

To the Public Utility Commission of Texas

# ERCOT Wholesale Electricity Market Monthly Report

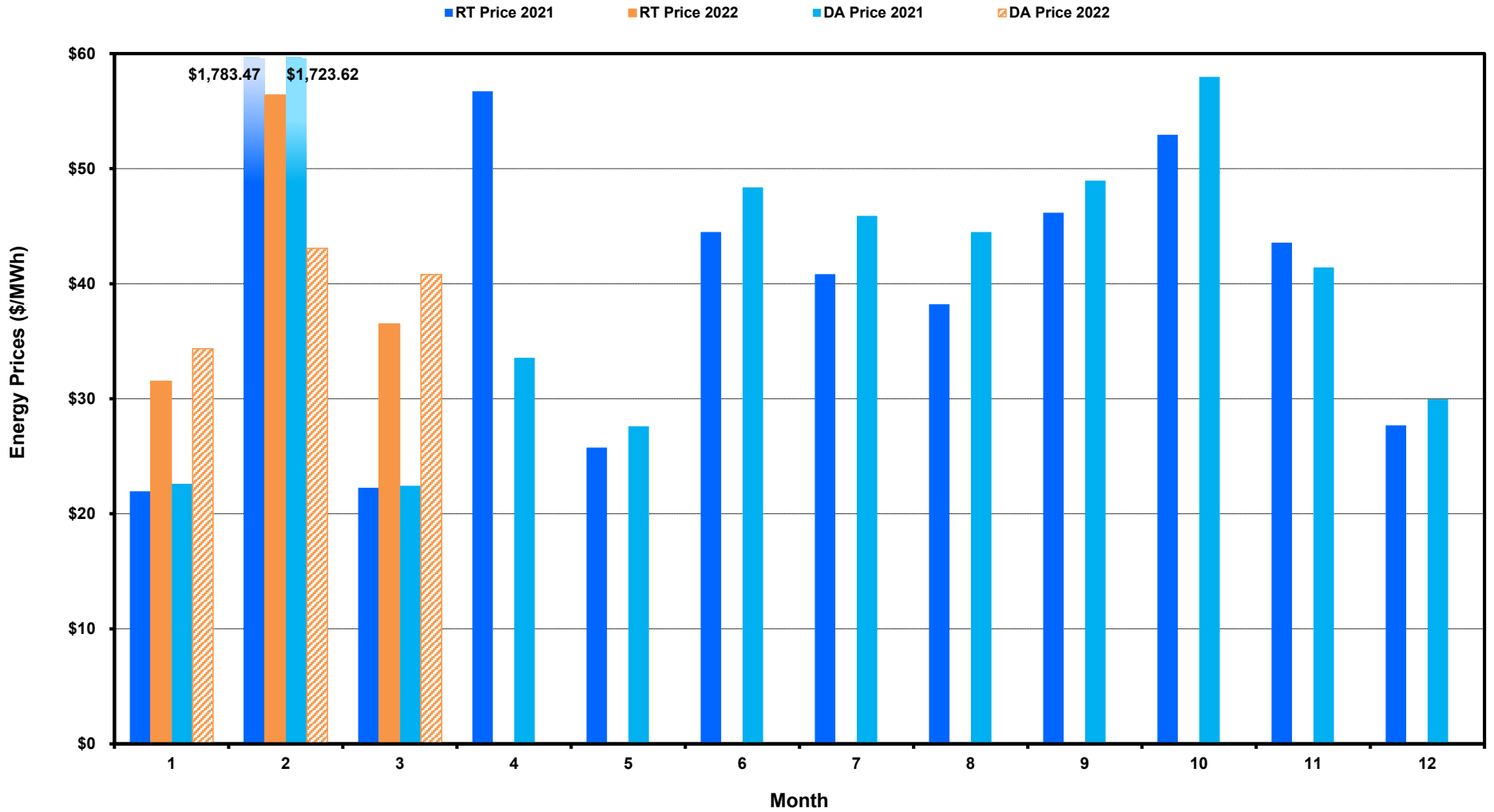
Monday, April 11, 2022

Potomac Economics, Ltd.  
Independent Market Monitor

<b>1</b>	<b>ERCOT-wide Average Energy Prices DA vs. RT</b>
<b>2</b>	<b>Load Zone Load Statistics</b>
<b>3</b>	<b>Load Zone Monthly Average Energy Prices DA vs RT</b>
<b>4</b>	<b>ERCOT-wide Monthly Implied Heat Rates DA vs RT</b>
<b>5</b>	<b>Load Zone Monthly Implied Heat Rates DA vs RT</b>
<b>6</b>	<b>Daily ORDC Reserve Adder Avg. Value and Duration</b>
<b>7</b>	<b>Monthly Ancillary Services Required MW</b>
<b>8</b>	<b>Hourly Average of Ancillary Services Required MW</b>
<b>9</b>	<b>Monthly Average Ancillary Services Price</b>
<b>10</b>	<b>Monthly Average A/S Cost per MWh Load</b>
<b>11</b>	<b>Ercot-wide Cumulative Peaker Net Margin</b>
<b>12</b>	<b>DA vs. RT Load Forecast Error by Hour Ending</b>
<b>13</b>	<b>Monthly Average of Wind Generation by Hour Ending</b>
<b>14</b>	<b>Monthly Average of Solar Generation by Hour Ending</b>
<b>15</b>	<b>RT Constraint Rankings</b>
	<b>- Top 10 Constraints by Total Congestion Value</b>
	<b>- Top 10 Constraints by Binding Frequency</b>
<b>16</b>	<b>DA Constraint Rankings</b>
	<b>- Top 10 Constraints by Total Congestion Value</b>
	<b>- Top 10 Constraints by Binding Frequency</b>
<b>17</b>	<b>CRR Pairs by Monthly Auction Value Rankings</b>
	<b>- Top 10 PTP Obligations by Total Transaction Value</b>
	<b>- Top 10 PTP Options by Total Transaction Value</b>

# ERCOT-wide Average Energy Prices DA vs RT

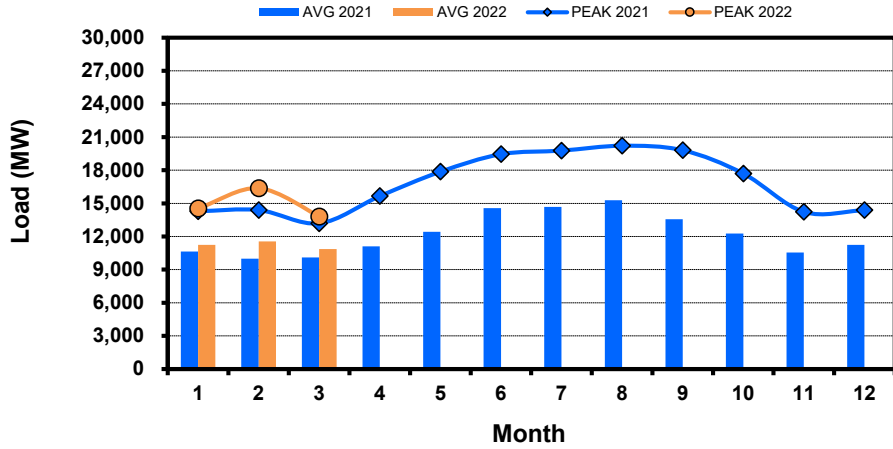
(avg. DA & RT SPPs weighted by Real Time Settlement Loads)



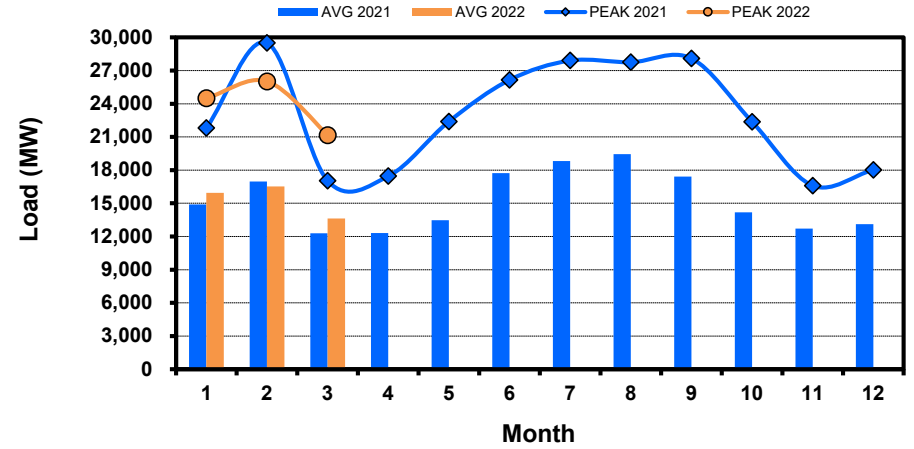
# Load Zone Load Statistics

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

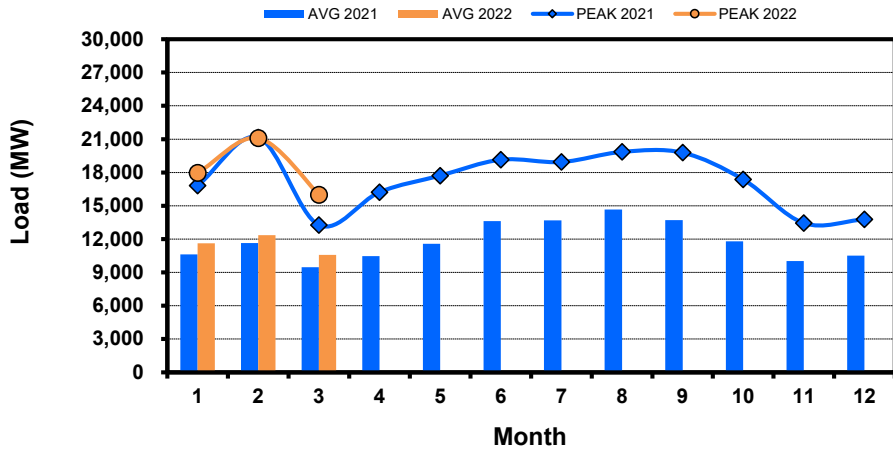
## Houston Zone



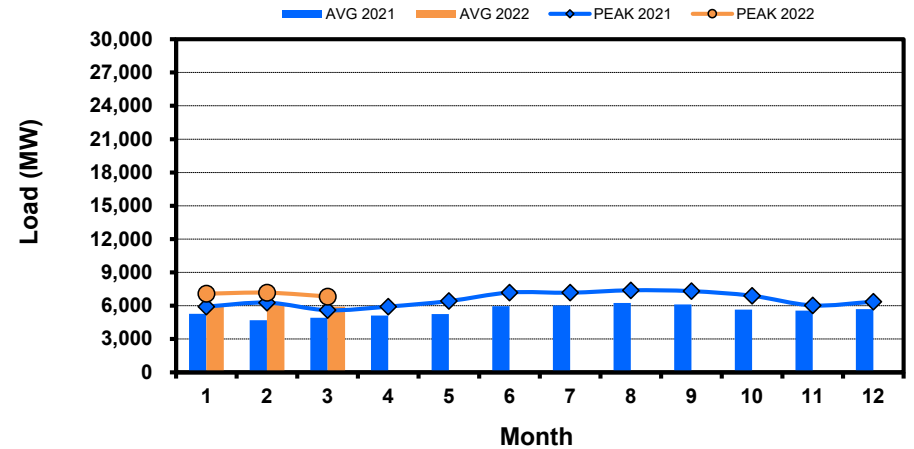
## North Zone



## South Zone



## West Zone

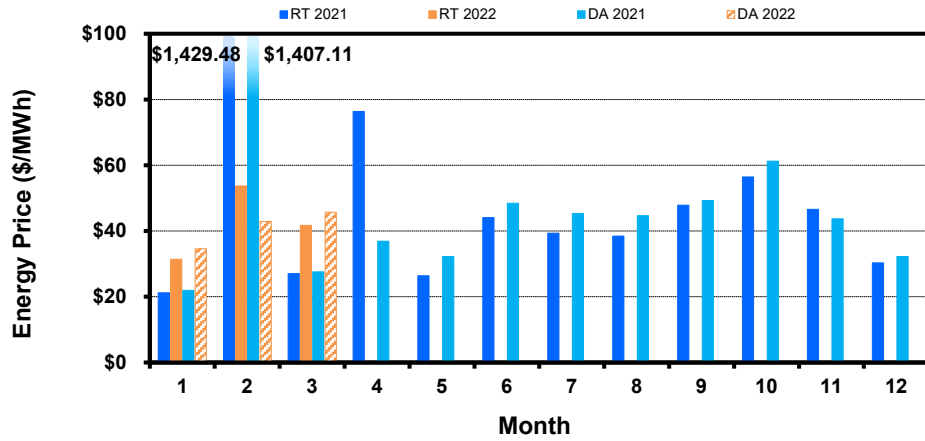


Note: \* Zonal load zone definition vs. Nodal comparable load zone definition: LZ\_Houston=LZ\_Houston; LZ\_West=LZ\_West; LZ\_North=(LZ\_North,LZ\_RAYBN); LZ\_South=(LZ\_South,LZ\_CPS,LZ\_AEN,LZ\_LCRA)

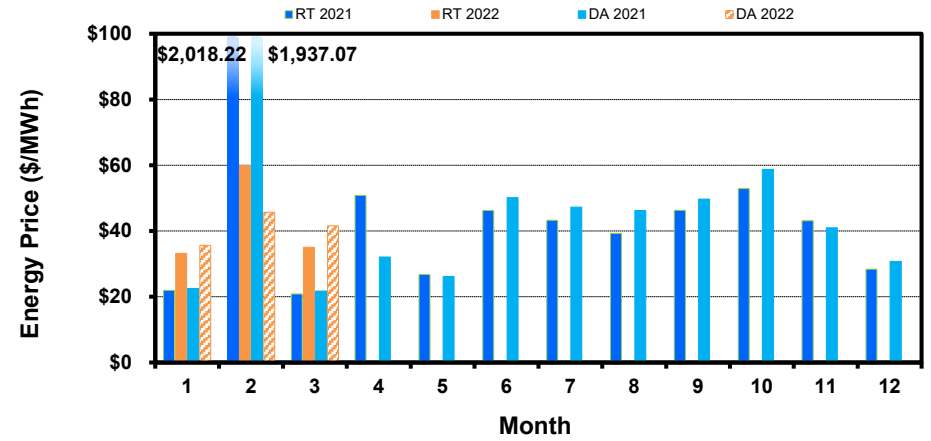
# Load Zone Monthly Average Energy Price DA vs RT

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

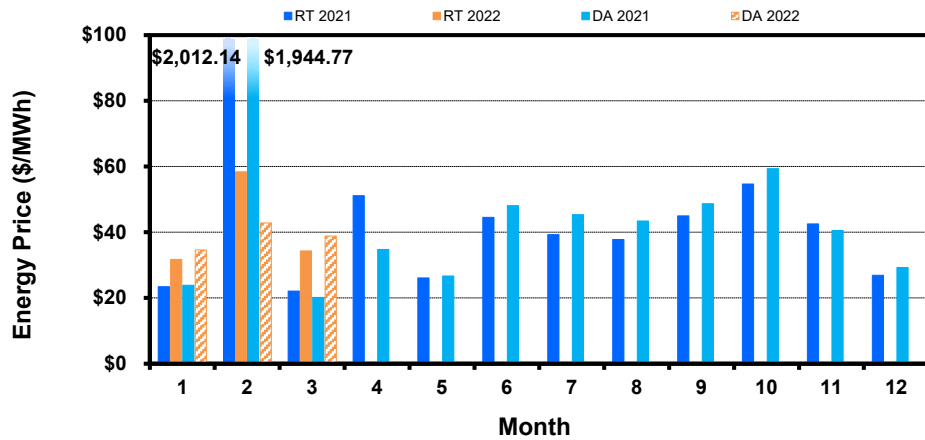
## Houston Zone



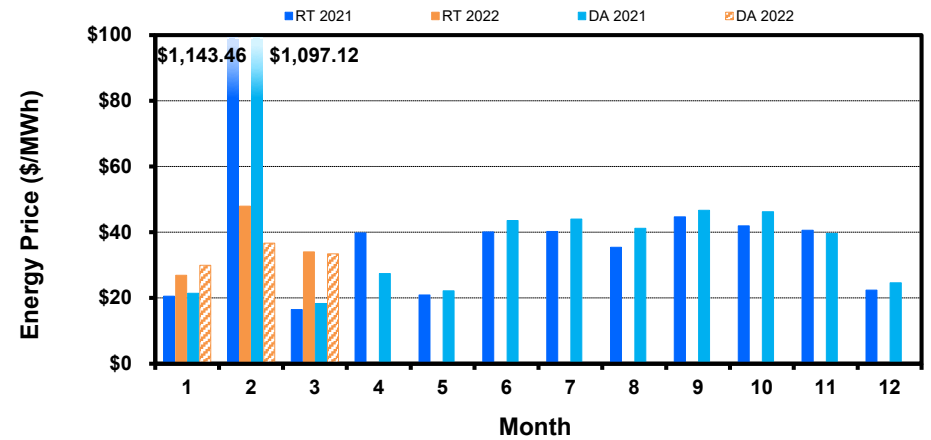
## North Zone



## South Zone



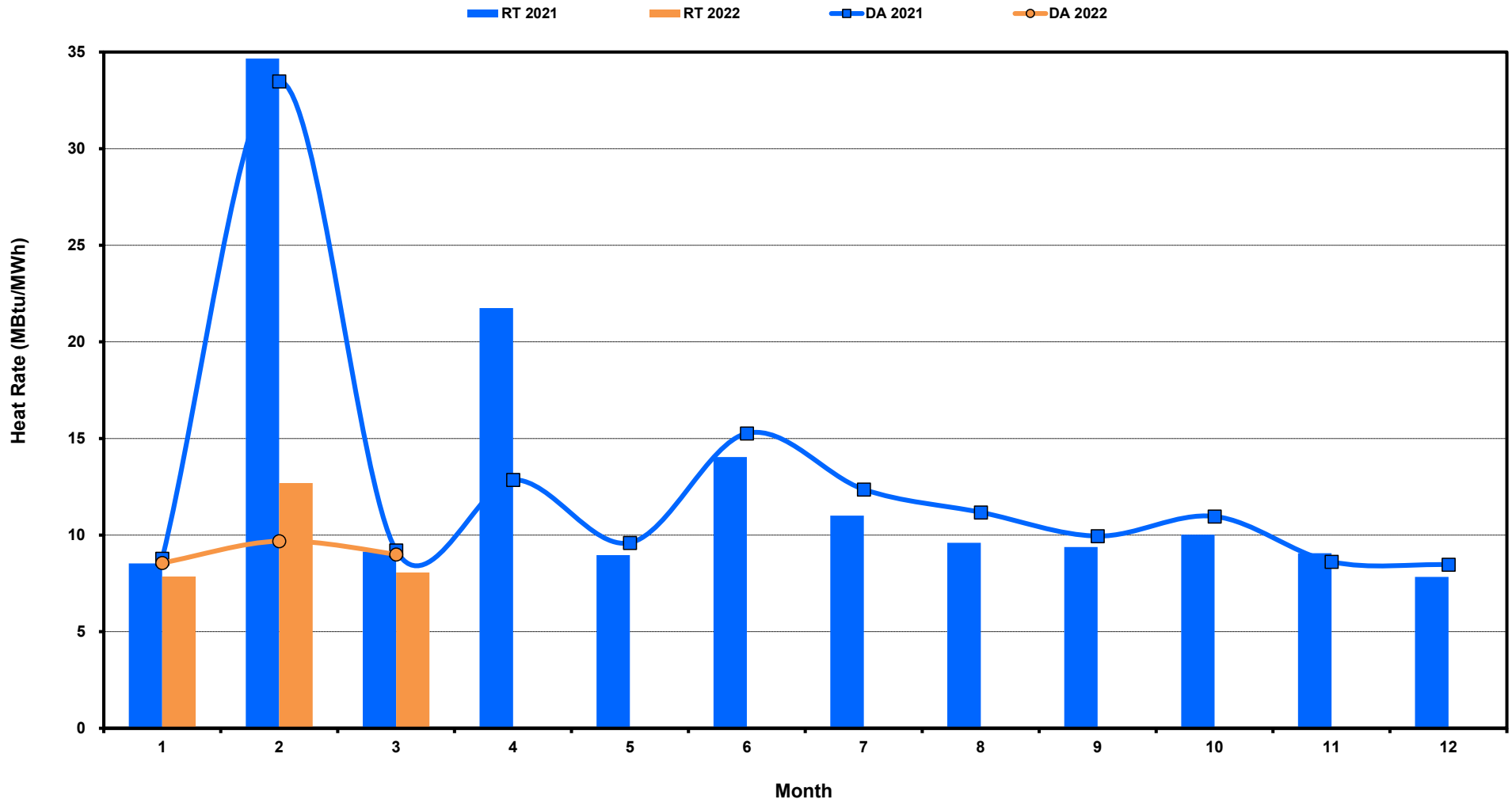
## West Zone



**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)

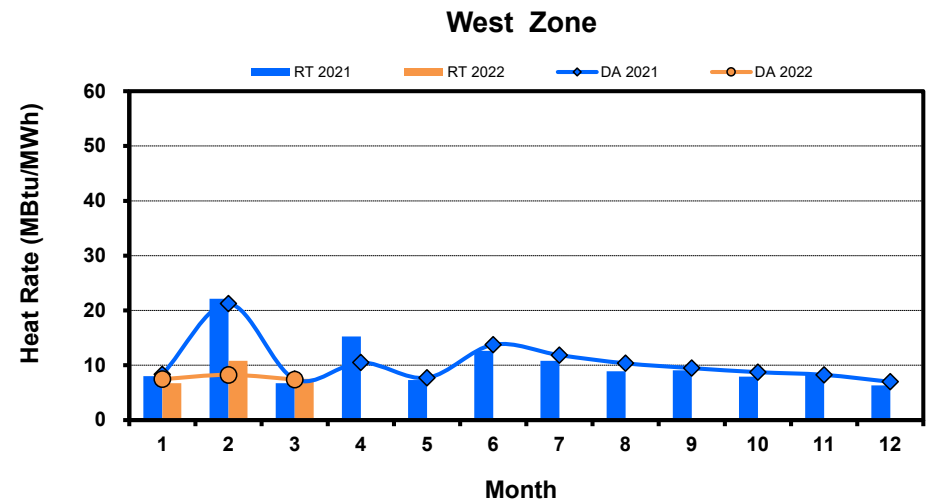
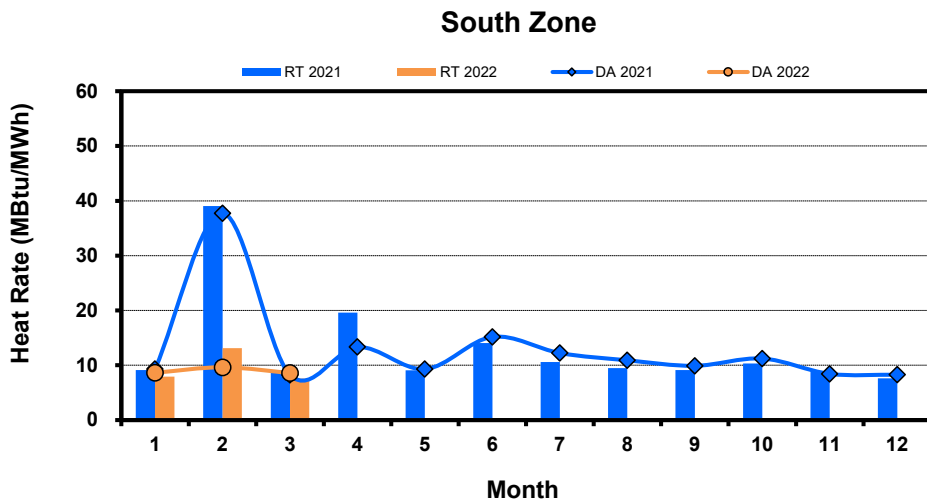
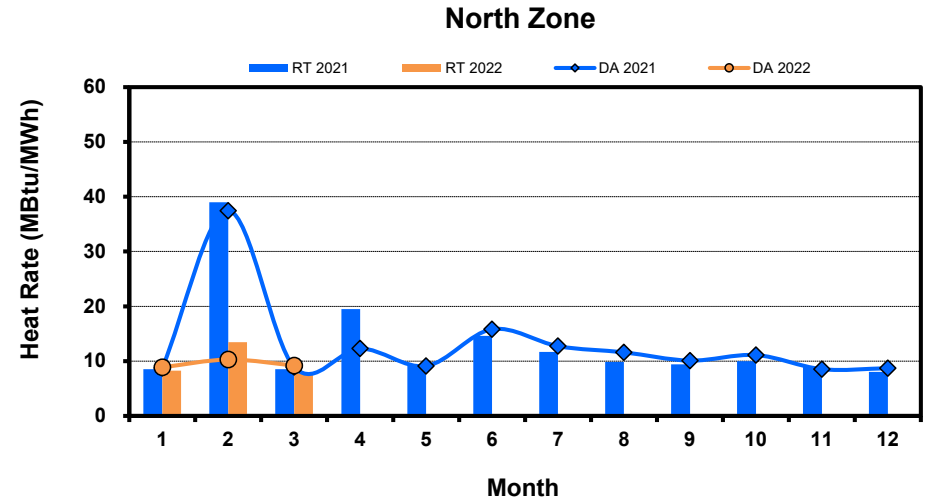
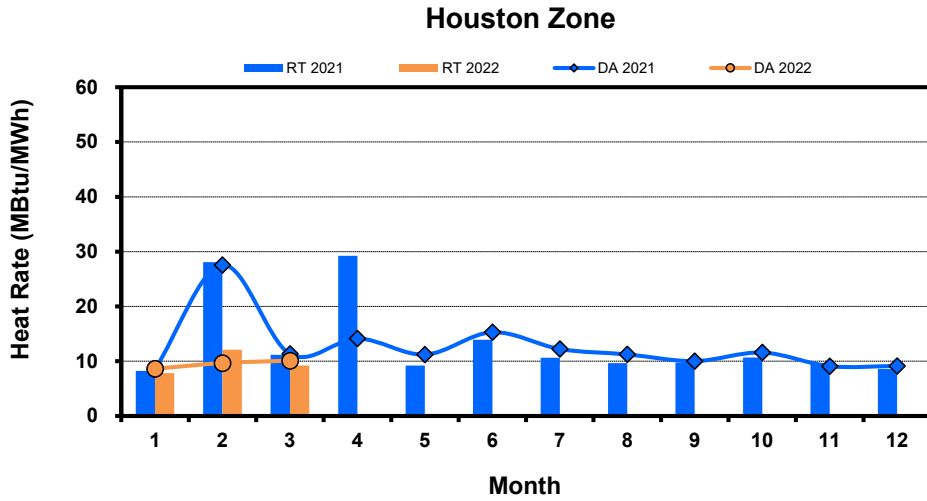
# ERCOT-wide Monthly Implied Heat Rate DA vs RT

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



# Load Zone Monthly Implied Heat Rate DA vs RT

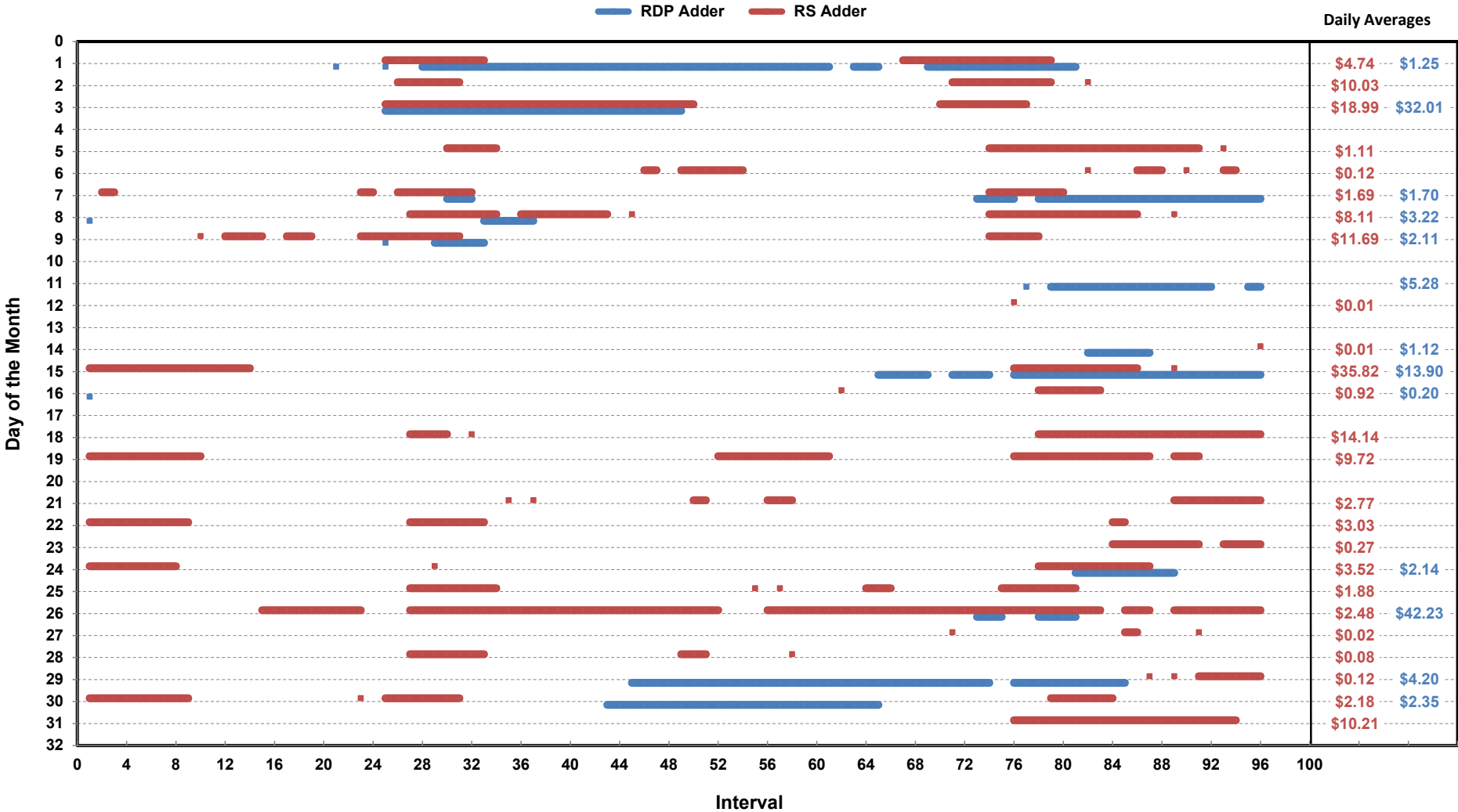
(avg. heat rates weighted by Real Time Settlement Loads)  
 (Nodal load zone made comparable to zonal sytem Load Zone definitions\*)



**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)

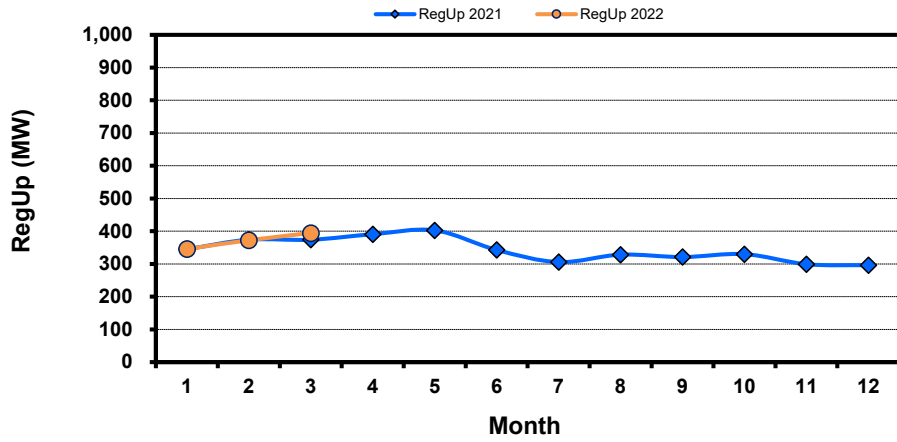
# Daily ORDC Adders Average Values and Interval Duration

## Mar-2022

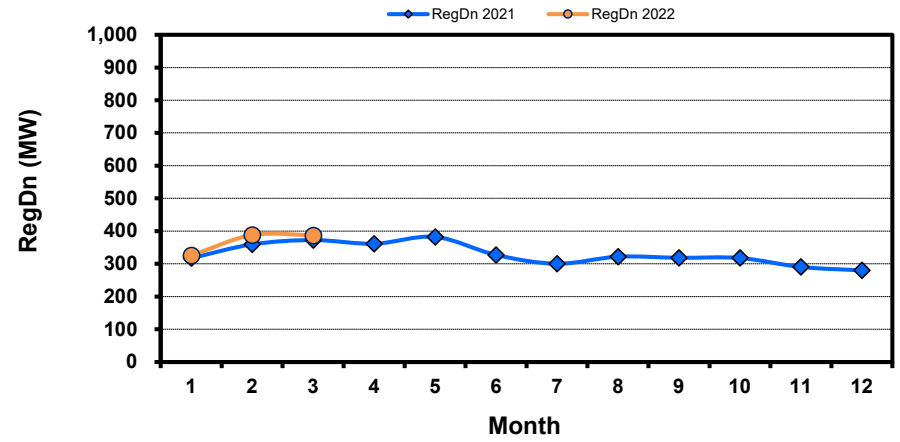


# Monthly Average of Ancillary Services Required MW

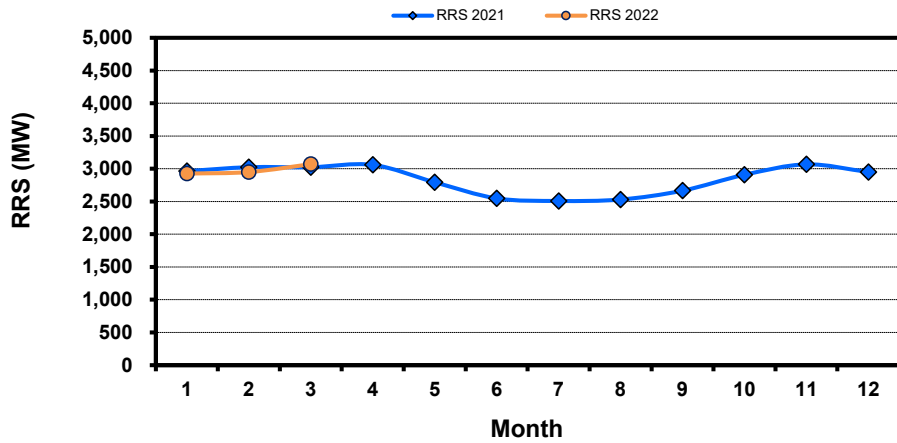
## Regulation Up



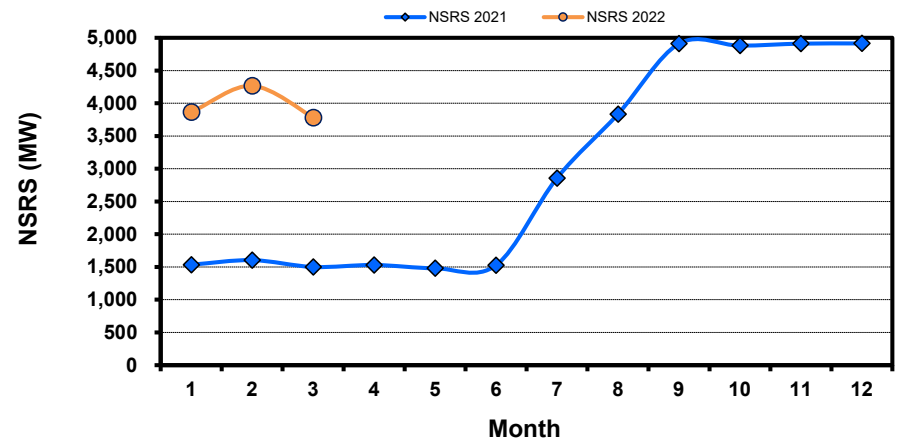
## Regulation Down



## Responsive Reserve



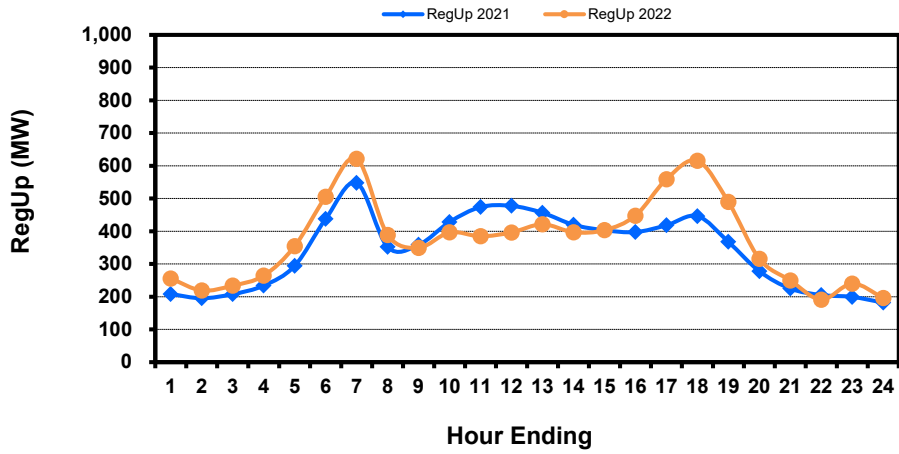
## Non-Spin Reserve



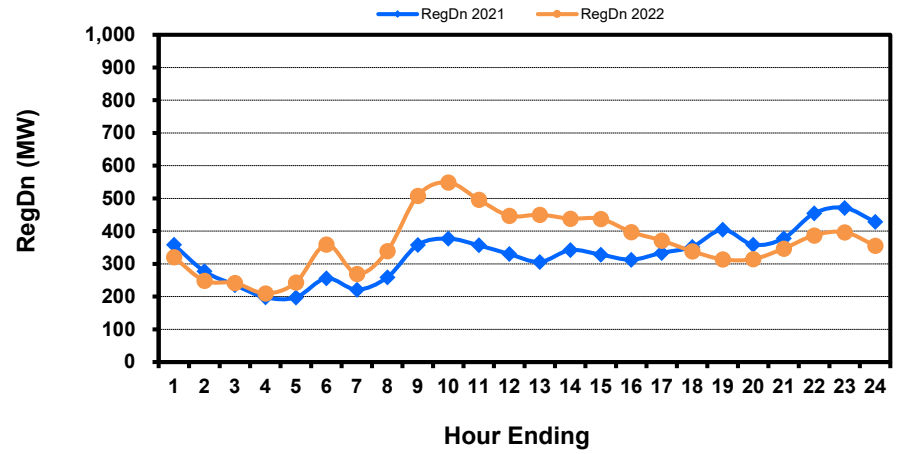


# Hourly Average of Ancillary Services Required MW

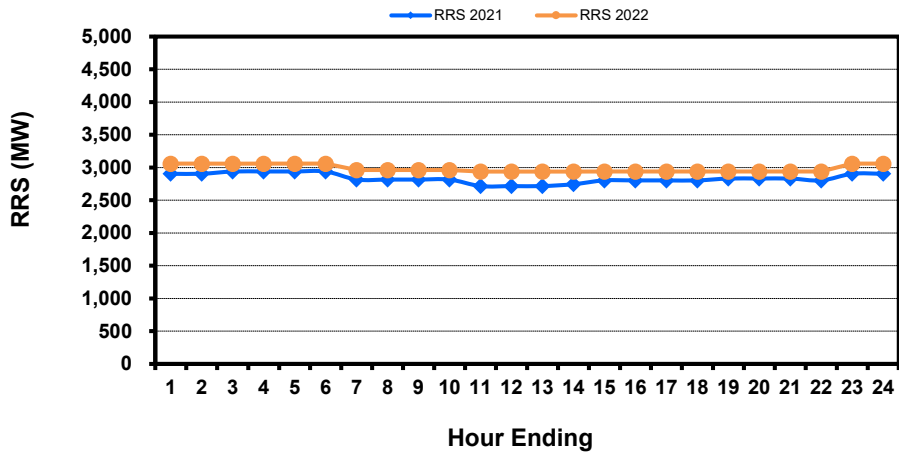
## Regulation Up



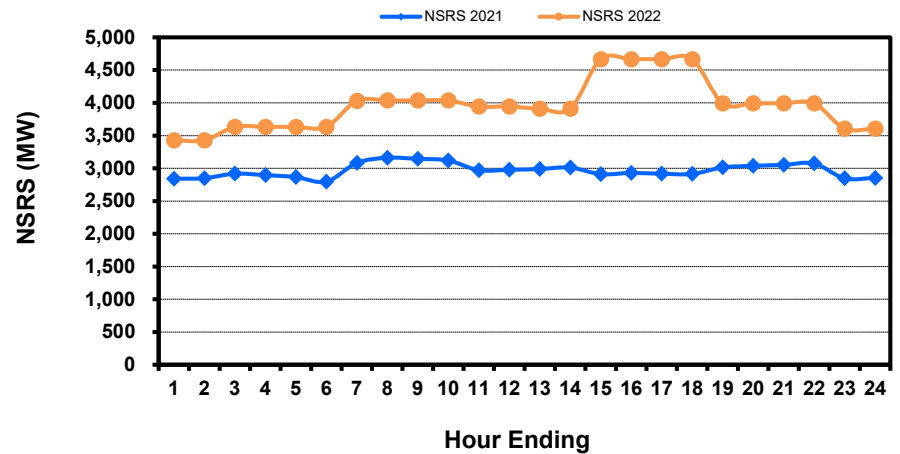
## Regulation Down



## Responsive Reserve



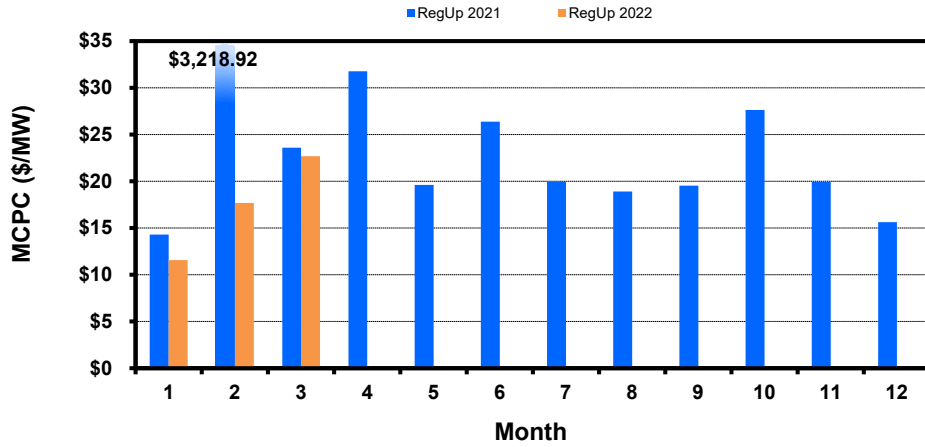
## Non-Spin Reserve



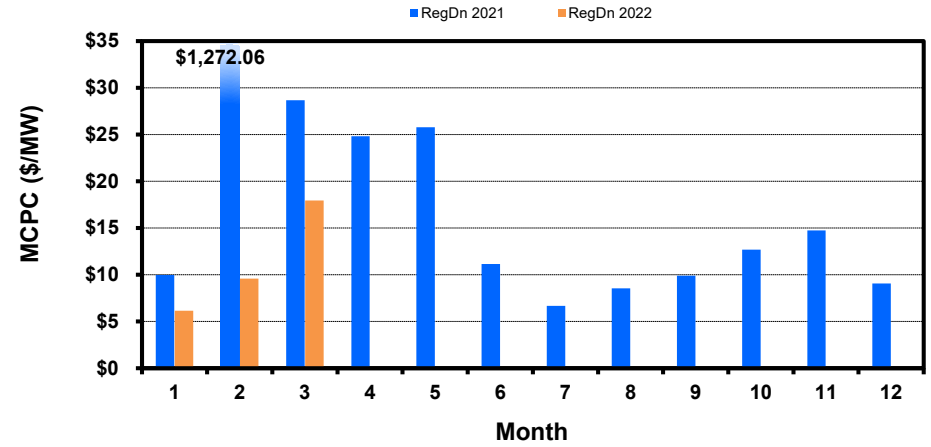
# Monthly Average Ancillary Services Price

(weighted by A/S Quantities Required)

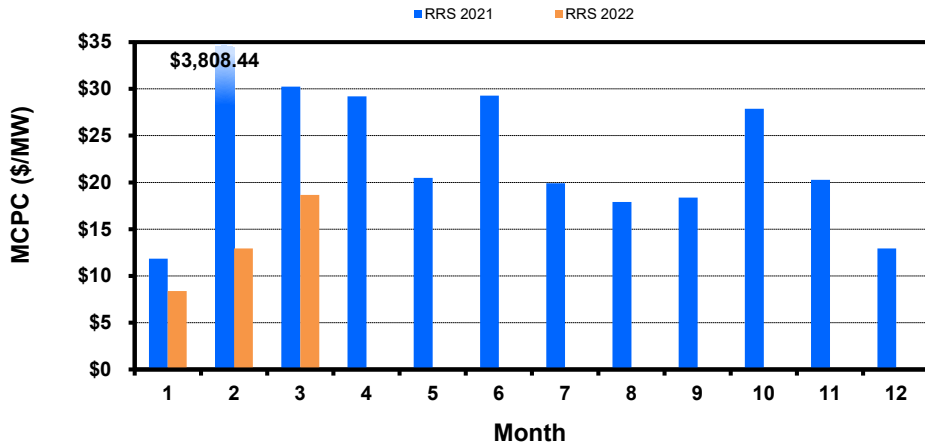
### Regulation Up



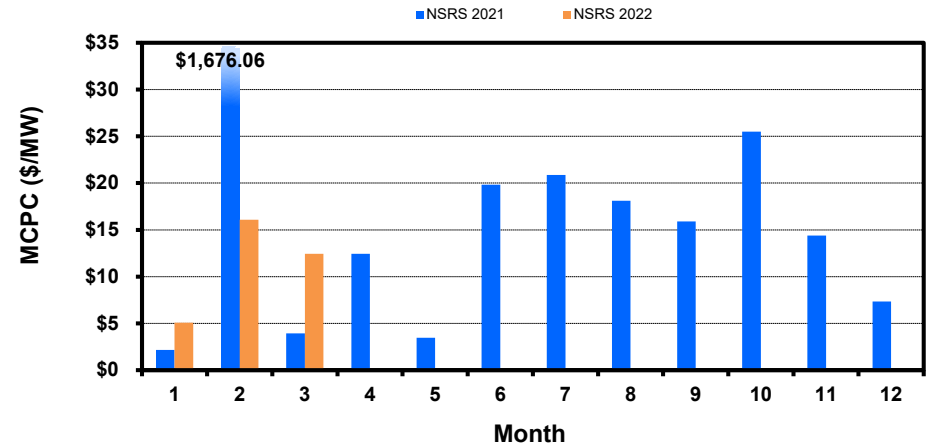
### Regulation Down



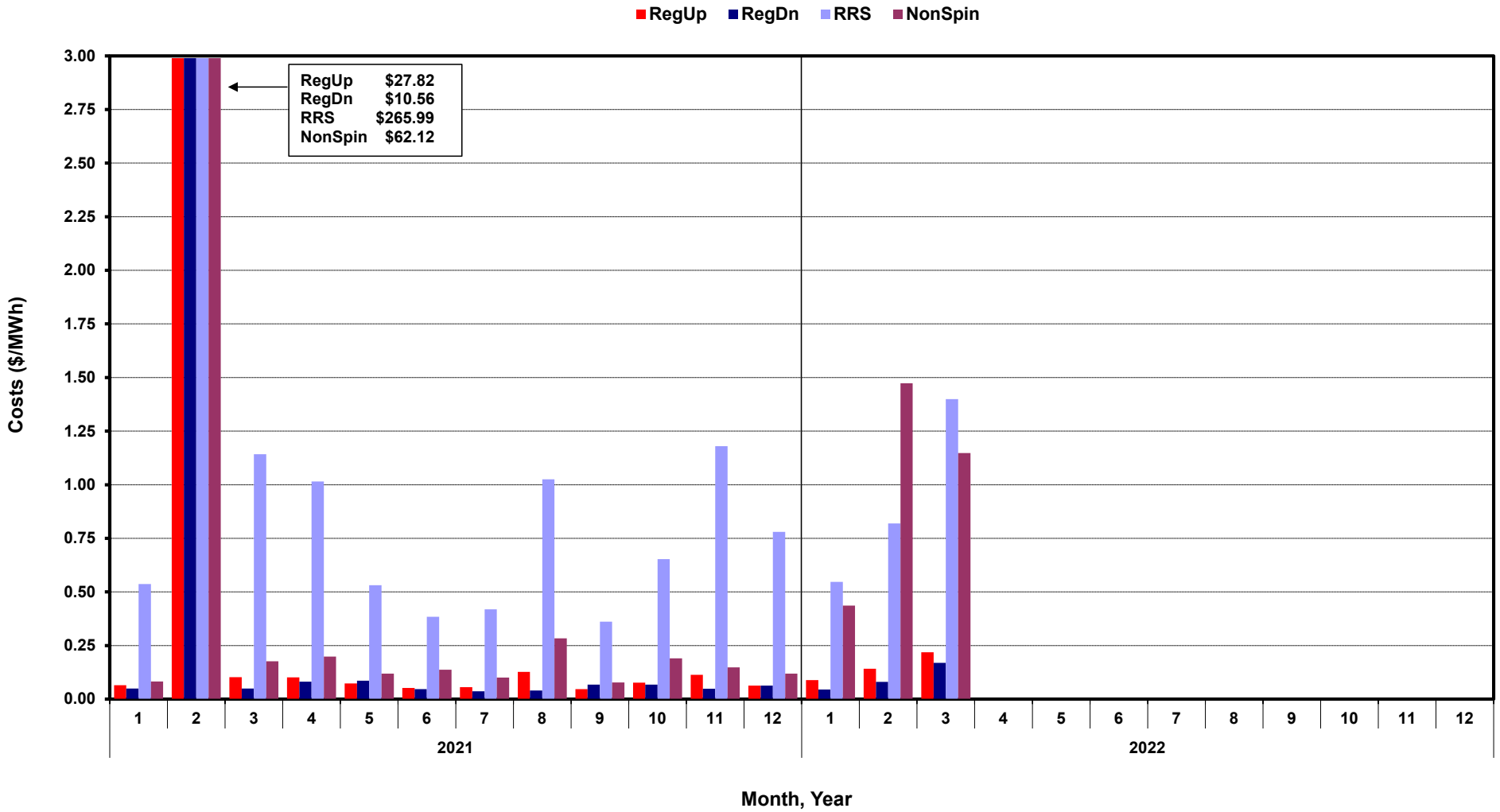
### Responsive Reserve



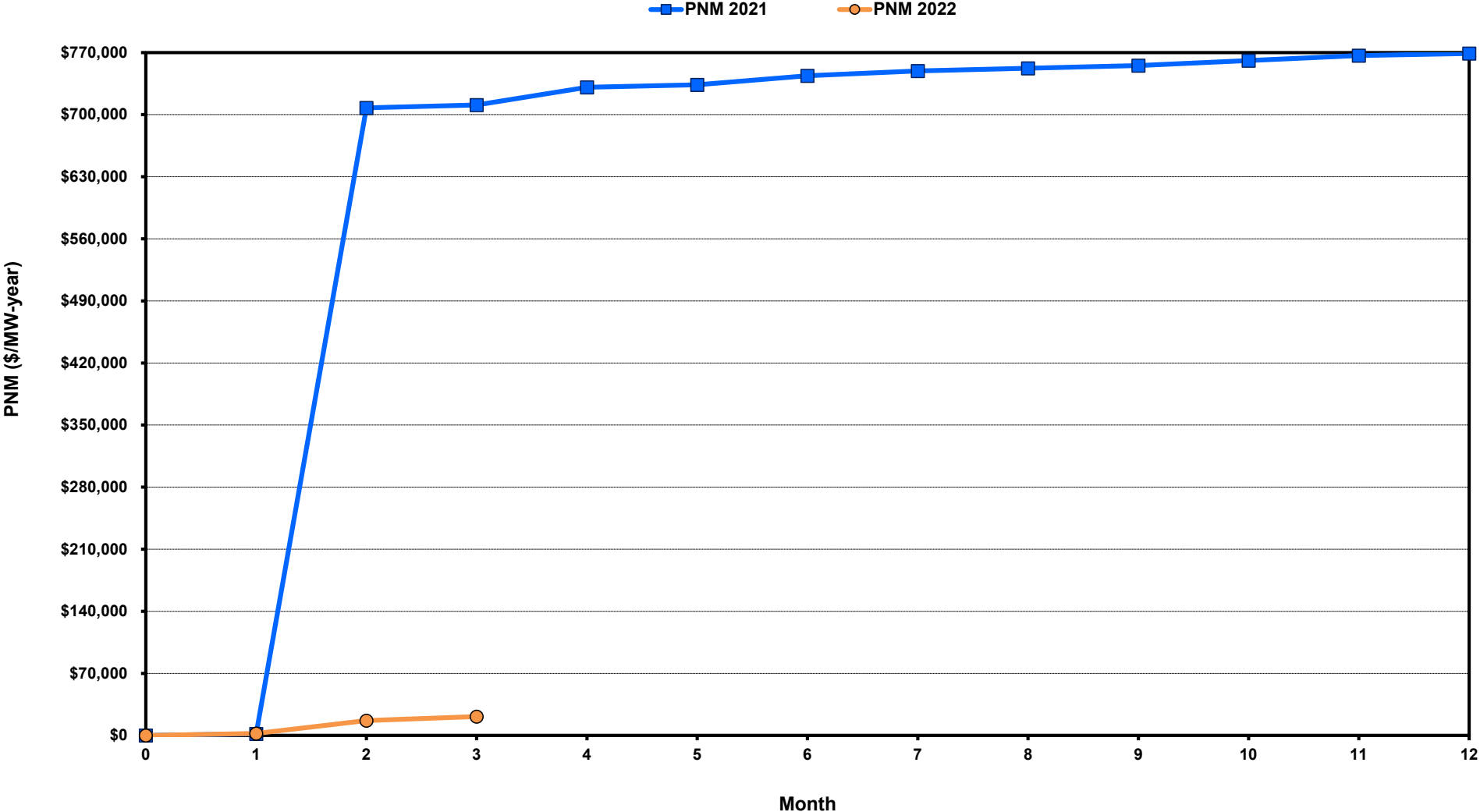
### Non-Spin Reserve



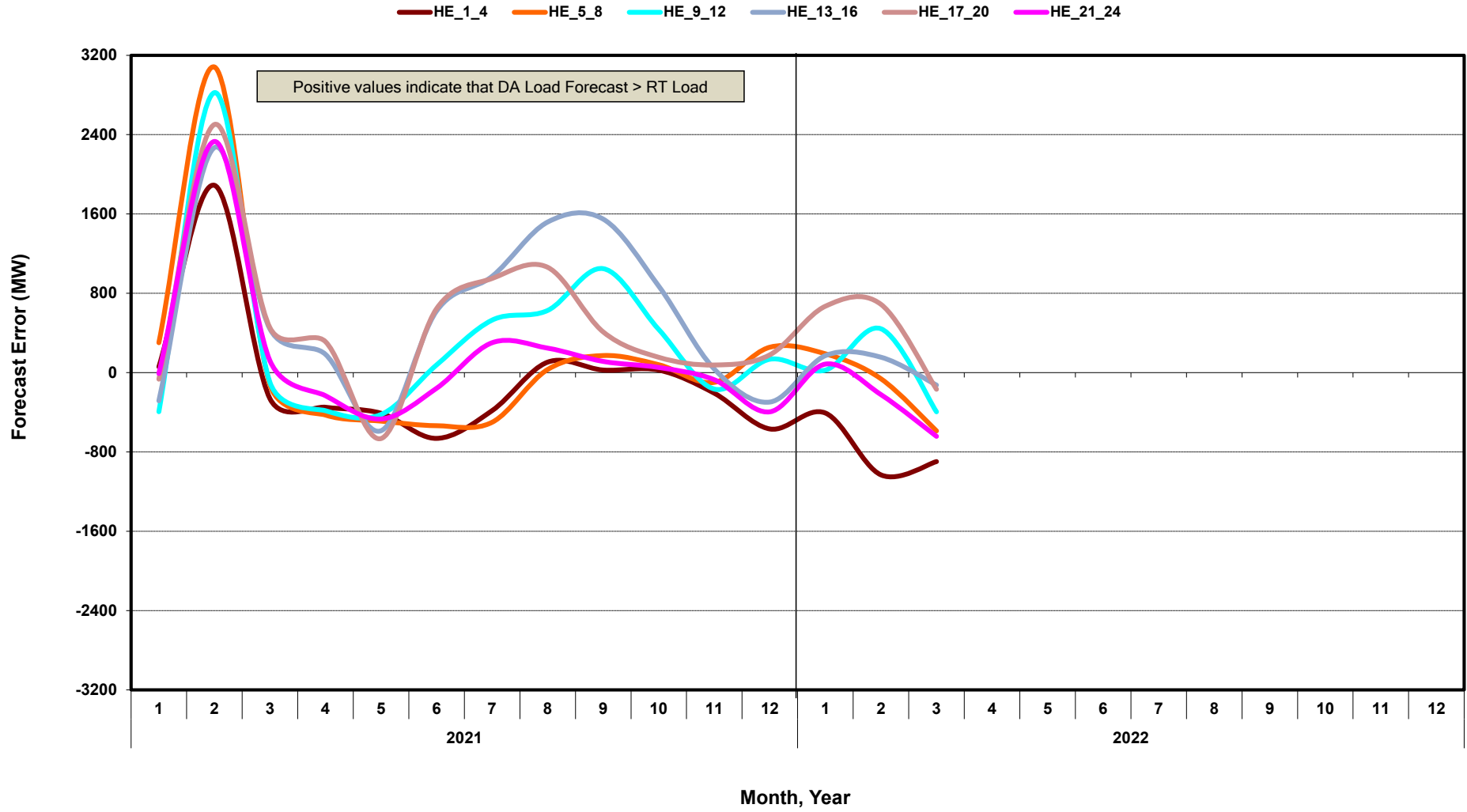
# Monthly Average A/S Cost per MWh Load



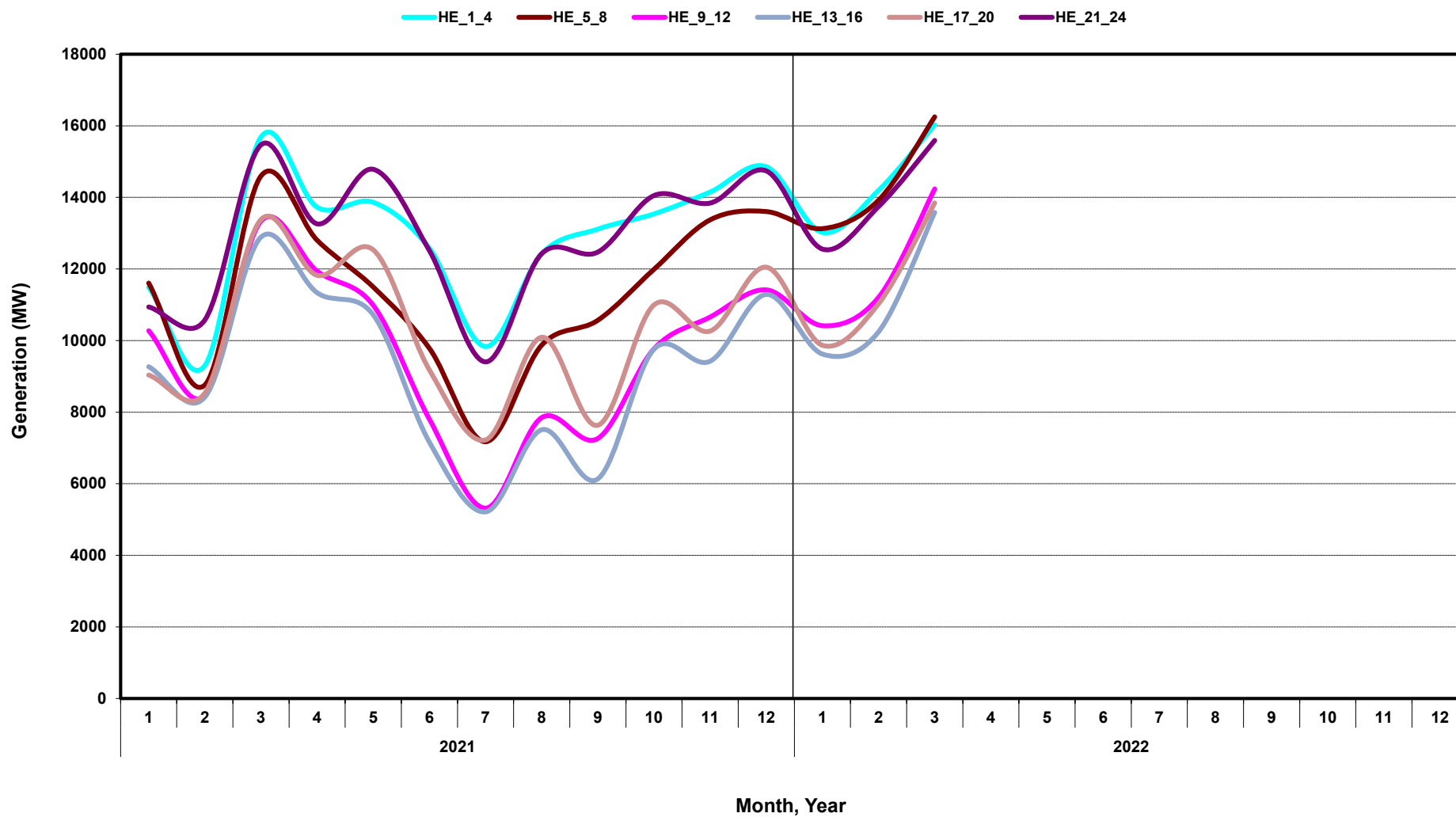
# ERCOT-wide Cumulative Peaker Net Margin



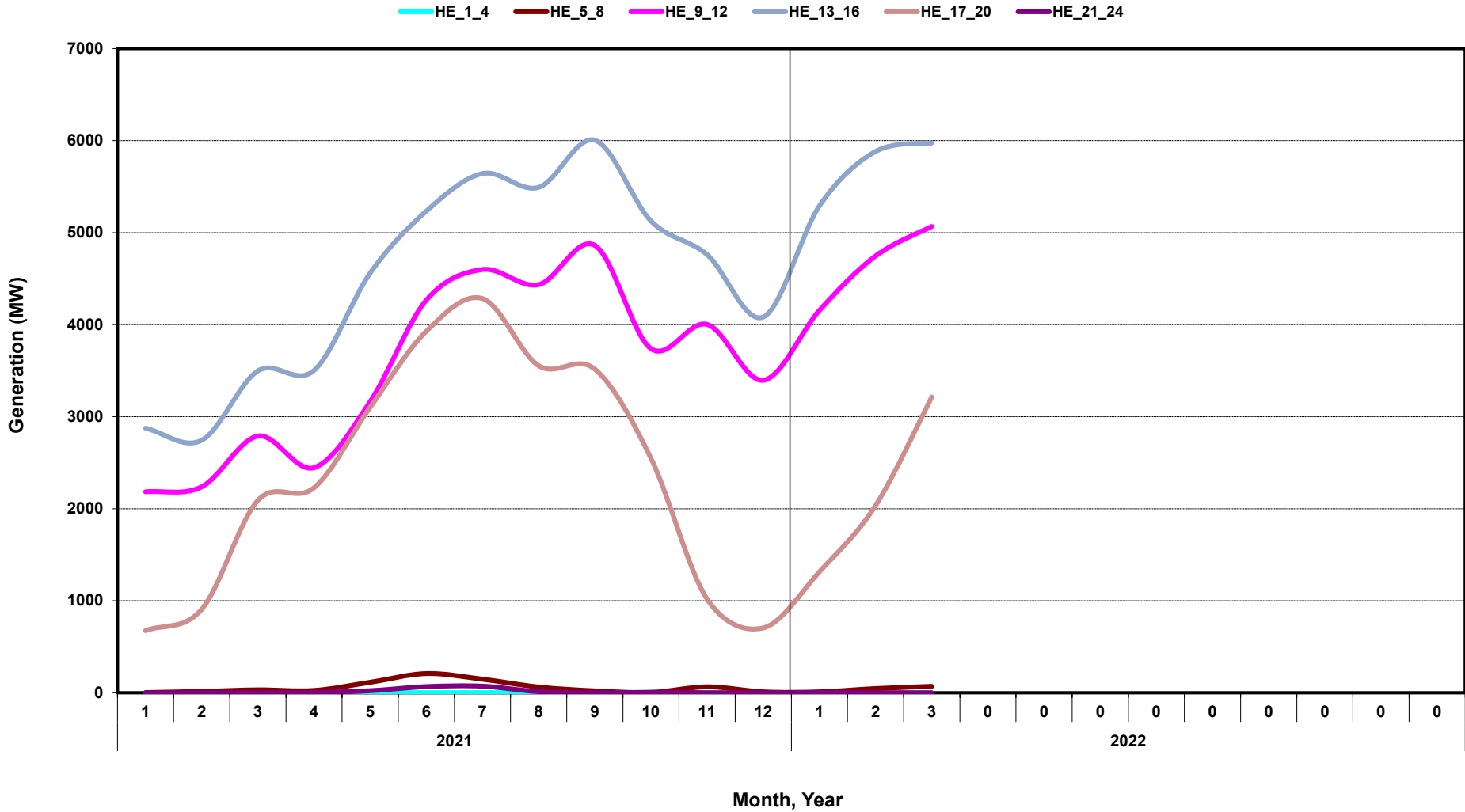
# DA vs. RT Load Forecast Error by Hour Ending



# Monthly Average of Wind Generation by Hour Ending

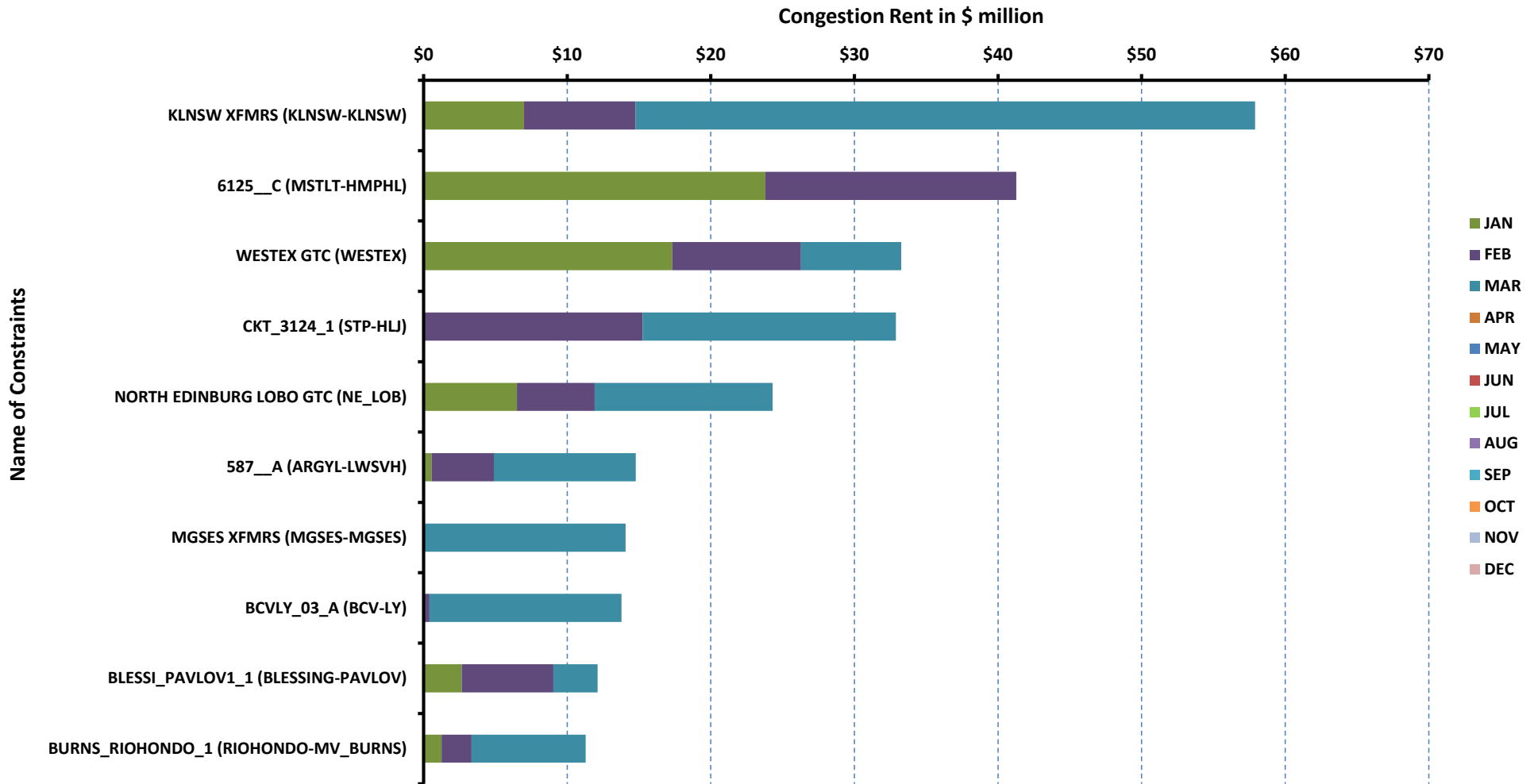


# Monthly Average of Solar Generation by Hour Ending



# RT Congestion Constraint Rankings - 1

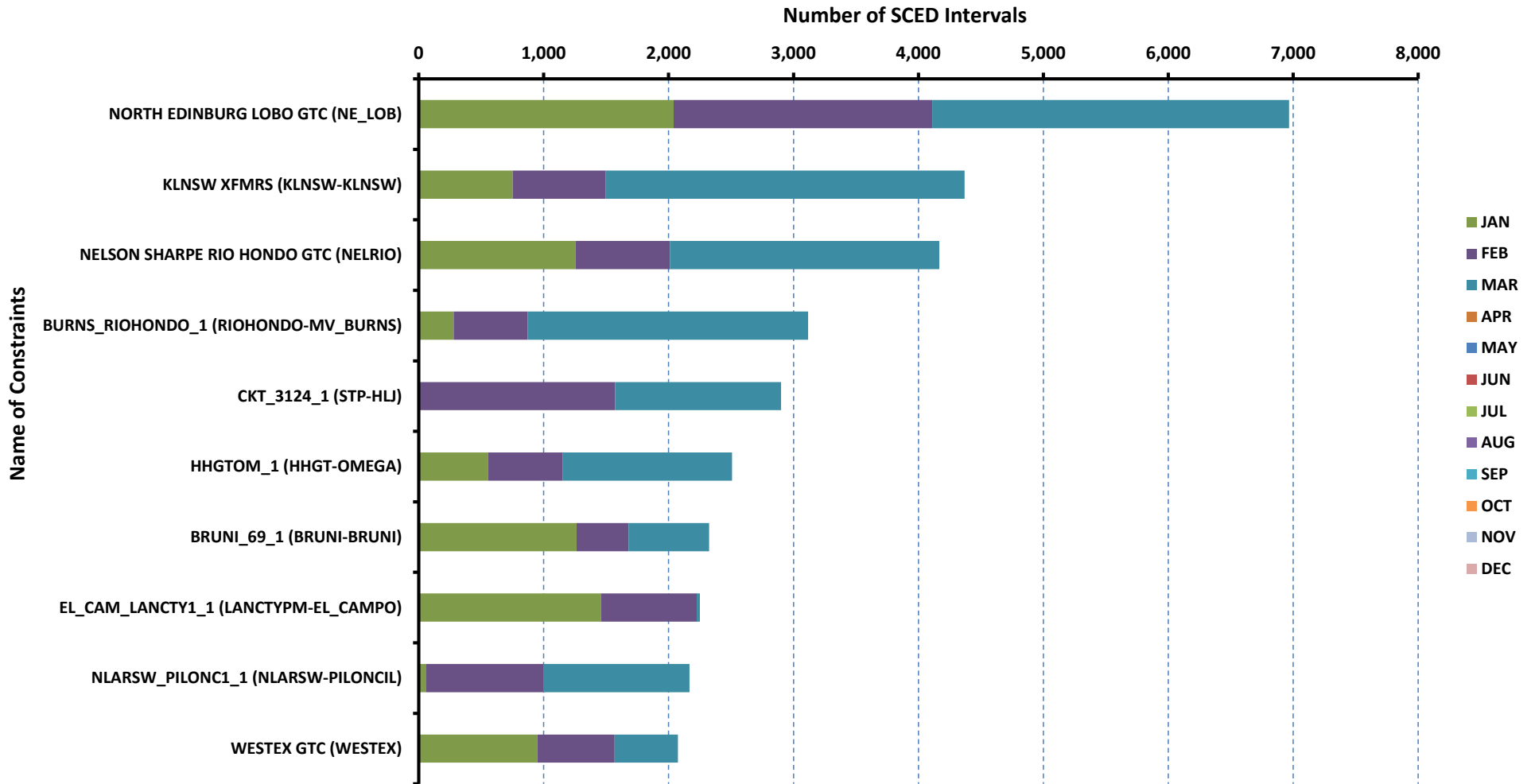
## Top 10 Constraints by Total Congestion Value - 2022





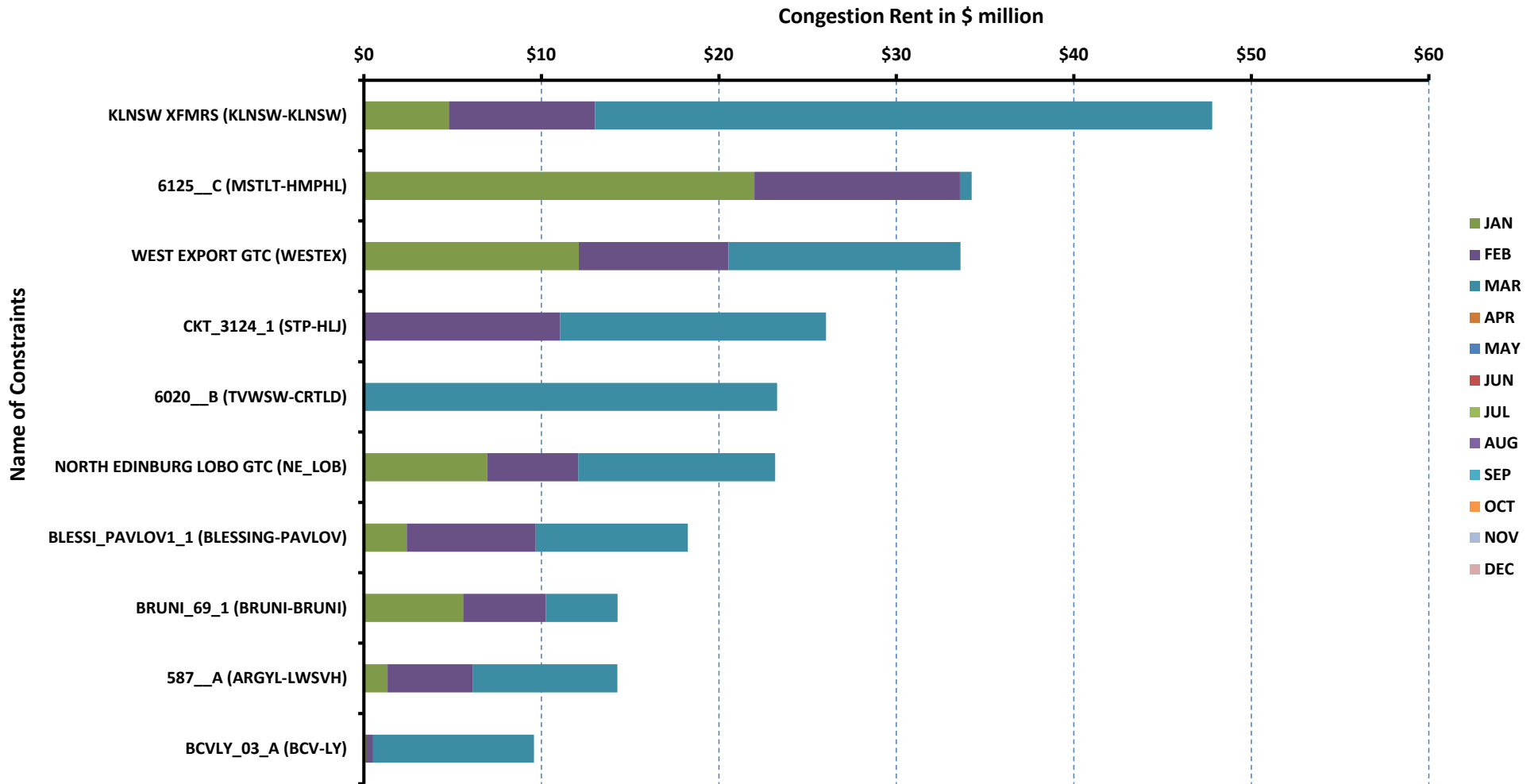
# RT Congestion Constraint Rankings - 2

## Top 10 Constraints by Binding Frequency - 2022



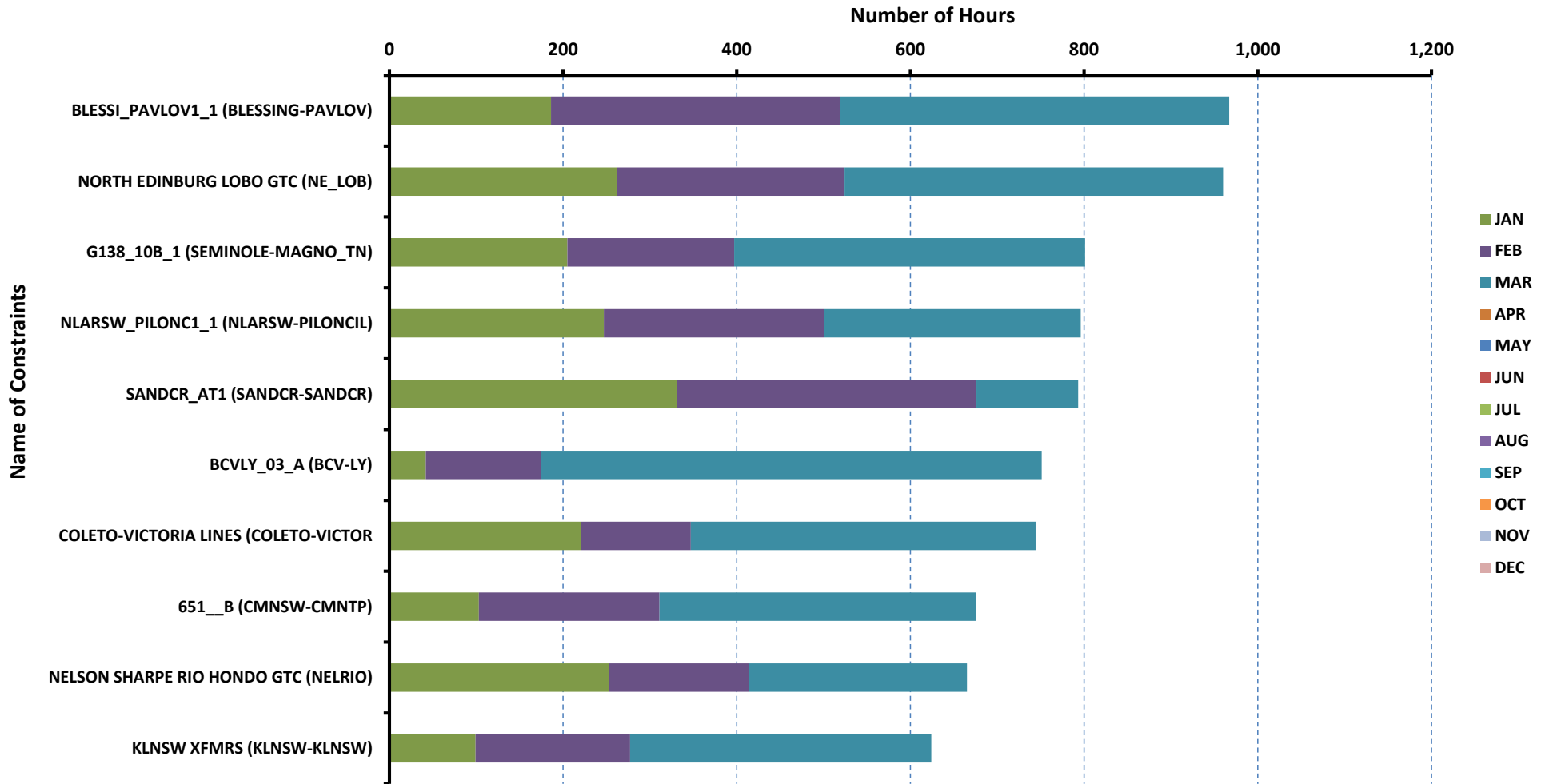
# DA Congestion Constraint Rankings - 1

## Top 10 Constraints by Total Congestion Value - 2022



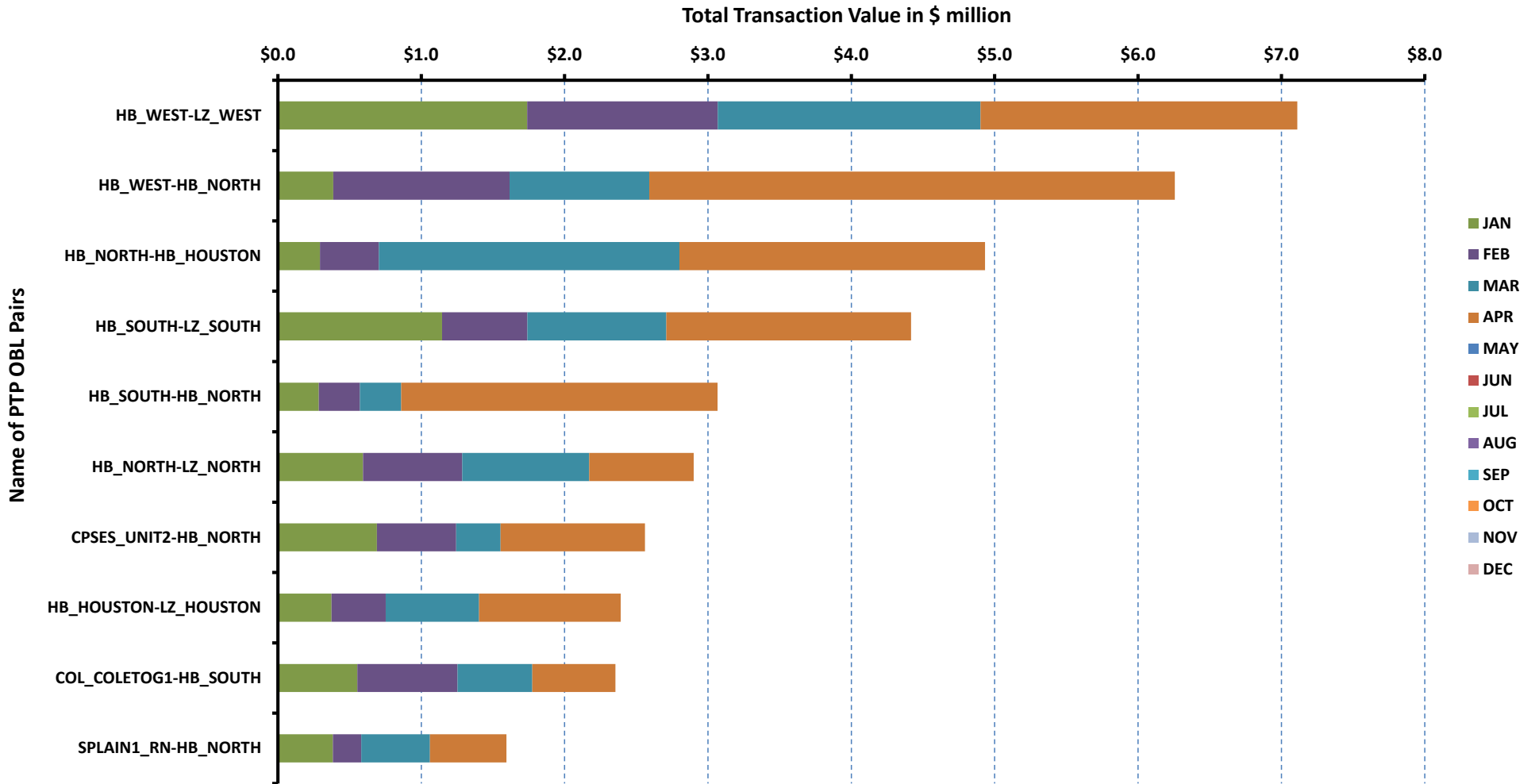
# DA Congestion Constraint Rankings - 2

## Top 10 Constraints by Binding Frequency - 2022



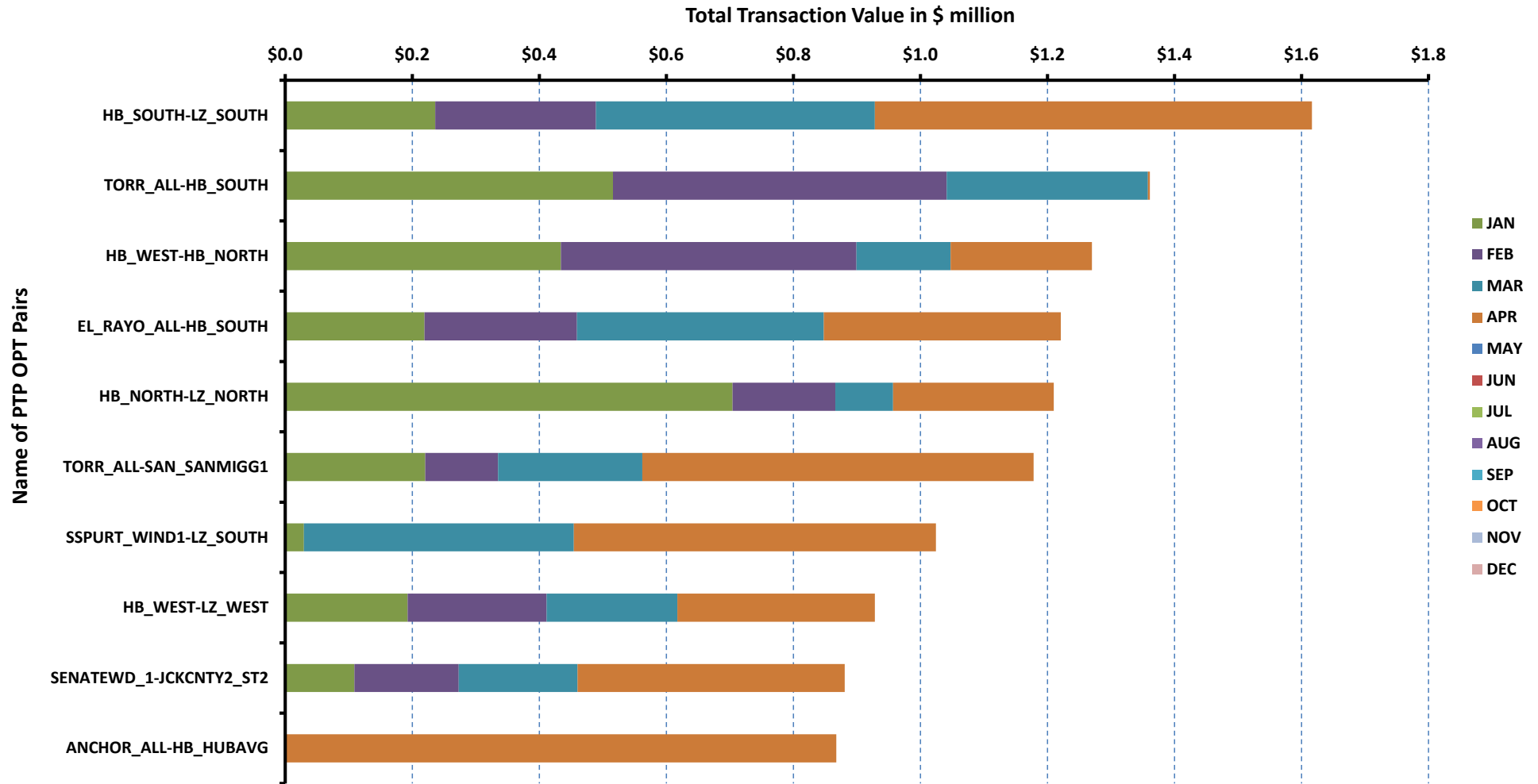
# Top 10 CRR Pairs Ranked by Monthly Auction Values - 1

## Top 10 PTP Obligations by Total Transaction Value - 2022



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

## Top 10 PTP Options by Total Transaction Value - 2022



ERCOT-wide Avg. Energy Price - DA vs. RT			
year	month	dam_spp	rtm_spp
2021	1	\$ 22.60	\$ 21.96
	2	\$ 1,723.84	\$ 1,784.27
	3	\$ 22.49	\$ 22.33
	4	\$ 33.56	\$ 56.73
	5	\$ 27.60	\$ 25.76
	6	\$ 48.37	\$ 44.49
	7	\$ 45.89	\$ 40.84
	8	\$ 44.50	\$ 38.22
	9	\$ 48.95	\$ 46.17
	10	\$ 57.98	\$ 52.94
	11	\$ 41.42	\$ 43.56
	12	\$ 29.94	\$ 27.69
2022	1	\$ 34.35	\$ 31.53
	2	\$ 43.07	\$ 56.40
	3	\$ 40.79	\$ 36.50
	4	\$ -	\$ -
	5	\$ -	\$ -
	6	\$ -	\$ -
	7	\$ -	\$ -
	8	\$ -	\$ -
	9	\$ -	\$ -
	10	\$ -	\$ -
	11	\$ -	\$ -
	12	\$ -	\$ -







ERCOT-wide Monthly Implied Heat Rate - DA vs. RT						
year	month	gasprice	rtm_spp	HR_rtm	dam_spp	HR_dam
2021	1	\$ 2.57	\$ 21.96	8.53	\$ 22.60	8.78
	2	\$ 51.48	\$ 1,784.27	34.66	\$ 1,723.84	33.49
	3	\$ 2.44	\$ 22.33	9.14	\$ 22.49	9.21
	4	\$ 2.61	\$ 56.73	21.74	\$ 33.56	12.86
	5	\$ 2.87	\$ 25.76	8.96	\$ 27.60	9.60
	6	\$ 3.17	\$ 44.49	14.04	\$ 48.37	15.27
	7	\$ 3.71	\$ 40.84	11.00	\$ 45.89	12.36
	8	\$ 3.98	\$ 38.22	9.60	\$ 44.50	11.18
	9	\$ 4.92	\$ 46.17	9.38	\$ 48.95	9.95
	10	\$ 5.29	\$ 52.94	10.01	\$ 57.98	10.97
	11	\$ 4.81	\$ 43.56	9.07	\$ 41.42	8.62
	12	\$ 3.54	\$ 27.69	7.83	\$ 29.94	8.47
2022	1	\$ 4.01	\$ 31.53	7.86	\$ 34.35	8.56
	2	\$ 4.45	\$ 56.40	12.69	\$ 43.07	9.69
	3	\$ 4.53	\$ 36.50	8.06	\$ 40.79	9.01
	4	\$ -	\$ -	-	\$ -	-
	5	\$ -	\$ -	-	\$ -	-
	6	\$ -	\$ -	-	\$ -	-
	7	\$ -	\$ -	-	\$ -	-
	8	\$ -	\$ -	-	\$ -	-
	9	\$ -	\$ -	-	\$ -	-
	10	\$ -	\$ -	-	\$ -	-
	11	\$ -	\$ -	-	\$ -	-
	12	\$ -	\$ -	-	\$ -	-



Daily ORDC Adders Average Values and Interval Duration								
YEAR	MONTH	DAY	PRICE_RS	PRICE_RDP	RS_CNT	RDP_CNT	RS_POS	RDP_POS
2022	3	1	\$ 4.74	\$ 1.25	22	52	80	90
2022	3	2	\$ 10.03	\$ -	16	0	80	90
2022	3	3	\$ 18.99	\$ 32.01	34	25	80	90
2022	3	4	\$ -	\$ -	0	0	80	90
2022	3	5	\$ 1.11	\$ -	24	0	80	90
2022	3	6	\$ 0.12	\$ -	15	0	80	90
2022	3	7	\$ 1.69	\$ 1.70	18	26	80	90
2022	3	8	\$ 8.11	\$ 3.22	31	6	80	90
2022	3	9	\$ 11.69	\$ 2.11	22	6	80	90
2022	3	10	\$ -	\$ -	0	0	80	90
2022	3	11	\$ -	\$ 5.28	0	17	80	90
2022	3	12	\$ 0.01	\$ -	1	0	80	90
2022	3	13	\$ -	\$ -	0	0	80	90
2022	3	14	\$ 0.01	\$ 1.12	1	6	80	90
2022	3	15	\$ 35.82	\$ 13.90	26	30	80	90
2022	3	16	\$ 0.92	\$ 0.20	7	1	80	90
2022	3	17	\$ -	\$ -	0	0	80	90
2022	3	18	\$ 14.14	\$ -	24	0	80	90
2022	3	19	\$ 9.72	\$ -	35	0	80	90
2022	3	20	\$ -	\$ -	0	0	80	90
2022	3	21	\$ 2.77	\$ -	15	0	80	90
2022	3	22	\$ 3.03	\$ -	18	0	80	90
2022	3	23	\$ 0.27	\$ -	12	0	80	90
2022	3	24	\$ 3.52	\$ 2.14	19	9	80	90
2022	3	25	\$ 1.88	\$ -	20	0	80	90
2022	3	26	\$ 2.48	\$ 42.23	74	7	80	90
2022	3	27	\$ 0.02	\$ -	4	0	80	90
2022	3	28	\$ 0.08	\$ -	11	0	80	90
2022	3	29	\$ 0.12	\$ 4.20	8	40	80	90
2022	3	30	\$ 2.18	\$ 2.35	23	23	80	90
2022	3	31	\$ 10.21	\$ -	19	0	80	90

Monthly Average of Ancillary Services Required MW					
year	month	ASMW_REGDN	ASMW_NSPIN	ASMW_RRS	ASMW_REGUP
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	327	1,527	2,548	343
	7	300	2,858	2,508	306
	8	322	3,835	2,530	328
	9	318	4,910	2,665	321
	10	318	4,880	2,908	330
	11	290	4,911	3,067	299
	12	280	4,914	2,951	296
2022	1	325	3,867	2,926	346
	2	388	4,267	2,950	372
	3	387	3,782	3,070	395
	4	-	-	-	-
	5	-	-	-	-
	6	-	-	-	-
	7	-	-	-	-
	8	-	-	-	-
	9	-	-	-	-
	10	-	-	-	-
	11	-	-	-	-
	12	-	-	-	-

**Hourly Average of Ancillary Services Required MW**

year	DELIVERY_HOUR	ASMW_REGDN	ASMW_NSPIN	ASMW_RRS	ASMW_REGUP
2021	1	359	2,840	2,905	208
	2	277	2,849	2,905	195
	3	235	2,918	2,939	208
	4	198	2,896	2,940	234
	5	198	2,866	2,940	294
	6	256	2,797	2,940	438
	7	221	3,082	2,816	548
	8	259	3,161	2,816	352
	9	358	3,144	2,816	359
	10	377	3,119	2,816	428
	11	357	2,972	2,716	474
	12	330	2,977	2,716	478
	13	306	2,989	2,716	456
	14	342	3,012	2,745	420
	15	328	2,911	2,803	403
	16	313	2,929	2,803	397
	17	334	2,917	2,803	418
	18	352	2,914	2,803	446
	19	404	3,013	2,832	368
	20	358	3,038	2,832	278
	21	378	3,052	2,832	225
	22	455	3,073	2,803	205
	23	471	2,847	2,905	199
	24	428	2,853	2,905	182
2022	1	320	3,428	3,060	256
	2	249	3,428	3,060	219
	3	242	3,632	3,058	234
	4	210	3,633	3,060	264
	5	243	3,633	3,060	354
	6	359	3,633	3,060	506
	7	269	4,030	2,963	622
	8	339	4,036	2,963	389
	9	508	4,036	2,963	350
	10	549	4,036	2,963	397
	11	496	3,944	2,938	385
	12	447	3,944	2,938	396
	13	450	3,910	2,938	421
	14	438	3,910	2,938	397
	15	438	4,667	2,939	403
	16	397	4,667	2,939	448
	17	371	4,667	2,939	559
	18	339	4,667	2,939	615
	19	314	3,993	2,939	490
	20	315	3,993	2,939	316
	21	347	3,993	2,939	250
	22	387	3,993	2,939	191
	23	397	3,607	3,060	240
	24	356	3,607	3,060	196

**Monthly Average Ancillary Services Price**

year	month	MCPC_REGDN	MCPC_NSPIN	MCPC_RRS	MCPC_REGUP
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	\$ 11.14	\$ 19.82	\$ 29.28	\$ 26.37
	7	\$ 6.66	\$ 20.88	\$ 19.92	\$ 19.94
	8	\$ 8.53	\$ 18.12	\$ 17.90	\$ 18.91
	9	\$ 9.89	\$ 15.91	\$ 18.39	\$ 19.54
	10	\$ 12.69	\$ 25.49	\$ 27.86	\$ 27.63
	11	\$ 14.74	\$ 14.39	\$ 20.28	\$ 19.93
	12	\$ 9.08	\$ 7.35	\$ 12.94	\$ 15.62
2022	1	\$ 6.15	\$ 5.07	\$ 8.39	\$ 11.56
	2	\$ 9.60	\$ 16.07	\$ 12.93	\$ 17.69
	3	\$ 17.94	\$ 12.43	\$ 18.67	\$ 22.69
	4	\$ -	\$ -	\$ -	\$ -
	5	\$ -	\$ -	\$ -	\$ -
	6	\$ -	\$ -	\$ -	\$ -
	7	\$ -	\$ -	\$ -	\$ -
	8	\$ -	\$ -	\$ -	\$ -
	9	\$ -	\$ -	\$ -	\$ -
	10	\$ -	\$ -	\$ -	\$ -
	11	\$ -	\$ -	\$ -	\$ -
	12	\$ -	\$ -	\$ -	\$ -

Monthly Average A/S Cost per MWh Load					
year	month	AScost_REGDN	AScost_NSPIIN	AScost_RRS	AScost_REGUP
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	\$ 0.07	\$ 0.58	\$ 1.44	\$ 0.17
	7	\$ 0.04	\$ 1.12	\$ 0.94	\$ 0.11
	8	\$ 0.05	\$ 1.25	\$ 0.81	\$ 0.11
	9	\$ 0.06	\$ 1.54	\$ 0.97	\$ 0.12
	10	\$ 0.09	\$ 2.83	\$ 1.85	\$ 0.21
	11	\$ 0.11	\$ 1.82	\$ 1.60	\$ 0.15
	12	\$ 0.06	\$ 0.89	\$ 0.94	\$ 0.11
2022	1	\$ 0.04	\$ 0.44	\$ 0.55	\$ 0.09
	2	\$ 0.08	\$ 1.47	\$ 0.82	\$ 0.14
	3	\$ 0.17	\$ 1.15	\$ 1.40	\$ 0.22
	4	\$ -	\$ -	\$ -	\$ -
	5	\$ -	\$ -	\$ -	\$ -
	6	\$ -	\$ -	\$ -	\$ -
	7	\$ -	\$ -	\$ -	\$ -
	8	\$ -	\$ -	\$ -	\$ -
	9	\$ -	\$ -	\$ -	\$ -
	10	\$ -	\$ -	\$ -	\$ -
	11	\$ -	\$ -	\$ -	\$ -
	12	\$ -	\$ -	\$ -	\$ -

ERCOT-wide Cumulative PNM			
year	month	pnm	pnm_accum
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	\$ 10,048.24	\$ 743,841.42
	7	\$ 5,447.42	\$ 749,288.84
	8	\$ 3,062.97	\$ 752,351.81
	9	\$ 3,075.26	\$ 755,427.07
	10	\$ 5,596.65	\$ 761,023.72
	11	\$ 5,656.41	\$ 766,680.13
	12	\$ 2,293.71	\$ 768,973.84
2022	0	\$ -	\$ -
	1	\$ 2,245.58	\$ 2,245.58
	2	\$ 14,589.18	\$ 16,834.76
	3	\$ 4,492.68	\$ 21,327.44
	4	\$ -	\$ -
	5	\$ -	\$ -
	6	\$ -	\$ -
	7	\$ -	\$ -
	8	\$ -	\$ -
	9	\$ -	\$ -
	10	\$ -	\$ -
	11	\$ -	\$ -
	12	\$ -	\$ -



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
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	(663)	622	645	(158)	(535)	78
	7	(383)	971	950	302	(501)	530
	8	106	1,519	1,062	247	32	627
	9	26	1,548	410	113	172	1,049
	10	25	872	154	52	80	435
	11	(208)	36	77	(72)	(98)	(166)
	12	(568)	(297)	180	(395)	256	135
2022	1	(408)	171	670	86	190	25
	2	(1,031)	155	689	(222)	(62)	442
	3	(897)	(126)	(168)	(643)	(588)	(395)
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
	11	-	-	-	-	-	-
	12	-	-	-	-	-	-

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
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	12,577	7,161	9,179	12,511	9,782	7,803
	7	9,833	5,215	7,223	9,405	7,174	5,318
	8	12,425	7,508	10,092	12,428	9,872	7,849
	9	13,114	6,136	7,634	12,472	10,567	7,265
	10	13,538	9,761	10,995	14,051	11,991	9,768
	11	14,149	9,423	10,265	13,841	13,372	10,657
	12	14,855	11,289	12,050	14,740	13,604	11,416
2022	1	13,020	9,623	9,868	12,555	13,127	10,415
	2	14,195	10,245	11,028	13,744	13,920	11,206
	3	16,027	13,581	13,844	15,591	16,250	14,236
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
	11	-	-	-	-	-	-
	12	-	-	-	-	-	-







