

To the Public Utility Commission of Texas

ERCOT Wholesale Electricity Market Monthly Report

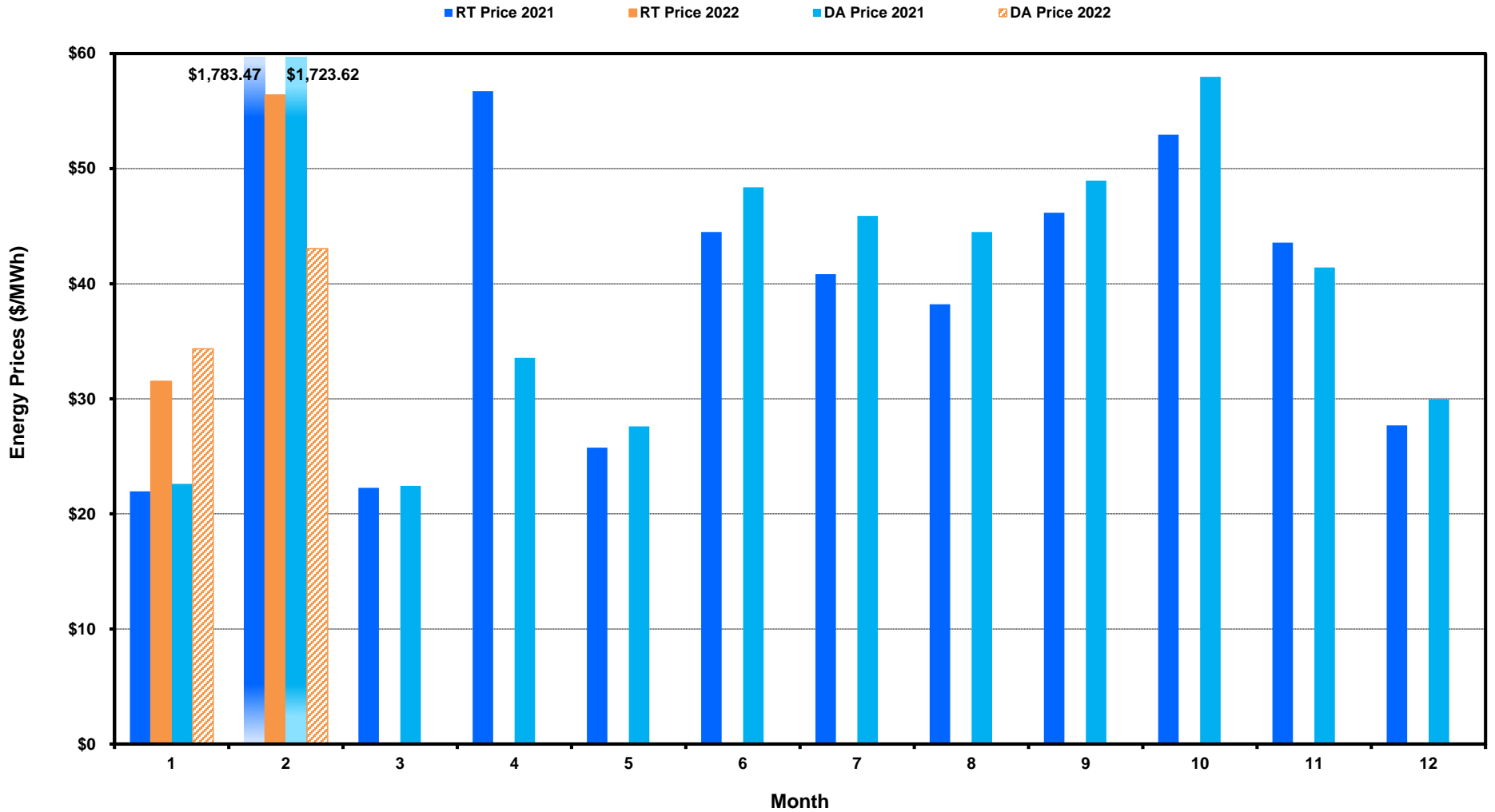
Thursday, March 10, 2022

Potomac Economics, Ltd.
Independent Market Monitor

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

ERCOT-wide Average Energy Prices DA vs RT

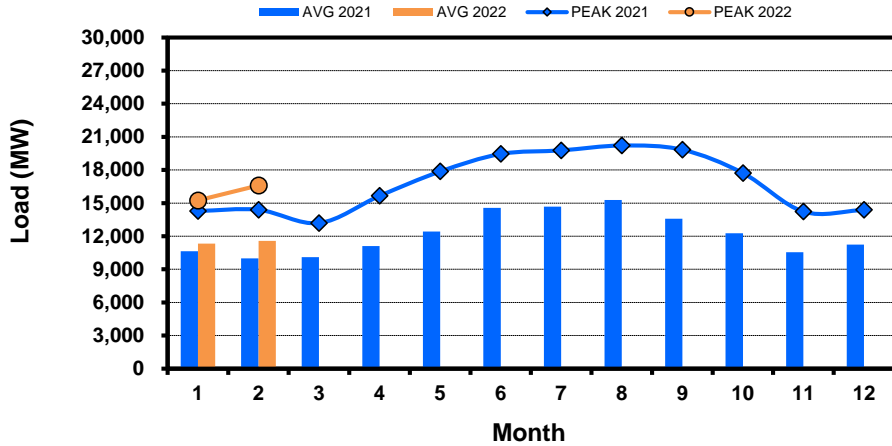
(avg. DA & RT SPPs weighted by Real Time Settlement Loads)



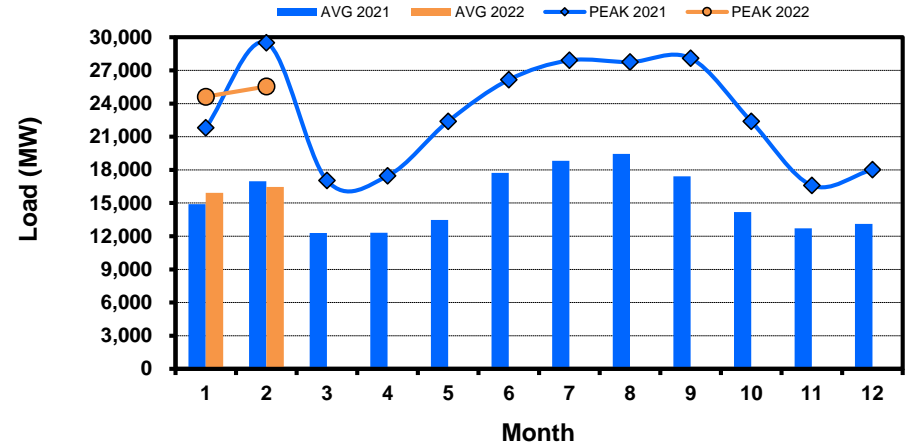
Load Zone Load Statistics

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

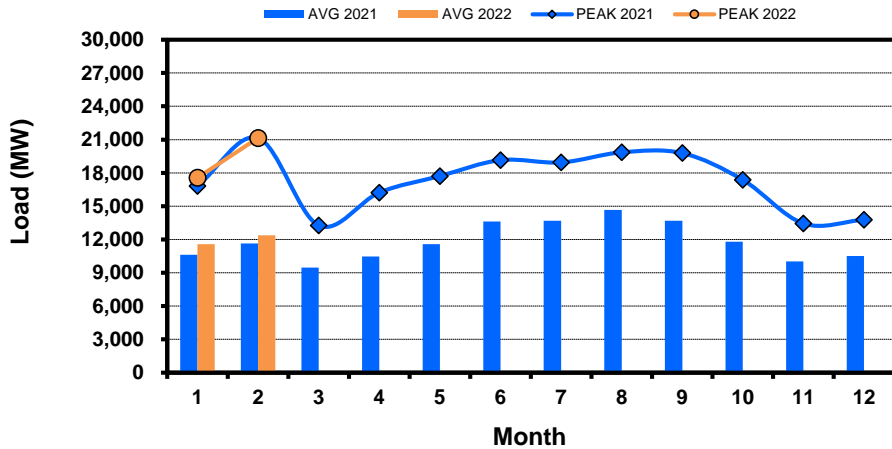
Houston Zone



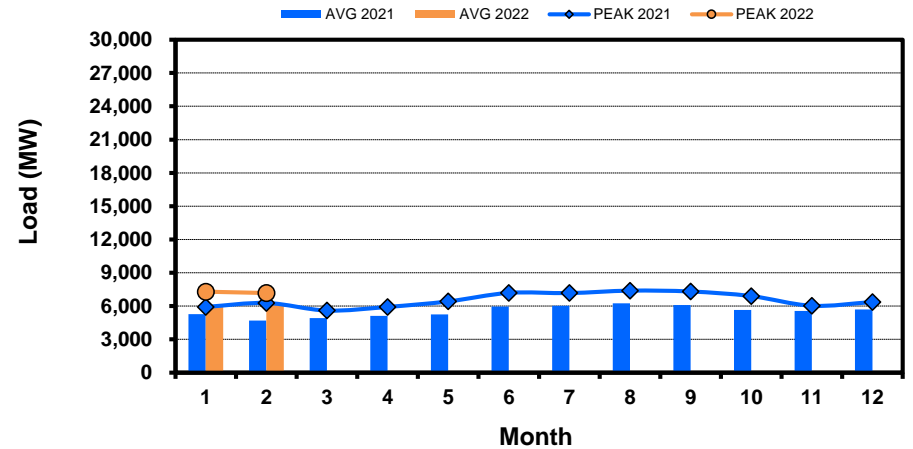
North Zone



South Zone



West Zone

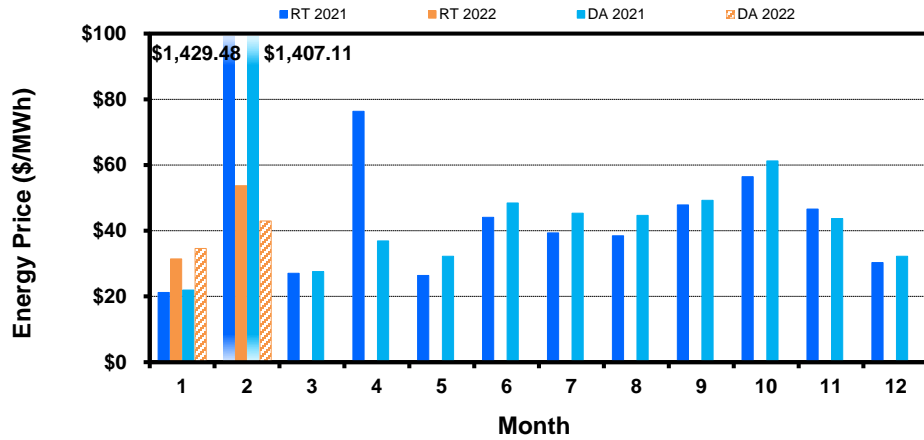


Note: * Zonal load zone definition vs. Nodal comparable load zone definition: LZ_Houston=LZ_Houston; LZ_West=LZ_West; LZ_North=(LZ_North,LZ_RAYBN); LZ_South=(LZ_South,LZ_CPS,LZ_AEN,LZ_LCRA)

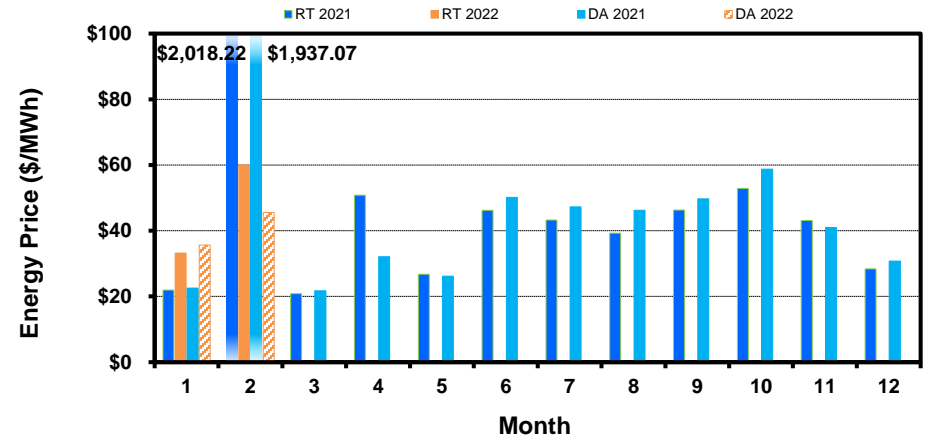
Load Zone Monthly Average Energy Price DA vs RT

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

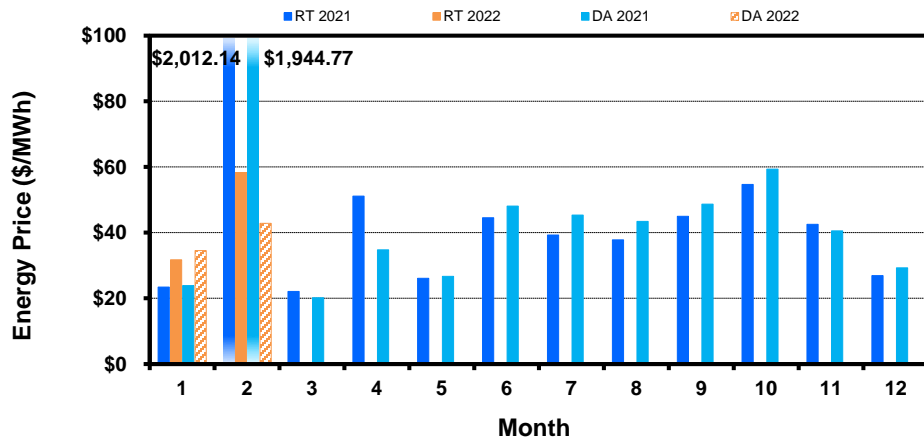
Houston Zone



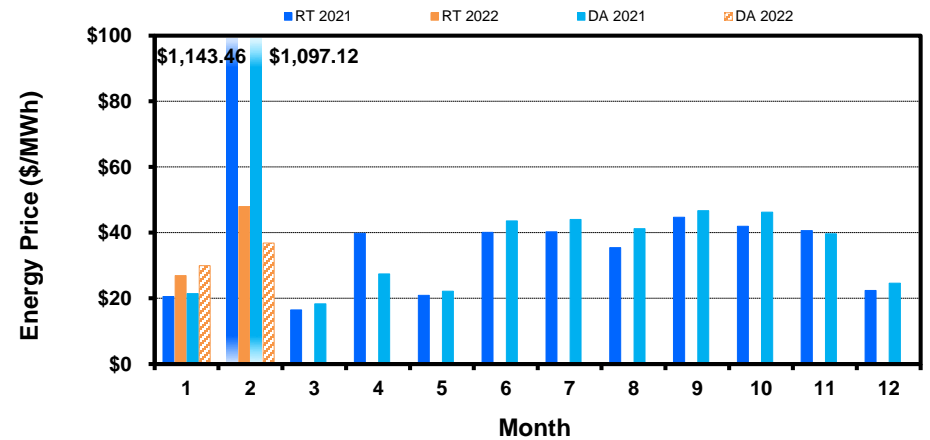
North Zone



South Zone



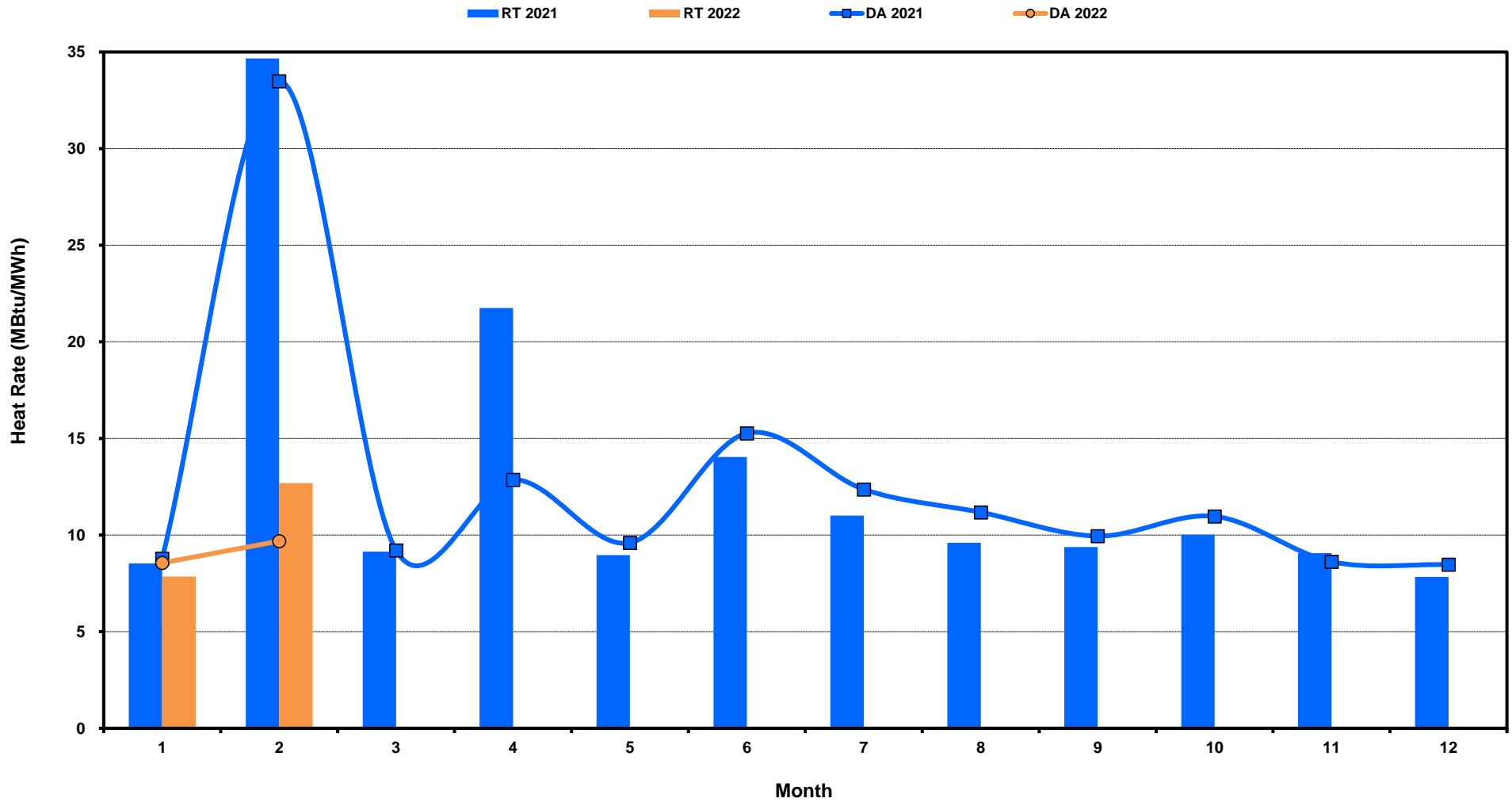
West Zone



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

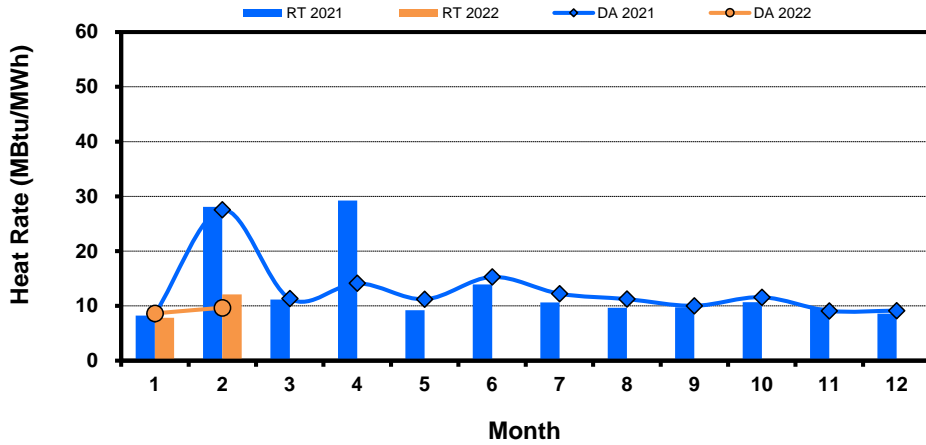
(avg. heat rates weighted by Real Time Settlement Loads)



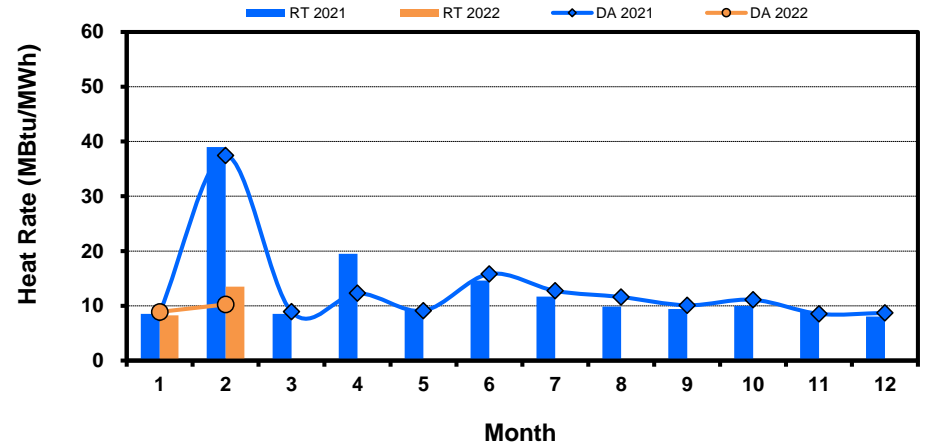
Load Zone Monthly Implied Heat Rate DA vs RT

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

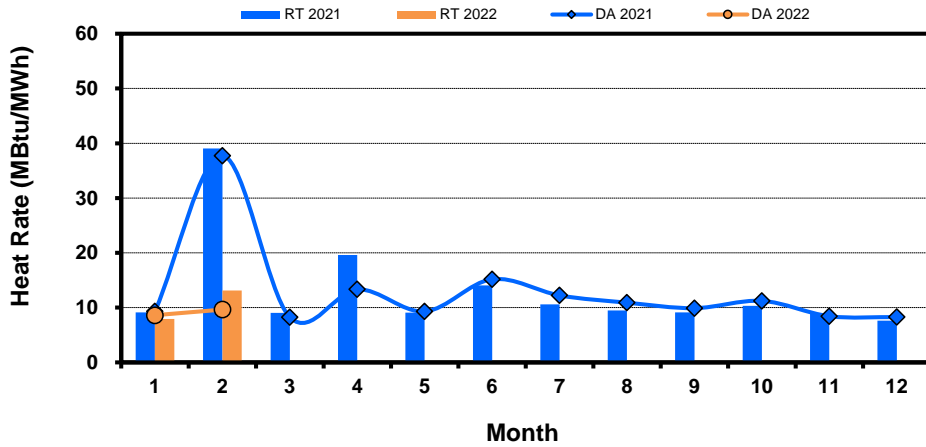
Houston Zone



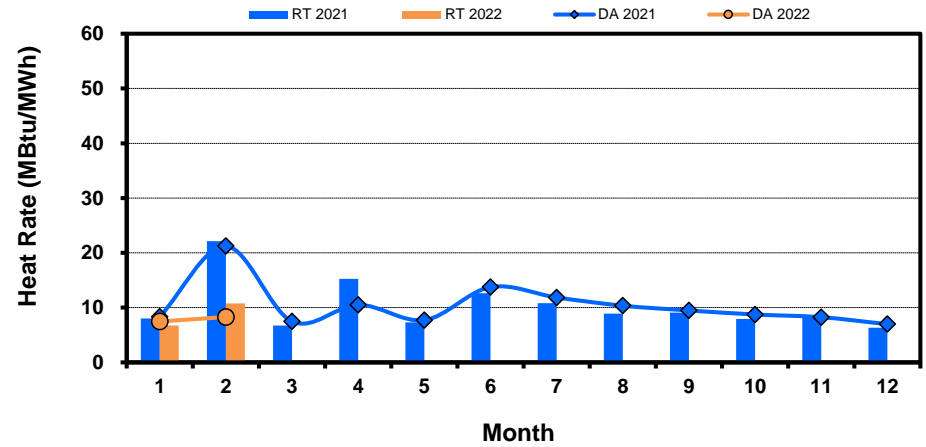
North Zone



South Zone



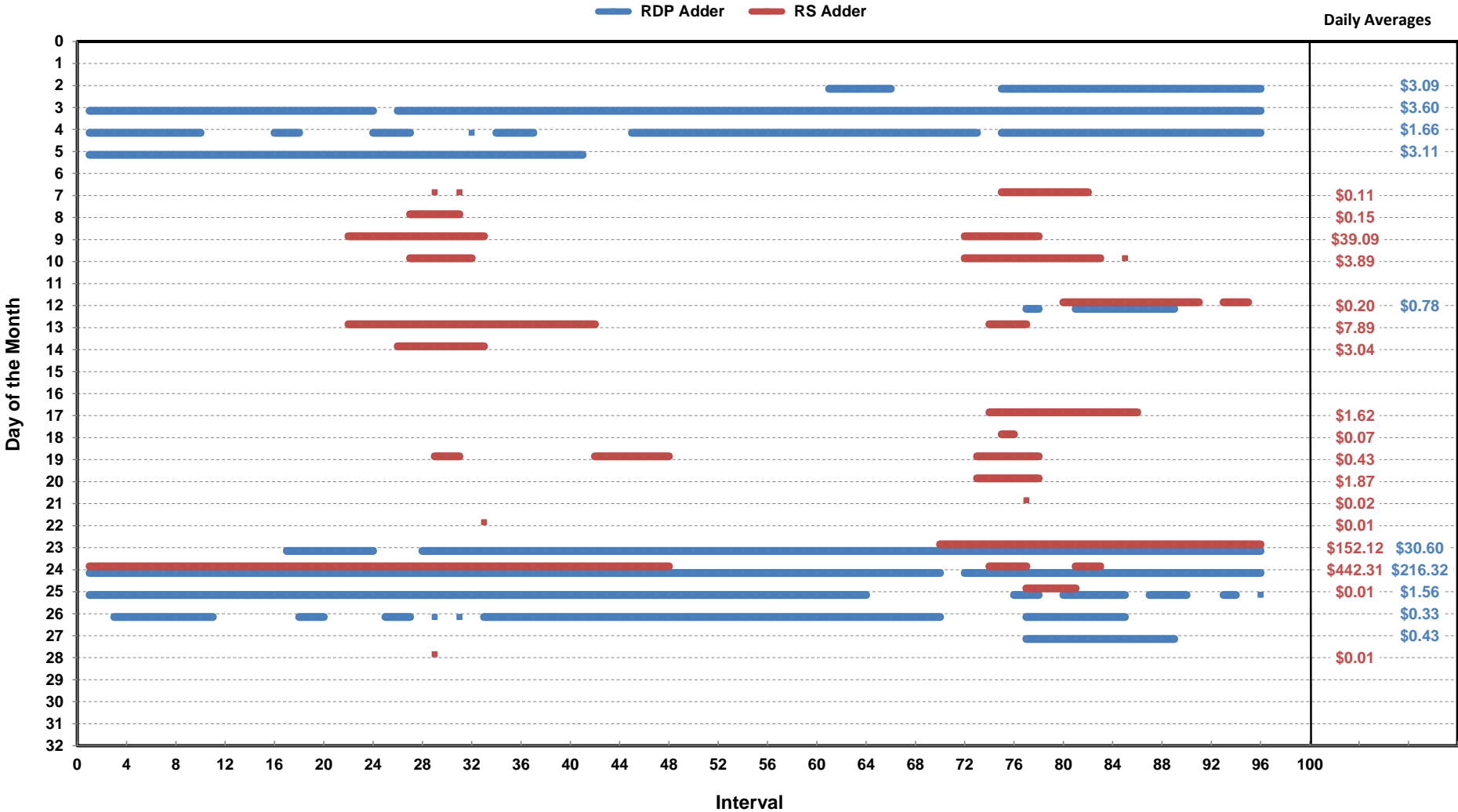
West Zone



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)

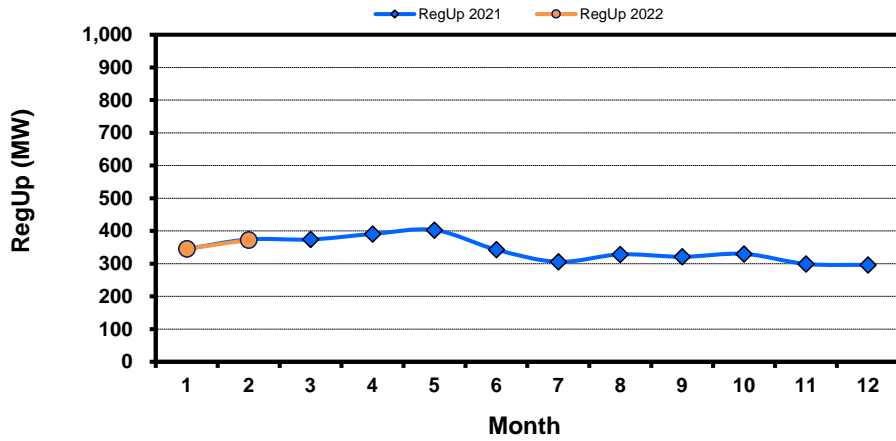
Daily ORDC Adders Average Values and Interval Duration

Feb-2022

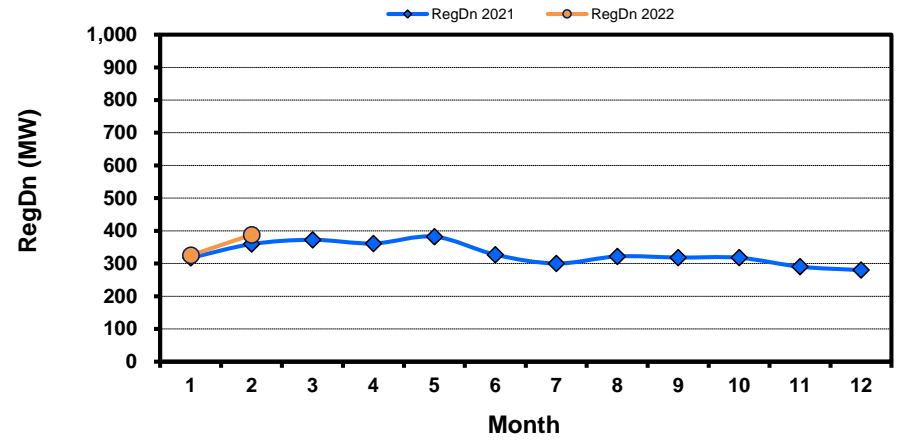


Monthly Average of Ancillary Services Required MW

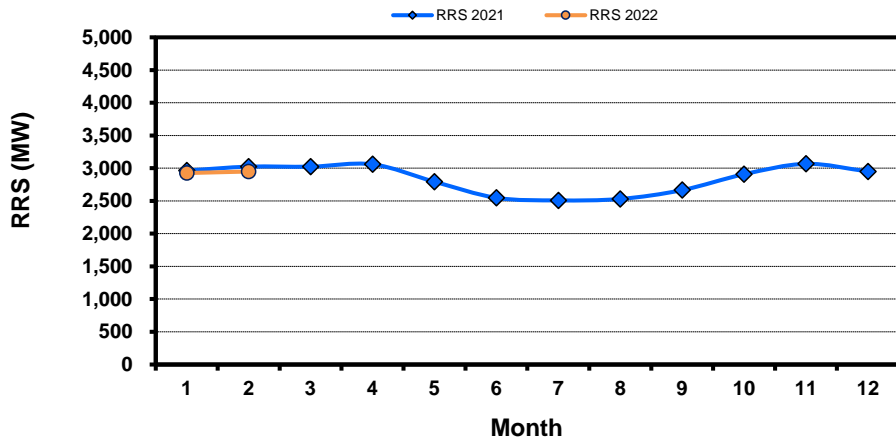
Regulation Up



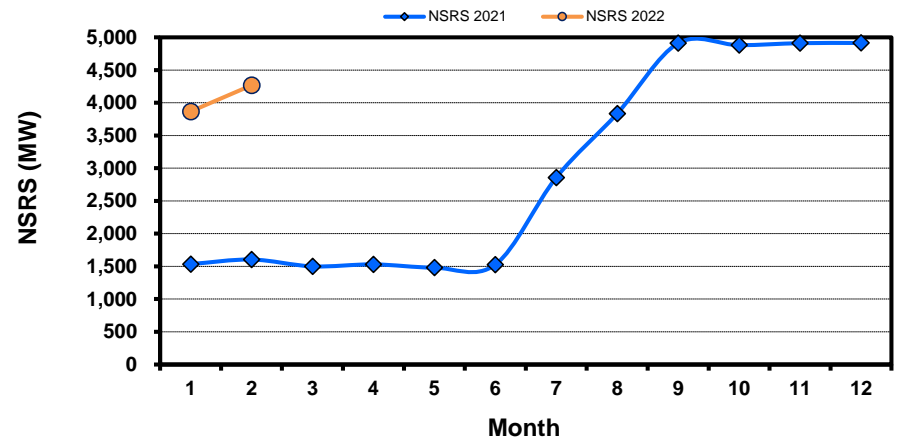
Regulation Down



Responsive Reserve

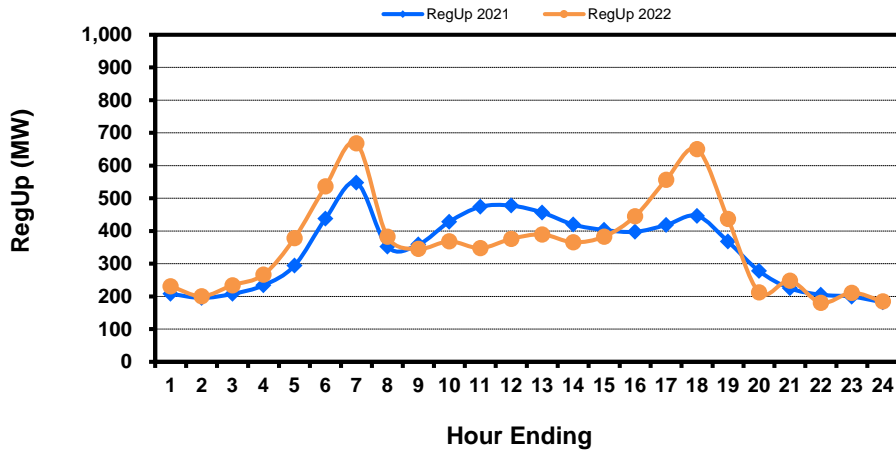


Non-Spin Reserve

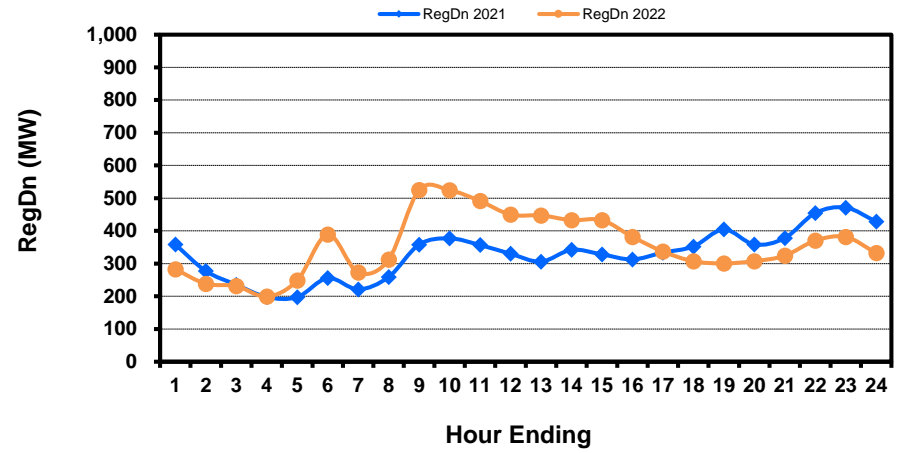


Hourly Average of Ancillary Services Required MW

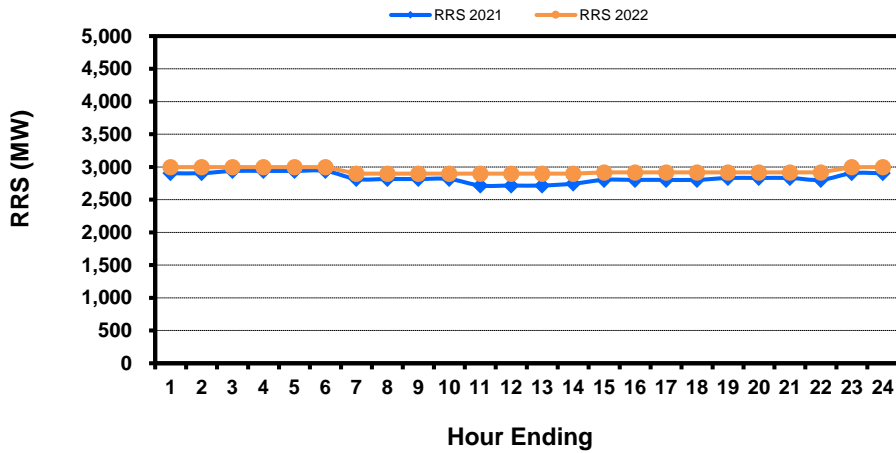
Regulation Up



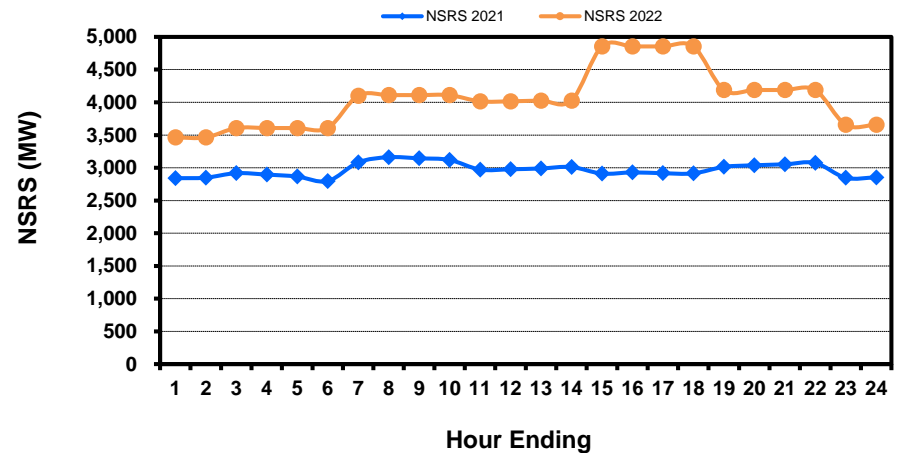
Regulation Down



Responsive Reserve



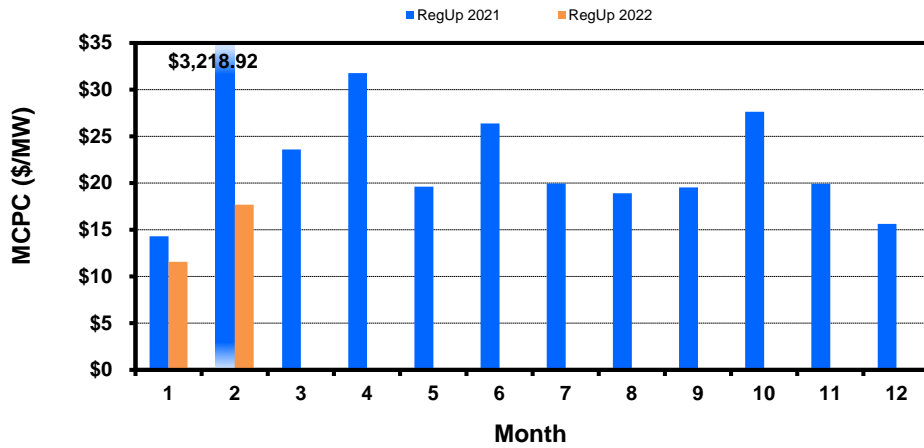
Non-Spin Reserve



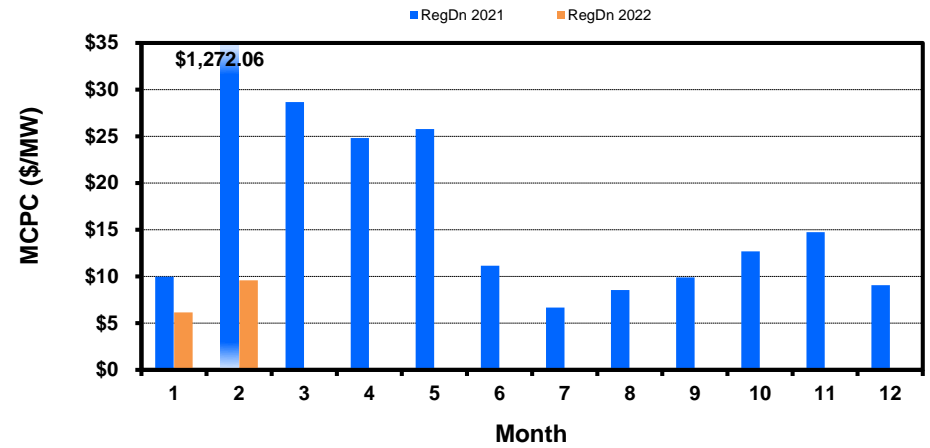
Monthly Average Ancillary Services Price

(weighted by A/S Quantities Required)

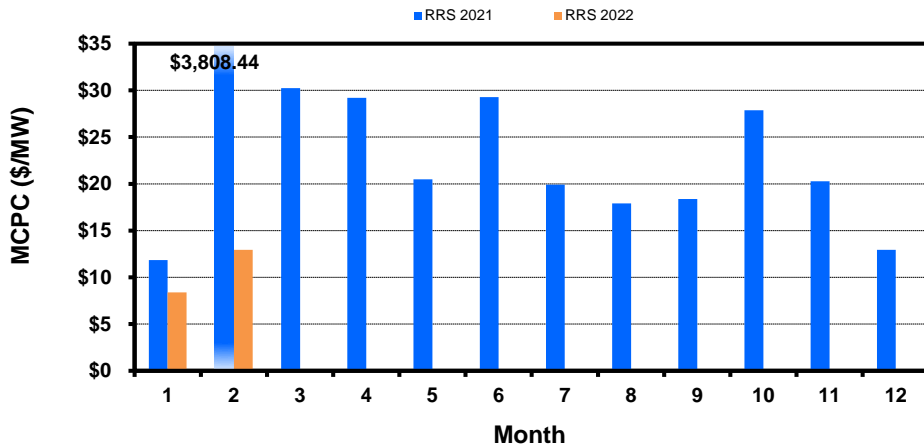
Regulation Up



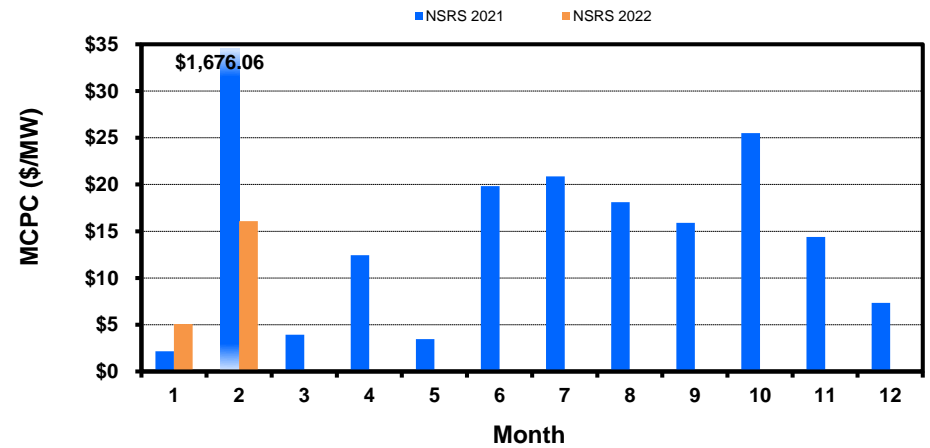
Regulation Down



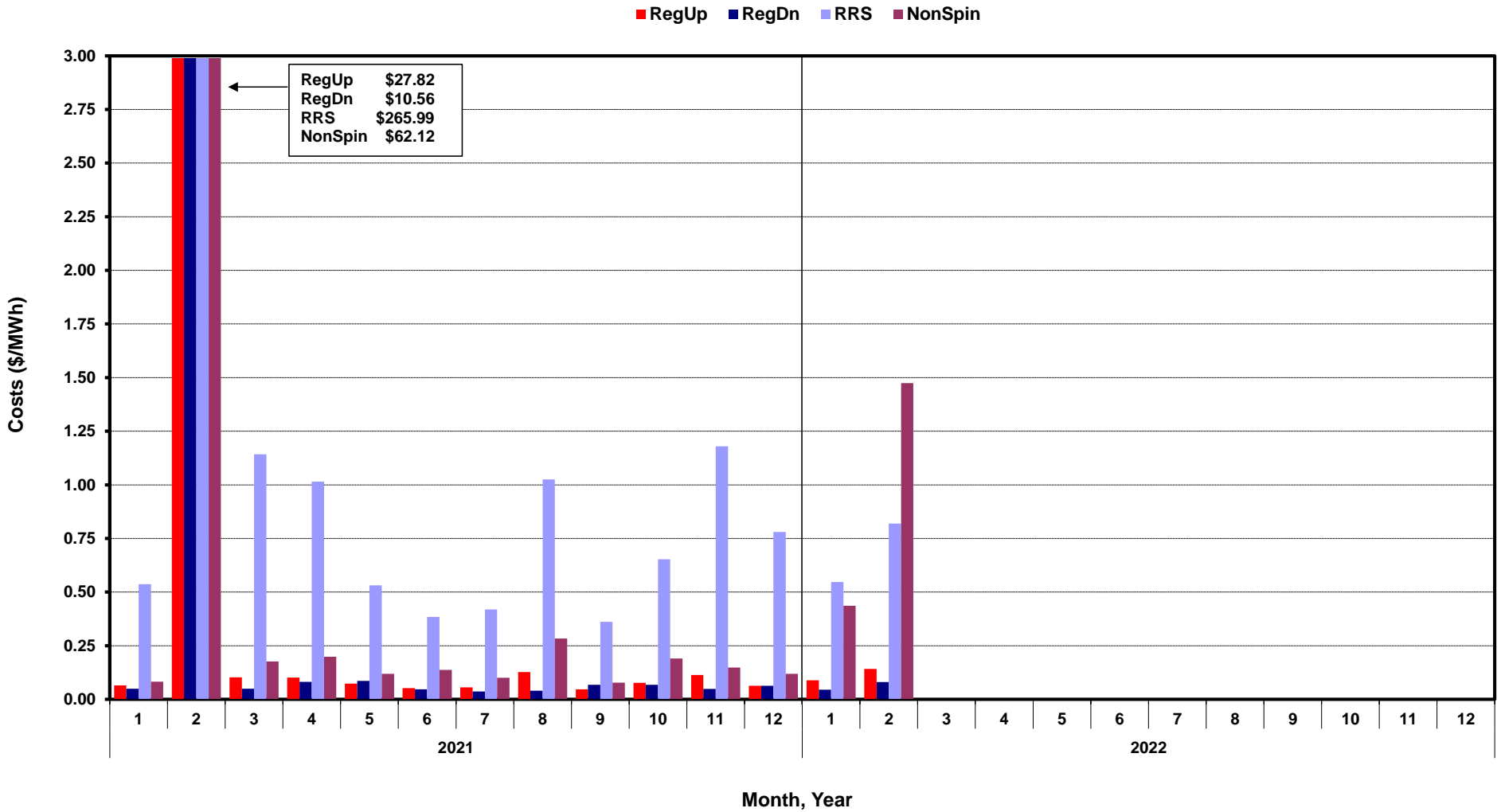
Responsive Reserve



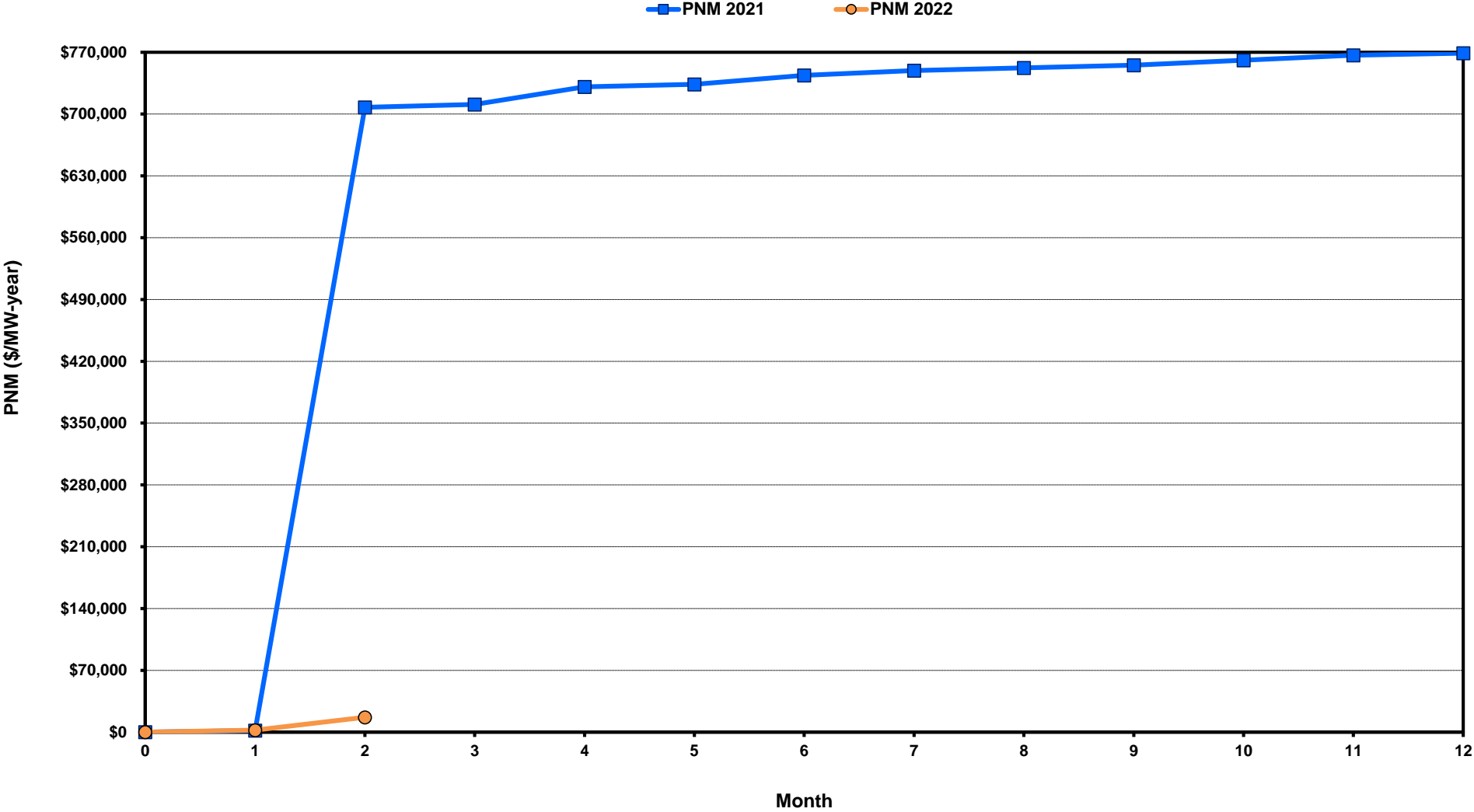
Non-Spin Reserve



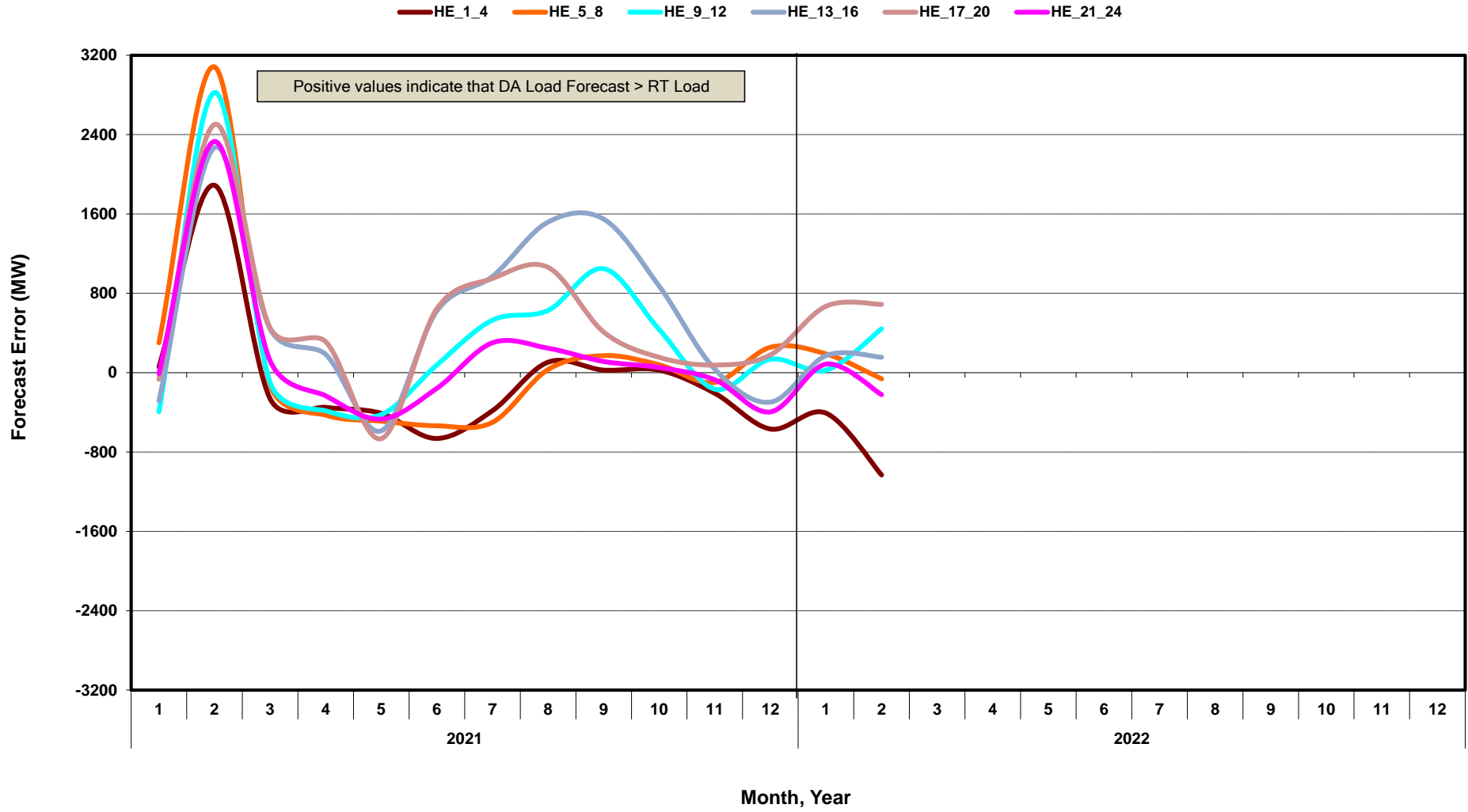
Monthly Average A/S Cost per MWh Load



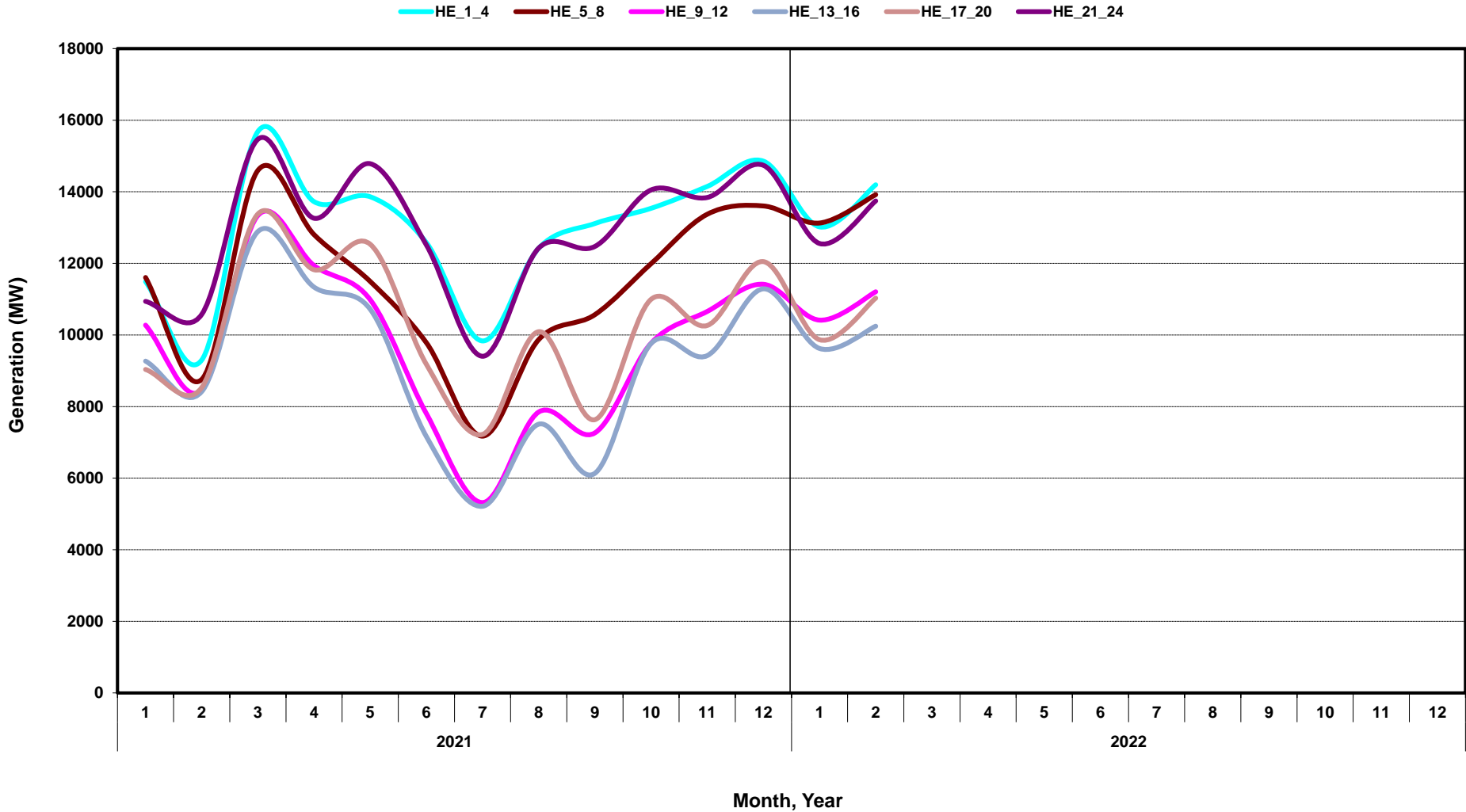
ERCOT-wide Cumulative Peaker Net Margin



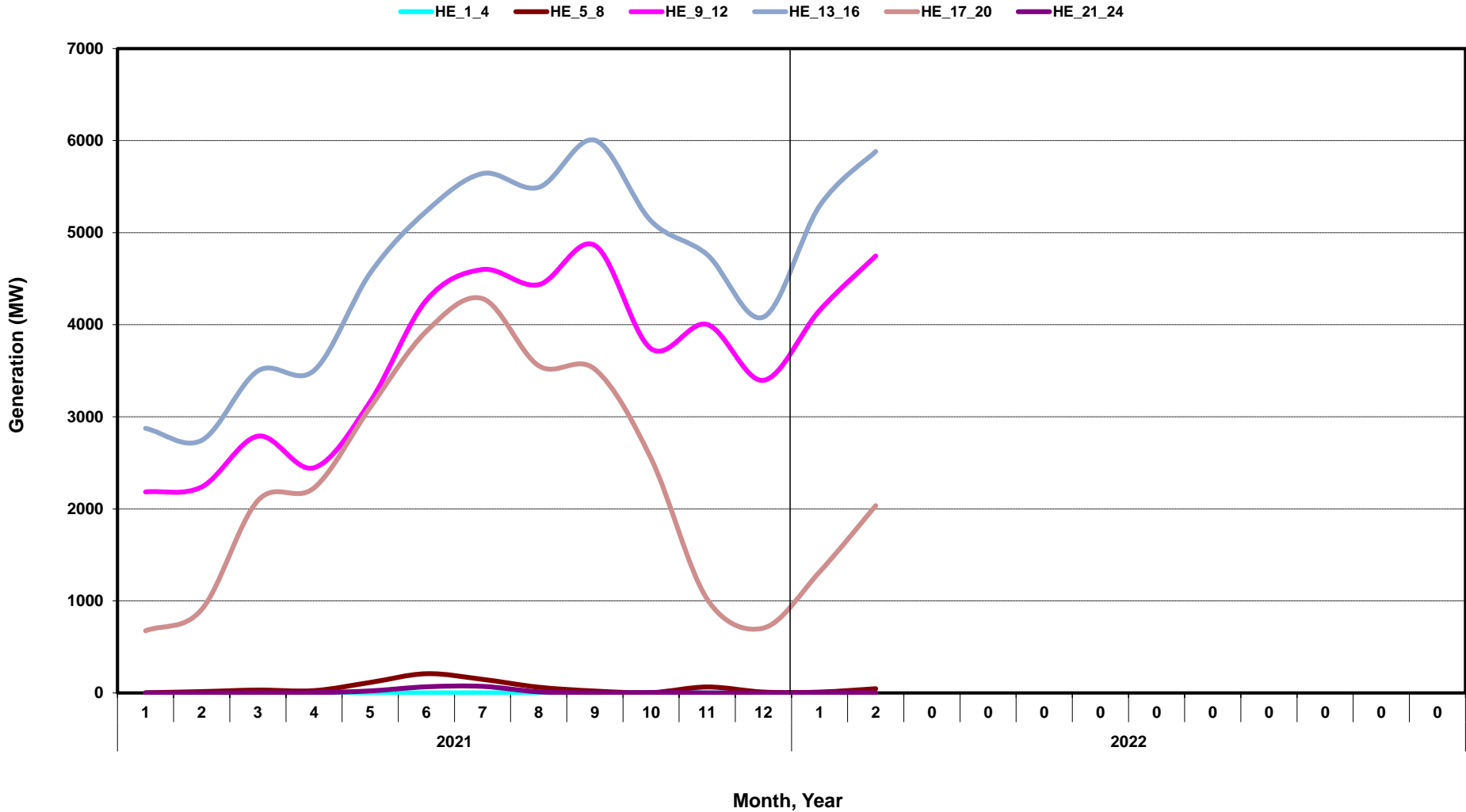
DA vs. RT Load Forecast Error by Hour Ending



Monthly Average of Wind Generation by Hour Ending

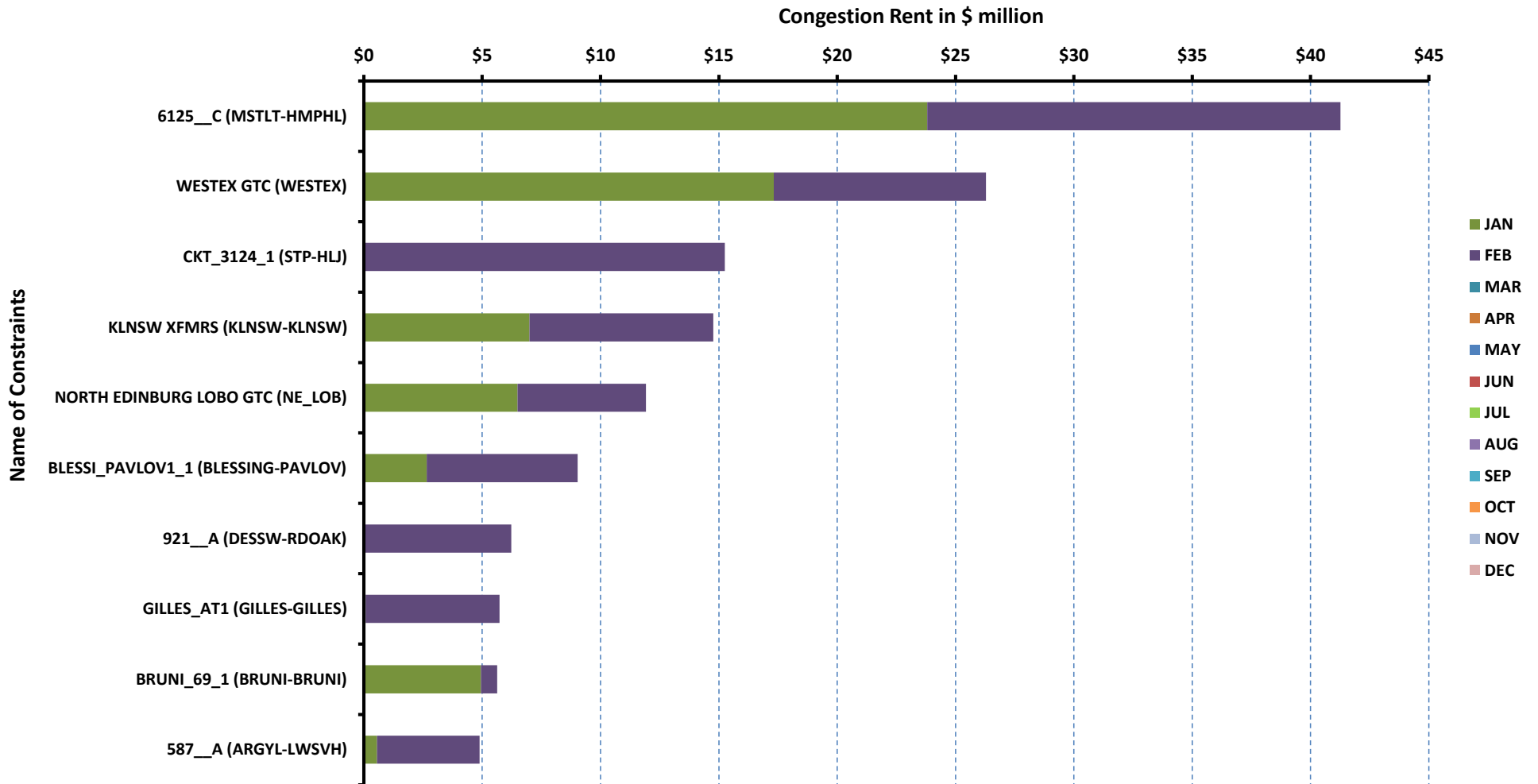


Monthly Average of Solar Generation by Hour Ending



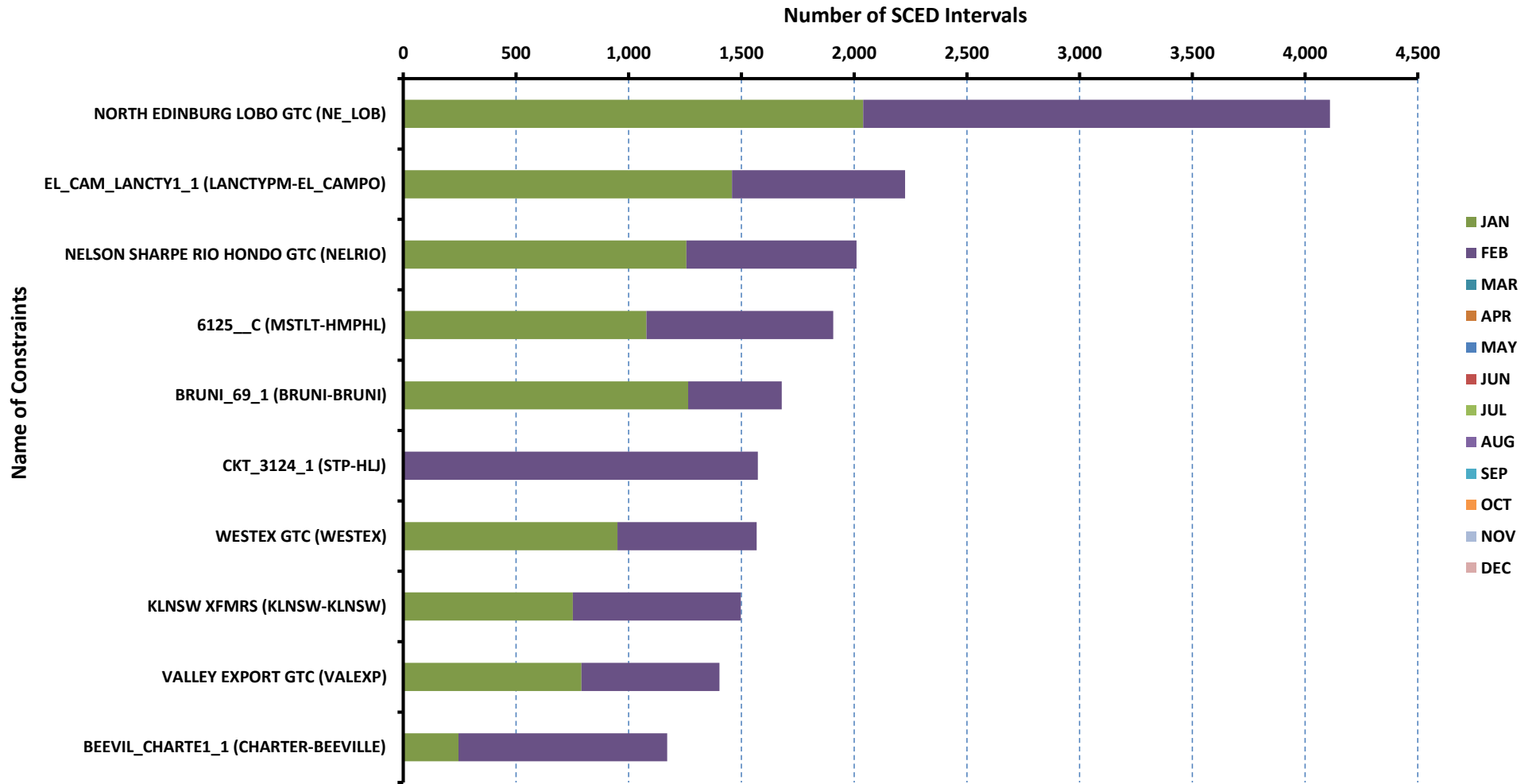
RT Congestion Constraint Rankings - 1

Top 10 Constraints by Total Congestion Value - 2022



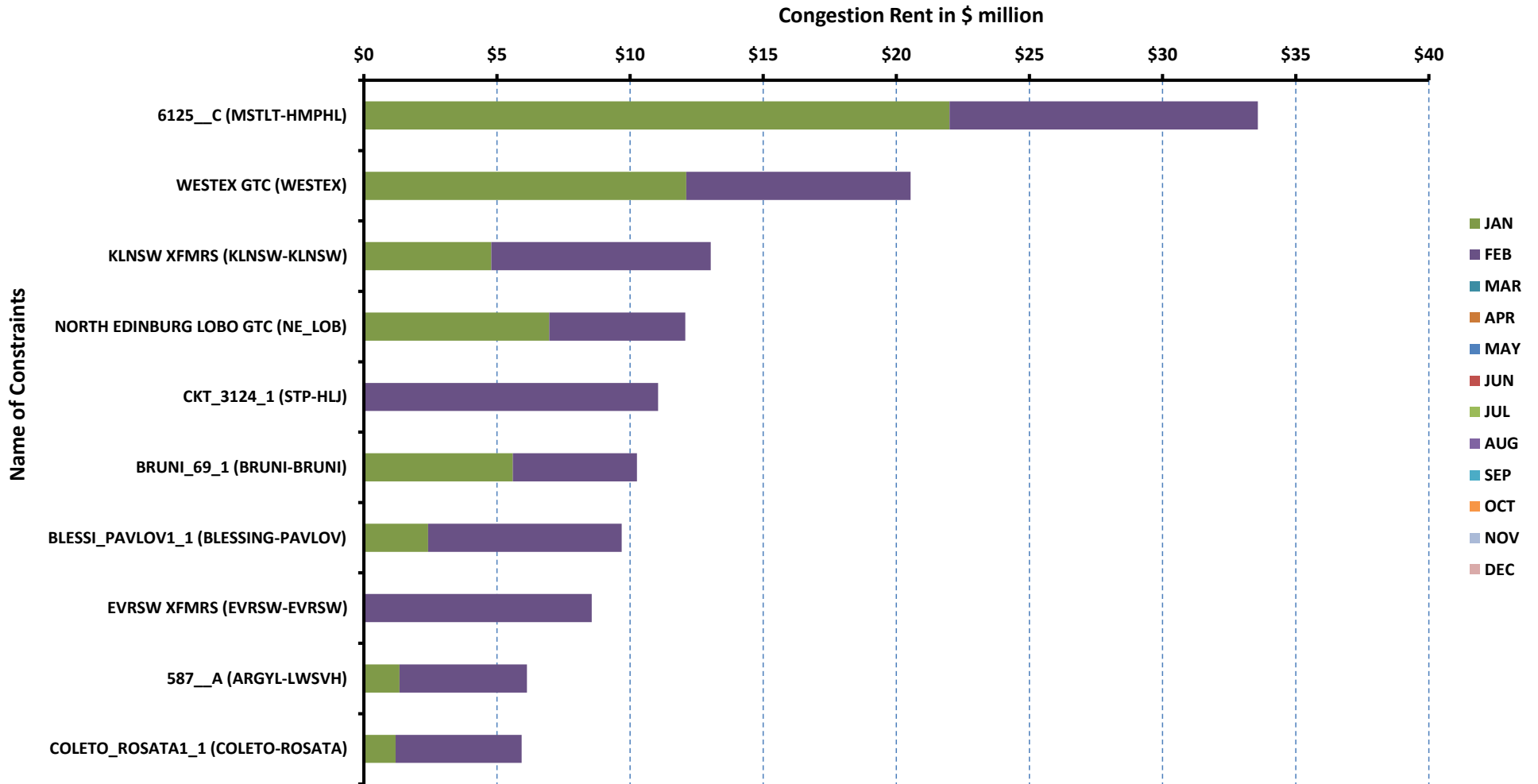
RT Congestion Constraint Rankings - 2

Top 10 Constraints by Binding Frequency - 2022



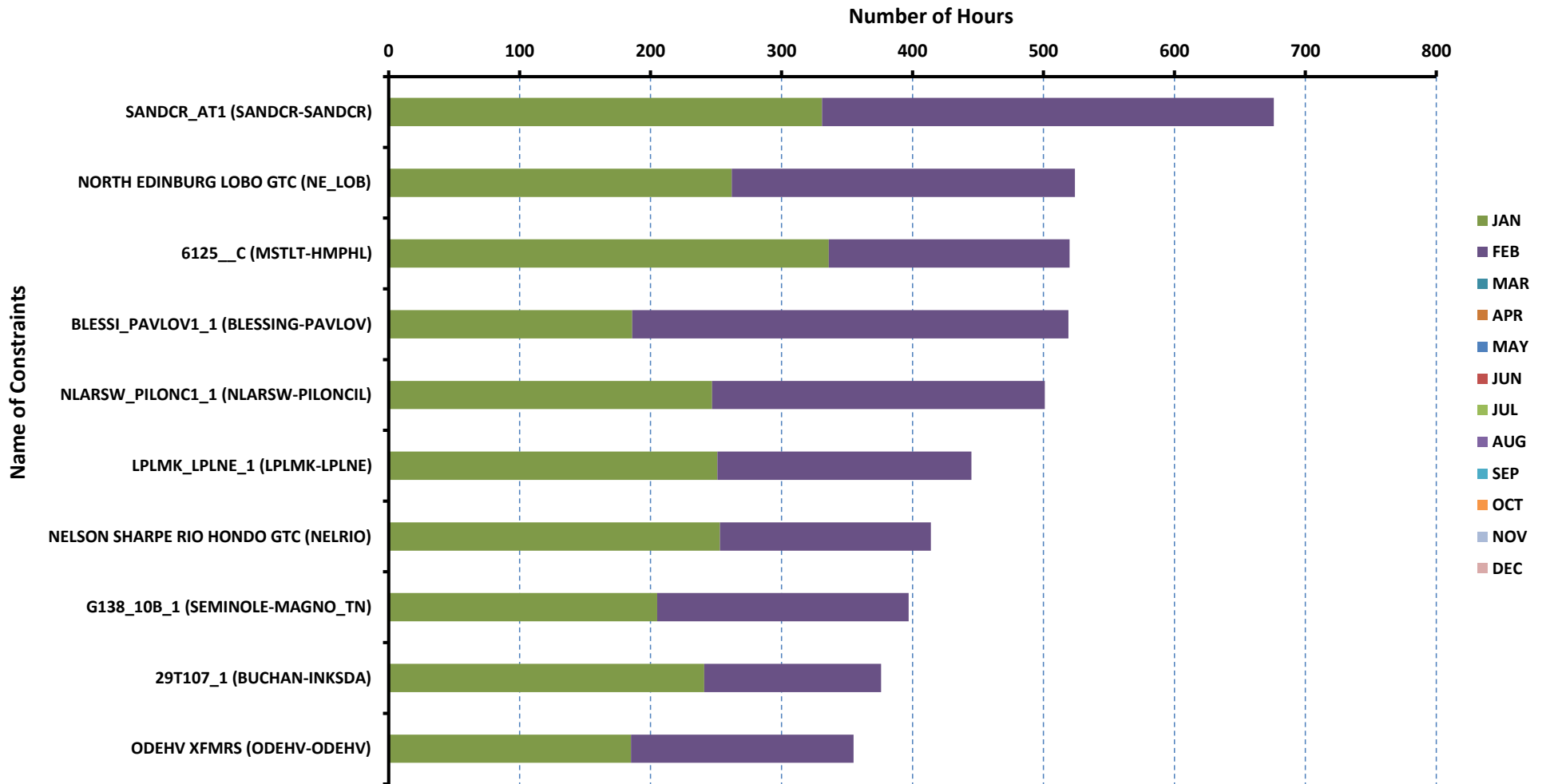
DA Congestion Constraint Rankings - 1

Top 10 Constraints by Total Congestion Value - 2022



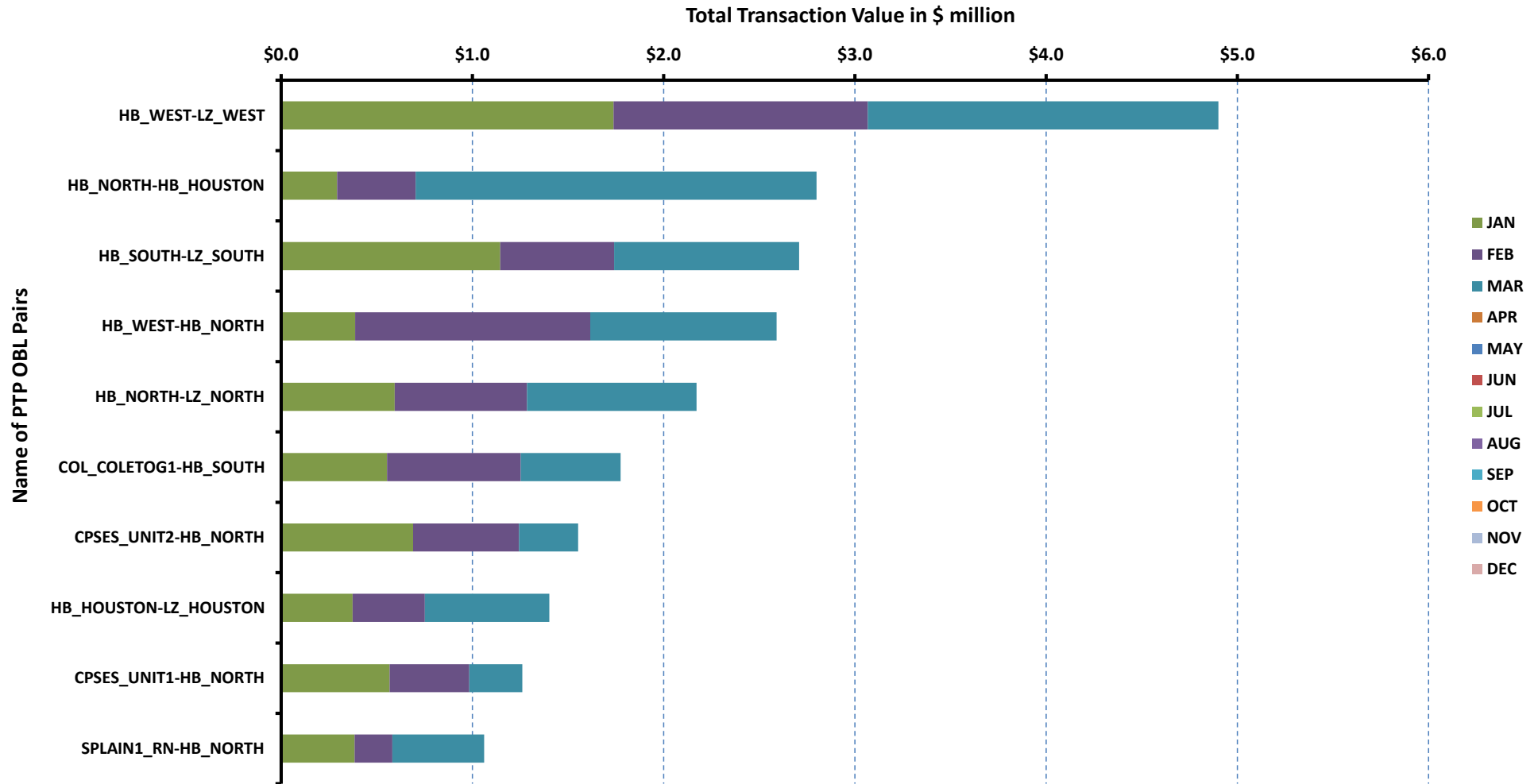
DA Congestion Constraint Rankings - 2

Top 10 Constraints by Binding Frequency - 2022



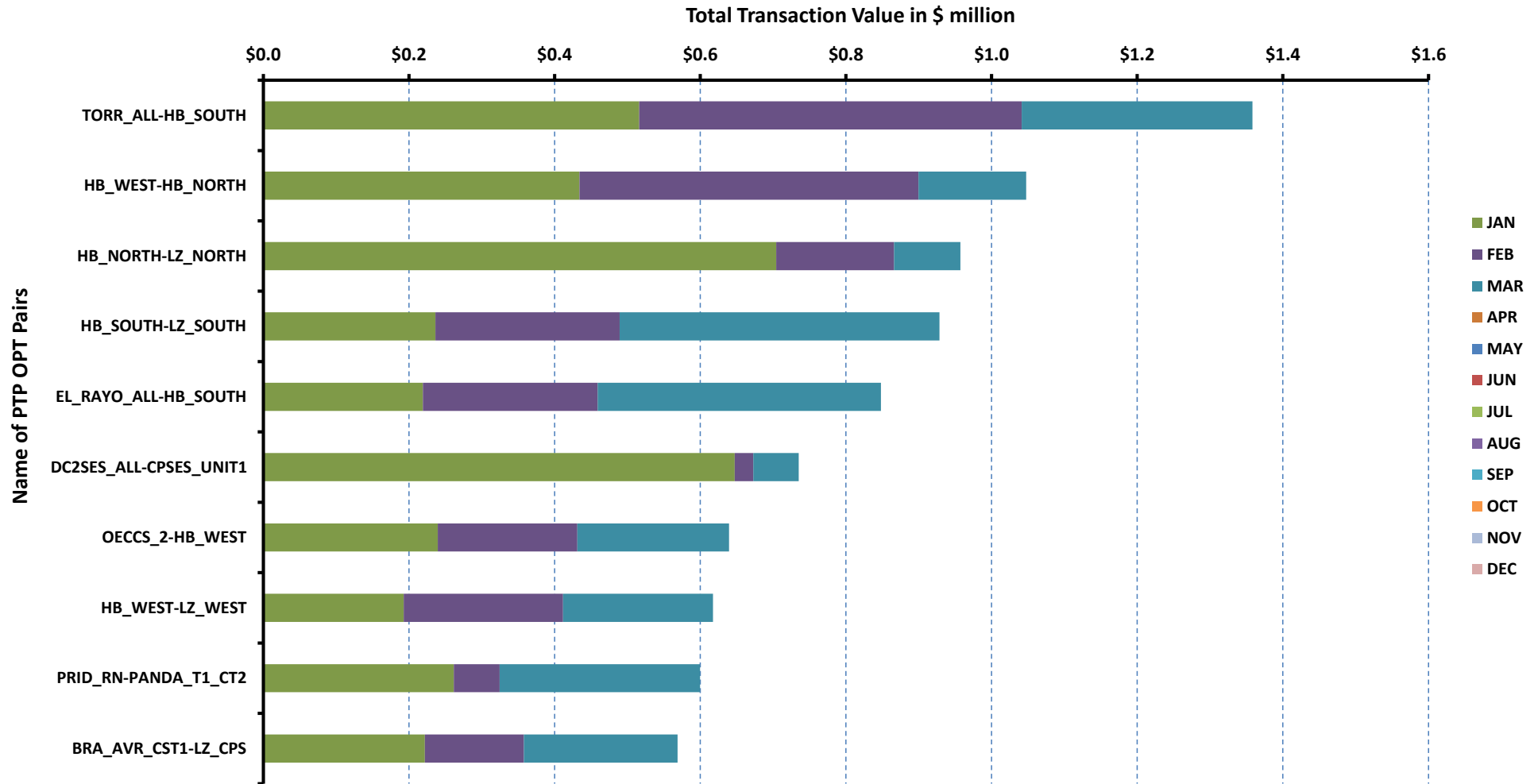
Top 10 CRR Pairs Ranked by Monthly Auction Values - 1

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	\$ 46.18
	10	\$ 57.98	\$ 52.95
	11	\$ 41.42	\$ 43.56
	12	\$ 29.94	\$ 27.69
2022	1	\$ 34.34	\$ 31.53
	2	\$ 43.05	\$ 56.40
	3	\$ -	\$ -
	4	\$ -	\$ -
	5	\$ -	\$ -
	6	\$ -	\$ -
	7	\$ -	\$ -
	8	\$ -	\$ -
	9	\$ -	\$ -
	10	\$ -	\$ -
	11	\$ -	\$ -
	12	\$ -	\$ -

ERCOT-wide Monthly Implied Heat Rate - DA vs. RT						
year	month	gasprice	rtn_spp	HR_rtn	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	\$ 46.18	9.38	\$ 48.95	9.95
	10	\$ 5.29	\$ 52.95	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	\$ 34.34	8.56
	2	\$ 4.45	\$ 56.40	12.69	\$ 43.05	9.69
	3	\$ -	\$ -	-	\$ -	-
	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	2	1	\$ -	\$ -	0	0	80	90
2022	2	2	\$ -	\$ 3.09	0	28	80	90
2022	2	3	\$ -	\$ 3.60	0	95	80	90
2022	2	4	\$ -	\$ 1.66	0	73	80	90
2022	2	5	\$ -	\$ 3.11	0	41	80	90
2022	2	6	\$ -	\$ -	0	0	80	90
2022	2	7	\$ 0.11	\$ -	10	0	80	90
2022	2	8	\$ 0.15	\$ -	5	0	80	90
2022	2	9	\$ 39.09	\$ -	19	0	80	90
2022	2	10	\$ 3.89	\$ -	19	0	80	90
2022	2	11	\$ -	\$ -	0	0	80	90
2022	2	12	\$ 0.20	\$ 0.78	15	11	80	90
2022	2	13	\$ 7.89	\$ -	25	0	80	90
2022	2	14	\$ 3.04	\$ -	8	0	80	90
2022	2	15	\$ -	\$ -	0	0	80	90
2022	2	16	\$ -	\$ -	0	0	80	90
2022	2	17	\$ 1.62	\$ -	13	0	80	90
2022	2	18	\$ 0.07	\$ -	2	0	80	90
2022	2	19	\$ 0.43	\$ -	16	0	80	90
2022	2	20	\$ 1.87	\$ -	6	0	80	90
2022	2	21	\$ 0.02	\$ -	1	0	80	90
2022	2	22	\$ 0.01	\$ -	1	0	80	90
2022	2	23	\$ 152.12	\$ 30.60	27	77	80	90
2022	2	24	\$ 442.31	\$ 216.32	55	95	80	90
2022	2	25	\$ 0.01	\$ 1.56	5	80	80	90
2022	2	26	\$ -	\$ 0.33	0	64	80	90
2022	2	27	\$ -	\$ 0.43	0	13	80	90
2022	2	28	\$ 0.01	\$ -	1	0	80	90
0	0	0	\$ -	\$ -	0	0	0	0
0	0	0	\$ -	\$ -	0	0	0	0
0	0	0	\$ -	\$ -	0	0	0	0

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	-	-	-	-
	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	283	3,464	2,998	231
	2	239	3,464	2,998	201
	3	232	3,607	2,998	234
	4	199	3,607	2,998	267
	5	248	3,607	2,998	378
	6	389	3,607	2,998	536
	7	273	4,102	2,898	668
	8	312	4,110	2,898	383
	9	525	4,110	2,898	345
	10	524	4,110	2,898	368
	11	491	4,015	2,898	348
	12	450	4,015	2,898	376
	13	447	4,027	2,898	390
	14	433	4,027	2,898	366
	15	433	4,854	2,916	383
	16	382	4,854	2,916	445
	17	337	4,854	2,916	556
	18	307	4,854	2,916	650
	19	301	4,188	2,916	437
	20	307	4,188	2,916	213
	21	324	4,188	2,916	248
	22	370	4,188	2,916	180
	23	382	3,657	2,998	211
	24	332	3,657	2,998	185

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	\$ -	\$ -	\$ -	\$ -
	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	\$ -	\$ -	\$ -	\$ -
	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	\$ -	\$ -
	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	-	-	-	-	-	-
	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	-	-	-	-	-	-
	4	-	-	-	-	-	-
	5	-	-	-	-	-	-
	6	-	-	-	-	-	-
	7	-	-	-	-	-	-
	8	-	-	-	-	-	-
	9	-	-	-	-	-	-
	10	-	-	-	-	-	-
	11	-	-	-	-	-	-
	12	-	-	-	-	-	-

