

To the Public Utility Commission of Texas

# ERCOT Wholesale Electricity Market Monthly Report

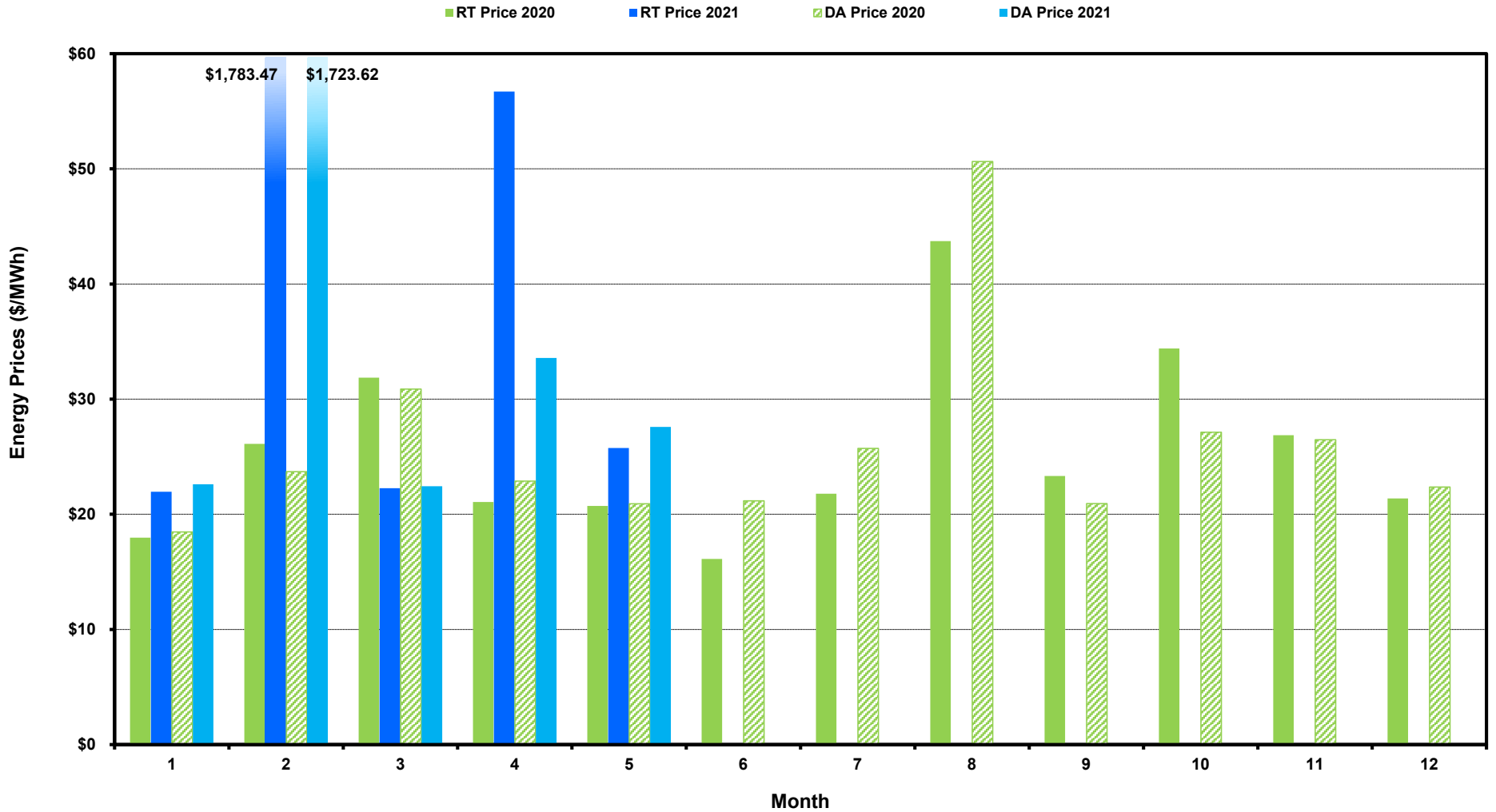
Thursday, June 10, 2021

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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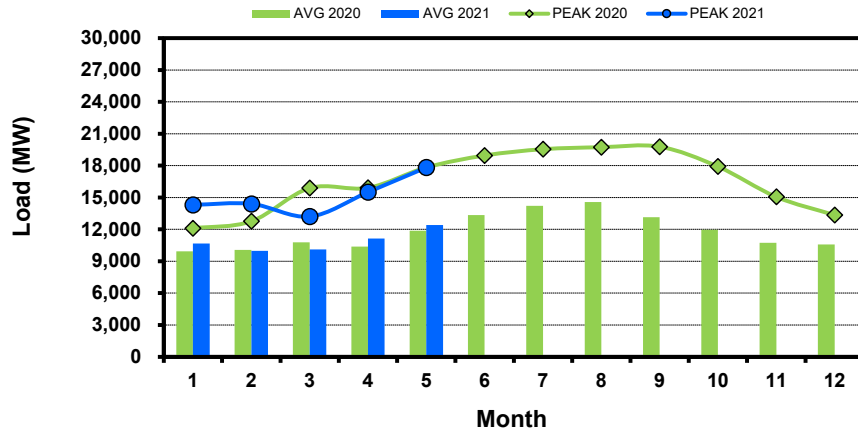
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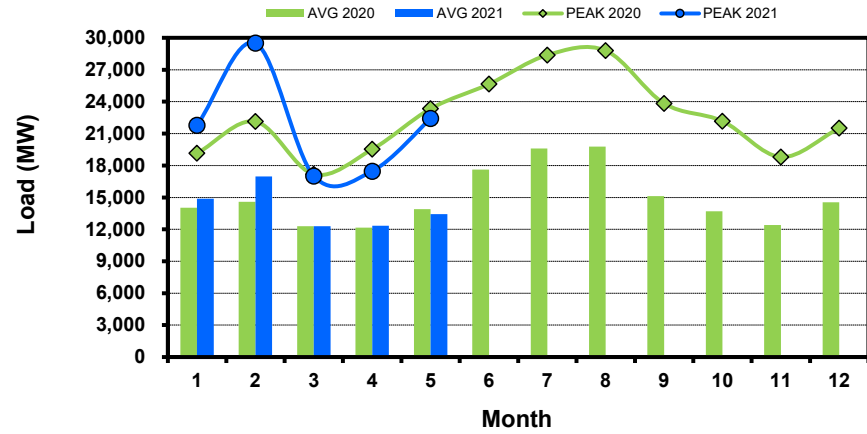
# Load Zone Load Statistics

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

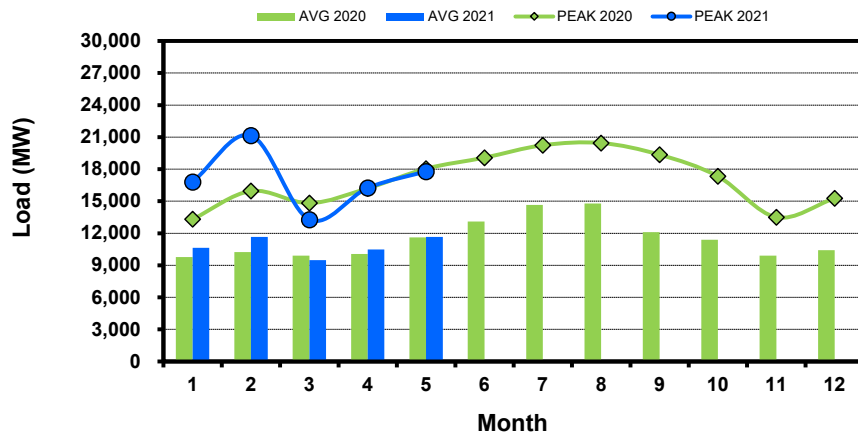
### Houston Zone



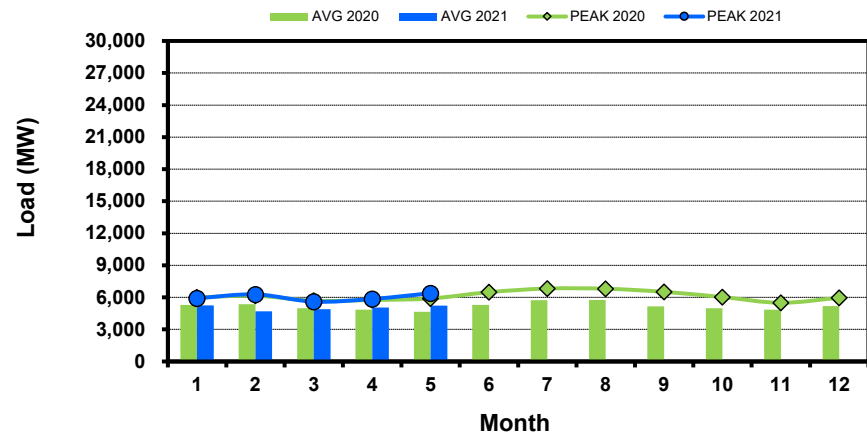
### North Zone



### South Zone



### West Zone



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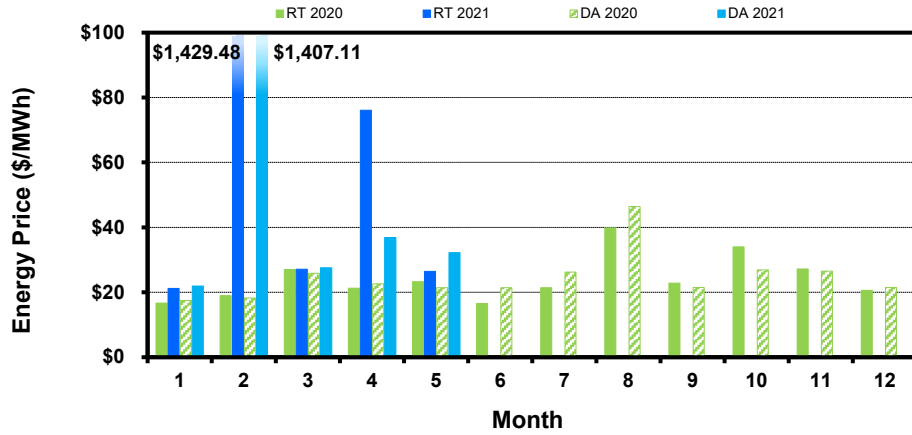
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**Note:** \* Zonal load zone definition vs. Nodal comparable load zone definition: LZ\_Houston=LZ\_Houston; LZ\_West=LZ\_West; LZ\_North=(LZ\_North,LZ\_RAYBN); LZ\_South=(LZ\_South,LZ\_CPS,LZ\_AEN,LZ\_LCRA)

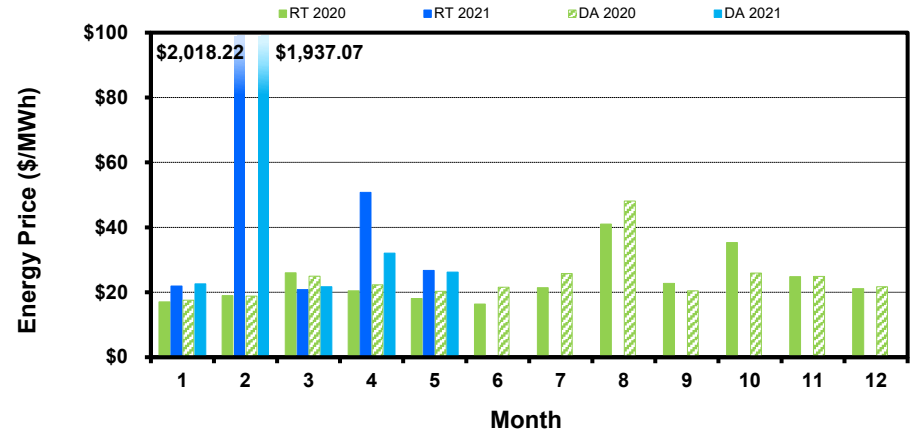
# Load Zone Monthly Average Energy Price DA vs RT

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

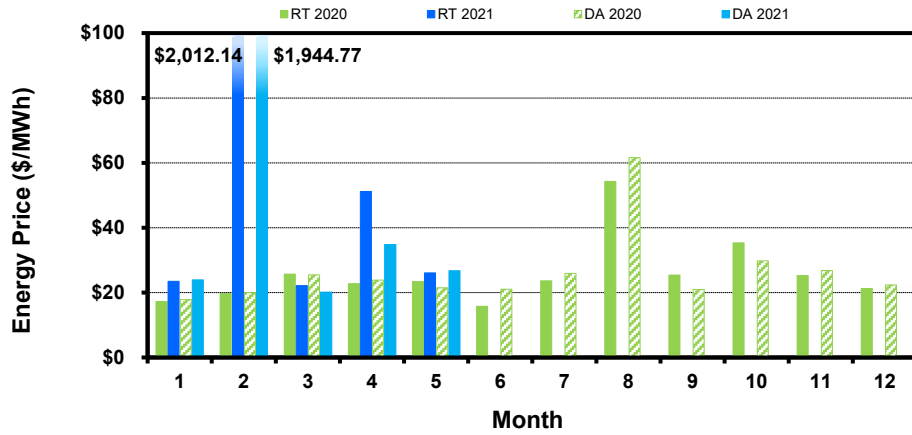
### Houston Zone



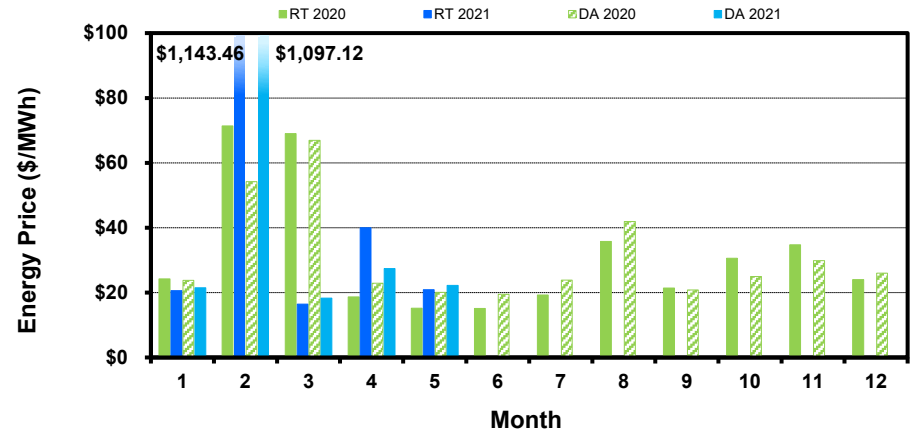
### North Zone



### South Zone



### West Zone



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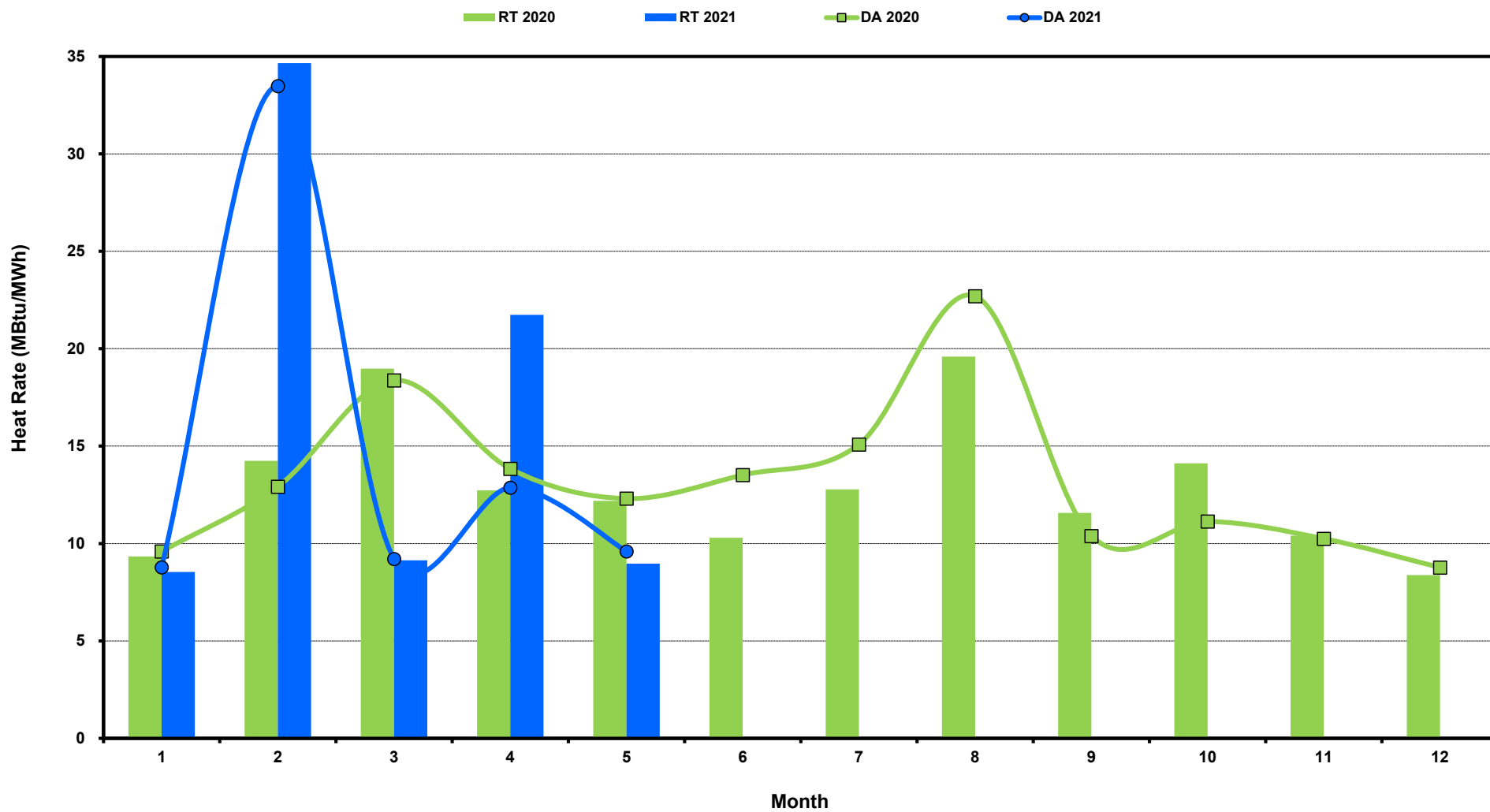
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**Note:** \* Zonal load zone definition vs. Nodal comparable load zone definition: LZ\_Houston=LZ\_Houston; LZ\_West=LZ\_West; LZ\_North=(LZ\_North,LZ\_RAYBN); LZ\_South=(LZ\_South,LZ\_CPS,LZ\_AEN,LZ\_LCRA)

# ERCOT-wide Monthly Implied Heat Rate DA vs RT

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



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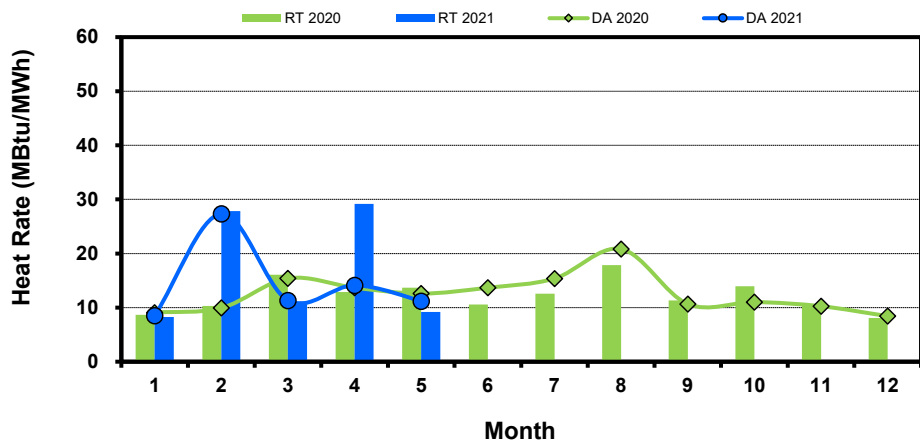
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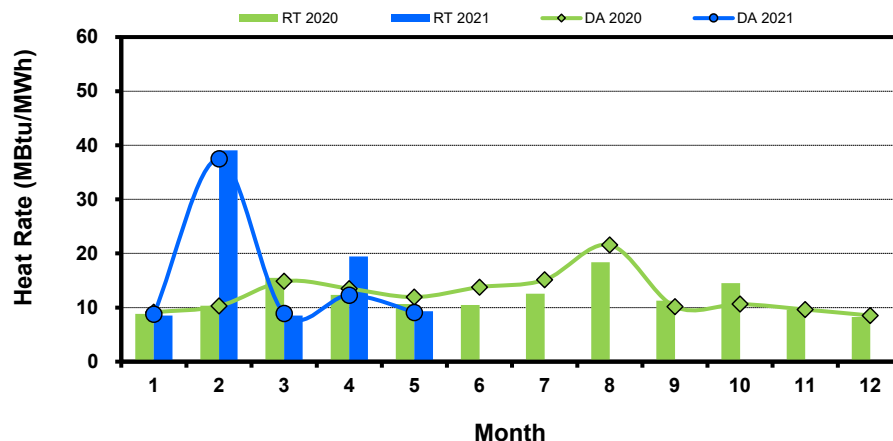
# Load Zone Monthly Implied Heat Rate DA vs RT

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

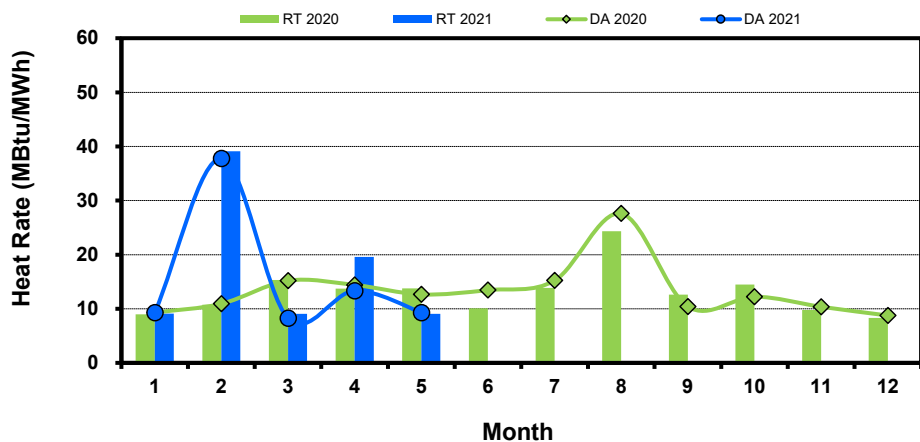
### Houston Zone



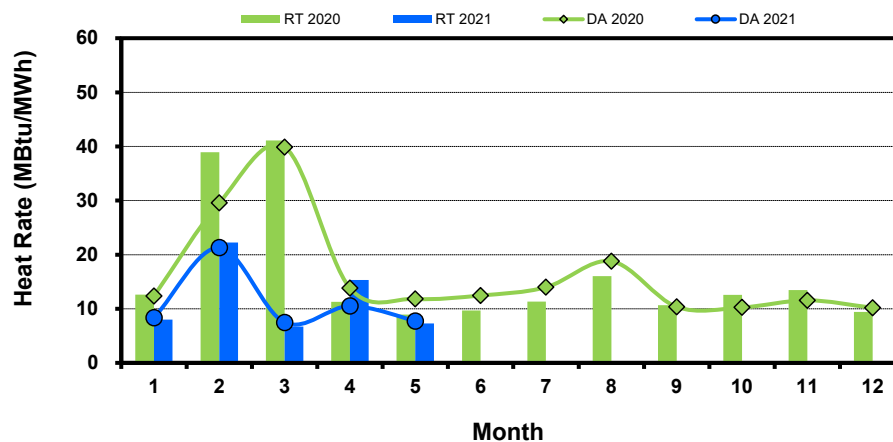
### North Zone



### South Zone



### West Zone



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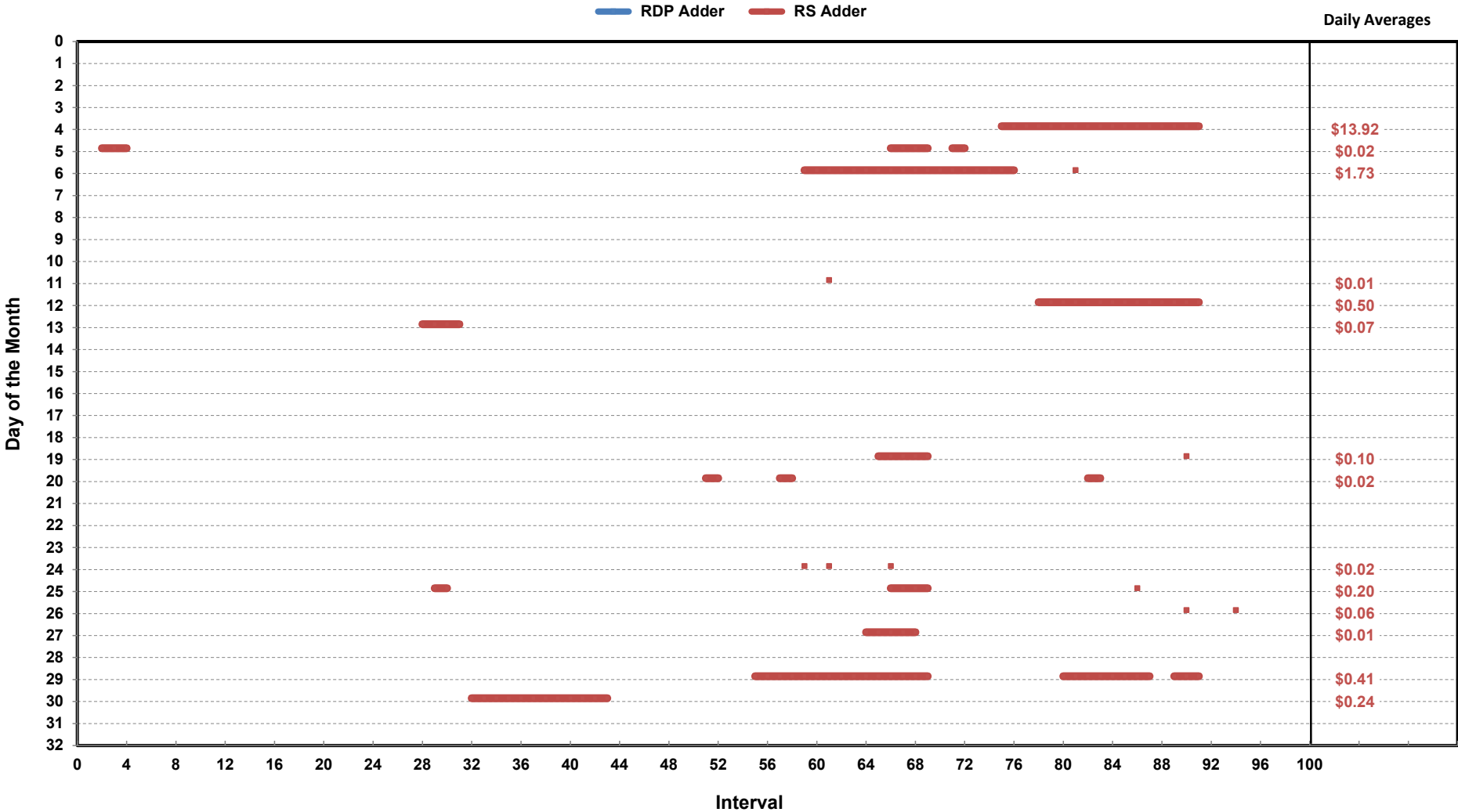
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**Note:** \* Zonal load zone definition vs. Nodal comparable load zone definition: LZ\_Houston=LZ\_Houston; LZ\_West=LZ\_West; LZ\_North=(LZ\_North,LZ\_RAYBN); LZ\_South=(LZ\_South,LZ\_CPS,LZ\_AEN,LZ\_LCRA)

# Daily ORDC Adders Average Values and Interval Duration May-2021



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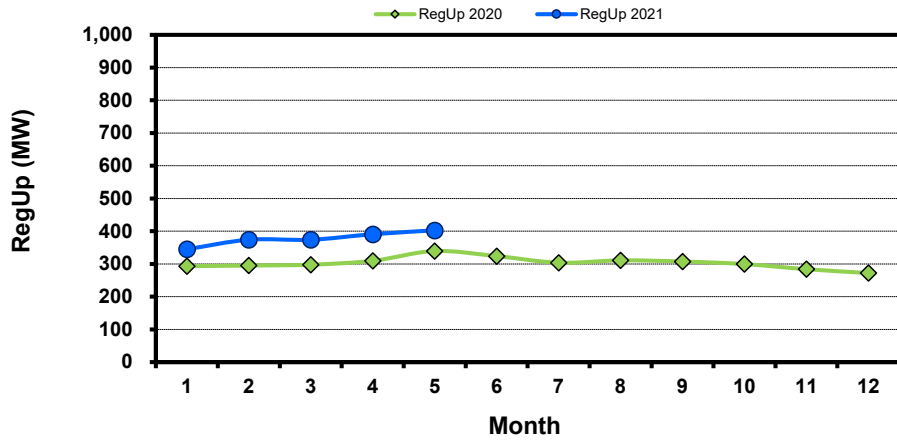
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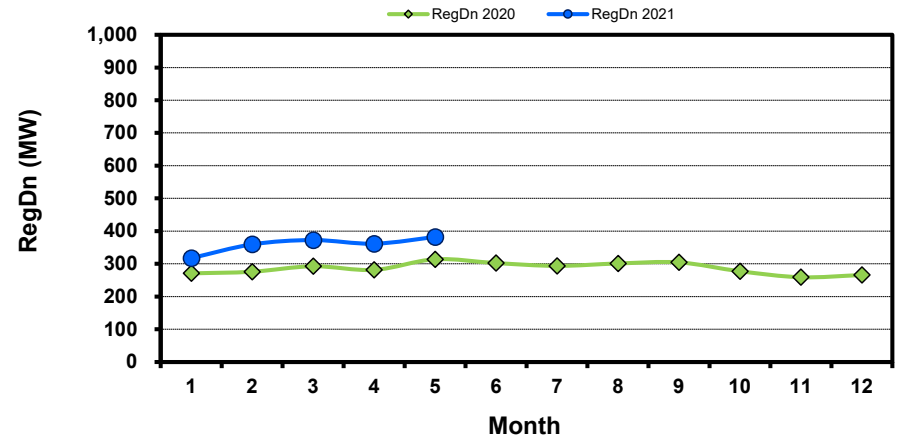
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# Monthly Average of Ancillary Services Required MW

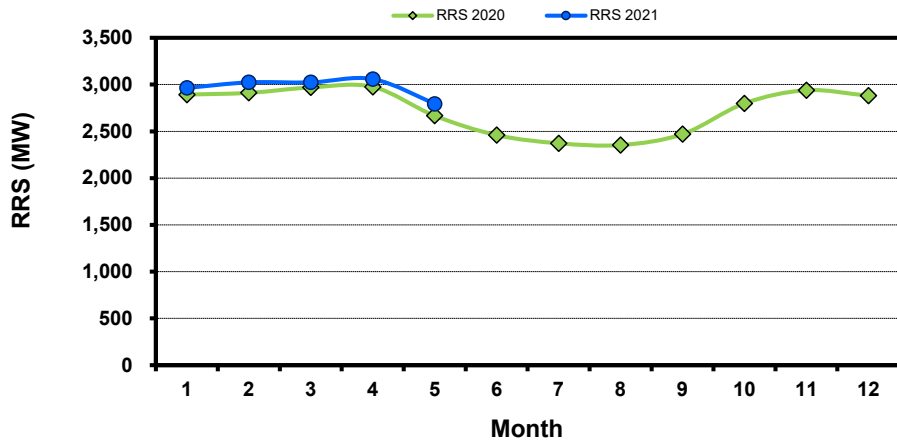
## Regulation Up



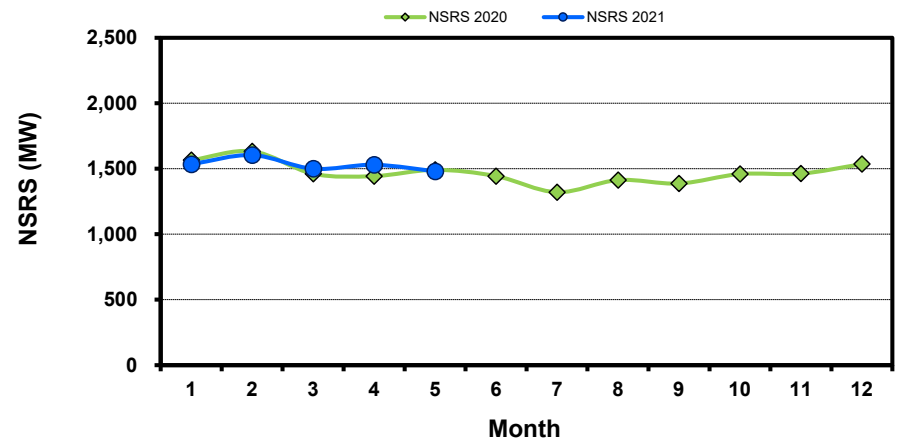
## Regulation Down



## Responsive Reserve



## Non-Spin Reserve



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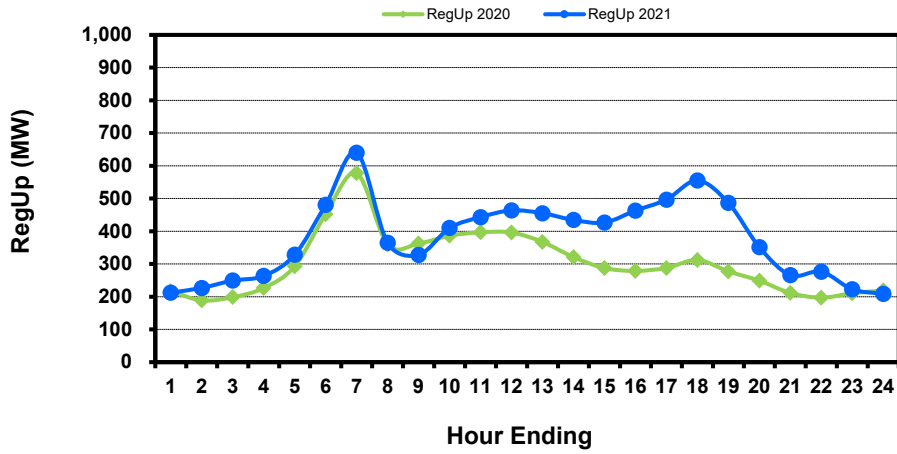
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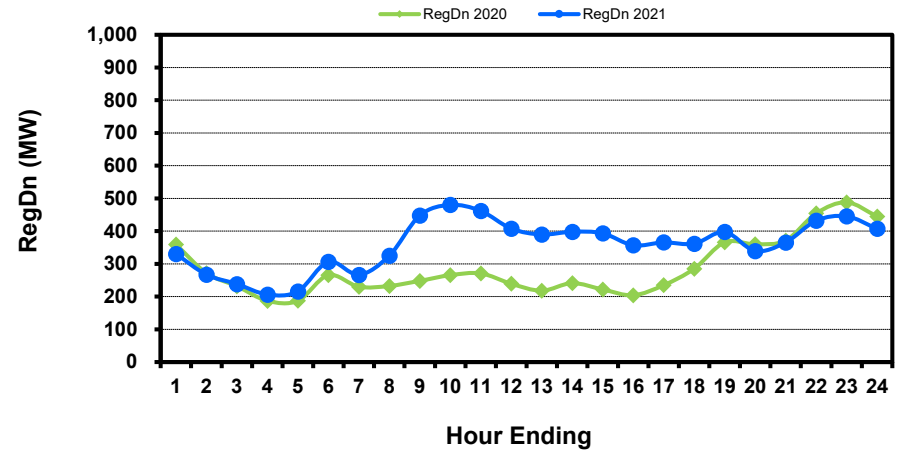


# Hourly Average of Ancillary Services Required MW

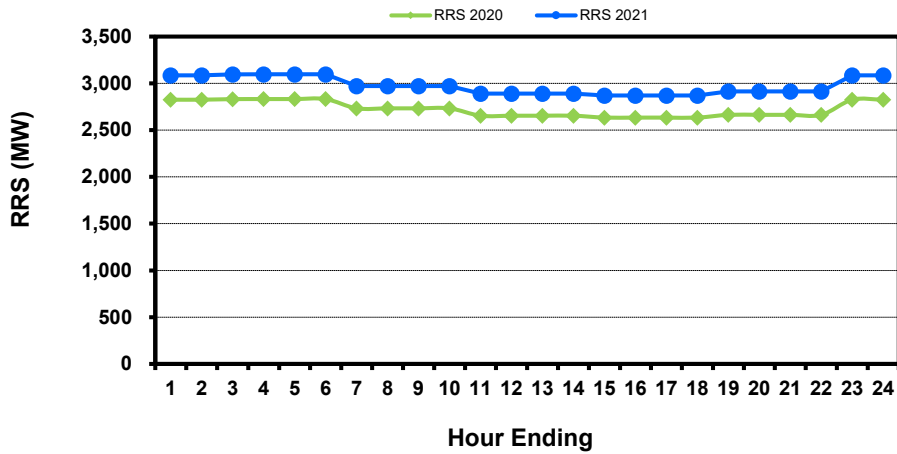
## Regulation Up



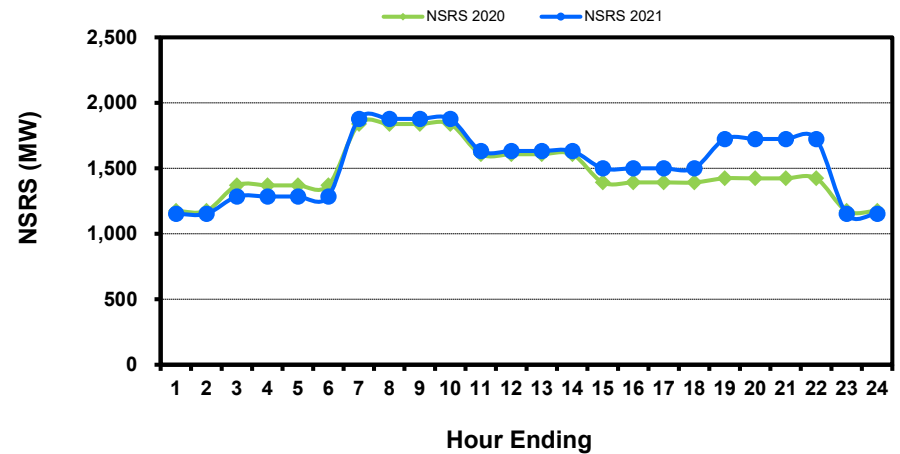
## Regulation Down



## Responsive Reserve



## Non-Spin Reserve



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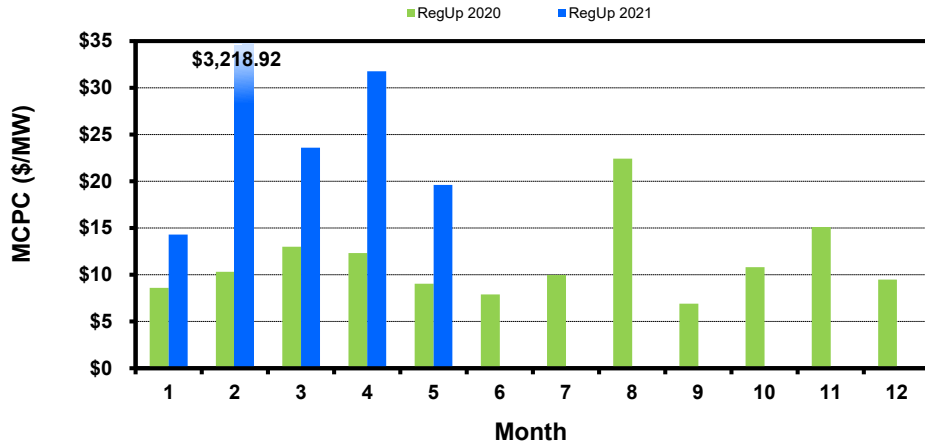
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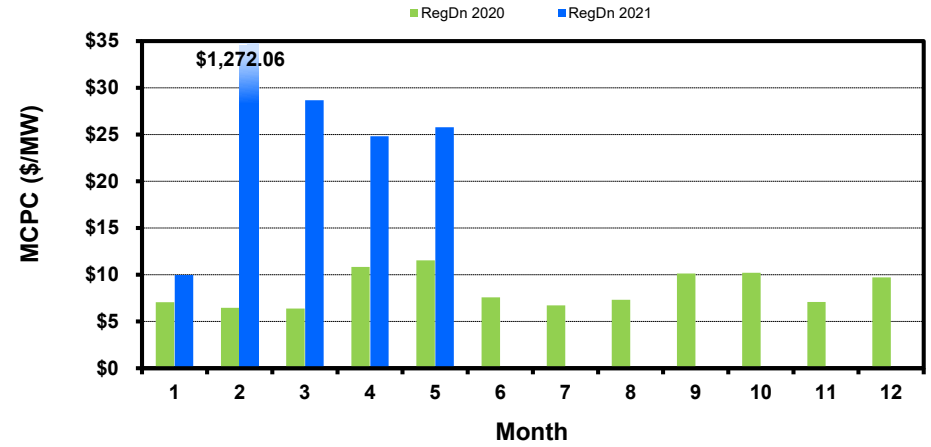
# Monthly Average Ancillary Services Price

(weighted by A/S Quantities Required)

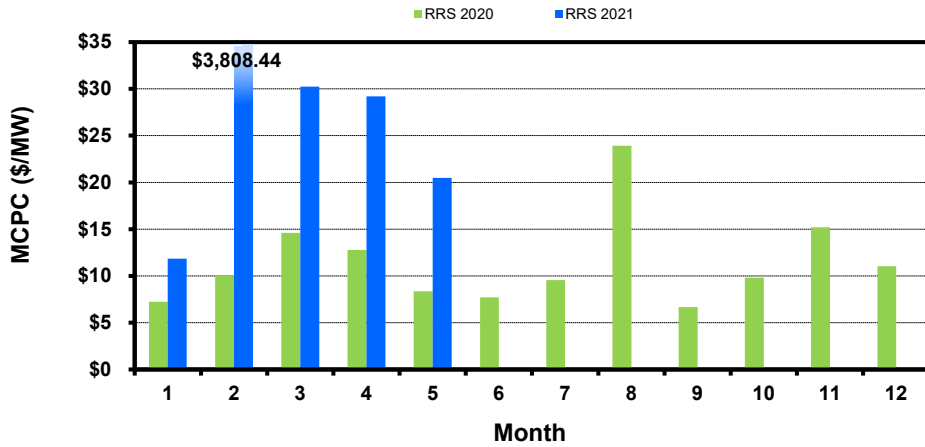
### Regulation Up



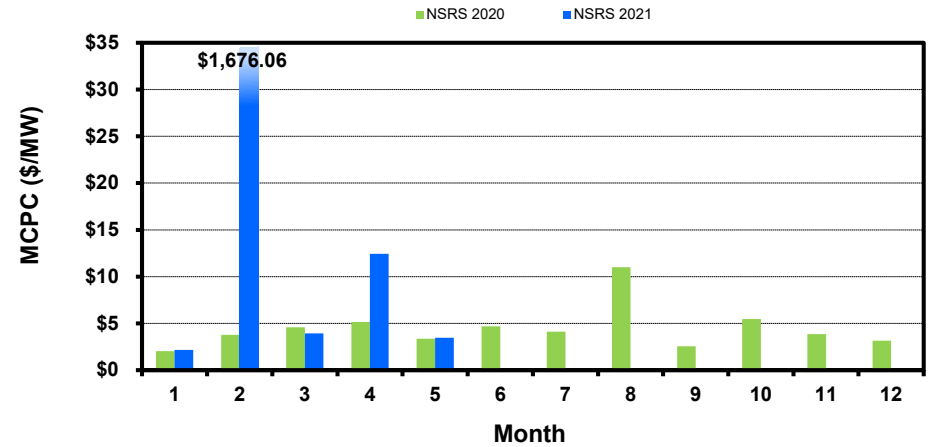
### Regulation Down



### Responsive Reserve



### Non-Spin Reserve



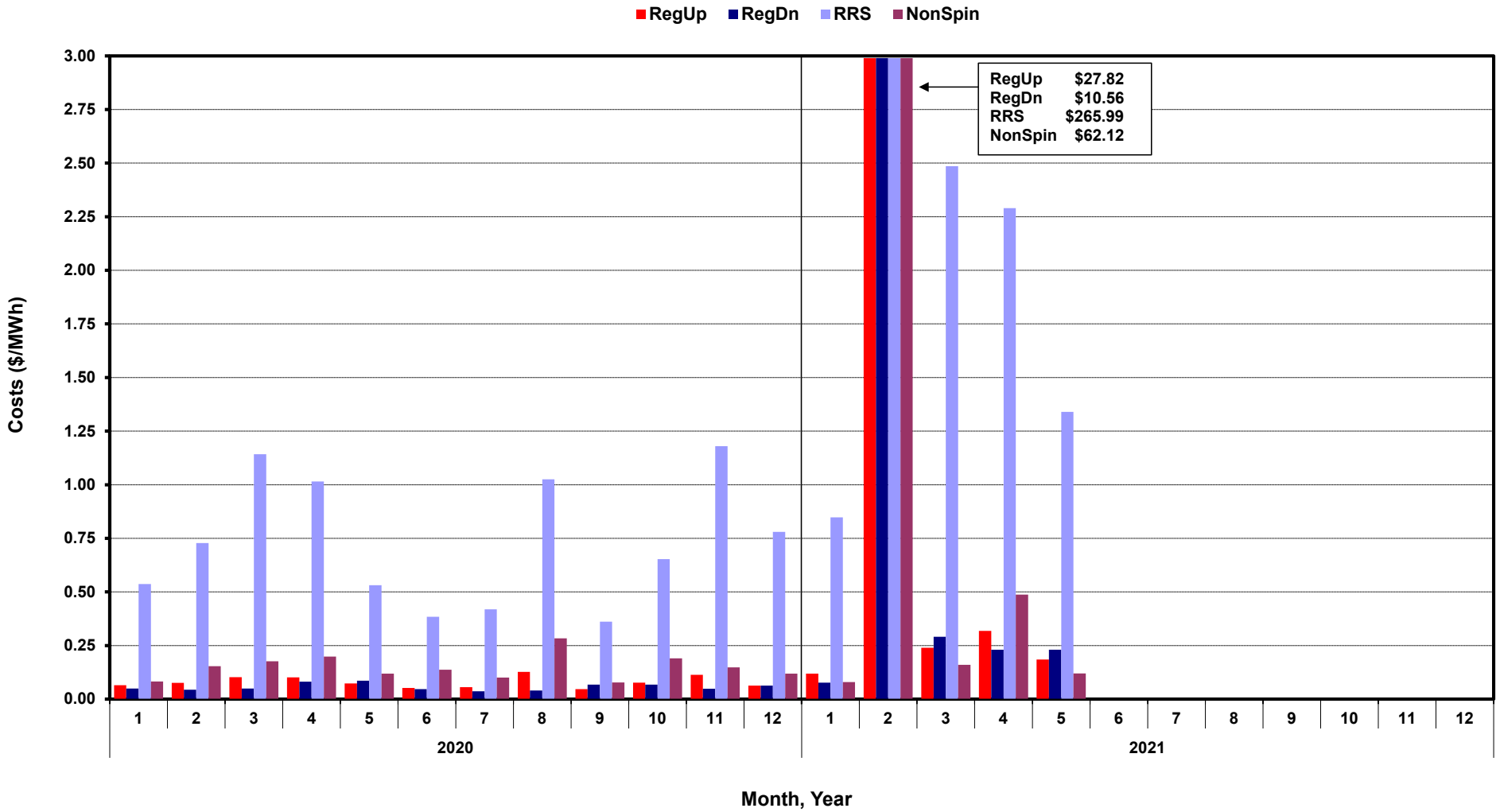
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# Monthly Average A/S Cost per MWh Load



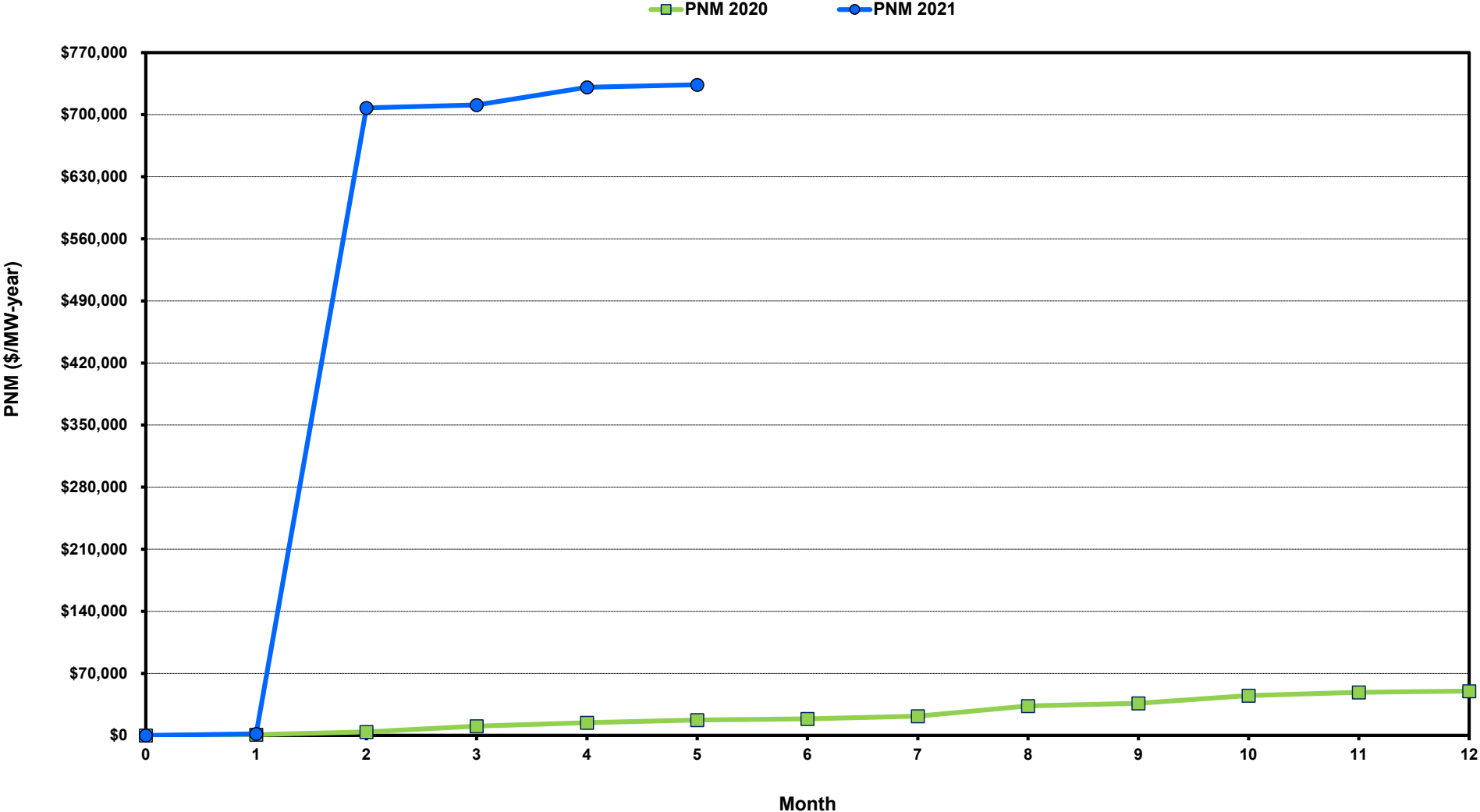
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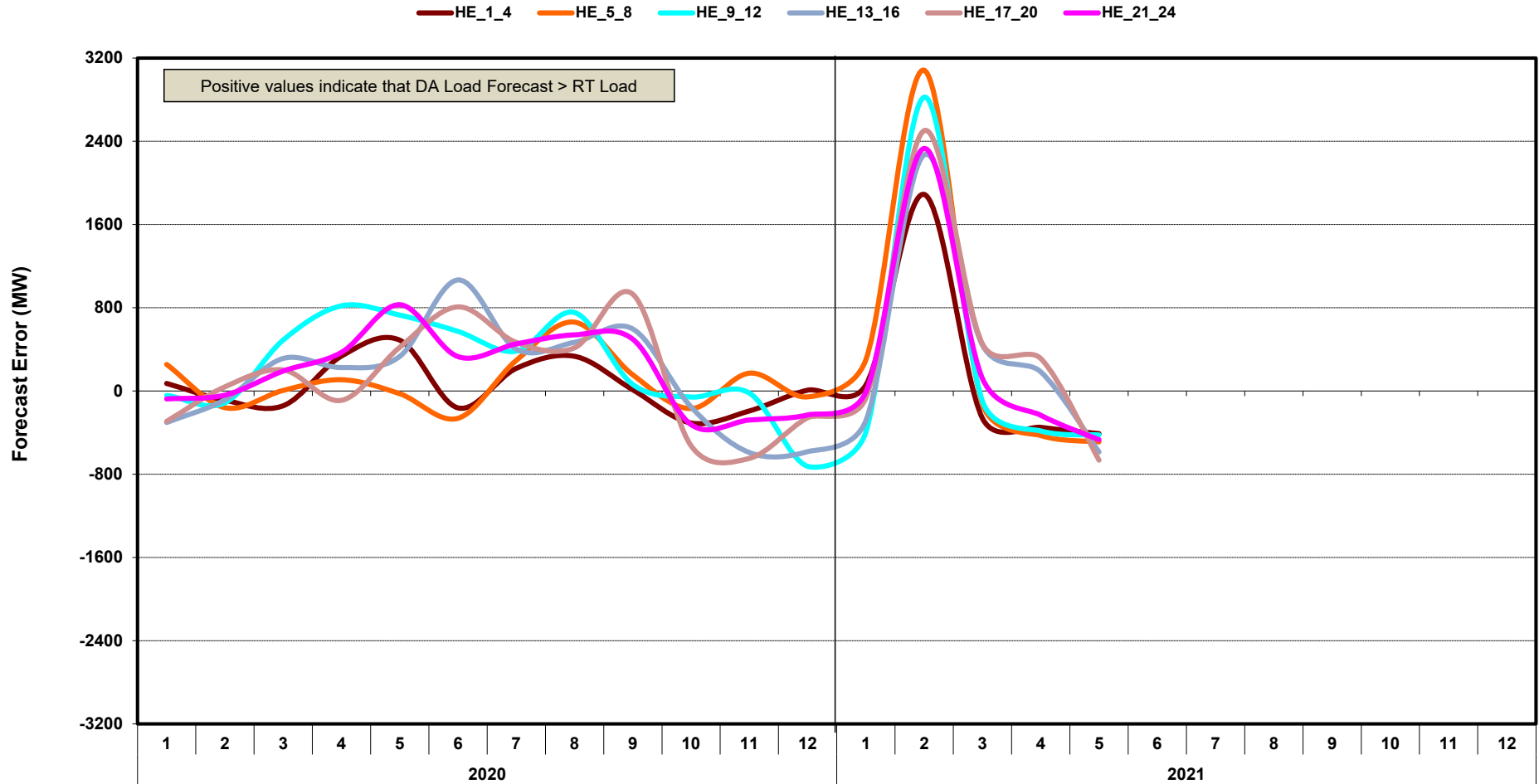
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# ERCOT-wide Cumulative Peaker Net Margin



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# DA vs. RT Load Forecast Error by Hour Ending



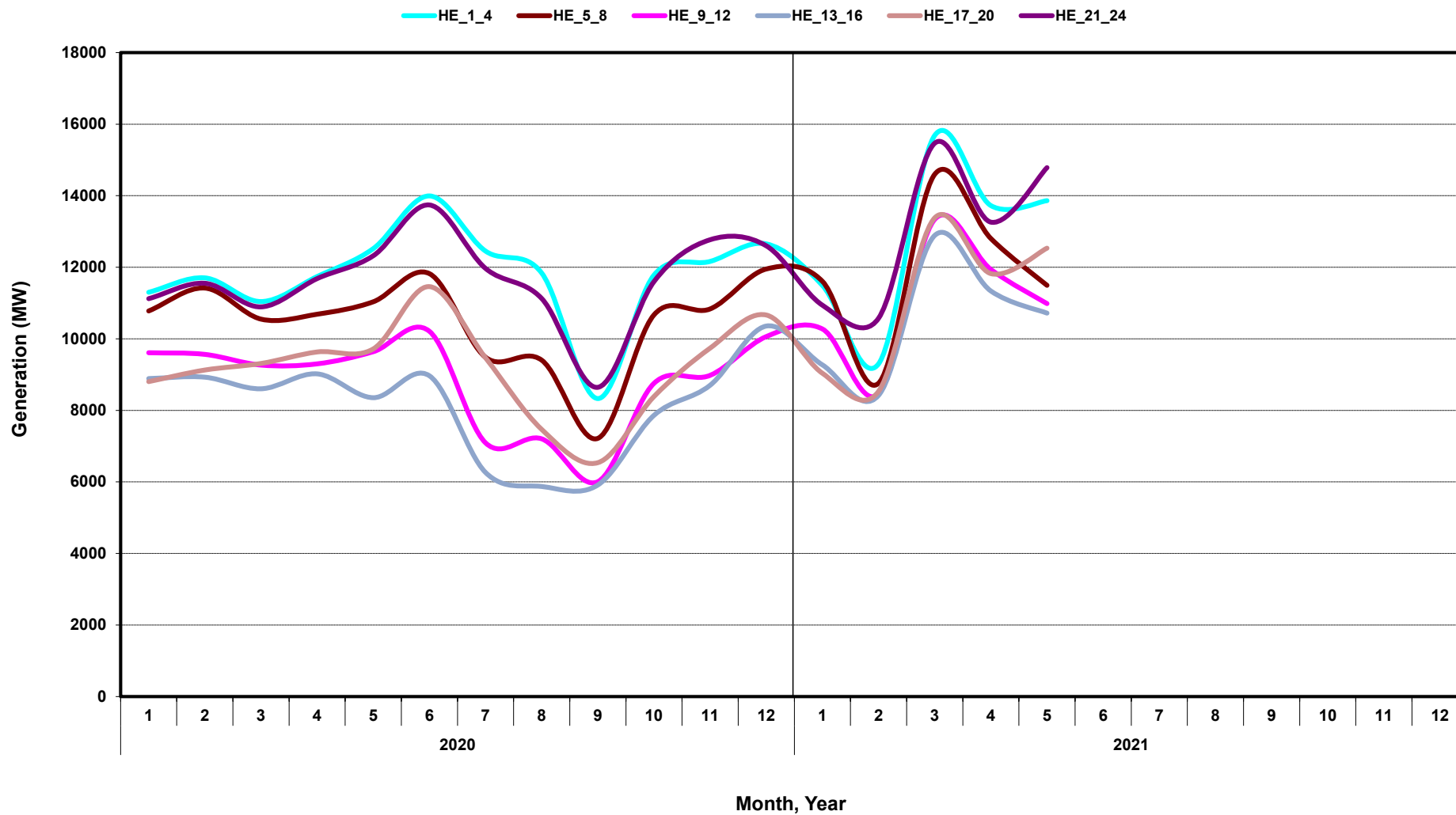
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# Monthly Average of Wind Generation by Hour Ending



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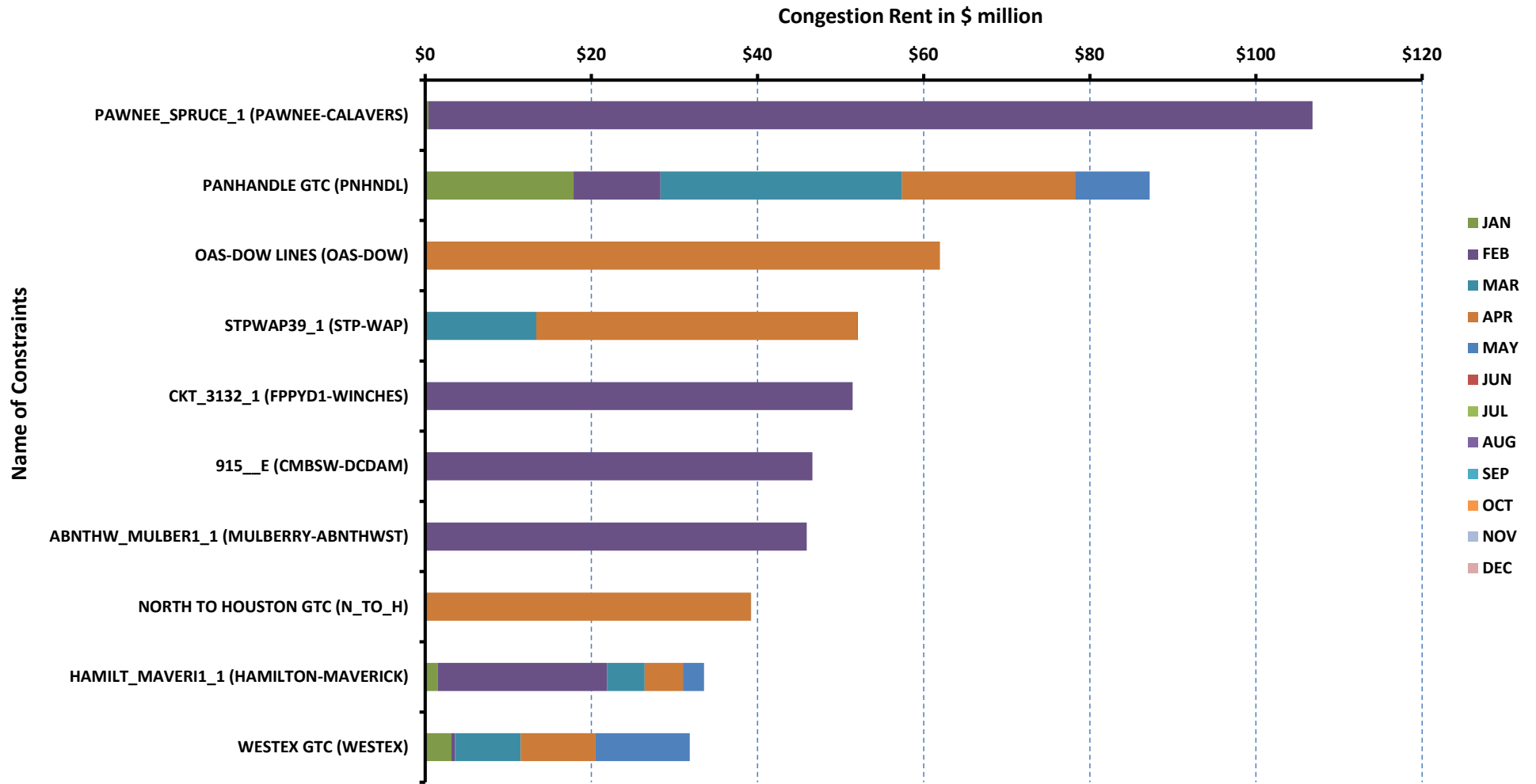
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# RT Congestion Constraint Rankings - 1

## Top 10 Constraints by Total Congestion Value - 2021



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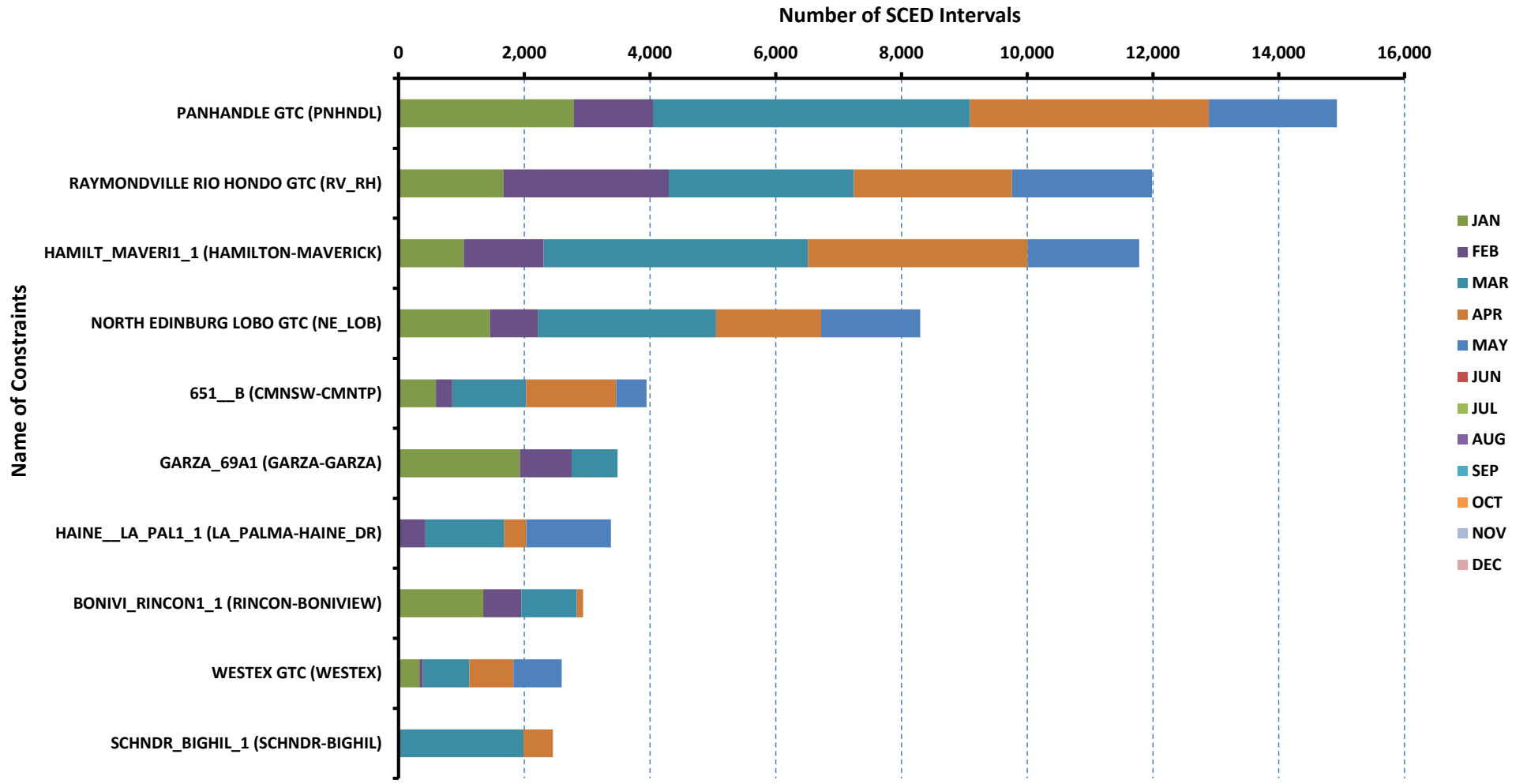
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# RT Congestion Constraint Rankings - 2

## Top 10 Constraints by Binding Frequency - 2021



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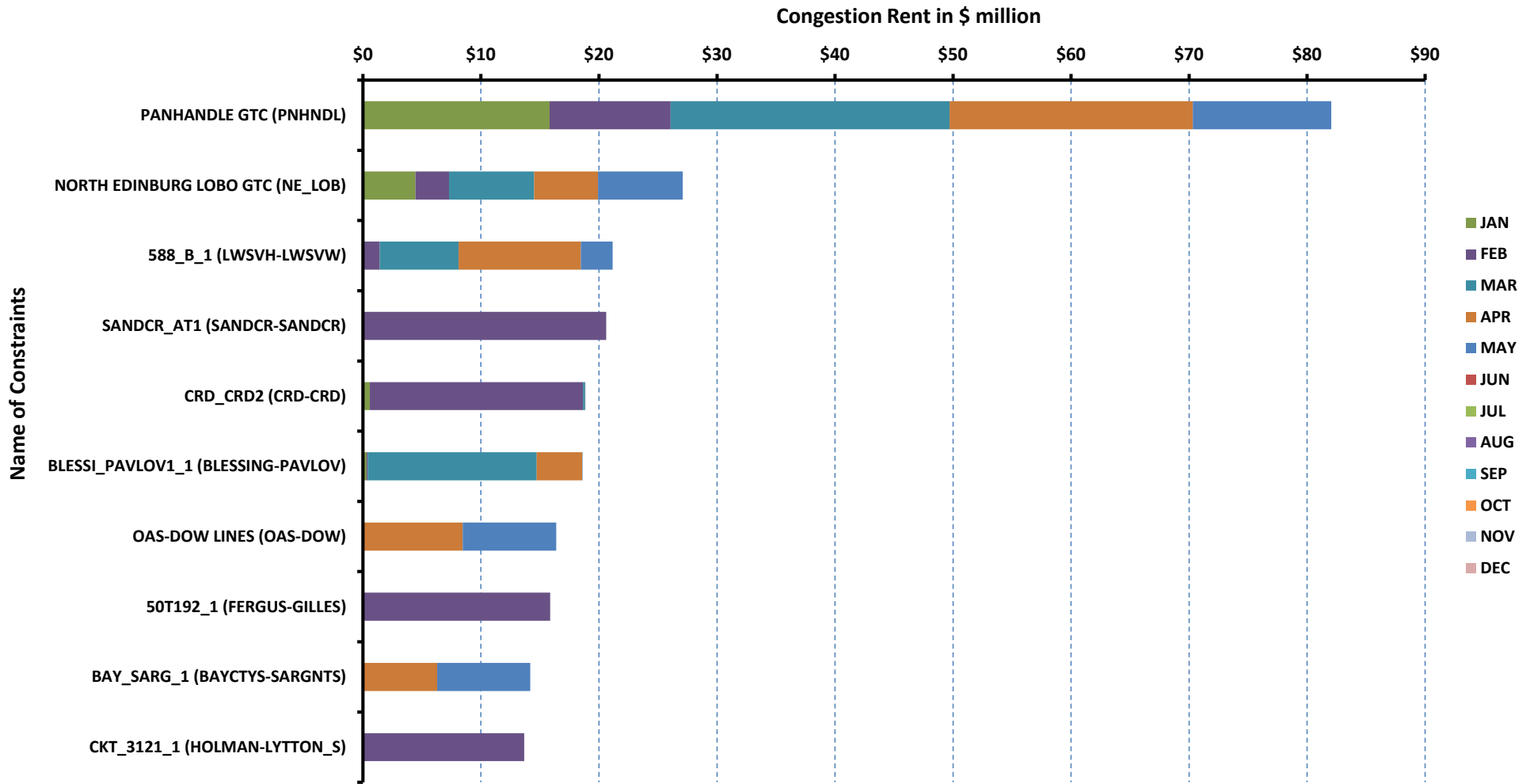
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# DA Congestion Constraint Rankings - 1

## Top 10 Constraints by Total Congestion Value - 2021



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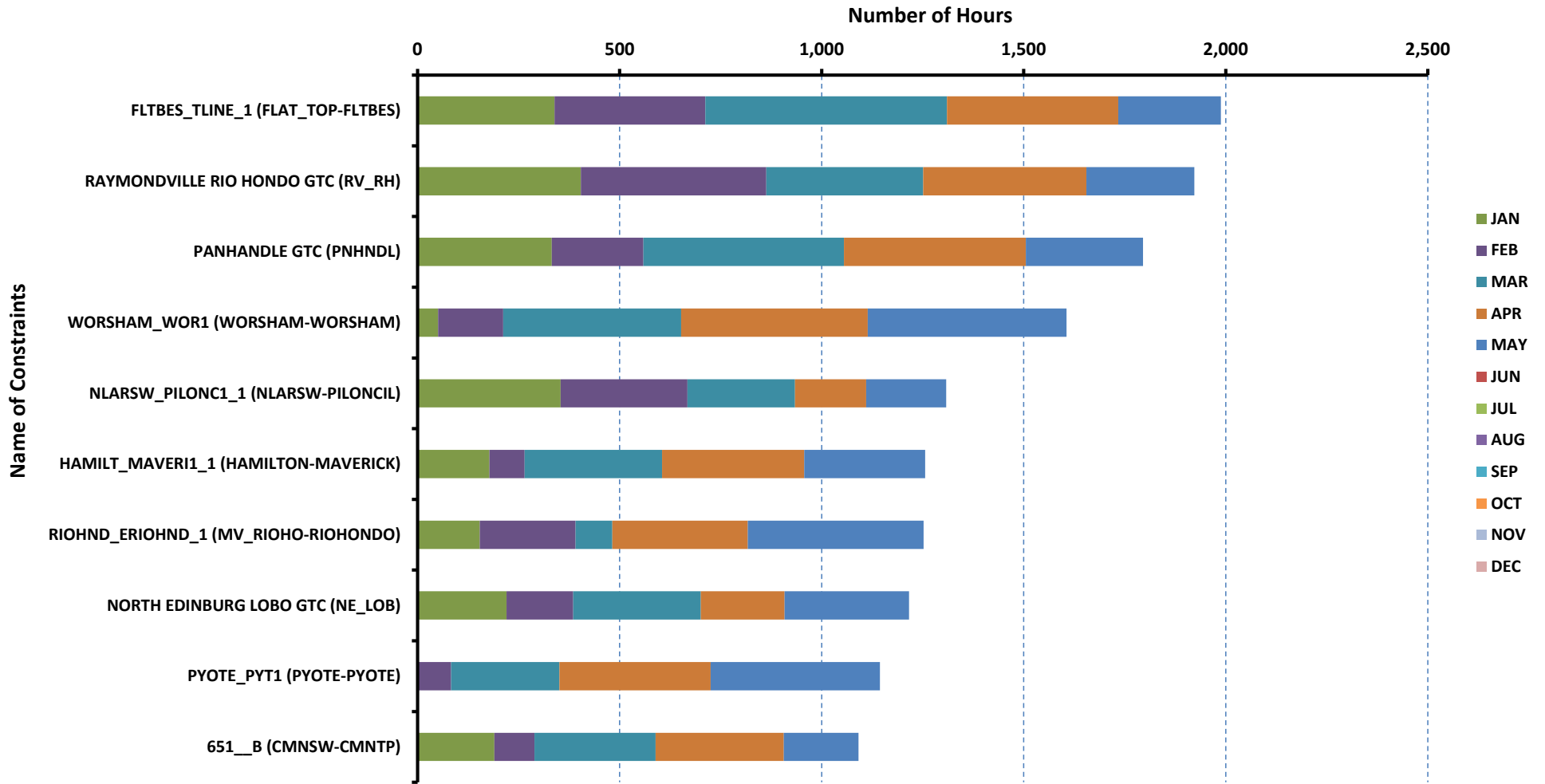
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# DA Congestion Constraint Rankings - 2

## Top 10 Constraints by Binding Frequency - 2021



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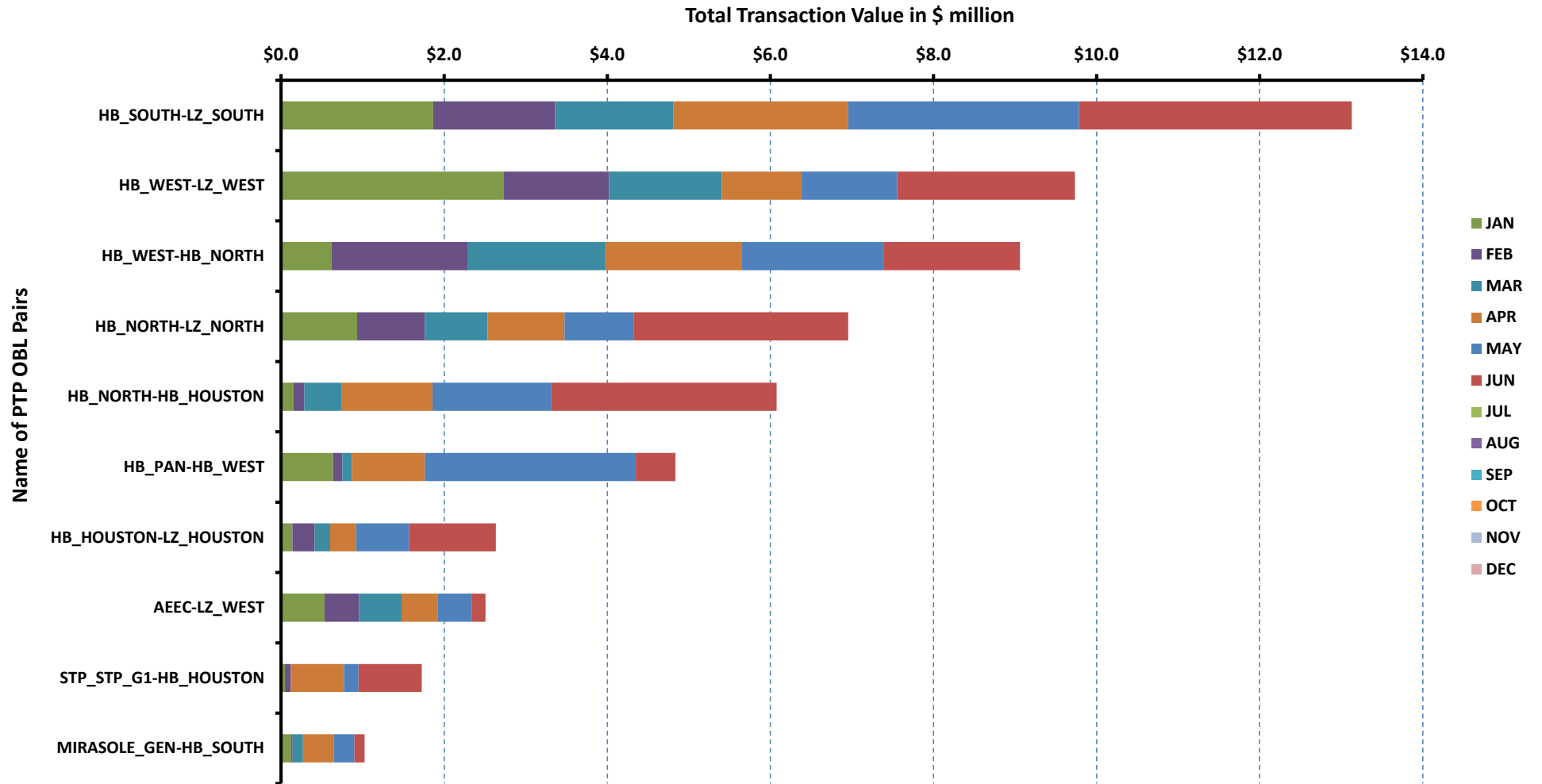
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# Top 10 CRR Pairs Ranked by Monthly Auction Values - 1

## Top 10 PTP Obligations by Total Transaction Value - 2021



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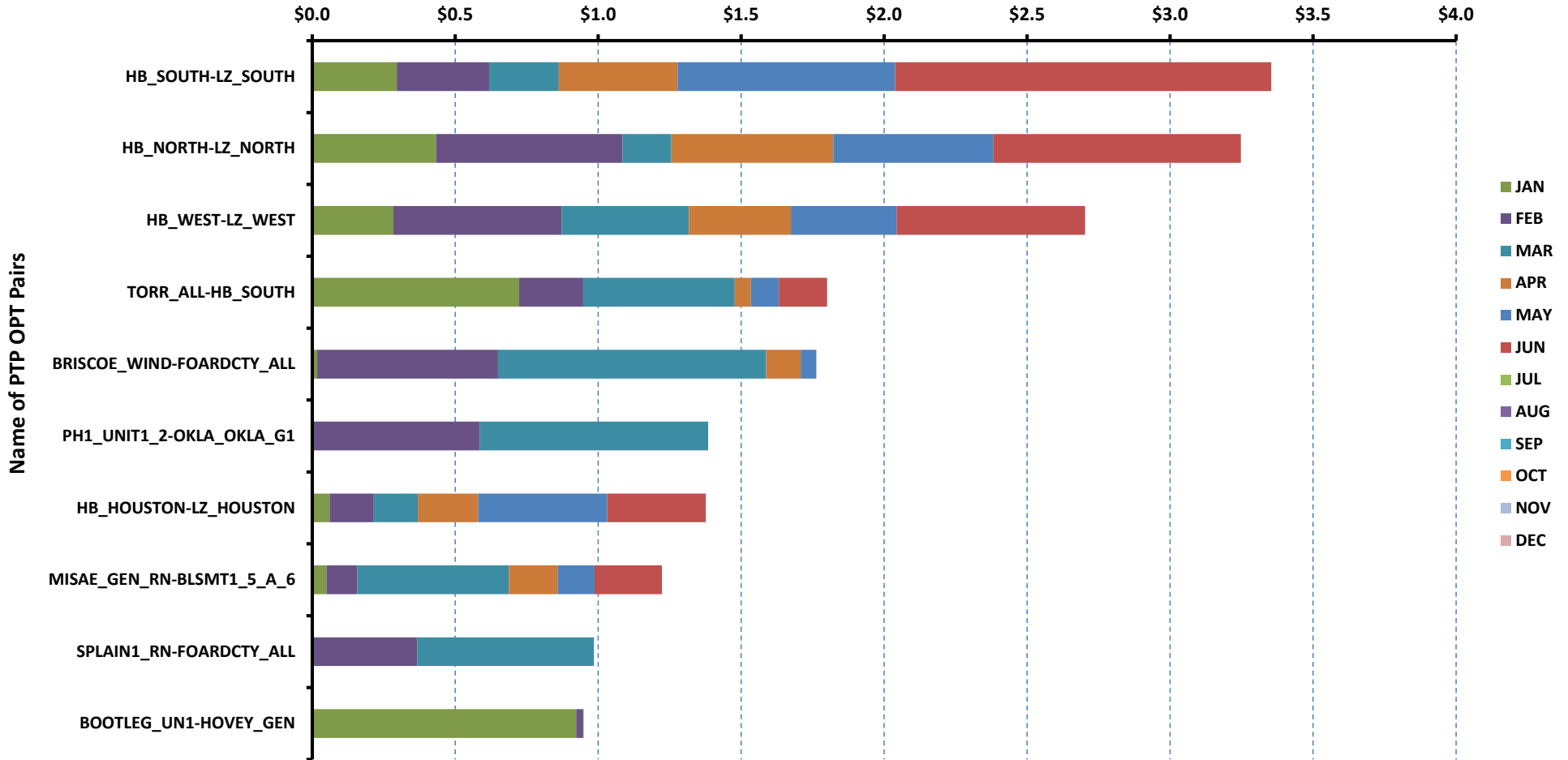
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# Top 10 CRR Pairs Ranked by Monthly Auction Values - 2

## Top 10 PTP Options by Total Transaction Value - 2021

Total Transaction Value in \$ million



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ERCOT-wide Avg. Energy Price - DA vs. RT			
year	month	dam_spp	rtm_spp
2020	1	\$ 18.46	\$ 17.97
	2	\$ 23.69	\$ 26.12
	3	\$ 30.87	\$ 31.87
	4	\$ 22.89	\$ 21.06
	5	\$ 20.92	\$ 20.72
	6	\$ 21.18	\$ 16.13
	7	\$ 25.72	\$ 21.79
	8	\$ 50.64	\$ 43.72
	9	\$ 20.93	\$ 23.32
	10	\$ 27.12	\$ 34.39
	11	\$ 26.47	\$ 26.86
	12	\$ 22.37	\$ 21.38
2021	1	\$ 22.60	\$ 21.96
	2	\$ 1,723.84	\$ 1,784.28
	3	\$ 22.50	\$ 22.34
	4	\$ 33.57	\$ 56.70
	5	\$ 27.59	\$ 25.76
	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		
2020	1	12,102	19,145	13,311	5,996	9,945	14,023	9,781	5,288		
	2	12,763	22,127	15,953	6,150	10,077	14,586	10,236	5,351		
	3	15,886	17,173	14,820	5,684	10,786	12,298	9,908	4,982		
	4	15,909	19,521	16,210	5,750	10,385	12,167	10,063	4,840		
	5	17,827	23,337	18,047	5,895	11,875	13,891	11,624	4,655		
	6	18,953	25,649	19,077	6,485	13,351	17,610	13,092	5,293		
	7	19,545	28,378	20,240	6,826	14,207	19,609	14,644	5,736		
	8	19,732	28,793	20,448	6,809	14,569	19,780	14,786	5,765		
	9	19,778	23,832	19,355	6,516	13,144	15,129	12,102	5,164		
	10	17,911	22,168	17,330	6,027	11,965	13,695	11,390	4,976		
	11	15,058	18,800	13,503	5,495	10,743	12,411	9,901	4,860		
	12	13,343	21,505	15,278	5,961	10,589	14,536	10,419	5,191		
2021	1	14,310	21,786	16,810	5,919	10,668	14,873	10,630	5,257		
	2	14,403	29,499	21,146	6,279	9,970	16,979	11,656	4,692		
	3	13,207	17,017	13,283	5,598	10,111	12,292	9,481	4,892		
	4	15,502	17,469	16,245	5,851	11,143	12,339	10,482	5,041		
	5	17,824	22,435	17,780	6,387	12,406	13,424	11,660	5,221		
	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
2020	1	\$ 16.65	\$ 17.03	\$ 17.27	\$ 24.25	\$ 17.48	\$ 17.57	\$ 17.87	\$ 23.75
	2	\$ 18.94	\$ 18.97	\$ 19.71	\$ 71.42	\$ 18.21	\$ 18.85	\$ 20.04	\$ 54.21
	3	\$ 27.03	\$ 26.02	\$ 25.72	\$ 69.03	\$ 25.88	\$ 24.94	\$ 25.51	\$ 66.94
	4	\$ 21.29	\$ 20.43	\$ 22.73	\$ 18.66	\$ 22.63	\$ 22.34	\$ 23.83	\$ 22.87
	5	\$ 23.27	\$ 18.12	\$ 23.42	\$ 15.20	\$ 21.41	\$ 20.28	\$ 21.50	\$ 20.11
	6	\$ 16.54	\$ 16.38	\$ 15.76	\$ 15.14	\$ 21.42	\$ 21.57	\$ 21.07	\$ 19.50
	7	\$ 21.44	\$ 21.40	\$ 23.62	\$ 19.29	\$ 26.21	\$ 25.76	\$ 25.93	\$ 23.82
	8	\$ 39.86	\$ 41.02	\$ 54.24	\$ 35.79	\$ 46.46	\$ 48.10	\$ 61.57	\$ 41.90
	9	\$ 22.80	\$ 22.72	\$ 25.43	\$ 21.43	\$ 21.48	\$ 20.45	\$ 20.95	\$ 20.85
	10	\$ 34.02	\$ 35.34	\$ 35.30	\$ 30.58	\$ 26.86	\$ 25.90	\$ 29.79	\$ 24.97
	11	\$ 27.19	\$ 24.78	\$ 25.28	\$ 34.71	\$ 26.49	\$ 24.88	\$ 26.78	\$ 29.86
	12	\$ 20.61	\$ 21.08	\$ 21.24	\$ 24.03	\$ 21.50	\$ 21.74	\$ 22.33	\$ 25.99
2021	1	\$ 21.23	\$ 21.92	\$ 23.45	\$ 20.58	\$ 21.92	\$ 22.57	\$ 23.90	\$ 21.47
	2	\$ 1,433.48	\$ 2,010.57	\$ 2,012.30	\$ 1,144.30	\$ 1,408.66	\$ 1,930.75	\$ 1,944.51	\$ 1,096.49
	3	\$ 27.22	\$ 20.85	\$ 22.10	\$ 16.43	\$ 27.64	\$ 21.77	\$ 20.15	\$ 18.25
	4	\$ 76.08	\$ 50.76	\$ 51.14	\$ 39.97	\$ 36.86	\$ 32.06	\$ 34.79	\$ 27.43
	5	\$ 26.41	\$ 26.74	\$ 26.10	\$ 20.92	\$ 32.19	\$ 26.20	\$ 26.72	\$ 22.19
	6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	9	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	11	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

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ERCOT-wide Monthly Implied Heat Rate - DA vs. RT						
year	month	gasprice	rtm_spp	HR_rtm	dam_spp	HR_dam
2020	1	\$ 1.92	\$ 17.97	9.34	\$ 18.46	9.59
	2	\$ 1.83	\$ 26.12	14.25	\$ 23.69	12.92
	3	\$ 1.68	\$ 31.87	18.98	\$ 30.87	18.38
	4	\$ 1.65	\$ 21.06	12.73	\$ 22.89	13.84
	5	\$ 1.70	\$ 20.72	12.19	\$ 20.92	12.31
	6	\$ 1.57	\$ 16.13	10.30	\$ 21.18	13.52
	7	\$ 1.70	\$ 21.79	12.78	\$ 25.72	15.09
	8	\$ 2.23	\$ 43.72	19.60	\$ 50.64	22.70
	9	\$ 2.01	\$ 23.32	11.58	\$ 20.93	10.39
	10	\$ 2.44	\$ 34.39	14.12	\$ 27.12	11.13
	11	\$ 2.58	\$ 26.86	10.40	\$ 26.47	10.25
	12	\$ 2.55	\$ 21.38	8.38	\$ 22.37	8.77
2021	1	\$ 2.57	\$ 21.96	8.53	\$ 22.60	8.78
	2	\$ 51.48	\$ 1,784.28	34.66	\$ 1,723.84	33.49
	3	\$ 2.44	\$ 22.34	9.14	\$ 22.50	9.21
	4	\$ 2.61	\$ 56.70	21.73	\$ 33.57	12.87
	5	\$ 2.87	\$ 25.76	8.96	\$ 27.59	9.60
	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
2020	1	9.08	9.29	9.13	12.34	8.65	8.98	8.85	12.60
	2	9.93	10.93	10.28	29.56	10.33	10.75	10.35	38.95
	3	15.41	15.19	14.85	39.87	16.10	15.32	15.49	41.11
	4	13.68	14.40	13.50	13.83	12.87	13.74	12.35	11.28
	5	12.59	12.65	11.93	11.83	13.69	13.78	10.66	8.94
	6	13.68	13.45	13.78	12.45	10.56	10.06	10.46	9.67
	7	15.38	15.21	15.11	13.98	12.58	13.86	12.56	11.32
	8	20.82	27.60	21.56	18.78	17.86	24.31	18.39	16.04
	9	10.66	10.40	10.16	10.35	11.32	12.62	11.28	10.64
	10	11.03	12.23	10.63	10.25	13.97	14.49	14.51	12.55
	11	10.26	10.37	9.63	11.56	10.53	9.79	9.59	13.44
	12	8.43	8.75	8.52	10.19	8.08	8.32	8.26	9.42
2021	1	8.52	9.29	8.77	8.34	8.25	9.11	8.52	8.00
	2	27.36	37.77	37.51	21.30	27.85	39.09	39.06	22.23
	3	11.31	8.25	8.91	7.47	11.14	9.05	8.53	6.73
	4	14.13	13.34	12.29	10.52	29.16	19.60	19.46	15.32
	5	11.20	9.30	9.12	7.72	9.19	9.08	9.31	7.28
	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
2021	5	1	\$ -	\$ -	0	0	80	90
2021	5	2	\$ -	\$ -	0	0	80	90
2021	5	3	\$ -	\$ -	0	0	80	90
2021	5	4	\$ 13.92	\$ -	17	0	80	90
2021	5	5	\$ 0.02	\$ -	9	0	80	90
2021	5	6	\$ 1.73	\$ -	19	0	80	90
2021	5	7	\$ -	\$ -	0	0	80	90
2021	5	8	\$ -	\$ -	0	0	80	90
2021	5	9	\$ -	\$ -	0	0	80	90
2021	5	10	\$ -	\$ -	0	0	80	90
2021	5	11	\$ 0.01	\$ -	1	0	80	90
2021	5	12	\$ 0.50	\$ -	14	0	80	90
2021	5	13	\$ 0.07	\$ -	4	0	80	90
2021	5	14	\$ -	\$ -	0	0	80	90
2021	5	15	\$ -	\$ -	0	0	80	90
2021	5	16	\$ -	\$ -	0	0	80	90
2021	5	17	\$ -	\$ -	0	0	80	90
2021	5	18	\$ -	\$ -	0	0	80	90
2021	5	19	\$ 0.10	\$ -	6	0	80	90
2021	5	20	\$ 0.02	\$ -	6	0	80	90
2021	5	21	\$ -	\$ -	0	0	80	90
2021	5	22	\$ -	\$ -	0	0	80	90
2021	5	23	\$ -	\$ -	0	0	80	90
2021	5	24	\$ 0.02	\$ -	3	0	80	90
2021	5	25	\$ 0.20	\$ -	7	0	80	90
2021	5	26	\$ 0.06	\$ -	2	0	80	90
2021	5	27	\$ 0.01	\$ -	5	0	80	90
2021	5	28	\$ -	\$ -	0	0	80	90
2021	5	29	\$ 0.41	\$ -	26	0	80	90
2021	5	30	\$ 0.24	\$ -	12	0	80	90
2021	5	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
2020	1	271	1,565	2,893	293
	2	276	1,633	2,911	295
	3	293	1,462	2,969	298
	4	282	1,444	2,976	310
	5	314	1,492	2,667	339
	6	302	1,444	2,460	324
	7	294	1,321	2,373	304
	8	301	1,414	2,354	311
	9	304	1,387	2,470	307
	10	277	1,460	2,799	300
	11	259	1,463	2,939	284
	12	266	1,535	2,881	272
2021	1	317	1,535	2,964	345
	2	360	1,604	3,024	374
	3	373	1,500	3,023	374
	4	362	1,531	3,059	391
	5	382	1,481	2,794	403
	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
2020	1	360	1,175	2,825	217
	2	272	1,175	2,825	189
	3	232	1,370	2,831	199
	4	187	1,369	2,832	226
	5	187	1,369	2,832	293
	6	266	1,369	2,832	452
	7	230	1,838	2,733	578
	8	233	1,838	2,733	360
	9	248	1,838	2,733	363
	10	265	1,838	2,733	386
	11	271	1,608	2,654	397
	12	239	1,608	2,654	396
	13	218	1,608	2,654	367
	14	241	1,608	2,654	321
	15	222	1,392	2,634	288
	16	204	1,392	2,634	279
	17	235	1,392	2,634	288
	18	285	1,392	2,634	312
	19	366	1,423	2,663	277
	20	360	1,423	2,663	249
	21	371	1,423	2,663	212
	22	454	1,423	2,663	197
	23	488	1,175	2,825	211
	24	445	1,175	2,825	219
2021	1	331	1,152	3,087	212
	2	267	1,152	3,087	227
	3	238	1,284	3,097	249
	4	206	1,285	3,097	263
	5	216	1,285	3,097	328
	6	306	1,285	3,097	481
	7	267	1,878	2,970	640
	8	325	1,878	2,970	365
	9	448	1,878	2,970	328
	10	480	1,878	2,970	410
	11	462	1,632	2,890	443
	12	408	1,632	2,890	464
	13	390	1,632	2,890	455
	14	398	1,632	2,890	434
	15	393	1,500	2,870	427
	16	357	1,500	2,870	463
	17	366	1,500	2,870	497
	18	362	1,500	2,870	555
	19	398	1,724	2,914	487
	20	340	1,724	2,914	351
	21	366	1,724	2,914	266
	22	432	1,724	2,914	277
	23	445	1,152	3,087	223
	24	407	1,152	3,087	209

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Monthly Average Ancillary Services Price					
year	month	MCPC_REGDN	MCPC_NSPIN	MCPC_RRS	MCPC_REGUP
2020	1	\$ 7.06	\$ 2.04	\$ 7.24	\$ 8.60
	2	\$ 6.46	\$ 3.78	\$ 10.06	\$ 10.33
	3	\$ 6.39	\$ 4.59	\$ 14.60	\$ 13.00
	4	\$ 10.83	\$ 5.15	\$ 12.78	\$ 12.31
	5	\$ 11.54	\$ 3.36	\$ 8.37	\$ 9.04
	6	\$ 7.57	\$ 4.69	\$ 7.70	\$ 7.89
	7	\$ 6.73	\$ 4.12	\$ 9.56	\$ 9.98
	8	\$ 7.32	\$ 11.02	\$ 23.91	\$ 22.42
	9	\$ 10.12	\$ 2.55	\$ 6.66	\$ 6.91
	10	\$ 10.22	\$ 5.47	\$ 9.81	\$ 10.82
	11	\$ 7.10	\$ 3.84	\$ 15.21	\$ 15.10
	12	\$ 9.71	\$ 3.16	\$ 11.03	\$ 9.49
2021	1	\$ 9.98	\$ 2.16	\$ 11.85	\$ 14.31
	2	\$ 1,272.06	\$ 1,676.26	\$ 3,808.44	\$ 3,218.92
	3	\$ 28.66	\$ 3.93	\$ 30.23	\$ 23.61
	4	\$ 24.82	\$ 12.43	\$ 29.20	\$ 31.78
	5	\$ 25.78	\$ 3.45	\$ 20.49	\$ 19.60
	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
2020	1	\$ 0.05	\$ 0.08	\$ 0.54	\$ 0.06
	2	\$ 0.04	\$ 0.15	\$ 0.73	\$ 0.08
	3	\$ 0.05	\$ 0.18	\$ 1.14	\$ 0.10
	4	\$ 0.08	\$ 0.20	\$ 1.02	\$ 0.10
	5	\$ 0.09	\$ 0.12	\$ 0.53	\$ 0.07
	6	\$ 0.05	\$ 0.14	\$ 0.38	\$ 0.05
	7	\$ 0.04	\$ 0.10	\$ 0.42	\$ 0.06
	8	\$ 0.04	\$ 0.28	\$ 1.03	\$ 0.13
	9	\$ 0.07	\$ 0.08	\$ 0.36	\$ 0.05
	10	\$ 0.07	\$ 0.19	\$ 0.65	\$ 0.08
	11	\$ 0.05	\$ 0.15	\$ 1.18	\$ 0.11
	12	\$ 0.06	\$ 0.12	\$ 0.78	\$ 0.06
2021	1	\$ 0.08	\$ 0.08	\$ 0.85	\$ 0.12
	2	\$ 10.56	\$ 62.11	\$ 265.95	\$ 27.81
	3	\$ 0.29	\$ 0.16	\$ 2.49	\$ 0.24
	4	\$ 0.23	\$ 0.49	\$ 2.29	\$ 0.32
	5	\$ 0.23	\$ 0.12	\$ 1.34	\$ 0.18
	6	\$ -	\$ -	\$ -	\$ -
	7	\$ -	\$ -	\$ -	\$ -
	8	\$ -	\$ -	\$ -	\$ -
	9	\$ -	\$ -	\$ -	\$ -
	10	\$ -	\$ -	\$ -	\$ -
	11	\$ -	\$ -	\$ -	\$ -
	12	\$ -	\$ -	\$ -	\$ -

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ERCOT-wide Cumulative PNM			
year	month	pnm	pnm_accum
2020	0	\$ -	\$ -
	1	\$ 948.71	\$ 948.71
	2	\$ 2,962.95	\$ 3,911.66
	3	\$ 6,596.00	\$ 10,507.66
	4	\$ 3,928.31	\$ 14,435.97
	5	\$ 2,971.45	\$ 17,407.42
	6	\$ 1,257.14	\$ 18,664.56
	7	\$ 3,082.86	\$ 21,747.42
	8	\$ 11,591.85	\$ 33,339.27
	9	\$ 3,063.07	\$ 36,402.34
	10	\$ 8,681.74	\$ 45,084.08
	11	\$ 3,520.43	\$ 48,604.51
12	\$ 1,469.68	\$ 50,074.19	
2021	0	\$ -	\$ -
	1	\$ 1,930.83	\$ 1,930.83
	2	\$ 705,718.36	\$ 707,649.19
	3	\$ 3,356.50	\$ 711,005.69
	4	\$ 19,870.21	\$ 730,875.90
	5	\$ 2,917.28	\$ 733,793.18
	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
2020	1	73	(303)	(292)	(76)	255	(43)
	2	(89)	(84)	40	(39)	(160)	(113)
	3	(142)	313	202	192	5	490
	4	335	225	(90)	371	108	819
	5	488	332	420	829	(26)	729
	6	(163)	1,067	808	330	(262)	573
	7	218	403	467	452	294	382
	8	333	468	415	540	662	754
	9	12	596	930	497	155	62
	10	(308)	(154)	(527)	(323)	(169)	(58)
	11	(192)	(592)	(648)	(279)	171	(20)
	12	8	(583)	(257)	(230)	(57)	(724)
2021	1	58	(284)	(66)	(9)	302	(394)
	2	1,889	2,270	2,503	2,331	3,083	2,824
	3	(263)	440	452	119	(125)	(99)
	4	(349)	184	312	(233)	(428)	(384)
	5	(410)	(586)	(665)	(468)	(489)	(422)
	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
2020	1	11,301	8,889	8,804	11,122	10,778	9,611
	2	11,703	8,927	9,127	11,552	11,418	9,565
	3	11,041	8,603	9,310	10,892	10,550	9,266
	4	11,740	9,020	9,632	11,683	10,687	9,300
	5	12,521	8,354	9,718	12,321	11,035	9,639
	6	13,993	8,966	11,459	13,741	11,821	10,210
	7	12,451	6,263	9,467	11,967	9,483	7,091
	8	11,838	5,872	7,466	11,126	9,403	7,204
	9	8,330	5,914	6,538	8,644	7,217	6,007
	10	11,781	7,862	8,387	11,600	10,670	8,756
	11	12,163	8,702	9,740	12,769	10,835	8,979
	12	12,653	10,356	10,665	12,599	11,951	10,062
2021	1	11,491	9,270	9,037	10,939	11,606	10,274
	2	9,300	8,420	8,532	10,575	8,759	8,461
	3	15,685	12,889	13,380	15,467	14,598	13,338
	4	13,724	11,336	11,823	13,261	12,803	11,939
	5	13,861	10,718	12,533	14,784	11,494	10,984
	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	2021	PANHANDLE GTC (PNHNDL)	14,927	1	2,790	1,257	5,042	3,801	2,037	-	-	-	-	-	-	-
FREQ_EXIST	2021	RAYMONDVILLE RIO HONDO GTC (RV RH)	11,984	2	1,667	2,630	2,944	2,514	2,229	-	-	-	-	-	-	-
FREQ_EXIST	2021	HAMILT MAVERI1_1 (HAMILTON-MAVERICK)	11,781	3	1,038	1,269	4,205	3,493	1,776	-	-	-	-	-	-	-
FREQ_EXIST	2021	NORTH EDINBURG LOBO GTC (NE LOB)	8,296	4	1,455	758	2,837	1,671	1,575	-	-	-	-	-	-	-
FREQ_EXIST	2021	651_B (CMNSW-CMNT)	3,946	5	594	260	1,176	1,432	484	-	-	-	-	-	-	-
FREQ_EXIST	2021	GARZA_69A1 (GARZA-GARZA)	3,484	6	1,928	825	731	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	HAIN LA PAL1_1 (LA PALMA-HAINE_DR)	3,377	7	-	428	1,255	348	1,346	-	-	-	-	-	-	-
FREQ_EXIST	2021	BONIVI_RINCON1_1 (RINCON-BONIVIEW)	2,935	8	1,347	607	880	101	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	WESTEX GTC (WESTEX)	2,594	9	332	56	739	701	766	-	-	-	-	-	-	-
FREQ_EXIST	2021	SCHNDR_BIGHIL_1 (SCHNDR-BIGHIL)	2,455	10	-	-	1,989	466	-	-	-	-	-	-	-	-
TOP10_RENT	2021	PAWNEE_SPRUCE_1 (PAWNEE-CALAVERS)	\$ 106.80	1	\$ 0.39	\$ 106.40	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	PANHANDLE GTC (PNHNDL)	\$ 87.20	2	\$ 17.87	\$ 10.46	\$ 29.06	\$ 20.83	\$ 8.98	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	OAS-DOW LINES (OAS-DOW)	\$ 61.96	3	\$ -	\$ -	\$ -	\$ 61.96	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	STPWAP39_1 (STP-WAP)	\$ 52.09	4	\$ -	\$ -	\$ 13.37	\$ 38.62	\$ 0.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	CKT_3132_1 (FPPYD1-WINCHES)	\$ 51.44	5	\$ -	\$ 51.44	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	915_E (CMBSW-DCDAM)	\$ 46.61	6	\$ -	\$ 46.61	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	ABNTHW_MULBER1_1 (MULBERRY-ABNTHWST)	\$ 45.93	7	\$ -	\$ 45.93	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	NORTH TO HOUSTON GTC (N TO H)	\$ 39.24	8	\$ -	\$ -	\$ 0.04	\$ 39.17	\$ 0.03	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	HAMILT MAVERI1_1 (HAMILTON-MAVERICK)	\$ 33.56	9	\$ 1.51	\$ 20.38	\$ 4.52	\$ 4.60	\$ 2.54	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	WESTEX GTC (WESTEX)	\$ 31.84	10	\$ 3.17	\$ 0.41	\$ 7.90	\$ 9.03	\$ 11.33	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

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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	2021	FLTBES TLINE 1 (FLAT TOP-FLTBES)	1,988	1	339	373	598	424	254	-	-	-	-	-	-	-	
FREQ_EXIST	2021	RAYMONDVILLE RIO HONDO GTC (RV_RH)	1,922	2	404	459	388	404	267	-	-	-	-	-	-	-	
FREQ_EXIST	2021	PANHANDLE GTC (PNHNDL)	1,795	3	332	227	496	450	290	-	-	-	-	-	-	-	
FREQ_EXIST	2021	WORSHAM WOR1 (WORSHAM-WORSHAM)	1,606	4	51	161	440	462	492	-	-	-	-	-	-	-	
FREQ_EXIST	2021	NLARSW_PILONC1_1 (NLARSW-PILONCIL)	1,308	5	354	314	266	176	198	-	-	-	-	-	-	-	
FREQ_EXIST	2021	HAMILT_MAUVER1_1 (HAMILTON-MAVERICK)	1,256	6	178	87	340	352	299	-	-	-	-	-	-	-	
FREQ_EXIST	2021	RIOHND_ERIOHND_1 (MV_RIOHO-RIOHONDO)	1,252	7	154	237	91	335	435	-	-	-	-	-	-	-	
FREQ_EXIST	2021	NORTH EDINBURG LOBO GTC (NE_LOB)	1,216	8	220	165	316	207	308	-	-	-	-	-	-	-	
FREQ_EXIST	2021	PYOTE_PYT1 (PYOTE-PYOTE)	1,144	9	-	83	268	374	419	-	-	-	-	-	-	-	
FREQ_EXIST	2021	651_B (CMNSW-CMNTP)	1,091	10	190	99	300	317	185	-	-	-	-	-	-	-	
TOP10_RENT	2021	PANHANDLE GTC (PNHNDL)	\$ 82.04	1	\$ 15.82	\$ 10.25	\$ 23.63	\$ 20.62	\$ 11.72	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	NORTH EDINBURG LOBO GTC (NE_LOB)	\$ 27.09	2	\$ 4.45	\$ 2.84	\$ 7.21	\$ 5.42	\$ 7.17	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	588_B_1 (LWSVH-LWSVW)	\$ 21.15	3	\$ -	\$ 1.42	\$ 6.89	\$ 10.35	\$ 2.70	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	SANDCR_AT1 (SANDCR-SANDCR)	\$ 20.61	4	\$ -	\$ 20.61	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	CRD_CRD2 (CRD-CRD)	\$ 18.82	5	\$ 0.58	\$ 18.06	\$ 0.18	\$ 0.00	\$ 0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	BLESSI_PAVLOV1_1 (BLESSING-PAVLOV)	\$ 18.61	6	\$ 0.31	\$ 0.09	\$ 14.32	\$ 3.86	\$ 0.02	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	OAS-DOW LINES (OAS-DOW)	\$ 16.37	7	\$ -	\$ -	\$ -	\$ 8.46	\$ 7.91	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	50T192_1 (FERGUS-GILLES)	\$ 15.86	8	\$ -	\$ 15.86	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	BAY_SARG_1 (BAYCTYS-SARGNTS)	\$ 14.18	9	\$ 0.02	\$ -	\$ -	\$ 6.26	\$ 7.90	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	CKT_3121_1 (HOLMAN-LYTTON_S)	\$ 13.66	10	\$ -	\$ 13.66	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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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	2021	HB SOUTH-LZ SOUTH	\$ 13.13	1	\$ 1.87	\$ 1.50	\$ 1.44	\$ 2.15	\$ 2.83	\$ 3.34	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	HB WEST-LZ WEST	\$ 9.74	2	\$ 2.73	\$ 1.29	\$ 1.38	\$ 0.98	\$ 1.17	\$ 2.18	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	HB WEST-HB NORTH	\$ 9.06	3	\$ 0.62	\$ 1.68	\$ 1.69	\$ 1.67	\$ 1.75	\$ 1.67	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	HB NORTH-LZ NORTH	\$ 6.95	4	\$ 0.93	\$ 0.83	\$ 0.77	\$ 0.94	\$ 0.85	\$ 2.63	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	HB NORTH-HB HOUSTON	\$ 6.08	5	\$ 0.15	\$ 0.14	\$ 0.45	\$ 1.12	\$ 1.46	\$ 2.76	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	HB PAN-HB WEST	\$ 4.84	6	\$ 0.64	\$ 0.11	\$ 0.12	\$ 0.89	\$ 2.59	\$ 0.49	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	HB HOUSTON-LZ HOUSTON	\$ 2.63	7	\$ 0.14	\$ 0.27	\$ 0.19	\$ 0.32	\$ 0.65	\$ 1.07	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	AEEC-LZ WEST	\$ 2.51	8	\$ 0.53	\$ 0.42	\$ 0.52	\$ 0.44	\$ 0.41	\$ 0.17	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	STP STP G1-HB HOUSTON	\$ 1.72	9	\$ 0.05	\$ 0.07	\$ -	\$ 0.65	\$ 0.18	\$ 0.77	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
N	2021	MIRASOLE GEN-HB SOUTH	\$ 1.02	10	\$ 0.12	\$ 0.02	\$ 0.13	\$ 0.38	\$ 0.25	\$ 0.12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	HB SOUTH-LZ SOUTH	\$ 3.35	1	\$ 0.30	\$ 0.32	\$ 0.24	\$ 0.42	\$ 0.76	\$ 1.32	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	HB NORTH-LZ NORTH	\$ 3.25	2	\$ 0.43	\$ 0.65	\$ 0.17	\$ 0.57	\$ 0.56	\$ 0.87	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	HB WEST-LZ WEST	\$ 2.70	3	\$ 0.28	\$ 0.59	\$ 0.44	\$ 0.36	\$ 0.37	\$ 0.66	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	TORR ALL-HB SOUTH	\$ 1.80	4	\$ 0.72	\$ 0.22	\$ 0.53	\$ 0.06	\$ 0.10	\$ 0.17	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	BRISCOE WIND-FOARDCTY ALL	\$ 1.76	5	\$ 0.02	\$ 0.63	\$ 0.94	\$ 0.12	\$ 0.05	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	PH1 UNIT1 2-OKLA OKLA G1	\$ 1.38	6	\$ 0.00	\$ 0.58	\$ 0.80	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	HB HOUSTON-LZ HOUSTON	\$ 1.38	7	\$ 0.06	\$ 0.16	\$ 0.15	\$ 0.21	\$ 0.45	\$ 0.34	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	MISAE GEN RN-BLSMT1 5 A 6	\$ 1.22	8	\$ 0.05	\$ 0.11	\$ 0.53	\$ 0.17	\$ 0.13	\$ 0.24	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	SPLAIN1 RN-FOARDCTY ALL	\$ 0.99	9	\$ -	\$ 0.37	\$ 0.62	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
Y	2021	BOOTLEG UN1-HOVEY GEN	\$ 0.95	10	\$ 0.92	\$ 0.02	\$ 0.00	\$ 0.00	\$ 0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		

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