

To the Public Utility Commission of Texas

ERCOT Wholesale Electricity Market Monthly Report

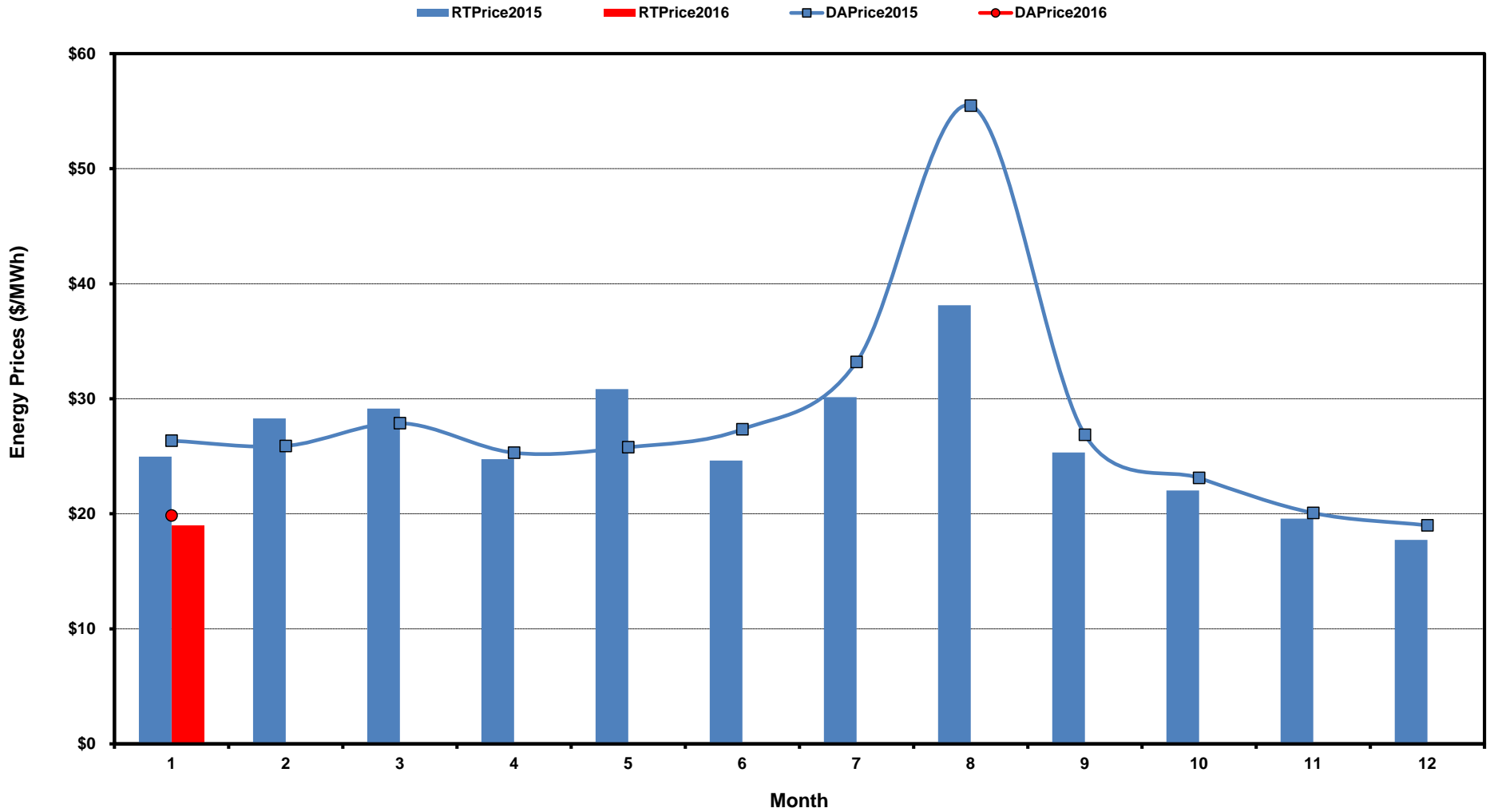
Thursday, February 11, 2016

Potomac Economics, Ltd.
Independent Market Monitor

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ERCOT-wide Average Energy Prices DA vs RT

(avg. DA & RT SPPs weighted by Real Time Settlement Loads)



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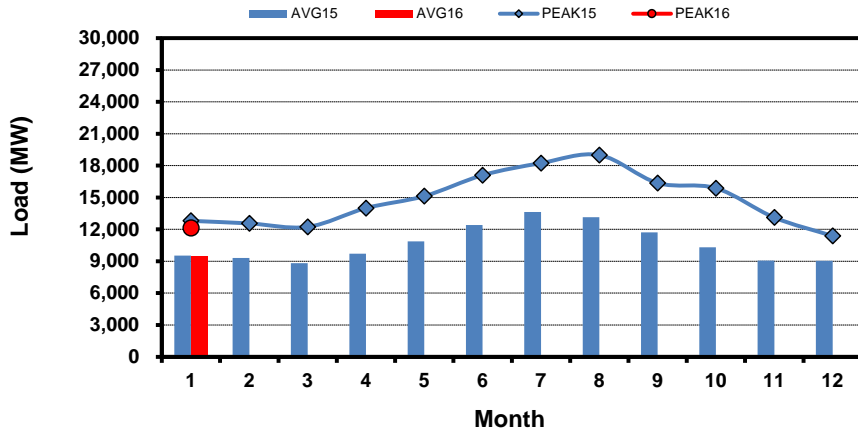
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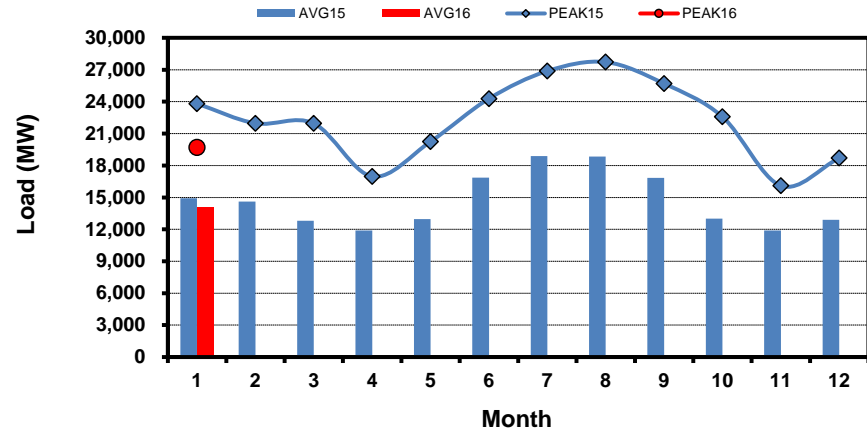
Load Zone Load Statistics

(Nodal load zone made comparable to zonal system Load Zone definitions*)

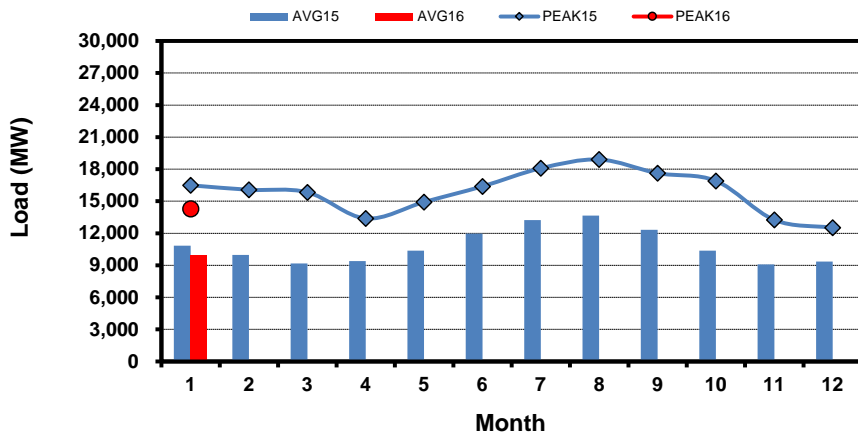
Houston Zone



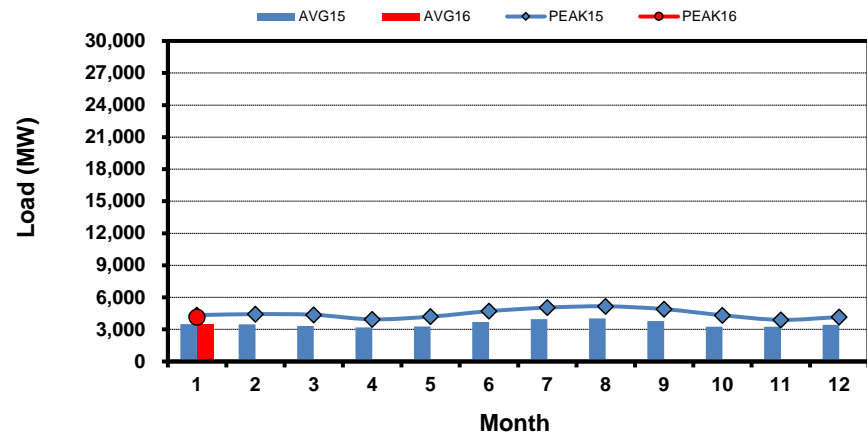
North Zone



South Zone



West Zone



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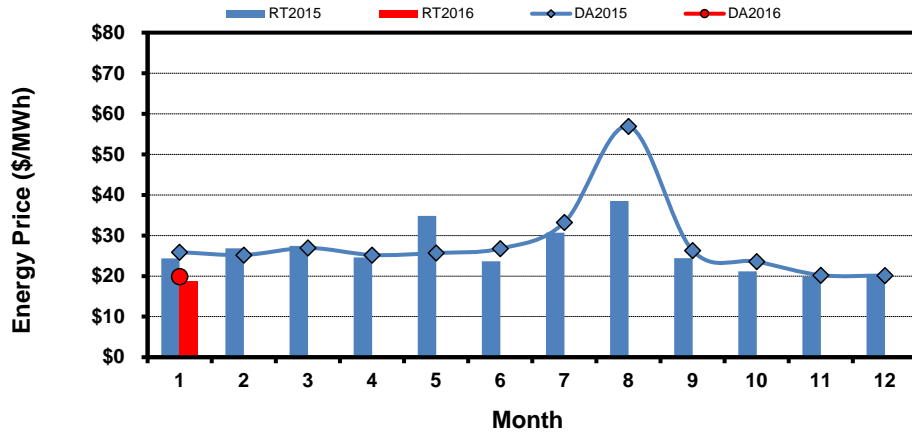
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

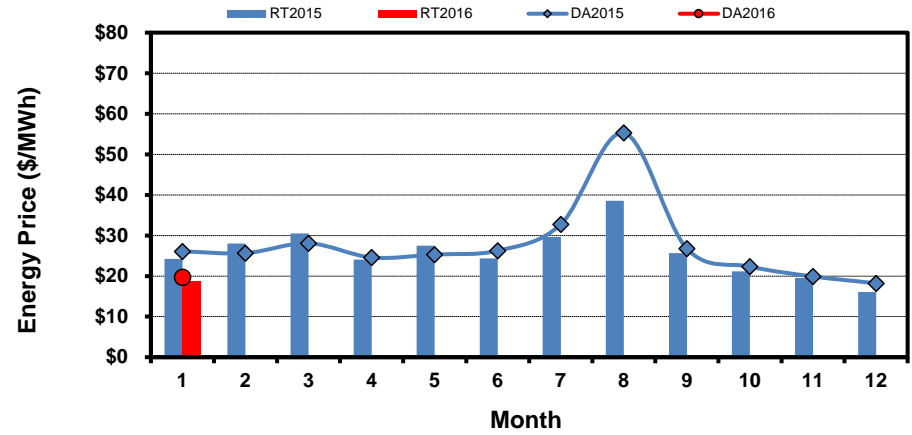
Load Zone Monthly Average Energy Price DA vs RT

(avg. DA & RT SPPs weighted by Real Time Settlement Loads)
 (Nodal load zone made comparable to zonal system Load Zone definitions*)

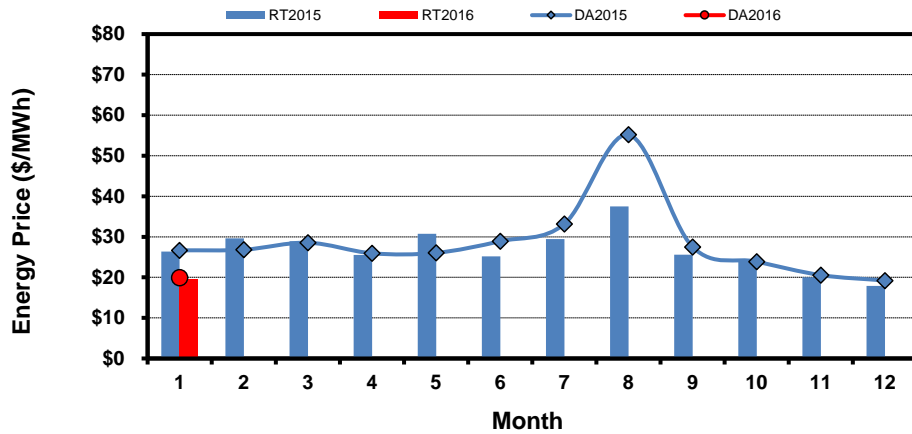
Houston Zone



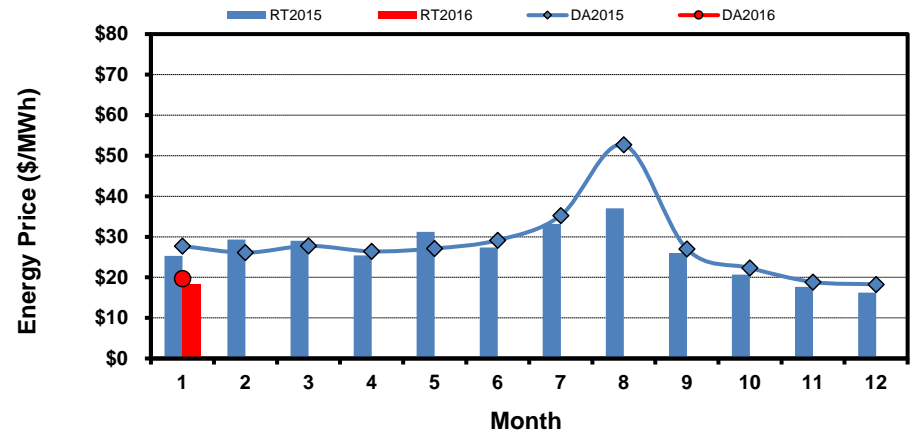
North Zone



South Zone



West Zone



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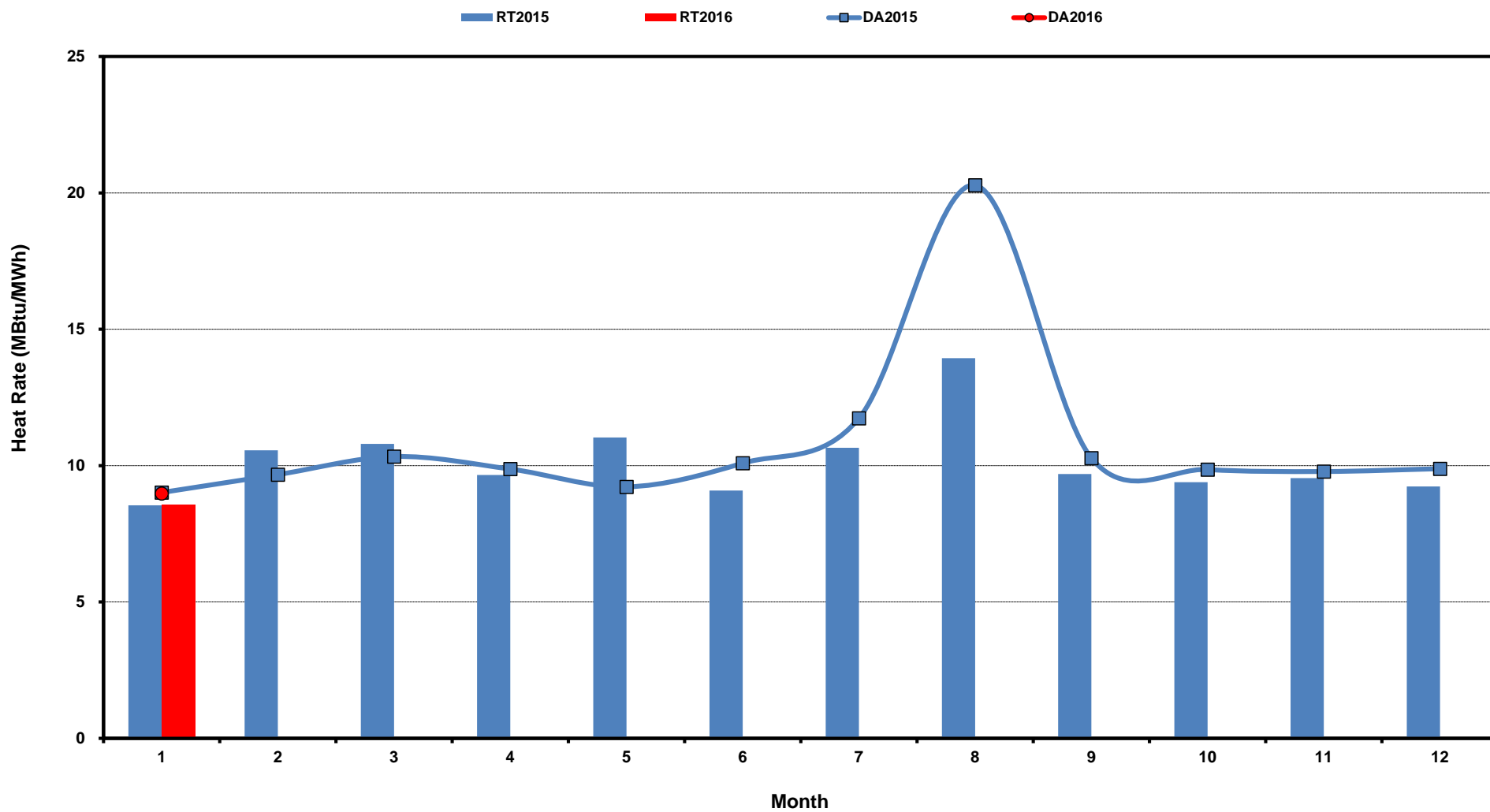
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

ERCOT-wide Monthly Implied Heat Rate DA vs RT

(avg. heat rates weighted by Real Time Settlement Loads)



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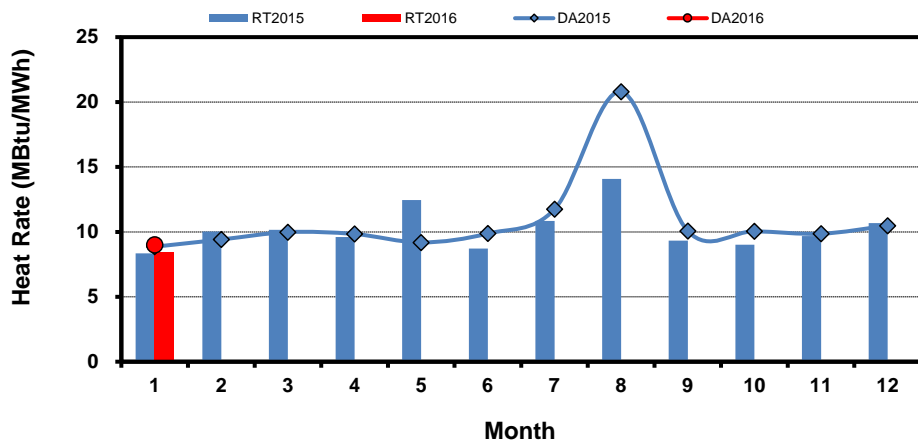
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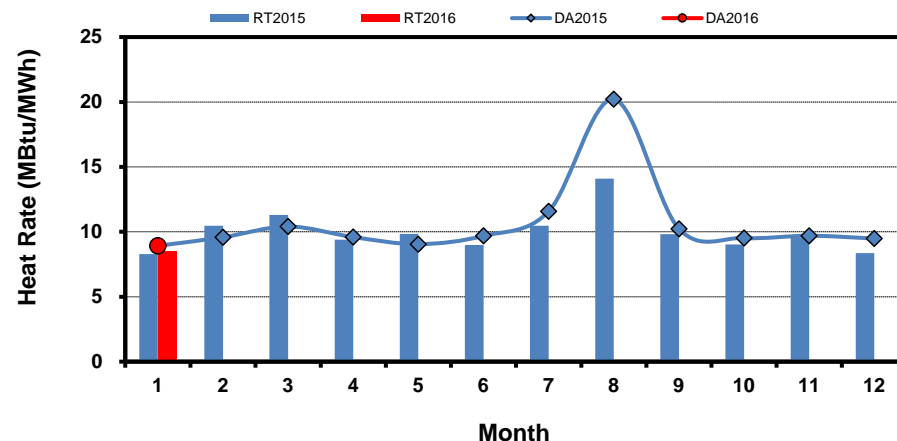
Load Zone Monthly Implied Heat Rate DA vs RT

(avg. heat rates weighted by Real Time Settlement Loads)
 (Nodal load zone made comparable to zonal system Load Zone definitions*)

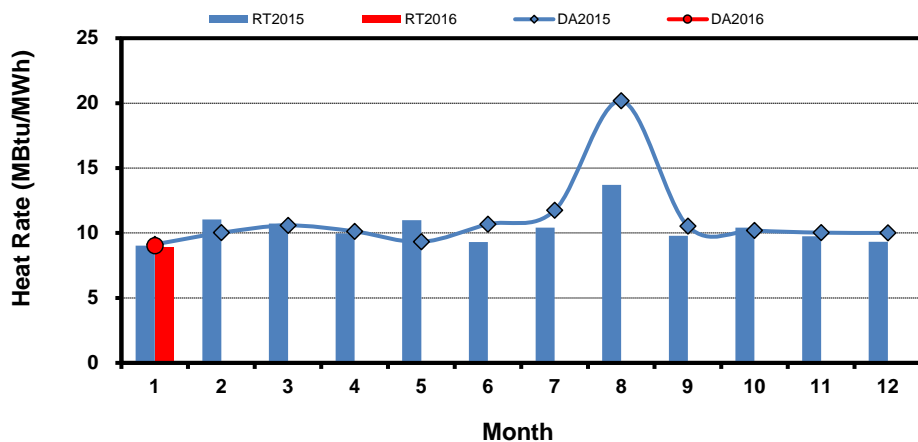
Houston Zone



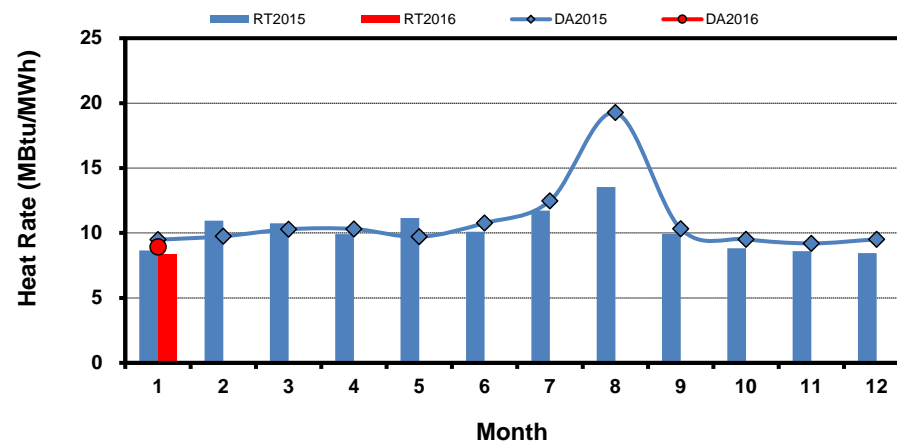
North Zone



South Zone



West Zone



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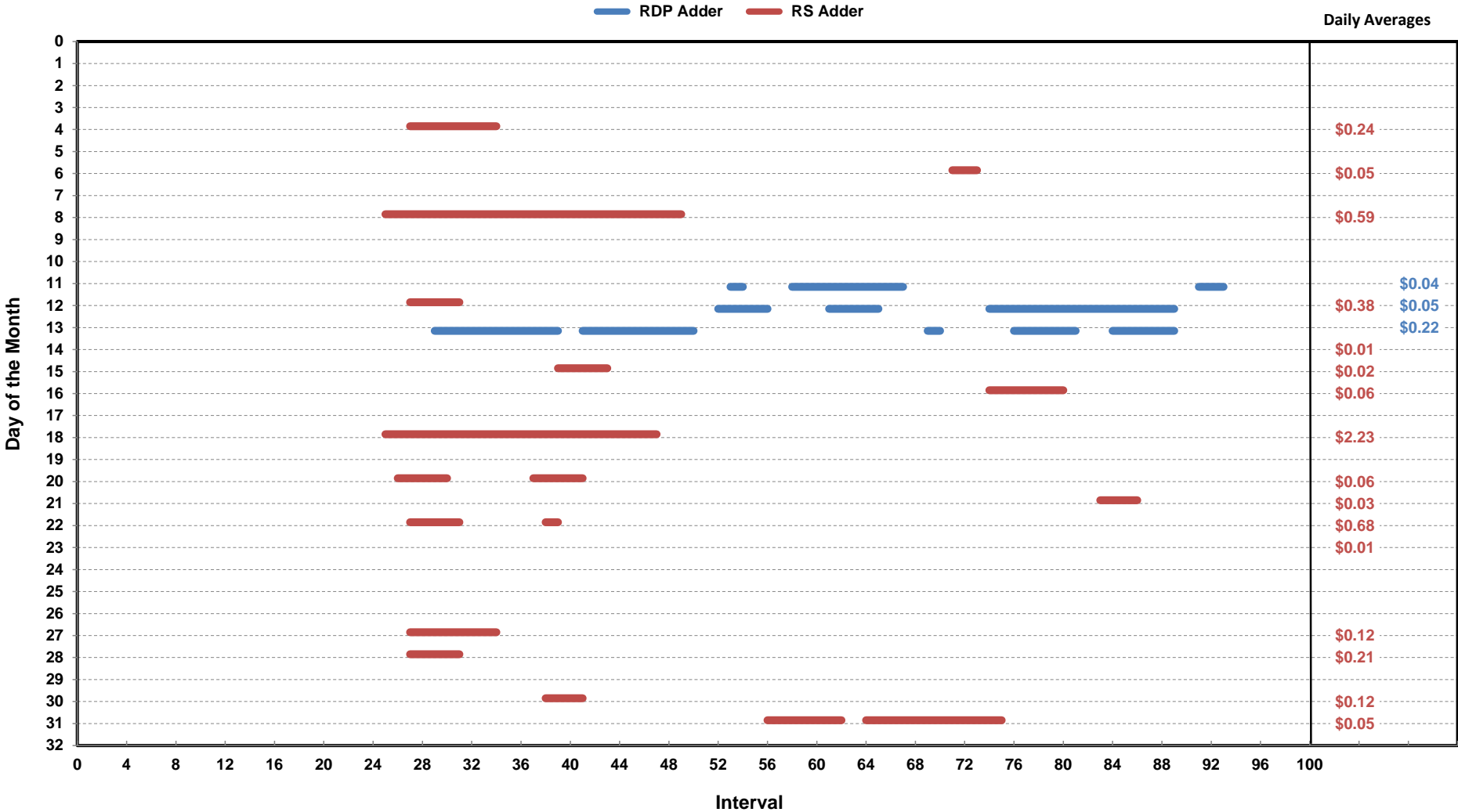
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

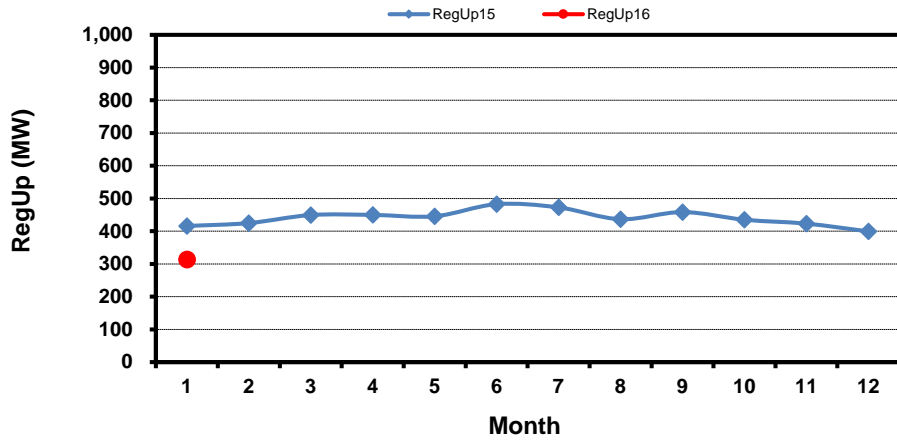
Daily ORDC Adders Average Values and Interval Duration Jan-2016



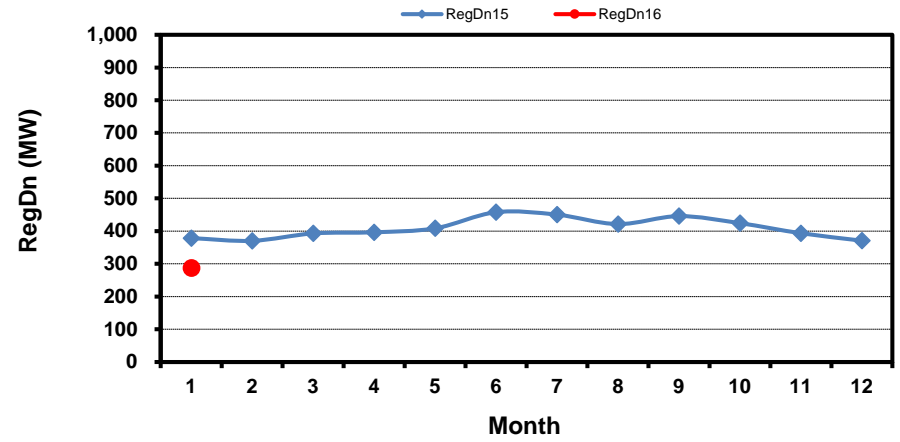
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Monthly Average of Ancillary Services Required MW

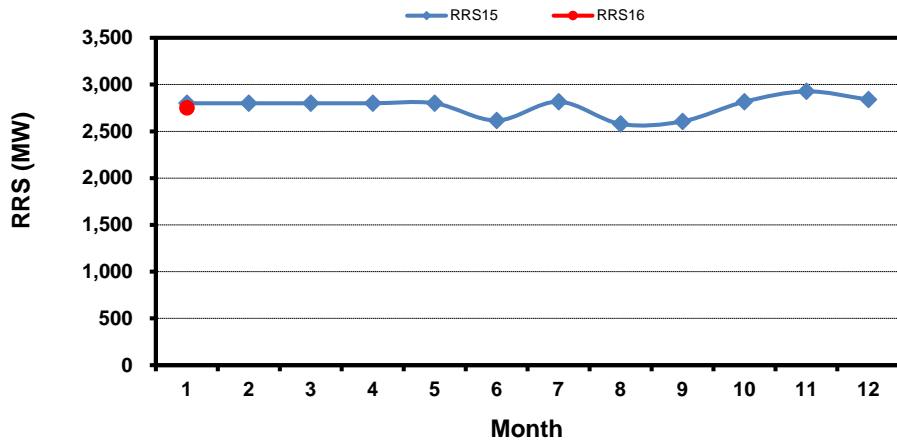
Regulation Up



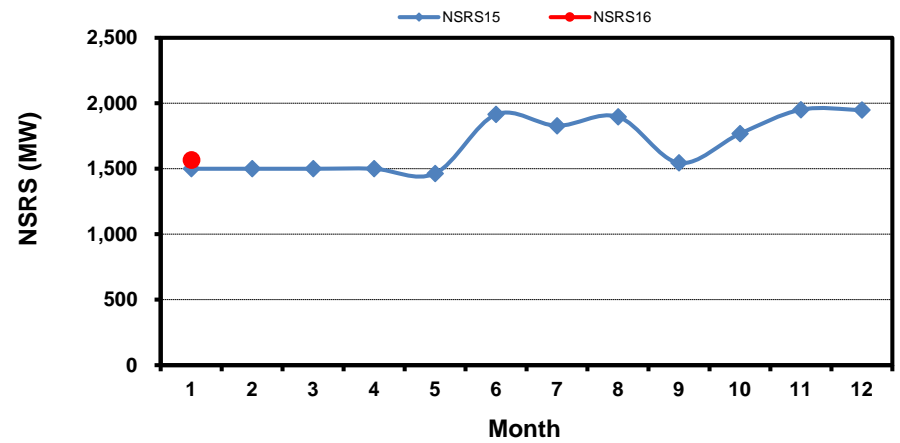
Regulation Down



Responsive Reserve



Non-Spin Reserve



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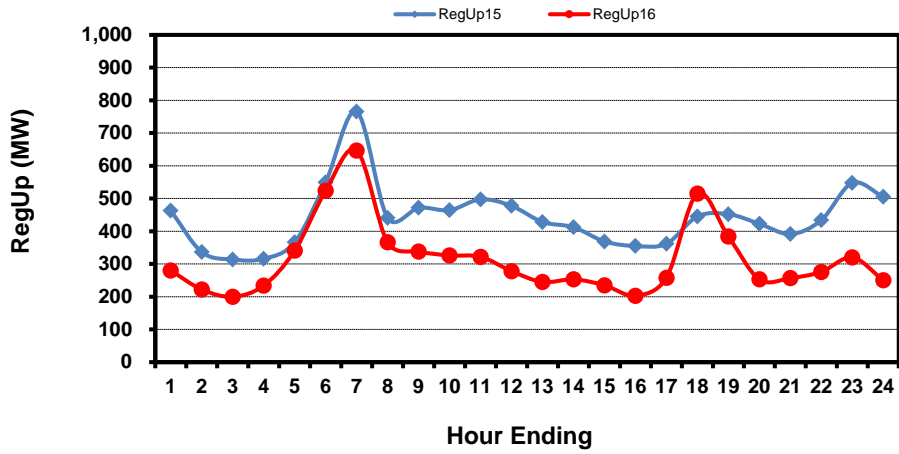
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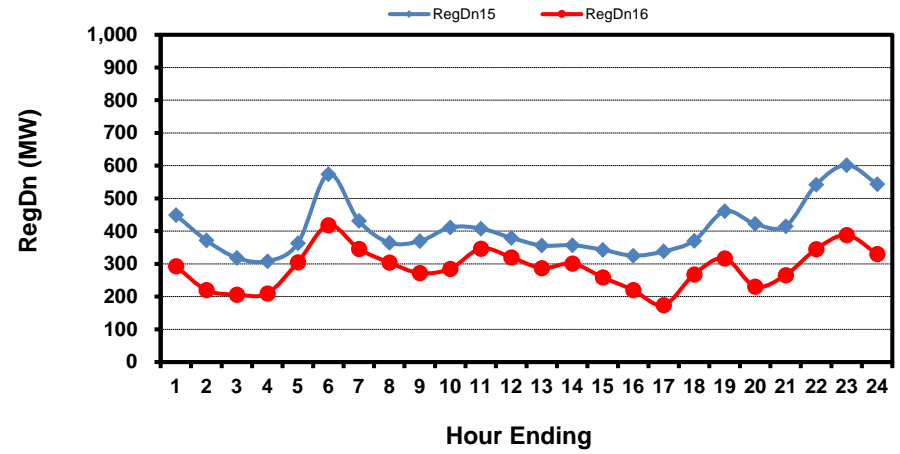
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Hourly Average of Ancillary Services Required MW

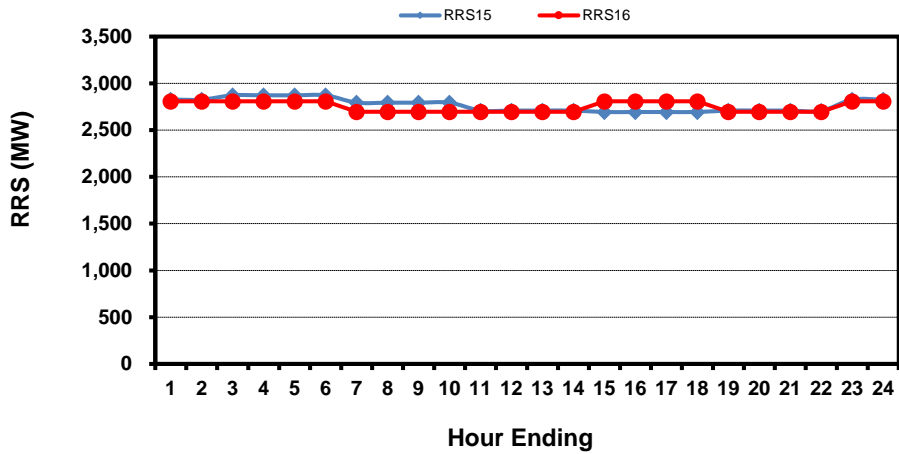
Regulation Up



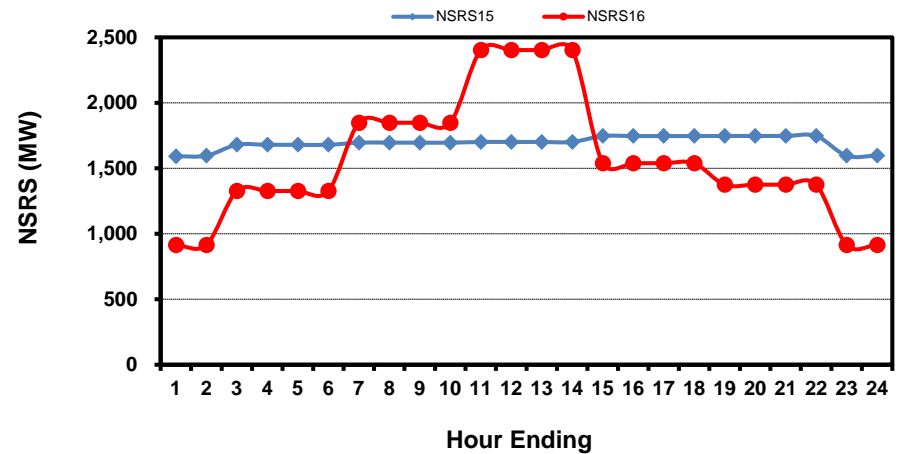
Regulation Down



Responsive Reserve



Non-Spin Reserve



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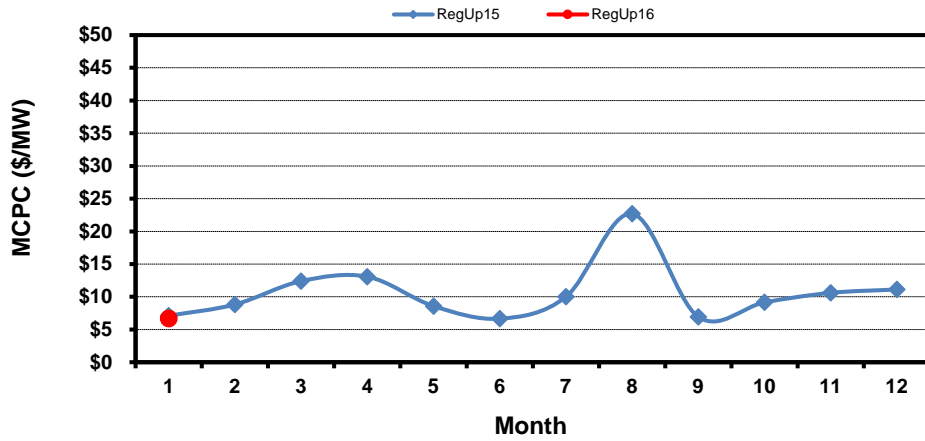
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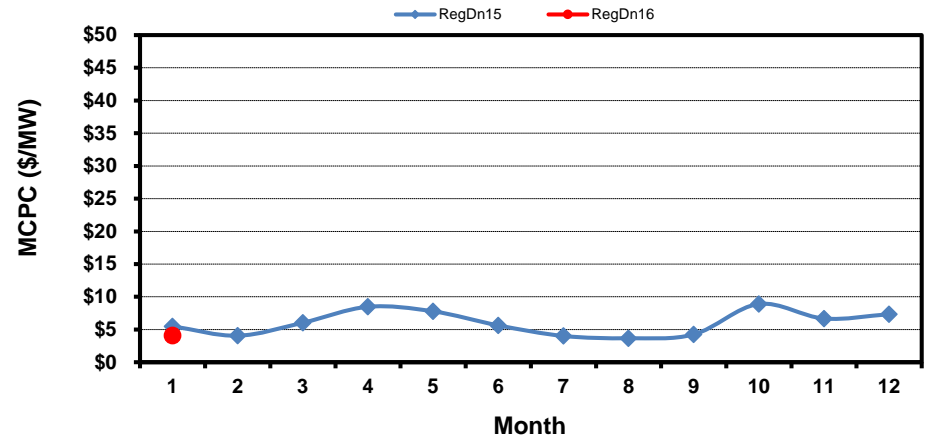
Monthly Average Ancillary Services Price

(weighted by A/S Quantities Required)

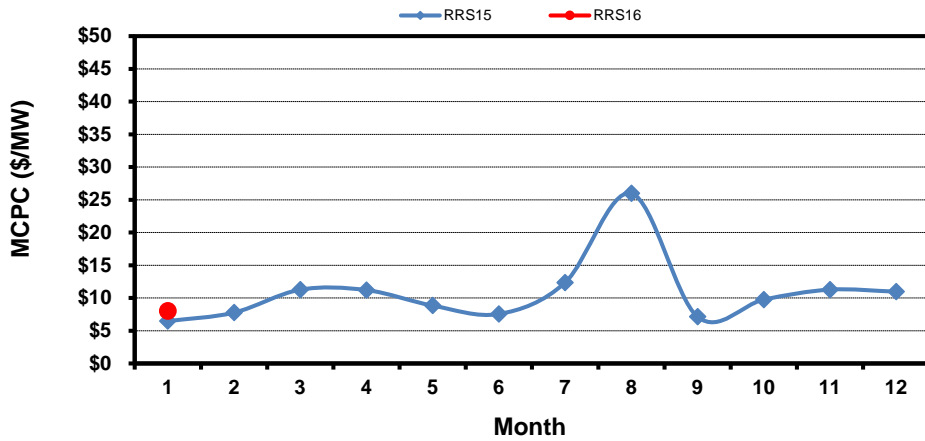
Regulation Up



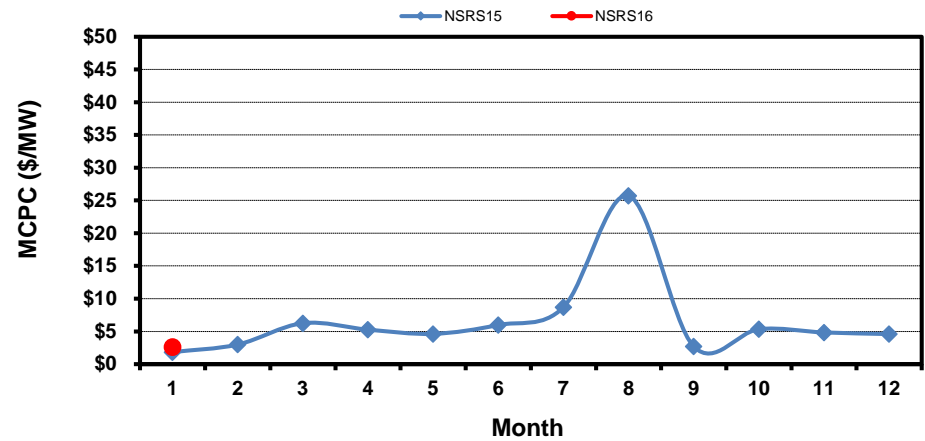
Regulation Down



Responsive Reserve



Non-Spin Reserve



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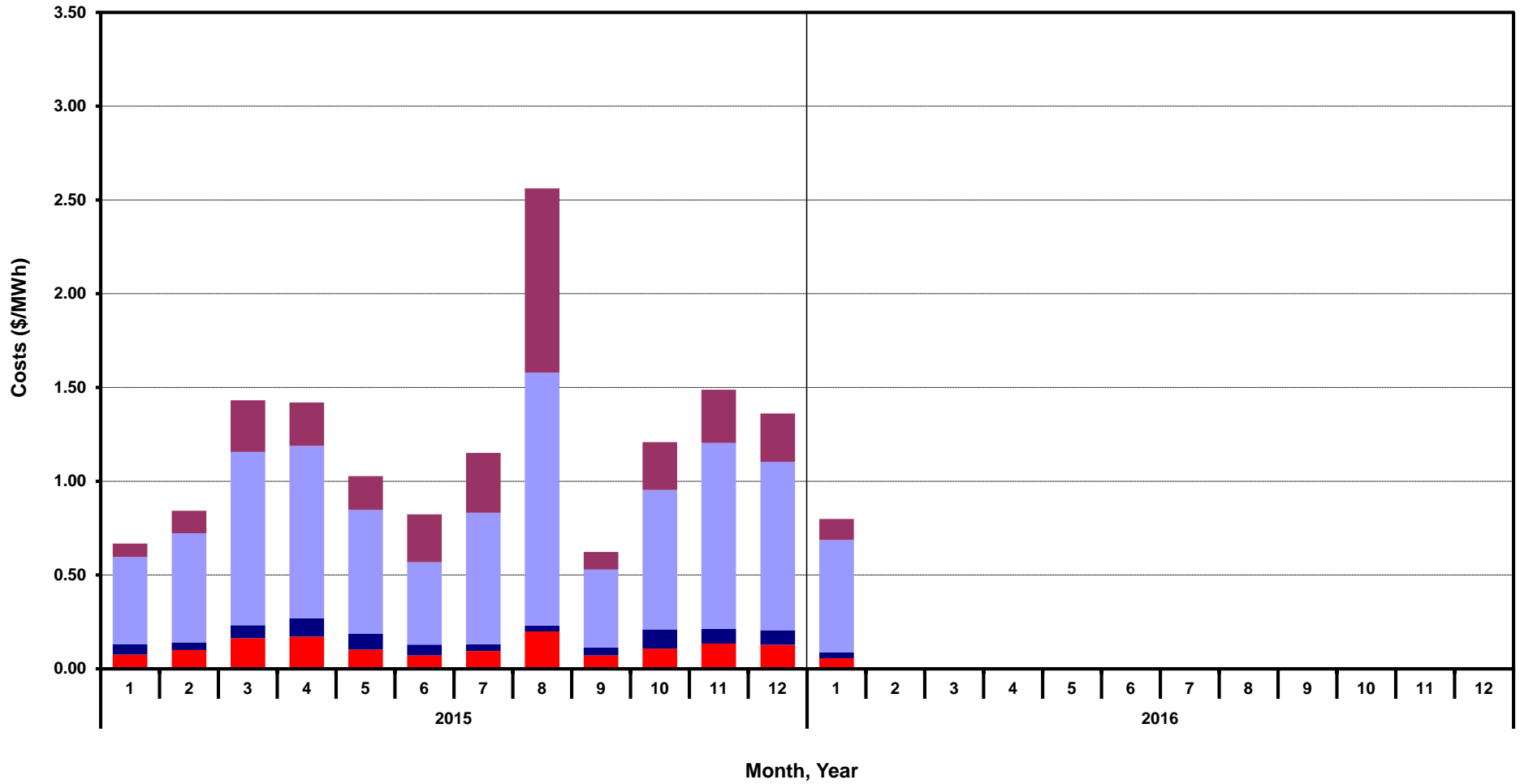
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Monthly Average A/S Cost per MWh Load

RegUp RegDn RRS NonSpin



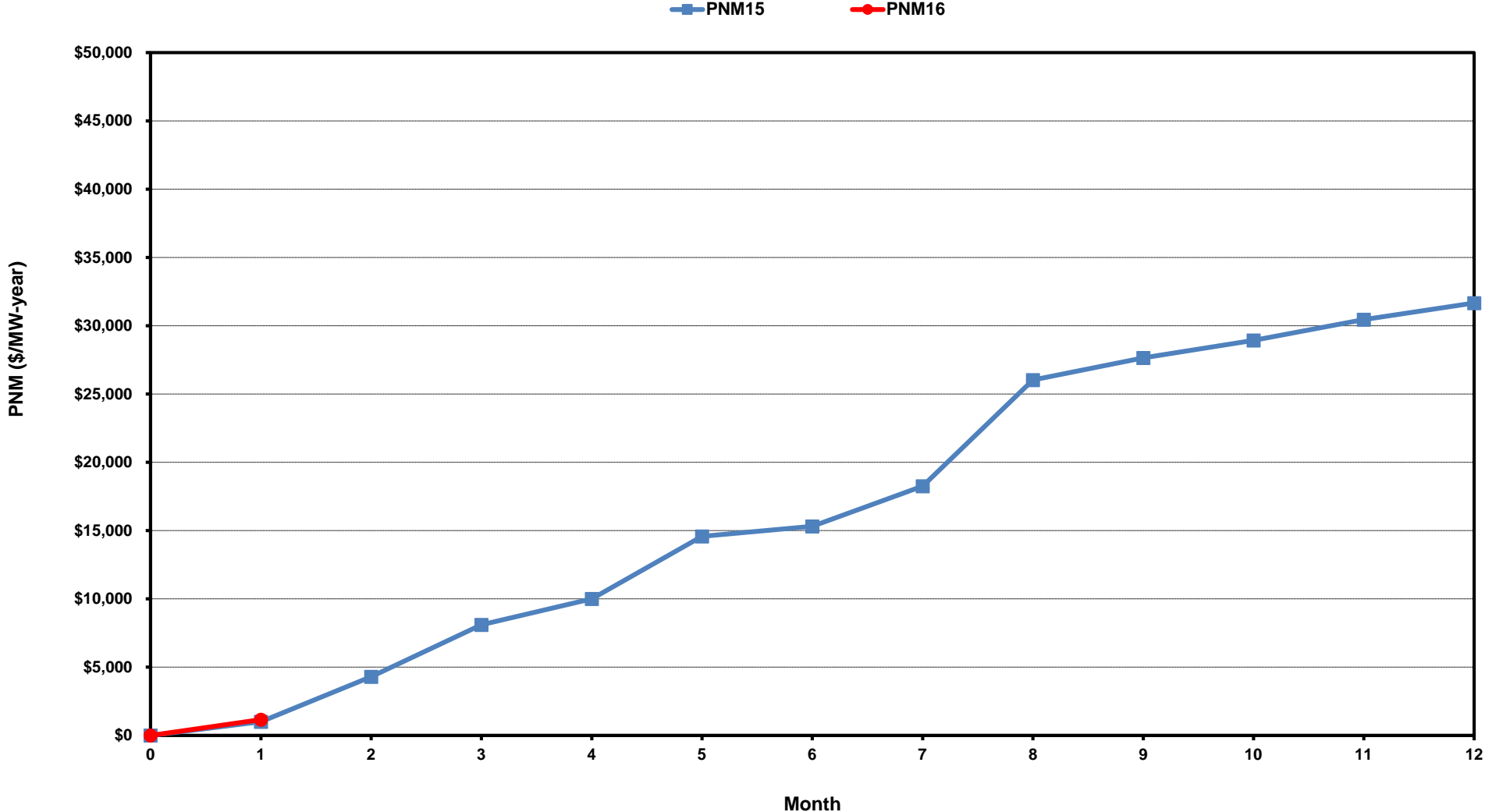
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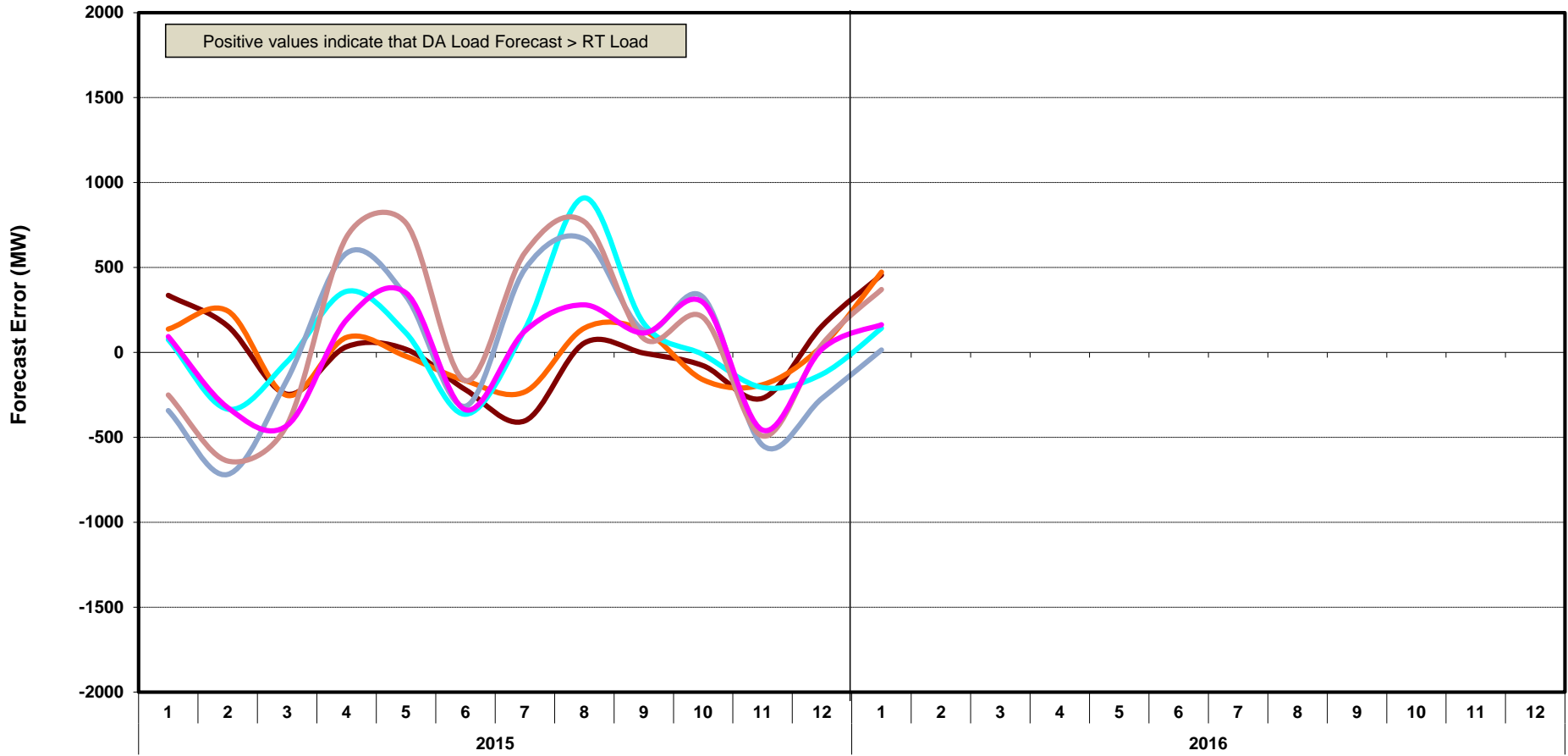
ERCOT-wide Cumulative Peaker Net Margin



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DA vs. RT Load Forecast Error by Hour Ending

HE_1_4 HE_5_8 HE_9_12 HE_13_16 HE_17_20 HE_21_24



Month, Year

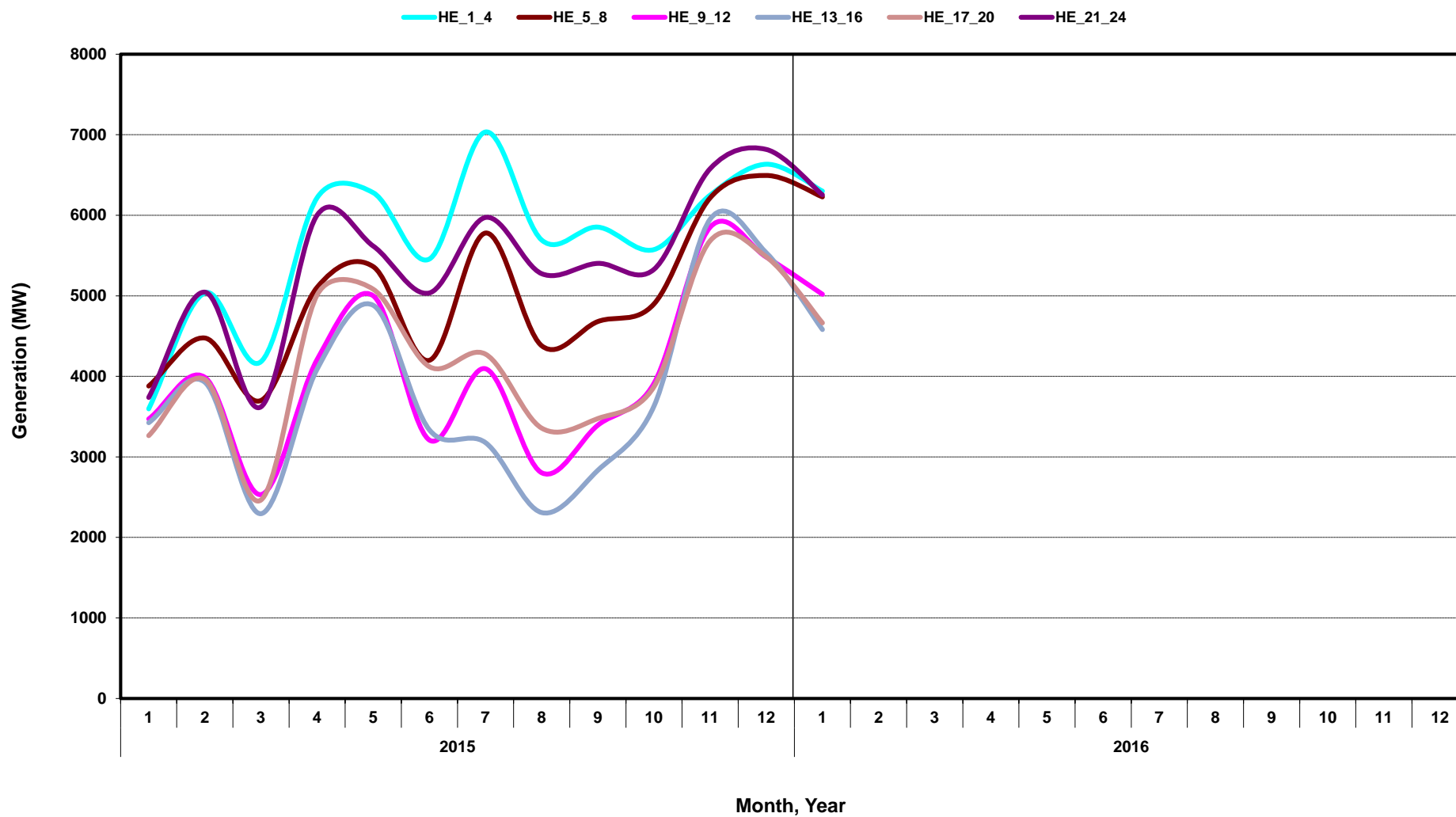
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Monthly Average of Wind Generation by Hour Ending



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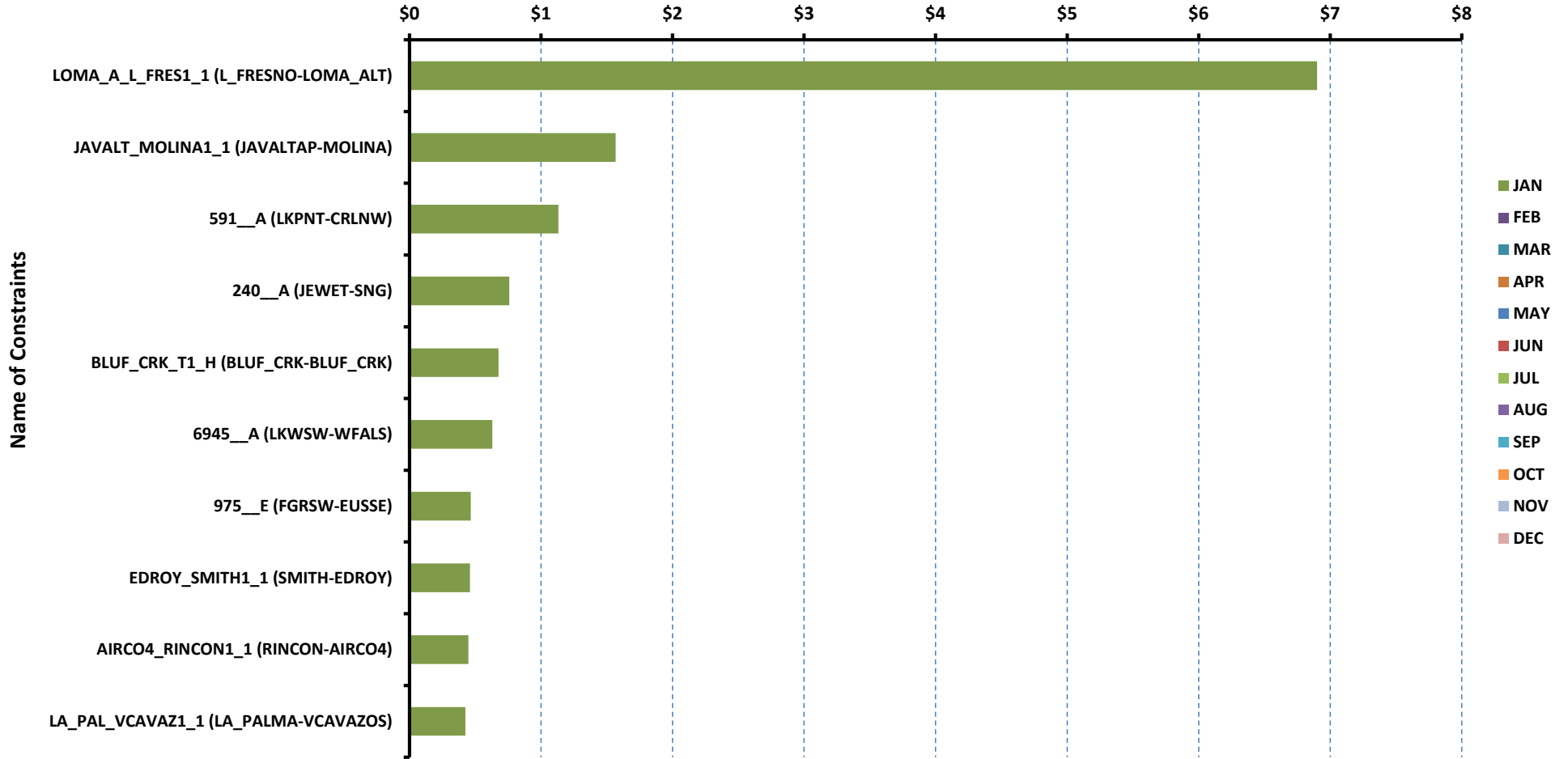
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RT Congestion Constraint Rankings - 1

Top 10 Constraints by Total Congestion Rent

Congestion Rent in \$ million



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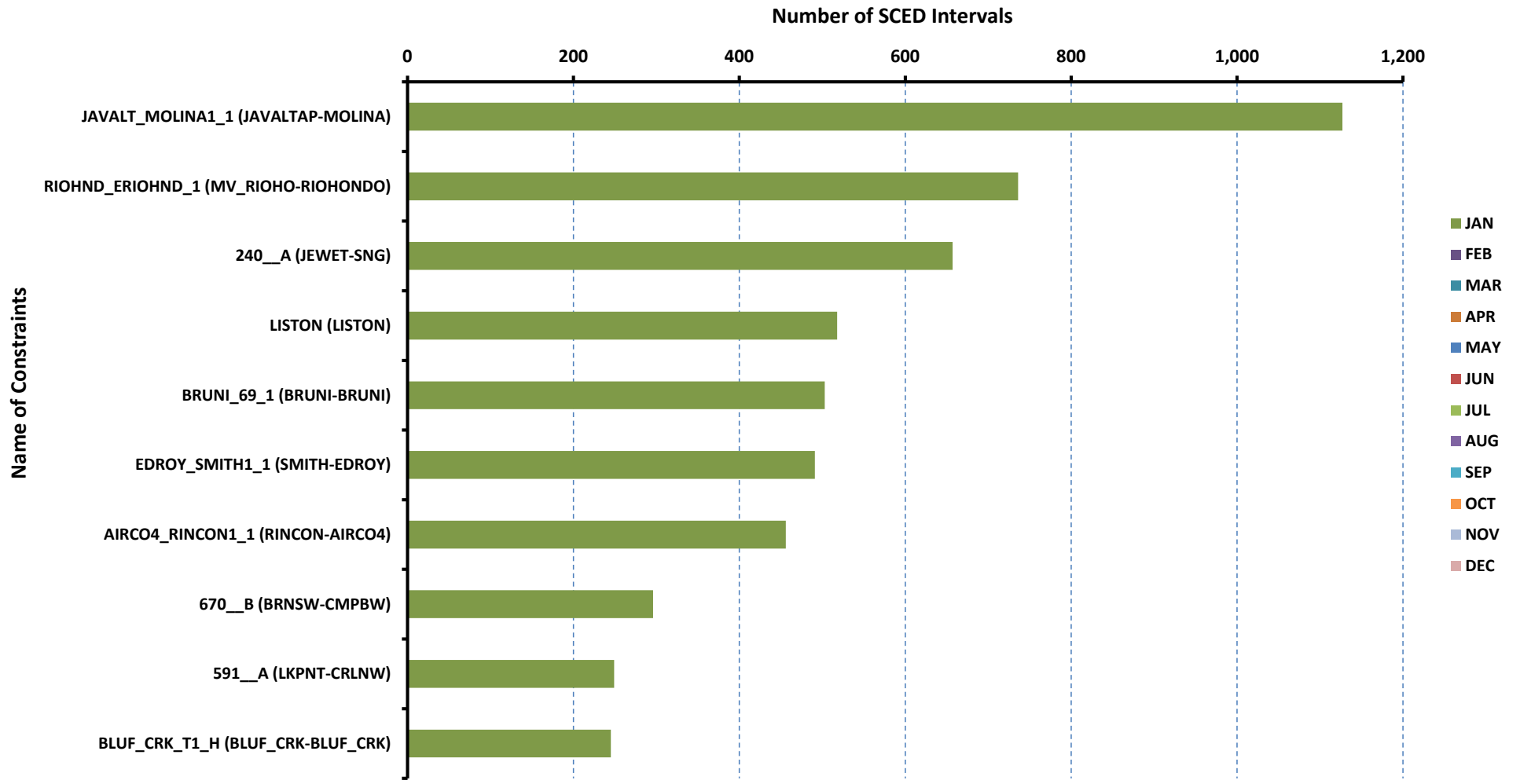
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RT Congestion Constraint Rankings - 2

Top 10 Constraints by Binding Frequency



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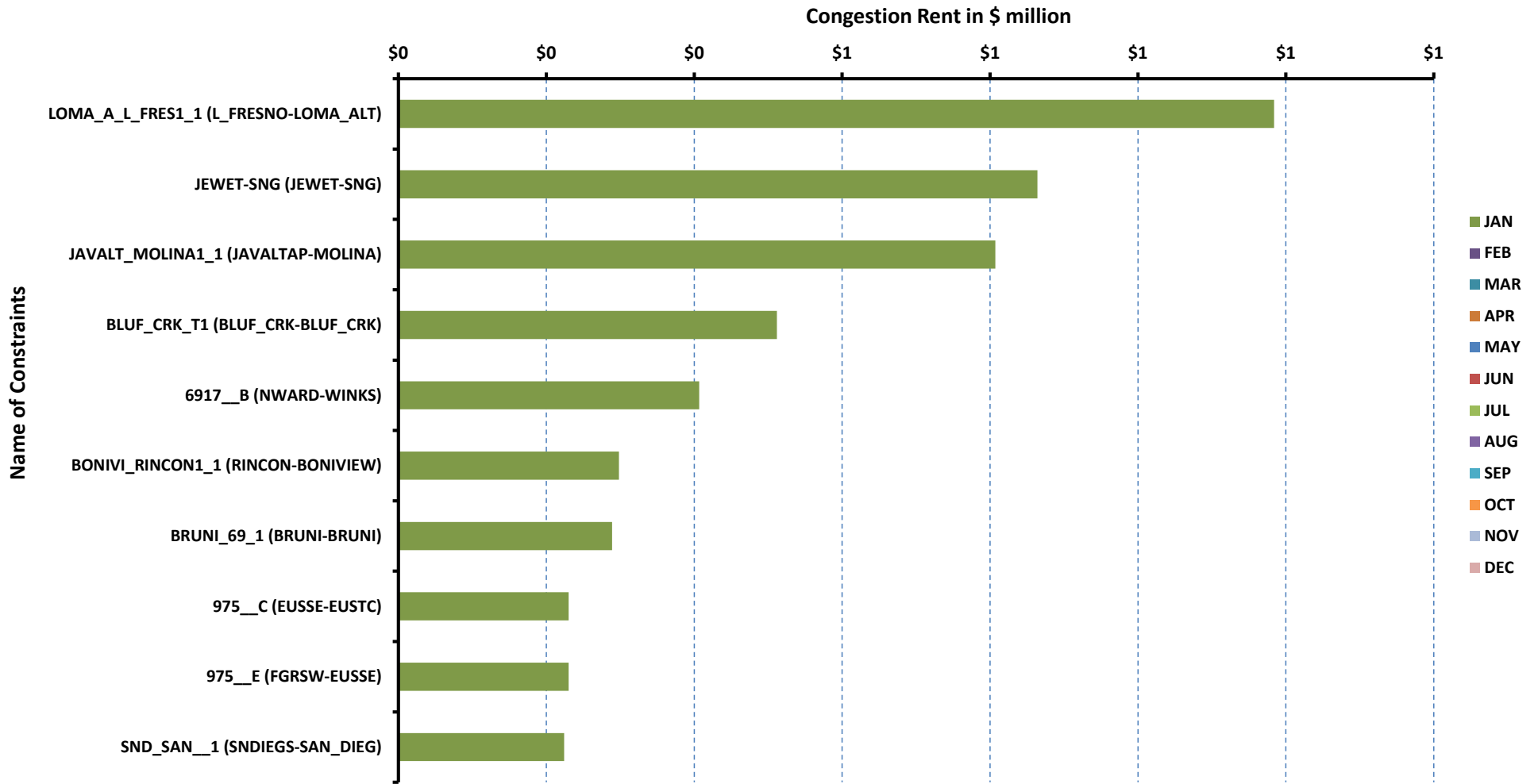
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DA Congestion Constraint Rankings - 1

Top 10 Constraints by Total Congestion Rent



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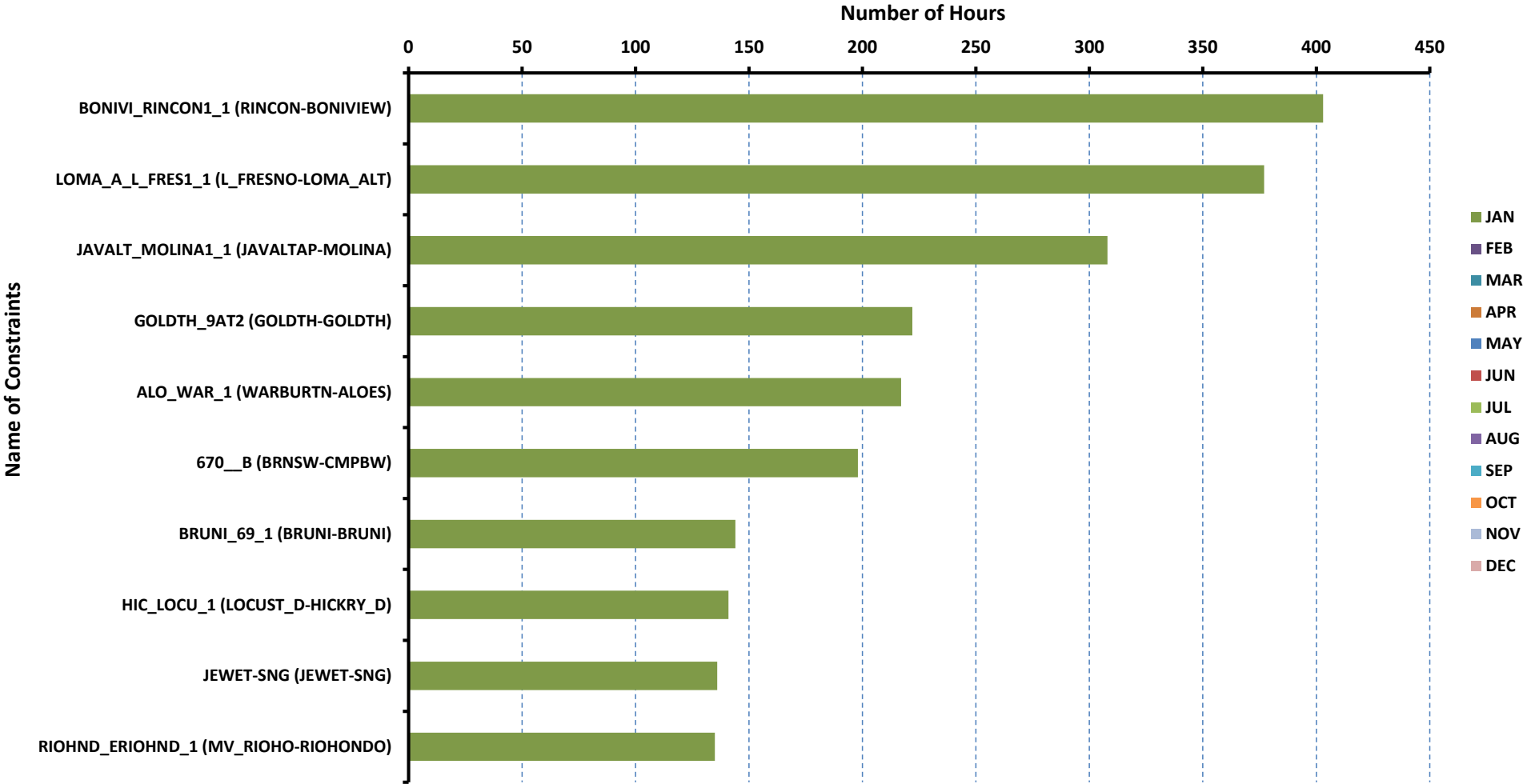
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DA Congestion Constraint Rankings - 2

Top 10 Constraints by Binding Frequency



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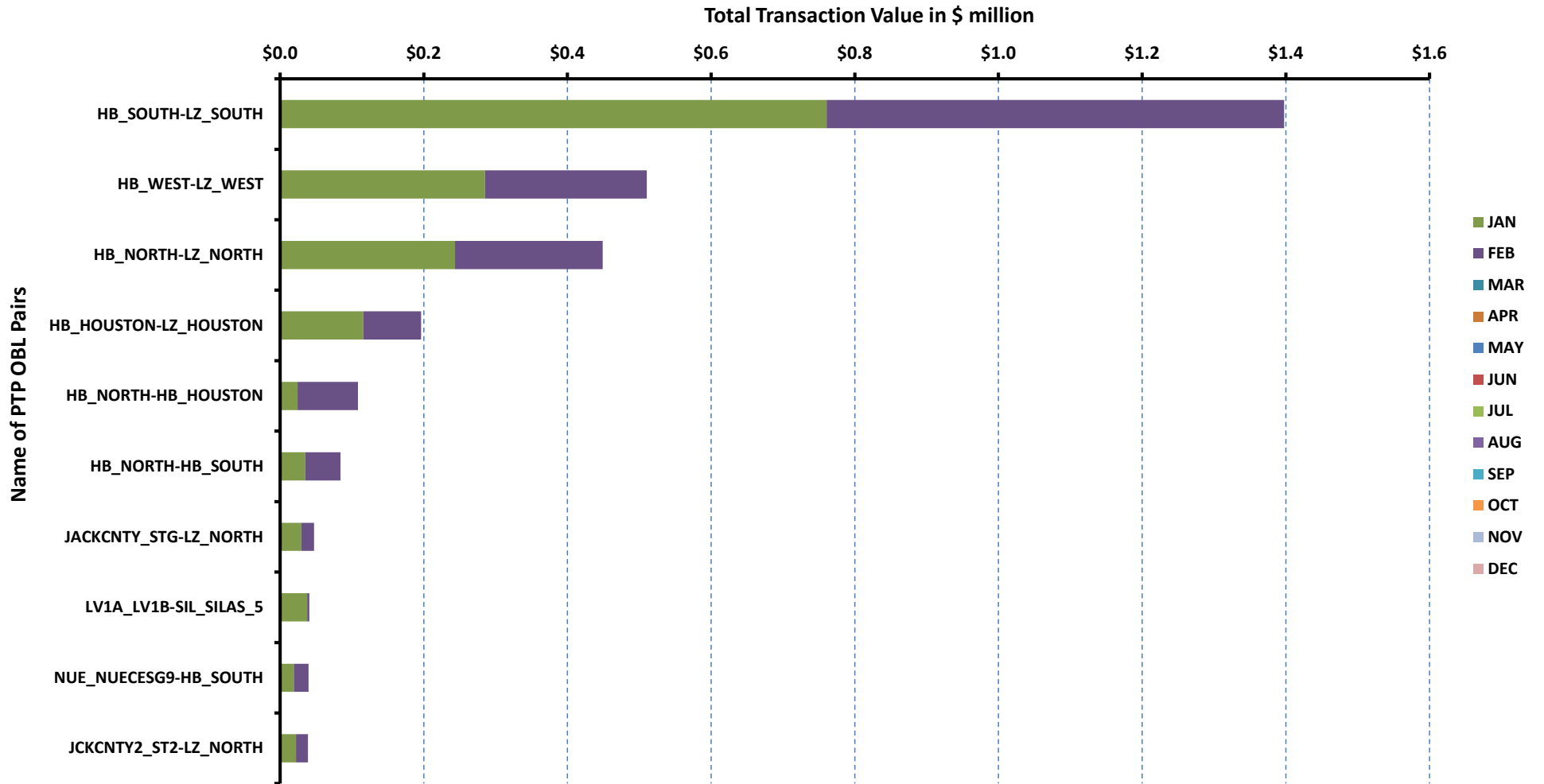
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Top 10 CRR Pairs Ranked by Monthly Auction Values - 1

Top 10 PTP Obligations by Total Transaction Value



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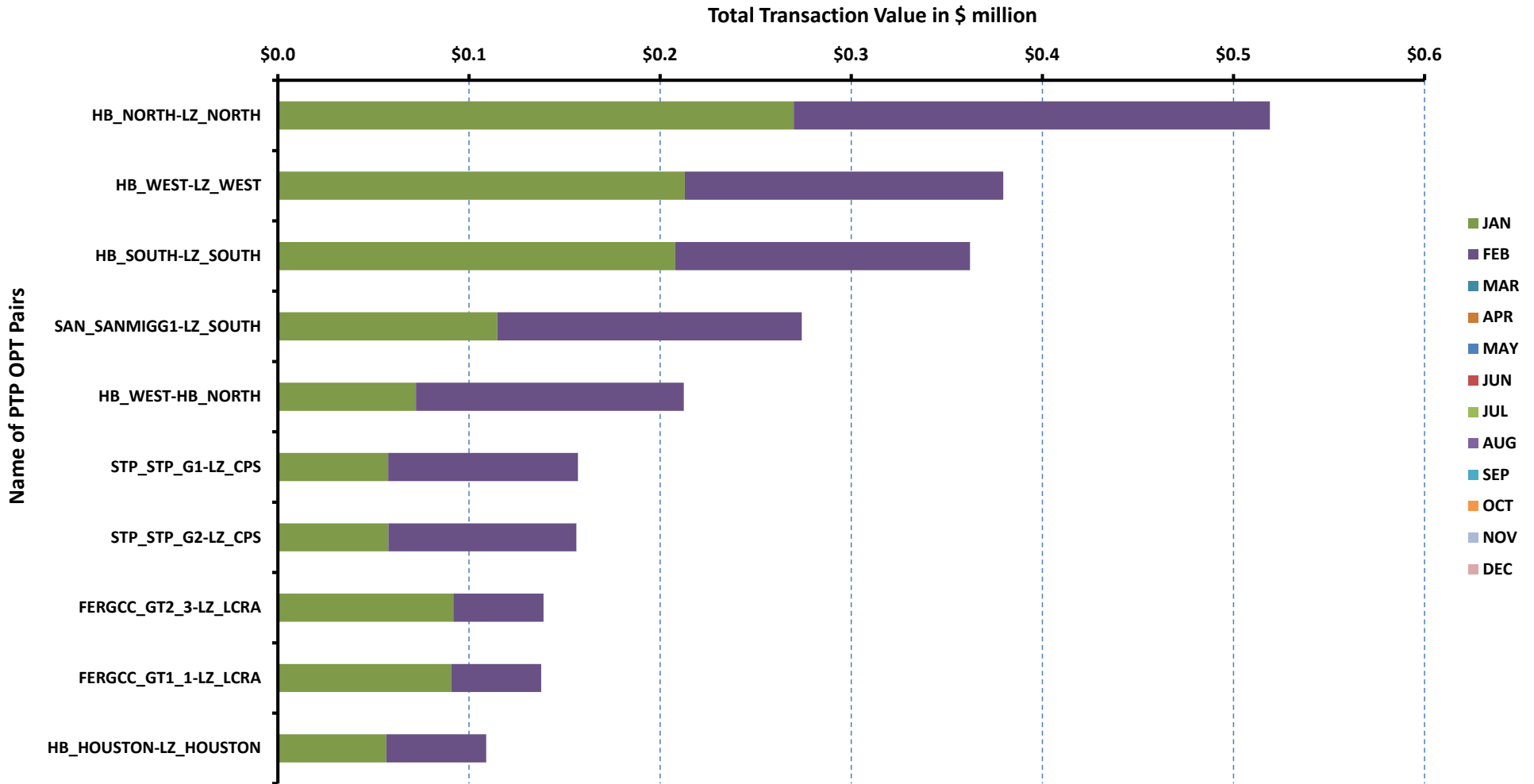
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Top 10 CRR Pairs Ranked by Monthly Auction Values - 2

Top 10 PTP Options by Total Transaction Value



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ERCOT-wide Avg. Energy Price - DA vs. RT			
year	month	dam_spp	rtm_spp
2015	1	\$ 26.35	\$ 24.97
	2	\$ 25.90	\$ 28.28
	3	\$ 27.88	\$ 29.14
	4	\$ 25.30	\$ 24.74
	5	\$ 25.78	\$ 30.84
	6	\$ 27.35	\$ 24.63
	7	\$ 33.20	\$ 30.14
	8	\$ 55.48	\$ 38.12
	9	\$ 26.87	\$ 25.33
	10	\$ 23.11	\$ 22.02
	11	\$ 20.07	\$ 19.58
	12	\$ 18.99	\$ 17.74
2016	1	\$ 19.85	\$ 18.96
	2	\$ -	\$ -
	3	\$ -	\$ -
	4	\$ -	\$ -
	5	\$ -	\$ -
	6	\$ -	\$ -
	7	\$ -	\$ -
	8	\$ -	\$ -
	9	\$ -	\$ -
	10	\$ -	\$ -
	11	\$ -	\$ -
	12	\$ -	\$ -

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Load Zone Load Statistics										
year	month	loadPEAK_Houston	loadPEAK_North	loadPEAK_South	loadPEAK_West	loadAVG_Houston	loadAVG_North	loadAVG_South	loadAVG_West	
2015	1	12,803	23,814	16,491	4,339	9,538	14,918	10,830	3,496	
	2	12,561	21,965	16,070	4,433	9,308	14,612	9,980	3,477	
	3	12,235	21,950	15,837	4,372	8,827	12,810	9,182	3,318	
	4	14,001	16,971	13,386	3,944	9,708	11,901	9,397	3,177	
	5	15,128	20,253	14,926	4,199	10,879	12,956	10,381	3,265	
	6	17,100	24,285	16,392	4,708	12,402	16,870	11,974	3,702	
	7	18,236	26,878	18,084	5,043	13,643	18,882	13,232	3,958	
	8	18,994	27,717	18,902	5,164	13,139	18,847	13,663	4,037	
	9	16,363	25,696	17,625	4,902	11,727	16,829	12,317	3,794	
	10	15,877	22,574	16,902	4,328	10,313	13,012	10,381	3,248	
	11	13,117	16,102	13,250	3,893	9,074	11,890	9,086	3,261	
	12	11,381	18,698	12,514	4,157	9,041	12,905	9,362	3,422	
2016	1	12,138	19,714	14,297	4,156	9,413	14,074	9,981	3,525	
	2	-	-	-	-	-	-	-	-	
	3	-	-	-	-	-	-	-	-	
	4	-	-	-	-	-	-	-	-	
	5	-	-	-	-	-	-	-	-	
	6	-	-	-	-	-	-	-	-	
	7	-	-	-	-	-	-	-	-	
	8	-	-	-	-	-	-	-	-	
	9	-	-	-	-	-	-	-	-	
	10	-	-	-	-	-	-	-	-	
	11	-	-	-	-	-	-	-	-	
	12	-	-	-	-	-	-	-	-	

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Load Zone Monthly Average Energy Price - DA vs. RT										
year	month	avgRTMp_Houston	avgRTMp_North	avgRTMp_South	avgRTMp_West	avgDAMp_Houston	avgDAMp_North	avgDAMp_South	avgDAMp_West	
2015	1	\$ 24.37	\$ 24.24	\$ 26.39	\$ 25.32	\$ 25.89	\$ 26.09	\$ 26.67	\$ 27.72	
	2	\$ 26.86	\$ 28.03	\$ 29.60	\$ 29.35	\$ 25.21	\$ 25.66	\$ 26.83	\$ 26.10	
	3	\$ 27.42	\$ 30.50	\$ 28.93	\$ 29.01	\$ 26.93	\$ 28.08	\$ 28.55	\$ 27.76	
	4	\$ 24.59	\$ 24.08	\$ 25.53	\$ 25.39	\$ 25.21	\$ 24.58	\$ 25.94	\$ 26.41	
	5	\$ 34.82	\$ 27.49	\$ 30.72	\$ 31.20	\$ 25.68	\$ 25.30	\$ 26.05	\$ 27.14	
	6	\$ 23.61	\$ 24.36	\$ 25.20	\$ 27.36	\$ 26.76	\$ 26.26	\$ 28.92	\$ 29.18	
	7	\$ 30.68	\$ 29.60	\$ 29.44	\$ 33.16	\$ 33.21	\$ 32.75	\$ 33.20	\$ 35.27	
	8	\$ 38.50	\$ 38.55	\$ 37.49	\$ 37.03	\$ 56.90	\$ 55.29	\$ 55.19	\$ 52.70	
	9	\$ 24.39	\$ 25.66	\$ 25.57	\$ 25.98	\$ 26.30	\$ 26.75	\$ 27.52	\$ 27.00	
	10	\$ 21.14	\$ 21.16	\$ 24.41	\$ 20.69	\$ 23.56	\$ 22.33	\$ 23.89	\$ 22.31	
	11	\$ 19.86	\$ 19.57	\$ 20.01	\$ 17.64	\$ 20.22	\$ 19.89	\$ 20.57	\$ 18.87	
	12	\$ 20.51	\$ 16.06	\$ 17.90	\$ 16.24	\$ 20.12	\$ 18.22	\$ 19.22	\$ 18.28	
2016	1	\$ 18.67	\$ 18.77	\$ 19.68	\$ 18.39	\$ 19.93	\$ 19.74	\$ 19.95	\$ 19.76	
	2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	9	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	11	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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ERCOT-wide Monthly Implied Heat Rate - DA vs. RT						
year	month	gasprice	rtn_spp	HR_rtn	dam_spp	HR_dam
2015	1	\$ 2.92	\$ 24.97	8.54	\$ 26.35	9.01
	2	\$ 2.68	\$ 28.28	10.56	\$ 25.90	9.67
	3	\$ 2.70	\$ 29.14	10.80	\$ 27.88	10.33
	4	\$ 2.56	\$ 24.74	9.66	\$ 25.30	9.87
	5	\$ 2.80	\$ 30.84	11.03	\$ 25.78	9.22
	6	\$ 2.71	\$ 24.63	9.09	\$ 27.35	10.09
	7	\$ 2.83	\$ 30.14	10.66	\$ 33.20	11.74
	8	\$ 2.74	\$ 38.12	13.94	\$ 55.48	20.28
	9	\$ 2.61	\$ 25.33	9.69	\$ 26.87	10.28
	10	\$ 2.35	\$ 22.02	9.39	\$ 23.11	9.86
	11	\$ 2.05	\$ 19.58	9.55	\$ 20.07	9.78
	12	\$ 1.92	\$ 17.74	9.23	\$ 18.99	9.89
2016	1	\$ 2.21	\$ 18.96	8.57	\$ 19.85	8.98
	2	\$ -	\$ -	-	\$ -	-
	3	\$ -	\$ -	-	\$ -	-
	4	\$ -	\$ -	-	\$ -	-
	5	\$ -	\$ -	-	\$ -	-
	6	\$ -	\$ -	-	\$ -	-
	7	\$ -	\$ -	-	\$ -	-
	8	\$ -	\$ -	-	\$ -	-
	9	\$ -	\$ -	-	\$ -	-
	10	\$ -	\$ -	-	\$ -	-
	11	\$ -	\$ -	-	\$ -	-
	12	\$ -	\$ -	-	\$ -	-

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Load Zone Monthly Implied Heat Rate - DA vs. RT									
year	month	HRdam_Houston	HRdam_South	HRdam_North	HRdam_West	HRrtm_Houston	HRrtm_South	HRrtm_North	HRrtm_West
2015	1	8.86	9.12	8.92	9.48	8.34	9.03	8.29	8.66
	2	9.41	10.02	9.58	9.75	10.03	11.05	10.47	10.96
	3	9.98	10.58	10.41	10.29	10.16	10.72	11.30	10.75
	4	9.84	10.12	9.59	10.31	9.60	9.96	9.40	9.91
	5	9.19	9.32	9.05	9.70	12.45	10.99	9.83	11.16
	6	9.87	10.67	9.69	10.76	8.71	9.30	8.99	10.09
	7	11.74	11.74	11.58	12.47	10.85	10.41	10.47	11.72
	8	20.80	20.17	20.21	19.27	14.08	13.70	14.09	13.54
	9	10.06	10.53	10.23	10.33	9.33	9.78	9.82	9.94
	10	10.05	10.19	9.52	9.51	9.01	10.41	9.02	8.82
	11	9.86	10.03	9.70	9.20	9.68	9.75	9.54	8.60
	12	10.47	10.01	9.49	9.52	10.68	9.32	8.36	8.46
2016	1	9.02	9.02	8.93	8.94	8.45	8.90	8.49	8.32
	2	-	-	-	-	-	-	-	-
	3	-	-	-	-	-	-	-	-
	4	-	-	-	-	-	-	-	-
	5	-	-	-	-	-	-	-	-
	6	-	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-	-
	10	-	-	-	-	-	-	-	-
	11	-	-	-	-	-	-	-	-
	12	-	-	-	-	-	-	-	-

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Daily ORDC Adders Average Values and Interval Duration								
YEAR	MONTH	DAY	PRICE_RS	PRICE_RDP	RS_CNT	RDP_CNT	RS_POS	RDP_POS
2016	1	1	\$ -	\$ -	0	0	80	90
2016	1	2	\$ -	\$ -	0	0	80	90
2016	1	3	\$ -	\$ -	0	0	80	90
2016	1	4	\$ 0.24	\$ -	8	0	80	90
2016	1	5	\$ -	\$ -	0	0	80	90
2016	1	6	\$ 0.05	\$ -	3	0	80	90
2016	1	7	\$ -	\$ -	0	0	80	90
2016	1	8	\$ 0.59	\$ -	25	0	80	90
2016	1	9	\$ -	\$ -	0	0	80	90
2016	1	10	\$ -	\$ -	0	0	80	90
2016	1	11	\$ -	\$ 0.04	0	16	80	90
2016	1	12	\$ 0.38	\$ 0.05	5	27	80	90
2016	1	13	\$ -	\$ 0.22	0	37	80	90
2016	1	14	\$ 0.01	\$ -	1	0	80	90
2016	1	15	\$ 0.02	\$ -	5	0	80	90
2016	1	16	\$ 0.06	\$ -	7	0	80	90
2016	1	17	\$ -	\$ -	0	0	80	90
2016	1	18	\$ 2.23	\$ -	24	0	80	90
2016	1	19	\$ -	\$ -	0	0	80	90
2016	1	20	\$ 0.06	\$ -	10	0	80	90
2016	1	21	\$ 0.03	\$ -	4	0	80	90
2016	1	22	\$ 0.68	\$ -	7	0	80	90
2016	1	23	\$ 0.01	\$ -	2	0	80	90
2016	1	24	\$ -	\$ -	0	0	80	90
2016	1	25	\$ -	\$ -	0	0	80	90
2016	1	26	\$ -	\$ -	0	0	80	90
2016	1	27	\$ 0.12	\$ -	8	0	80	90
2016	1	28	\$ 0.21	\$ -	6	0	80	90
2016	1	29	\$ -	\$ -	0	0	80	90
2016	1	30	\$ 0.12	\$ -	4	0	80	90
2016	1	31	\$ 0.05	\$ -	20	0	80	90

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Monthly Average of Ancillary Services Required MW					
year	month	ASMW_REGDN	ASMW_NSPIN	ASMW_RRS	ASMW_REGUP
2015	1	379	1,500	2,800	416
	2	370	1,500	2,800	425
	3	393	1,500	2,800	449
	4	396	1,500	2,800	450
	5	409	1,464	2,800	446
	6	458	1,915	2,616	483
	7	450	1,828	2,817	473
	8	422	1,897	2,579	437
	9	446	1,545	2,607	458
	10	424	1,768	2,817	435
	11	394	1,951	2,927	423
	12	371	1,949	2,840	400
2016	1	288	1,568	2,752	314
	2	-	-	-	-
	3	-	-	-	-
	4	-	-	-	-
	5	-	-	-	-
	6	-	-	-	-
	7	-	-	-	-
	8	-	-	-	-
	9	-	-	-	-
	10	-	-	-	-
	11	-	-	-	-
	12	-	-	-	-

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Hourly Average of Ancillary Services Required MW

year	DELIVERY_HOUR	ASMW_REGDN	ASMW_NSPIN	ASMW_RRS	ASMW_REGUP
2015	1	449	1,592	2,826	463
	2	372	1,596	2,826	336
	3	318	1,680	2,872	314
	4	308	1,680	2,872	316
	5	363	1,680	2,872	367
	6	574	1,680	2,872	549
	7	432	1,696	2,793	766
	8	365	1,696	2,793	441
	9	369	1,696	2,793	472
	10	411	1,696	2,793	464
	11	408	1,701	2,709	498
	12	380	1,701	2,709	478
	13	356	1,701	2,709	428
	14	357	1,701	2,709	412
	15	343	1,746	2,693	369
	16	325	1,746	2,693	355
	17	338	1,746	2,693	362
	18	371	1,746	2,693	445
	19	461	1,747	2,709	452
	20	422	1,747	2,709	423
	21	415	1,747	2,709	391
	22	542	1,747	2,706	434
	23	602	1,596	2,826	547
	24	544	1,596	2,826	505
2016	1	293	915	2,808	280
	2	220	915	2,808	222
	3	206	1,327	2,808	200
	4	210	1,327	2,808	234
	5	305	1,327	2,808	341
	6	418	1,327	2,808	524
	7	346	1,848	2,696	647
	8	304	1,848	2,696	366
	9	272	1,848	2,696	338
	10	285	1,848	2,696	326
	11	347	2,403	2,696	322
	12	320	2,403	2,696	278
	13	287	2,403	2,696	245
	14	301	2,403	2,696	253
	15	259	1,539	2,808	235
	16	220	1,539	2,808	203
	17	174	1,539	2,808	258
	18	268	1,539	2,808	515
	19	317	1,375	2,696	384
	20	231	1,375	2,696	253
	21	266	1,375	2,696	257
	22	345	1,375	2,696	276
	23	388	915	2,808	320
	24	330	915	2,808	250

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Monthly Average Ancillary Services Price					
year	month	MCPC_REGDN	MCPC_NSPIN	MCPC_RRS	MCPC_REGUP
2015	1	\$ 5.49	\$ 1.84	\$ 6.47	\$ 7.10
	2	\$ 4.05	\$ 3.00	\$ 7.77	\$ 8.83
	3	\$ 6.04	\$ 6.26	\$ 11.27	\$ 12.39
	4	\$ 8.47	\$ 5.27	\$ 11.21	\$ 13.08
	5	\$ 7.78	\$ 4.63	\$ 8.84	\$ 8.58
	6	\$ 5.63	\$ 5.98	\$ 7.56	\$ 6.65
	7	\$ 4.01	\$ 8.69	\$ 12.37	\$ 10.00
	8	\$ 3.67	\$ 25.73	\$ 25.98	\$ 22.70
	9	\$ 4.25	\$ 2.70	\$ 7.13	\$ 6.93
	10	\$ 8.90	\$ 5.34	\$ 9.76	\$ 9.15
	11	\$ 6.67	\$ 4.84	\$ 11.28	\$ 10.60
	12	\$ 7.33	\$ 4.59	\$ 10.97	\$ 11.12
2016	1	\$ 4.10	\$ 2.62	\$ 8.05	\$ 6.69
	2	\$ -	\$ -	\$ -	\$ -
	3	\$ -	\$ -	\$ -	\$ -
	4	\$ -	\$ -	\$ -	\$ -
	5	\$ -	\$ -	\$ -	\$ -
	6	\$ -	\$ -	\$ -	\$ -
	7	\$ -	\$ -	\$ -	\$ -
	8	\$ -	\$ -	\$ -	\$ -
	9	\$ -	\$ -	\$ -	\$ -
	10	\$ -	\$ -	\$ -	\$ -
	11	\$ -	\$ -	\$ -	\$ -
	12	\$ -	\$ -	\$ -	\$ -

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Monthly Average A/S Cost per MWh Load					
year	month	AScost_REGDN	AScost_NSPIIN	AScost_RRS	AScost_REGUP
2015	1	\$ 0.05	\$ 0.07	\$ 0.47	\$ 0.08
	2	\$ 0.04	\$ 0.12	\$ 0.58	\$ 0.10
	3	\$ 0.07	\$ 0.28	\$ 0.92	\$ 0.16
	4	\$ 0.10	\$ 0.23	\$ 0.92	\$ 0.17
	5	\$ 0.08	\$ 0.18	\$ 0.66	\$ 0.10
	6	\$ 0.06	\$ 0.25	\$ 0.44	\$ 0.07
	7	\$ 0.04	\$ 0.32	\$ 0.70	\$ 0.10
	8	\$ 0.03	\$ 0.98	\$ 1.35	\$ 0.20
	9	\$ 0.04	\$ 0.09	\$ 0.42	\$ 0.07
	10	\$ 0.10	\$ 0.26	\$ 0.74	\$ 0.11
	11	\$ 0.08	\$ 0.28	\$ 0.99	\$ 0.13
	12	\$ 0.08	\$ 0.26	\$ 0.90	\$ 0.13
2016	1	\$ 0.03	\$ 0.11	\$ 0.60	\$ 0.06
	2	\$ -	\$ -	\$ -	\$ -
	3	\$ -	\$ -	\$ -	\$ -
	4	\$ -	\$ -	\$ -	\$ -
	5	\$ -	\$ -	\$ -	\$ -
	6	\$ -	\$ -	\$ -	\$ -
	7	\$ -	\$ -	\$ -	\$ -
	8	\$ -	\$ -	\$ -	\$ -
	9	\$ -	\$ -	\$ -	\$ -
	10	\$ -	\$ -	\$ -	\$ -
	11	\$ -	\$ -	\$ -	\$ -
	12	\$ -	\$ -	\$ -	\$ -

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ERCOT-wide Cumulative PNM			
year	month	pnm	pnm_accum
2015	0	\$ -	\$ -
	1	\$ 1,009.59	\$ 1,009.59
	2	\$ 3,289.14	\$ 4,298.73
	3	\$ 3,800.54	\$ 8,099.27
	4	\$ 1,900.94	\$ 10,000.21
	5	\$ 4,578.64	\$ 14,578.85
	6	\$ 738.37	\$ 15,317.22
	7	\$ 2,945.67	\$ 18,262.89
	8	\$ 7,767.43	\$ 26,030.32
	9	\$ 1,612.54	\$ 27,642.86
	10	\$ 1,283.56	\$ 28,926.42
	11	\$ 1,529.59	\$ 30,456.01
12	\$ 1,209.77	\$ 31,665.78	
2016	0	\$ -	\$ -
	1	\$ 1,160.69	\$ 1,160.69
	2	\$ -	\$ -
	3	\$ -	\$ -
	4	\$ -	\$ -
	5	\$ -	\$ -
	6	\$ -	\$ -
	7	\$ -	\$ -
	8	\$ -	\$ -
	9	\$ -	\$ -
	10	\$ -	\$ -
	11	\$ -	\$ -
12	\$ -	\$ -	

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DA vs. RT Load Forecast Error by Hour Ending							
year	month	HE_1_4	HE_13_16	HE_17_20	HE_21_24	HE_5_8	HE_9_12
2015	1	336	(342)	(251)	93	137	75
	2	155	(718)	(639)	(325)	244	(334)
	3	(246)	(160)	(425)	(430)	(253)	(54)
	4	34	585	680	192	88	359
	5	18	330	761	350	(23)	114
	6	(219)	(317)	(166)	(338)	(167)	(364)
	7	(403)	490	587	126	(232)	136
	8	55	667	769	280	143	910
	9	(4)	130	81	114	129	171
	10	(78)	324	206	294	(161)	(13)
	11	(270)	(547)	(492)	(457)	(190)	(207)
	12	156	(270)	47	20	38	(128)
2016	1	455	14	371	163	473	142
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
	11	-	-	-	-	-	-
	12	-	-	-	-	-	-

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Monthly Average of Wind Generation by Hour Ending							
year	month	HE_1_4	HE_13_16	HE_17_20	HE_21_24	HE_5_8	HE_9_12
2015	1	3,597	3,424	3,264	3,738	3,879	3,471
	2	5,036	3,927	3,961	5,045	4,476	3,988
	3	4,182	2,295	2,465	3,622	3,701	2,532
	4	6,218	4,090	5,011	6,002	5,105	4,209
	5	6,280	4,882	5,081	5,617	5,362	5,000
	6	5,457	3,335	4,120	5,036	4,199	3,209
	7	7,034	3,176	4,275	5,973	5,779	4,094
	8	5,692	2,309	3,357	5,275	4,380	2,803
	9	5,853	2,834	3,476	5,403	4,681	3,394
	10	5,574	3,631	3,871	5,329	4,899	3,913
	11	6,250	5,952	5,683	6,578	6,216	5,852
	12	6,634	5,535	5,484	6,817	6,494	5,481
2016	1	6,300	4,581	4,663	6,253	6,228	5,019
	2	-	-	-	-	-	-
	3	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
	11	-	-	-	-	-	-
	12	-	-	-	-	-	-

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RT Congestion Constraint Rankings - Top 10 Constraints by Binding Frequency and Top 10 Constraints by Total Congestion Rent																	
category	year	item	rankvar	rank	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
FREQ_EXIST	2016	JAVALT_MOLINA1_1 (JAVALTAP-MOLINA)	1,127	1	1,127	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	RIOHND_ERIOHND_1 (MV_RIOHO-RIOHONDO)	736	2	736	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	240_A (JEWET-SNG)	657	3	657	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	LISTON (LISTON)	518	4	518	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	BRUNI_69_1 (BRUNI-BRUNI)	503	5	503	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	EDROY_SMITH1_1 (SMITH-EDROY)	491	6	491	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	AIRCO4_RINCON1_1 (RINCON-AIRCO4)	456	7	456	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	670_B (BRNSW-CMPBW)	296	8	296	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	591_A (LKPNT-CRLNW)	249	9	249	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	BLUF_CRK_T1_H (BLUF_CRK-BLUF_CRK)	245	10	245	-	-	-	-	-	-	-	-	-	-	-	
TOP10_RENT	2016	LOMA_A_L_FRES1_1 (L_FRESNO-LOMA_ALT)	\$ 6.90	1	\$ 6.90	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	JAVALT_MOLINA1_1 (JAVALTAP-MOLINA)	\$ 1.57	2	\$ 1.57	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	591_A (LKPNT-CRLNW)	\$ 1.13	3	\$ 1.13	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	240_A (JEWET-SNG)	\$ 0.76	4	\$ 0.76	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	BLUF_CRK_T1_H (BLUF_CRK-BLUF_CRK)	\$ 0.68	5	\$ 0.68	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	6945_A (LKWSW-WFALS)	\$ 0.63	6	\$ 0.63	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	975_E (FGRSW-EUSSE)	\$ 0.47	7	\$ 0.47	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	EDROY_SMITH1_1 (SMITH-EDROY)	\$ 0.46	8	\$ 0.46	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	AIRCO4_RINCON1_1 (RINCON-AIRCO4)	\$ 0.45	9	\$ 0.45	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	LA_PAL_VCAVAZ1_1 (LA_PALMA-VCAVAZOS)	\$ 0.43	10	\$ 0.43	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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DA Congestion Constraint Rankings - Top 10 Constraints by Binding Frequency and Top 10 Constraints by Total Congestion Rent																	
category	year	item	rankvar	rank	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
FREQ_EXIST	2016	BONIVI_RINCON1_1 (RINCON-BONIVIEW)	403	1	403	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	LOMA_A_L_FRES1_1 (L_FRESNO-LOMA_ALT)	377	2	377	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	JAVALT_MOLINA1_1 (JAVALTAP-MOLINA)	308	3	308	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	GOLDTH_9AT2 (GOLDTH-GOLDTH)	222	4	222	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	ALO_WAR_1 (WARBURTN-ALOES)	217	5	217	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	670_B (BRNSW-CMPBW)	198	6	198	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	BRUNI_69_1 (BRUNI-BRUNI)	144	7	144	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	HIC_LOCU_1 (LOCUST_D-HICKRY_D)	141	8	141	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	JEWET-SNG (JEWET-SNG)	136	9	136	-	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2016	RIOHND_ERIOHND_1 (MV_RIOHO-RIOHONDO)	135	10	135	-	-	-	-	-	-	-	-	-	-	-	
TOP10_RENT	2016	LOMA_A_L_FRES1_1 (L_FRESNO-LOMA_ALT)	\$ 1.18	1	\$ 1.18	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	JEWET-SNG (JEWET-SNG)	\$ 0.86	2	\$ 0.86	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	JAVALT_MOLINA1_1 (JAVALTAP-MOLINA)	\$ 0.81	3	\$ 0.81	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	BLUF_CRK_T1 (BLUF_CRK-BLUF_CRK)	\$ 0.51	4	\$ 0.51	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	6917_B (NWARD-WINKS)	\$ 0.41	5	\$ 0.41	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	BONIVI_RINCON1_1 (RINCON-BONIVIEW)	\$ 0.30	6	\$ 0.30	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	BRUNI_69_1 (BRUNI-BRUNI)	\$ 0.29	7	\$ 0.29	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	975_C (EUSSE-EUSTC)	\$ 0.23	8	\$ 0.23	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	975_E (FGRSW-EUSSE)	\$ 0.23	9	\$ 0.23	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2016	SND_SAN_1 (SNDIEGS-SAN_DIEG)	\$ 0.22	10	\$ 0.22	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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Top 10 CRR Pairs Ranked by Monthly Auction Values - Top 10 PTP Obligations by Total Transaction Values and Top 10 PTP Options by Total Transaction Values																	
fr_option	year	pair	total_value	rank	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
N	2016	HB SOUTH-LZ SOUTH	\$ 1.40	1	\$ 0.76	\$ 0.64	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	HB WEST-LZ WEST	\$ 0.51	2	\$ 0.29	\$ 0.23	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	HB NORTH-LZ NORTH	\$ 0.45	3	\$ 0.24	\$ 0.21	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	HB HOUSTON-LZ HOUSTON	\$ 0.20	4	\$ 0.12	\$ 0.08	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	HB NORTH-HB HOUSTON	\$ 0.11	5	\$ 0.02	\$ 0.08	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	HB NORTH-HB SOUTH	\$ 0.08	6	\$ 0.03	\$ 0.05	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	JACKCNTY STG-LZ NORTH	\$ 0.05	7	\$ 0.03	\$ 0.02	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	LV1A LV1B-SIL SILAS 5	\$ 0.04	8	\$ 0.04	\$ 0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	NUE NUCESG9-HB SOUTH	\$ 0.04	9	\$ 0.02	\$ 0.02	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2016	JCKCNTY2 ST2-LZ NORTH	\$ 0.04	10	\$ 0.02	\$ 0.02	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	HB NORTH-LZ NORTH	\$ 0.52	1	\$ 0.27	\$ 0.25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	HB WEST-LZ WEST	\$ 0.38	2	\$ 0.21	\$ 0.17	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	HB SOUTH-LZ SOUTH	\$ 0.36	3	\$ 0.21	\$ 0.15	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	SAN SANMIGG1-LZ SOUTH	\$ 0.27	4	\$ 0.11	\$ 0.16	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	HB WEST-HB NORTH	\$ 0.21	5	\$ 0.07	\$ 0.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	STP STP G1-LZ CPS	\$ 0.16	6	\$ 0.06	\$ 0.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	STP STP G2-LZ CPS	\$ 0.16	7	\$ 0.06	\$ 0.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	FERGCC GT2 3-LZ LCRA	\$ 0.14	8	\$ 0.09	\$ 0.05	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	FERGCC GT1 1-LZ LCRA	\$ 0.14	9	\$ 0.09	\$ 0.05	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2016	HB HOUSTON-LZ HOUSTON	\$ 0.11	10	\$ 0.06	\$ 0.05	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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