

To the Public Utility Commission of Texas

ERCOT Wholesale Electricity Market Monthly Report

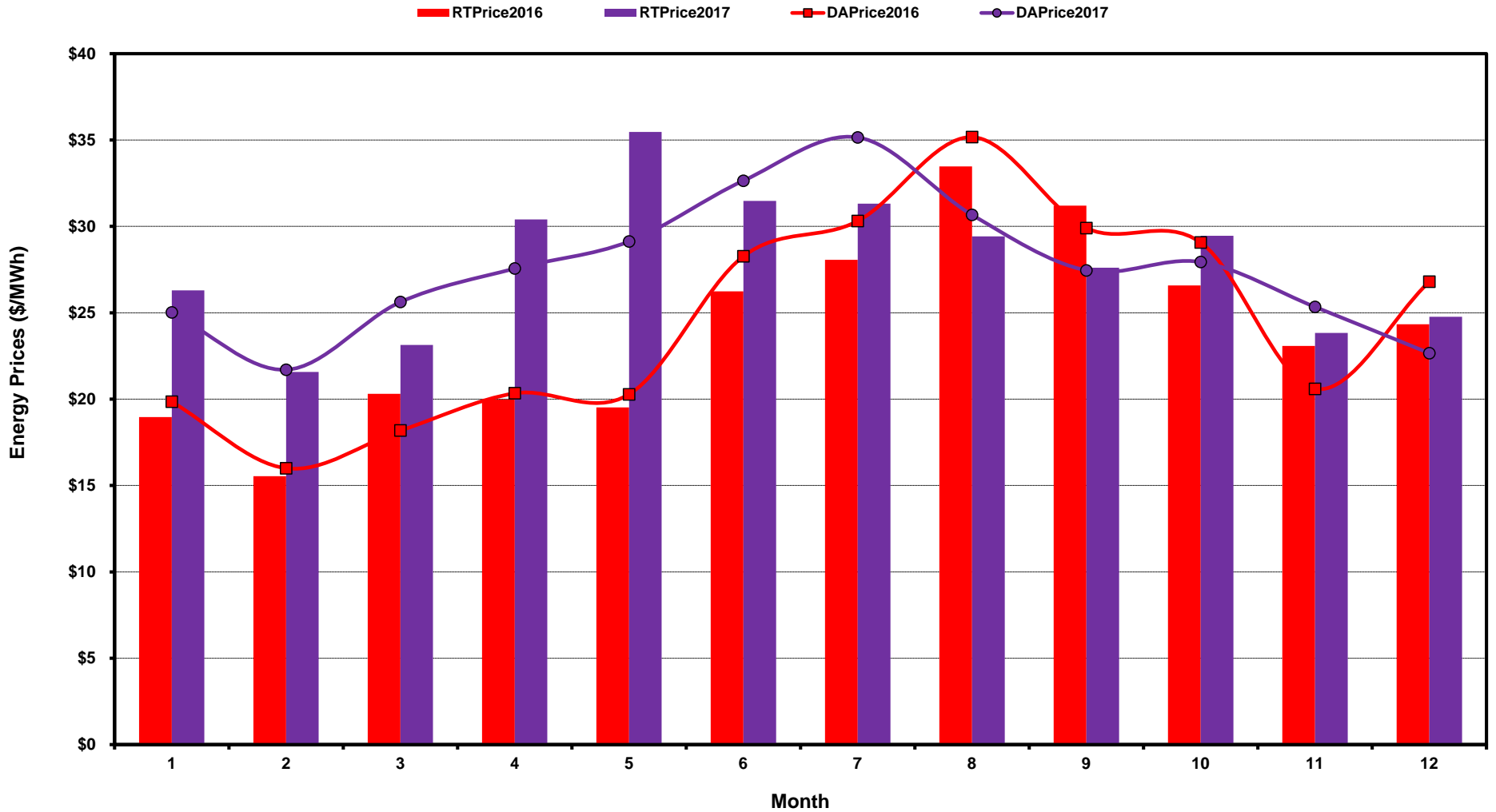
Wednesday, January 10, 2018

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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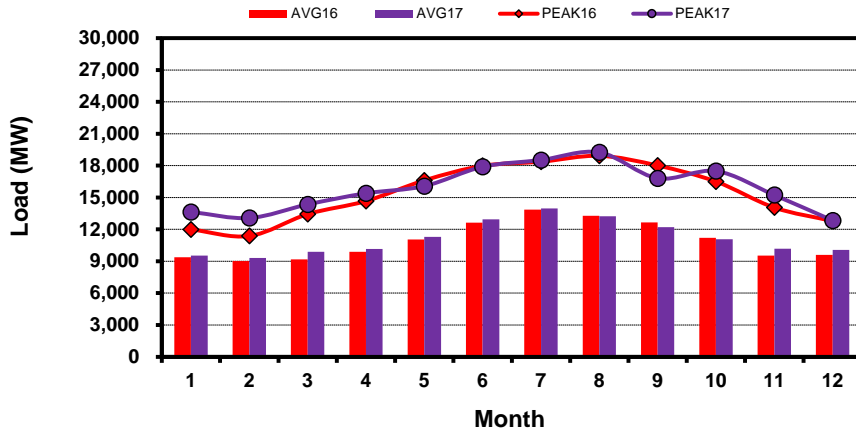
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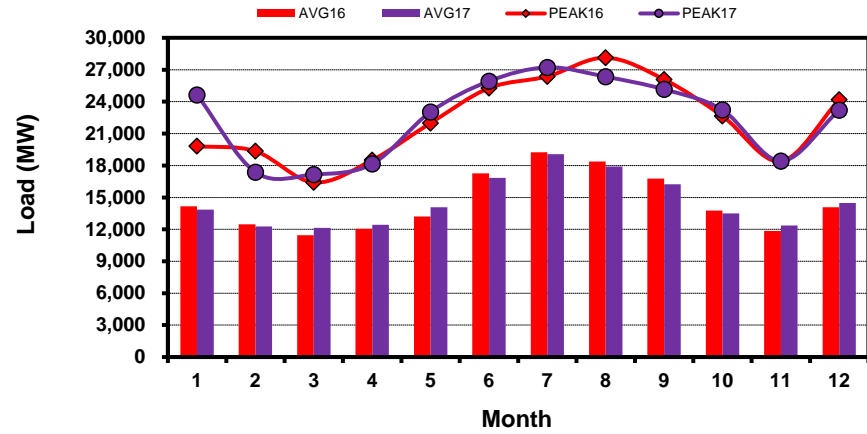
Load Zone Load Statistics

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

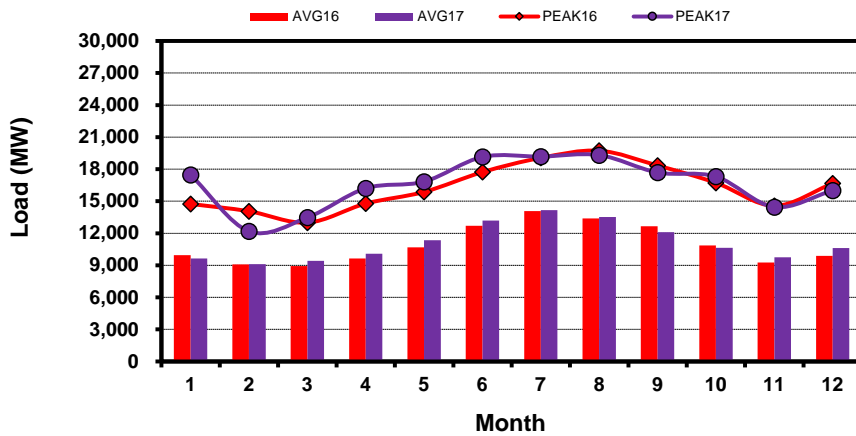
Houston Zone



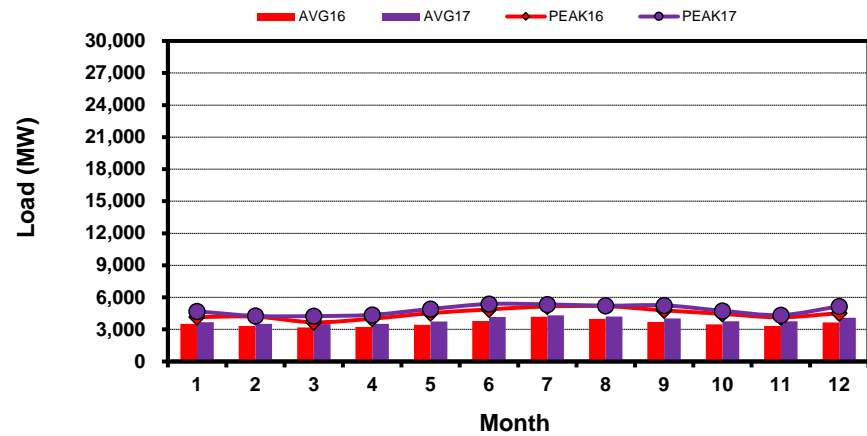
North Zone



South Zone



West Zone



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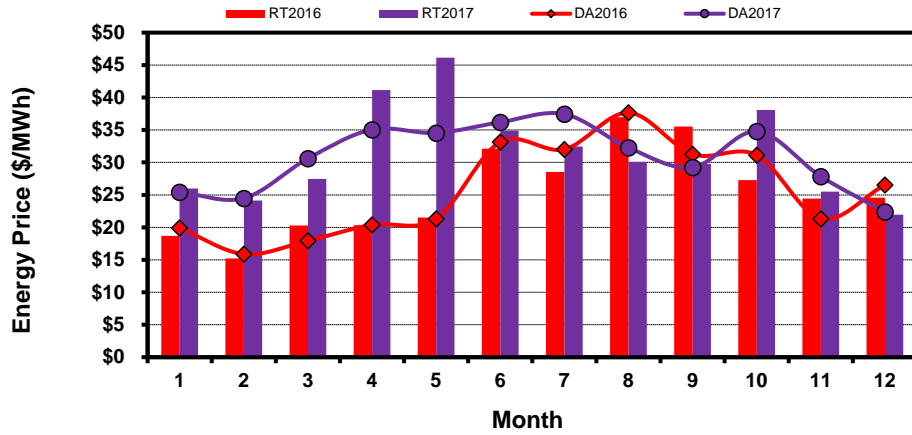
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

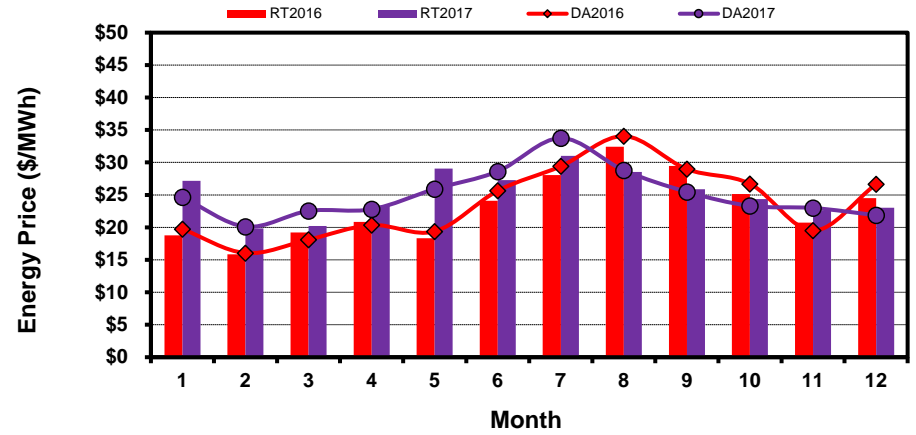
Load Zone Monthly Average Energy Price DA vs RT

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

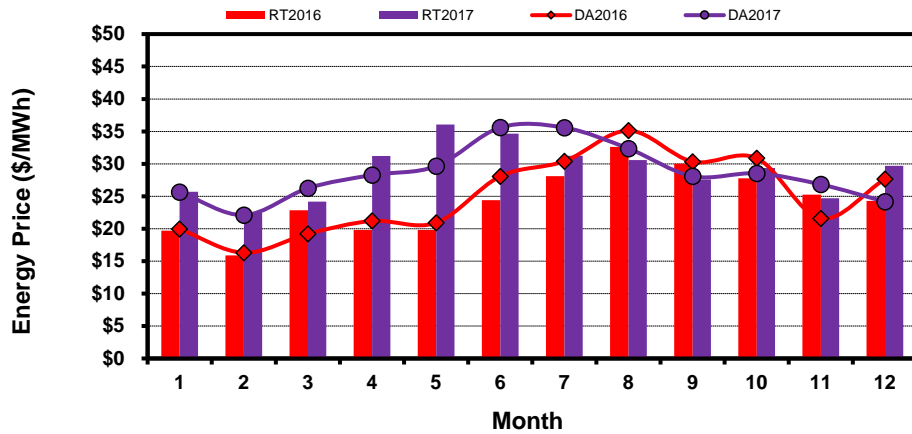
Houston Zone



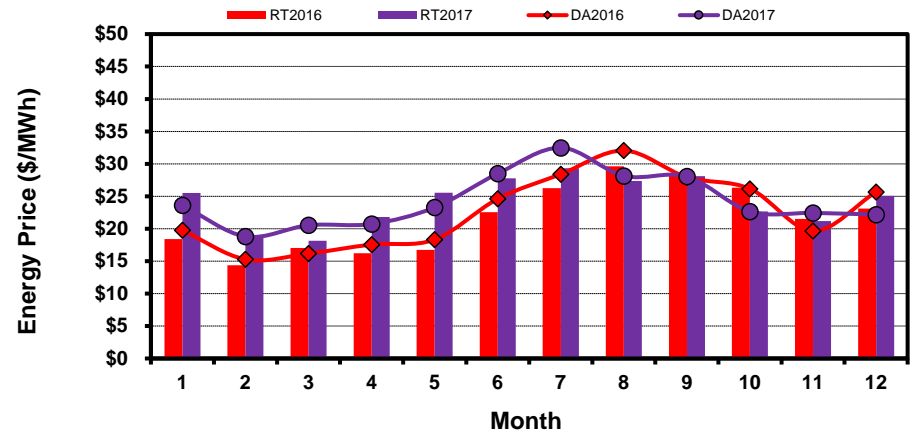
North Zone



South Zone



West Zone



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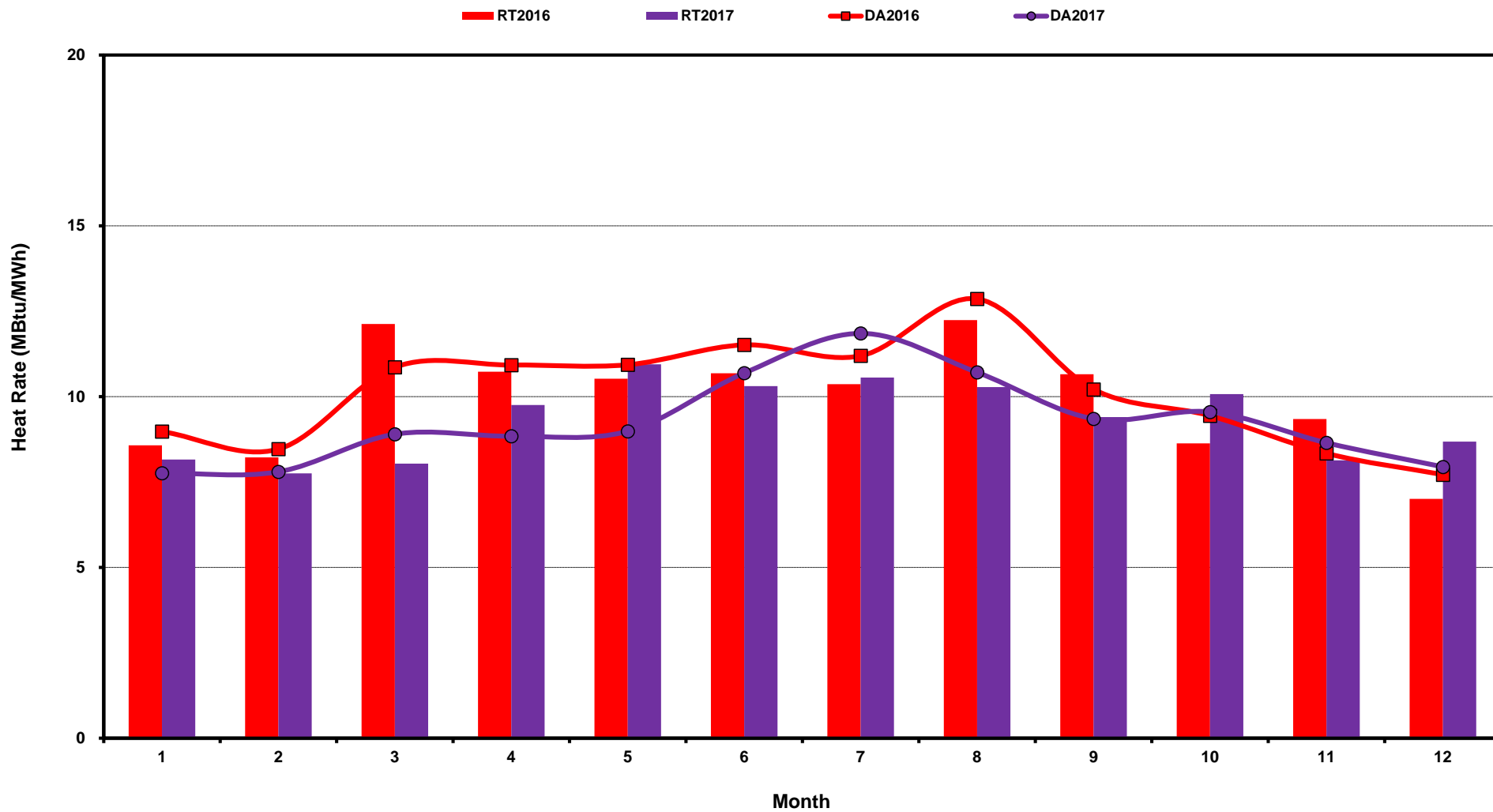
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

ERCOT-wide Monthly Implied Heat Rate DA vs RT

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



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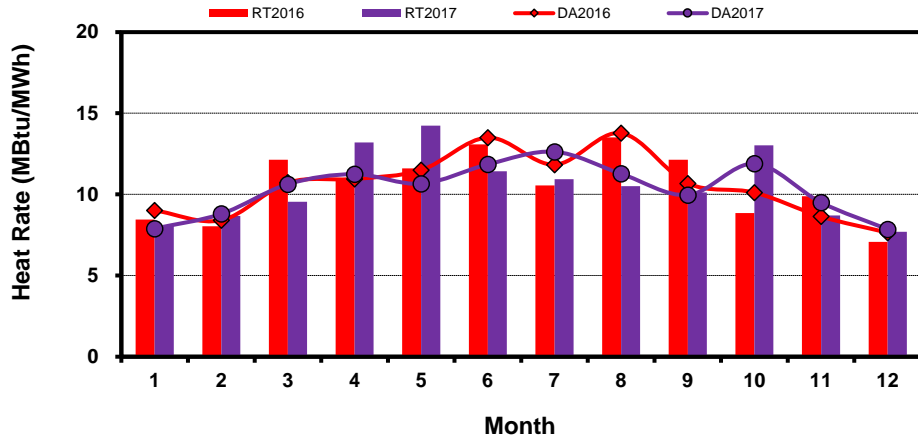
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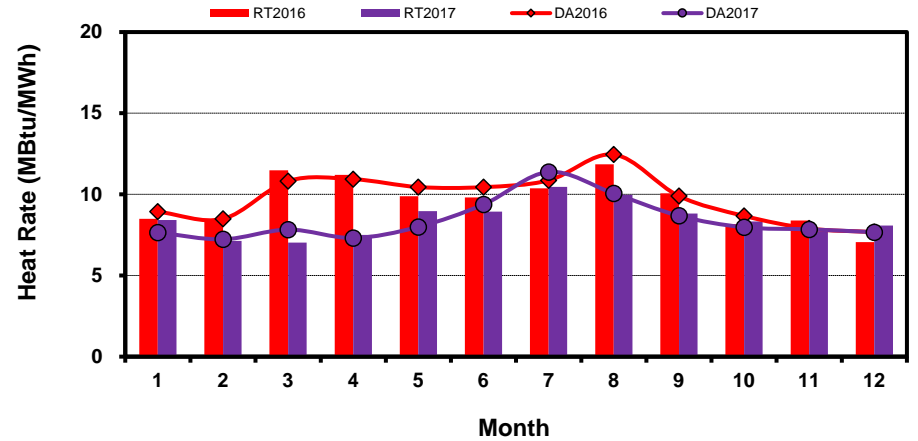
Load Zone Monthly Implied Heat Rate DA vs RT

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

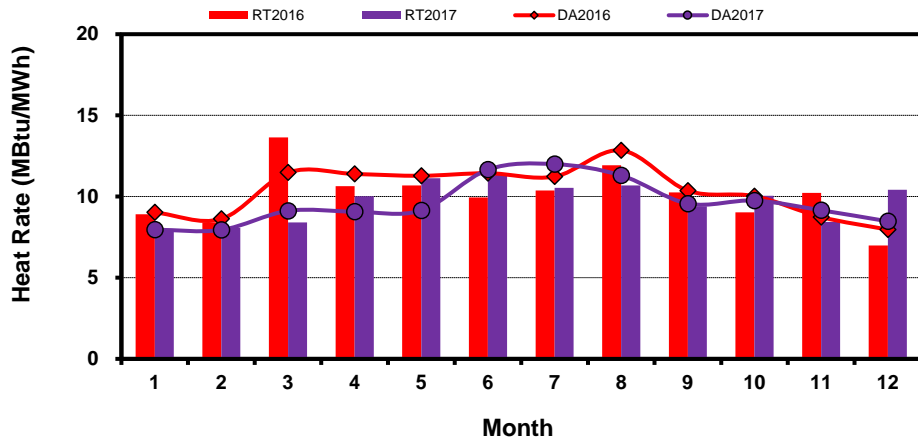
Houston Zone



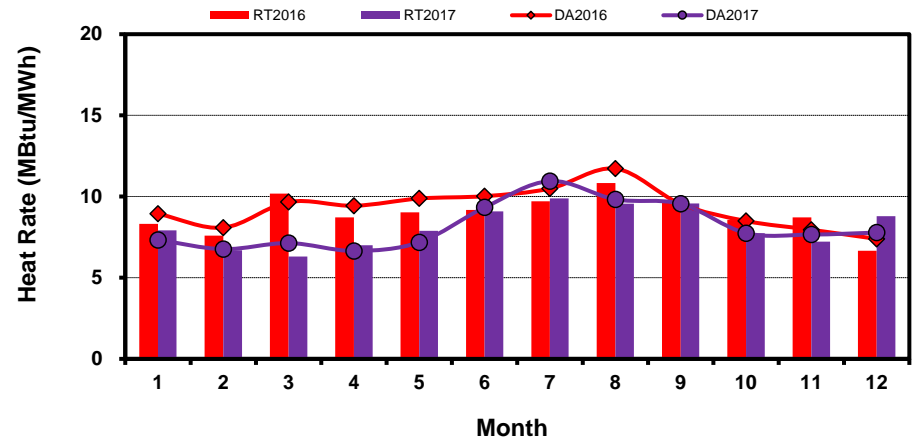
North Zone



South Zone



West Zone



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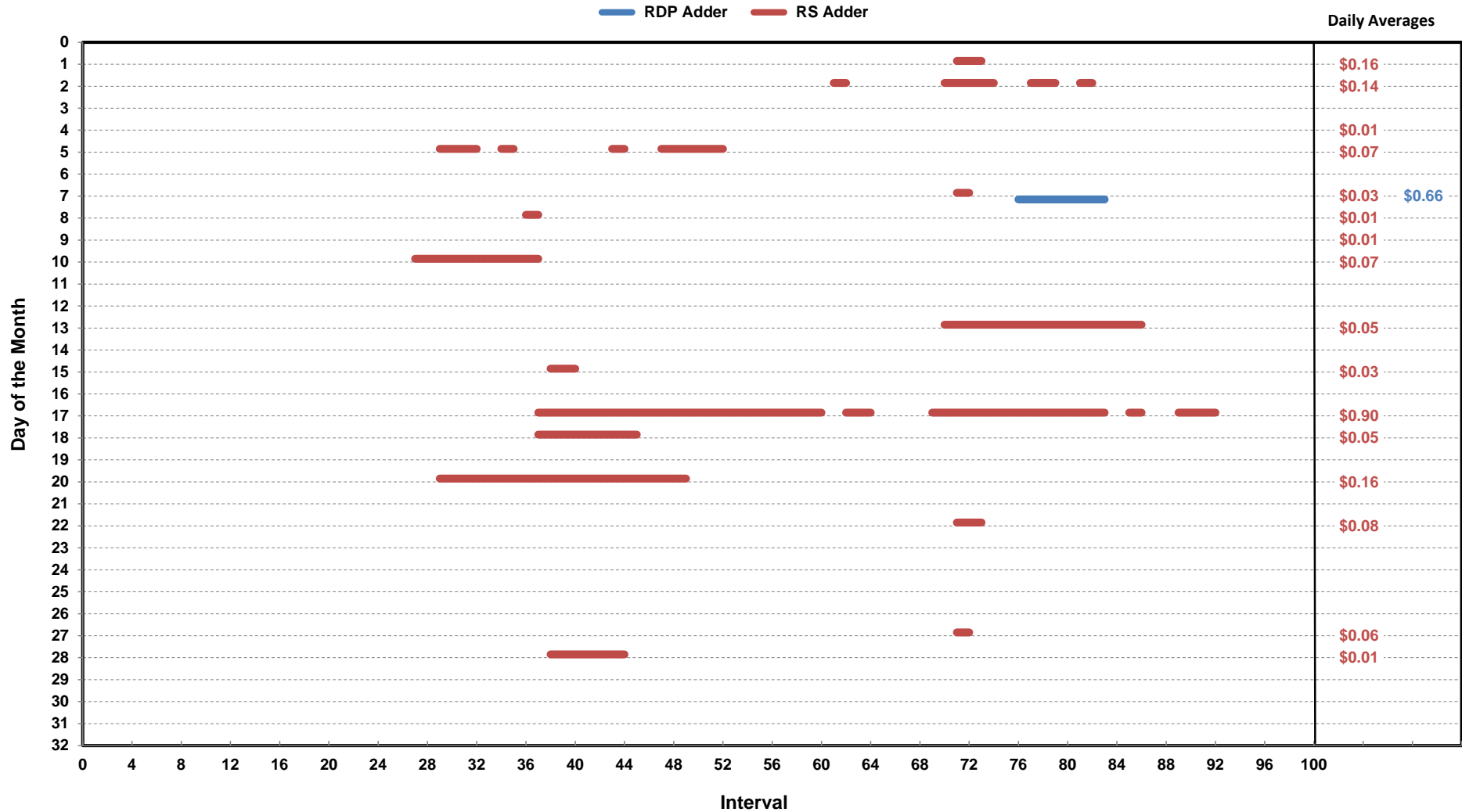
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

Daily ORDC Adders Average Values and Interval Duration

Dec-2017



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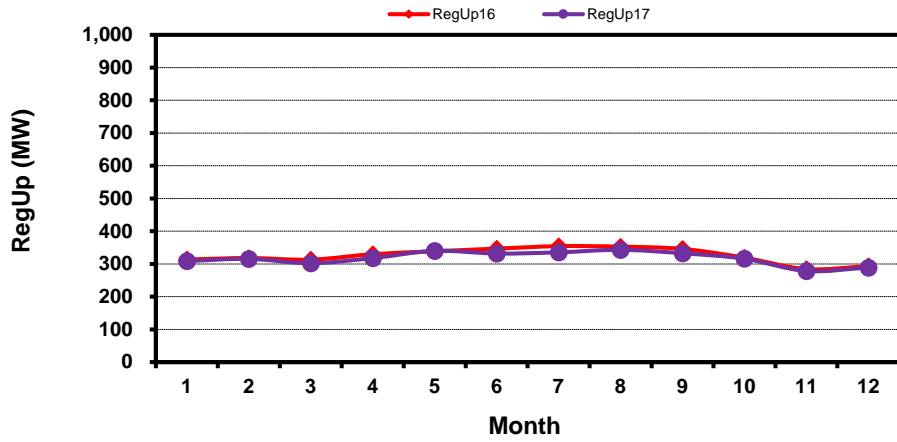
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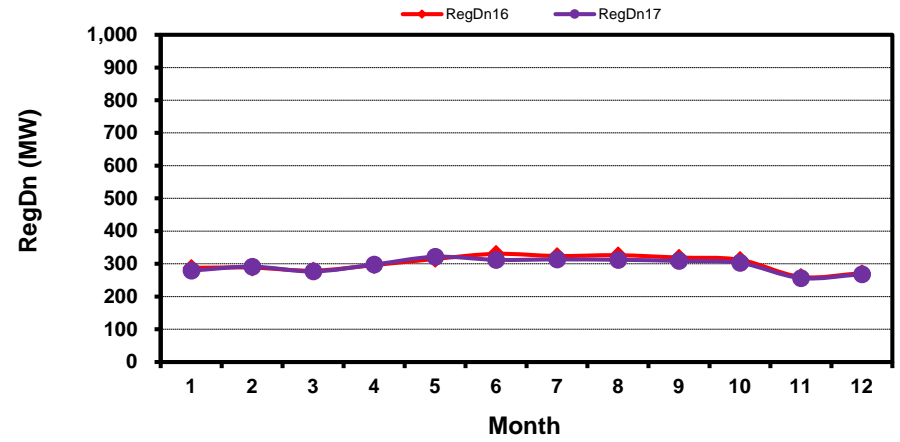
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Monthly Average of Ancillary Services Required MW

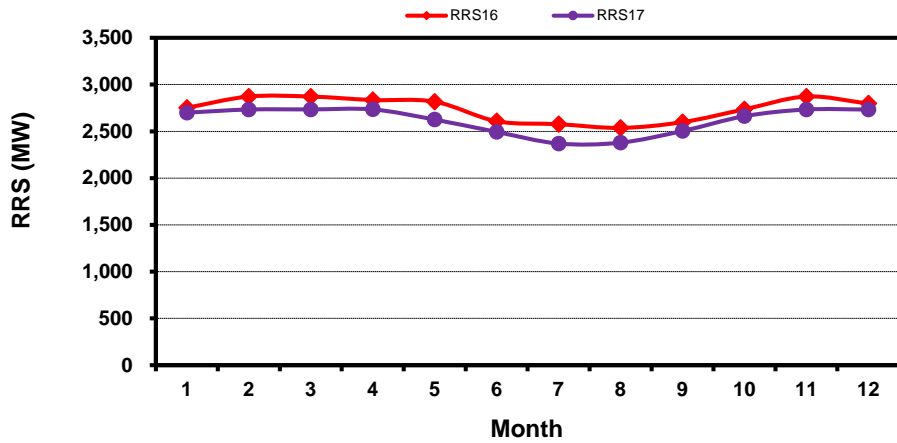
Regulation Up



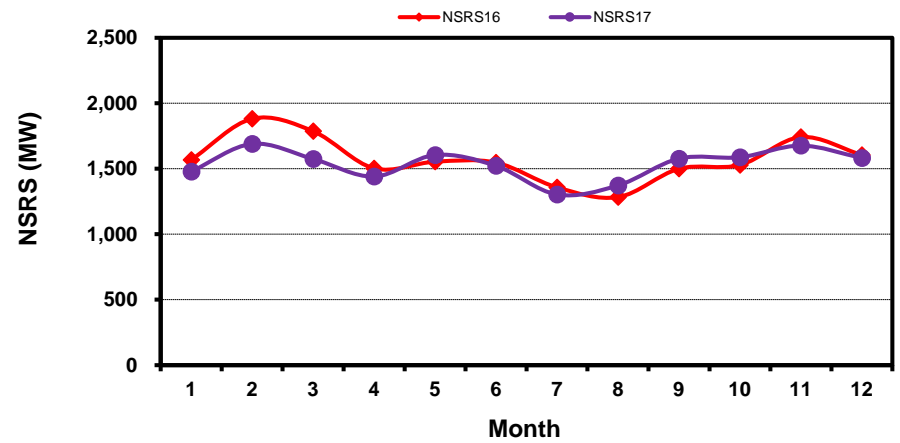
Regulation Down



Responsive Reserve



Non-Spin Reserve



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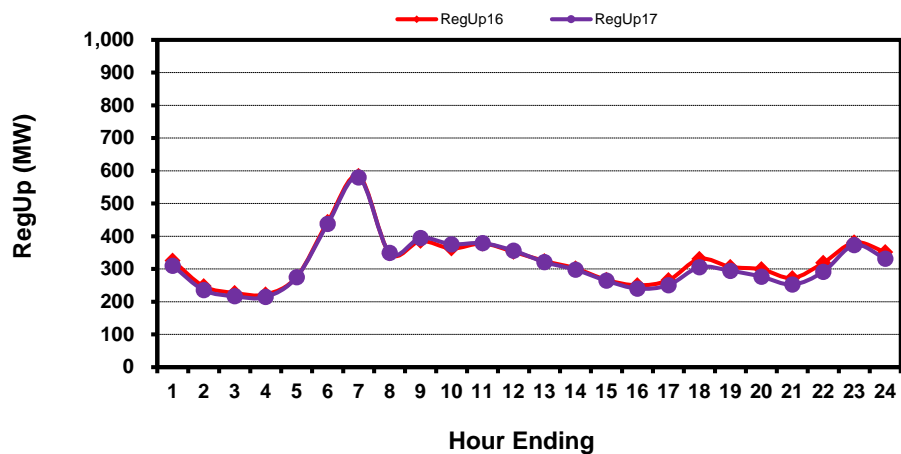
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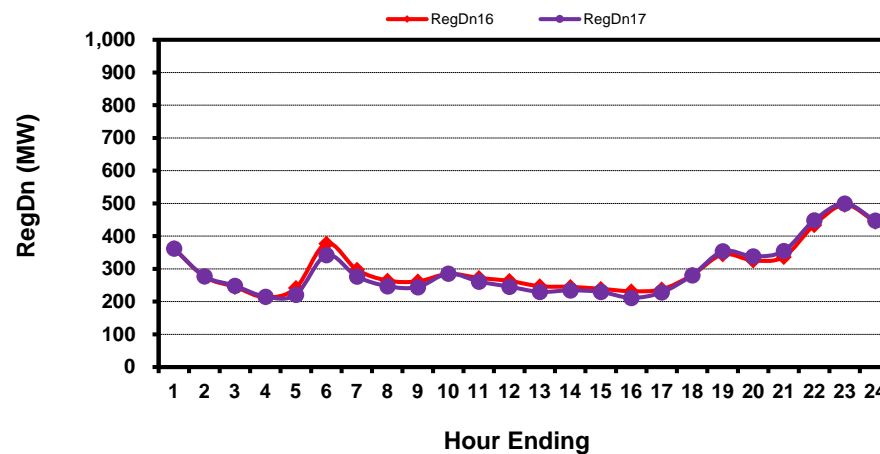
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Hourly Average of Ancillary Services Required MW

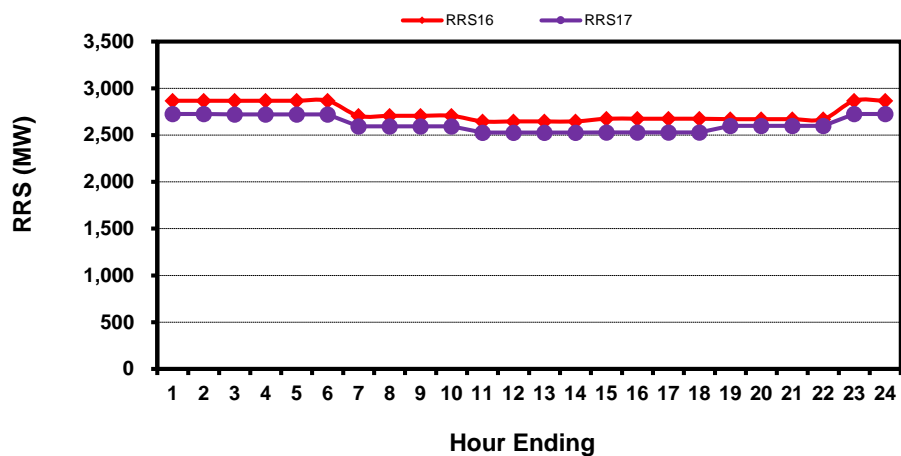
Regulation Up



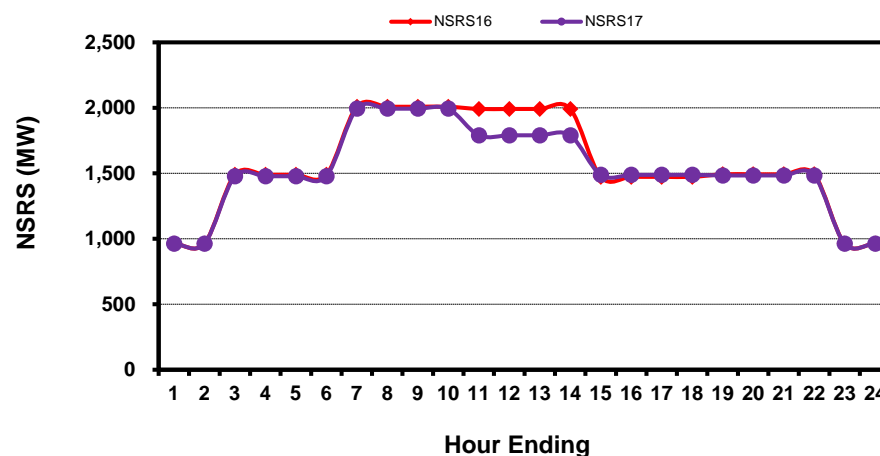
Regulation Down



Responsive Reserve



Non-Spin Reserve



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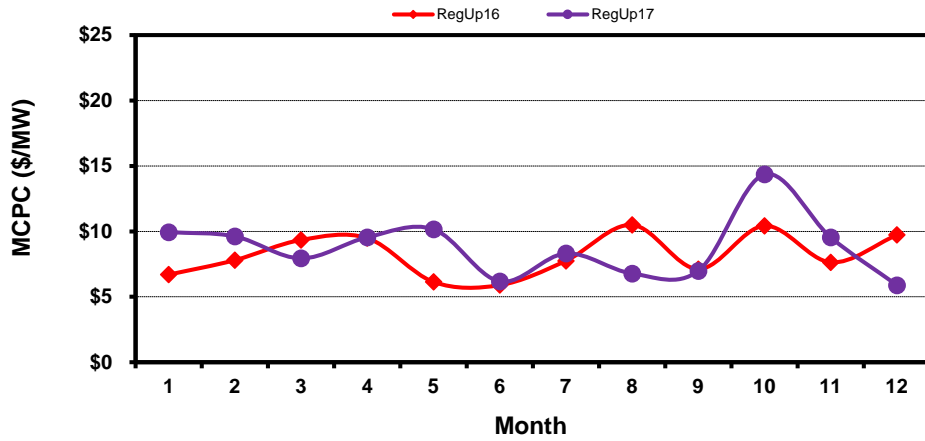
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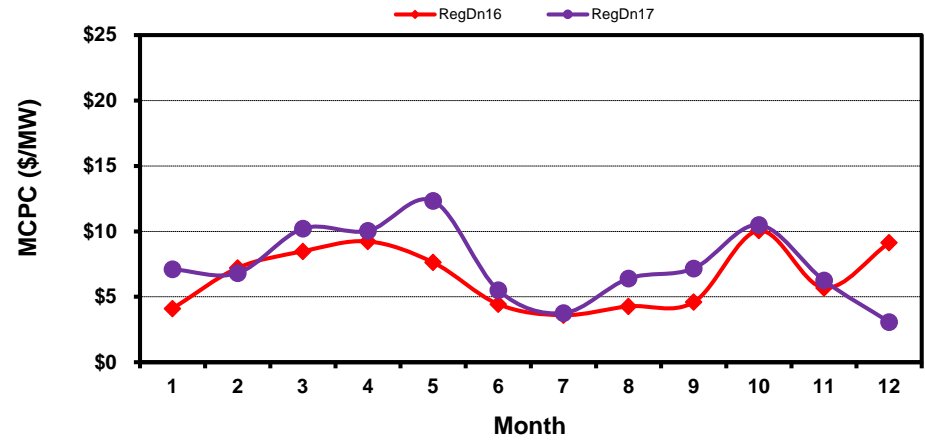
Monthly Average Ancillary Services Price

(weighted by A/S Quantities Required)

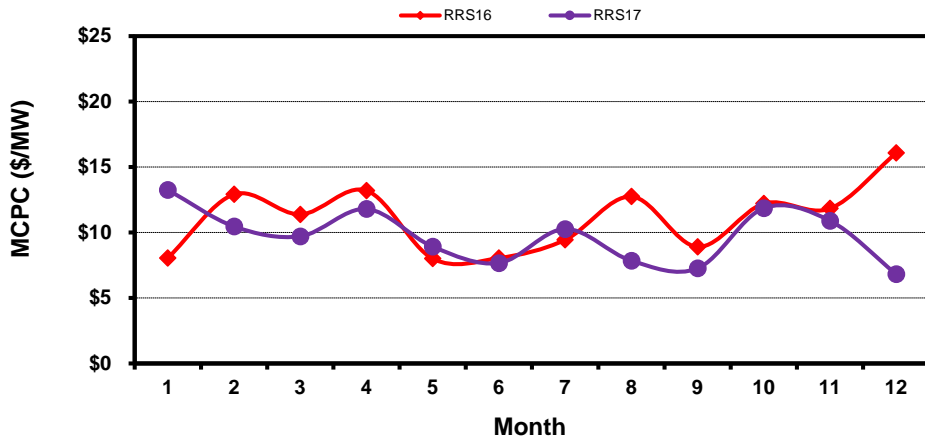
Regulation Up



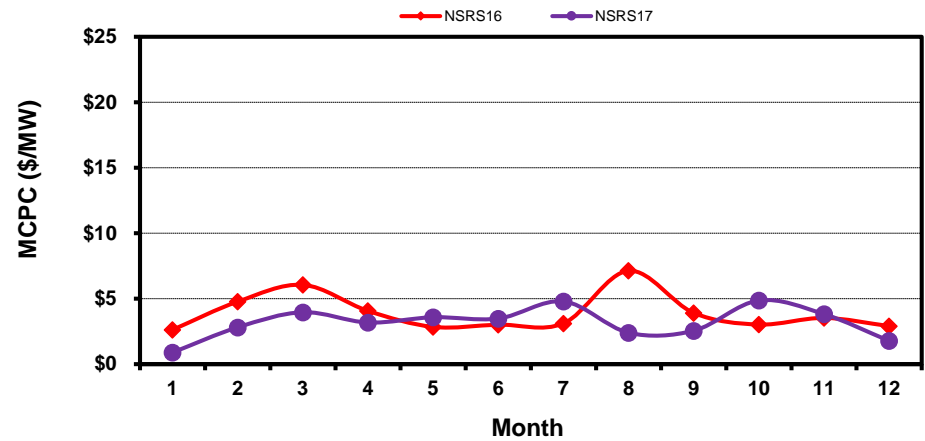
Regulation Down



Responsive Reserve



Non-Spin Reserve



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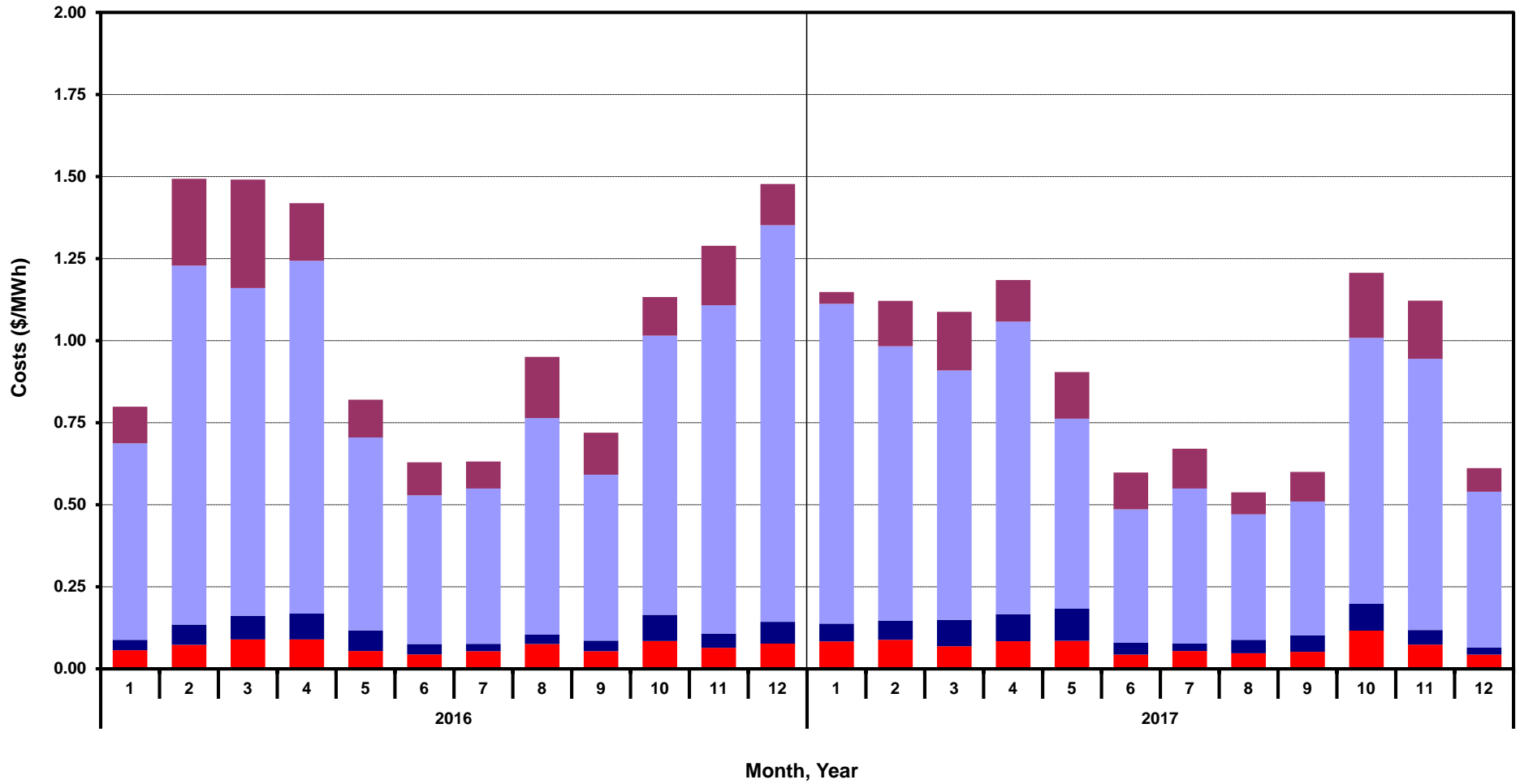
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Monthly Average A/S Cost per MWh Load

RegUp RegDn RRS NonSpin



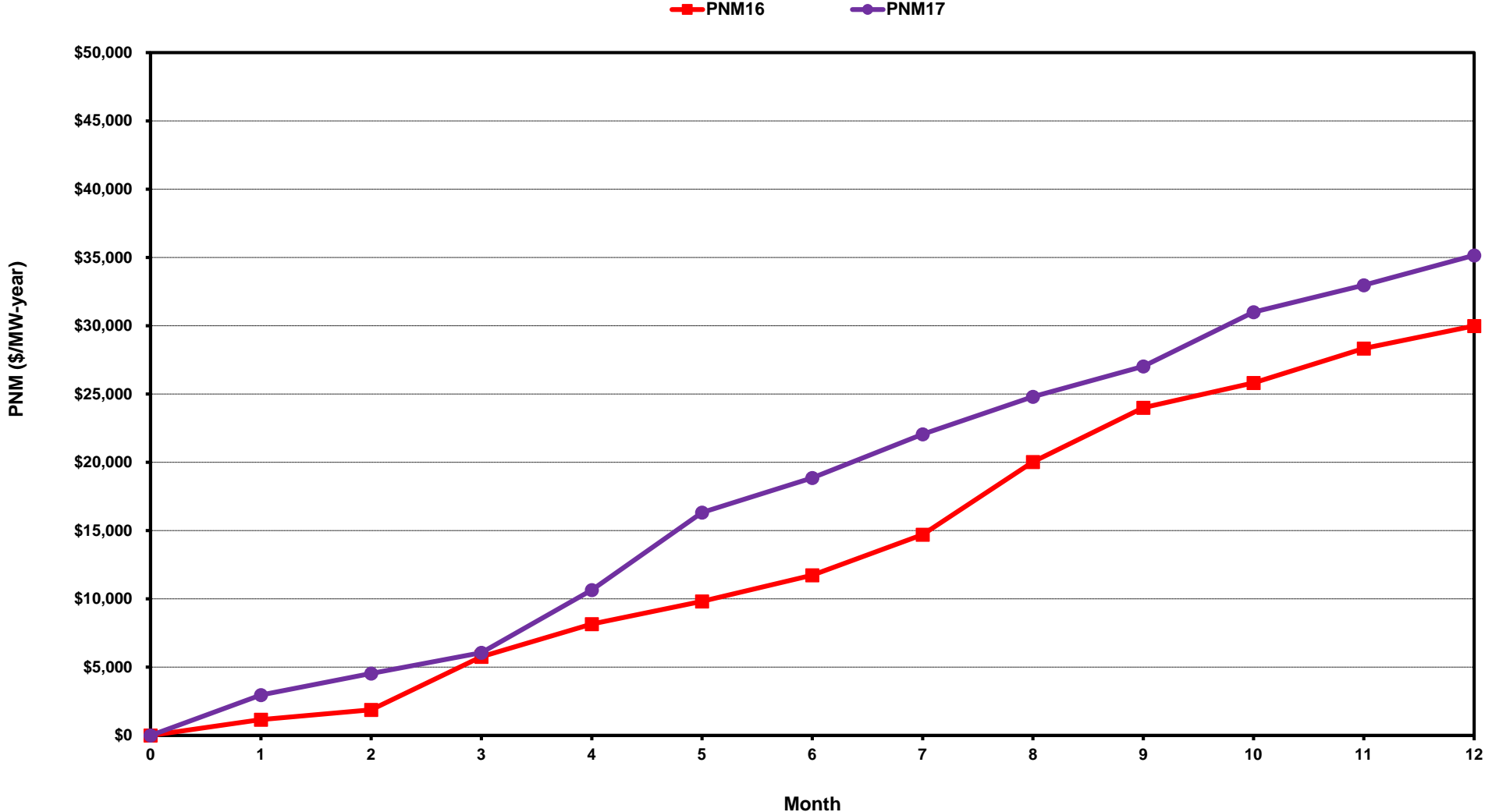
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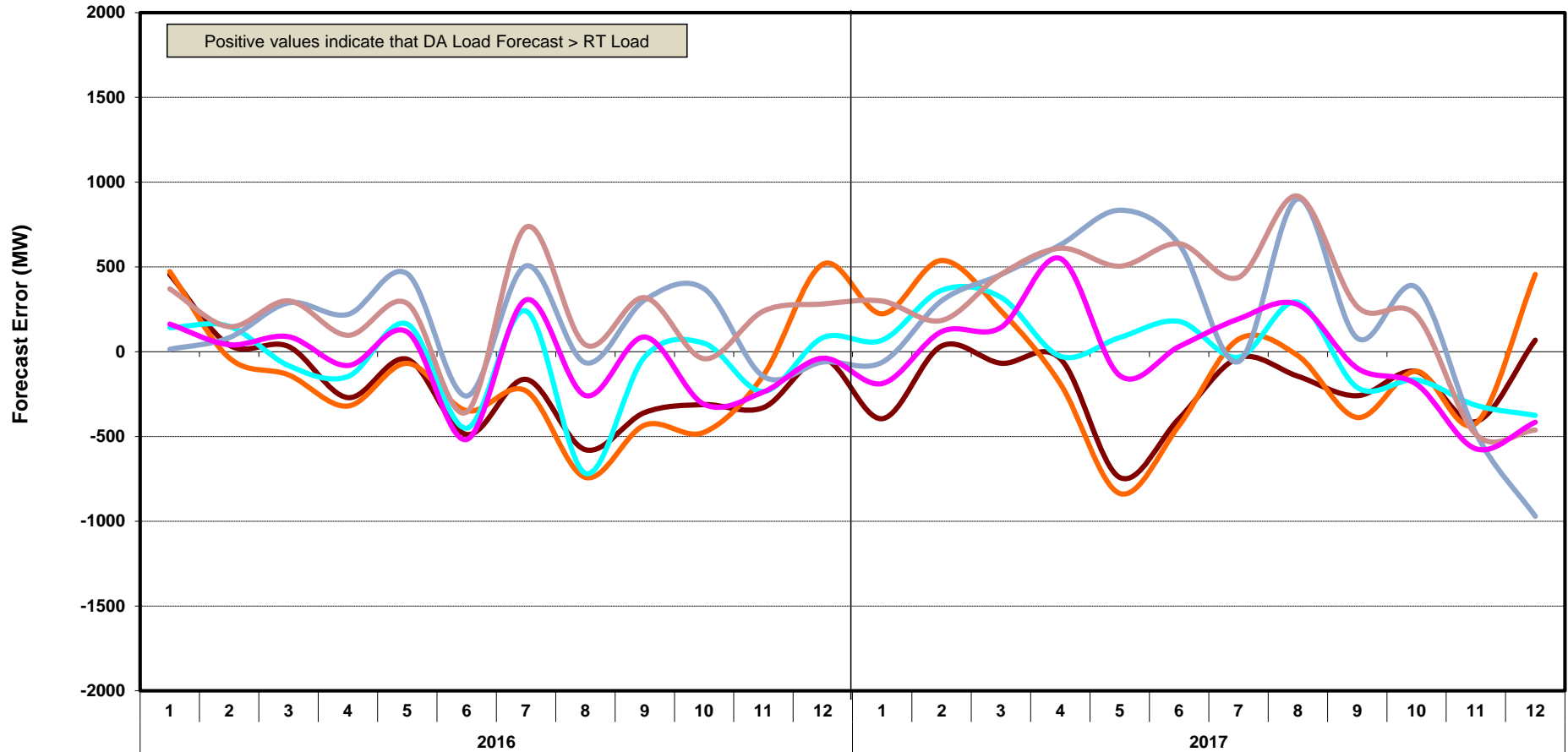
ERCOT-wide Cumulative Peaker Net Margin



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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



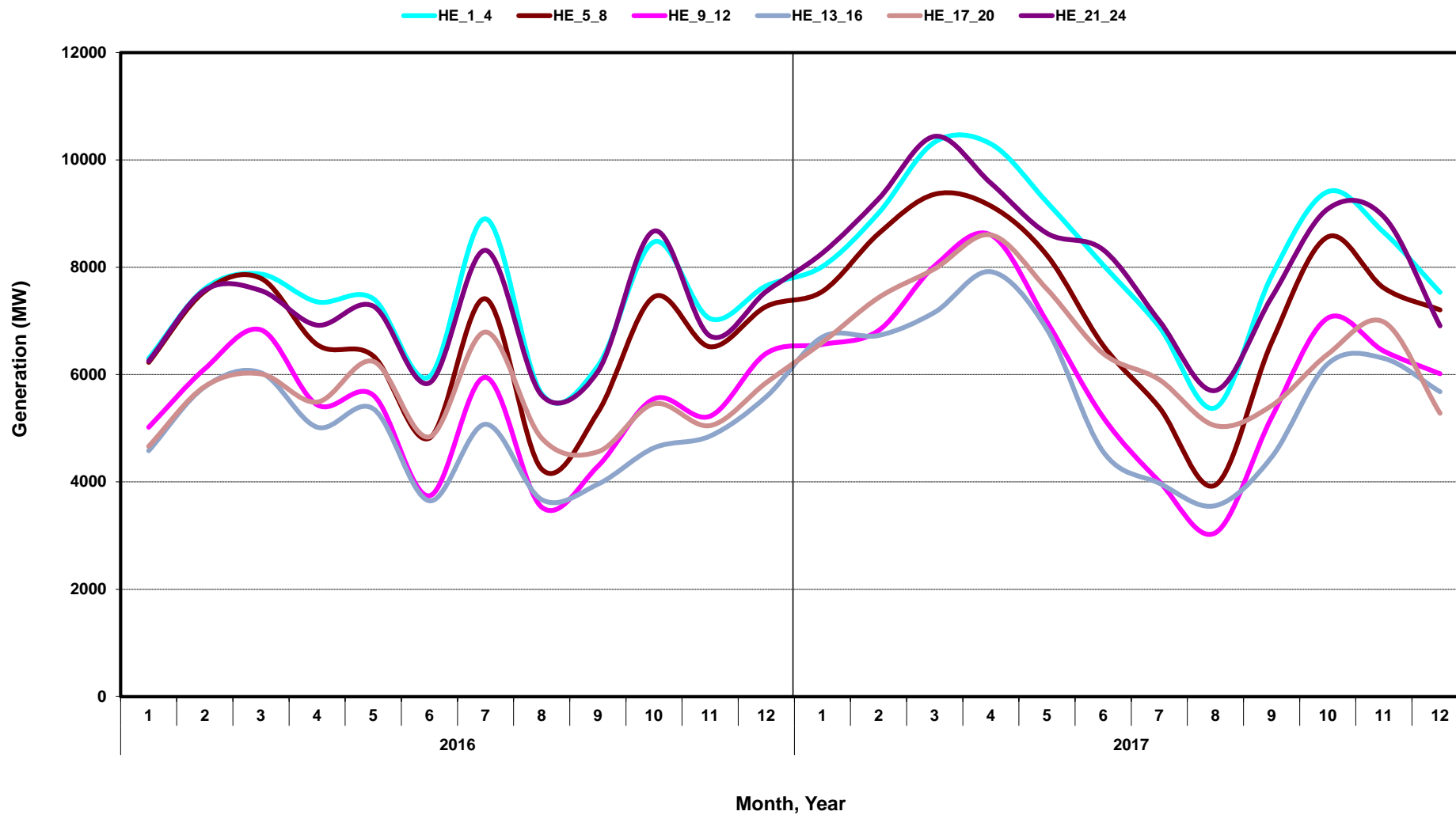
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Monthly Average of Wind Generation by Hour Ending



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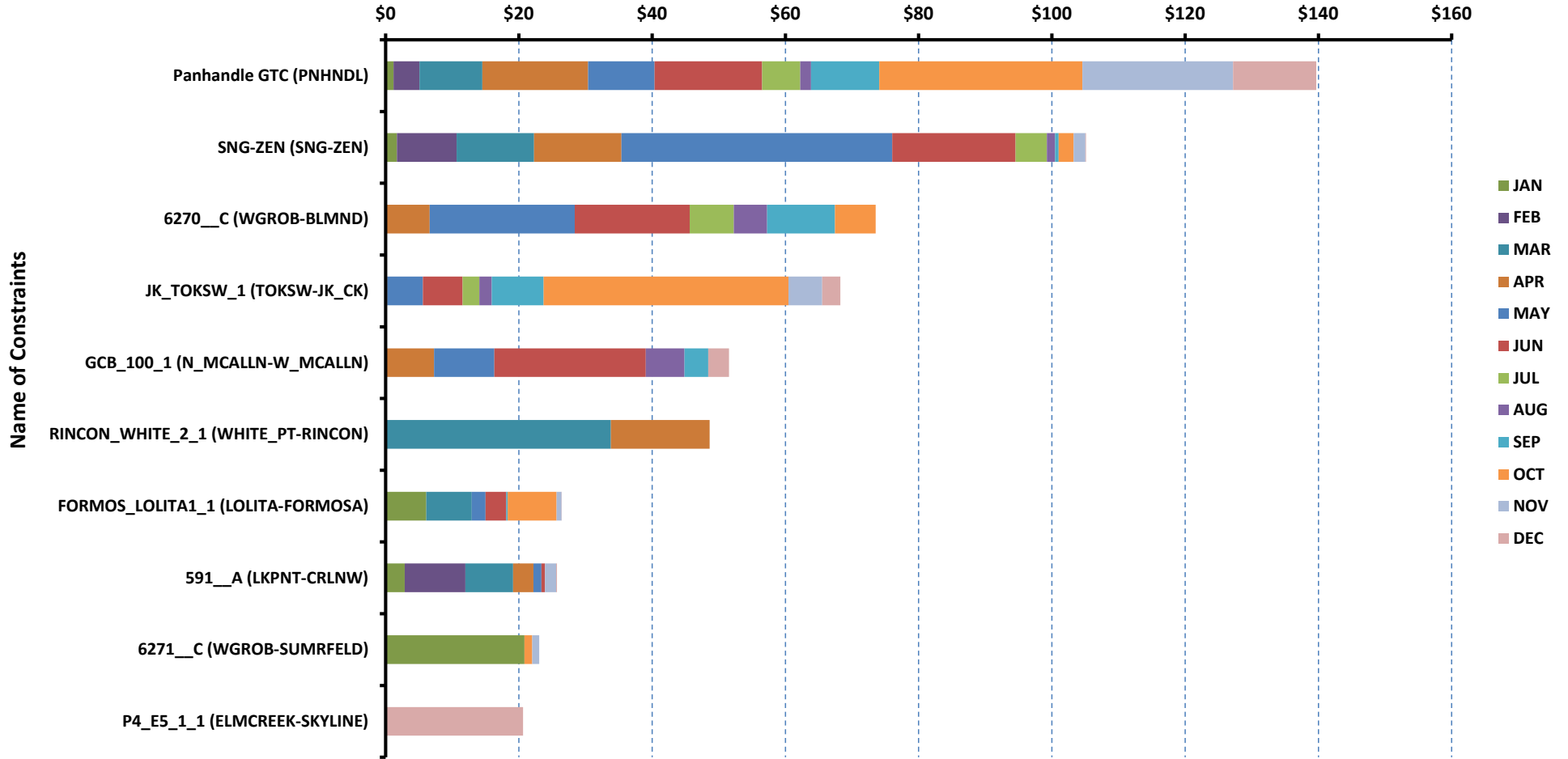
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RT Congestion Constraint Rankings - 1

Top 10 Constraints by Total Congestion Value

Congestion Rent in \$ million



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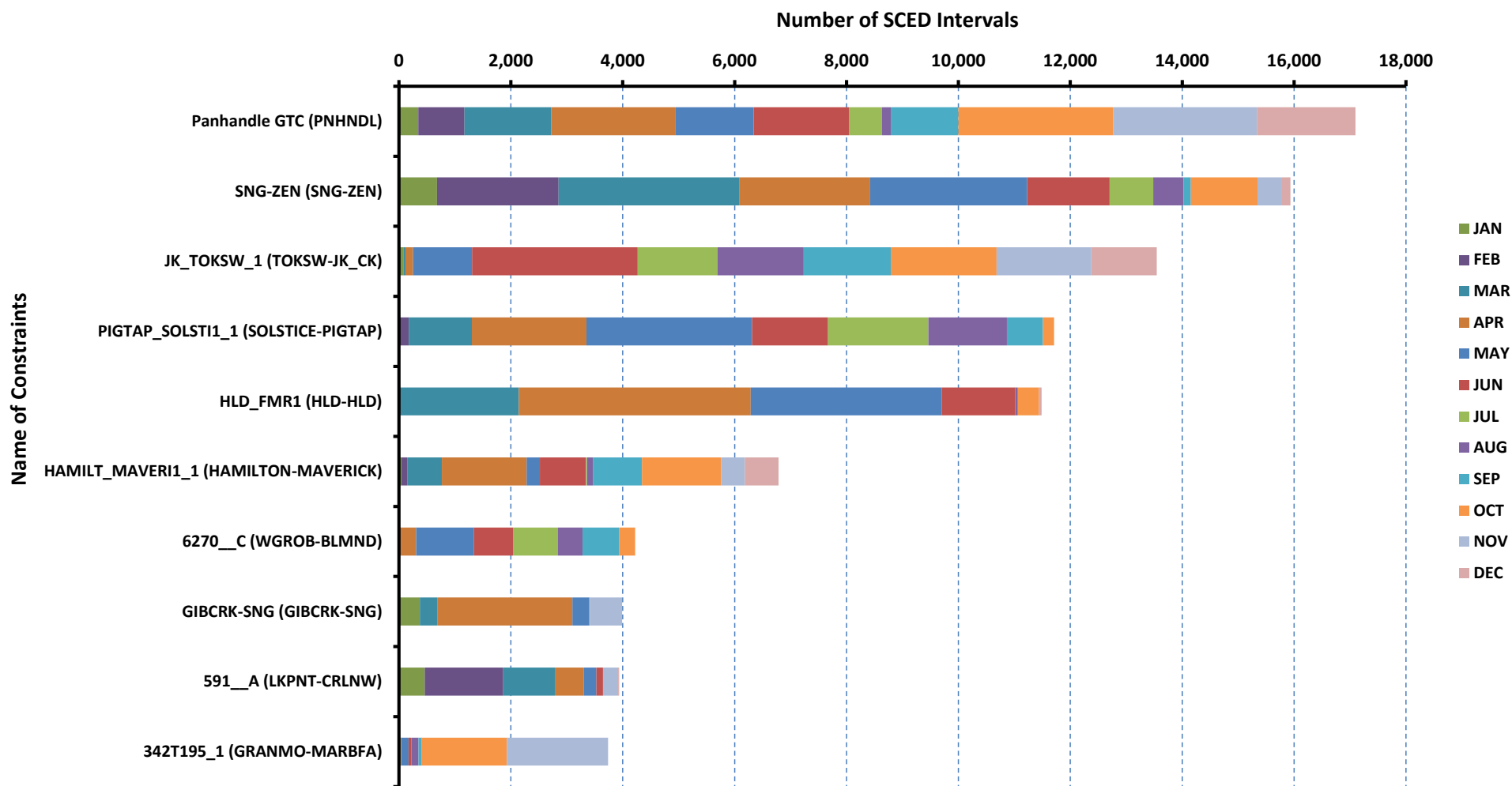
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RT Congestion Constraint Rankings - 2

Top 10 Constraints by Binding Frequency



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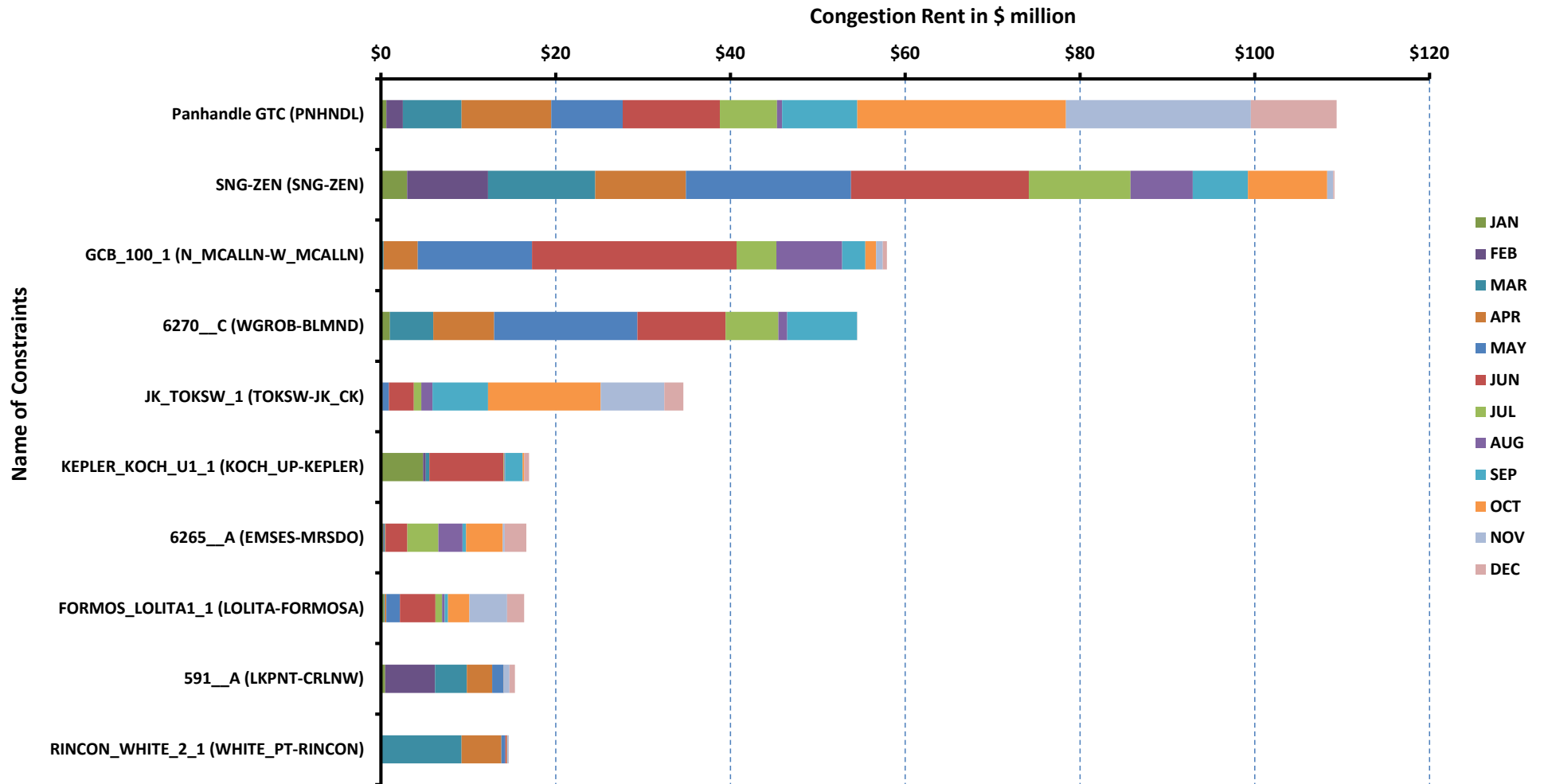
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DA Congestion Constraint Rankings - 1

Top 10 Constraints by Total Congestion Value



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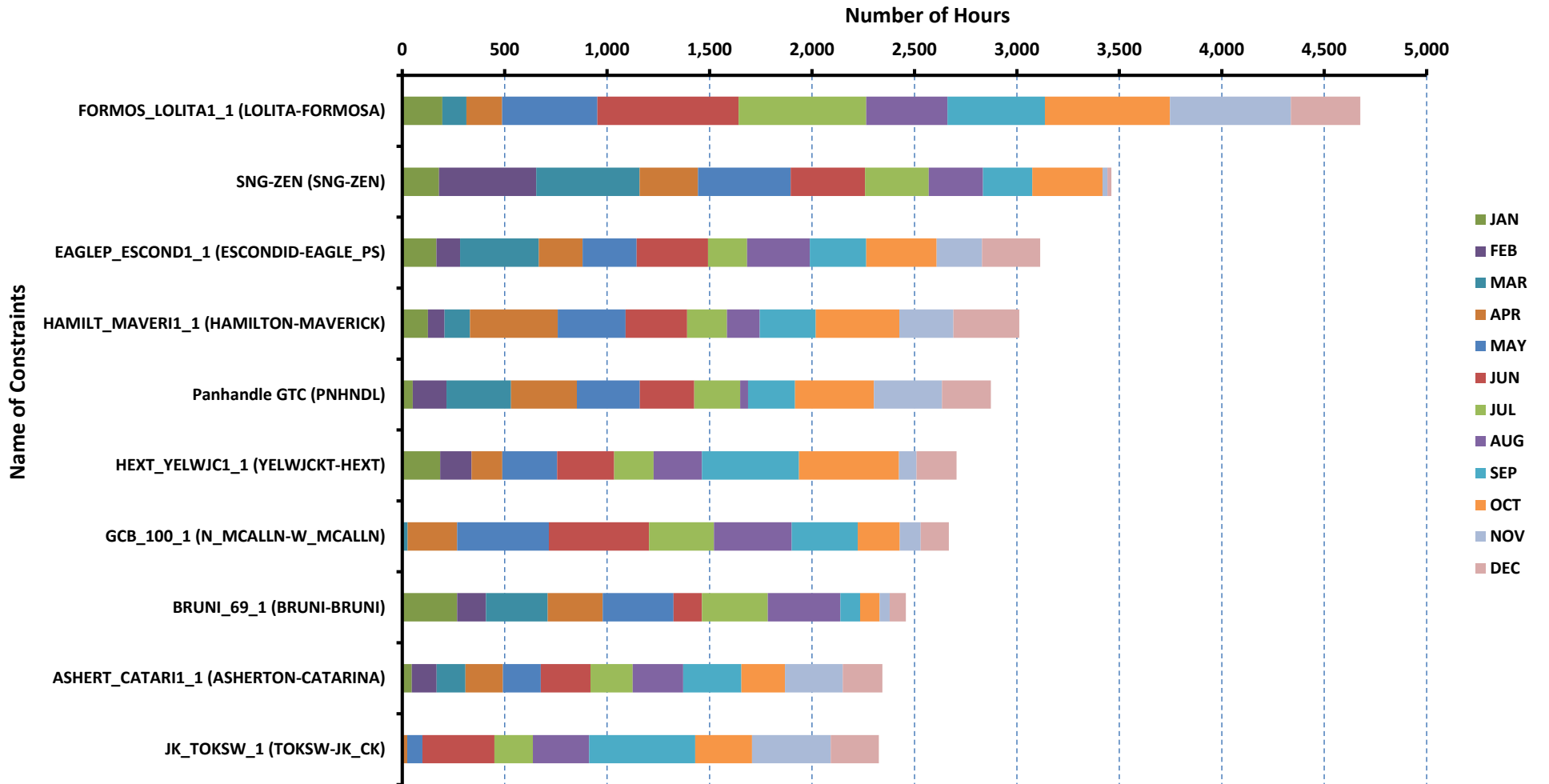
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DA Congestion Constraint Rankings - 2

Top 10 Constraints by Binding Frequency



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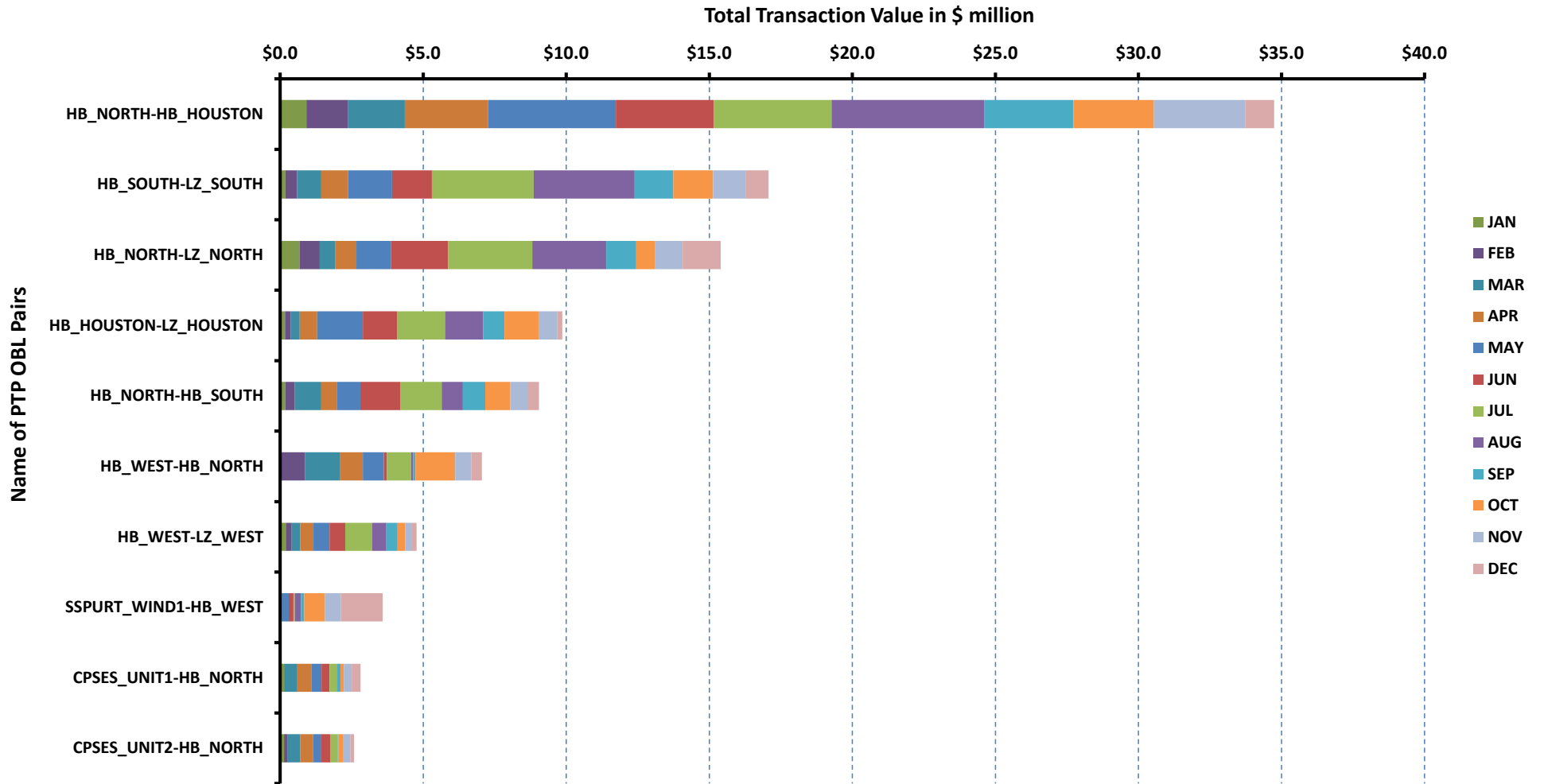
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Top 10 CRR Pairs Ranked by Monthly Auction Values - 1

Top 10 PTP Obligations by Total Transaction Value



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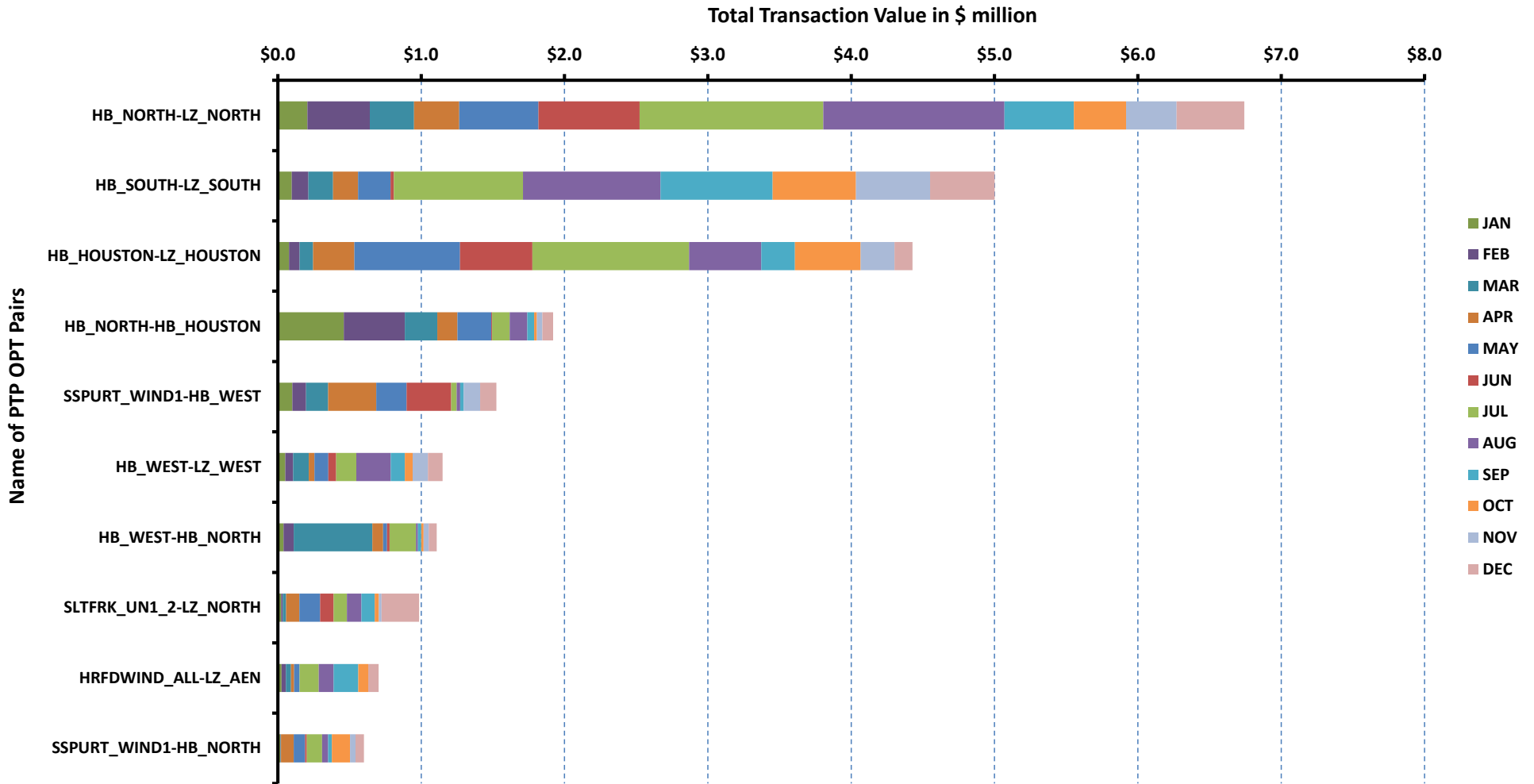
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Top 10 CRR Pairs Ranked by Monthly Auction Values - 2

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
2016	1	\$ 19.85	\$ 18.96
	2	\$ 16.00	\$ 15.54
	3	\$ 18.18	\$ 20.30
	4	\$ 20.34	\$ 19.98
	5	\$ 20.28	\$ 19.52
	6	\$ 28.27	\$ 26.23
	7	\$ 30.31	\$ 28.06
	8	\$ 35.17	\$ 33.47
	9	\$ 29.90	\$ 31.20
	10	\$ 29.07	\$ 26.58
	11	\$ 20.59	\$ 23.08
	12	\$ 26.80	\$ 24.33
2017	1	\$ 25.01	\$ 26.30
	2	\$ 21.70	\$ 21.57
	3	\$ 25.62	\$ 23.14
	4	\$ 27.56	\$ 30.40
	5	\$ 29.12	\$ 35.47
	6	\$ 32.64	\$ 31.47
	7	\$ 35.15	\$ 31.32
	8	\$ 30.67	\$ 29.43
	9	\$ 27.45	\$ 27.61
	10	\$ 27.94	\$ 29.46
	11	\$ 25.34	\$ 23.84
	12	\$ 22.66	\$ 24.77

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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
2016	1	11,996	19,817	14,745	4,154	9,367	14,160	9,958	3,525
	2	11,378	19,345	14,062	4,194	9,027	12,473	9,085	3,318
	3	13,434	16,410	12,996	3,667	9,184	11,447	8,934	3,177
	4	14,666	18,506	14,780	4,007	9,890	12,058	9,634	3,239
	5	16,608	21,991	15,871	4,520	11,044	13,212	10,679	3,423
	6	17,981	25,275	17,724	4,876	12,627	17,254	12,696	3,795
	7	18,366	26,373	19,056	5,146	13,866	19,237	14,083	4,192
	8	18,920	28,134	19,726	5,173	13,285	18,380	13,383	3,975
	9	18,008	26,088	18,339	4,783	12,650	16,767	12,651	3,698
	10	16,500	22,643	16,722	4,457	11,209	13,756	10,856	3,472
	11	14,053	18,396	14,574	4,132	9,533	11,857	9,264	3,330
	12	12,783	24,181	16,662	4,523	9,606	14,071	9,886	3,654
2017	1	13,640	24,641	17,476	4,693	9,533	13,862	9,650	3,682
	2	13,074	17,377	12,186	4,263	9,319	12,279	9,105	3,517
	3	14,350	17,155	13,474	4,247	9,894	12,145	9,426	3,489
	4	15,397	18,149	16,208	4,366	10,155	12,424	10,090	3,526
	5	16,071	23,038	16,835	4,912	11,298	14,082	11,344	3,734
	6	17,892	25,922	19,144	5,380	12,950	16,838	13,184	4,159
	7	18,527	27,219	19,179	5,347	13,962	19,066	14,173	4,326
	8	19,249	26,343	19,318	5,220	13,245	17,910	13,516	4,198
	9	16,811	25,154	17,688	5,253	12,212	16,243	12,106	4,029
	10	17,487	23,219	17,305	4,746	11,077	13,499	10,631	3,758
	11	15,231	18,425	14,460	4,344	10,174	12,370	9,747	3,756
	12	12,839	23,212	16,003	5,164	10,057	14,477	10,612	4,092

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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
2016	1	\$ 18.68	\$ 18.77	\$ 19.69	\$ 18.39	\$ 19.93	\$ 19.74	\$ 19.95	\$ 19.76
	2	\$ 15.20	\$ 15.84	\$ 15.89	\$ 14.35	\$ 15.89	\$ 16.05	\$ 16.30	\$ 15.28
	3	\$ 20.31	\$ 19.22	\$ 22.84	\$ 17.04	\$ 17.95	\$ 18.12	\$ 19.22	\$ 16.18
	4	\$ 20.32	\$ 20.84	\$ 19.79	\$ 16.22	\$ 20.39	\$ 20.35	\$ 21.20	\$ 17.56
	5	\$ 21.52	\$ 18.32	\$ 19.82	\$ 16.75	\$ 21.33	\$ 19.38	\$ 20.92	\$ 18.32
	6	\$ 32.12	\$ 24.08	\$ 24.42	\$ 22.53	\$ 33.15	\$ 25.64	\$ 28.08	\$ 24.60
	7	\$ 28.55	\$ 28.07	\$ 28.10	\$ 26.26	\$ 32.03	\$ 29.41	\$ 30.40	\$ 28.41
	8	\$ 36.96	\$ 32.41	\$ 32.61	\$ 29.64	\$ 37.68	\$ 34.06	\$ 35.13	\$ 32.05
	9	\$ 35.54	\$ 29.45	\$ 30.02	\$ 28.34	\$ 31.27	\$ 28.97	\$ 30.34	\$ 27.94
	10	\$ 27.27	\$ 25.14	\$ 27.77	\$ 26.33	\$ 31.14	\$ 26.70	\$ 30.86	\$ 26.15
	11	\$ 24.43	\$ 20.73	\$ 25.25	\$ 21.51	\$ 21.33	\$ 19.50	\$ 21.58	\$ 19.65
	12	\$ 24.59	\$ 24.51	\$ 24.28	\$ 23.11	\$ 26.55	\$ 26.66	\$ 27.66	\$ 25.67
2017	1	\$ 25.97	\$ 27.15	\$ 25.69	\$ 25.52	\$ 25.45	\$ 24.65	\$ 25.65	\$ 23.62
	2	\$ 24.14	\$ 19.84	\$ 22.43	\$ 18.59	\$ 24.48	\$ 20.12	\$ 22.10	\$ 18.81
	3	\$ 27.46	\$ 20.23	\$ 24.18	\$ 18.15	\$ 30.61	\$ 22.53	\$ 26.24	\$ 20.54
	4	\$ 41.17	\$ 23.37	\$ 31.21	\$ 21.80	\$ 35.06	\$ 22.79	\$ 28.27	\$ 20.73
	5	\$ 46.16	\$ 29.05	\$ 36.05	\$ 25.54	\$ 34.55	\$ 25.91	\$ 29.64	\$ 23.27
	6	\$ 34.90	\$ 27.27	\$ 34.65	\$ 27.77	\$ 36.20	\$ 28.63	\$ 35.60	\$ 28.49
	7	\$ 32.45	\$ 31.01	\$ 31.24	\$ 29.34	\$ 37.45	\$ 33.75	\$ 35.58	\$ 32.49
	8	\$ 30.09	\$ 28.53	\$ 30.59	\$ 27.37	\$ 32.27	\$ 28.79	\$ 32.36	\$ 28.14
	9	\$ 29.74	\$ 25.89	\$ 27.59	\$ 28.11	\$ 29.25	\$ 25.48	\$ 28.08	\$ 28.05
	10	\$ 38.08	\$ 24.35	\$ 29.37	\$ 22.64	\$ 34.80	\$ 23.32	\$ 28.53	\$ 22.66
	11	\$ 25.51	\$ 22.58	\$ 24.71	\$ 21.18	\$ 27.84	\$ 22.99	\$ 26.82	\$ 22.44
	12	\$ 21.95	\$ 23.02	\$ 29.71	\$ 25.08	\$ 22.39	\$ 21.88	\$ 24.17	\$ 22.19

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ERCOT-wide Monthly Implied Heat Rate - DA vs. RT						
year	month	gasprice	rtm_spp	HR_rtm	dam_spp	HR_dam
2016	1	\$ 2.21	\$ 18.96	8.58	\$ 19.85	8.98
	2	\$ 1.89	\$ 15.54	8.22	\$ 16.00	8.46
	3	\$ 1.67	\$ 20.30	12.13	\$ 18.18	10.86
	4	\$ 1.86	\$ 19.98	10.73	\$ 20.34	10.92
	5	\$ 1.85	\$ 19.52	10.52	\$ 20.28	10.93
	6	\$ 2.46	\$ 26.23	10.69	\$ 28.27	11.51
	7	\$ 2.71	\$ 28.06	10.36	\$ 30.31	11.19
	8	\$ 2.73	\$ 33.47	12.24	\$ 35.17	12.86
	9	\$ 2.93	\$ 31.20	10.66	\$ 29.90	10.21
	10	\$ 3.08	\$ 26.58	8.63	\$ 29.07	9.44
	11	\$ 2.47	\$ 23.08	9.34	\$ 20.59	8.34
	12	\$ 3.47	\$ 24.33	7.00	\$ 26.80	7.72
2017	1	\$ 3.22	\$ 26.30	8.16	\$ 25.01	7.76
	2	\$ 2.78	\$ 21.57	7.75	\$ 21.70	7.80
	3	\$ 2.88	\$ 23.14	8.04	\$ 25.62	8.90
	4	\$ 3.12	\$ 30.40	9.75	\$ 27.56	8.84
	5	\$ 3.24	\$ 35.47	10.94	\$ 29.12	8.99
	6	\$ 3.05	\$ 31.47	10.31	\$ 32.64	10.69
	7	\$ 2.97	\$ 31.32	10.56	\$ 35.15	11.85
	8	\$ 2.86	\$ 29.43	10.28	\$ 30.67	10.71
	9	\$ 2.94	\$ 27.61	9.40	\$ 27.45	9.35
	10	\$ 2.93	\$ 29.46	10.07	\$ 27.94	9.55
	11	\$ 2.93	\$ 23.84	8.13	\$ 25.34	8.65
	12	\$ 2.85	\$ 24.77	8.68	\$ 22.66	7.94

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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
2016	1	9.02	9.02	8.93	8.94	8.45	8.91	8.49	8.32
	2	8.41	8.62	8.49	8.08	8.04	8.41	8.38	7.59
	3	10.73	11.48	10.82	9.67	12.13	13.65	11.48	10.18
	4	10.95	11.39	10.93	9.43	10.92	10.63	11.20	8.71
	5	11.50	11.28	10.45	9.88	11.60	10.68	9.88	9.03
	6	13.50	11.44	10.44	10.02	13.08	9.95	9.81	9.18
	7	11.83	11.23	10.86	10.49	10.55	10.38	10.37	9.70
	8	13.78	12.84	12.45	11.72	13.52	11.92	11.85	10.84
	9	10.68	10.36	9.89	9.54	12.14	10.25	10.06	9.68
	10	10.11	10.02	8.67	8.49	8.86	9.02	8.16	8.55
	11	8.64	8.74	7.89	7.95	9.89	10.22	8.39	8.71
	12	7.64	7.96	7.67	7.39	7.08	6.99	7.06	6.65
2017	1	7.89	7.96	7.65	7.33	8.06	7.97	8.42	7.92
	2	8.80	7.94	7.23	6.76	8.68	8.06	7.13	6.68
	3	10.63	9.12	7.83	7.13	9.54	8.40	7.03	6.30
	4	11.25	9.07	7.31	6.65	13.21	10.01	7.50	7.00
	5	10.66	9.14	7.99	7.18	14.24	11.12	8.96	7.88
	6	11.85	11.66	9.37	9.33	11.43	11.35	8.93	9.09
	7	12.63	12.00	11.38	10.95	10.94	10.53	10.45	9.89
	8	11.27	11.30	10.06	9.83	10.51	10.68	9.97	9.56
	9	9.96	9.57	8.68	9.55	10.13	9.40	8.82	9.57
	10	11.90	9.75	7.97	7.75	13.02	10.04	8.33	7.74
	11	9.50	9.15	7.84	7.66	8.71	8.43	7.71	7.23
	12	7.85	8.47	7.67	7.78	7.69	10.41	8.07	8.79

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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
2017	12	1	\$ 0.16	\$ -	3	0	80	90
2017	12	2	\$ 0.14	\$ -	13	0	80	90
2017	12	3	\$ -	\$ -	0	0	80	90
2017	12	4	\$ 0.01	\$ -	1	0	80	90
2017	12	5	\$ 0.07	\$ -	14	0	80	90
2017	12	6	\$ -	\$ -	0	0	80	90
2017	12	7	\$ 0.03	\$ 0.66	2	8	80	90
2017	12	8	\$ 0.01	\$ -	2	0	80	90
2017	12	9	\$ 0.01	\$ -	1	0	80	90
2017	12	10	\$ 0.07	\$ -	12	0	80	90
2017	12	11	\$ -	\$ -	0	0	80	90
2017	12	12	\$ -	\$ -	0	0	80	90
2017	12	13	\$ 0.05	\$ -	17	0	80	90
2017	12	14	\$ -	\$ -	0	0	80	90
2017	12	15	\$ 0.03	\$ -	3	0	80	90
2017	12	16	\$ -	\$ -	0	0	80	90
2017	12	17	\$ 0.90	\$ -	49	0	80	90
2017	12	18	\$ 0.05	\$ -	9	0	80	90
2017	12	19	\$ -	\$ -	0	0	80	90
2017	12	20	\$ 0.16	\$ -	21	0	80	90
2017	12	21	\$ -	\$ -	0	0	80	90
2017	12	22	\$ 0.08	\$ -	3	0	80	90
2017	12	23	\$ -	\$ -	0	0	80	90
2017	12	24	\$ -	\$ -	0	0	80	90
2017	12	25	\$ -	\$ -	0	0	80	90
2017	12	26	\$ -	\$ -	0	0	80	90
2017	12	27	\$ 0.06	\$ -	2	0	80	90
2017	12	28	\$ 0.01	\$ -	7	0	80	90
2017	12	29	\$ -	\$ -	0	0	80	90
2017	12	30	\$ -	\$ -	0	0	80	90
2017	12	31	\$ -	\$ -	0	0	80	90

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Monthly Average of Ancillary Services Required MW					
year	month	ASMW_REGDN	ASMW_NSPIN	ASMW_RRS	ASMW_REGUP
2016	1	288	1,568	2,752	314
	2	289	1,882	2,872	318
	3	279	1,787	2,872	313
	4	296	1,503	2,835	330
	5	315	1,554	2,817	339
	6	331	1,547	2,608	347
	7	324	1,358	2,577	354
	8	326	1,283	2,537	353
	9	319	1,500	2,598	346
	10	312	1,529	2,735	319
	11	260	1,742	2,872	284
	12	272	1,605	2,797	293
2017	1	279	1,479	2,700	309
	2	291	1,690	2,733	315
	3	277	1,575	2,734	302
	4	298	1,441	2,734	318
	5	322	1,605	2,626	340
	6	312	1,522	2,494	332
	7	314	1,304	2,370	335
	8	313	1,372	2,379	343
	9	309	1,578	2,504	333
	10	303	1,588	2,662	316
	11	257	1,677	2,733	279
	12	268	1,583	2,733	289

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Hourly Average of Ancillary Services Required MW					
year	DELIVERY_HOUR	ASMW_REGDN	ASMW_NSPIN	ASMW_RRS	ASMW_REGUP
2016	1	363	964	2,867	325
	2	276	964	2,867	247
	3	245	1,489	2,867	227
	4	213	1,489	2,867	222
	5	242	1,489	2,867	276
	6	378	1,489	2,867	444
	7	298	2,008	2,706	584
	8	264	2,008	2,706	348
	9	262	2,008	2,706	385
	10	285	2,008	2,706	363
	11	273	1,991	2,646	378
	12	263	1,991	2,646	353
	13	247	1,991	2,646	324
	14	245	1,991	2,646	302
	15	239	1,473	2,675	267
	16	232	1,473	2,675	250
	17	237	1,473	2,675	266
	18	281	1,473	2,675	331
	19	344	1,492	2,670	306
	20	326	1,492	2,670	299
	21	337	1,492	2,670	272
	22	434	1,492	2,670	319
	23	496	964	2,867	381
	24	444	964	2,867	352
2017	1	362	963	2,726	310
	2	278	963	2,726	235
	3	248	1,478	2,720	217
	4	215	1,478	2,721	214
	5	221	1,478	2,721	275
	6	342	1,478	2,721	437
	7	277	1,994	2,594	580
	8	247	1,994	2,594	349
	9	244	1,994	2,594	395
	10	286	1,994	2,594	376
	11	261	1,790	2,527	379
	12	246	1,790	2,527	356
	13	230	1,790	2,527	321
	14	234	1,790	2,527	298
	15	230	1,488	2,528	264
	16	212	1,488	2,528	240
	17	228	1,488	2,528	251
	18	281	1,488	2,528	305
	19	354	1,484	2,599	295
	20	338	1,484	2,599	277
	21	355	1,484	2,599	253
	22	448	1,484	2,599	291
	23	500	963	2,726	373
	24	448	963	2,726	331

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Monthly Average Ancillary Services Price					
year	month	MCPC_REGDN	MCPC_NSPIIN	MCPC_RRS	MCPC_REGUP
2016	1	\$ 4.10	\$ 2.62	\$ 8.05	\$ 6.69
	2	\$ 7.21	\$ 4.77	\$ 12.91	\$ 7.80
	3	\$ 8.47	\$ 6.06	\$ 11.39	\$ 9.34
	4	\$ 9.23	\$ 4.07	\$ 13.20	\$ 9.48
	5	\$ 7.63	\$ 2.84	\$ 8.01	\$ 6.14
	6	\$ 4.43	\$ 3.02	\$ 8.05	\$ 5.89
	7	\$ 3.59	\$ 3.11	\$ 9.44	\$ 7.75
	8	\$ 4.27	\$ 7.13	\$ 12.75	\$ 10.49
	9	\$ 4.59	\$ 3.91	\$ 8.91	\$ 7.12
	10	\$ 10.06	\$ 3.02	\$ 12.21	\$ 10.42
	11	\$ 5.68	\$ 3.53	\$ 11.84	\$ 7.64
	12	\$ 9.13	\$ 2.91	\$ 16.08	\$ 9.72
2017	1	\$ 7.10	\$ 0.89	\$ 13.26	\$ 9.94
	2	\$ 6.81	\$ 2.81	\$ 10.47	\$ 9.62
	3	\$ 10.21	\$ 3.96	\$ 9.71	\$ 7.94
	4	\$ 10.04	\$ 3.18	\$ 11.80	\$ 9.55
	5	\$ 12.33	\$ 3.58	\$ 8.92	\$ 10.16
	6	\$ 5.50	\$ 3.48	\$ 7.67	\$ 6.18
	7	\$ 3.75	\$ 4.79	\$ 10.27	\$ 8.31
	8	\$ 6.40	\$ 2.40	\$ 7.85	\$ 6.78
	9	\$ 7.17	\$ 2.55	\$ 7.26	\$ 6.98
	10	\$ 10.49	\$ 4.86	\$ 11.87	\$ 14.36
	11	\$ 6.25	\$ 3.82	\$ 10.89	\$ 9.54
	12	\$ 3.08	\$ 1.78	\$ 6.82	\$ 5.89

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Monthly Average A/S Cost per MWh Load					
year	month	AScost_REGDN	AScost_NSPIIN	AScost_RRS	AScost_REGUP
2016	1	\$ 0.03	\$ 0.11	\$ 0.60	\$ 0.06
	2	\$ 0.06	\$ 0.26	\$ 1.09	\$ 0.07
	3	\$ 0.07	\$ 0.33	\$ 1.00	\$ 0.09
	4	\$ 0.08	\$ 0.18	\$ 1.07	\$ 0.09
	5	\$ 0.06	\$ 0.12	\$ 0.59	\$ 0.05
	6	\$ 0.03	\$ 0.10	\$ 0.45	\$ 0.04
	7	\$ 0.02	\$ 0.08	\$ 0.47	\$ 0.05
	8	\$ 0.03	\$ 0.19	\$ 0.66	\$ 0.08
	9	\$ 0.03	\$ 0.13	\$ 0.51	\$ 0.05
	10	\$ 0.08	\$ 0.12	\$ 0.85	\$ 0.08
	11	\$ 0.04	\$ 0.18	\$ 1.00	\$ 0.06
	12	\$ 0.07	\$ 0.13	\$ 1.21	\$ 0.08
2017	1	\$ 0.05	\$ 0.04	\$ 0.97	\$ 0.08
	2	\$ 0.06	\$ 0.14	\$ 0.84	\$ 0.09
	3	\$ 0.08	\$ 0.18	\$ 0.76	\$ 0.07
	4	\$ 0.08	\$ 0.13	\$ 0.89	\$ 0.08
	5	\$ 0.10	\$ 0.14	\$ 0.58	\$ 0.09
	6	\$ 0.04	\$ 0.11	\$ 0.41	\$ 0.04
	7	\$ 0.02	\$ 0.12	\$ 0.47	\$ 0.05
	8	\$ 0.04	\$ 0.07	\$ 0.38	\$ 0.05
	9	\$ 0.05	\$ 0.09	\$ 0.41	\$ 0.05
	10	\$ 0.08	\$ 0.20	\$ 0.81	\$ 0.12
	11	\$ 0.04	\$ 0.18	\$ 0.83	\$ 0.07
	12	\$ 0.02	\$ 0.07	\$ 0.48	\$ 0.04

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ERCOT-wide Cumulative PNM			
year	month	pnm	pnm_accum
2016	0	\$ -	\$ -
	1	\$ 1,160.69	\$ 1,160.69
	2	\$ 720.57	\$ 1,881.26
	3	\$ 3,883.41	\$ 5,764.67
	4	\$ 2,389.99	\$ 8,154.66
	5	\$ 1,661.50	\$ 9,816.16
	6	\$ 1,922.76	\$ 11,738.92
	7	\$ 2,969.44	\$ 14,708.36
	8	\$ 5,321.18	\$ 20,029.54
	9	\$ 3,967.65	\$ 23,997.19
	10	\$ 1,824.61	\$ 25,821.80
	11	\$ 2,510.79	\$ 28,332.59
12	\$ 1,658.38	\$ 29,990.97	
2017	0	\$ -	\$ -
	1	\$ 2,964.83	\$ 2,964.83
	2	\$ 1,573.68	\$ 4,538.51
	3	\$ 1,520.94	\$ 6,059.45
	4	\$ 4,590.29	\$ 10,649.74
	5	\$ 5,673.67	\$ 16,323.41
	6	\$ 2,542.93	\$ 18,866.34
	7	\$ 3,189.82	\$ 22,056.16
	8	\$ 2,749.34	\$ 24,805.50
	9	\$ 2,220.00	\$ 27,025.50
	10	\$ 3,969.18	\$ 30,994.68
	11	\$ 1,974.12	\$ 32,968.80
12	\$ 2,188.63	\$ 35,157.43	

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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
2016	1	455	14	371	163	473	142
	2	39	83	148	42	(36)	150
	3	31	288	300	89	(136)	(82)
	4	(271)	220	97	(82)	(320)	(147)
	5	(44)	460	285	117	(69)	163
	6	(488)	(261)	(356)	(518)	(348)	(451)
	7	(163)	507	735	306	(231)	240
	8	(578)	(65)	41	(258)	(741)	(717)
	9	(358)	305	319	87	(433)	(30)
	10	(312)	371	(41)	(310)	(475)	50
	11	(329)	(146)	240	(237)	(139)	(234)
	12	(41)	(61)	282	(38)	516	83
2017	1	(395)	(62)	298	(188)	224	69
	2	34	300	185	118	538	363
	3	(68)	455	456	143	241	321
	4	(41)	631	611	550	(189)	(27)
	5	(741)	835	505	(140)	(836)	84
	6	(394)	634	637	30	(435)	179
	7	(36)	(59)	438	193	73	(32)
	8	(145)	902	918	278	(23)	293
	9	(259)	81	267	(96)	(388)	(210)
	10	(117)	379	213	(192)	(115)	(167)
	11	(412.27)	(481.25)	(487.41)	(572.47)	(422.77)	(315.93)
	12	68.38	(970.71)	(462.14)	(415.68)	456.02	(375.47)

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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
2016	1	6,300	4,581	4,663	6,253	6,228	5,019
	2	7,602	5,772	5,779	7,573	7,552	6,109
	3	7,872	6,033	6,013	7,565	7,793	6,833
	4	7,356	5,020	5,488	6,921	6,559	5,437
	5	7,414	5,363	6,245	7,275	6,347	5,617
	6	5,963	3,648	4,840	5,845	4,816	3,741
	7	8,903	5,074	6,793	8,315	7,411	5,948
	8	5,644	3,670	4,814	5,613	4,238	3,529
	9	6,159	3,957	4,561	6,057	5,295	4,291
	10	8,472	4,634	5,455	8,674	7,449	5,548
	11	7,043	4,855	5,049	6,718	6,517	5,225
	12	7,653	5,588	5,849	7,549	7,270	6,395
2017	1	8,014	6,700	6,599	8,265	7,550	6,562
	2	9,009	6,729	7,434	9,274	8,627	6,821
	3	10,332	7,161	7,971	10,439	9,360	8,027
	4	10,299	7,917	8,602	9,566	9,141	8,602
	5	9,211	6,841	7,592	8,633	8,222	6,984
	6	8,043	4,563	6,393	8,327	6,543	5,205
	7	6,890	3,976	5,906	7,002	5,387	4,007
	8	5,383	3,558	5,047	5,704	3,942	3,052
	9	7,838	4,460	5,419	7,437	6,599	5,200
	10	9,408	6,198	6,379	9,086	8,565	7,053
	11	8,650	6,302	6,979	8,939	7,614	6,438
	12	7,532	5,681	5,279	6,908	7,205	6,015

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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	2017	Panhandle GTC (PNHNDL)	17,096	1	344	826	1,553	2,223	1,393	1,704	590	157	1,210	2,770	2,564	1,762
FREQ_EXIST	2017	SNG-ZEN (SNG-ZEN)	15,933	2	679	2,173	3,235	2,335	2,807	1,473	780	544	128	1,191	425	163
FREQ_EXIST	2017	JK TOKSW 1 (TOKSW-JK CK)	13,546	3	85	3	29	136	1,055	2,958	1,425	1,543	1,557	1,890	1,695	1,170
FREQ_EXIST	2017	PIGTAP SOLST11 1 (SOLSTICE-PIGTAP)	11,711	4	-	176	1,127	2,048	2,960	1,380	1,793	1,404	642	201	-	-
FREQ_EXIST	2017	HLD FMR1 (HLD-HLD)	11,486	5	-	-	2,143	4,143	3,413	1,317	-	36	14	375	-	45
FREQ_EXIST	2017	HAMILT MAVERI1 1 (HAMILTON-MAVERICK)	6,786	6	47	99	621	1,516	236	822	22	103	879	1,414	423	604
FREQ_EXIST	2017	6270 C (WGROB-BLMND)	4,221	7	-	-	12	296	1,033	699	803	440	651	287	-	-
FREQ_EXIST	2017	GIBCRK-SNG (GIBCRK-SNG)	3,990	8	375	-	308	2,419	303	-	-	-	5	-	580	-
FREQ_EXIST	2017	591 A (LKPNT-CRLNW)	3,937	9	462	1,403	922	519	222	120	-	-	-	-	270	19
FREQ_EXIST	2017	342T195 1 (GRANMO-MARBFA)	3,739	10	27	-	-	12	133	53	-	125	58	1,521	1,810	-
TOP10_RENT	2017	Panhandle GTC (PNHNDL)	\$ 139.70	1	\$ 1.17	\$ 3.92	\$ 9.44	\$ 15.86	\$ 9.98	\$ 16.13	\$ 5.74	\$ 1.62	\$ 10.25	\$ 30.49	\$ 22.59	\$ 12.51
TOP10_RENT	2017	SNG-ZEN (SNG-ZEN)	\$ 105.13	2	\$ 1.68	\$ 8.98	\$ 11.62	\$ 13.11	\$ 40.63	\$ 18.53	\$ 4.69	\$ 1.22	\$ 0.56	\$ 2.23	\$ 1.78	\$ 0.09
TOP10_RENT	2017	6270 C (WGROB-BLMND)	\$ 73.55	3	\$ -	\$ -	\$ 0.09	\$ 6.52	\$ 21.76	\$ 17.26	\$ 6.62	\$ 5.01	\$ 10.18	\$ 6.10	\$ -	\$ -
TOP10_RENT	2017	JK TOKSW 1 (TOKSW-JK CK)	\$ 68.25	4	\$ 0.08	\$ 0.00	\$ 0.03	\$ 0.11	\$ 5.38	\$ 5.94	\$ 2.53	\$ 1.85	\$ 7.77	\$ 36.78	\$ 5.05	\$ 2.73
TOP10_RENT	2017	GCB 100 1 (N_MCALLN-W_MCALLN)	\$ 51.53	5	\$ -	\$ -	\$ -	\$ 7.27	\$ 9.05	\$ 22.74	\$ -	\$ 5.79	\$ 3.57	\$ -	\$ -	\$ 3.11
TOP10_RENT	2017	RINCON WHITE 2 1 (WHITE_PT-RINCON)	\$ 48.63	6	\$ -	\$ -	\$ 33.80	\$ 14.82	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2017	FORMOS LOLITA 1 (LOLITA-FORMOSA)	\$ 26.40	7	\$ 6.11	\$ -	\$ 6.83	\$ -	\$ 2.04	\$ 3.12	\$ -	\$ -	\$ 0.23	\$ 7.33	\$ 0.73	\$ 0.00
TOP10_RENT	2017	591 A (LKPNT-CRLNW)	\$ 25.71	8	\$ 2.86	\$ 9.12	\$ 7.14	\$ 3.06	\$ 1.20	\$ 0.54	\$ -	\$ -	\$ -	\$ -	\$ 1.68	\$ 0.12
TOP10_RENT	2017	6271 C (WGROB-SUMRFELD)	\$ 23.04	9	\$ 20.83	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1.17	\$ 1.04	\$ -
TOP10_RENT	2017	P4 E5 1 1 (ELMCREEK-SKYLINE)	\$ 20.63	10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.00	\$ -	\$ -	\$ 20.63

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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	2017	FORMOS LOLITA1_1 (LOLITA-FORMOSA)	4,676	1	196	-	117	174	465	690	623	396	476	610	590	339
FREQ_EXIST	2017	SNG-ZEN (SNG-ZEN)	3,461	2	179	475	504	285	453	363	311	264	241	343	24	19
FREQ_EXIST	2017	EAGLEP_ESCOND1_1 (ESCONDID-EAGLE PS)	3,114	3	167	115	384	214	264	348	191	306	276	343	222	284
FREQ_EXIST	2017	HAMILT_MAVERI1_1 (HAMILTON-MAVERICK)	3,012	4	125	81	124	429	331	300	195	160	273	408	264	322
FREQ_EXIST	2017	Panhandle GTC (PNHNDL)	2,873	5	51	165	315	321	307	266	224	39	229	385	332	239
FREQ_EXIST	2017	HEXT_YELWJC1_1 (YELWJCKT-HEXT)	2,705	6	185	153	-	150	268	278	193	236	473	488	86	195
FREQ_EXIST	2017	GCB_100_1 (N_MCALLN-W_MCALLN)	2,668	7	-	5	21	242	448	489	316	380	322	205	102	138
FREQ_EXIST	2017	BRUNI_69_1 (BRUNI-BRUNI)	2,458	8	268	140	302	268	346	139	321	354	97	95	49	79
FREQ_EXIST	2017	ASHERT_CATARI1_1 (ASHERTON-CATARINA)	2,343	9	46	122	140	183	185	243	206	246	284	213	282	193
FREQ_EXIST	2017	JK_TOKSW_1 (TOKSW-JK_CK)	2,326	10	2	1	-	21	74	352	188	274	518	277	384	235
TOP10_RENT	2017	Panhandle GTC (PNHNDL)	\$ 109.37	1	\$ 0.61	\$ 1.89	\$ 6.71	\$ 10.27	\$ 8.19	\$ 11.11	\$ 6.54	\$ 0.58	\$ 8.59	\$ 23.88	\$ 21.17	\$ 9.82
TOP10_RENT	2017	SNG-ZEN (SNG-ZEN)	\$ 109.12	2	\$ 3.00	\$ 9.25	\$ 12.28	\$ 10.37	\$ 18.90	\$ 20.34	\$ 11.65	\$ 7.11	\$ 6.32	\$ 9.08	\$ 0.69	\$ 0.13
TOP10_RENT	2017	GCB_100_1 (N_MCALLN-W_MCALLN)	\$ 57.91	3	\$ -	\$ 0.00	\$ 0.30	\$ 3.91	\$ 13.07	\$ 23.41	\$ 4.56	\$ 7.52	\$ 2.66	\$ 1.23	\$ 0.76	\$ 0.48
TOP10_RENT	2017	6270_C (WGROB-BLMND)	\$ 54.49	4	\$ 1.03	\$ -	\$ 4.96	\$ 6.97	\$ 16.41	\$ 10.07	\$ 6.04	\$ 1.03	\$ 7.99	\$ -	\$ -	\$ 0.00
TOP10_RENT	2017	JK_TOKSW_1 (TOKSW-JK_CK)	\$ 34.60	5	\$ 0.01	\$ 0.00	\$ -	\$ 0.15	\$ 0.75	\$ 2.84	\$ 0.87	\$ 1.28	\$ 6.36	\$ 12.88	\$ 7.29	\$ 2.17
TOP10_RENT	2017	KEPLER KOCH U1_1 (KOCH_UP-KEPLER)	\$ 16.96	6	\$ 4.82	\$ 0.32	\$ 0.39	\$ -	\$ -	\$ 8.51	\$ 0.08	\$ 0.09	\$ 2.00	\$ 0.19	\$ -	\$ 0.56
TOP10_RENT	2017	6265_A (EMSES-MRSDO)	\$ 16.65	7	\$ 0.27	\$ 0.06	\$ 0.14	\$ 0.07	\$ 0.00	\$ 2.48	\$ 3.55	\$ 2.77	\$ 0.39	\$ 4.21	\$ 0.23	\$ 2.48
TOP10_RENT	2017	FORMOS LOLITA1_1 (LOLITA-FORMOSA)	\$ 16.40	8	\$ 0.36	\$ -	\$ 0.09	\$ 0.16	\$ 1.57	\$ 4.05	\$ 0.78	\$ 0.29	\$ 0.39	\$ 2.43	\$ 4.31	\$ 1.97
TOP10_RENT	2017	591_A (LKPNT-CRLNW)	\$ 15.34	9	\$ 0.49	\$ 5.71	\$ 3.64	\$ 2.88	\$ 1.28	\$ 0.02	\$ -	\$ -	\$ 0.01	\$ 0.00	\$ 0.68	\$ 0.63
TOP10_RENT	2017	RINCON WHITE_2_1 (WHITE_PT-RINCON)	\$ 14.62	10	\$ -	\$ 0.00	\$ 9.22	\$ 4.57	\$ 0.43	\$ 0.13	\$ 0.01	\$ 0.02	\$ 0.00	\$ 0.06	\$ 0.16	\$ 0.00

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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	2017	HB NORTH-HB HOUSTON	\$ 34.74	1	\$ 0.92	\$ 1.46	\$ 1.98	\$ 2.92	\$ 4.46	\$ 3.42	\$ 4.12	\$ 5.33	\$ 3.12	\$ 2.81	\$ 3.20	\$ 1.00		
N	2017	HB SOUTH-LZ SOUTH	\$ 17.07	2	\$ 0.18	\$ 0.41	\$ 0.85	\$ 0.94	\$ 1.54	\$ 1.39	\$ 3.56	\$ 3.53	\$ 1.35	\$ 1.39	\$ 1.15	\$ 0.79		
N	2017	HB NORTH-LZ NORTH	\$ 15.40	3	\$ 0.68	\$ 0.70	\$ 0.53	\$ 0.75	\$ 1.21	\$ 2.00	\$ 2.94	\$ 2.59	\$ 1.05	\$ 0.67	\$ 0.96	\$ 1.33		
N	2017	HB HOUSTON-LZ HOUSTON	\$ 9.86	4	\$ 0.17	\$ 0.19	\$ 0.33	\$ 0.61	\$ 1.59	\$ 1.21	\$ 1.67	\$ 1.34	\$ 0.74	\$ 1.19	\$ 0.66	\$ 0.17		
N	2017	HB NORTH-HB SOUTH	\$ 9.04	5	\$ 0.18	\$ 0.34	\$ 0.92	\$ 0.55	\$ 0.81	\$ 1.39	\$ 1.45	\$ 0.74	\$ 0.79	\$ 0.87	\$ 0.63	\$ 0.37		
N	2017	HB WEST-HB NORTH	\$ 7.06	6	\$ 0.05	\$ 0.82	\$ 1.22	\$ 0.81	\$ 0.73	\$ 0.12	\$ 0.84	\$ 0.07	\$ 0.08	\$ 1.39	\$ 0.56	\$ 0.37		
N	2017	HB WEST-LZ WEST	\$ 4.77	7	\$ 0.20	\$ 0.20	\$ 0.30	\$ 0.46	\$ 0.56	\$ 0.55	\$ 0.94	\$ 0.50	\$ 0.39	\$ 0.27	\$ 0.21	\$ 0.18		
N	2017	SSPURT_WIND1-HB WEST	\$ 3.58	8	\$ 0.01	\$ 0.01	\$ 0.01	\$ 0.03	\$ 0.24	\$ 0.16	\$ 0.05	\$ 0.21	\$ 0.12	\$ 0.73	\$ 0.55	\$ 1.46		
N	2017	CPSES_UNIT1-HB NORTH	\$ 2.81	9	\$ 0.14	\$ 0.02	\$ 0.44	\$ 0.50	\$ 0.34	\$ 0.28	\$ 0.27	\$ 0.00	\$ 0.12	\$ 0.11	\$ 0.28	\$ 0.31		
N	2017	CPSES_UNIT2-HB NORTH	\$ 2.58	10	\$ 0.13	\$ 0.13	\$ 0.44	\$ 0.46	\$ 0.28	\$ 0.31	\$ 0.27	\$ -	\$ 0.03	\$ 0.15	\$ 0.26	\$ 0.13		
Y	2017	HB NORTH-LZ NORTH	\$ 6.74	1	\$ 0.21	\$ 0.43	\$ 0.31	\$ 0.32	\$ 0.55	\$ 0.71	\$ 1.28	\$ 1.26	\$ 0.48	\$ 0.36	\$ 0.35	\$ 0.47		
Y	2017	HB SOUTH-LZ SOUTH	\$ 5.00	2	\$ 0.10	\$ 0.12	\$ 0.17	\$ 0.17	\$ 0.23	\$ 0.02	\$ 0.90	\$ 0.96	\$ 0.78	\$ 0.58	\$ 0.52	\$ 0.45		
Y	2017	HB HOUSTON-LZ HOUSTON	\$ 4.43	3	\$ 0.08	\$ 0.07	\$ 0.09	\$ 0.29	\$ 0.74	\$ 0.50	\$ 1.09	\$ 0.50	\$ 0.23	\$ 0.46	\$ 0.24	\$ 0.13		
Y	2017	HB NORTH-HB HOUSTON	\$ 1.92	4	\$ 0.46	\$ 0.43	\$ 0.23	\$ 0.14	\$ 0.24	\$ 0.01	\$ 0.12	\$ 0.12	\$ 0.05	\$ 0.02	\$ 0.04	\$ 0.08		
Y	2017	SSPURT_WIND1-HB WEST	\$ 1.52	5	\$ 0.10	\$ 0.09	\$ 0.15	\$ 0.34	\$ 0.21	\$ 0.31	\$ 0.04	\$ 0.02	\$ 0.02	\$ -	\$ 0.11	\$ 0.11		
Y	2017	HB WEST-LZ WEST	\$ 1.15	6	\$ 0.05	\$ 0.05	\$ 0.11	\$ 0.04	\$ 0.10	\$ 0.06	\$ 0.14	\$ 0.24	\$ 0.10	\$ 0.05	\$ 0.11	\$ 0.10		
Y	2017	HB WEST-HB NORTH	\$ 1.11	7	\$ 0.04	\$ 0.07	\$ 0.55	\$ 0.08	\$ 0.03	\$ 0.02	\$ 0.18	\$ 0.01	\$ 0.02	\$ 0.02	\$ 0.04	\$ 0.06		
Y	2017	SLFRK_UN1_2-LZ NORTH	\$ 0.99	8	\$ 0.02	\$ 0.01	\$ 0.02	\$ 0.09	\$ 0.14	\$ 0.09	\$ 0.09	\$ 0.10	\$ 0.09	\$ 0.03	\$ 0.02	\$ 0.26		
Y	2017	HRFDWIND_ALL-LZ AEN	\$ 0.70	9	\$ 0.03	\$ 0.03	\$ 0.04	\$ 0.02	\$ 0.04	\$ -	\$ 0.13	\$ 0.10	\$ 0.17	\$ 0.07	\$ -	\$ 0.07		
Y	2017	SSPURT_WIND1-HB NORTH	\$ 0.60	10	\$ 0.02	\$ 0.00	\$ 0.00	\$ 0.09	\$ 0.08	\$ 0.01	\$ 0.11	\$ 0.04	\$ 0.03	\$ 0.13	\$ 0.04	\$ 0.06		

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