

To the Public Utility Commission of Texas

ERCOT Wholesale Electricity Market Monthly Report

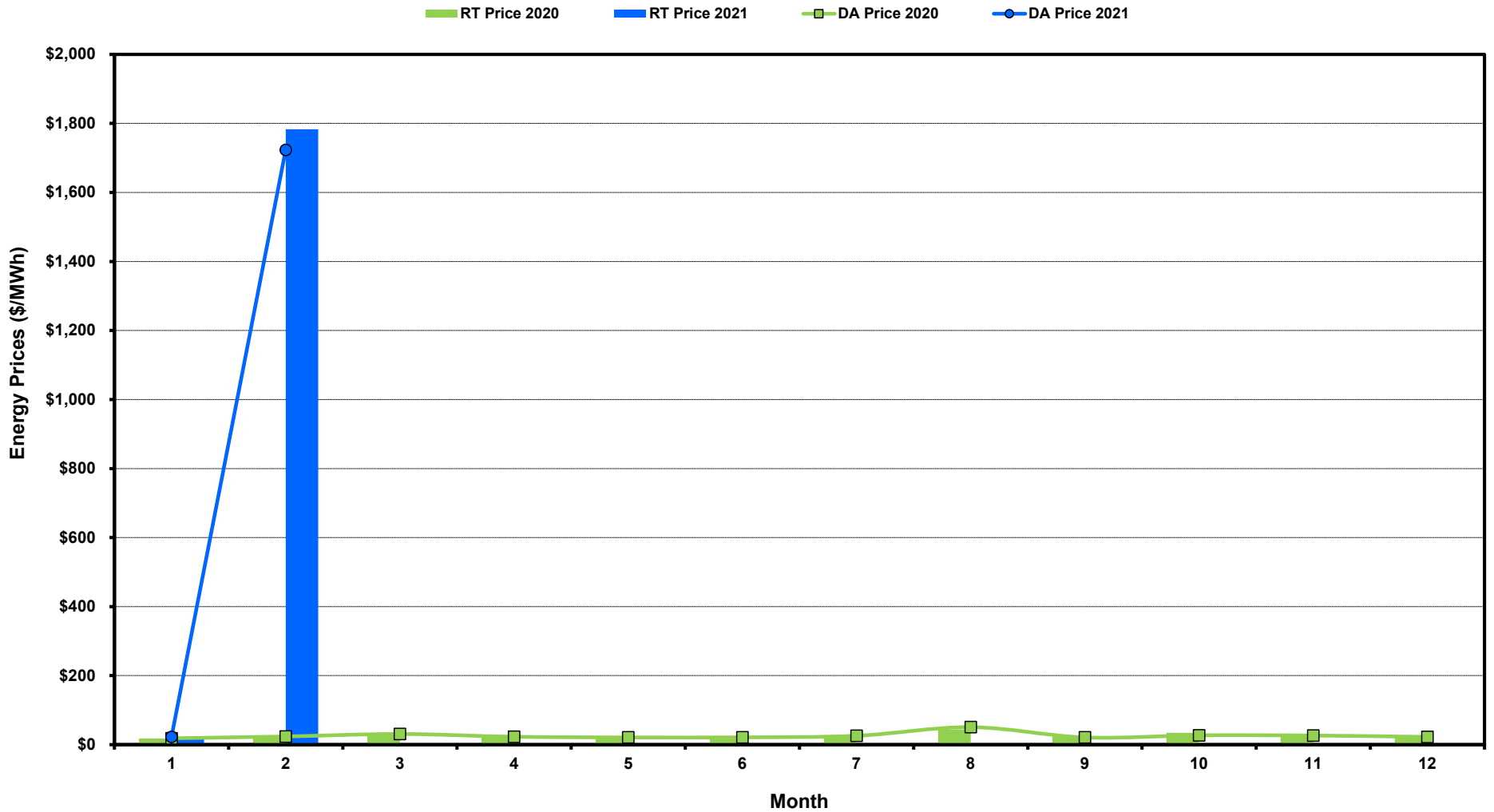
Wednesday, March 10, 2021

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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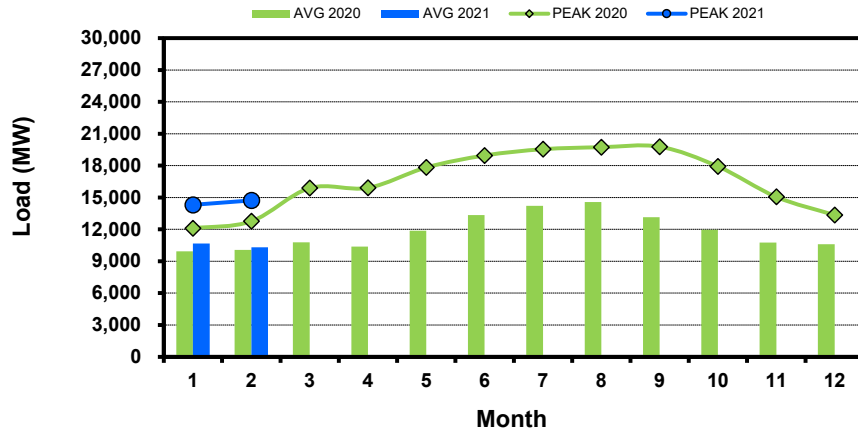
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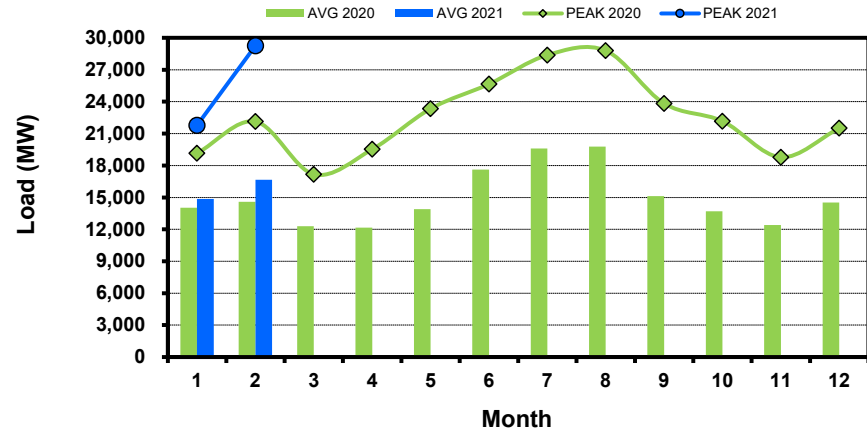
Load Zone Load Statistics

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

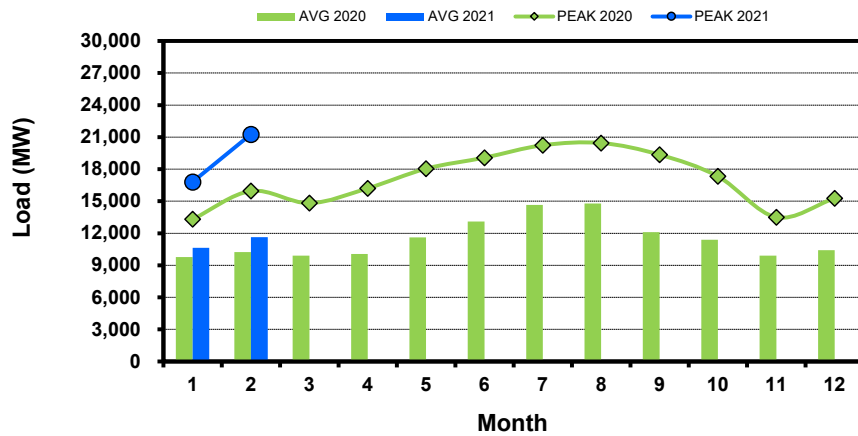
Houston Zone



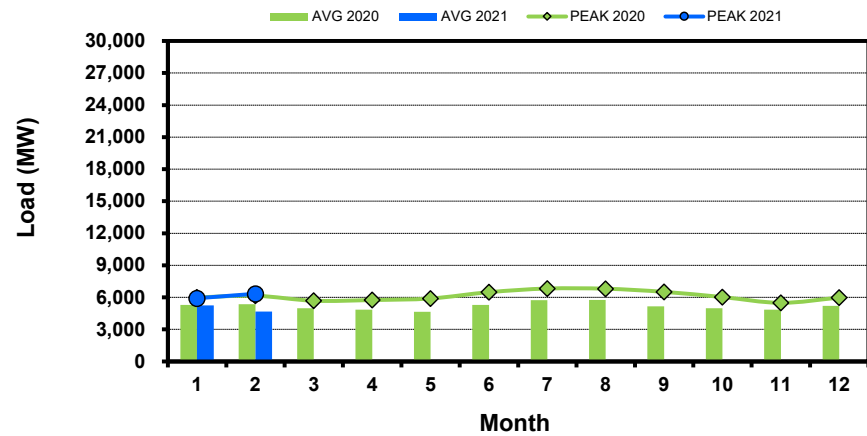
North Zone



South Zone



West Zone



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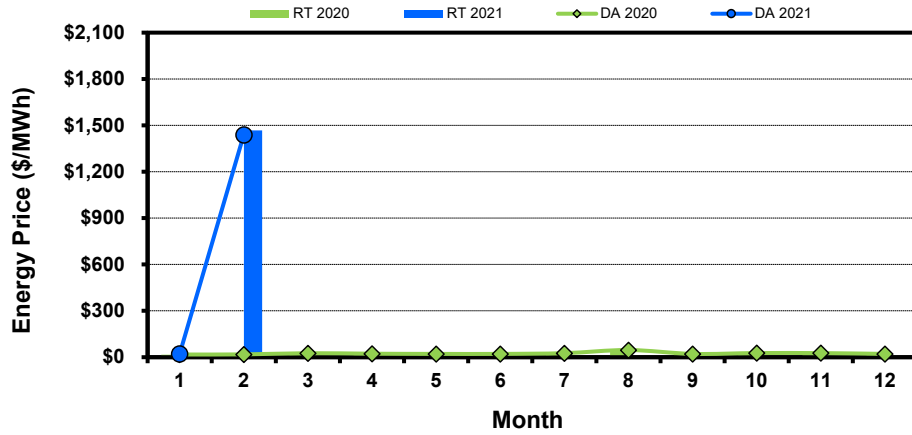
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

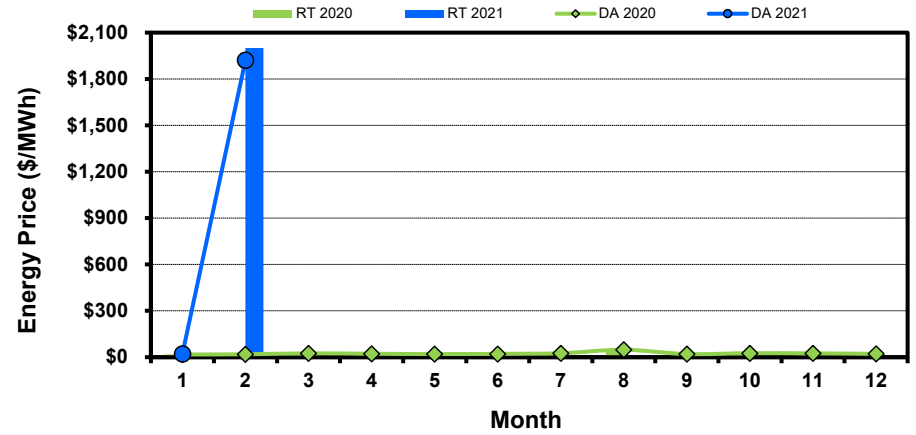
Load Zone Monthly Average Energy Price DA vs RT

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

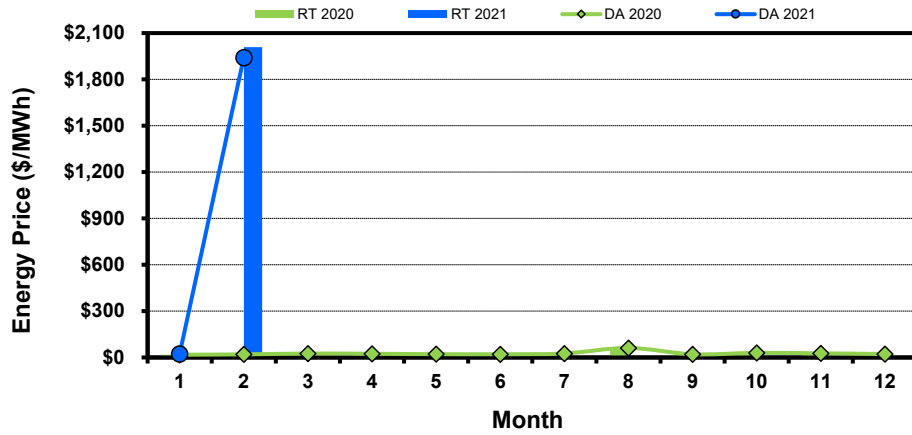
Houston Zone



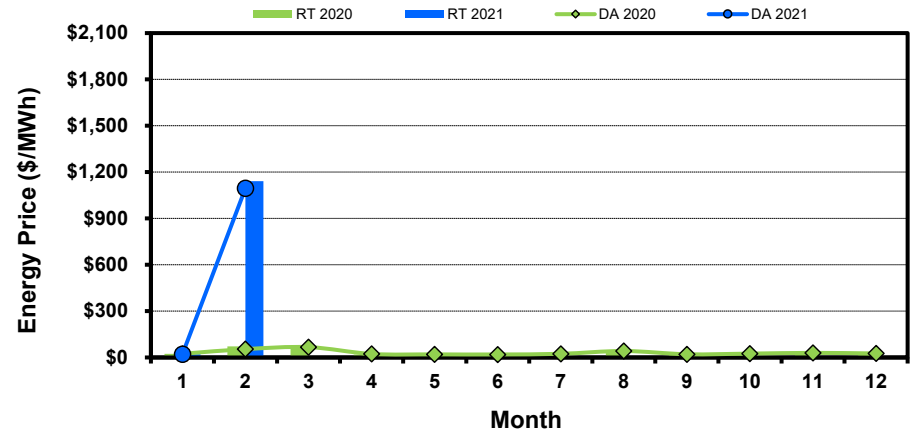
North Zone



South Zone



West Zone



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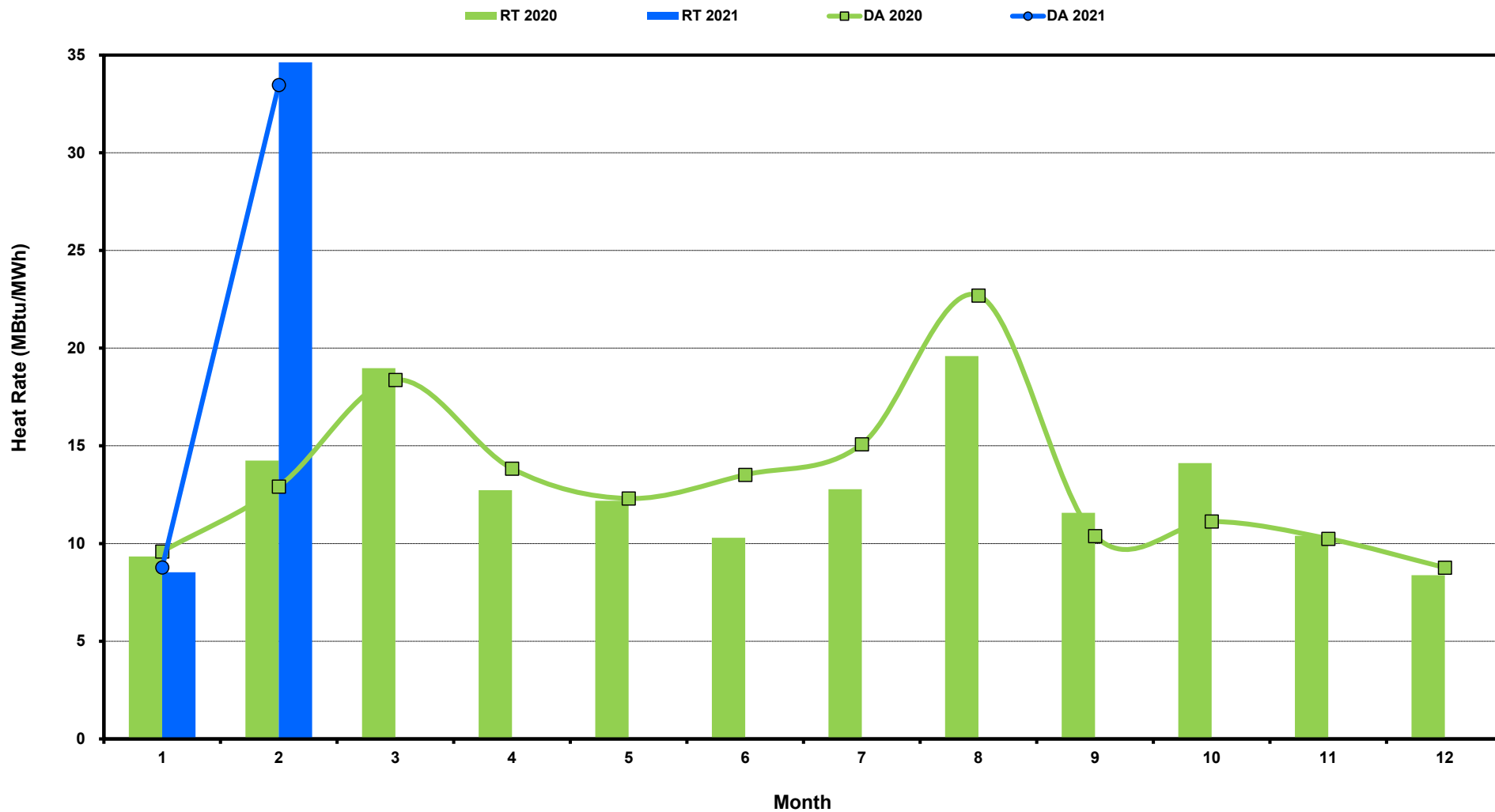
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

ERCOT-wide Monthly Implied Heat Rate DA vs RT

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



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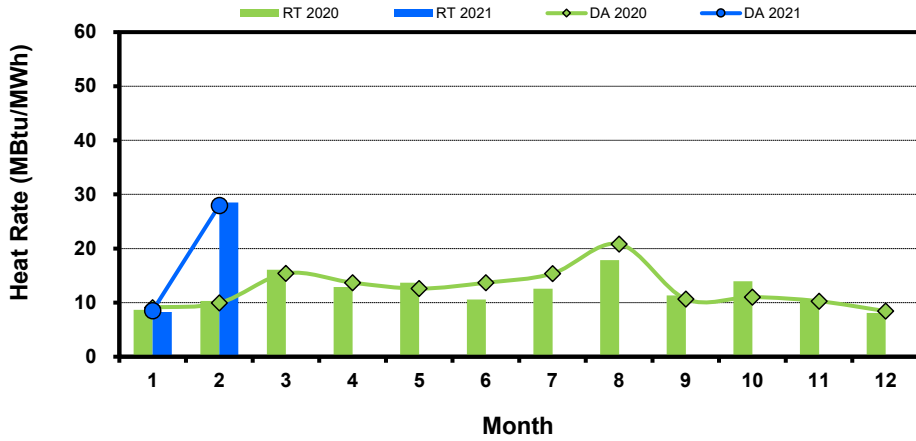
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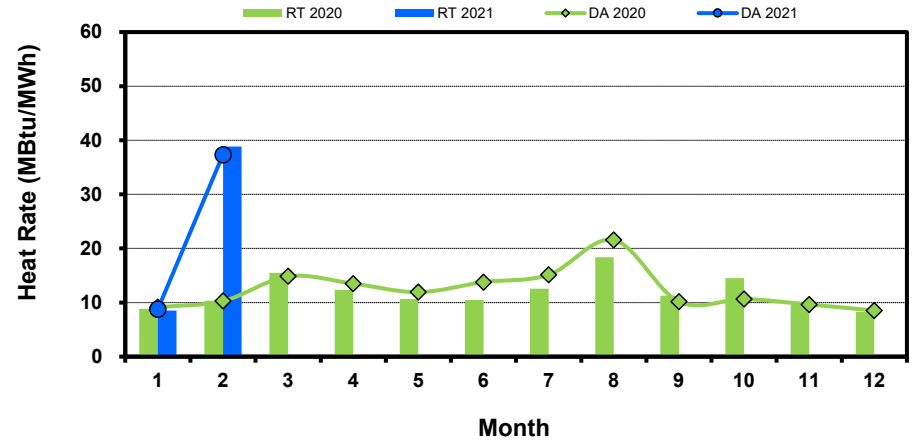
Load Zone Monthly Implied Heat Rate DA vs RT

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

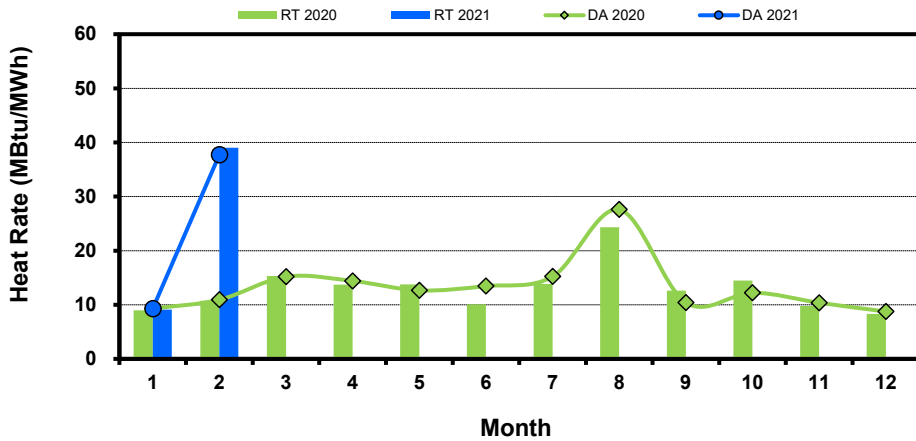
Houston Zone



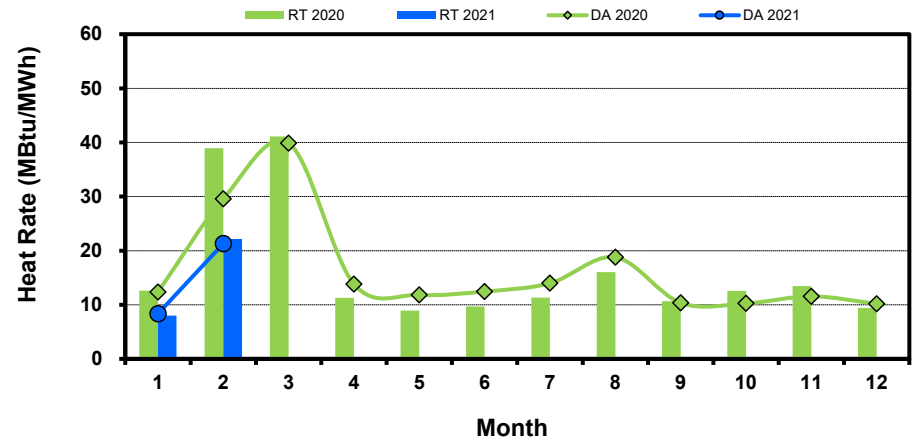
North Zone



South Zone



West Zone



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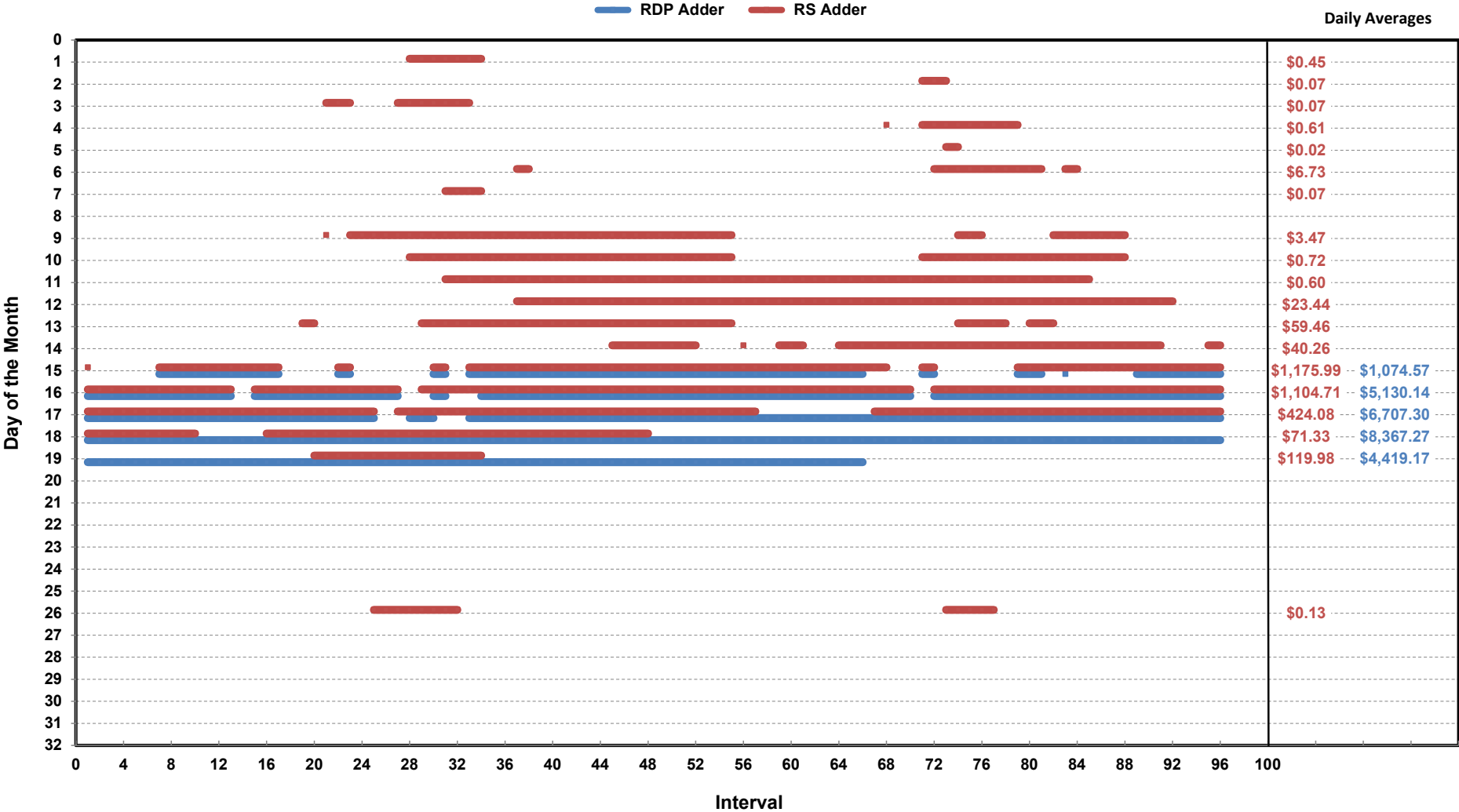
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Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

Daily ORDC Adders Average Values and Interval Duration

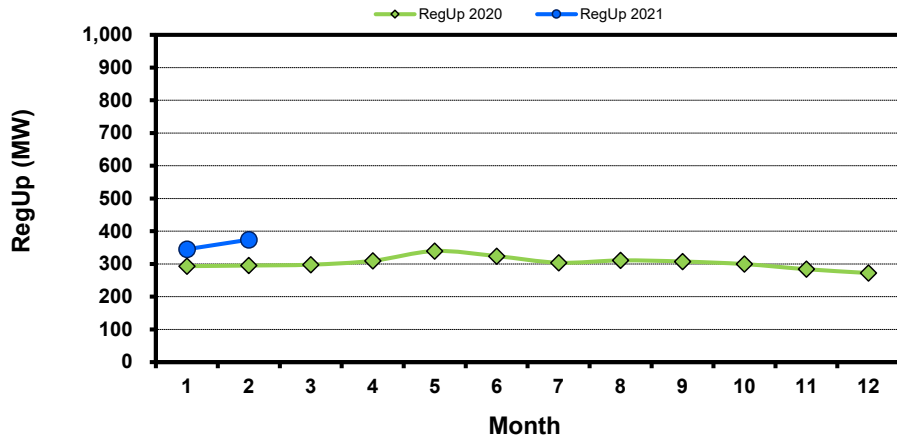
Feb-2021



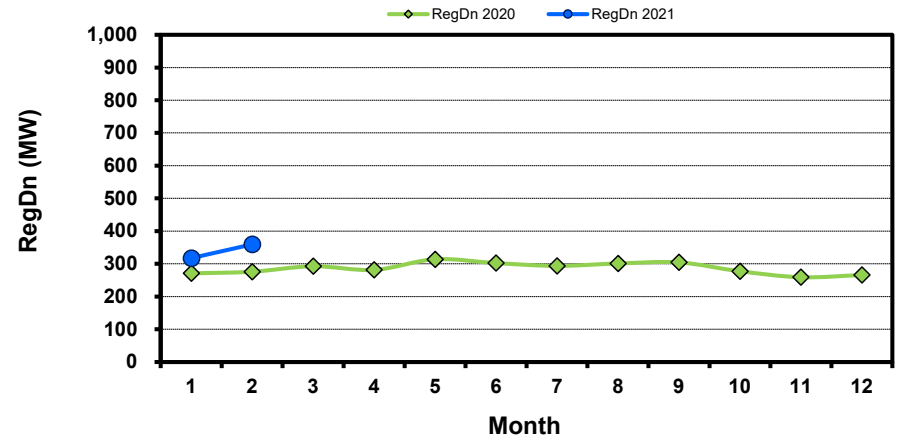
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Monthly Average of Ancillary Services Required MW

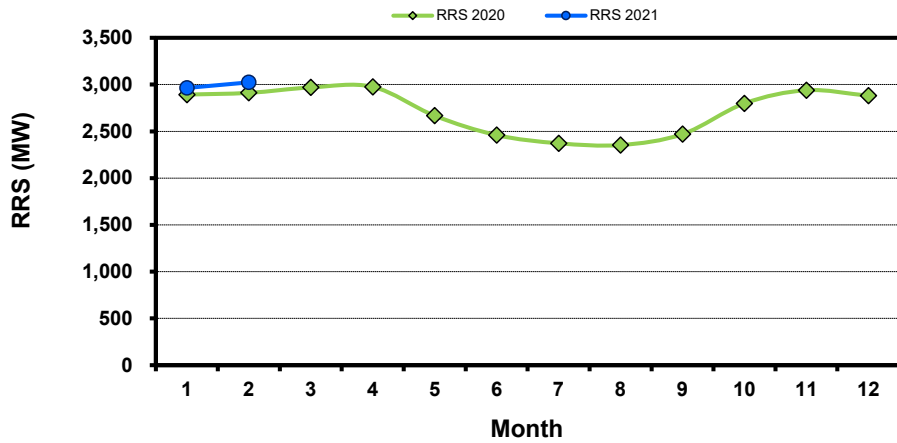
Regulation Up



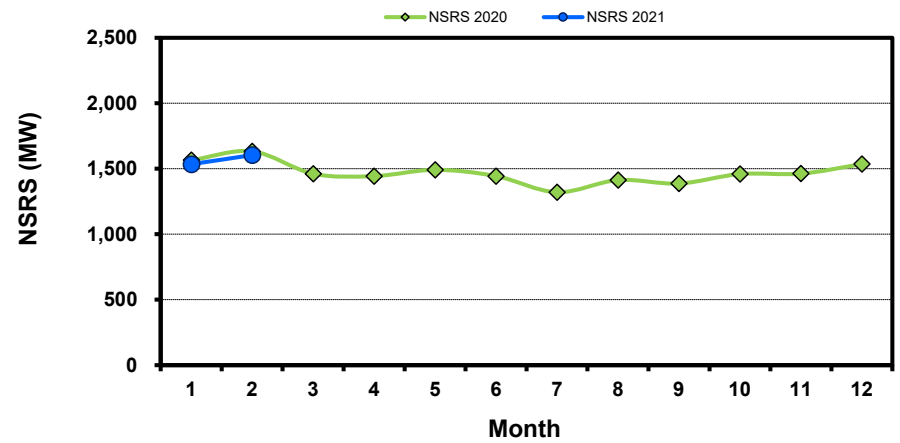
Regulation Down



Responsive Reserve



Non-Spin Reserve



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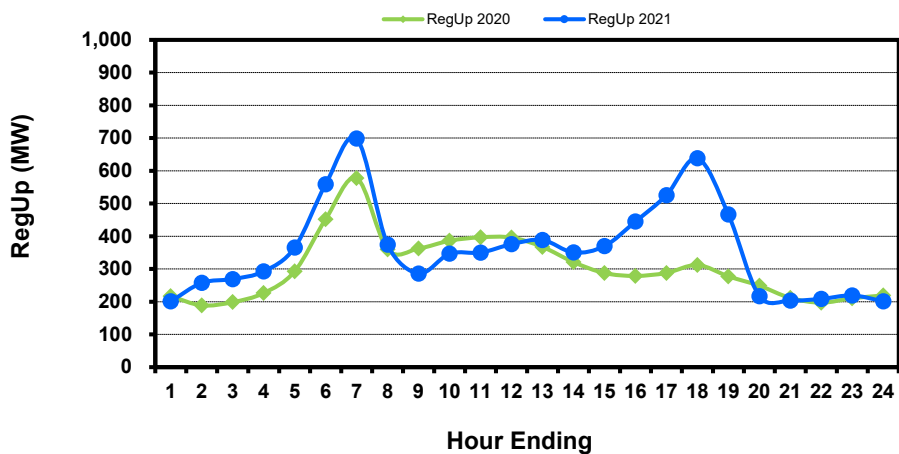
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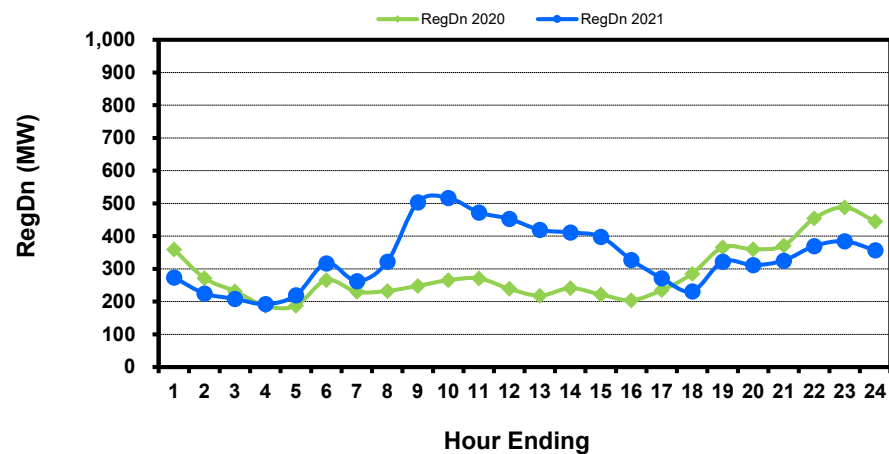
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Hourly Average of Ancillary Services Required MW

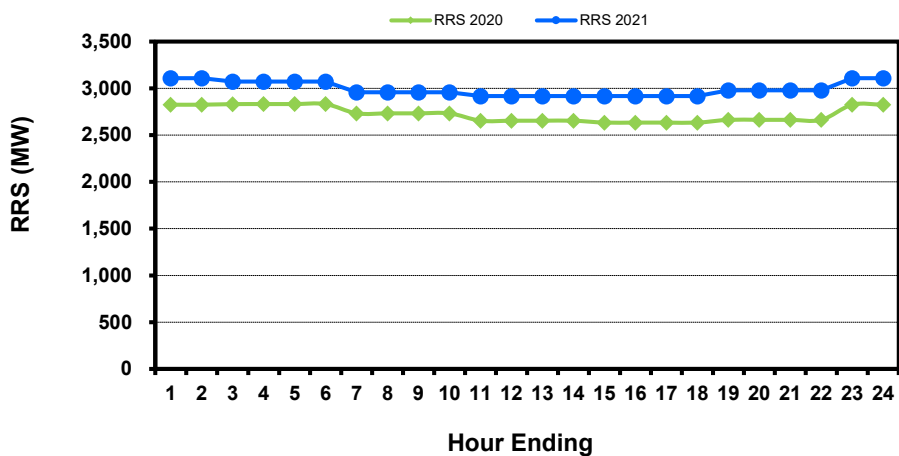
Regulation Up



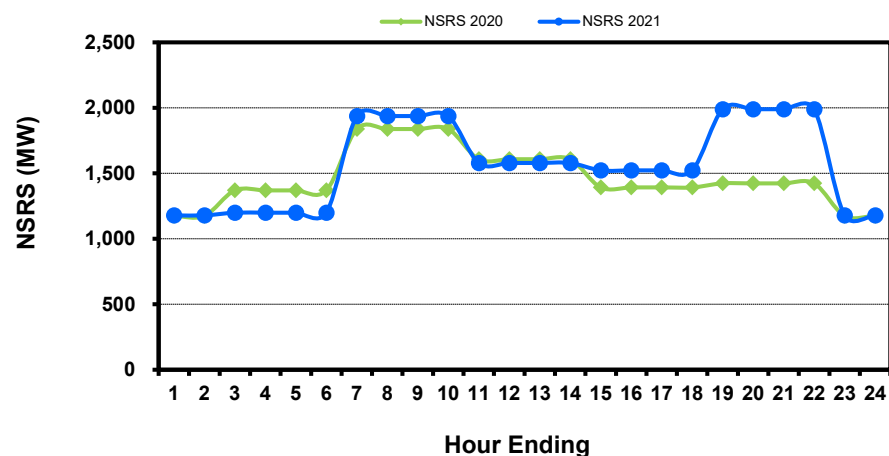
Regulation Down



Responsive Reserve



Non-Spin Reserve



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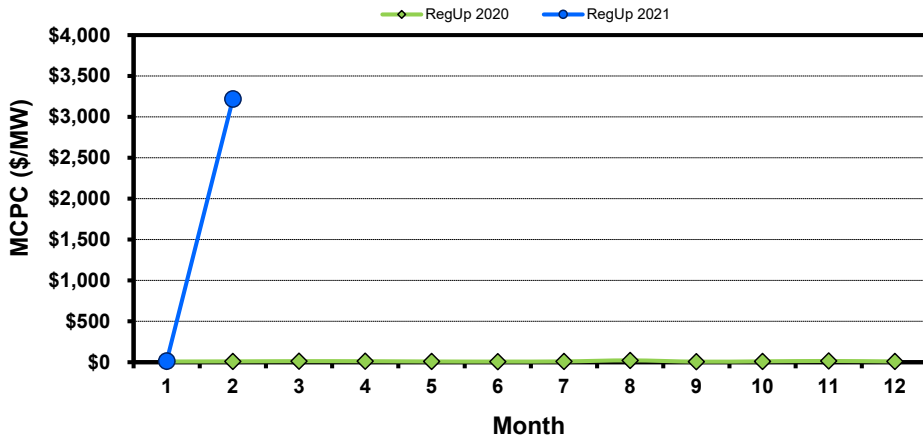
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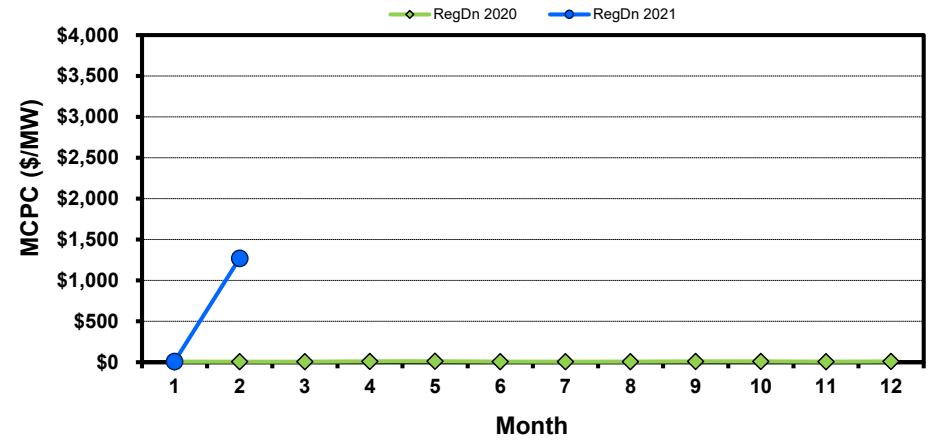
Monthly Average Ancillary Services Price

(weighted by A/S Quantities Required)

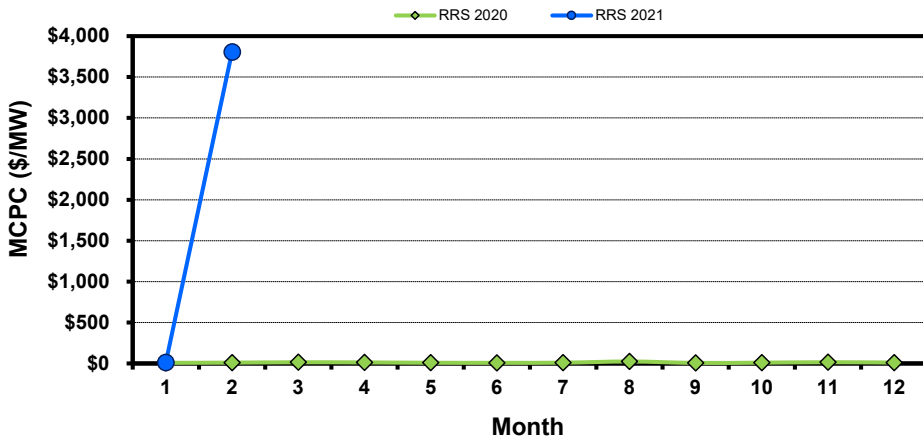
Regulation Up



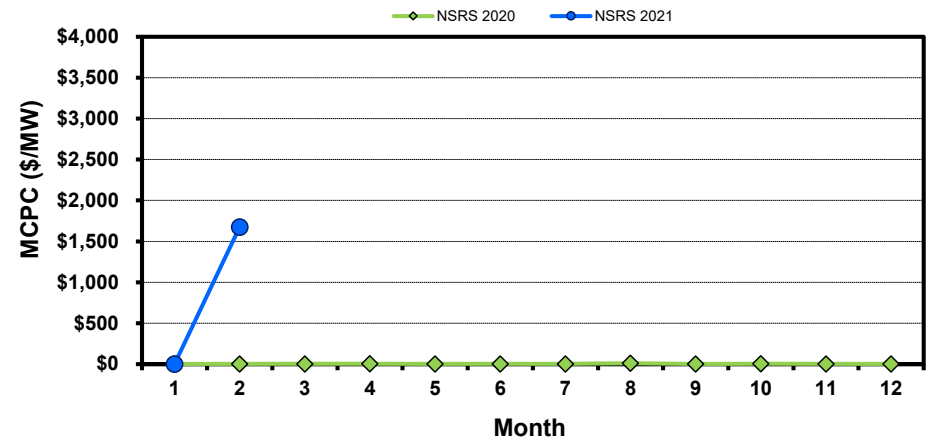
Regulation Down



Responsive Reserve



Non-Spin Reserve



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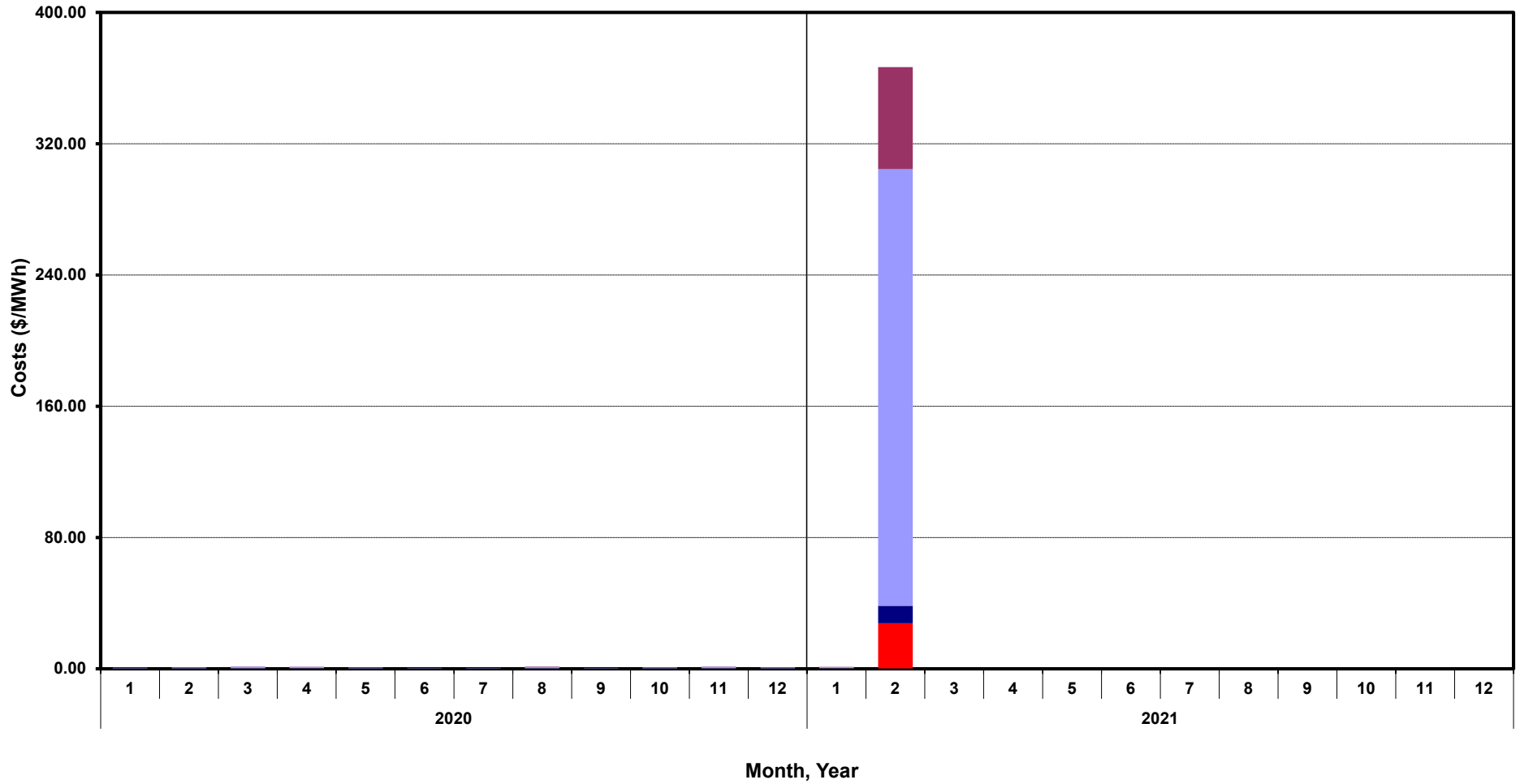
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Monthly Average A/S Cost per MWh Load

RegUp RegDn RRS NonSpin



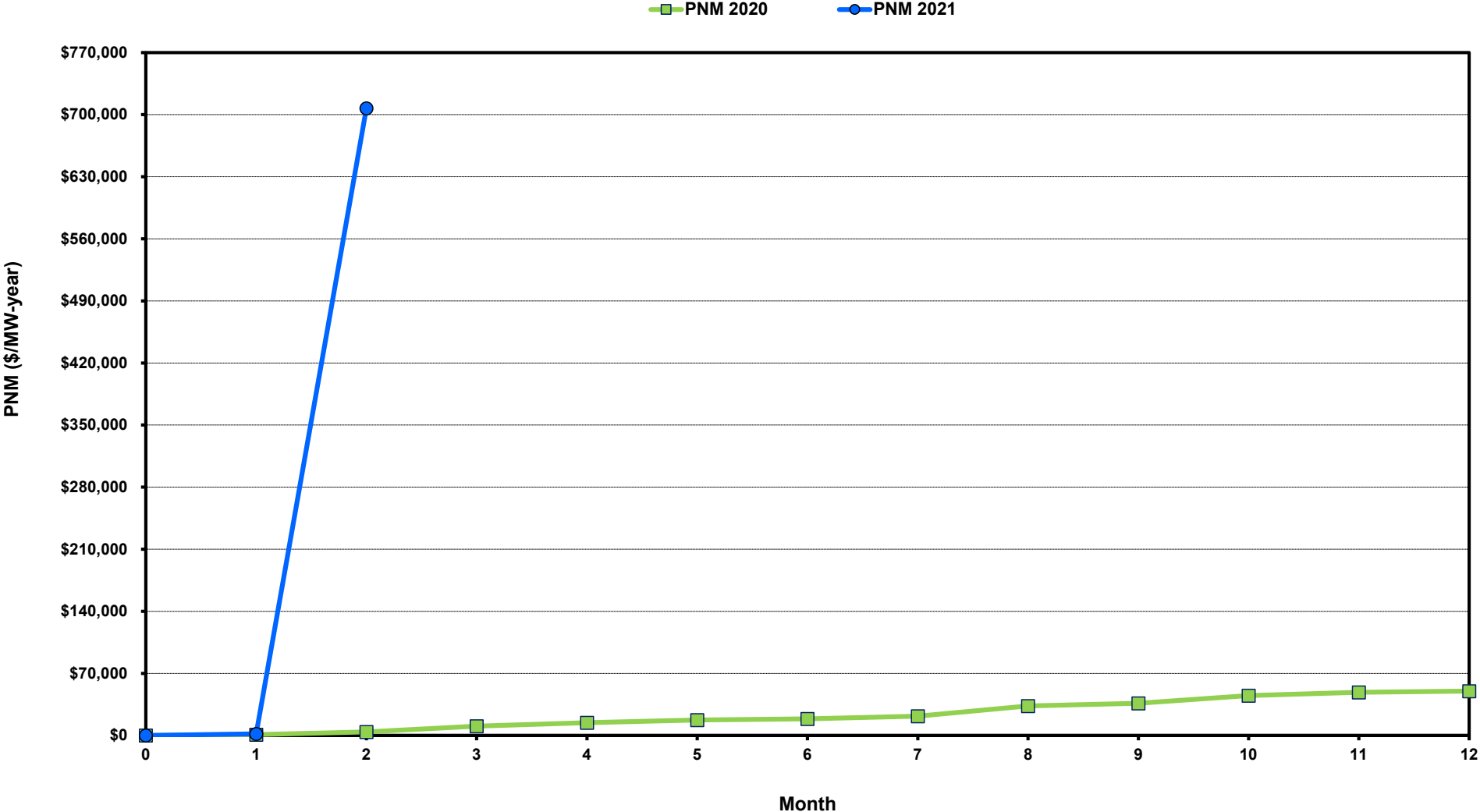
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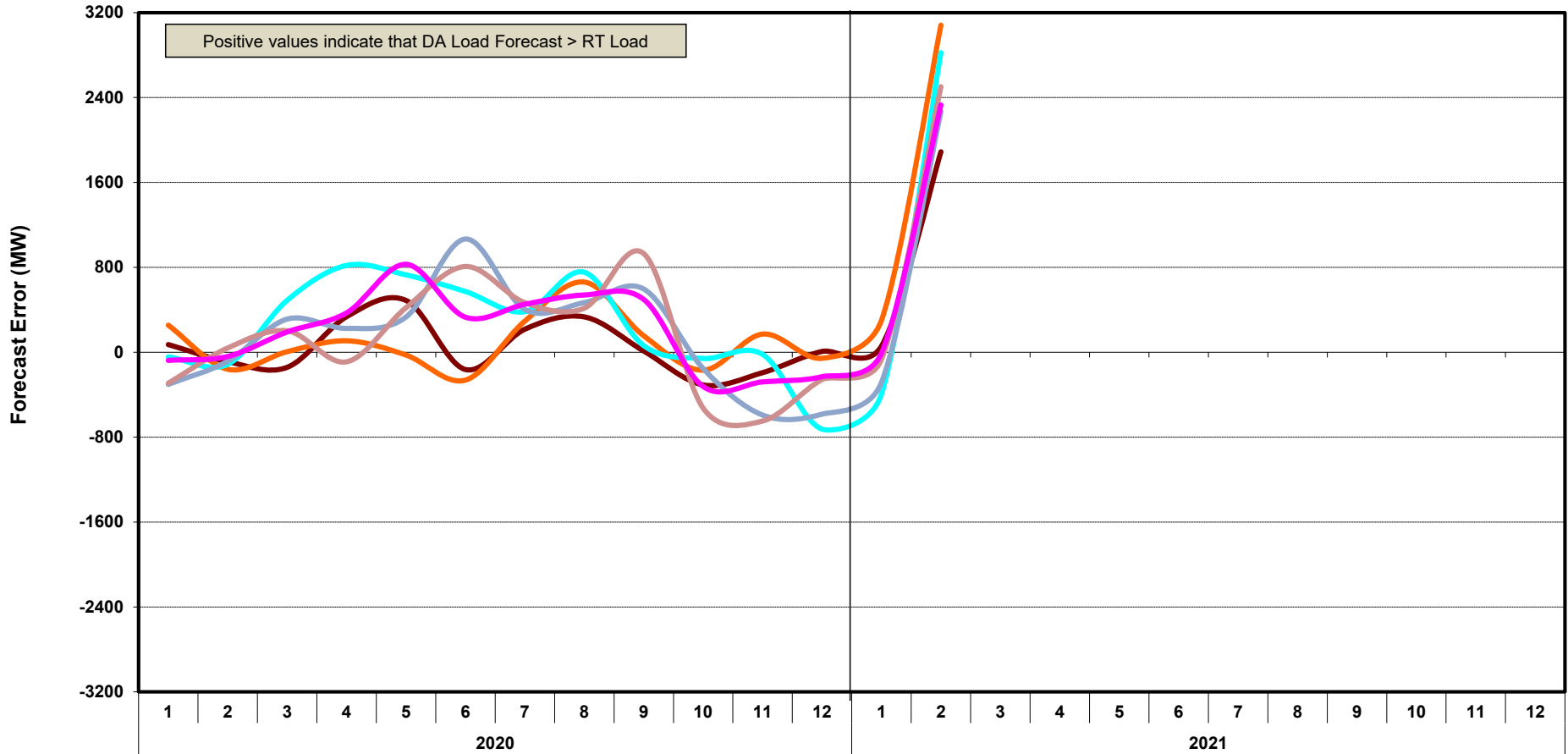
ERCOT-wide Cumulative Peaker Net Margin



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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



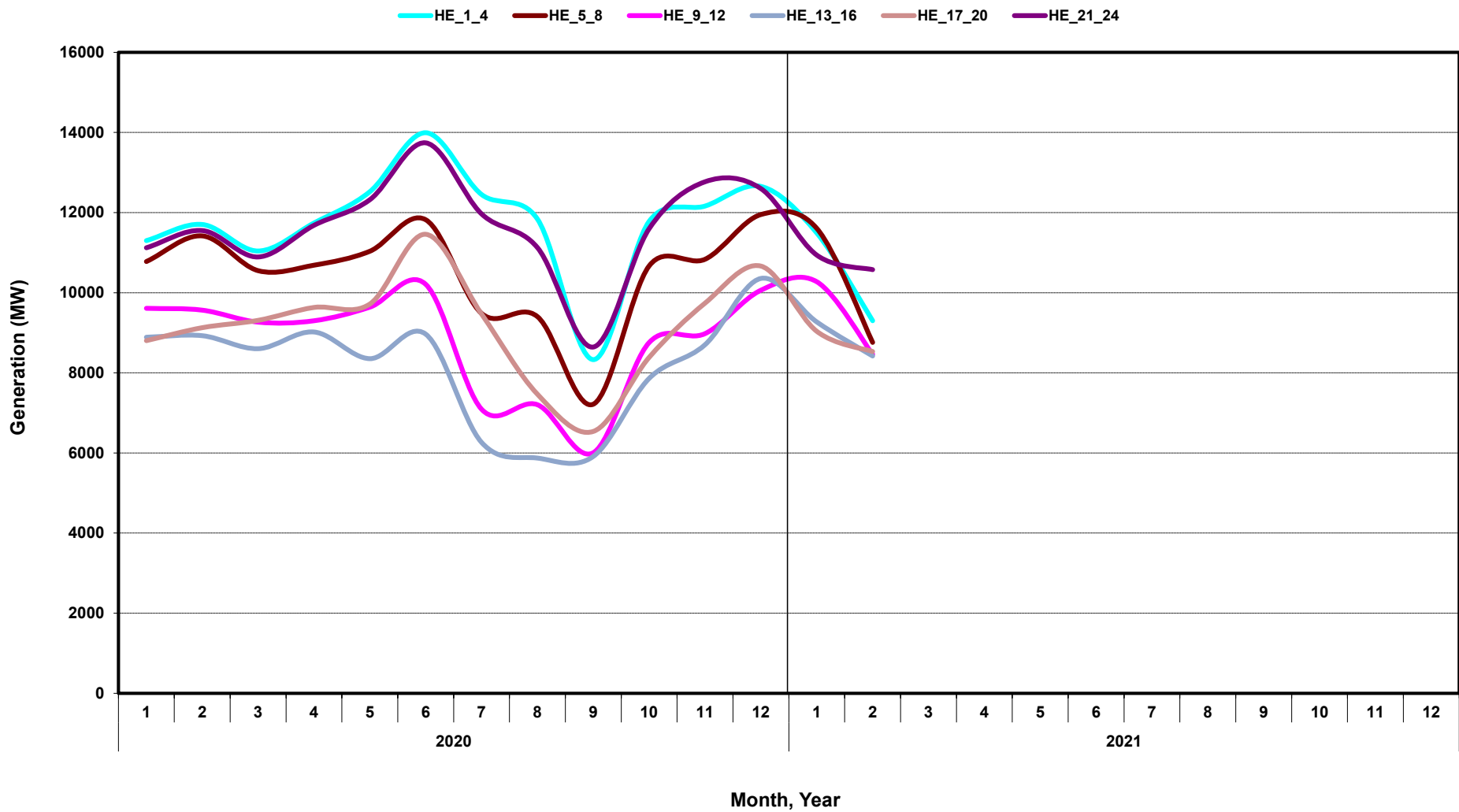
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Monthly Average of Wind Generation by Hour Ending



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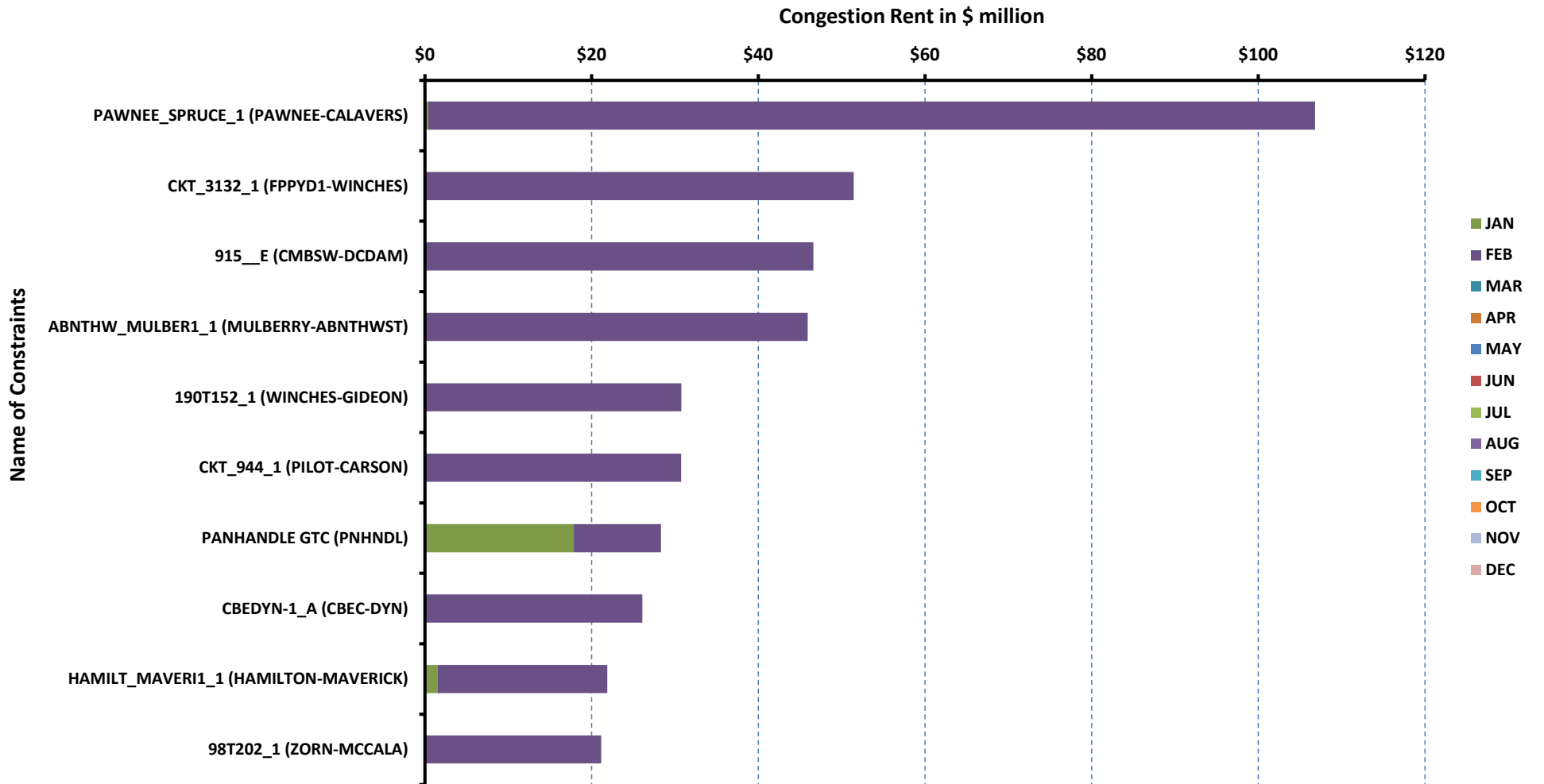
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RT Congestion Constraint Rankings - 1

Top 10 Constraints by Total Congestion Value - 2021



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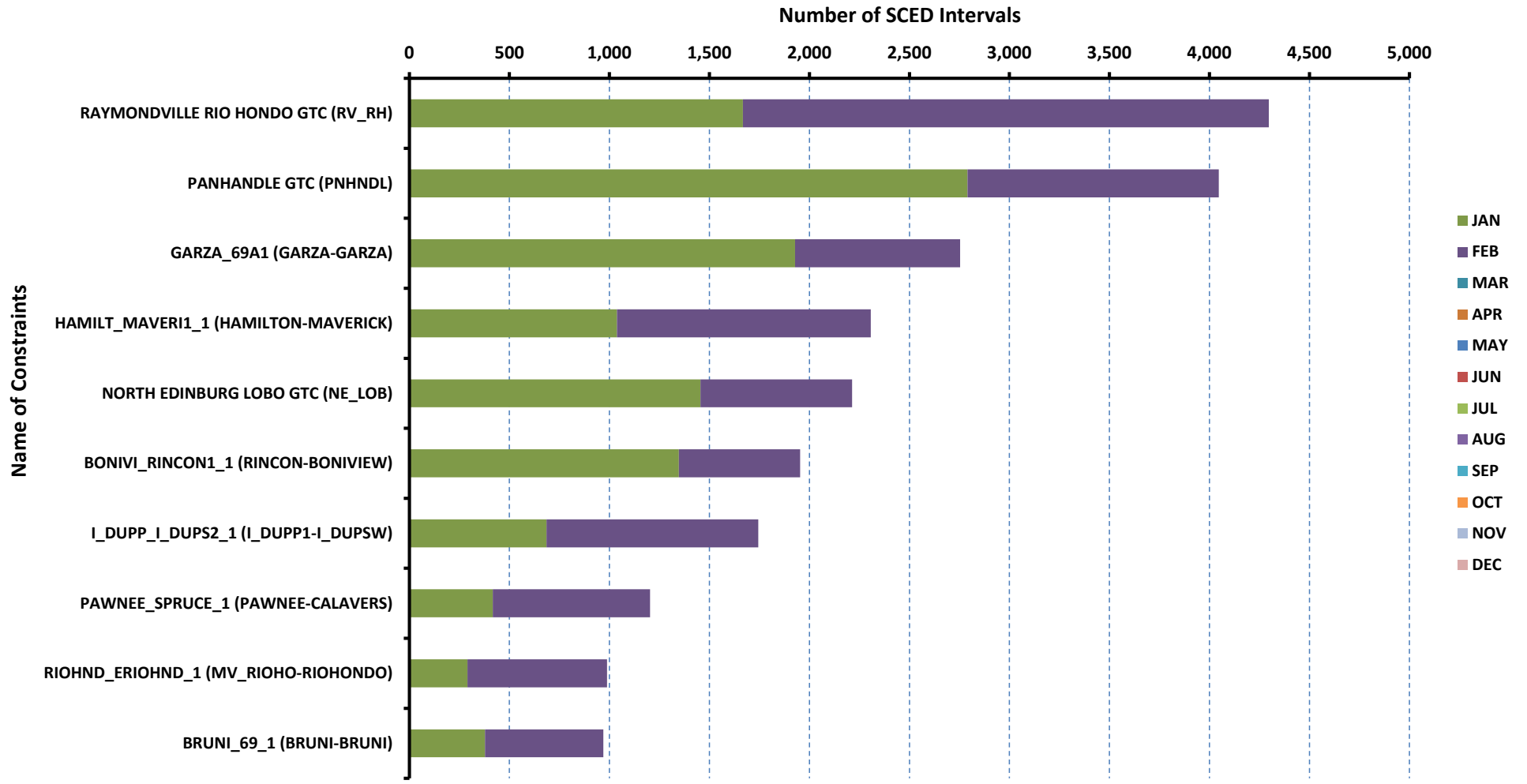
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RT Congestion Constraint Rankings - 2

Top 10 Constraints by Binding Frequency - 2021



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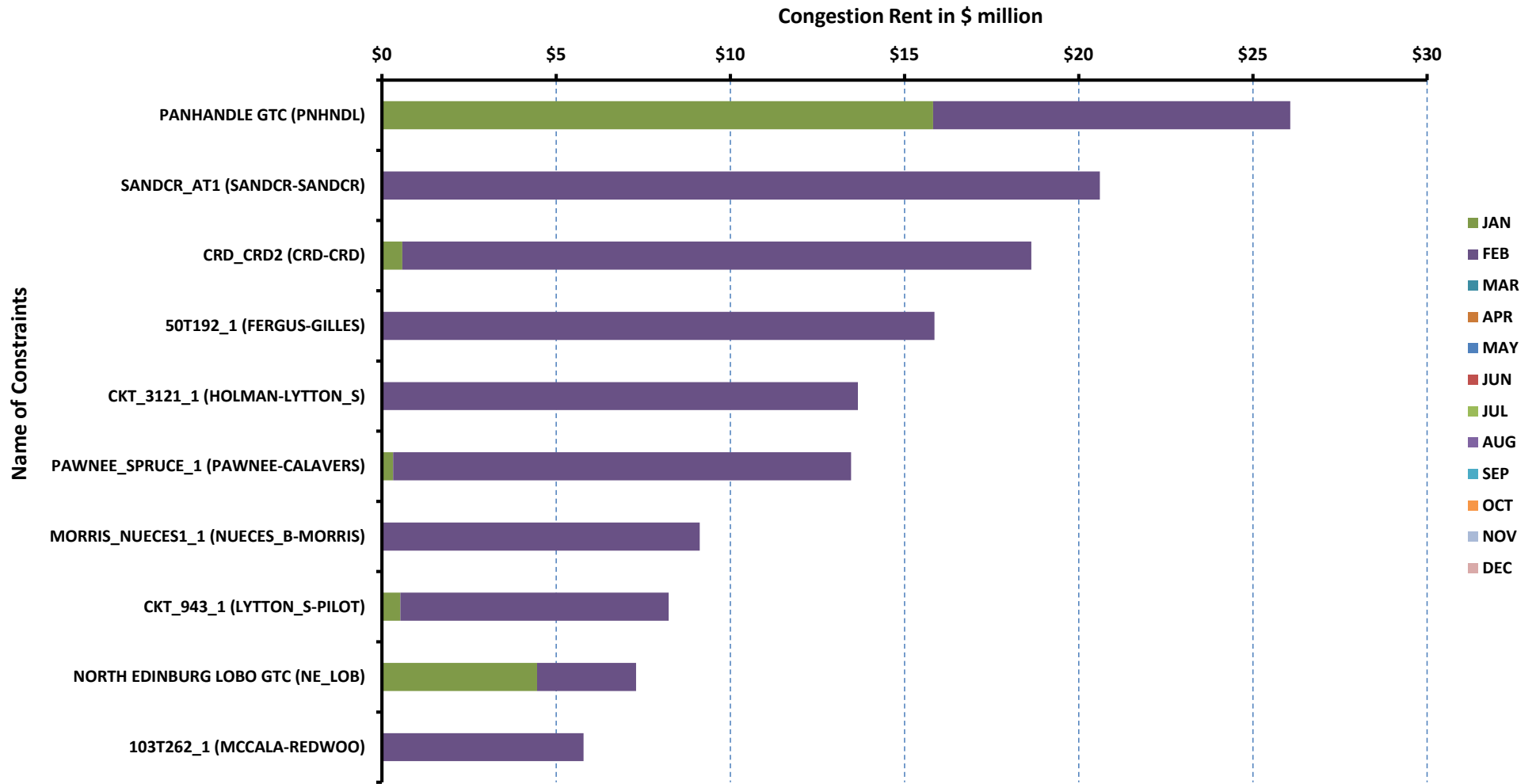
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DA Congestion Constraint Rankings - 1

Top 10 Constraints by Total Congestion Value - 2021



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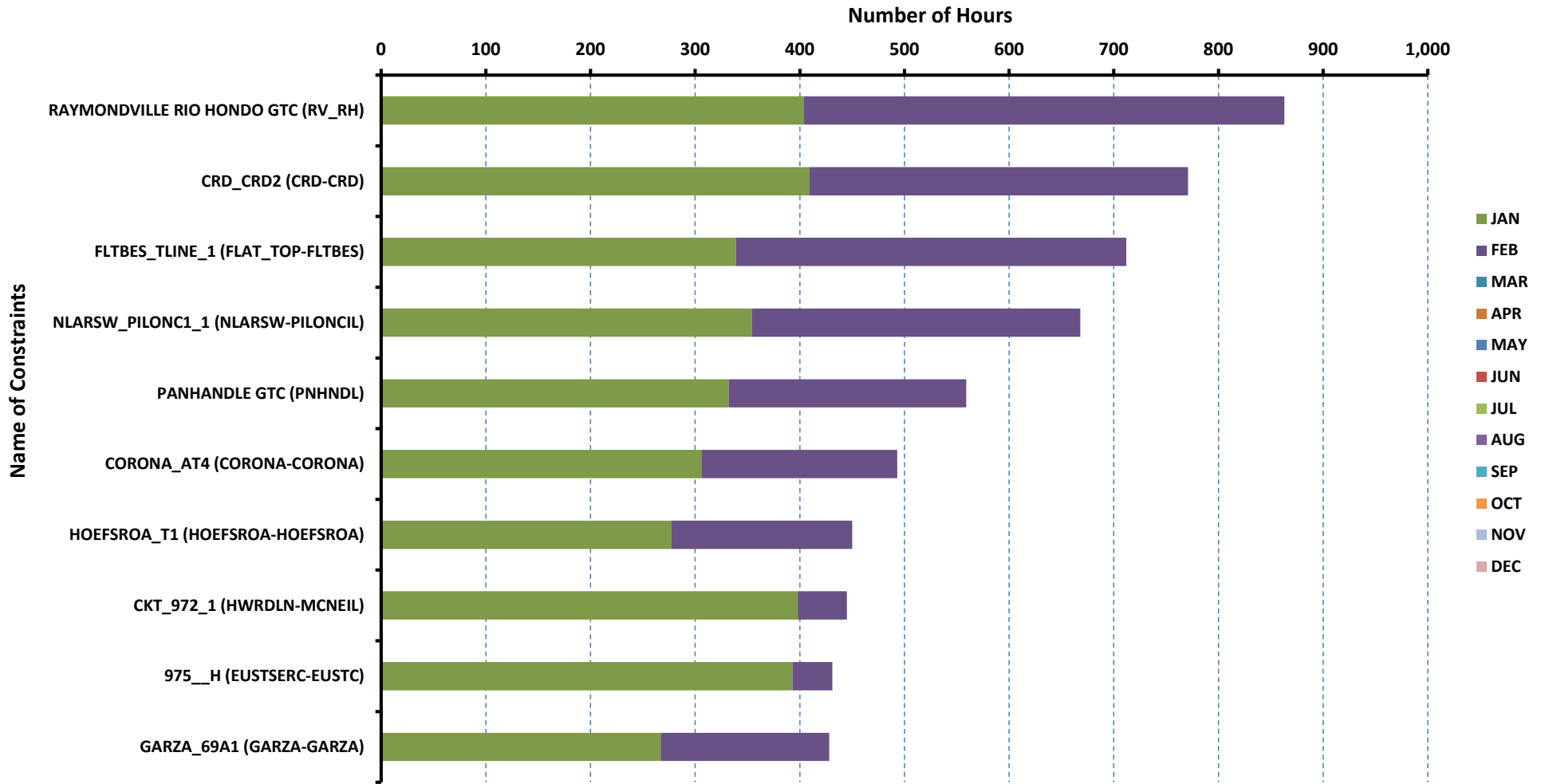
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DA Congestion Constraint Rankings - 2

Top 10 Constraints by Binding Frequency - 2021



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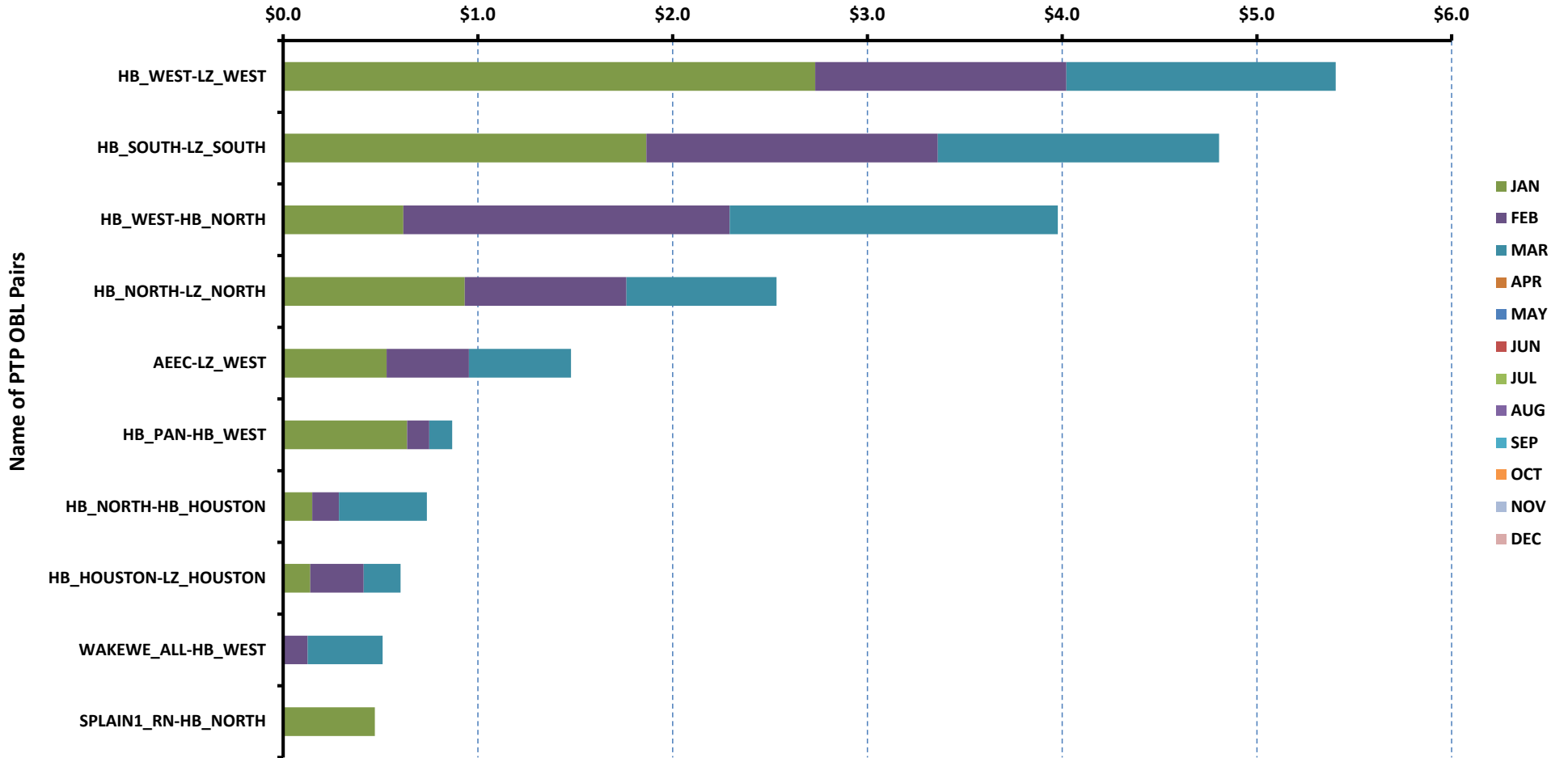
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Top 10 CRR Pairs Ranked by Monthly Auction Values - 1

Top 10 PTP Obligations by Total Transaction Value - 2021

Total Transaction Value in \$ million



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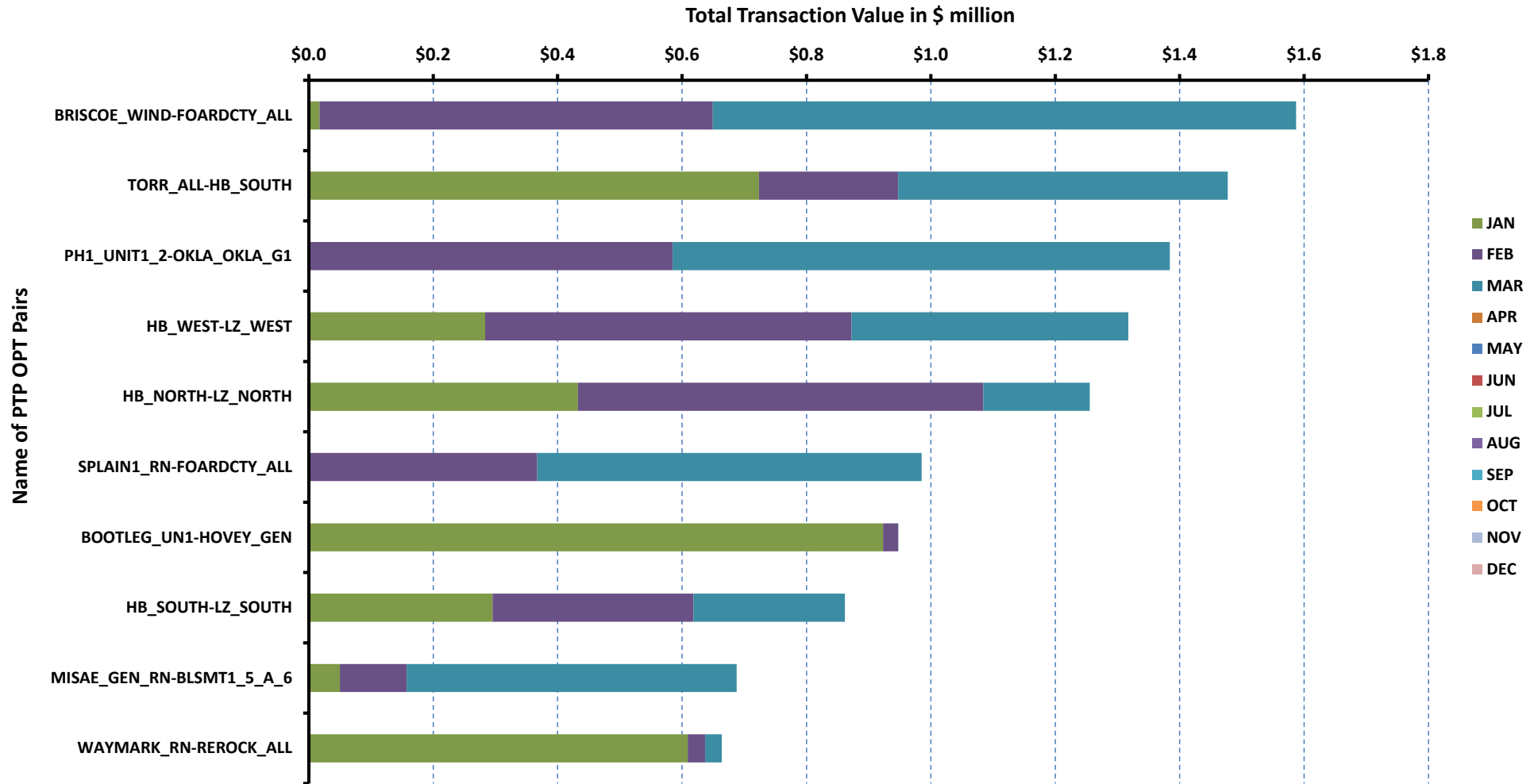
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Top 10 CRR Pairs Ranked by Monthly Auction Values - 2

Top 10 PTP Options by Total Transaction Value - 2021



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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	\$ 1,723.38	\$ 1,782.88
	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	
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	13,146	15,129	12,101	5,163	
	10	17,923	22,165	17,325	6,027	11,971	13,691	11,388	4,976	
	11	15,057	18,778	13,503	5,489	10,755	12,406	9,898	4,855	
	12	13,343	21,505	15,278	5,977	10,605	14,512	10,420	5,195	
2021	1	14,310	21,786	16,810	5,919	10,675	14,847	10,636	5,256	
	2	14,725	29,257	21,268	6,337	10,323	16,648	11,629	4,666	
	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
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	\$ 27.18	\$ 24.78	\$ 25.28	\$ 34.70	\$ 26.49	\$ 24.89	\$ 26.78	\$ 29.86
	12	\$ 20.62	\$ 21.08	\$ 21.24	\$ 24.04	\$ 21.50	\$ 21.74	\$ 22.33	\$ 25.99
2021	1	\$ 21.24	\$ 21.90	\$ 23.45	\$ 20.59	\$ 21.92	\$ 22.56	\$ 23.90	\$ 21.48
	2	\$ 1,467.52	\$ 2,000.33	\$ 2,008.93	\$ 1,141.44	\$ 1,439.37	\$ 1,922.47	\$ 1,942.24	\$ 1,095.98
	3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
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	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
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	\$ 1,782.88	34.63	\$ 1,723.38	33.48
	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
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	12.63	11.28	10.64
	10	11.03	12.23	10.63	10.25	13.96	14.49	14.51	12.55
	11	10.25	10.37	9.64	11.56	10.52	9.79	9.60	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	8.35	8.25	9.11	8.51	8.00
	2	27.96	37.73	37.34	21.29	28.51	39.02	38.86	22.17
	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
2021	2	1	\$ 0.45	\$ -	7	0	80	90
2021	2	2	\$ 0.07	\$ -	3	0	80	90
2021	2	3	\$ 0.07	\$ -	10	0	80	90
2021	2	4	\$ 0.61	\$ -	10	0	80	90
2021	2	5	\$ 0.02	\$ -	2	0	80	90
2021	2	6	\$ 6.73	\$ -	14	0	80	90
2021	2	7	\$ 0.07	\$ -	4	0	80	90
2021	2	8	\$ -	\$ -	0	0	80	90
2021	2	9	\$ 3.47	\$ -	44	0	80	90
2021	2	10	\$ 0.72	\$ -	46	0	80	90
2021	2	11	\$ 0.60	\$ -	55	0	80	90
2021	2	12	\$ 23.44	\$ -	56	0	80	90
2021	2	13	\$ 59.46	\$ -	37	0	80	90
2021	2	14	\$ 40.26	\$ -	42	0	80	90
2021	2	15	\$ 1,175.99	\$ 1,074.57	72	63	80	90
2021	2	16	\$ 1,104.71	\$ 5,130.14	93	90	80	90
2021	2	17	\$ 424.08	\$ 6,707.30	86	92	80	90
2021	2	18	\$ 71.33	\$ 8,367.27	43	96	80	90
2021	2	19	\$ 119.98	\$ 4,419.17	15	66	80	90
2021	2	20	\$ -	\$ -	0	0	80	90
2021	2	21	\$ -	\$ -	0	0	80	90
2021	2	22	\$ -	\$ -	0	0	80	90
2021	2	23	\$ -	\$ -	0	0	80	90
2021	2	24	\$ -	\$ -	0	0	80	90
2021	2	25	\$ -	\$ -	0	0	80	90
2021	2	26	\$ 0.13	\$ -	13	0	80	90
2021	2	27	\$ -	\$ -	0	0	80	90
2021	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
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	-	-	-	-
	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
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	274	1,179	3,109	201
	2	225	1,179	3,109	257
	3	209	1,199	3,072	269
	4	192	1,199	3,072	293
	5	219	1,199	3,072	365
	6	317	1,199	3,072	559
	7	263	1,937	2,959	698
	8	322	1,937	2,959	374
	9	504	1,937	2,959	286
	10	517	1,937	2,959	347
	11	473	1,579	2,917	350
	12	453	1,579	2,917	376
	13	419	1,579	2,917	389
	14	411	1,579	2,917	350
	15	398	1,523	2,917	370
	16	328	1,523	2,917	445
	17	272	1,523	2,917	526
	18	231	1,523	2,917	639
	19	322	1,990	2,979	467
	20	312	1,990	2,979	217
	21	325	1,990	2,979	204
	22	370	1,990	2,979	209
	23	384	1,179	3,109	219
	24	357	1,179	3,109	201

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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	\$ -	\$ -	\$ -	\$ -
	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
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	\$ 10.57	\$ 62.15	\$ 266.14	\$ 27.83
	3	\$ -	\$ -	\$ -	\$ -
	4	\$ -	\$ -	\$ -	\$ -
	5	\$ -	\$ -	\$ -	\$ -
	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	\$ 705,359.21	\$ 707,290.04
	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
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	-	-	-	-	-	-
	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
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	-	-	-	-	-	-
	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	2021	RAYMONDVILLE RIO HONDO GTC (RV_RH)	4,297	1	1,667	2,630	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	PANHANDLE GTC (PNHNDL)	4,047	2	2,790	1,257	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	GARZA 69A1 (GARZA-GARZA)	2,753	3	1,928	825	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	HAMILT MAVER11_1 (HAMILTON-MAVERICK)	2,307	4	1,038	1,269	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	NORTH EDINBURG LOBO GTC (NE_LOB)	2,213	5	1,455	758	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	BONIVI RINCON1_1 (RINCON-BONIVIEW)	1,954	6	1,347	607	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	I_DUPP_I_DUPS2_1 (I_DUPP1-I_DUPSW)	1,744	7	685	1,059	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	PAWNEE SPRUCE_1 (PAWNEE-CALAVERS)	1,203	8	417	786	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	RIOHND_ERIOHND_1 (MV RIOHO-RIOHONDO)	988	9	290	698	-	-	-	-	-	-	-	-	-	-
FREQ_EXIST	2021	BRUNI_89_1 (BRUNI-BRUNI)	970	10	378	592	-	-	-	-	-	-	-	-	-	-
TOP10_RENT	2021	PAWNEE_SPRUCE_1 (PAWNEE-CALAVERS)	\$ 106.80	1	\$ 0.39	\$ 106.40	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	CKT_3132_1 (FPPYD1-WINCHE)	\$ 51.44	2	\$ -	\$ 51.44	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	915_E (CMBSW-DCDAM)	\$ 46.61	3	\$ -	\$ 46.61	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	ABNTHW_MULBER1_1 (MULBERRY-ABNTHWST)	\$ 45.93	4	\$ -	\$ 45.93	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	190T152_1 (WINCHE-GIDEON)	\$ 30.76	5	\$ 0.12	\$ 30.63	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	CKT_944_1 (PILOT-CARSON)	\$ 30.74	6	\$ -	\$ 30.74	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	PANHANDLE GTC (PNHNDL)	\$ 28.33	7	\$ 17.87	\$ 10.46	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	CBEDYN-1_A (CBEC-DYN)	\$ 26.09	8	\$ -	\$ 26.09	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	HAMILT MAVER11_1 (HAMILTON-MAVERICK)	\$ 21.89	9	\$ 1.51	\$ 20.38	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
TOP10_RENT	2021	98T202_1 (ZORN-MCCALA)	\$ 21.16	10	\$ -	\$ 21.16	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

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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	RAYMONDVILLE RIO HONDO GTC (RV_RH)	863	1	404	459	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	CRD_CRD2 (CRD-CRD)	771	2	409	362	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	FLTBES_TLINE_1 (FLAT_TOP-FLTBES)	712	3	339	373	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	NLARSW_PILONC1_1 (NLARSW-PILONCIL)	668	4	354	314	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	PANHANDLE GTC (PNHNDL)	559	5	332	227	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	CORONA_AT4 (CORONA-CORONA)	493	6	306	187	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	HOEFSROA_T1 (HOEFSROA-HOEFSROA)	450	7	277	173	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	CKT_972_1 (HWRDLN-MCNEIL)	445	8	398	47	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	975_H (EUSTSERC-EUSTC)	431	9	393	38	-	-	-	-	-	-	-	-	-	-	
FREQ_EXIST	2021	GARZA_89A1 (GARZA-GARZA)	428	10	267	161	-	-	-	-	-	-	-	-	-	-	
TOP10_RENT	2021	PANHANDLE GTC (PNHNDL)	\$ 26.07	1	\$ 15.82	\$ 10.25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	SANDCR_AT1 (SANDCR-SANDCR)	\$ 20.61	2	\$ -	\$ 20.61	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	CRD_CRD2 (CRD-CRD)	\$ 18.64	3	\$ 0.58	\$ 18.06	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	50T192_1 (FERGUS-GILLES)	\$ 15.86	4	\$ -	\$ 15.86	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	CKT_3121_1 (HOLMAN-LYTTON_S)	\$ 13.66	5	\$ -	\$ 13.66	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	PAWNEE_SPRUCE_1 (PAWNEE-CALAVERS)	\$ 13.47	6	\$ 0.32	\$ 13.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	MORRIS_NUECES1_1 (NUECES_B-MORRIS)	\$ 9.12	7	\$ 0.03	\$ 9.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	CKT_943_1 (LYTTON_S-PILOT)	\$ 8.23	8	\$ 0.53	\$ 7.70	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	NORTH EDINBURG LOBO GTC (NE_LOB)	\$ 7.29	9	\$ 4.45	\$ 2.84	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
TOP10_RENT	2021	103T262_1 (MCCALA-REDWOO)	\$ 5.79	10	\$ -	\$ 5.79	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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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 WEST-LZ WEST	\$ 5.40	1	\$ 2.73	\$ 1.29	\$ 1.38	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	HB SOUTH-LZ SOUTH	\$ 4.81	2	\$ 1.87	\$ 1.50	\$ 1.44	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	HB WEST-HB NORTH	\$ 3.98	3	\$ 0.62	\$ 1.68	\$ 1.69	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	HB NORTH-LZ NORTH	\$ 2.53	4	\$ 0.93	\$ 0.83	\$ 0.77	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	AEEC-LZ WEST	\$ 1.48	5	\$ 0.53	\$ 0.42	\$ 0.52	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	HB PAN-HB WEST	\$ 0.87	6	\$ 0.64	\$ 0.11	\$ 0.12	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	HB NORTH-HB HOUSTON	\$ 0.74	7	\$ 0.15	\$ 0.14	\$ 0.45	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	HB HOUSTON-LZ HOUSTON	\$ 0.60	8	\$ 0.14	\$ 0.27	\$ 0.19	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	WAKEWE ALL-HB WEST	\$ 0.51	9	\$ 0.00	\$ 0.13	\$ 0.38	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
N	2021	SPLAIN1 RN-HB NORTH	\$ 0.47	10	\$ 0.47	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	BRISCOE WIND-FOARDCTY_ALL	\$ 1.59	1	\$ 0.02	\$ 0.63	\$ 0.94	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	TORR ALL-HB SOUTH	\$ 1.48	2	\$ 0.72	\$ 0.22	\$ 0.53	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	PH1 UNIT1 2-OKLA OKLA G1	\$ 1.38	3	\$ 0.00	\$ 0.58	\$ 0.80	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	HB WEST-LZ WEST	\$ 1.32	4	\$ 0.28	\$ 0.59	\$ 0.44	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	HB NORTH-LZ NORTH	\$ 1.26	5	\$ 0.43	\$ 0.65	\$ 0.17	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	SPLAIN1 RN-FOARDCTY_ALL	\$ 0.99	6	\$ -	\$ 0.37	\$ 0.62	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	BOOTLEG UN1-HOVEY GEN	\$ 0.95	7	\$ 0.92	\$ 0.02	\$ 0.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	HB SOUTH-LZ SOUTH	\$ 0.86	8	\$ 0.30	\$ 0.32	\$ 0.24	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	MISAE GEN RN-BLSMT1 5 A 6	\$ 0.69	9	\$ 0.05	\$ 0.11	\$ 0.53	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Y	2021	WAYMARK RN-REROCK ALL	\$ 0.66	10	\$ 0.61	\$ 0.03	\$ 0.03	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

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[chart 2](#)