

To the Public Utility Commission of Texas

# ERCOT Wholesale Electricity Market Monthly Report

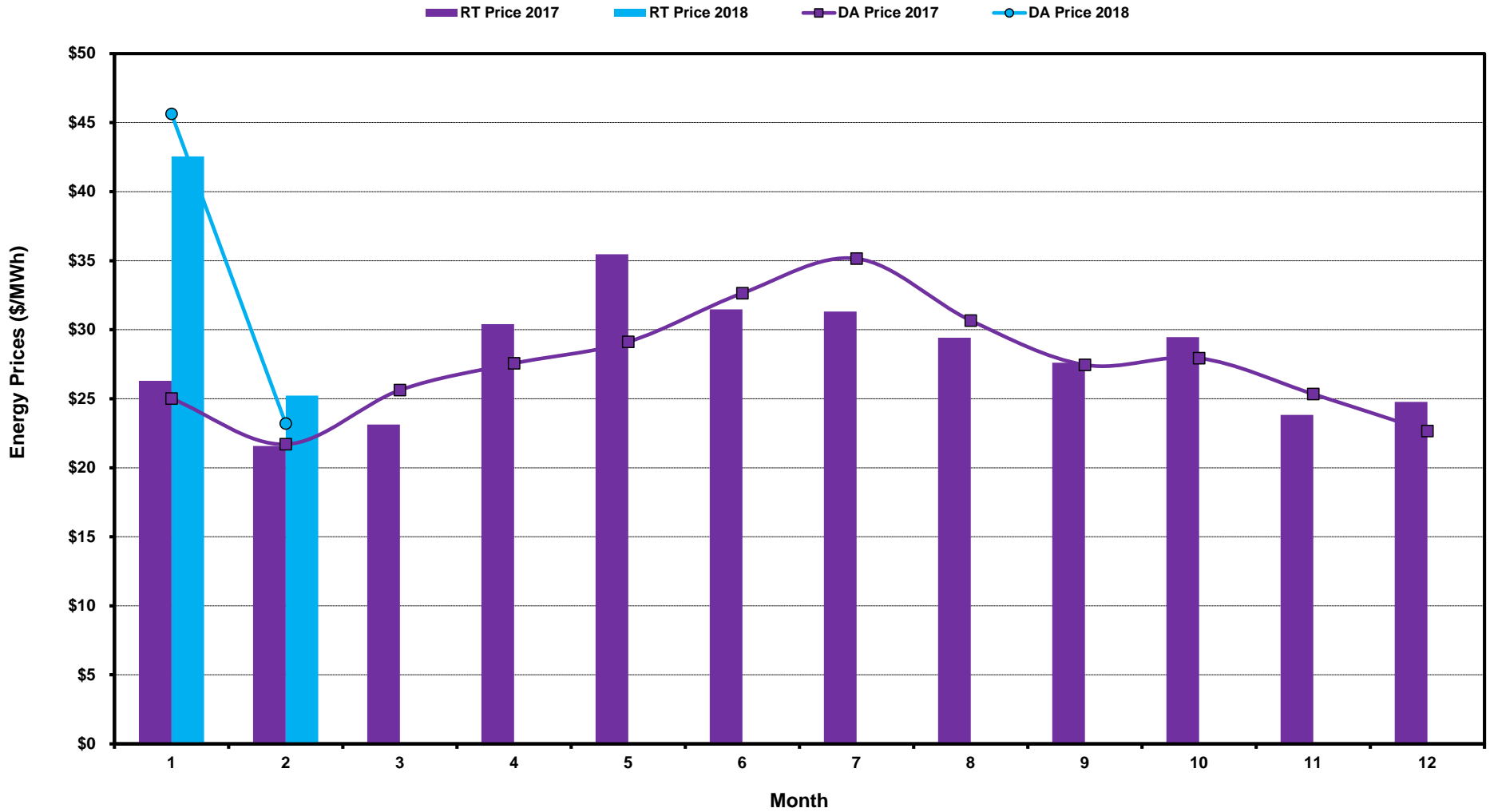
Tuesday, March 13, 2018

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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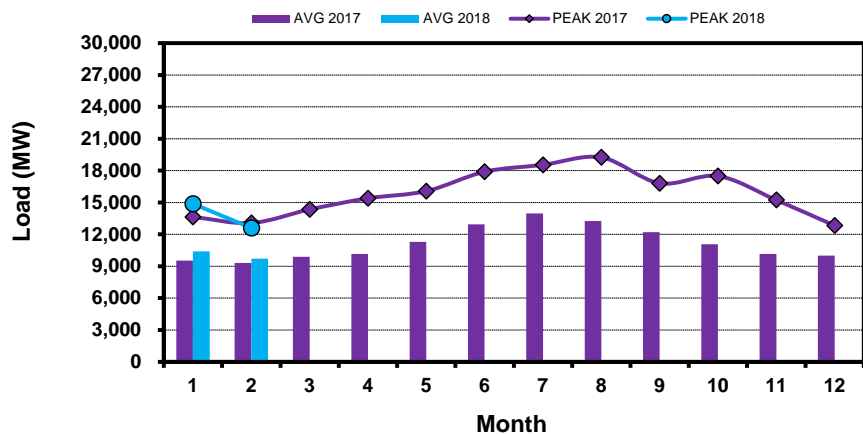
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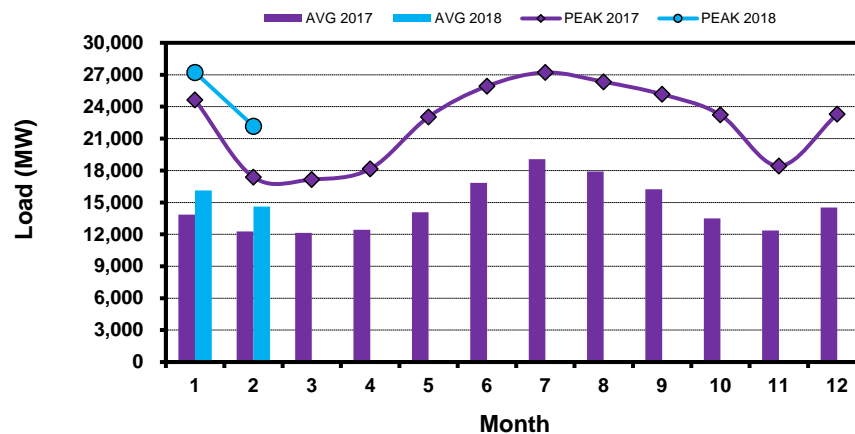
# Load Zone Load Statistics

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

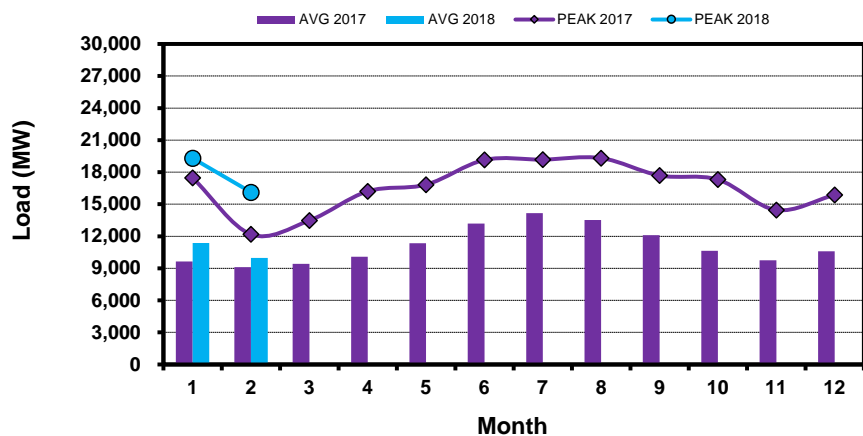
### Houston Zone



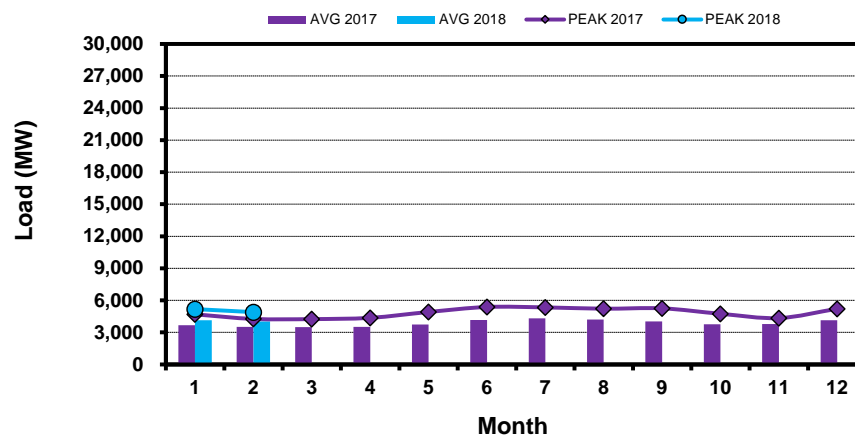
### North Zone



### South Zone



### West Zone



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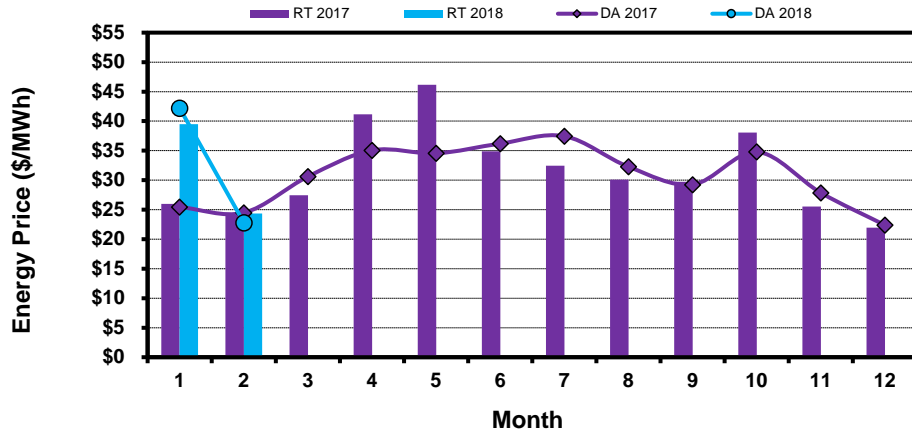
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**Note:** \* Zonal load zone definition vs. Nodal comparable load zone definition: LZ\_Houston=LZ\_Houston; LZ\_West=LZ\_West; LZ\_North=(LZ\_North,LZ\_RAYBN); LZ\_South=(LZ\_South,LZ\_CPS,LZ\_AEN,LZ\_LCRA)

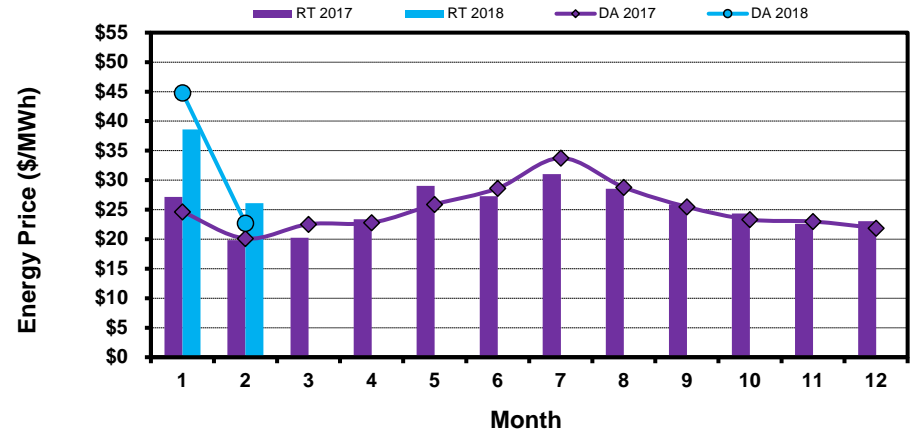
# Load Zone Monthly Average Energy Price DA vs RT

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

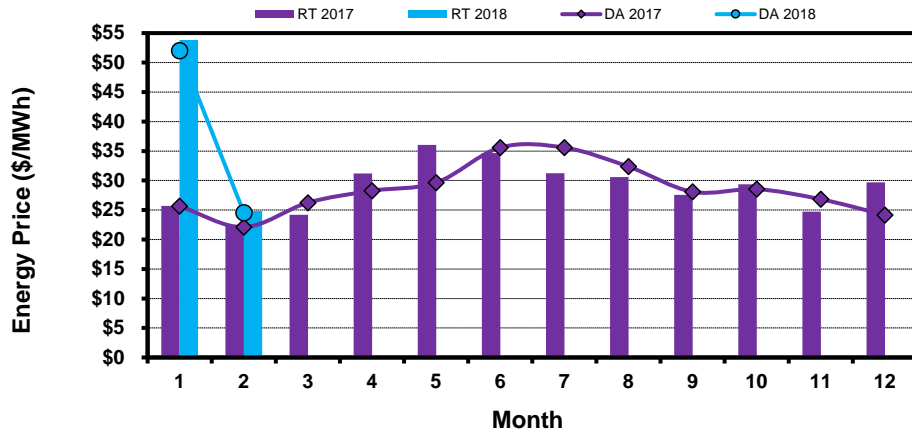
### Houston Zone



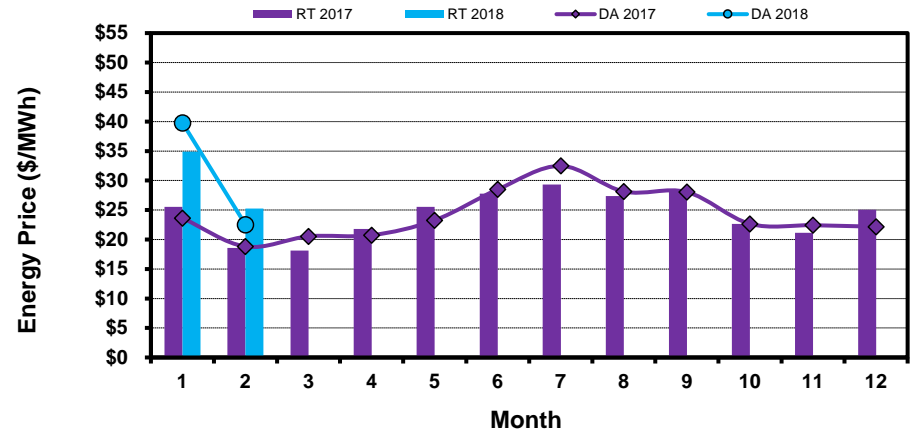
### North Zone



### South Zone



### West Zone



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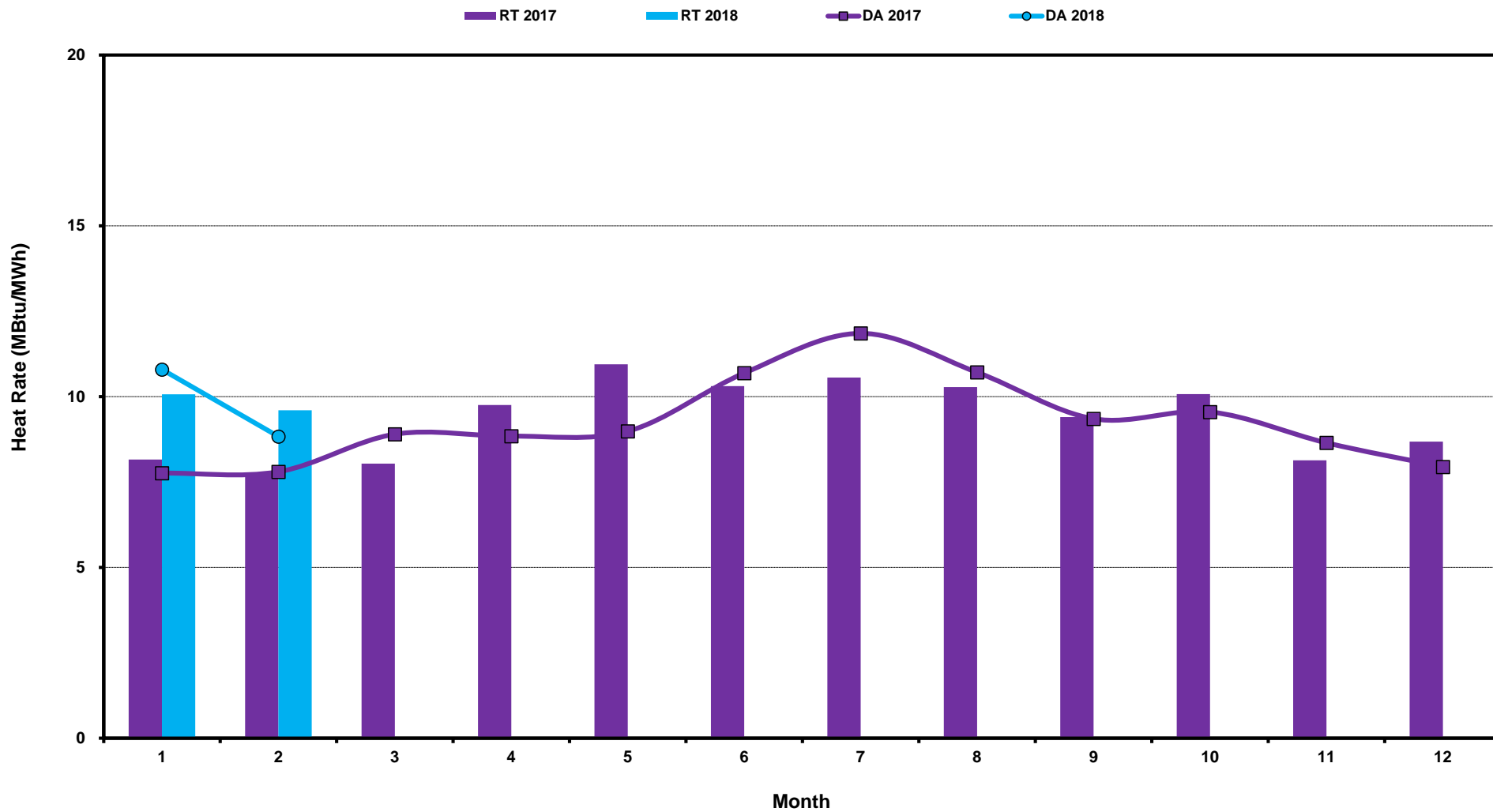
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**Note:** \* Zonal load zone definition vs. Nodal comparable load zone definition: LZ\_Houston=LZ\_Houston; LZ\_West=LZ\_West; LZ\_North=(LZ\_North,LZ\_RAYBN); LZ\_South=(LZ\_South,LZ\_CPS,LZ\_AEN,LZ\_LCRA)

# ERCOT-wide Monthly Implied Heat Rate DA vs RT

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



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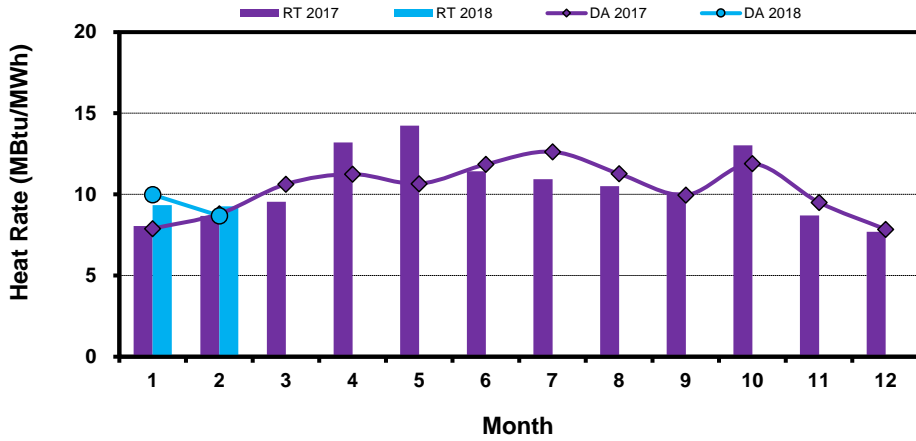
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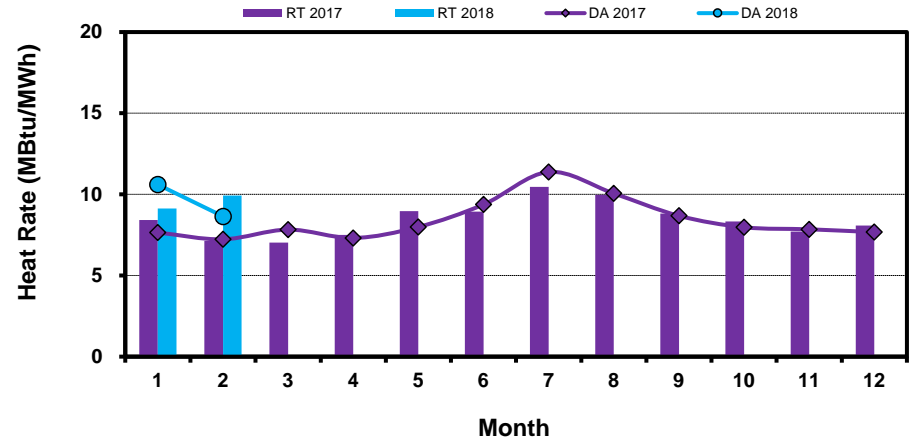
# Load Zone Monthly Implied Heat Rate DA vs RT

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

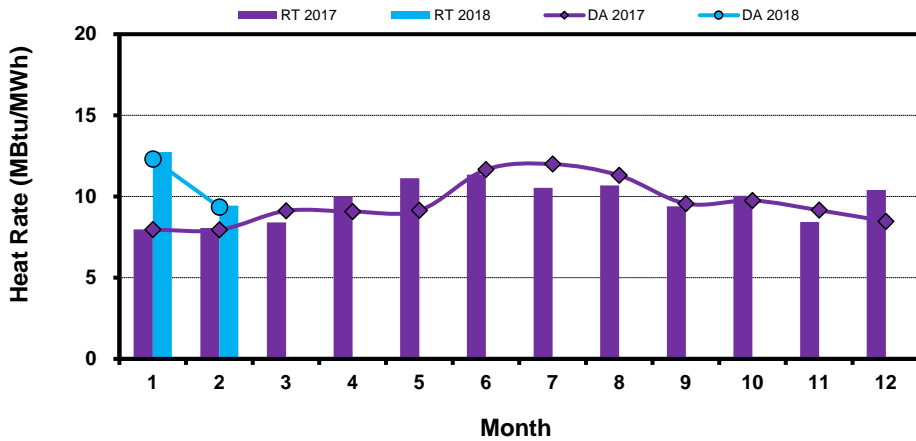
### Houston Zone



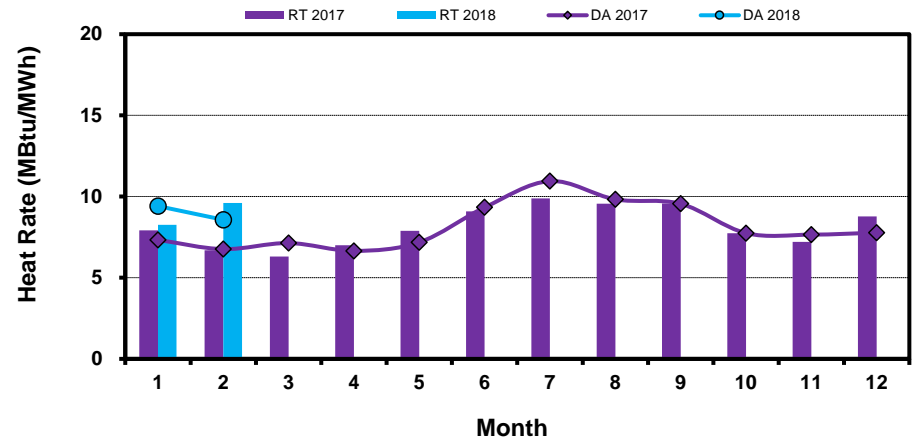
### North Zone



### South Zone



### West Zone



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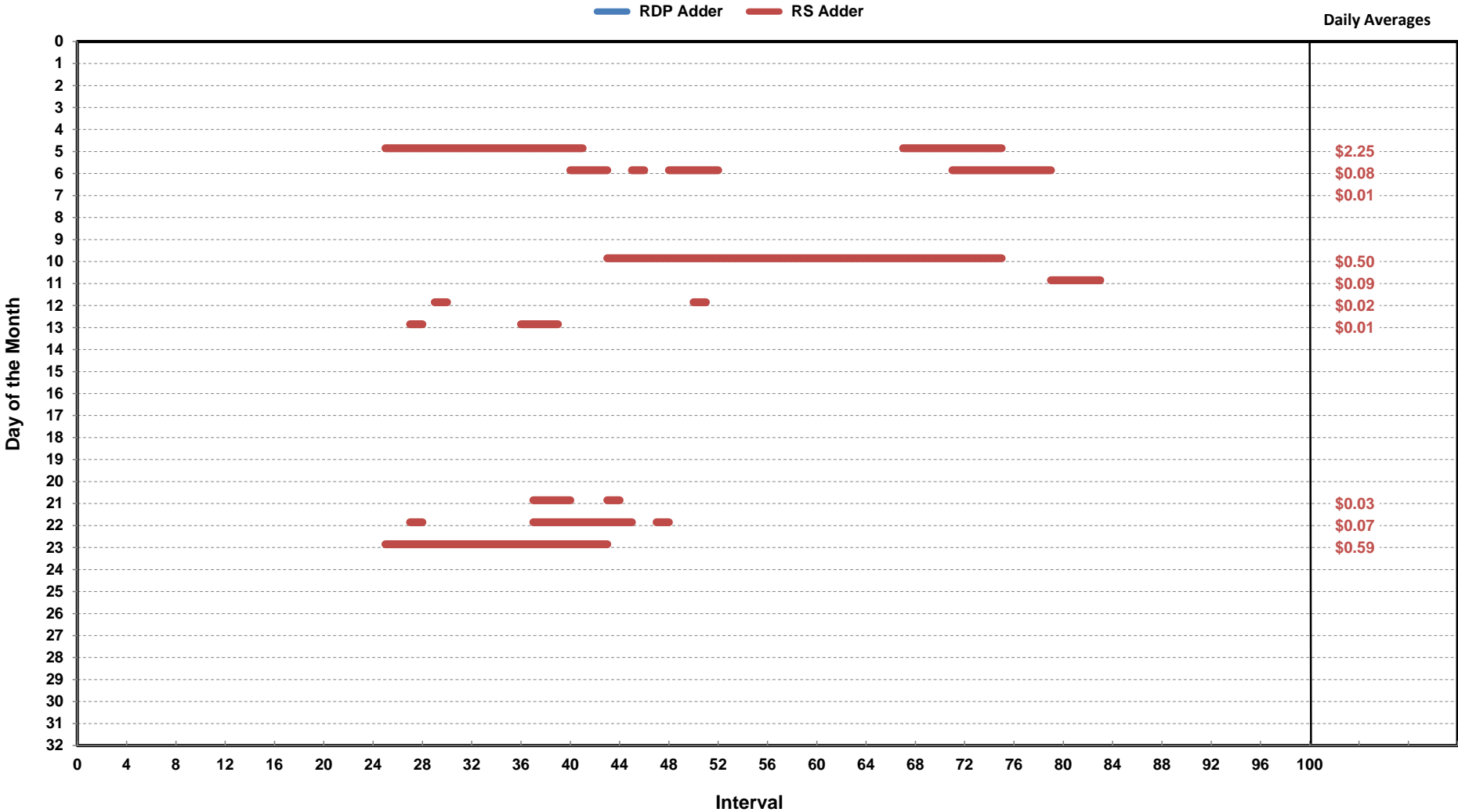
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**Note:** \* Zonal load zone definition vs. Nodal comparable load zone definition: LZ\_Houston=LZ\_Houston; LZ\_West=LZ\_West; LZ\_North=(LZ\_North,LZ\_RAYBN); LZ\_South=(LZ\_South,LZ\_CPS,LZ\_AEN,LZ\_LCRA)

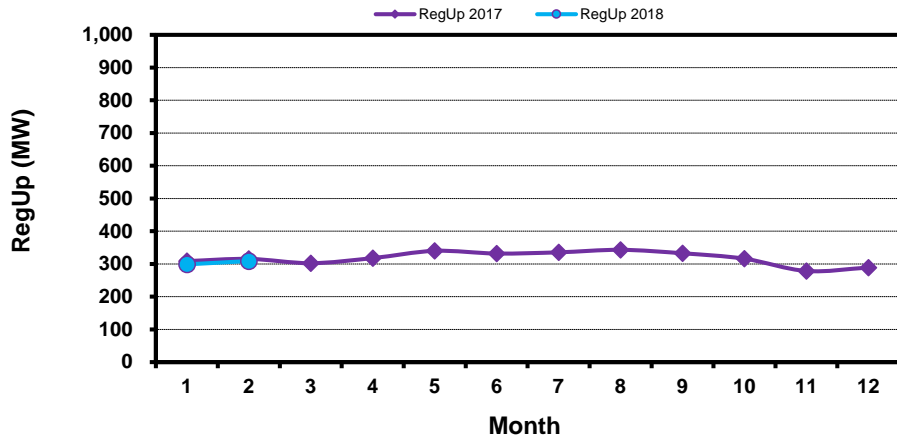
# Daily ORDC Adders Average Values and Interval Duration Feb-2018



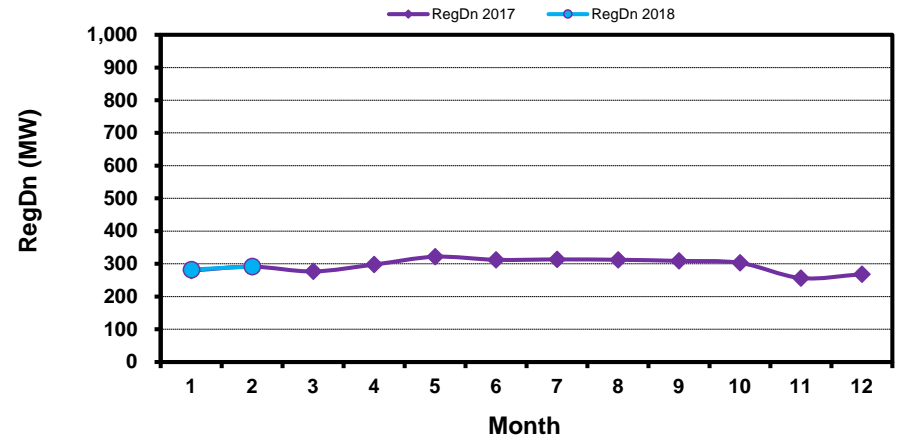
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# Monthly Average of Ancillary Services Required MW

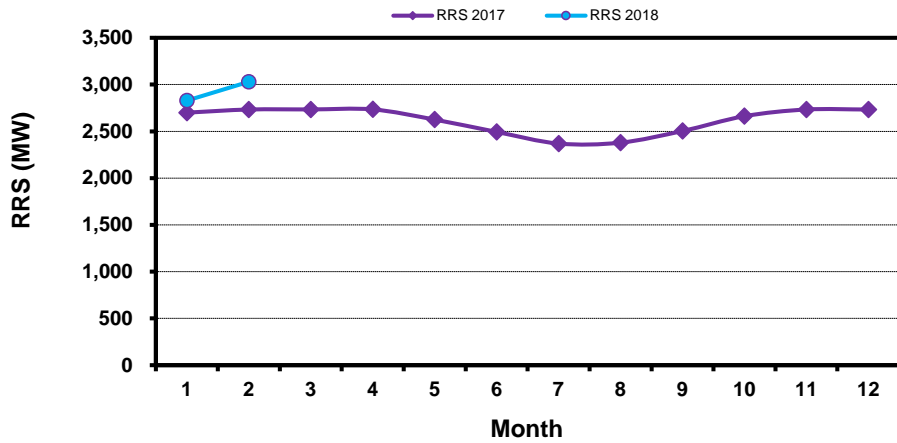
## Regulation Up



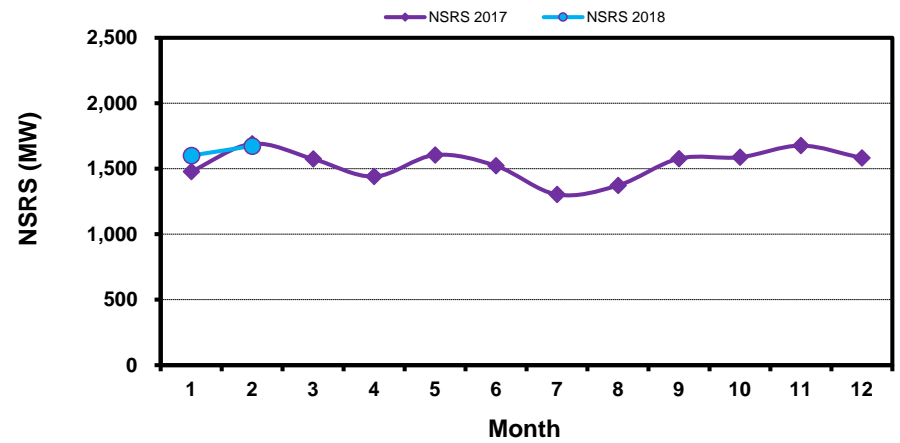
## Regulation Down



## Responsive Reserve



## Non-Spin Reserve



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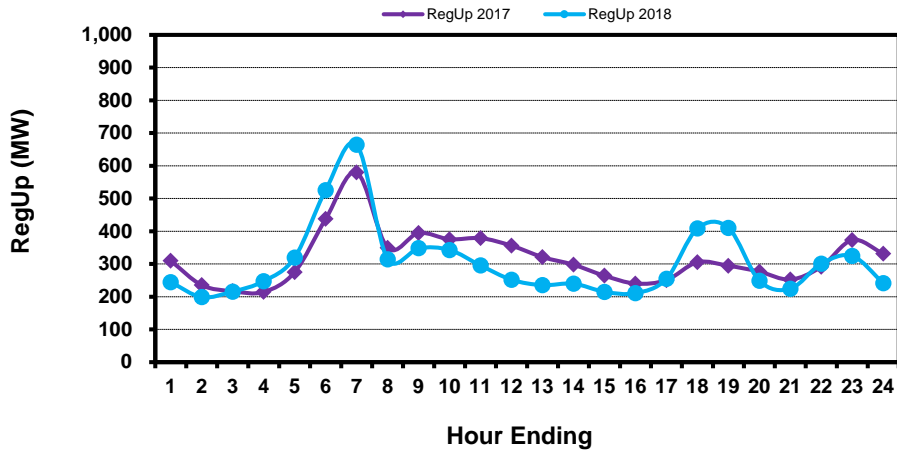
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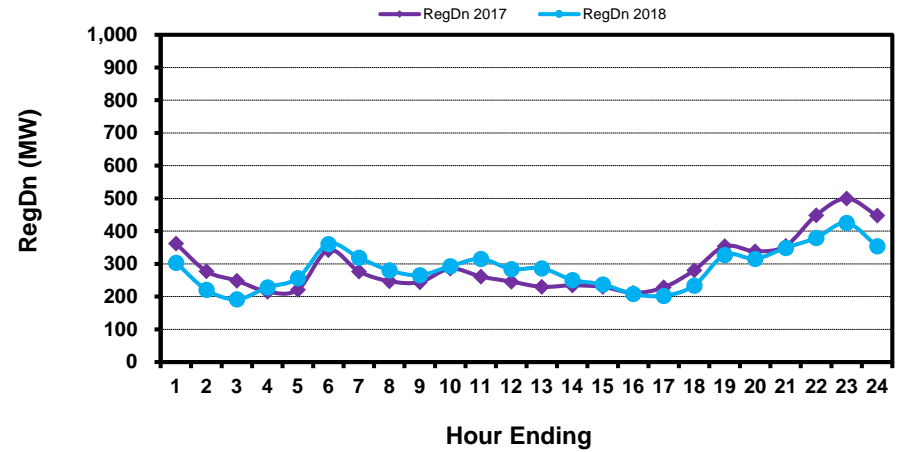


# Hourly Average of Ancillary Services Required MW

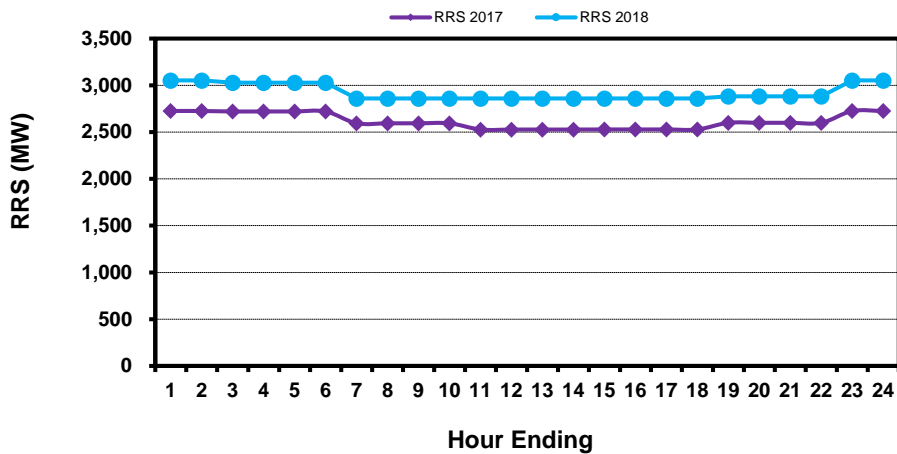
## Regulation Up



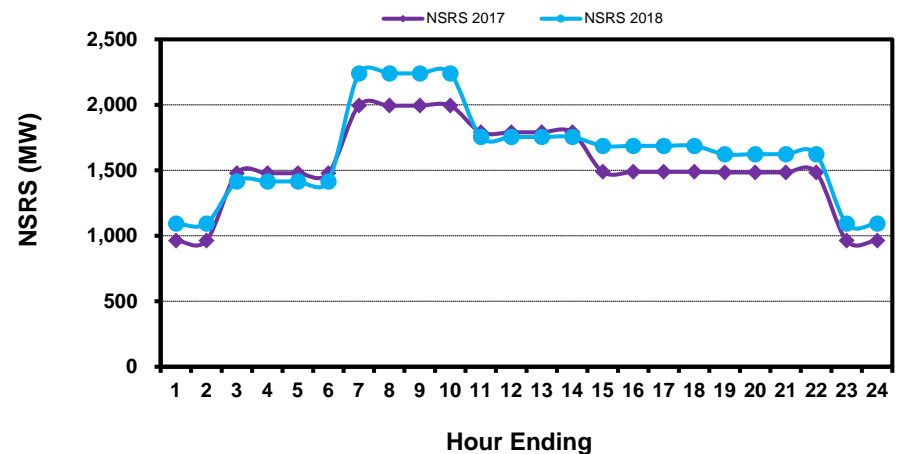
## Regulation Down



## Responsive Reserve



## Non-Spin Reserve



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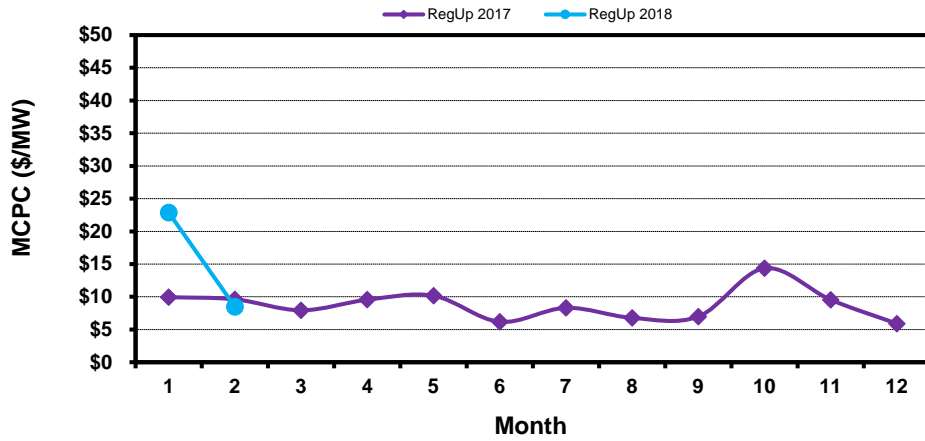
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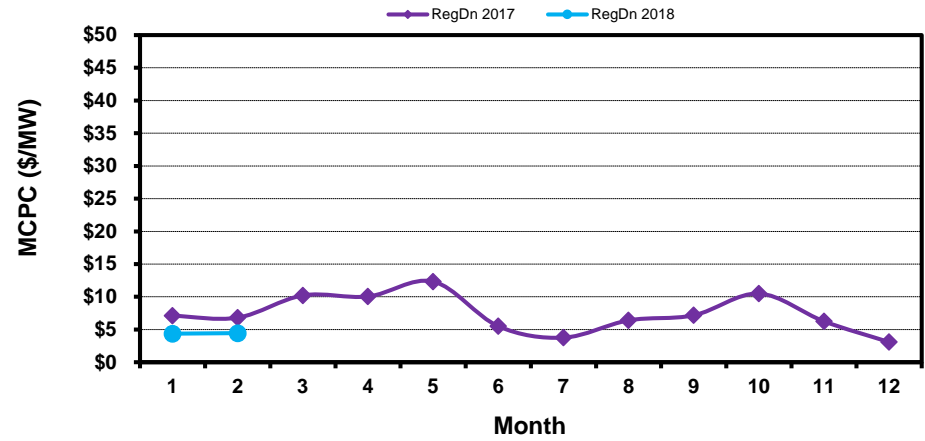
# Monthly Average Ancillary Services Price

(weighted by A/S Quantities Required)

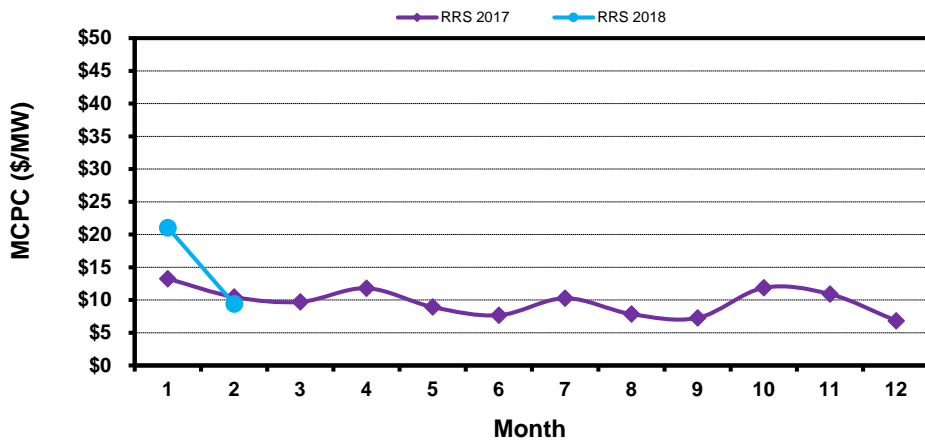
### Regulation Up



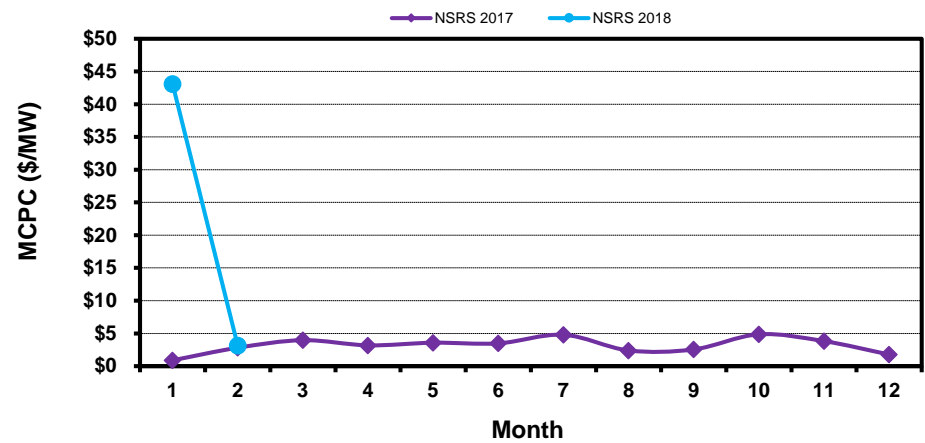
### Regulation Down



### Responsive Reserve



### Non-Spin Reserve



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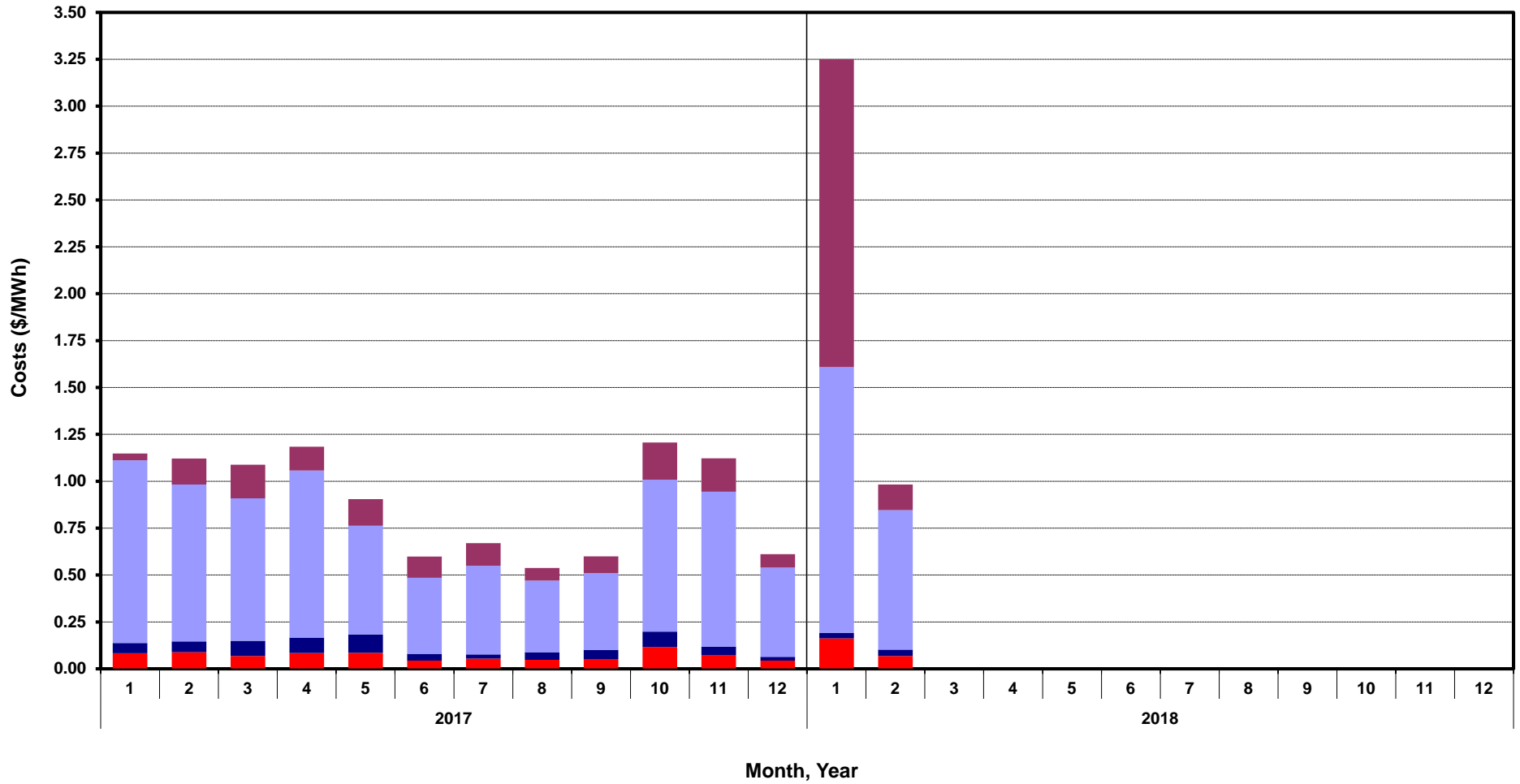
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# Monthly Average A/S Cost per MWh Load

RegUp RegDn RRS NonSpin



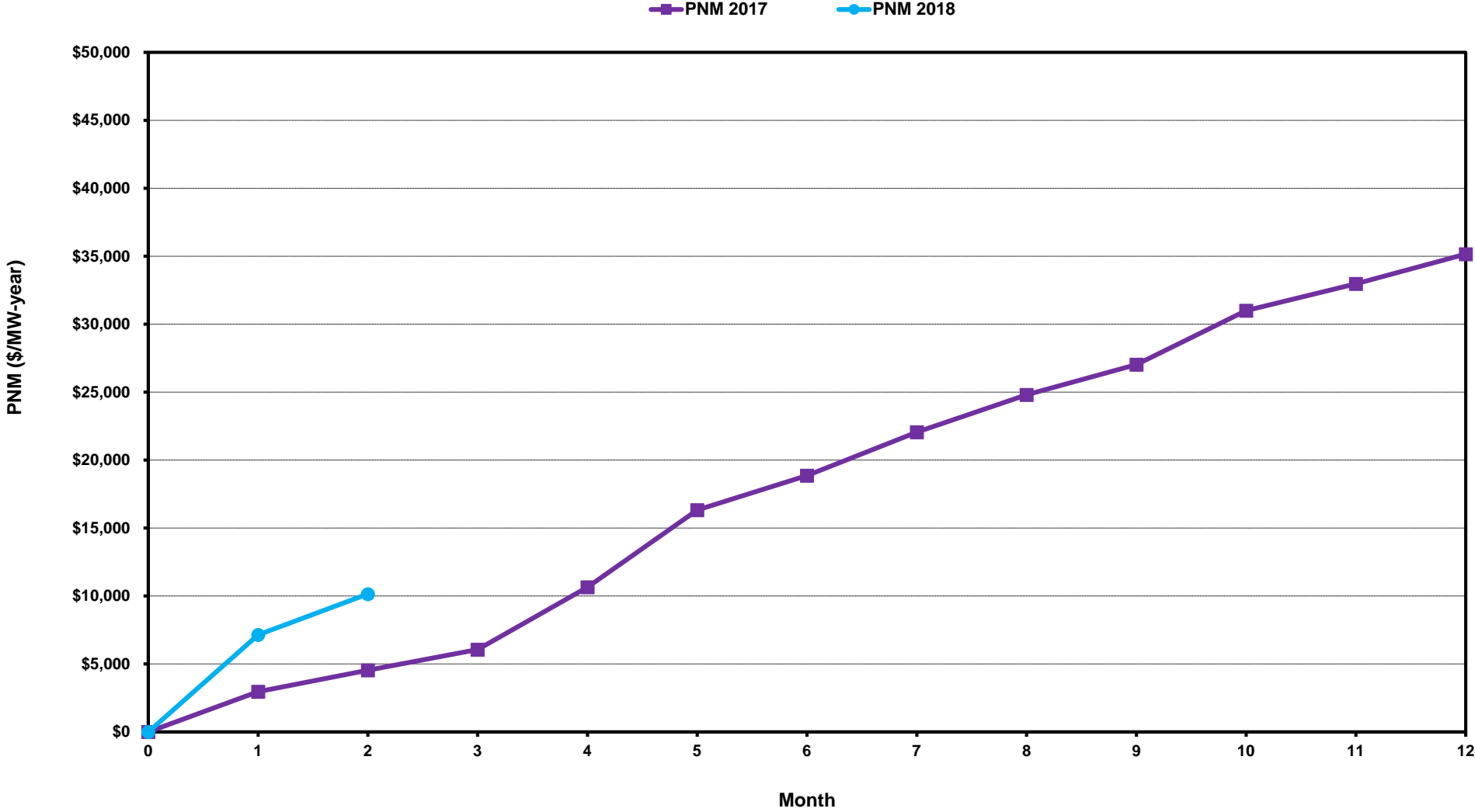
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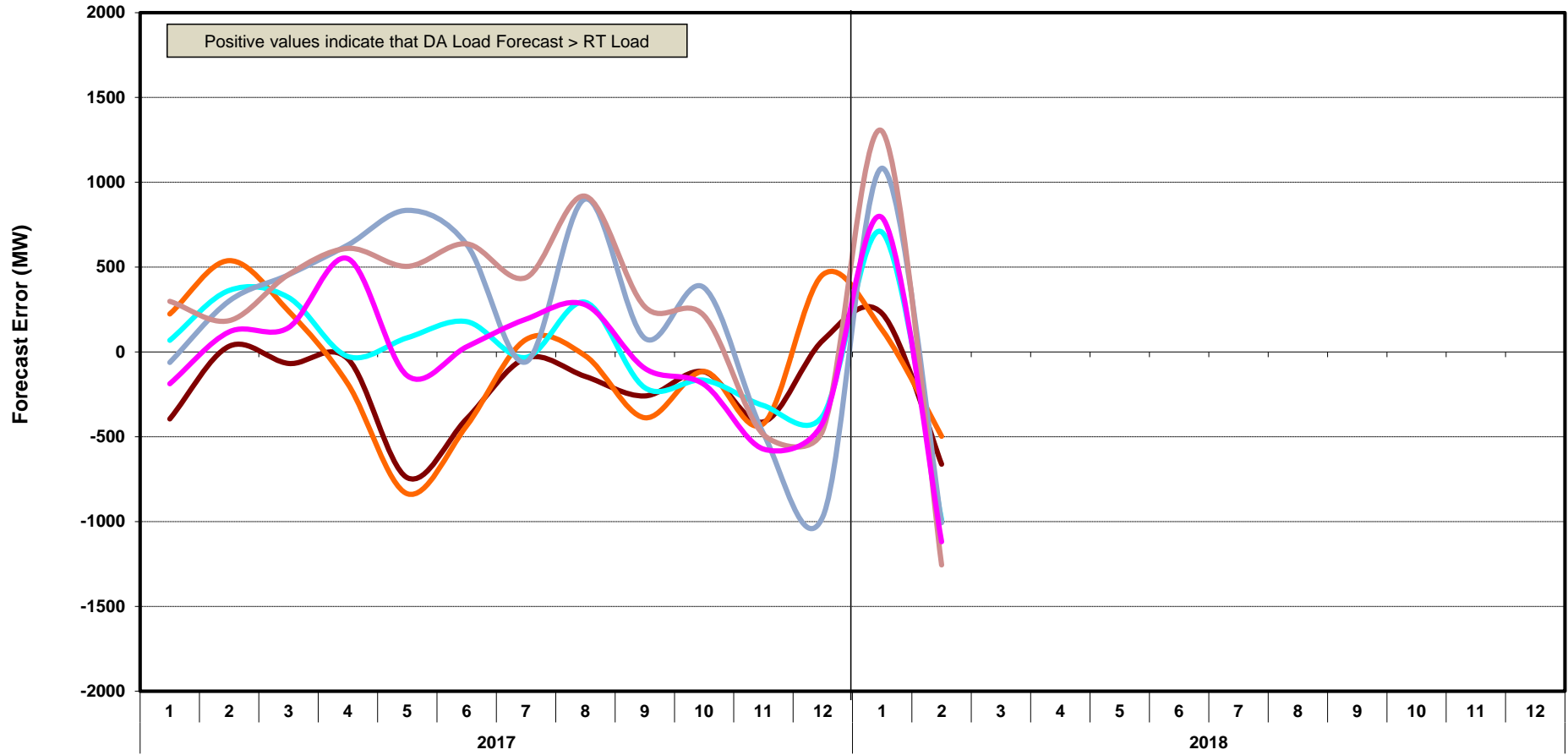
# ERCOT-wide Cumulative Peaker Net Margin



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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

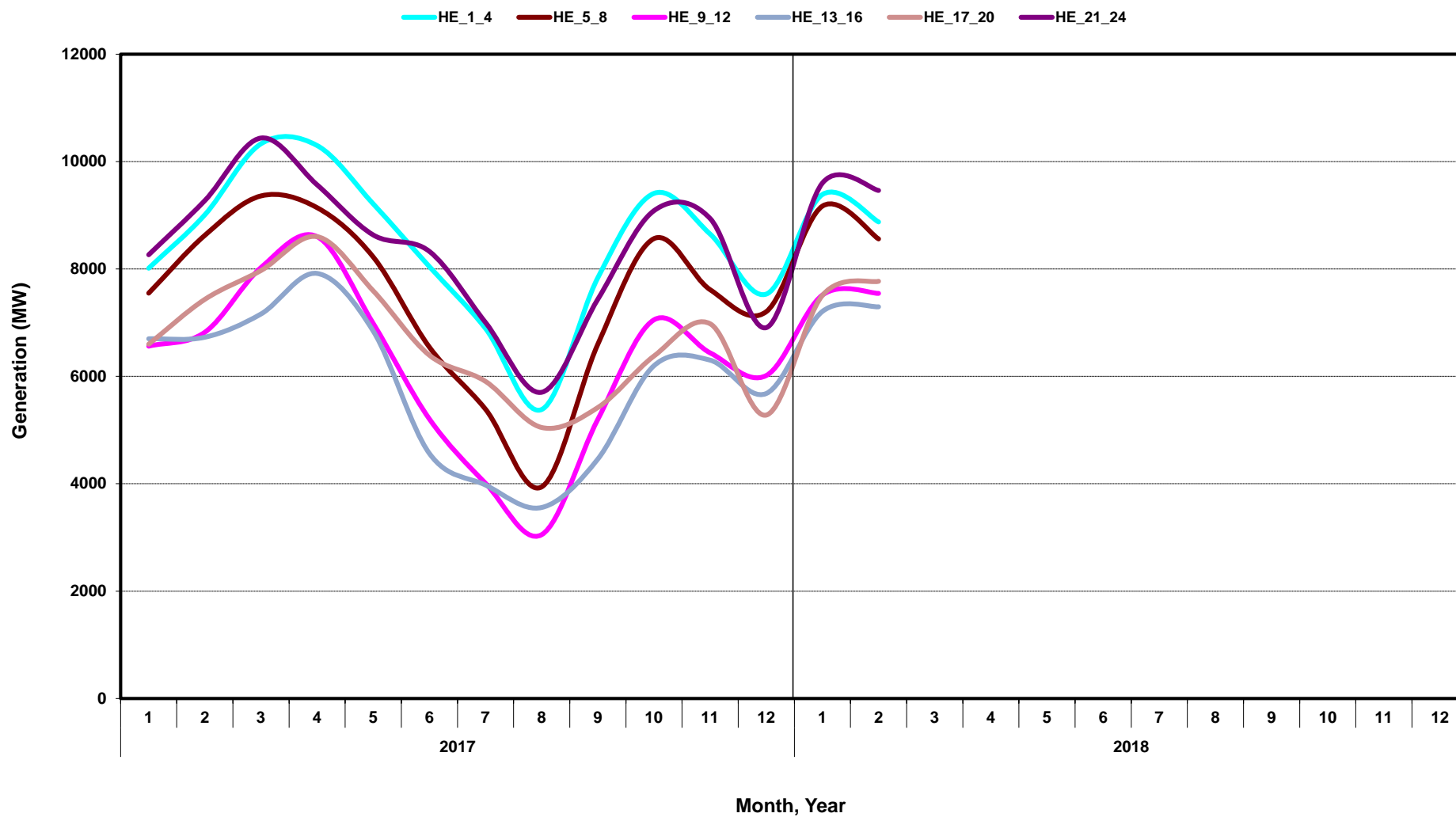
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# Monthly Average of Wind Generation by Hour Ending



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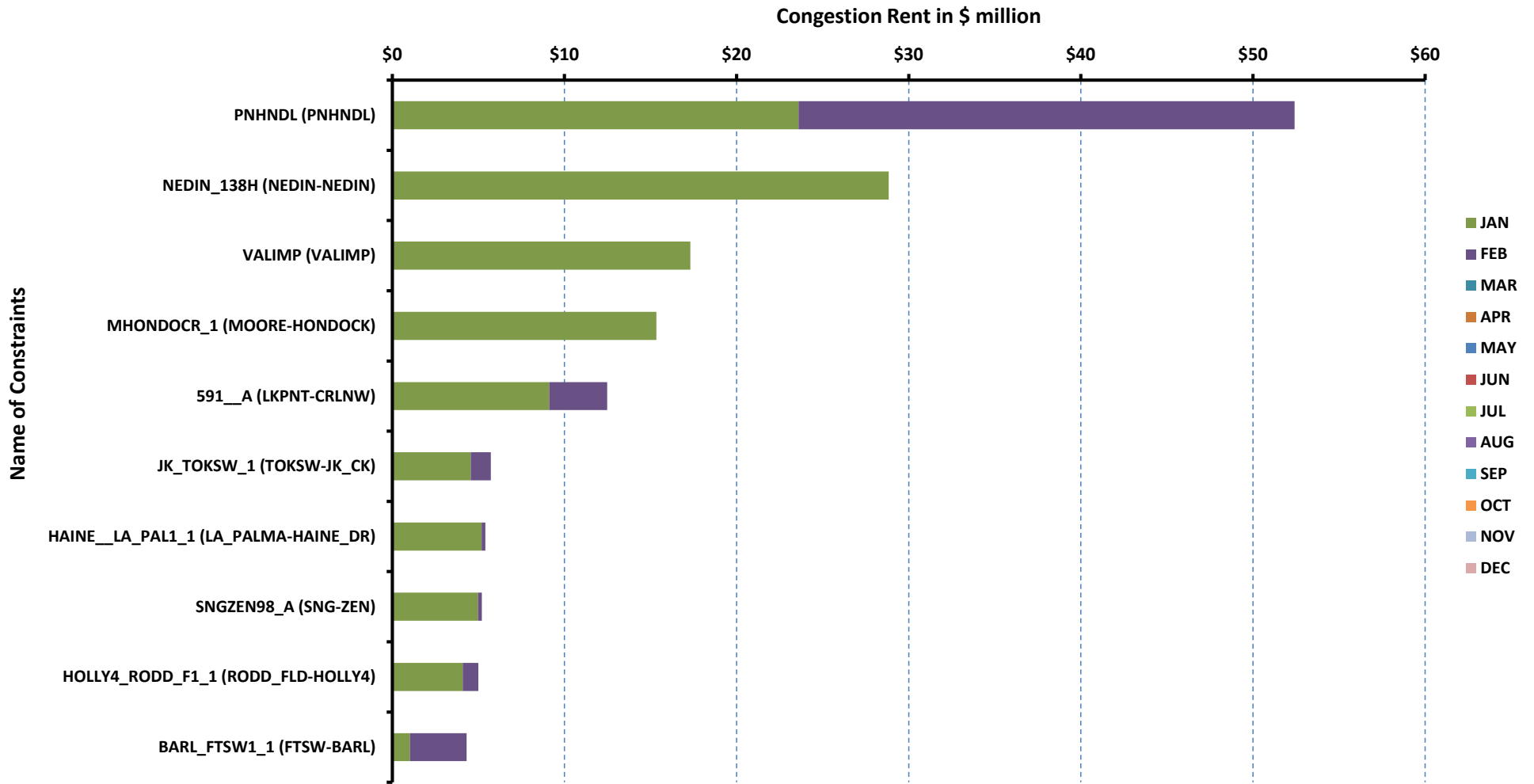
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# RT Congestion Constraint Rankings - 1

## Top 10 Constraints by Total Congestion Value - 2018



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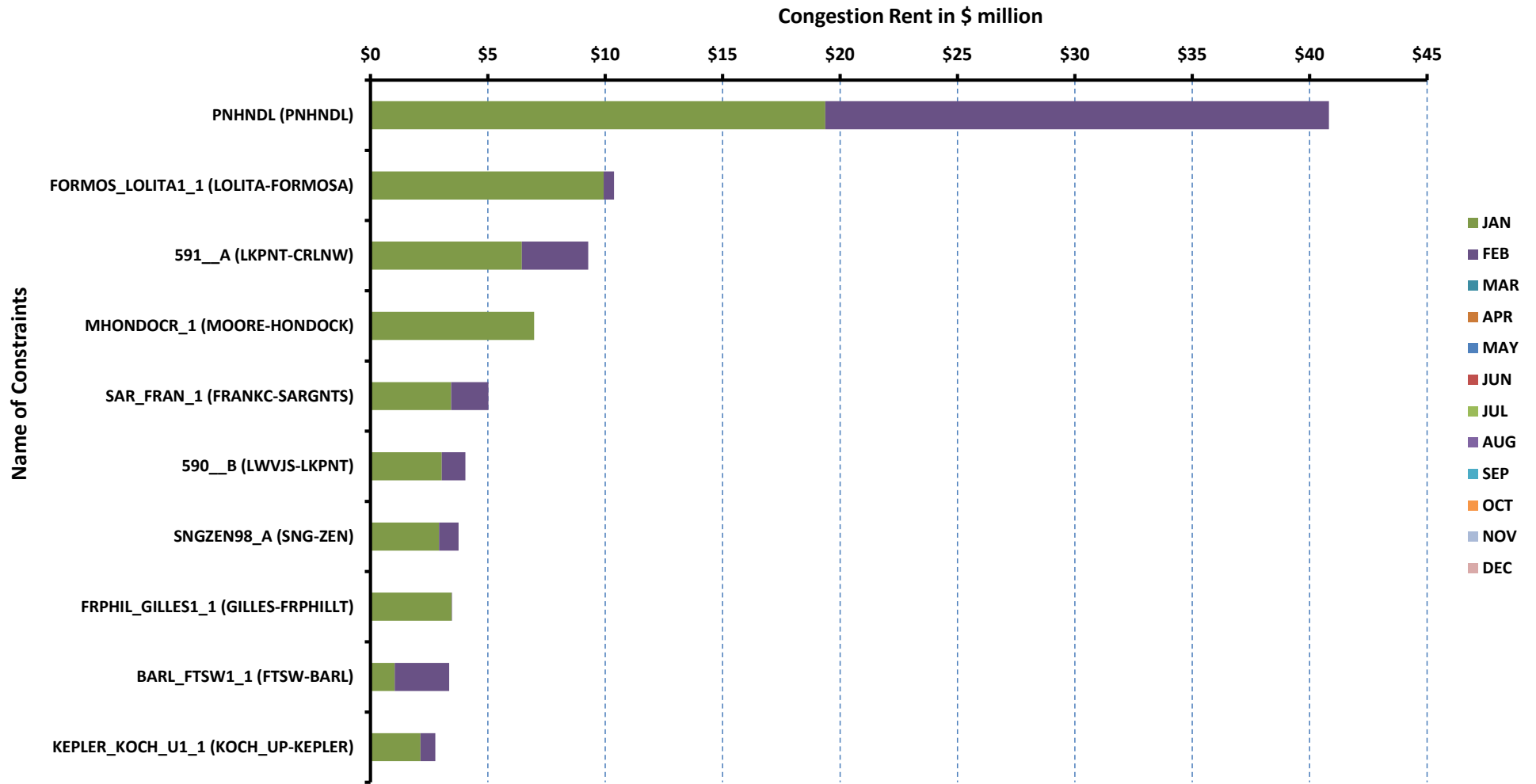
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# DA Congestion Constraint Rankings - 1

## Top 10 Constraints by Total Congestion Value - 2018



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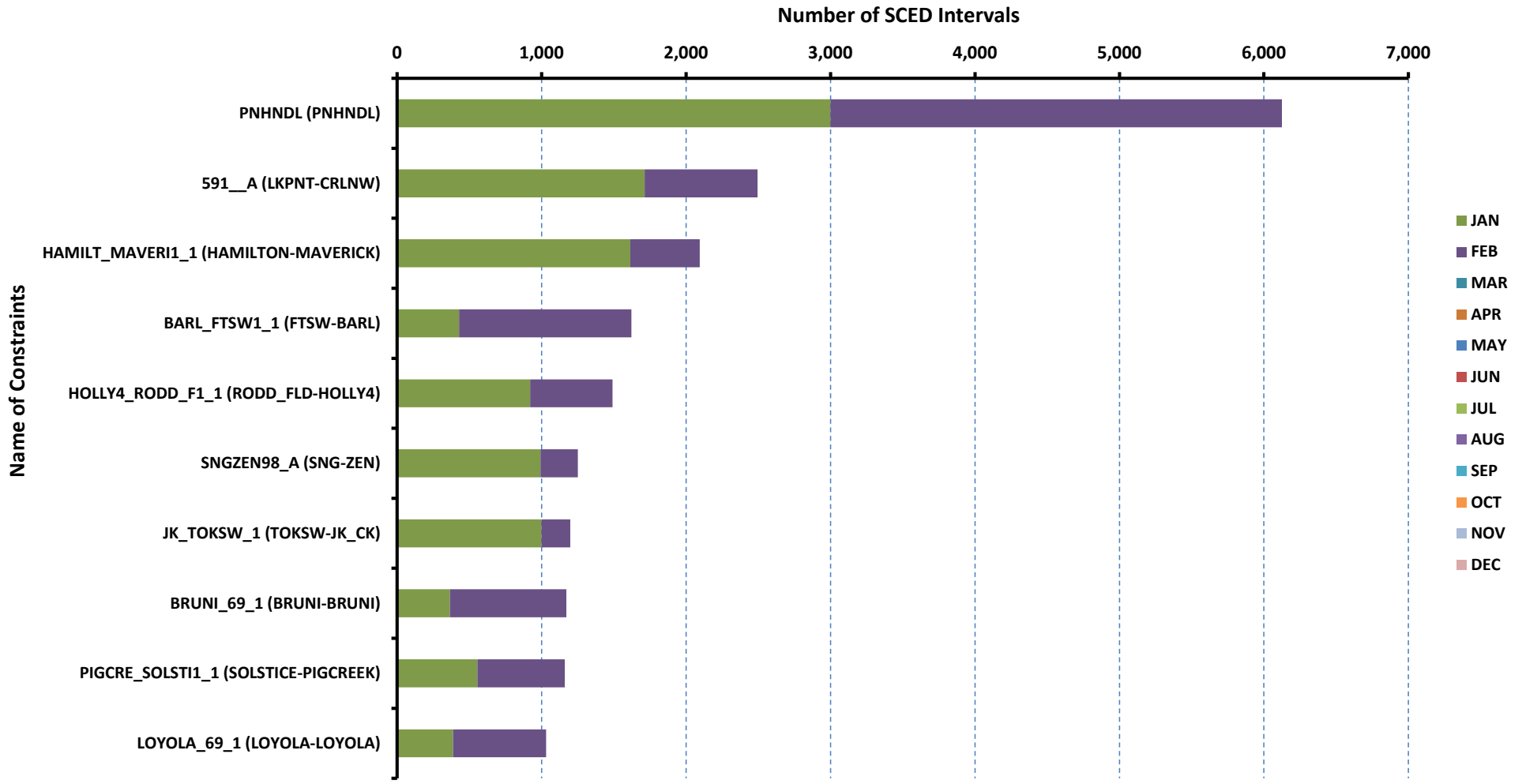
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# RT Congestion Constraint Rankings - 2

## Top 10 Constraints by Binding Frequency - 2018



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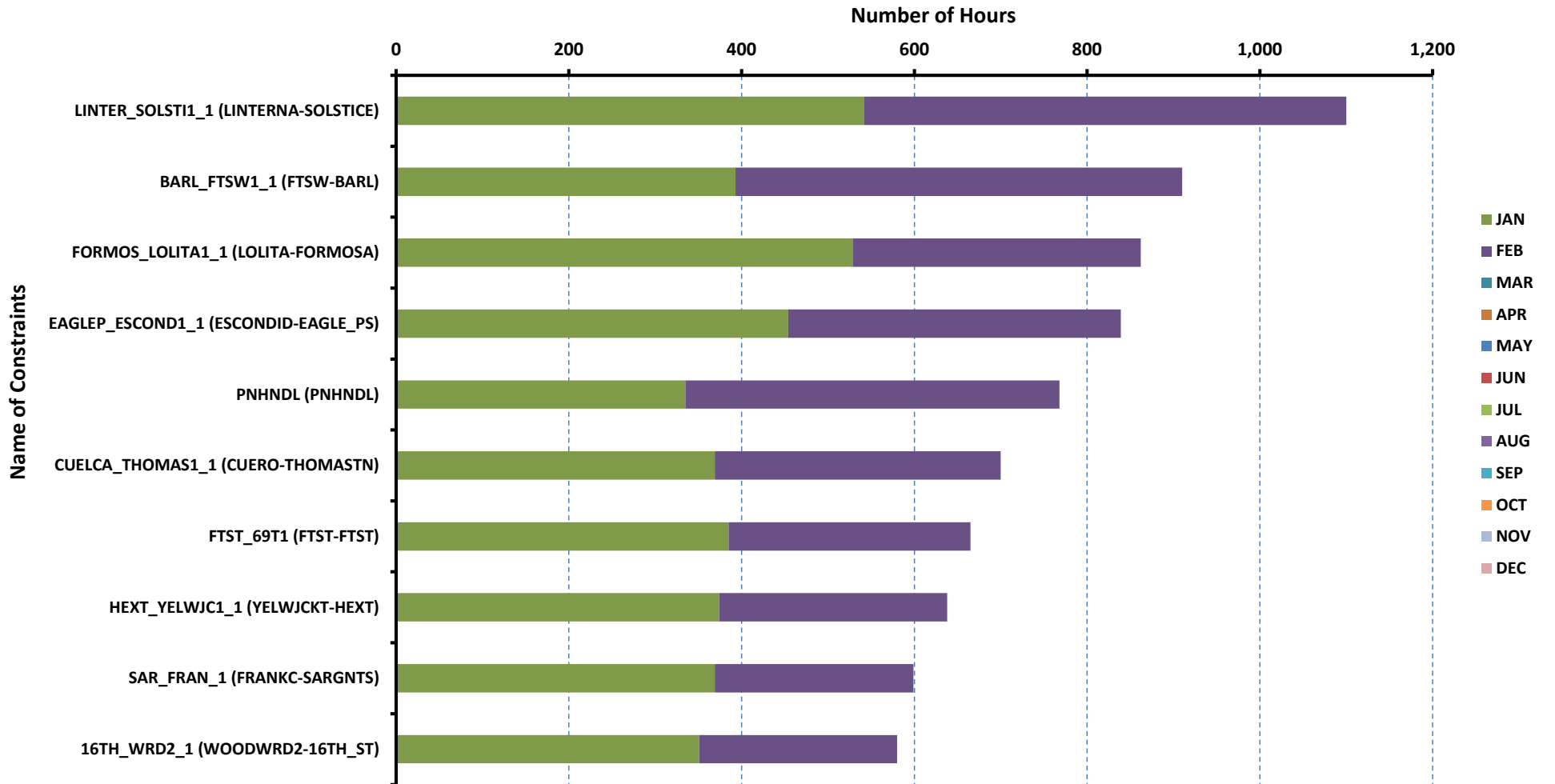
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# DA Congestion Constraint Rankings - 2

## Top 10 Constraints by Binding Frequency - 2018



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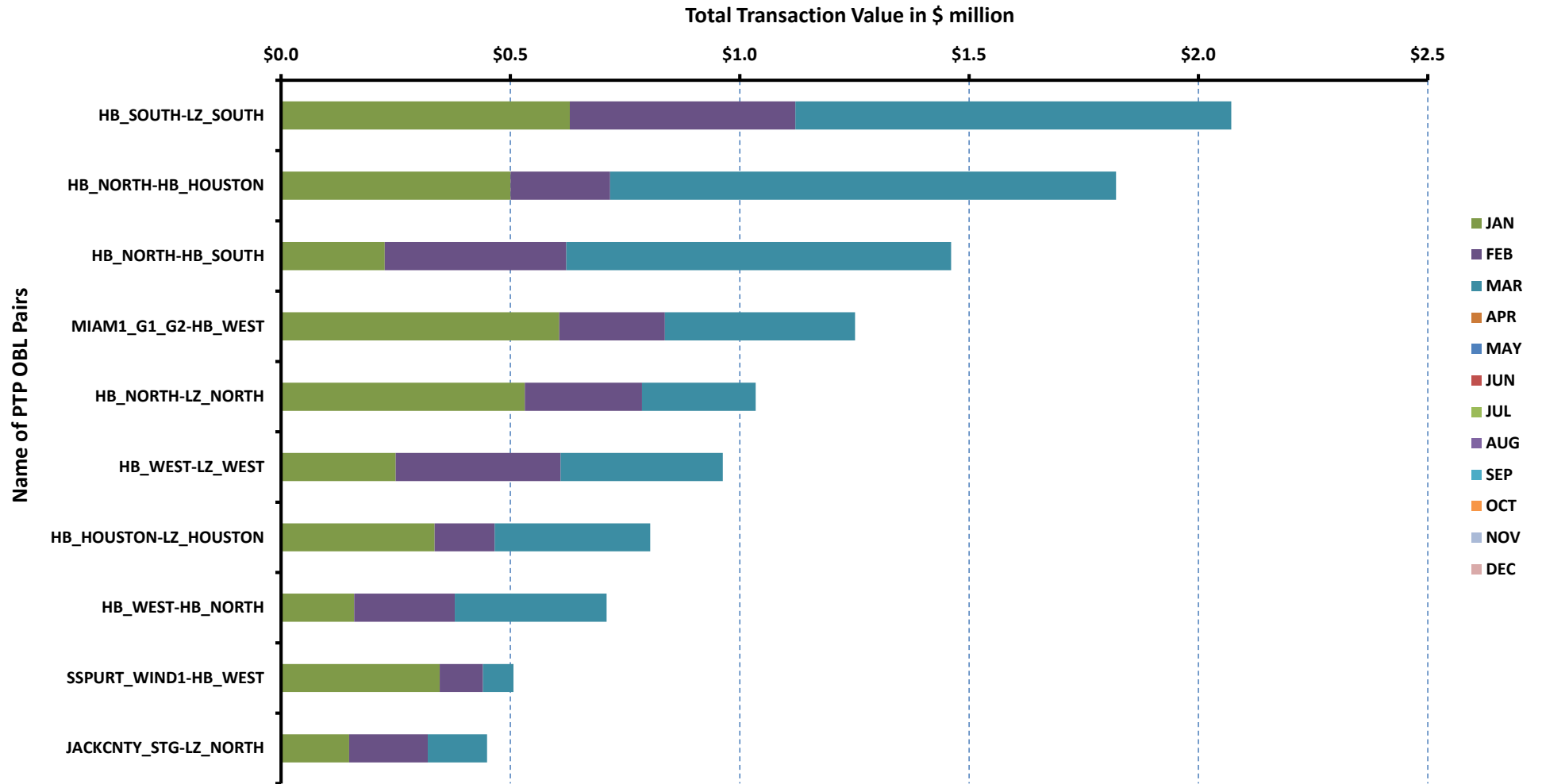
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# Top 10 CRR Pairs Ranked by Monthly Auction Values - 1

## Top 10 PTP Obligations by Total Transaction Value - 2018



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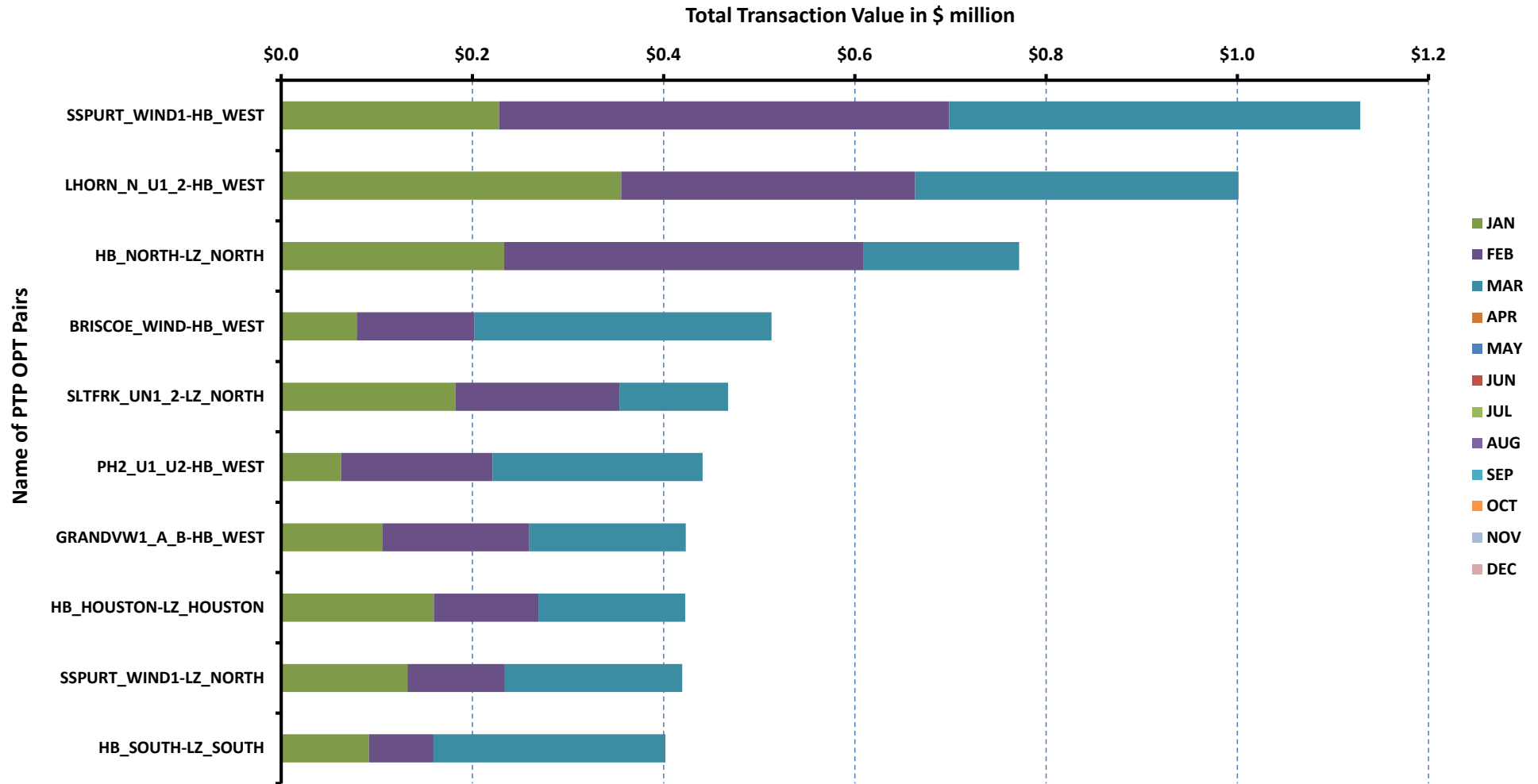
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# Top 10 CRR Pairs Ranked by Monthly Auction Values - 2

## Top 10 PTP Options by Total Transaction Value - 2018



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ERCOT-wide Avg. Energy Price - DA vs. RT			
year	month	dam_spp	rtm_spp
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
2018	1	\$ 45.63	\$ 42.56
	2	\$ 23.21	\$ 25.23
	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	
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	18,546	27,206	19,176	5,343	13,970	19,060	14,172	4,325	
	8	19,245	26,332	19,315	5,219	13,249	17,905	13,516	4,199	
	9	16,811	25,154	17,688	5,253	12,212	16,242	12,107	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	10,152	12,351	9,753	3,795	
	12	12,831	23,301	15,875	5,215	9,995	14,528	10,597	4,130	
2018	1	14,879	27,220	19,303	5,182	10,395	16,129	11,368	4,147	
	2	12,609	22,169	16,123	4,899	9,704	14,613	9,974	4,021	
	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	
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	\$ 25.52	\$ 22.59	\$ 24.71	\$ 21.14	\$ 27.86	\$ 22.99	\$ 26.83	\$ 22.42	
	12	\$ 21.95	\$ 23.04	\$ 29.69	\$ 25.04	\$ 22.38	\$ 21.88	\$ 24.16	\$ 22.17	
2018	1	\$ 39.48	\$ 38.58	\$ 53.82	\$ 34.91	\$ 42.21	\$ 44.82	\$ 52.06	\$ 39.79	
	2	\$ 24.35	\$ 26.09	\$ 24.83	\$ 25.25	\$ 22.82	\$ 22.72	\$ 24.58	\$ 22.52	
	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
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
2018	1	\$ 4.23	\$ 42.56	10.07	\$ 45.63	10.79
	2	\$ 2.63	\$ 25.23	9.60	\$ 23.21	8.83
	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
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	9.96	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	9.51	9.15	7.85	7.65	8.71	8.43	7.71	7.21
	12	7.85	8.47	7.67	7.77	7.69	10.41	8.08	8.78
2018	1	9.98	12.31	10.60	9.41	9.34	12.73	9.13	8.26
	2	8.69	9.35	8.65	8.57	9.27	9.45	9.93	9.61
	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
2018	2	1	\$ -	\$ -	0	0	80	90
2018	2	2	\$ -	\$ -	0	0	80	90
2018	2	3	\$ -	\$ -	0	0	80	90
2018	2	4	\$ -	\$ -	0	0	80	90
2018	2	5	\$ 2.25	\$ -	27	0	80	90
2018	2	6	\$ 0.08	\$ -	21	0	80	90
2018	2	7	\$ 0.01	\$ -	1	0	80	90
2018	2	8	\$ -	\$ -	0	0	80	90
2018	2	9	\$ -	\$ -	0	0	80	90
2018	2	10	\$ 0.50	\$ -	33	0	80	90
2018	2	11	\$ 0.09	\$ -	5	0	80	90
2018	2	12	\$ 0.02	\$ -	5	0	80	90
2018	2	13	\$ 0.01	\$ -	8	0	80	90
2018	2	14	\$ -	\$ -	0	0	80	90
2018	2	15	\$ -	\$ -	0	0	80	90
2018	2	16	\$ -	\$ -	0	0	80	90
2018	2	17	\$ -	\$ -	0	0	80	90
2018	2	18	\$ -	\$ -	0	0	80	90
2018	2	19	\$ -	\$ -	0	0	80	90
2018	2	20	\$ -	\$ -	0	0	80	90
2018	2	21	\$ 0.03	\$ -	8	0	80	90
2018	2	22	\$ 0.07	\$ -	13	0	80	90
2018	2	23	\$ 0.59	\$ -	20	0	80	90
2018	2	24	\$ -	\$ -	0	0	80	90
2018	2	25	\$ -	\$ -	0	0	80	90
2018	2	26	\$ -	\$ -	0	0	80	90
2018	2	27	\$ -	\$ -	0	0	80	90
2018	2	28	\$ -	\$ -	0	0	80	90
0	0	0	\$ -	\$ -	0	0	0	0
0	0	0	\$ -	\$ -	0	0	0	0
0	0	0	\$ -	\$ -	0	0	0	0

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Monthly Average of Ancillary Services Required MW					
year	month	ASMW_REGDN	ASMW_NSPIN	ASMW_RRS	ASMW_REGUP
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
2018	1	283	1,601	2,829	299
	2	292	1,674	3,030	309
	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
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
2018	1	304	1,093	3,053	244
	2	221	1,093	3,053	199
	3	192	1,415	3,029	216
	4	228	1,415	3,029	247
	5	257	1,415	3,029	320
	6	361	1,415	3,029	526
	7	319	2,240	2,860	665
	8	280	2,240	2,860	314
	9	266	2,240	2,860	348
	10	293	2,240	2,860	343
	11	315	1,755	2,860	296
	12	284	1,755	2,860	252
	13	287	1,755	2,860	235
	14	251	1,755	2,860	240
	15	237	1,687	2,860	215
	16	208	1,687	2,860	211
	17	203	1,687	2,860	255
	18	234	1,687	2,860	408
	19	327	1,623	2,883	410
	20	316	1,623	2,883	249
	21	349	1,623	2,883	224
	22	379	1,623	2,883	301
	23	425	1,093	3,053	324
	24	354	1,093	3,053	241

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Monthly Average Ancillary Services Price					
year	month	MCPC_REGDN	MCPC_NSPIN	MCPC_RRS	MCPC_REGUP
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
2018	1	\$ 4.36	\$ 43.10	\$ 21.06	\$ 22.87
	2	\$ 4.45	\$ 3.14	\$ 9.40	\$ 8.48
	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
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
2018	1	\$ 0.03	\$ 1.64	\$ 1.42	\$ 0.16
	2	\$ 0.03	\$ 0.14	\$ 0.74	\$ 0.07
	3	\$ -	\$ -	\$ -	\$ -
	4	\$ -	\$ -	\$ -	\$ -
	5	\$ -	\$ -	\$ -	\$ -
	6	\$ -	\$ -	\$ -	\$ -
	7	\$ -	\$ -	\$ -	\$ -
	8	\$ -	\$ -	\$ -	\$ -
	9	\$ -	\$ -	\$ -	\$ -
	10	\$ -	\$ -	\$ -	\$ -
	11	\$ -	\$ -	\$ -	\$ -
	12	\$ -	\$ -	\$ -	\$ -

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ERCOT-wide Cumulative PNM			
year	month	pnm	pnm_accum
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	
2018	0	\$ -	\$ -
	1	\$ 7,139.99	\$ 7,139.99
	2	\$ 3,011.86	\$ 10,151.85
	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
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)	(481)	(487)	(572)	(423)	(316)
	12	68	(971)	(462)	(416)	456	(375)
2018	1	226	1,083	1,300	791	129	705
	2	(662)	(1,007)	(1,256)	(1,119)	(497)	(990)
	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
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
2018	1	9,387	7,209	7,508	9,601	9,171	7,514
	2	8,876	7,295	7,771	9,462	8,559	7,545
	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	2018	PNHNDL (PNHNDL)	6,125	1	2,999	3,126	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	591_A (LKPNT-CRLNW)	2,495	2	1,714	781	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	HAMILT_MAVERT1_1 (HAMILTON-MAVERICK)	2,095	3	1,614	481	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	BARL_FTSW1_1 (FTSW-BARL)	1,622	4	429	1,193	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	HOLLY4_RODD_F1_1 (RODD_FLD-HOLLY4)	1,491	5	921	570	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	SNGZEN98_A (SNG-ZEN)	1,251	6	992	259	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	JK_TOKSW_1 (TOKSW-JK_CK)	1,198	7	999	199	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	BRUNL_69_1 (BRUNL-BRUNL)	1,172	8	365	807	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	PIGCRE_SOLST11_1 (SOLSTICE-PIGCREEK)	1,161	9	555	606	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	LOYOLA_69_1 (LOYOLA-LOYOLA)	1,031	10	387	644	-	-	-	-	-	-	-	-	-	-	
TOP10_RENT	2018	PNHNDL (PNHNDL)	\$ 52.42	1	\$ 23.59	\$ 28.83	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	NEDIN_138H (NEDIN-NEDIN)	\$ 28.83	2	\$ 28.83	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	VALIMP (VALIMP)	\$ 17.31	3	\$ 17.31	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	MHONDOCR_1 (MOORE-HONDOCK)	\$ 15.34	4	\$ 15.34	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	591_A (LKPNT-CRLNW)	\$ 12.48	5	\$ 9.11	\$ 3.37	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	JK_TOKSW_1 (TOKSW-JK_CK)	\$ 5.72	6	\$ 4.56	\$ 1.16	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	HAINL_PA_PAL1_1 (LA_PALMA-HAINL_DR)	\$ 5.40	7	\$ 5.19	\$ 0.21	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	SNGZEN98_A (SNG-ZEN)	\$ 5.20	8	\$ 4.97	\$ 0.22	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	HOLLY4_RODD_F1_1 (RODD_FLD-HOLLY4)	\$ 5.00	9	\$ 4.08	\$ 0.92	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	BARL_FTSW1_1 (FTSW-BARL)	\$ 4.32	10	\$ 1.03	\$ 3.29	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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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	2018	LINTER_SOLST1_1 (LINTERNA-SOLSTICE)	1,100	1	542	558	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	BARL_FTSW1_1 (FTSW-BARL)	910	2	393	517	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	FORMOS_LOLITA1_1 (LOLITA-FORMOSA)	862	3	529	333	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	EAGLEP_ESCOND1_1 (ESCONDID-EAGLE PS)	839	4	454	385	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	PNHNDL (PNHNDL)	768	5	335	433	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	CUELCA_THOMAS1_1 (CUERO-THOMASTN)	700	6	369	331	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	FTST_69T1 (FTST-FTST)	665	7	385	280	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	HEXT_YELWJC1_1 (YELWJCKT-HEXT)	638	8	374	264	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	SAR_FRAN_1 (FRANKC-SARGNTS)	599	9	369	230	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2018	16TH_WRD2_1 (WOODWRD2-16TH_ST)	580	10	351	229	-	-	-	-	-	-	-	-	-	-	
TOP10_RENT	2018	PNHNDL (PNHNDL)	\$ 40.82	1	\$ 19.37	\$ 21.44	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	FORMOS_LOLITA1_1 (LOLITA-FORMOSA)	\$ 10.37	2	\$ 9.94	\$ 0.44	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	591_A (LKPNT-CRLNW)	\$ 9.27	3	\$ 6.45	\$ 2.83	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	MHONDOCR_1 (MOORE-HONDOCK)	\$ 6.97	4	\$ 6.97	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	SAR_FRAN_1 (FRANKC-SARGNTS)	\$ 5.03	5	\$ 3.44	\$ 1.59	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	590_B (LWVJS-LKPNT)	\$ 4.04	6	\$ 3.03	\$ 1.01	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	SNGZEN98_A (SNG-ZEN)	\$ 3.75	7	\$ 2.92	\$ 0.83	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	FRPHIL_GILLES1_1 (GILLES-FRPHILLT)	\$ 3.47	8	\$ 3.45	\$ 0.01	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	BARL_FTSW1_1 (FTSW-BARL)	\$ 3.35	9	\$ 1.03	\$ 2.32	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2018	KEPLER_KOCH_U1_1 (KOCH_UP-KEPLER)	\$ 2.76	10	\$ 2.13	\$ 0.64	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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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	2018	HB SOUTH-LZ SOUTH	\$ 2.07	1	\$ 0.63	\$ 0.49	\$ 0.95	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	HB NORTH-HB HOUSTON	\$ 1.82	2	\$ 0.50	\$ 0.22	\$ 1.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	HB NORTH-HB SOUTH	\$ 1.46	3	\$ 0.23	\$ 0.40	\$ 0.84	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	MIAMI G1 G2-HB WEST	\$ 1.25	4	\$ 0.61	\$ 0.23	\$ 0.41	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	HB NORTH-LZ NORTH	\$ 1.03	5	\$ 0.53	\$ 0.26	\$ 0.25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	HB WEST-LZ WEST	\$ 0.96	6	\$ 0.25	\$ 0.36	\$ 0.35	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	HB HOUSTON-LZ HOUSTON	\$ 0.80	7	\$ 0.33	\$ 0.13	\$ 0.34	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	HB WEST-HB NORTH	\$ 0.71	8	\$ 0.16	\$ 0.22	\$ 0.33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	SSPURT WIND1-HB WEST	\$ 0.51	9	\$ 0.35	\$ 0.09	\$ 0.07	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2018	JACKCNTY STG-LZ NORTH	\$ 0.45	10	\$ 0.15	\$ 0.17	\$ 0.13	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	SSPURT WIND1-HB WEST	\$ 1.13	1	\$ 0.23	\$ 0.47	\$ 0.43	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	LHORN N U1 2-HB WEST	\$ 1.00	2	\$ 0.36	\$ 0.31	\$ 0.34	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	HB NORTH-LZ NORTH	\$ 0.77	3	\$ 0.23	\$ 0.38	\$ 0.16	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	BRISCOE WIND-HB WEST	\$ 0.51	4	\$ 0.08	\$ 0.12	\$ 0.31	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	SLTFRK UN1 2-LZ NORTH	\$ 0.47	5	\$ 0.18	\$ 0.17	\$ 0.11	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	PH2 U1 U2-HB WEST	\$ 0.44	6	\$ 0.06	\$ 0.16	\$ 0.22	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	GRANDVW1 A B-HB WEST	\$ 0.42	7	\$ 0.11	\$ 0.15	\$ 0.16	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	HB HOUSTON-LZ HOUSTON	\$ 0.42	8	\$ 0.16	\$ 0.11	\$ 0.15	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	SSPURT WIND1-LZ NORTH	\$ 0.42	9	\$ 0.13	\$ 0.10	\$ 0.19	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2018	HB SOUTH-LZ SOUTH	\$ 0.40	10	\$ 0.09	\$ 0.07	\$ 0.24	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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