
85	11/2/2018	22	4	32.57	Yes	33.50	0.93
86	11/2/2018	22	5	32.57	Yes	33.50	0.93
87	11/2/2018	22	6	29.93	Yes	33.50	3.57
88	11/2/2018	22	7	30.28	Yes	33.50	3.22
89	11/2/2018	22	8	28.65	Yes	33.50	4.85
90	11/2/2018	22	9	28.65	Yes	33.50	4.85
91	11/2/2018	22	10	26.46	Yes	33.50	7.04
92	11/2/2018	22	11	26.29	Yes	33.50	7.21
93	11/2/2018	22	12	25.96	Yes	33.50	7.54
94	11/3/2018	19	1	31.33	Yes	20.56	-10.77
95	11/3/2018	19	2	31.33	Yes	20.56	-10.77
96	11/3/2018	19	3	32.17	No	17.60	-14.57
97	11/3/2018	19	4	45.41	No	20.56	-24.85
98	11/3/2018	19	5	31.50	Yes	20.56	-10.94
99	11/3/2018	19	6	31.23	Yes	20.56	-10.67
100	11/3/2018	19	7	30.48	No	20.56	-9.92
101	11/3/2018	19	8	32.45	No	20.56	-11.89
102	11/3/2018	19	9	30.44	No	20.56	-9.88
103	11/3/2018	19	10	33.57	Yes	20.56	-13.01
104	11/3/2018	19	11	31.42	Yes	20.56	-10.86
105	11/3/2018	19	12	30.09	No	20.56	-9.53
106	11/3/2018	20	1	35.74	No	20.56	-15.18
107	11/3/2018	20	2	41.85	No	20.56	-21.29
108	11/3/2018	20	3	40.62	No	20.56	-20.06
109	11/3/2018	20	4	38.70	No	20.56	-18.14
110	11/3/2018	20	5	37.08	No	20.56	-16.52

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
111	11/3/2018	20	6	31.33	No	20.56	-10.77
112	11/3/2018	20	7	32.03	No	20.56	-11.47
113	11/3/2018	20	8	31.57	No	20.56	-11.01
114	11/3/2018	20	9	29.34	No	20.56	-8.78
115	11/3/2018	20	10	29.79	No	20.56	-9.23
116	11/3/2018	20	11	29.31	No	20.56	-8.75
117	11/3/2018	20	12	29.31	No	20.56	-8.75
118	11/3/2018	21	1	37.33	No	20.56	-16.77
119	11/3/2018	21	2	38.61	No	20.56	-18.05
120	11/3/2018	21	3	38.49	No	20.56	-17.93
121	11/3/2018	21	4	37.89	No	20.56	-17.33
122	11/3/2018	21	5	36.41	No	20.56	-15.85
123	11/3/2018	21	6	34.23	No	20.56	-13.67
124	11/4/2018	18	1	27.34	Yes	24.43	-2.91
125	11/4/2018	18	2	26.71	Yes	24.43	-2.28
126	11/4/2018	18	3	24.44	Yes	24.43	-0.01
127	11/4/2018	18	4	26.33	Yes	24.43	-1.90
128	11/4/2018	18	5	27.09	Yes	24.43	-2.66
129	11/4/2018	18	6	26.56	Yes	24.43	-2.13
130	11/4/2018	18	7	27.49	Yes	24.43	-3.06
131	11/4/2018	18	8	30.05	Yes	24.43	-5.62
132	11/4/2018	18	9	30.15	No	21.07	-9.08
133	11/4/2018	18	10	28.55	No	21.07	-7.48
134	11/4/2018	18	11	29.50	No	21.07	-8.43
135	11/4/2018	18	12	30.13	No	21.07	-9.06
136	11/4/2018	19	1	30.82	No	24.43	-6.39
137	11/4/2018	19	2	37.08	No	24.43	-12.65
138	11/4/2018	19	3	35.06	No	24.43	-10.63
139	11/4/2018	19	4	39.16	No	24.43	-14.73
140	11/4/2018	19	5	37.45	No	24.43	-13.02
141	11/4/2018	19	6	30.31	No	24.43	-5.88
142	11/5/2018	16	11	51.15	No	17.59	-33.56
143	11/5/2018	16	12	63.35	No	17.59	-45.76
144	11/5/2018	17	1	21.05	No	20.56	-0.49
145	11/5/2018	17	2	19.55	No	20.56	1.01
146	11/5/2018	17	3	22.92	No	20.56	-2.36
147	11/5/2018	17	4	24.91	No	20.56	-4.35
148	11/5/2018	17	5	26.71	No	20.56	-6.15

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
149	11/5/2018	17	6	36.19	No	20.56	-15.63
150	11/5/2018	17	7	37.10	No	20.56	-16.54
151	11/5/2018	17	8	36.63	No	20.56	-16.07
152	11/5/2018	17	9	32.59	No	20.56	-12.03
153	11/5/2018	17	10	29.85	Yes	21.07	-8.78
154	11/5/2018	17	11	26.81	Yes	21.07	-5.74
155	11/5/2018	17	12	22.51	Yes	21.07	-1.44
156	11/5/2018	18	1	21.68	Yes	21.07	-0.61
157	11/5/2018	18	2	19.11	Yes	21.07	1.96
158	11/5/2018	18	3	17.84	Yes	21.07	3.23
159	11/5/2018	18	4	18.62	Yes	21.07	2.45
160	11/5/2018	18	5	21.35	Yes	21.07	-0.28
161	11/5/2018	18	6	19.30	Yes	21.07	1.77
162	11/5/2018	18	7	22.11	Yes	21.07	-1.04
163	11/5/2018	18	8	22.22	Yes	21.07	-1.15
164	11/5/2018	18	9	22.26	Yes	21.07	-1.19
165	11/5/2018	18	10	22.45	Yes	21.07	-1.38
166	11/5/2018	18	11	22.36	Yes	21.07	-1.29
167	11/5/2018	18	12	22.36	Yes	21.07	-1.29
168	11/5/2018	19	1	22.31	Yes	21.07	-1.24
169	11/5/2018	19	2	22.32	Yes	21.07	-1.25
170	11/5/2018	19	3	22.25	Yes	21.07	-1.18
171	11/5/2018	19	4	22.41	Yes	21.07	-1.34
172	11/5/2018	19	5	22.34	Yes	21.07	-1.27
173	11/5/2018	19	6	22.30	Yes	21.07	-1.23
174	11/5/2018	19	7	22.31	Yes	21.07	-1.24
175	11/5/2018	19	8	22.31	Yes	21.07	-1.24
176	11/5/2018	19	9	21.67	Yes	21.07	-0.60
177	11/5/2018	19	10	21.49	Yes	21.07	-0.42
178	11/5/2018	19	11	21.29	Yes	21.07	-0.22
179	11/5/2018	19	12	22.28	Yes	21.07	-1.21
180	11/5/2018	20	1	22.39	Yes	21.07	-1.32
181	11/5/2018	20	2	22.31	Yes	21.07	-1.24
182	11/5/2018	20	3	22.34	Yes	21.07	-1.27
183	11/5/2018	20	4	22.16	Yes	21.07	-1.09
184	11/5/2018	20	5	22.10	Yes	21.07	-1.03
185	11/5/2018	20	6	22.03	Yes	21.07	-0.96
186	11/5/2018	20	7	21.33	Yes	21.07	-0.26

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
187	11/5/2018	20	8	20.90	Yes	21.07	0.17
188	11/5/2018	20	9	19.73	Yes	21.07	1.34
189	11/5/2018	20	10	19.74	Yes	21.07	1.33
190	11/5/2018	20	11	20.83	Yes	21.07	0.24
191	11/5/2018	20	12	21.99	Yes	21.07	-0.92
192	11/5/2018	21	1	24.33	Yes	21.07	-3.26
193	11/5/2018	21	2	27.95	Yes	21.07	-6.88
194	11/5/2018	21	3	27.87	Yes	21.07	-6.80
195	11/5/2018	21	4	27.36	Yes	21.07	-6.29
196	11/5/2018	21	5	25.87	Yes	21.07	-4.80
197	11/5/2018	21	6	25.09	Yes	21.07	-4.02
198	11/5/2018	21	7	24.09	Yes	21.07	-3.02
199	11/5/2018	21	8	23.74	Yes	21.07	-2.67
200	11/5/2018	21	9	23.66	Yes	21.07	-2.59
201	11/5/2018	21	10	23.41	Yes	21.07	-2.34
202	11/5/2018	21	11	23.44	Yes	21.07	-2.37
203	11/5/2018	21	12	23.39	Yes	21.07	-2.32
204	11/5/2018	22	1	29.39	Yes	21.07	-8.32
205	11/5/2018	22	2	36.70	Yes	21.07	-15.63
206	11/5/2018	22	3	32.29	Yes	21.07	-11.22
207	11/5/2018	22	4	30.40	Yes	21.07	-9.33
208	11/5/2018	22	5	26.23	Yes	21.07	-5.16
209	11/5/2018	22	6	27.72	Yes	21.07	-6.65
210	11/5/2018	22	7	27.03	Yes	21.07	-5.96
211	11/5/2018	22	8	26.89	Yes	21.07	-5.82
212	11/5/2018	22	9	24.78	Yes	21.07	-3.71
213	11/5/2018	22	10	24.37	Yes	21.07	-3.30
214	11/5/2018	22	11	24.31	Yes	21.07	-3.24
215	11/5/2018	22	12	24.98	Yes	21.07	-3.91
216	11/5/2018	23	1	31.77	Yes	21.07	-10.70
217	11/5/2018	23	2	33.46	Yes	21.07	-12.39
218	11/5/2018	23	3	31.66	Yes	21.07	-10.59
219	11/5/2018	23	4	30.69	Yes	21.07	-9.62
220	11/5/2018	23	5	27.77	Yes	21.07	-6.70
221	11/5/2018	23	6	26.92	Yes	21.07	-5.85
222	11/5/2018	23	7	26.87	Yes	21.07	-5.80
223	11/5/2018	23	8	26.40	Yes	21.07	-5.33
224	11/5/2018	23	9	26.22	Yes	21.07	-5.15

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
225	11/5/2018	23	10	24.13	Yes	21.07	-3.06
226	11/5/2018	23	11	25.89	Yes	21.07	-4.82
227	11/5/2018	23	12	26.60	Yes	21.07	-5.53
228	11/5/2018	24	1	26.88	Yes	21.07	-5.81
229	11/5/2018	24	2	27.90	Yes	21.07	-6.83
230	11/5/2018	24	3	27.24	Yes	21.07	-6.17
231	11/5/2018	24	4	26.99	Yes	21.07	-5.92
232	11/5/2018	24	5	26.82	Yes	21.07	-5.75
233	11/5/2018	24	6	26.19	Yes	21.07	-5.12
234	11/5/2018	24	7	25.57	Yes	21.07	-4.50
235	11/5/2018	24	8	24.95	Yes	21.07	-3.88
236	11/5/2018	24	9	24.42	Yes	21.07	-3.35
237	11/5/2018	24	10	23.36	Yes	21.07	-2.29
238	11/5/2018	24	11	23.09	Yes	21.07	-2.02
239	11/5/2018	24	12	23.42	Yes	21.07	-2.35
240	11/6/2018	16	1	22.75	No	22.27	-0.48
241	11/6/2018	16	2	22.70	No	22.27	-0.43
242	11/6/2018	16	3	24.58	No	22.27	-2.31
243	11/6/2018	16	4	21.00	No	22.27	1.27
244	11/6/2018	16	5	24.52	No	22.27	-2.25
245	11/6/2018	16	6	27.68	No	22.27	-5.41
246	11/6/2018	16	7	24.25	No	22.27	-1.98
247	11/6/2018	16	8	26.79	No	22.27	-4.52
248	11/6/2018	16	9	29.90	No	22.27	-7.63
249	11/6/2018	16	10	33.29	Yes	26.36	-6.93
250	11/6/2018	16	11	34.68	Yes	26.36	-8.32
251	11/6/2018	16	12	36.08	Yes	26.36	-9.72
252	11/6/2018	17	1	28.43	Yes	26.36	-2.07
253	11/6/2018	17	2	28.51	Yes	26.36	-2.15
254	11/6/2018	17	3	31.04	Yes	26.36	-4.68
255	11/6/2018	17	4	30.49	Yes	26.36	-4.13
256	11/6/2018	17	5	33.54	Yes	26.36	-7.18
257	11/6/2018	17	6	33.53	Yes	26.36	-7.17
258	11/6/2018	17	7	37.12	Yes	26.36	-10.76
259	11/6/2018	17	8	37.24	Yes	26.36	-10.88
260	11/6/2018	17	9	35.95	Yes	26.36	-9.59
261	11/6/2018	17	10	37.33	Yes	26.36	-10.97
262	11/6/2018	17	11	41.01	Yes	26.36	-14.65

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
263	11/6/2018	17	12	42.47	Yes	26.36	-16.11
264	11/6/2018	18	1	-1.96	Yes	26.36	28.32
265	11/6/2018	18	2	13.50	Yes	26.36	12.86
266	11/6/2018	18	3	21.86	Yes	26.36	4.50
267	11/6/2018	18	4	35.25	Yes	26.36	-8.89
268	11/6/2018	18	5	35.73	Yes	26.36	-9.37
269	11/6/2018	18	6	31.13	Yes	26.36	-4.77
270	11/6/2018	18	7	28.81	Yes	26.36	-2.45
271	11/6/2018	18	8	29.28	Yes	26.36	-2.92
272	11/6/2018	18	9	13.80	Yes	26.36	12.56
273	11/6/2018	18	10	34.23	Yes	26.36	-7.87
274	11/6/2018	18	11	33.94	Yes	26.36	-7.58
275	11/6/2018	18	12	35.24	Yes	26.36	-8.88
276	11/6/2018	19	1	30.76	Yes	26.36	-4.40
277	11/6/2018	19	2	30.72	Yes	26.36	-4.36
278	11/6/2018	19	3	28.24	Yes	26.36	-1.88
279	11/6/2018	19	4	32.09	Yes	26.36	-5.73
280	11/6/2018	19	5	30.71	Yes	26.36	-4.35
281	11/6/2018	19	6	32.82	Yes	26.36	-6.46
282	11/6/2018	19	7	22.98	Yes	26.36	3.38
283	11/6/2018	19	8	27.49	Yes	26.36	-1.13
284	11/6/2018	19	9	29.96	Yes	26.36	-3.60
285	11/6/2018	19	10	32.11	Yes	26.36	-5.75
286	11/6/2018	19	11	30.84	Yes	26.36	-4.48
287	11/6/2018	19	12	26.32	Yes	26.36	0.04
288	11/6/2018	20	1	34.42	Yes	26.36	-8.06
289	11/6/2018	20	2	35.85	Yes	26.36	-9.49
290	11/6/2018	20	3	34.62	Yes	26.36	-8.26
291	11/6/2018	20	4	39.03	Yes	26.36	-12.67
292	11/6/2018	20	5	37.26	Yes	26.36	-10.90
293	11/6/2018	20	6	36.96	Yes	26.36	-10.60
294	11/6/2018	20	7	36.34	Yes	26.36	-9.98
295	11/6/2018	20	8	36.44	Yes	26.36	-10.08
296	11/6/2018	20	9	35.60	Yes	26.36	-9.24
297	11/6/2018	20	10	31.67	Yes	26.36	-5.31
298	11/6/2018	20	11	29.63	Yes	26.36	-3.27
299	11/6/2018	20	12	29.30	Yes	26.36	-2.94
300	11/6/2018	21	1	33.01	Yes	26.36	-6.65

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
301	11/6/2018	21	2	34.15	Yes	26.36	-7.79
302	11/6/2018	21	3	34.66	Yes	26.36	-8.30
303	11/6/2018	21	4	33.56	Yes	26.36	-7.20
304	11/6/2018	21	5	33.42	Yes	26.36	-7.06
305	11/6/2018	21	6	33.24	Yes	26.36	-6.88
306	11/6/2018	21	7	31.80	Yes	26.36	-5.44
307	11/6/2018	21	8	31.67	Yes	26.36	-5.31
308	11/6/2018	21	9	29.51	Yes	26.36	-3.15
309	11/6/2018	21	10	29.54	Yes	26.36	-3.18
310	11/6/2018	21	11	27.48	Yes	26.36	-1.12
311	11/6/2018	21	12	34.54	Yes	26.36	-8.18
312	11/6/2018	22	1	38.54	Yes	26.36	-12.18
313	11/6/2018	22	2	44.98	Yes	26.36	-18.62
314	11/6/2018	22	3	41.97	Yes	26.36	-15.61
315	11/6/2018	22	4	42.41	Yes	26.36	-16.05
316	11/6/2018	22	5	38.79	Yes	26.36	-12.43
317	11/6/2018	22	6	37.31	Yes	26.36	-10.95
318	11/6/2018	22	7	39.23	Yes	26.36	-12.87
319	11/6/2018	22	8	37.58	Yes	26.36	-11.22
320	11/6/2018	22	9	37.92	Yes	26.36	-11.56
321	11/6/2018	22	10	36.54	Yes	26.36	-10.18
322	11/6/2018	22	11	35.32	Yes	26.36	-8.96
323	11/6/2018	22	12	35.96	Yes	26.36	-9.60
324	11/6/2018	23	1	33.92	Yes	26.36	-7.56
325	11/6/2018	23	2	33.85	Yes	26.36	-7.49
326	11/6/2018	23	3	33.77	Yes	26.36	-7.41
327	11/6/2018	23	4	33.06	Yes	26.36	-6.70
328	11/6/2018	23	5	31.51	Yes	26.36	-5.15
329	11/6/2018	23	6	30.37	Yes	26.36	-4.01
330	11/6/2018	23	7	26.95	Yes	26.36	-0.59
331	11/6/2018	23	8	26.82	Yes	26.36	-0.46
332	11/6/2018	23	9	26.55	Yes	26.36	-0.19
333	11/6/2018	23	10	26.40	Yes	26.36	-0.04
334	11/6/2018	23	11	26.10	Yes	26.36	0.26
335	11/6/2018	23	12	26.30	Yes	26.36	0.06
336	11/6/2018	24	1	27.26	Yes	26.36	-0.90
337	11/6/2018	24	2	26.55	Yes	26.36	-0.19
338	11/6/2018	24	3	26.07	Yes	26.36	0.29

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
339	11/6/2018	24	4	25.95	Yes	26.36	0.41
340	11/6/2018	24	5	25.38	Yes	26.36	0.98
341	11/6/2018	24	6	24.60	Yes	26.36	1.76
342	11/6/2018	24	7	23.47	Yes	26.36	2.89
343	11/6/2018	24	8	23.36	Yes	26.36	3.00
344	11/6/2018	24	9	23.36	Yes	26.36	3.00
345	11/6/2018	24	10	22.95	Yes	26.36	3.41
346	11/6/2018	24	11	23.15	Yes	26.36	3.21
347	11/6/2018	24	12	21.77	Yes	26.36	4.59
348	11/7/2018	9	1	17.15	Yes	22.41	5.26
349	11/7/2018	9	2	19.35	Yes	22.41	3.06
350	11/7/2018	9	3	15.43	Yes	22.41	6.98
351	11/7/2018	9	4	-0.01	Yes	22.41	22.42
352	11/7/2018	9	5	-0.32	Yes	22.41	22.73
353	11/7/2018	9	6	-0.23	Yes	22.41	22.64
354	11/7/2018	9	7	17.38	Yes	22.41	5.03
355	11/7/2018	9	8	19.06	Yes	22.41	3.35
356	11/7/2018	9	9	19.88	Yes	22.41	2.53
357	11/7/2018	9	10	2.46	Yes	22.41	19.95
358	11/7/2018	9	11	2.97	Yes	22.41	19.44
359	11/7/2018	9	12	18.40	Yes	22.41	4.01
360	11/7/2018	10	1	-5.48	Yes	22.41	27.89
361	11/7/2018	10	2	7.61	Yes	22.41	14.80
362	11/7/2018	10	3	12.41	Yes	22.41	10.00
363	11/7/2018	10	4	4.67	Yes	22.41	17.74
364	11/7/2018	10	5	4.41	Yes	22.41	18.00
365	11/7/2018	10	6	4.31	Yes	22.41	18.10
366	11/7/2018	10	7	3.11	Yes	22.41	19.30
367	11/7/2018	10	8	3.01	Yes	22.41	19.40
368	11/7/2018	10	9	-0.29	Yes	22.41	22.70
369	11/7/2018	10	10	-7.01	Yes	22.41	29.42
370	11/7/2018	10	11	-7.13	Yes	22.41	29.54
371	11/7/2018	10	12	-6.83	Yes	22.41	29.24
372	11/7/2018	11	1	-7.44	Yes	22.41	29.85
373	11/7/2018	11	2	-0.86	Yes	22.41	23.27
374	11/7/2018	11	3	1.29	Yes	22.41	21.12
375	11/7/2018	11	4	4.45	Yes	22.41	17.96
376	11/7/2018	11	5	4.40	Yes	22.41	18.01

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
377	11/7/2018	11	6	4.40	Yes	22.41	18.01
378	11/7/2018	11	7	-0.42	Yes	22.41	22.83
379	11/7/2018	11	8	-1.09	Yes	22.41	23.50
380	11/7/2018	11	9	-0.34	Yes	22.41	22.75
381	11/7/2018	11	10	0.33	Yes	22.41	22.08
382	11/7/2018	11	11	-0.13	Yes	22.41	22.54
383	11/7/2018	11	12	-0.37	Yes	22.41	22.78
384	11/7/2018	12	1	-7.21	Yes	22.41	29.62
385	11/7/2018	12	2	-6.53	Yes	22.41	28.94
386	11/7/2018	12	3	-7.07	Yes	22.41	29.48
387	11/7/2018	12	4	-0.22	Yes	22.41	22.63
388	11/7/2018	12	5	-0.50	Yes	22.41	22.91
389	11/7/2018	12	6	-0.76	Yes	22.41	23.17
390	11/7/2018	12	7	-1.73	Yes	22.41	24.14
391	11/7/2018	12	8	8.76	Yes	22.41	13.65
392	11/7/2018	12	9	-1.30	Yes	22.41	23.71
393	11/7/2018	12	10	-1.91	Yes	22.41	24.32
394	11/7/2018	12	11	5.52	Yes	22.41	16.89
395	11/7/2018	12	12	-1.42	Yes	22.41	23.83
396	11/7/2018	13	1	-2.15	Yes	22.41	24.56
397	11/7/2018	13	2	-1.50	Yes	22.41	23.91
398	11/7/2018	13	3	-1.61	Yes	22.41	24.02
399	11/7/2018	13	4	8.34	Yes	22.41	14.07
400	11/7/2018	13	5	12.45	Yes	22.41	9.96
401	11/7/2018	13	6	1.21	Yes	22.41	21.20
402	11/7/2018	13	7	-1.13	Yes	22.41	23.54
403	11/7/2018	13	8	8.61	Yes	22.41	13.80
404	11/7/2018	13	9	-1.14	Yes	22.41	23.55
405	11/7/2018	13	10	-1.54	Yes	22.41	23.95
406	11/7/2018	13	11	-1.67	Yes	22.41	24.08
407	11/7/2018	13	12	-1.52	Yes	22.41	23.93
408	11/7/2018	14	1	16.34	Yes	22.41	6.07
409	11/7/2018	14	2	16.57	Yes	22.41	5.84
410	11/7/2018	14	3	-2.14	Yes	22.41	24.55
411	11/7/2018	14	4	-0.34	Yes	22.41	22.75
412	11/7/2018	14	5	-0.59	Yes	22.41	23.00
413	11/7/2018	14	6	-1.05	Yes	22.41	23.46
414	11/7/2018	14	7	-0.65	Yes	22.41	23.06

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
415	11/7/2018	14	8	-0.61	Yes	22.41	23.02
416	11/7/2018	14	9	-0.63	Yes	22.41	23.04
417	11/7/2018	14	10	-0.56	Yes	22.41	22.97
418	11/7/2018	14	11	-0.58	Yes	22.41	22.99
419	11/7/2018	14	12	-0.58	Yes	22.41	22.99
420	11/7/2018	15	1	12.69	Yes	22.41	9.72
421	11/7/2018	15	2	10.71	Yes	22.41	11.70
422	11/7/2018	15	3	11.92	Yes	22.41	10.49
423	11/7/2018	15	4	13.07	Yes	22.41	9.34
424	11/7/2018	15	5	13.08	Yes	22.41	9.33
425	11/7/2018	15	6	17.41	Yes	22.41	5.00
426	11/7/2018	15	7	17.25	Yes	22.41	5.16
427	11/7/2018	15	8	11.25	Yes	22.41	11.16
428	11/7/2018	15	9	3.77	Yes	22.41	18.64
429	11/7/2018	15	10	18.45	Yes	22.41	3.96
430	11/7/2018	15	11	19.22	Yes	22.41	3.19
431	11/7/2018	15	12	17.86	Yes	22.41	4.55
432	11/7/2018	17	1	25.38	No	26.51	1.13
433	11/7/2018	17	2	26.11	No	26.51	0.40
434	11/7/2018	17	3	28.14	No	26.51	-1.63
435	11/7/2018	17	4	33.76	No	26.51	-7.25
436	11/7/2018	17	5	41.72	No	26.51	-15.21
437	11/7/2018	17	6	44.82	No	26.51	-18.31
438	11/7/2018	17	7	32.88	No	26.51	-6.37
439	11/7/2018	17	8	35.69	No	26.51	-9.18
440	11/7/2018	17	9	42.94	No	26.51	-16.43
441	11/7/2018	17	10	39.99	No	26.51	-13.48
442	11/7/2018	17	11	67.97	No	26.51	-41.46
443	11/7/2018	17	12	40.11	No	26.51	-13.60
444	11/7/2018	18	1	37.44	No	26.51	-10.93
445	11/7/2018	18	2	31.75	No	26.51	-5.24
446	11/7/2018	18	3	30.30	No	26.51	-3.79
447	11/7/2018	18	4	26.96	No	26.51	-0.45
448	11/7/2018	18	5	28.02	No	26.51	-1.51
449	11/7/2018	18	6	27.40	No	26.51	-0.89
450	11/7/2018	18	7	34.36	No	26.51	-7.85
451	11/7/2018	18	8	38.95	No	26.51	-12.44
452	11/7/2018	18	9	38.47	No	26.51	-11.96

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
453	11/7/2018	18	10	38.45	No	26.51	-11.94
454	11/7/2018	18	11	37.79	No	26.51	-11.28
455	11/7/2018	18	12	39.08	No	26.51	-12.57
456	11/7/2018	19	1	54.30	No	26.51	-27.79
457	11/7/2018	19	2	62.29	No	26.51	-35.78
458	11/7/2018	19	3	55.10	No	26.51	-28.59
459	11/7/2018	19	4	37.57	No	26.51	-11.06
460	11/7/2018	19	5	42.56	No	26.51	-16.05
461	11/7/2018	19	6	63.38	No	26.51	-36.87
462	11/7/2018	19	7	55.72	No	26.51	-29.21
463	11/7/2018	19	8	50.60	No	26.51	-24.09
464	11/7/2018	19	9	54.87	No	26.51	-28.36
465	11/7/2018	19	10	46.26	No	26.51	-19.75
466	11/7/2018	19	11	48.09	No	26.51	-21.58
467	11/7/2018	19	12	62.38	No	26.51	-35.87
468	11/7/2018	20	1	71.00	No	26.51	-44.49
469	11/7/2018	20	2	66.98	No	26.51	-40.47
470	11/7/2018	20	3	71.79	No	26.51	-45.28
471	11/7/2018	20	4	69.56	No	26.51	-43.05
472	11/7/2018	20	5	66.39	No	26.51	-39.88
473	11/7/2018	20	6	62.08	No	26.51	-35.57
474	11/7/2018	20	7	47.03	No	26.51	-20.52
475	11/7/2018	20	8	46.03	No	26.51	-19.52
476	11/7/2018	20	9	45.10	No	26.51	-18.59
477	11/7/2018	20	10	45.61	No	26.51	-19.10
478	11/7/2018	20	11	36.49	No	26.51	-9.98
479	11/7/2018	20	12	38.64	No	26.51	-12.13
480	11/7/2018	21	1	34.90	No	26.51	-8.39
481	11/7/2018	21	2	34.21	No	26.51	-7.70
482	11/7/2018	21	3	32.31	No	26.51	-5.80
483	11/7/2018	21	4	31.77	No	26.51	-5.26
484	11/7/2018	21	5	20.27	No	26.51	6.24
485	11/7/2018	21	6	28.02	No	26.51	-1.51
486	11/7/2018	21	7	25.21	No	26.51	1.30
487	11/7/2018	21	8	25.35	No	26.51	1.16
488	11/7/2018	21	9	23.07	No	26.51	3.44
489	11/7/2018	21	10	21.19	No	26.51	5.32
490	11/7/2018	21	11	21.95	No	26.51	4.56

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
491	11/7/2018	21	12	20.87	No	26.51	5.64
492	11/7/2018	22	1	25.42	No	26.51	1.09
493	11/7/2018	22	2	22.53	No	26.51	3.98
494	11/7/2018	22	3	21.76	No	26.51	4.75
495	11/7/2018	22	4	-47.48	No	26.51	73.99
496	11/7/2018	22	5	-47.05	No	26.51	73.56
497	11/7/2018	22	6	-48.05	No	26.51	74.56
498	11/7/2018	22	7	-47.50	No	26.51	74.01
499	11/7/2018	22	8	16.81	No	26.51	9.70
500	11/7/2018	22	9	-46.44	No	26.51	72.95
501	11/7/2018	22	10	-17.41	No	26.51	43.92
502	11/7/2018	22	11	-21.00	No	26.51	47.51
503	11/7/2018	22	12	-44.67	No	26.51	71.18
504	11/7/2018	23	1	25.05	No	26.51	1.46
505	11/7/2018	23	2	25.22	No	26.51	1.29
506	11/7/2018	23	3	24.61	No	26.51	1.90
507	11/7/2018	23	4	25.05	No	26.51	1.46
508	11/7/2018	23	5	25.05	No	26.51	1.46
509	11/7/2018	23	8	21.86	No	30.93	9.07
510	11/7/2018	23	9	21.54	No	30.93	9.39
511	11/7/2018	23	10	20.56	No	30.93	10.37
512	11/7/2018	23	11	21.88	No	30.93	9.05
513	11/7/2018	23	12	21.11	No	30.93	9.82
514	11/7/2018	24	1	26.82	No	30.93	4.11
515	11/7/2018	24	2	29.62	No	30.93	1.31
516	11/7/2018	24	3	28.97	No	30.93	1.96
517	11/7/2018	24	4	27.75	No	30.93	3.18
518	11/7/2018	24	5	25.65	No	30.93	5.28
519	11/7/2018	24	6	25.53	No	30.93	5.40
520	11/7/2018	24	7	21.73	No	30.93	9.20
521	11/7/2018	24	8	25.12	No	30.93	5.81
522	11/7/2018	24	9	27.03	No	30.93	3.90
523	11/7/2018	24	10	25.66	No	30.93	5.27
524	11/7/2018	24	11	23.16	No	30.93	7.77
525	11/7/2018	24	12	24.33	No	30.93	6.60
526	11/14/2018	10	9	31.17	No	40.46	9.29
527	11/14/2018	10	10	30.86	No	40.46	9.60
528	11/14/2018	10	11	31.20	No	39.36	8.16

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
529	11/14/2018	10	12	31.69	No	39.36	7.67
530	11/14/2018	11	1	32.19	No	39.36	7.17
531	11/14/2018	11	2	32.51	No	39.36	6.85
532	11/14/2018	11	3	30.63	No	39.36	8.73
533	11/14/2018	11	4	31.56	Yes	33.02	1.46
534	11/14/2018	11	5	31.07	Yes	33.02	1.95
535	11/14/2018	11	6	29.70	Yes	33.02	3.32
536	11/14/2018	11	7	29.59	Yes	33.02	3.43
537	11/14/2018	11	8	30.17	Yes	33.02	2.85
538	11/14/2018	11	9	29.87	Yes	33.02	3.15
539	11/14/2018	11	10	29.74	Yes	33.02	3.28
540	11/14/2018	11	11	29.90	Yes	33.02	3.12
541	11/14/2018	11	12	31.00	Yes	33.02	2.02
542	11/14/2018	12	1	33.00	Yes	33.02	0.02
543	11/14/2018	12	2	33.14	Yes	33.02	-0.12
544	11/14/2018	12	3	33.85	Yes	33.02	-0.83
545	11/14/2018	12	4	34.31	Yes	33.02	-1.29
546	11/14/2018	12	5	33.73	Yes	33.02	-0.71
547	11/14/2018	12	6	33.98	Yes	33.02	-0.96
548	11/14/2018	12	7	34.53	Yes	33.02	-1.51
549	11/14/2018	12	8	34.99	Yes	33.02	-1.97
550	11/14/2018	12	9	34.31	Yes	33.02	-1.29
551	11/14/2018	12	10	20.65	Yes	33.02	12.37
552	11/14/2018	12	11	20.66	Yes	33.02	12.36
553	11/14/2018	12	12	32.64	Yes	33.02	0.38
554	11/14/2018	13	1	32.07	Yes	33.02	0.95
555	11/14/2018	13	2	32.75	Yes	33.02	0.27
556	11/14/2018	13	3	33.05	Yes	33.02	-0.03
557	11/14/2018	13	4	32.80	Yes	33.02	0.22
558	11/14/2018	13	5	32.80	Yes	33.02	0.22
559	11/14/2018	13	6	30.61	Yes	33.02	2.41
560	11/14/2018	13	7	26.92	Yes	33.02	6.10
561	11/14/2018	13	8	26.82	Yes	33.02	6.20
562	11/14/2018	13	9	28.24	Yes	33.02	4.78
563	11/14/2018	13	10	28.48	Yes	33.02	4.54
564	11/14/2018	13	11	32.10	Yes	33.02	0.92
565	11/14/2018	13	12	28.48	Yes	33.02	4.54
566	11/14/2018	14	1	32.50	Yes	33.02	0.52

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
567	11/14/2018	14	2	33.13	Yes	33.02	-0.11
568	11/14/2018	14	3	32.72	Yes	33.02	0.30
569	11/14/2018	14	4	32.77	Yes	33.02	0.25
570	11/14/2018	14	5	24.06	Yes	33.02	8.96
571	11/14/2018	14	6	24.11	Yes	33.02	8.91
572	11/14/2018	14	7	25.63	Yes	33.02	7.39
573	11/14/2018	14	8	25.49	Yes	33.02	7.53
574	11/14/2018	14	9	25.47	Yes	33.02	7.55
575	11/14/2018	14	10	27.58	Yes	33.02	5.44
576	11/14/2018	14	11	32.44	Yes	33.02	0.58
577	11/14/2018	14	12	31.85	Yes	33.02	1.17
578	11/14/2018	15	1	30.05	Yes	33.02	2.97
579	11/14/2018	15	2	28.76	Yes	33.02	4.26
580	11/14/2018	15	3	25.78	Yes	33.02	7.24
581	11/14/2018	15	4	17.54	Yes	33.02	15.48
582	11/14/2018	15	5	18.64	Yes	33.02	14.38
583	11/14/2018	15	6	26.80	Yes	33.02	6.22
584	11/14/2018	15	7	29.34	Yes	33.02	3.68
585	11/14/2018	15	8	27.85	Yes	33.02	5.17
586	11/14/2018	15	9	29.89	Yes	33.02	3.13
587	11/14/2018	15	10	22.71	Yes	33.02	10.31
588	11/14/2018	15	11	29.85	Yes	33.02	3.17
589	11/14/2018	15	12	27.02	Yes	33.02	6.00
590	11/14/2018	16	1	34.52	Yes	33.02	-1.50
591	11/14/2018	16	2	183.98	Yes	33.02	-150.96
592	11/14/2018	16	3	219.68	Yes	33.02	-186.66
593	11/14/2018	16	4	89.46	Yes	33.02	-56.44
594	11/14/2018	16	5	109.75	Yes	33.02	-76.73
595	11/14/2018	16	6	75.75	Yes	33.02	-42.73
596	11/14/2018	16	7	8.80	Yes	33.02	24.22
597	11/14/2018	16	8	19.93	Yes	33.02	13.09
598	11/14/2018	16	9	43.49	Yes	33.02	-10.47
599	11/14/2018	16	10	247.92	Yes	33.02	-214.90
600	11/14/2018	16	11	474.04	Yes	33.02	-441.02
601	11/14/2018	16	12	354.03	Yes	33.02	-321.01
602	11/14/2018	17	1	29.81	Yes	33.02	3.21
603	11/14/2018	17	2	31.05	Yes	33.02	1.97
604	11/14/2018	17	3	32.39	Yes	33.02	0.63

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
605	11/14/2018	17	4	39.39	Yes	33.02	-6.37
606	11/14/2018	17	5	49.39	Yes	33.02	-16.37
607	11/14/2018	17	6	50.77	Yes	33.02	-17.75
608	11/14/2018	17	7	49.39	Yes	33.02	-16.37
609	11/14/2018	17	8	50.74	Yes	33.02	-17.72
610	11/14/2018	17	9	50.86	Yes	33.02	-17.84
611	11/14/2018	17	10	52.14	Yes	33.02	-19.12
612	11/14/2018	17	11	52.83	Yes	33.02	-19.81
613	11/14/2018	17	12	50.61	Yes	33.02	-17.59
614	11/14/2018	18	1	48.98	Yes	33.02	-15.96
615	11/14/2018	18	2	43.72	Yes	33.02	-10.70
616	11/14/2018	18	3	47.30	Yes	33.02	-14.28
617	11/14/2018	18	4	49.61	Yes	33.02	-16.59
618	11/14/2018	18	5	48.66	Yes	33.02	-15.64
619	11/14/2018	18	6	44.43	Yes	33.02	-11.41
620	11/14/2018	18	7	50.07	Yes	33.02	-17.05
621	11/14/2018	18	8	54.76	Yes	33.02	-21.74
622	11/14/2018	18	9	59.23	Yes	33.02	-26.21
623	11/14/2018	18	10	45.06	Yes	33.02	-12.04
624	11/14/2018	18	11	48.38	Yes	33.02	-15.36
625	11/14/2018	18	12	46.25	Yes	33.02	-13.23
626	11/14/2018	19	1	52.58	Yes	33.02	-19.56
627	11/14/2018	19	2	59.74	Yes	33.02	-26.72
628	11/14/2018	19	3	59.74	Yes	33.02	-26.72
629	11/14/2018	19	4	60.74	Yes	33.02	-27.72
630	11/14/2018	19	5	60.74	Yes	33.02	-27.72
631	11/14/2018	19	6	56.80	Yes	33.02	-23.78
632	11/14/2018	19	7	56.82	Yes	33.02	-23.80
633	11/14/2018	19	8	56.82	Yes	33.02	-23.80
634	11/14/2018	19	9	54.31	Yes	33.02	-21.29
635	11/14/2018	19	10	54.43	Yes	33.02	-21.41
636	11/14/2018	19	11	57.19	Yes	33.02	-24.17
637	11/14/2018	19	12	61.02	Yes	33.02	-28.00
638	11/14/2018	20	1	69.06	Yes	33.02	-36.04
639	11/14/2018	20	2	95.11	Yes	33.02	-62.09
640	11/14/2018	20	3	84.51	Yes	33.02	-51.49
641	11/14/2018	20	4	78.32	Yes	33.02	-45.30
642	11/14/2018	20	5	72.76	Yes	33.02	-39.74

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
643	11/14/2018	20	6	62.25	Yes	33.02	-29.23
644	11/14/2018	20	7	50.66	Yes	33.02	-17.64
645	11/14/2018	20	8	50.60	Yes	33.02	-17.58
646	11/14/2018	20	9	50.60	Yes	33.02	-17.58
647	11/14/2018	20	10	50.60	Yes	33.02	-17.58
648	11/14/2018	20	11	50.72	Yes	33.02	-17.70
649	11/14/2018	20	12	50.72	Yes	33.02	-17.70
650	11/14/2018	21	1	55.65	Yes	33.02	-22.63
651	11/14/2018	21	2	61.74	Yes	33.02	-28.72
652	11/14/2018	21	3	55.95	Yes	33.02	-22.93
653	11/15/2018	7	1	53.26	No	44.88	-8.38
654	11/15/2018	7	2	53.26	Yes	33.02	-20.24
655	11/15/2018	7	3	53.26	Yes	33.02	-20.24
656	11/15/2018	7	4	56.31	Yes	33.02	-23.29
657	11/15/2018	7	5	60.60	Yes	33.02	-27.58
658	11/15/2018	7	6	59.20	Yes	33.02	-26.18
659	11/15/2018	7	7	61.80	Yes	33.02	-28.78
660	11/15/2018	7	8	57.92	Yes	33.02	-24.90
661	11/15/2018	7	9	63.12	Yes	33.02	-30.10
662	11/15/2018	7	10	66.73	Yes	33.02	-33.71
663	11/15/2018	7	11	58.00	Yes	33.02	-24.98
664	11/15/2018	7	12	65.79	Yes	33.02	-32.77
665	11/15/2018	8	1	71.17	Yes	33.55	-37.62
666	11/15/2018	8	2	68.58	Yes	33.55	-35.03
667	11/15/2018	8	3	58.40	Yes	33.55	-24.85
668	11/15/2018	8	4	57.02	Yes	33.55	-23.47
669	11/15/2018	8	5	48.08	Yes	33.55	-14.53
670	11/15/2018	8	6	43.15	Yes	33.55	-9.60
671	11/15/2018	8	7	36.91	Yes	33.55	-3.36
672	11/15/2018	8	8	37.82	Yes	33.55	-4.27
673	11/15/2018	8	9	33.51	Yes	33.55	0.04
674	11/15/2018	8	10	33.35	Yes	33.55	0.20
675	11/15/2018	8	11	33.32	Yes	33.55	0.23
676	11/15/2018	8	12	33.19	Yes	33.55	0.36
677	11/15/2018	9	1	38.11	Yes	33.55	-4.56
678	11/15/2018	9	2	38.21	Yes	33.55	-4.66
679	11/15/2018	9	3	38.03	Yes	33.55	-4.48
680	11/15/2018	9	4	36.17	Yes	33.55	-2.62

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
681	11/15/2018	9	5	34.75	Yes	33.55	-1.20
682	11/15/2018	9	6	34.41	Yes	33.55	-0.86
683	11/15/2018	9	7	32.98	Yes	33.55	0.57
684	11/15/2018	9	8	32.98	Yes	33.55	0.57
685	11/15/2018	9	9	32.41	Yes	33.55	1.14
686	11/15/2018	9	10	32.51	Yes	33.55	1.04
687	11/15/2018	9	11	32.51	Yes	33.55	1.04
688	11/15/2018	9	12	33.40	Yes	33.55	0.15
689	11/15/2018	10	1	33.67	Yes	33.55	-0.12
690	11/15/2018	10	2	34.86	Yes	33.55	-1.31
691	11/15/2018	10	3	34.83	Yes	33.55	-1.28
692	11/15/2018	10	4	34.83	Yes	33.55	-1.28
693	11/15/2018	10	5	34.83	Yes	33.55	-1.28
694	11/15/2018	10	6	35.33	Yes	33.55	-1.78
695	11/15/2018	10	7	37.80	Yes	33.55	-4.25
696	11/15/2018	10	8	39.24	Yes	33.55	-5.69
697	11/15/2018	10	9	37.51	Yes	33.55	-3.96
698	11/15/2018	10	10	36.27	Yes	33.55	-2.72
699	11/15/2018	10	11	33.92	Yes	33.55	-0.37
700	11/15/2018	10	12	31.98	Yes	33.55	1.57
701	11/15/2018	11	1	31.33	Yes	33.55	2.22
702	11/15/2018	11	2	31.76	Yes	33.55	1.79
703	11/15/2018	11	3	32.36	Yes	33.55	1.19
704	11/15/2018	11	4	32.59	Yes	33.55	0.96
705	11/15/2018	11	5	35.61	Yes	33.55	-2.06
706	11/15/2018	11	6	33.35	Yes	33.55	0.20
707	11/15/2018	11	7	32.98	Yes	33.55	0.57
708	11/15/2018	11	8	31.44	Yes	33.55	2.11
709	11/15/2018	11	9	32.00	Yes	33.55	1.55
710	11/15/2018	11	10	31.84	Yes	33.55	1.71
711	11/15/2018	11	11	28.38	Yes	33.55	5.17
712	11/15/2018	11	12	30.60	Yes	33.55	2.95
713	11/15/2018	12	1	30.93	Yes	33.55	2.62
714	11/15/2018	12	2	31.82	Yes	33.55	1.73
715	11/15/2018	12	3	31.84	Yes	33.55	1.71
716	11/15/2018	12	4	30.51	Yes	33.55	3.04
717	11/15/2018	12	5	30.92	Yes	33.55	2.63
718	11/15/2018	12	6	30.92	Yes	33.55	2.63

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
719	11/15/2018	12	7	31.79	Yes	33.55	1.76
720	11/15/2018	12	8	30.93	Yes	33.55	2.62
721	11/15/2018	12	9	32.77	Yes	33.55	0.78
722	11/15/2018	12	10	32.28	Yes	33.55	1.27
723	11/15/2018	12	11	32.17	Yes	33.55	1.38
724	11/15/2018	12	12	31.81	Yes	33.55	1.74
725	11/15/2018	13	1	32.79	Yes	33.55	0.76
726	11/15/2018	13	2	32.58	Yes	33.55	0.97
727	11/15/2018	13	3	32.58	Yes	33.55	0.97
728	11/15/2018	13	4	9.79	Yes	33.55	23.76
729	11/15/2018	13	5	31.70	Yes	33.55	1.85
730	11/15/2018	13	6	32.29	Yes	33.55	1.26
731	11/15/2018	13	7	35.81	Yes	33.55	-2.26
732	11/15/2018	13	8	34.06	Yes	33.55	-0.51
733	11/15/2018	13	9	33.78	Yes	33.55	-0.23
734	11/15/2018	13	10	34.67	Yes	33.55	-1.12
735	11/15/2018	13	11	34.97	Yes	33.55	-1.42
736	11/15/2018	13	12	36.37	Yes	33.55	-2.82
737	11/15/2018	14	1	34.52	Yes	33.55	-0.97
738	11/15/2018	14	2	34.28	Yes	33.55	-0.73
739	11/15/2018	14	3	33.66	Yes	33.55	-0.11
740	11/15/2018	14	4	33.29	Yes	33.55	0.26
741	11/15/2018	14	5	32.85	Yes	33.55	0.70
742	11/15/2018	14	6	32.85	Yes	33.55	0.70
743	11/15/2018	14	7	18.96	Yes	33.55	14.59
744	11/15/2018	14	8	30.23	Yes	33.55	3.32
745	11/15/2018	14	9	22.74	Yes	33.55	10.81
746	11/15/2018	14	10	29.51	Yes	33.55	4.04
747	11/15/2018	14	11	31.98	Yes	33.55	1.57
748	11/15/2018	14	12	29.33	Yes	33.55	4.22
749	11/15/2018	15	1	33.84	Yes	33.55	-0.29
750	11/15/2018	15	2	33.95	Yes	33.55	-0.40
751	11/15/2018	15	3	33.95	Yes	33.55	-0.40
752	11/15/2018	15	4	28.68	Yes	33.55	4.87
753	11/15/2018	15	5	28.27	Yes	33.55	5.28
754	11/15/2018	15	6	28.57	Yes	33.55	4.98
755	11/15/2018	15	7	32.16	Yes	33.55	1.39
756	11/15/2018	15	8	32.85	Yes	33.55	0.70

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
757	11/15/2018	15	9	11.40	Yes	33.55	22.15
758	11/15/2018	15	10	6.09	Yes	33.55	27.46
759	11/15/2018	15	11	5.87	Yes	33.55	27.68
760	11/15/2018	15	12	6.02	Yes	33.55	27.53
761	11/15/2018	16	1	38.86	Yes	33.55	-5.31
762	11/15/2018	16	2	39.38	Yes	33.55	-5.83
763	11/15/2018	16	3	39.99	Yes	33.55	-6.44
764	11/15/2018	16	4	36.48	Yes	33.55	-2.93
765	11/15/2018	16	5	37.22	Yes	33.55	-3.67
766	11/15/2018	16	6	43.52	Yes	33.55	-9.97
767	11/15/2018	16	7	45.07	Yes	33.55	-11.52
768	11/15/2018	16	8	64.57	Yes	33.55	-31.02
769	11/15/2018	16	9	60.82	Yes	33.55	-27.27
770	11/15/2018	16	10	67.00	Yes	33.55	-33.45
771	11/15/2018	16	11	69.88	Yes	33.55	-36.33
772	11/15/2018	16	12	62.95	Yes	33.55	-29.40
773	11/15/2018	17	1	37.90	Yes	33.55	-4.35
774	11/15/2018	17	2	38.65	Yes	33.55	-5.10
775	11/15/2018	17	3	34.66	Yes	33.55	-1.11
776	11/15/2018	17	4	38.10	Yes	33.55	-4.55
777	11/15/2018	17	5	52.23	Yes	33.55	-18.68
778	11/15/2018	17	6	52.95	Yes	33.55	-19.40
779	11/15/2018	17	7	52.95	Yes	33.55	-19.40
780	11/15/2018	17	8	52.95	Yes	33.55	-19.40
781	11/15/2018	17	9	52.95	Yes	33.55	-19.40
782	11/15/2018	17	10	57.17	Yes	33.55	-23.62
783	11/15/2018	17	11	63.82	Yes	33.55	-30.27
784	11/15/2018	17	12	63.21	Yes	33.55	-29.66
785	11/15/2018	18	1	57.87	Yes	33.55	-24.32
786	11/15/2018	18	2	58.21	Yes	33.55	-24.66
787	11/15/2018	18	3	58.21	Yes	33.55	-24.66
788	11/15/2018	18	4	73.51	Yes	33.55	-39.96
789	11/15/2018	18	5	88.64	Yes	33.55	-55.09
790	11/15/2018	18	6	97.45	Yes	33.55	-63.90
791	11/15/2018	18	7	96.73	Yes	33.55	-63.18
792	11/15/2018	18	8	113.80	Yes	33.55	-80.25
793	11/15/2018	18	9	113.80	Yes	33.55	-80.25
794	11/15/2018	18	10	113.80	Yes	33.55	-80.25

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
795	11/15/2018	18	11	99.66	Yes	33.55	-66.11
796	11/15/2018	18	12	99.66	Yes	33.55	-66.11
797	11/15/2018	19	1	75.59	Yes	33.55	-42.04
798	11/15/2018	19	2	75.59	Yes	33.55	-42.04
799	11/15/2018	19	3	75.59	Yes	33.55	-42.04
800	11/15/2018	19	4	75.59	Yes	33.55	-42.04
801	11/15/2018	19	5	75.59	Yes	33.55	-42.04
802	11/15/2018	19	6	75.59	Yes	33.55	-42.04
803	11/15/2018	19	7	75.59	Yes	33.55	-42.04
804	11/15/2018	19	8	75.59	Yes	33.55	-42.04
805	11/15/2018	19	9	75.59	Yes	33.55	-42.04
806	11/15/2018	19	10	75.59	Yes	33.55	-42.04
807	11/15/2018	19	11	73.93	Yes	33.55	-40.38
808	11/15/2018	19	12	66.14	Yes	33.55	-32.59
809	11/15/2018	20	1	70.73	Yes	33.55	-37.18
810	11/15/2018	20	2	70.73	Yes	33.55	-37.18
811	11/15/2018	20	3	67.23	Yes	33.55	-33.68
812	11/15/2018	20	4	67.68	Yes	33.55	-34.13
813	11/15/2018	20	5	67.27	Yes	33.55	-33.72
814	11/15/2018	21	4	70.11	Yes	33.55	-36.56
815	11/15/2018	21	5	178.30	Yes	33.55	-144.75
816	11/15/2018	21	6	135.09	Yes	33.55	-101.54
817	11/17/2018	18	12	41.71	No	32.13	-9.58
818	11/17/2018	19	1	42.00	No	32.13	-9.87
819	11/17/2018	19	2	42.02	No	32.13	-9.89
820	11/17/2018	19	3	45.72	No	32.13	-13.59
821	11/17/2018	19	4	34.72	No	32.13	-2.59
822	11/17/2018	19	5	34.14	No	32.13	-2.01
823	11/17/2018	19	6	40.42	No	32.13	-8.29
824	11/17/2018	19	7	41.38	No	32.13	-9.25
825	11/17/2018	19	8	42.33	No	32.13	-10.20
826	11/17/2018	19	9	44.50	No	32.13	-12.37
827	11/17/2018	19	10	34.49	No	32.13	-2.36
828	11/17/2018	19	11	34.47	No	32.13	-2.34
829	11/17/2018	19	12	44.93	No	32.13	-12.80
830	11/17/2018	20	1	34.37	No	32.13	-2.24
831	11/17/2018	20	2	34.67	No	32.13	-2.54
832	11/17/2018	20	3	58.59	No	32.13	-26.46

Number	Trade Date	Trade Hour	Interval	Market LMP	Eligible Flag	Calculated LMP	Change in LMP
833	11/17/2018	20	4	21.50	No	32.13	10.63
834	11/17/2018	20	5	-18.76	No	32.13	50.89
835	11/17/2018	20	6	-20.44	No	32.13	52.57
836	11/17/2018	20	7	-21.56	No	32.13	53.69
837	11/17/2018	20	8	-0.72	No	32.13	32.85
838	11/17/2018	20	9	-11.27	No	32.13	43.40
839	11/17/2018	20	10	-4.18	No	32.13	36.31
840	11/17/2018	20	11	-4.22	No	32.13	36.35
841	11/17/2018	20	12	-2.09	No	32.13	34.22
842	11/17/2018	21	1	-28.84	No	32.13	60.97
843	11/17/2018	21	2	-34.82	No	32.13	66.95
844	11/17/2018	21	3	-33.25	No	32.13	65.38
845	11/17/2018	21	4	-24.99	No	32.13	57.12
846	11/17/2018	21	5	-29.47	No	32.13	61.60
847	11/17/2018	21	6	-43.22	No	32.13	75.35
848	11/17/2018	21	7	-19.16	No	32.13	51.29
849	11/17/2018	21	8	-14.10	No	32.13	46.23
850	11/17/2018	21	9	-21.54	No	32.13	53.67
851	11/17/2018	21	10	-1.50	No	32.13	33.63
852	11/17/2018	21	11	-14.35	No	32.13	46.48
853	11/17/2018	21	12	-41.19	No	32.13	73.32

Appendix C: Exceptional Dispatch Bid Mitigation Analysis

In November 2018, the ISO applied the exceptional dispatch bid mitigation to the exceptional dispatches. **Error! Reference source not found.** shows the costs by instruction type in November. 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 November 2018

Type	Number of Resources	Costs without Bid Mitigation	Costs with Bid Mitigation	Cost Saving
NONTMOD	1	$ 0	$ 0	$ 0
TMODEL5	1	$ 0	$ 0	$ 0
Total	2	$ 0	$ 0	$ 0

CERTIFICATE OF SERVICE

I hereby certify that I have served the foregoing document upon the parties listed on the official service lists in the above-referenced proceedings, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated at Folsom, California, this 28th day of February, 2019.

/s/ Anna Pascuzzo
Anna Pascuzzo