

Market Operations Report

Rana Mukerji

SENIOR VICE PRESIDENT – MARKET STRUCTURES, NYISO

Business Issues Committee Meeting

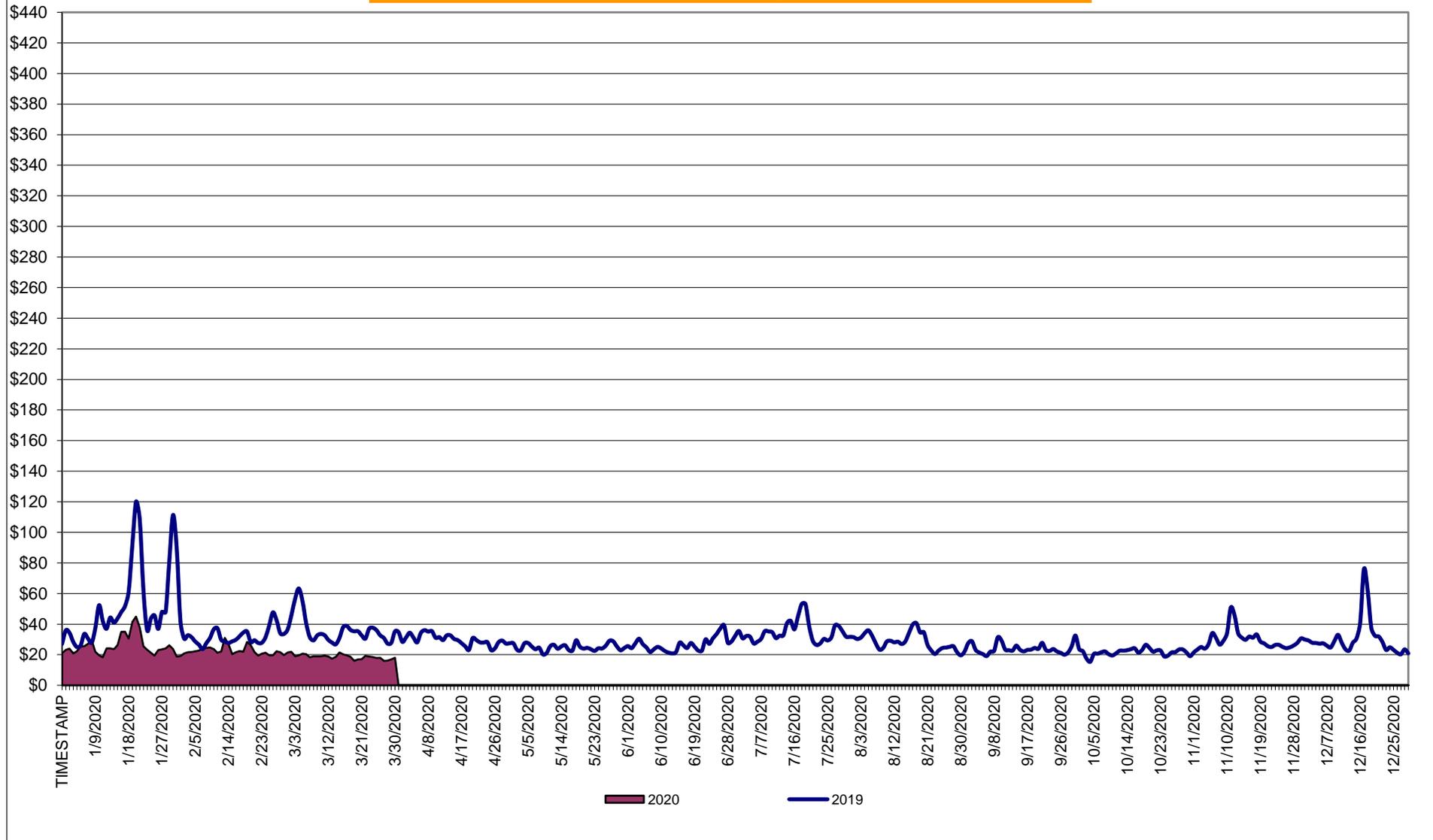
April 8, 2020 Rensselaer, NY

Market Performance Highlights

March 2020

- LBMP for March is \$17.11/MWh; lower than \$21.11/MWh in February 2020 and \$34.91/MWh in March 2019.
 - Day Ahead and Real Time Load Weighted LBMPs are lower compared to February.
- March 2020 average year-to-date monthly cost of \$23.48/MWh is a 45% decrease from \$42.54/MWh in March 2019.
- Average daily sendout is 375 GWh/day in March; lower than 417 GWh/day in February 2020 and 411 GWh/day in March 2019.
- Natural gas and distillate prices are lower compared to the previous month.
 - Natural Gas (Transco Z6 NY) was \$1.49 /MMBtu, down from \$1.87/MMBtu in February.
 - Natural gas prices are down 49.1% year-over-year.
 - Jet Kerosene Gulf Coast was \$7.13/MMBtu, down from \$11.33/MMBtu in February.
 - Ultra Low Sulfur No.2 Diesel NY Harbor was \$8.53/MMBtu, down from \$11.73/MMBtu in February.
 - Distillate prices are down 32.2% year-over-year.
- Uplift per MWh is higher compared to the previous month.
 - Uplift (not including NYISO cost of operations) is (\$0.19)/MWh; higher than (\$0.23)/MWh in February.
 - Local Reliability Share is \$0.07/MWh, higher than \$0.06/MWh in February.
 - Statewide Share is (\$0.26)/MWh, higher than (\$0.29)/MWh in February.
 - TSA \$ per NYC MWh is \$0.00/MWh.
 - Total uplift costs (Schedule 1 components including NYISO Cost of Operations) are higher than February.

Daily NYISO Average Cost/MWh (Energy & Ancillary Services)*
2019 Annual Average \$32.59/MWh
March 2019 YTD Average \$42.54/MWh
March 2020 YTD Average \$23.29/MWh



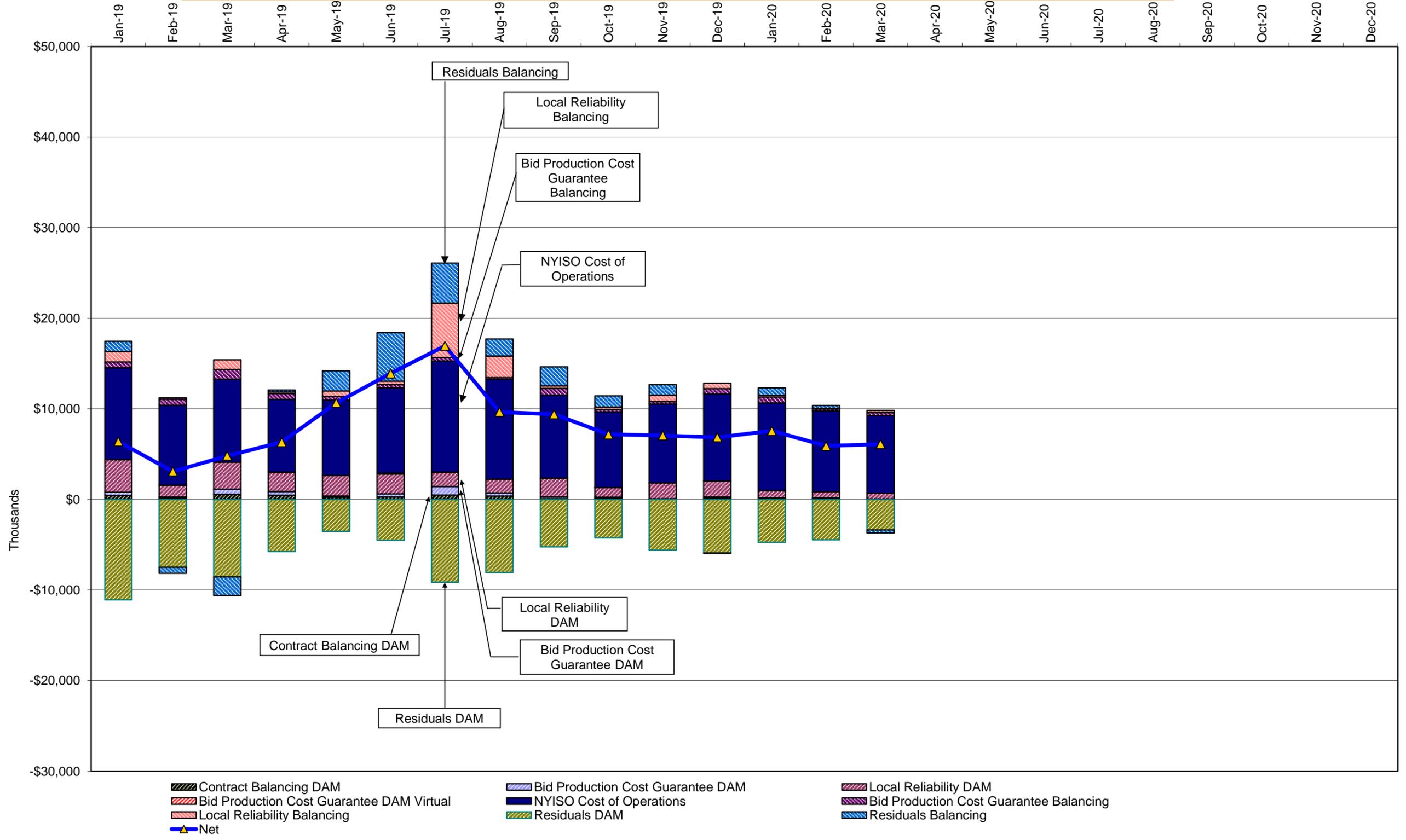
* Excludes ICAP payments.

NYISO Average Cost/MWh (Energy and Ancillary Services) *
from the LBMP Customer point of view

2020	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
LBMP	24.77	21.11	17.11									
NTAC	0.91	0.70	0.86									
Reserve	0.46	0.43	0.47									
Regulation	0.09	0.08	0.09									
NYISO Cost of Operations	0.68	0.69	0.68									
FERC Fee Recovery	0.08	0.09	0.09									
Uplift	(0.15)	(0.23)	(0.19)									
Uplift: Local Reliability Share	0.07	0.06	0.07									
Uplift: Statewide Share	(0.22)	(0.29)	(0.26)									
Voltage Support and Black Start	0.44	0.44	0.44									
Avg Monthly Cost	27.29	23.32	19.55									
Avg YTD Cost	27.29	25.40	23.48									
TSA \$ per NYC MWh	0.00	0.00	0.00									
2019	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
LBMP	50.93	33.51	34.91	28.01	23.10	24.43	33.18	27.83	22.22	20.84	27.39	29.52
NTAC	0.51	0.69	0.98	1.16	0.72	1.08	1.01	0.98	0.48	0.57	0.88	0.77
Reserve	0.54	0.51	0.55	0.63	0.63	0.50	0.44	0.49	0.50	0.62	0.50	0.44
Regulation	0.13	0.11	0.10	0.33	0.13	0.09	0.07	0.09	0.09	0.13	0.11	0.10
NYISO Cost of Operations	0.68	0.68	0.69	0.69	0.68	0.69	0.70	0.70	0.69	0.67	0.67	0.67
FERC Fee Recovery	0.08	0.09	0.09	0.10	0.10	0.08	0.06	0.07	0.09	0.09	0.09	0.08
Uplift	(0.25)	(0.44)	(0.33)	(0.15)	0.13	0.07	(0.06)	(0.20)	(0.13)	(0.09)	(0.13)	(0.19)
Uplift: Local Reliability Share	0.32	0.11	0.31	0.20	0.23	0.19	0.44	0.25	0.17	0.11	0.19	0.17
Uplift: Statewide Share	(0.57)	(0.55)	(0.64)	(0.35)	(0.11)	(0.12)	(0.50)	(0.45)	(0.30)	(0.20)	(0.31)	(0.35)
Voltage Support and Black Start	0.37	0.37	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.37	0.37	0.36
Avg Monthly Cost	52.99	35.51	37.38	31.16	25.88	27.32	35.78	30.33	24.32	23.21	29.89	31.76
Avg YTD Cost	52.99	44.93	42.54	40.12	37.57	35.76	35.75	34.96	33.88	32.94	32.69	32.59
TSA \$ per NYC MWh	0.00	0.00	0.01	0.01	0.19	0.77	1.00	0.33	0.43	0.00	0.00	0.00

* Excludes ICAP payments.
Market Mitigation and Analysis
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NYISO Dollar Flows - Uplift - OATT Schedule 1 components - Data through March 31, 2020



DAM Contract Balancing amounts are for payments made to generating units to make them whole for being dispatched below their Day-Ahead schedule, as a result of out-of-merit dispatches.

DAM Bid Production Cost Guarantees for Virtual Transactions are included in the chart and are shown from the inception of Virtual Transactions. These values are small and cannot be identified on the chart.

DAM residuals consist of both energy and loss revenue collections and payments. By design, there is a net over collection of revenues due to the difference between the marginal losses paid to generation and the average losses charged to loads.

NYISO Markets Transactions

2020	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Day Ahead Market MWh	14,194,609	13,172,669	12,495,999									
DAM LSE Internal LBMP Energy Sales	56%	56%	59%									
DAM External TC LBMP Energy Sales	6%	5%	5%									
DAM Bilateral - Internal Bilaterals	30%	30%	27%									
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%	6%									
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	2%	2%									
DAM Bilateral - Wheel Through Bilaterals	1%	1%	1%									
Balancing Energy Market MWh	-26,753	-142,168	144,076									
Balancing Energy LSE Internal LBMP Energy Sales	-1080%	-221%	-85%									
Balancing Energy External TC LBMP Energy Sales	1156%	181%	240%									
Balancing Energy Bilateral - Internal Bilaterals	62%	5%	12%									
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%									
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	127%	16%	18%									
Balancing Energy Bilateral - Wheel Through Bilaterals	-365%	-81%	-85%									
Transactions Summary												
LBMP	62%	62%	65%									
Internal Bilaterals	31%	31%	27%									
Import Bilaterals	5%	5%	6%									
Export Bilaterals	2%	2%	2%									
Wheels Through	0%	1%	0%									
Market Share of Total Load												
Day Ahead Market	100.2%	101.1%	98.9%									
Balancing Energy +	-0.2%	-1.1%	1.1%									
Total MWh	14,167,856	13,030,501	12,640,075									
Average Daily Energy Sendout/Month GWh	423	417	375									

2019	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Day Ahead Market MWh	15,299,458	13,391,383	13,527,834	11,811,029	12,521,583	13,723,372	17,416,589	16,379,968	13,588,715	12,567,821	13,036,152	14,345,711
DAM LSE Internal LBMP Energy Sales	57%	57%	59%	59%	57%	58%	64%	63%	58%	57%	54%	56%
DAM External TC LBMP Energy Sales	6%	5%	3%	1%	3%	3%	3%	3%	3%	4%	6%	6%
DAM Bilateral - Internal Bilaterals	29%	30%	30%	31%	32%	29%	26%	26%	30%	32%	32%	30%
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%	5%	5%	6%	5%	4%	4%	5%	5%	5%	5%
DAM Bilateral - Export/Non-LBMP Market Bilaterals	1%	1%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%
DAM Bilateral - Wheel Through Bilaterals	2%	2%	2%	2%	1%	2%	2%	2%	2%	1%	1%	1%
Balancing Energy Market MWh	-322,442	-323,188	-261,217	-218,482	-392,699	-102,044	103,628	-514,102	-247,267	-112,057	-17,421	46,828
Balancing Energy LSE Internal LBMP Energy Sales	-120%	-126%	-138%	-178%	-150%	-264%	-2%	-119%	-163%	-346%	-1332%	-480%
Balancing Energy External TC LBMP Energy Sales	65%	67%	82%	113%	68%	233%	199%	41%	93%	266%	1435%	699%
Balancing Energy Bilateral - Internal Bilaterals	-4%	-1%	-3%	2%	1%	0%	5%	0%	-4%	6%	103%	39%
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%	0%	0%	0%	15%	0%	0%	0%	0%	0%
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	3%	7%	6%	7%	2%	8%	8%	1%	6%	25%	170%	70%
Balancing Energy Bilateral - Wheel Through Bilaterals	-45%	-47%	-47%	-44%	-21%	-77%	-125%	-23%	-31%	-52%	-476%	-229%
Transactions Summary												
LBMP	63%	62%	61%	60%	59%	62%	68%	65%	61%	61%	60%	63%
Internal Bilaterals	29%	30%	30%	31%	33%	30%	25%	27%	30%	32%	32%	30%
Import Bilaterals	5%	5%	6%	6%	6%	5%	4%	5%	5%	5%	5%	5%
Export Bilaterals	1%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%
Wheels Through	1%	1%	1%	1%	0%	1%	1%	1%	2%	0%	0%	0%
Market Share of Total Load												
Day Ahead Market	102.2%	102.5%	102.0%	101.9%	103.2%	100.7%	99.4%	103.2%	101.9%	100.9%	100.1%	99.7%
Balancing Energy +	-2.2%	-2.5%	-2.0%	-1.9%	-3.2%	-0.7%	0.6%	-3.2%	-1.9%	-0.9%	-0.1%	0.3%
Total MWh	14,977,016	13,068,195	13,266,617	11,592,547	12,128,884	13,621,328	17,520,217	15,865,866	13,341,448	12,455,764	13,018,731	14,392,539
Average Daily Energy Sendout/Month GWh	449	436	411	371	373	429	539	487	419	377	401	427

+ Balancing Energy: Load(MW) purchased at Real Time LBMP.

* The signs for the detail section intuitively reflect the direction of power flow eliminating the use of double negatives when Balancing Energy is negative.

Notes: Percent totals may not equal 100% due to rounding.

Virtual Transactions are not reflected in this chart.

NYISO Markets 2020 Energy Statistics

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<u>DAY AHEAD LBMP</u>												
Price *	\$22.11	\$19.48	\$16.07									
Standard Deviation	\$7.43	\$4.45	\$3.21									
Load Weighted Price **	\$22.77	\$19.84	\$16.36									
<u>RTC LBMP</u>												
Price *	\$22.86	\$21.48	\$16.48									
Standard Deviation	\$9.33	\$53.30	\$4.84									
Load Weighted Price **	\$23.50	\$21.94	\$16.74									
<u>REAL TIME LBMP</u>												
Price *	\$22.53	\$19.29	\$16.24									
Standard Deviation	\$11.90	\$8.68	\$7.48									
Load Weighted Price **	\$23.20	\$19.68	\$16.58									
Average Daily Energy Sendout/Month GWh	423	417	375									

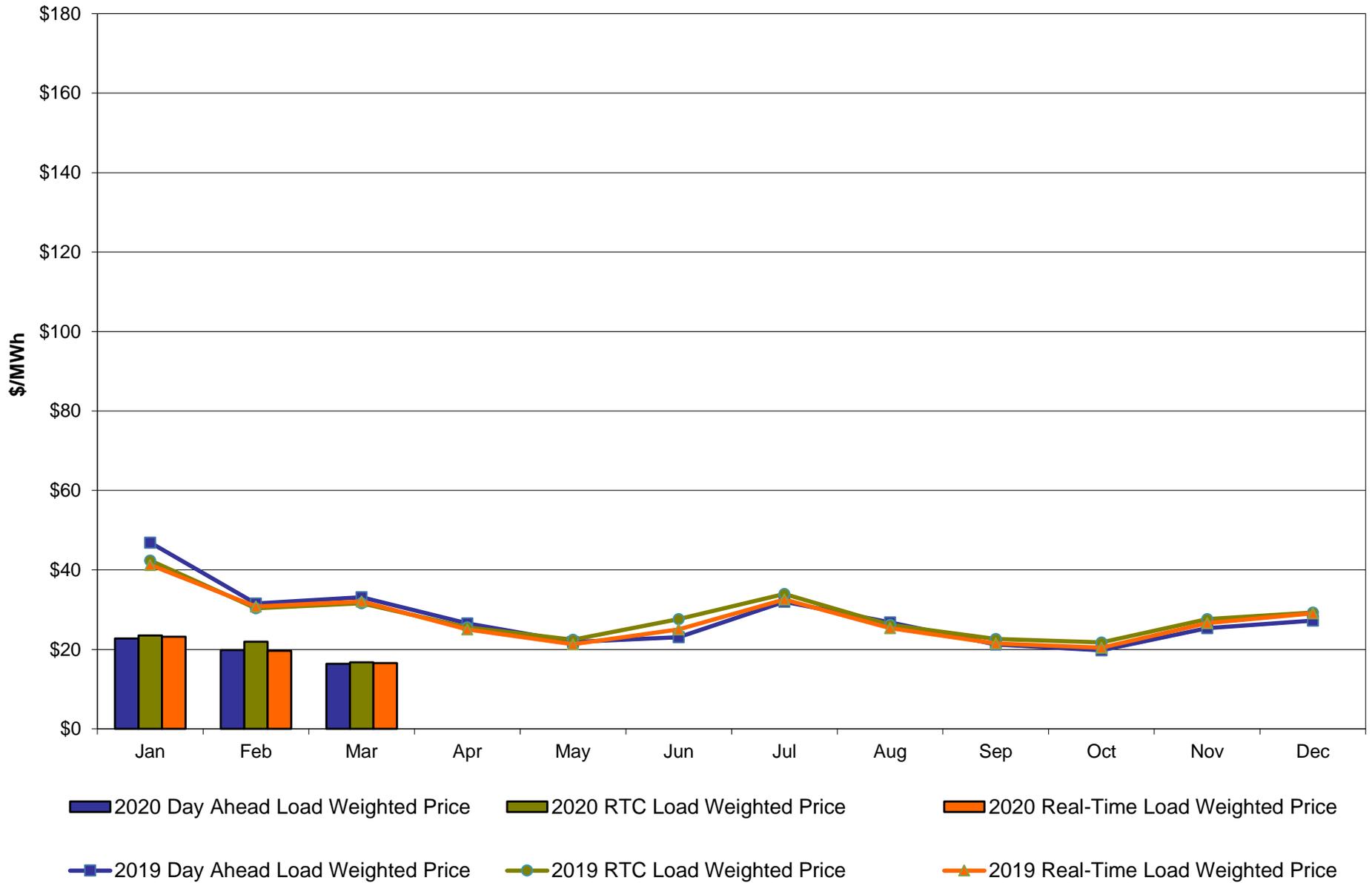
NYISO Markets 2019 Energy Statistics

	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<u>DAY AHEAD LBMP</u>												
Price *	\$45.01	\$30.66	\$32.34	\$25.97	\$21.16	\$21.79	\$30.16	\$25.35	\$20.45	\$19.18	\$24.65	\$26.29
Standard Deviation	\$25.67	\$12.86	\$9.30	\$6.32	\$5.89	\$7.28	\$12.06	\$8.73	\$5.57	\$5.09	\$7.73	\$11.81
Load Weighted Price **	\$46.88	\$31.53	\$33.14	\$26.57	\$21.89	\$23.04	\$31.98	\$26.83	\$21.23	\$19.77	\$25.36	\$27.22
<u>RTC LBMP</u>												
Price *	\$40.86	\$29.74	\$31.04	\$25.07	\$21.88	\$25.67	\$32.23	\$24.92	\$21.70	\$20.92	\$26.82	\$28.17
Standard Deviation	\$23.02	\$10.79	\$8.48	\$7.53	\$8.01	\$23.45	\$21.96	\$14.96	\$9.22	\$13.95	\$10.37	\$16.26
Load Weighted Price **	\$42.39	\$30.32	\$31.62	\$25.54	\$22.44	\$27.64	\$33.92	\$26.14	\$22.60	\$21.76	\$27.64	\$29.24
<u>REAL TIME LBMP</u>												
Price *	\$39.54	\$30.13	\$31.46	\$24.47	\$20.56	\$23.30	\$30.77	\$24.01	\$20.49	\$19.53	\$25.82	\$27.81
Standard Deviation	\$26.03	\$13.77	\$12.54	\$17.27	\$10.35	\$17.49	\$20.63	\$12.36	\$9.62	\$12.02	\$11.60	\$19.64
Load Weighted Price **	\$41.24	\$30.80	\$32.06	\$25.06	\$21.28	\$25.05	\$32.53	\$25.34	\$21.50	\$20.43	\$26.64	\$29.05
Average Daily Energy Sendout/Month GWh	449	436	411	371	373	429	539	487	419	377	401	427

* Average zonal load weighted prices.

** Average zonal load weighted prices, load weighted in each hour.

NYISO Monthly Average Internal LBMPs 2019- 2020

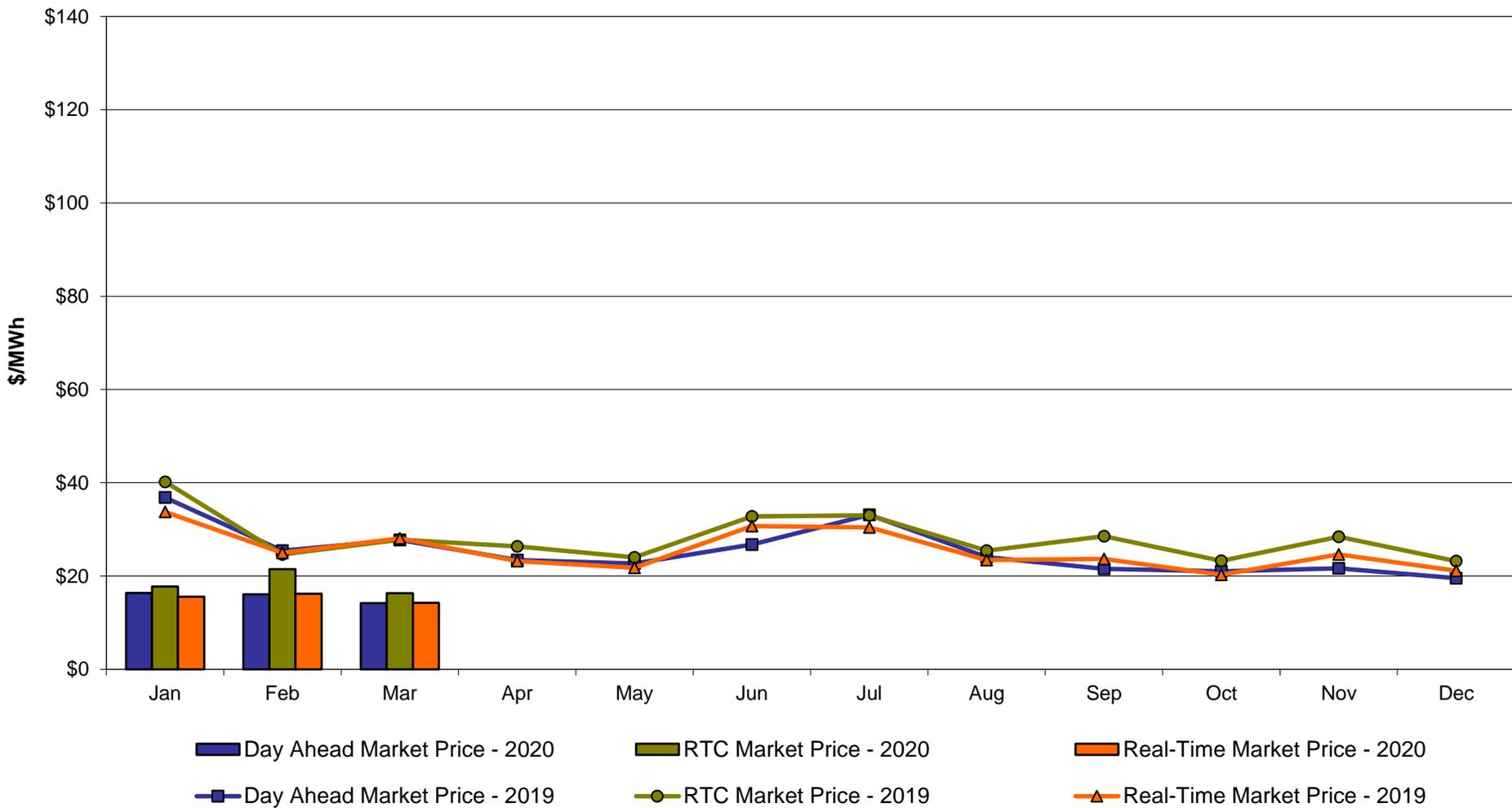


March 2020 Zonal LBMP Statistics for NYISO (\$/MWh)

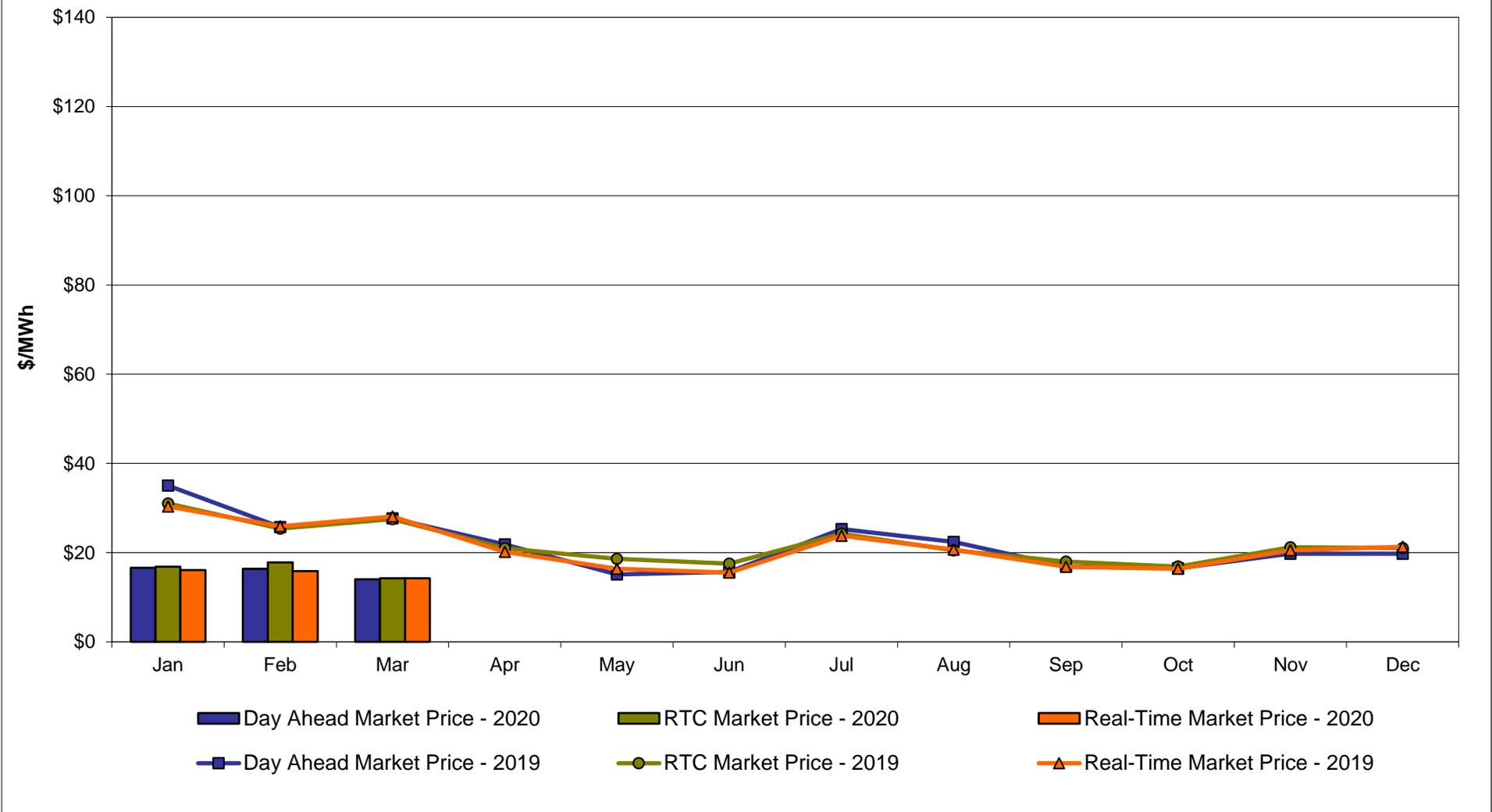
	<u>WEST Zone A</u>	<u>GENESEE Zone B</u>	<u>NORTH Zone D</u>	<u>CENTRAL Zone C</u>	<u>MOHAWK VALLEY Zone E</u>	<u>CAPITAL Zone F</u>	<u>HUDSON VALLEY Zone G</u>	<u>MILLWOOD Zone H</u>	<u>DUNWOODIE Zone I</u>	<u>NEW YORK CITY Zone J</u>	<u>LONG ISLAND Zone K</u>
<u>DAY AHEAD LBMP</u>											
Unweighted Price *	14.19	13.47	11.57	13.99	13.91	17.05	16.39	16.57	16.61	16.81	19.84
Standard Deviation	4.62	3.32	4.35	3.35	3.36	3.71	3.15	3.22	3.22	3.24	4.86
<u>RTC LBMP</u>											
Unweighted Price *	16.33	13.61	12.25	14.24	14.08	17.51	16.66	16.81	16.83	16.89	20.21
Standard Deviation	10.70	5.23	6.50	5.26	5.29	5.06	4.18	4.24	4.23	4.30	14.37
<u>REAL TIME LBMP</u>											
Unweighted Price *	14.22	13.66	12.25	14.22	14.10	17.59	16.72	16.87	16.89	16.98	19.79
Standard Deviation	10.80	7.44	8.39	7.59	7.68	8.14	7.31	7.39	7.38	7.43	14.36
	<u>ONTARIO IESO Zone O</u>	<u>HYDRO QUEBEC (Wheel) Zone M</u>	<u>HYDRO QUEBEC (Import/Export) Zone M</u>	<u>PJM Zone P</u>	<u>NEW ENGLAND Zone N</u>	<u>CROSS SOUND CABLE Controllable Line</u>	<u>NORTHPORT- NORWALK Controllable Line</u>	<u>NEPTUNE Controllable Line</u>	<u>LINDEN VFT Controllable Line</u>	<u>HUDSON Controllable Line</u>	<u>Dennison Controllable Line</u>
<u>DAY AHEAD LBMP</u>											
Unweighted Price *	13.00	12.79	12.79	15.19	16.68	19.67	19.42	18.70	16.76	16.73	11.33
Standard Deviation	3.04	3.39	3.39	3.10	3.34	4.92	4.84	4.34	3.22	3.23	4.25
<u>RTC LBMP</u>											
Unweighted Price *	12.55	12.83	12.83	15.82	17.60	21.58	19.48	18.41	15.76	16.87	11.18
Standard Deviation	5.00	6.01	6.01	4.78	5.62	24.80	15.24	7.78	17.80	4.20	12.39
<u>REAL TIME LBMP</u>											
Unweighted Price *	12.91	12.87	12.84	15.32	17.33	20.71	19.29	18.38	16.02	16.94	10.65
Standard Deviation	7.60	7.82	7.80	6.92	7.81	20.18	16.01	9.34	19.95	7.35	11.72

* Straight LBMP averages

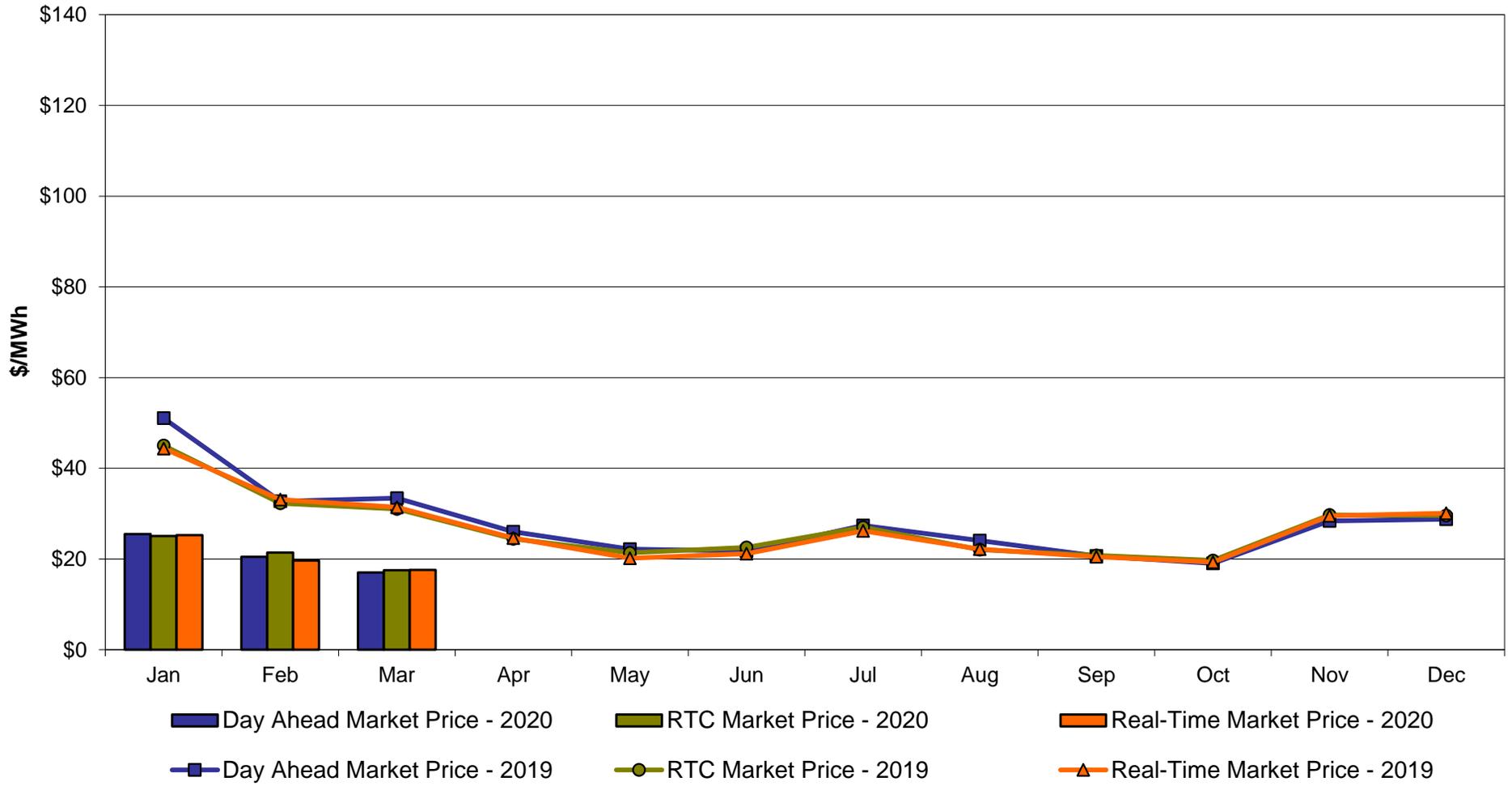
**West Zone A
Monthly Average LBMP Prices 2019 - 2020**



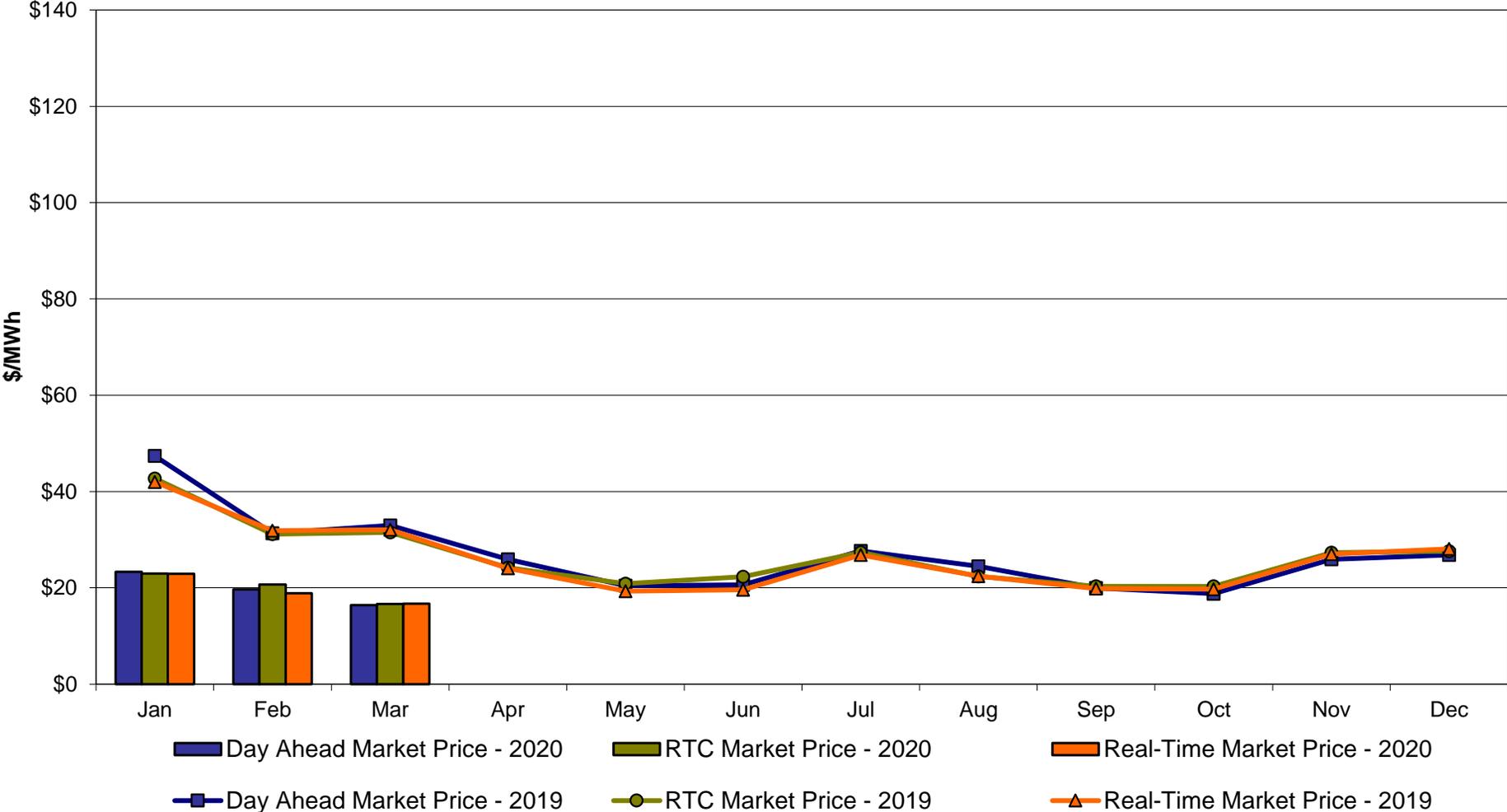
**Central Zone C
Monthly Average LBMP Prices 2019 - 2020**



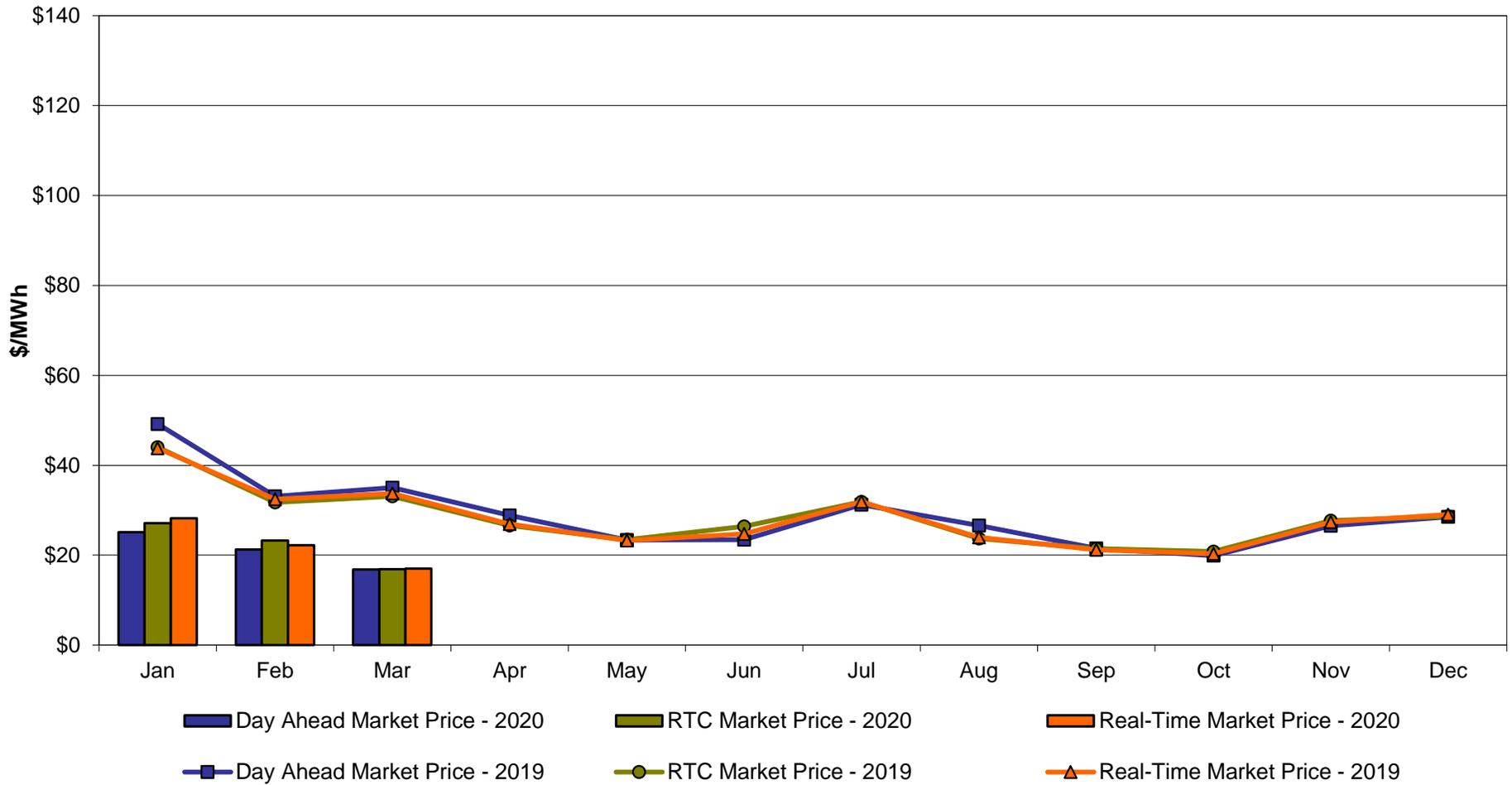
Capital Zone F Monthly Average LBMP Prices 2019 - 2020



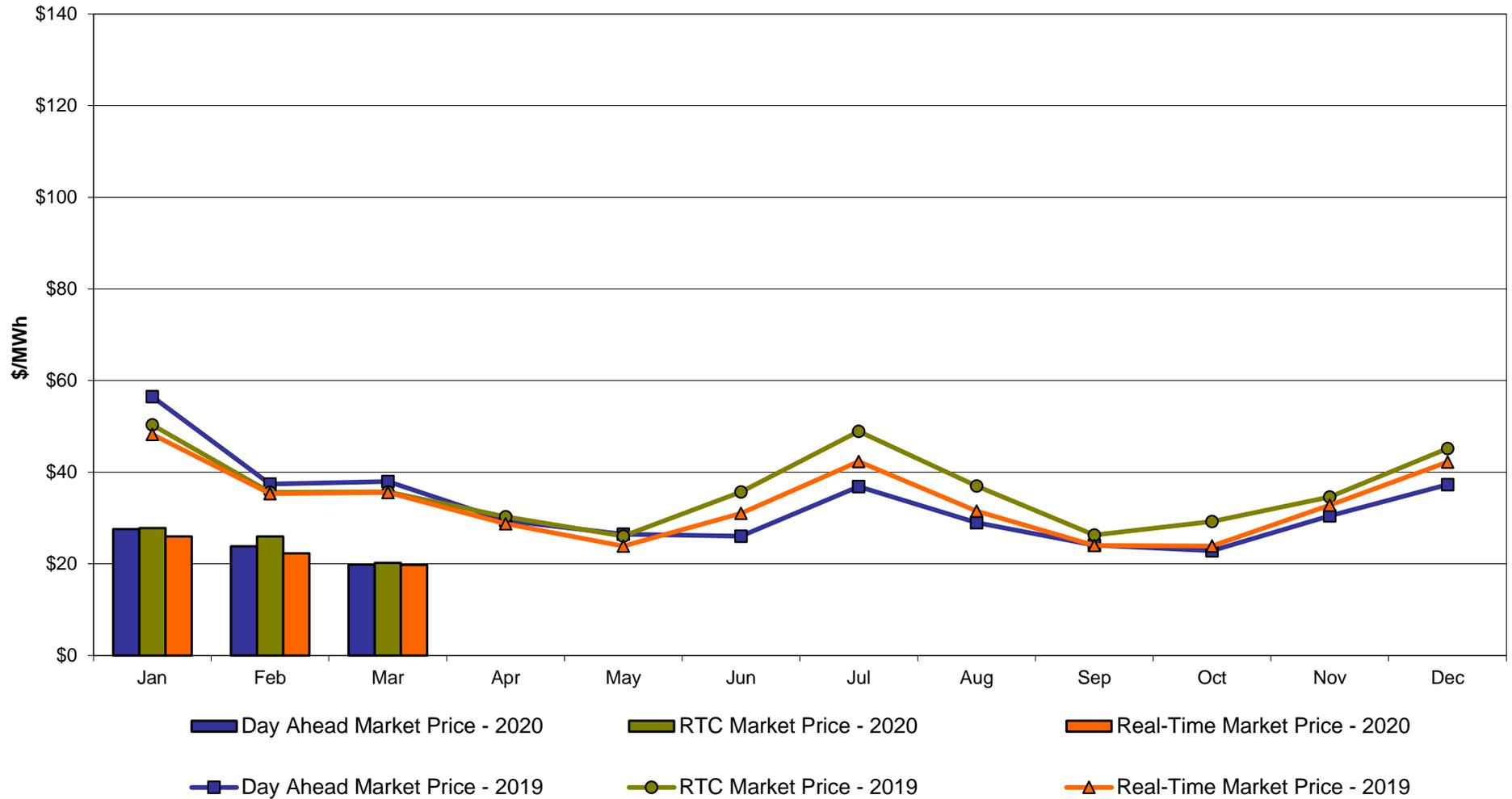
Hudson Valley Zone G Monthly Average LBMP Prices 2019 - 2020



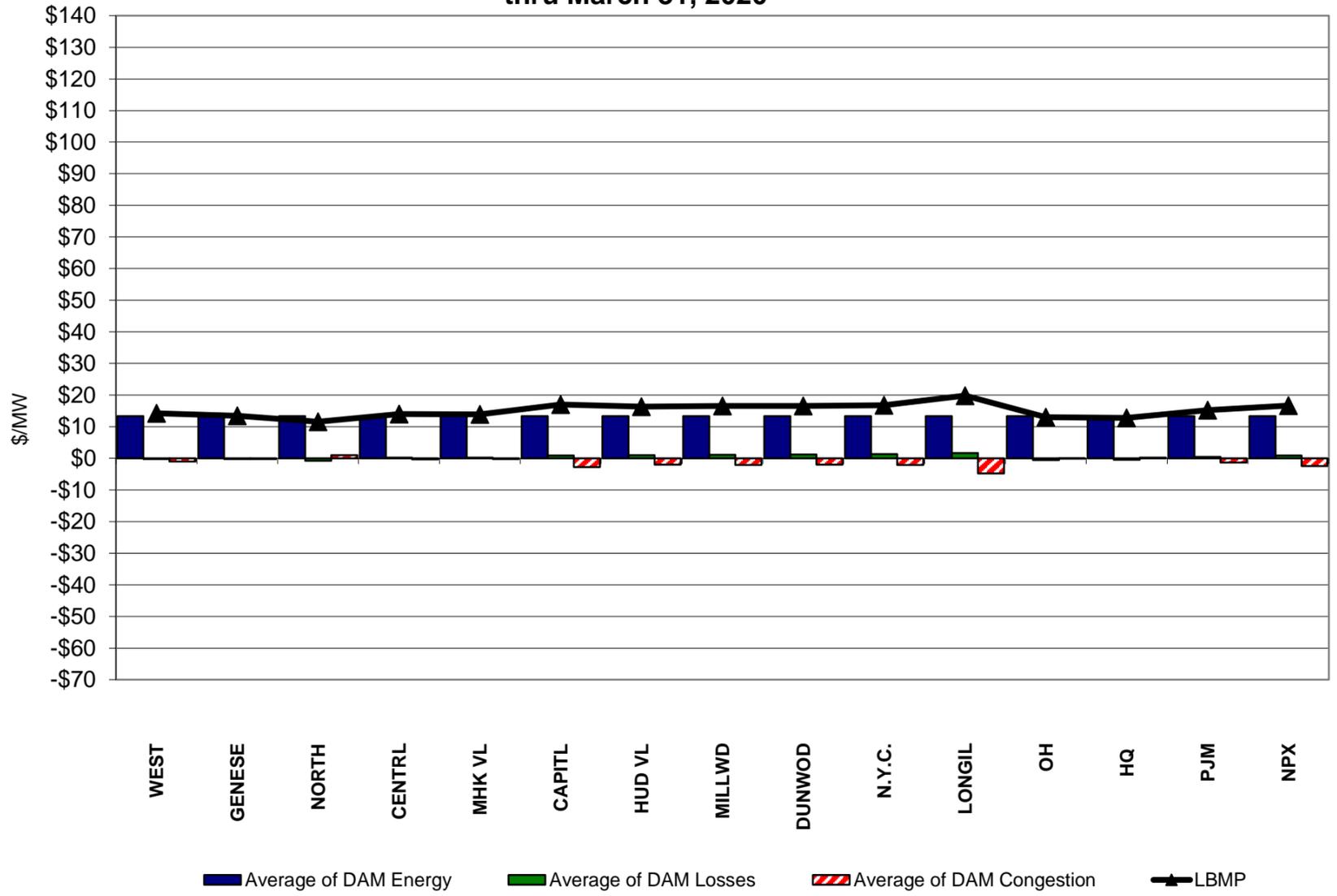
**NYC Zone J
Monthly Average LBMP Prices 2019 - 2020**



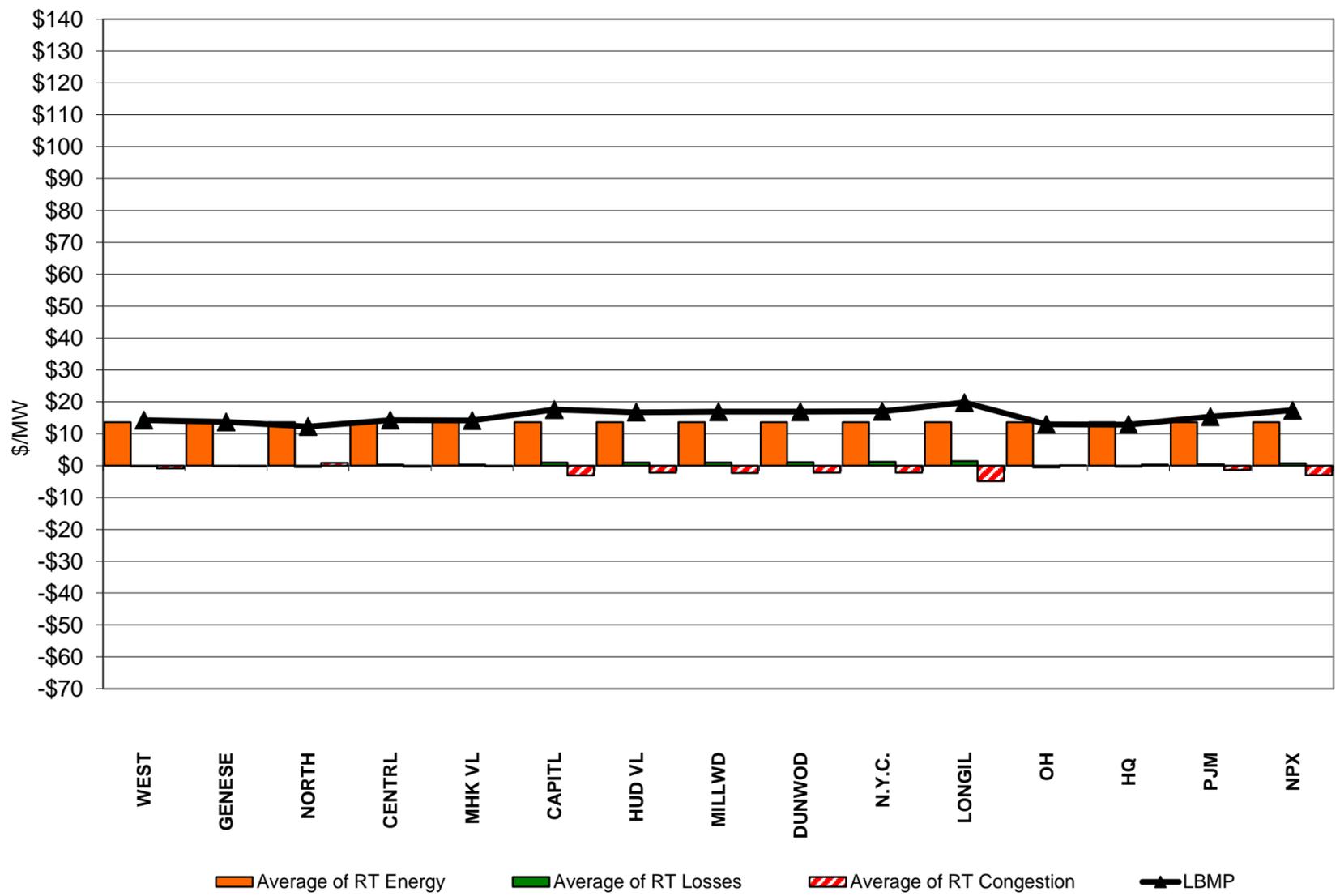
Long Island Zone K Monthly Average LBMP Prices 2019 - 2020



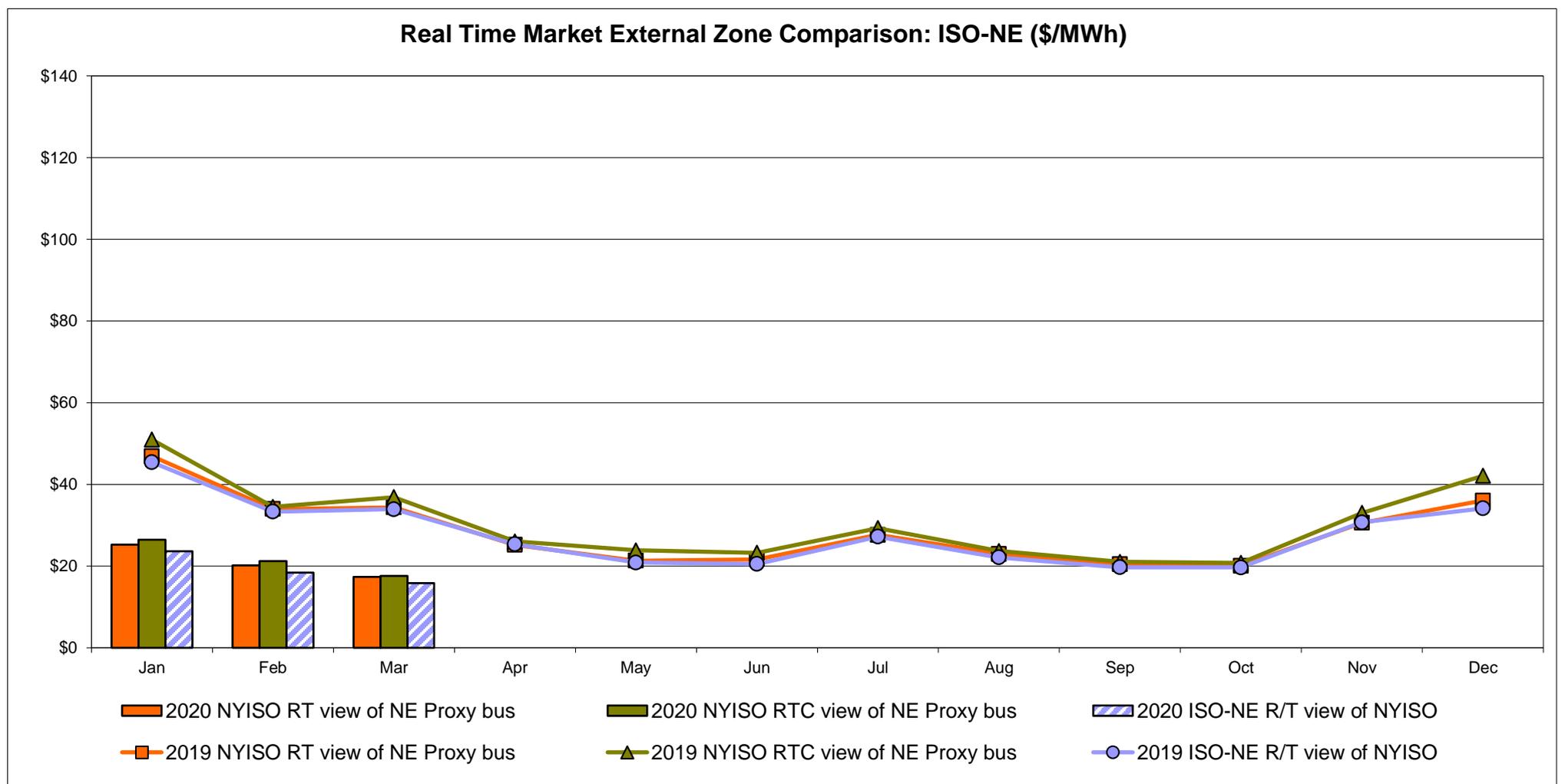
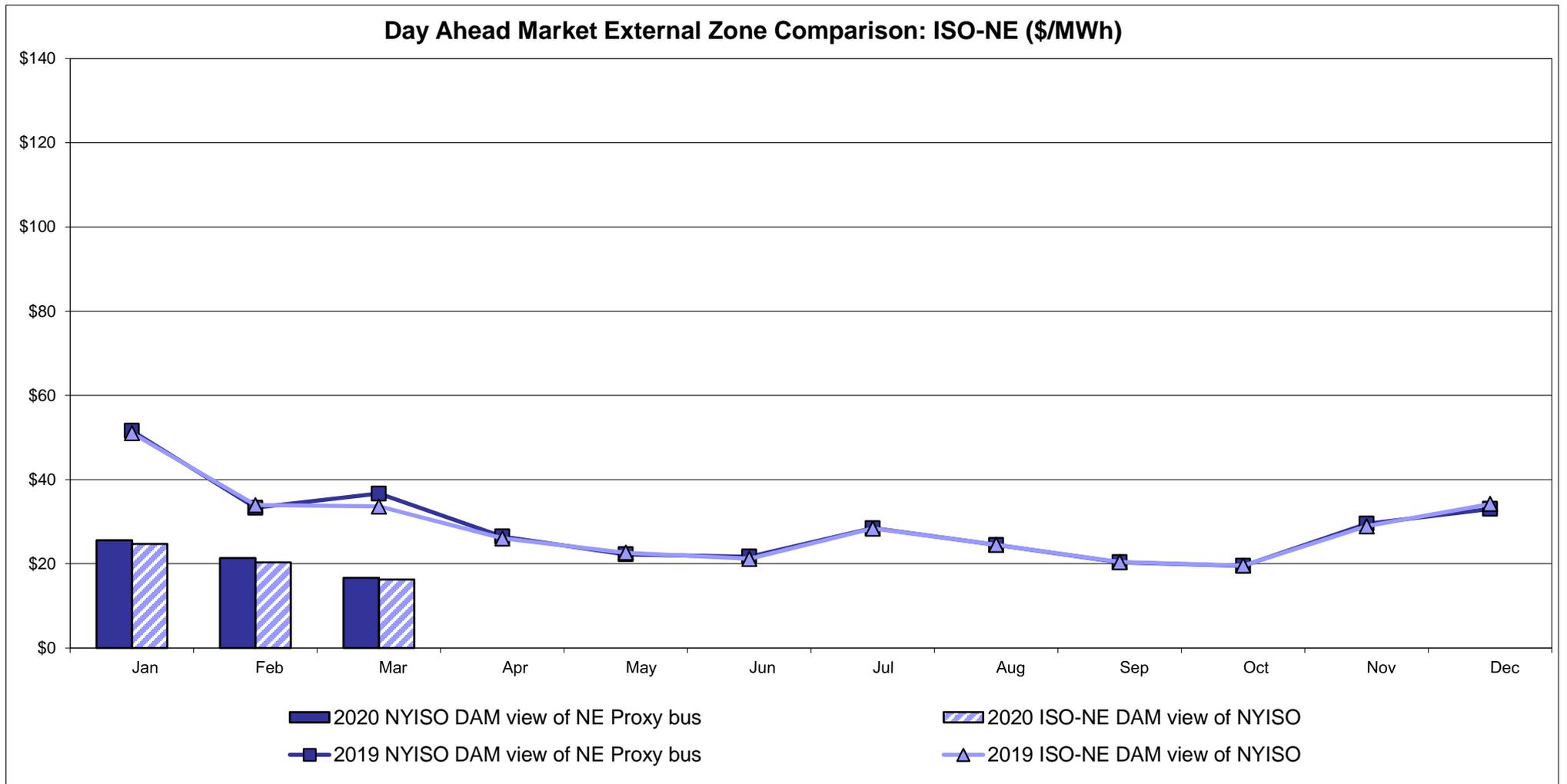
**DAM Zonal Unweighted Monthly Average LBMP Components
thru March 31, 2020**



**RT Zonal Unweighted Monthly Average LBMP Components
thru March 31, 2020**

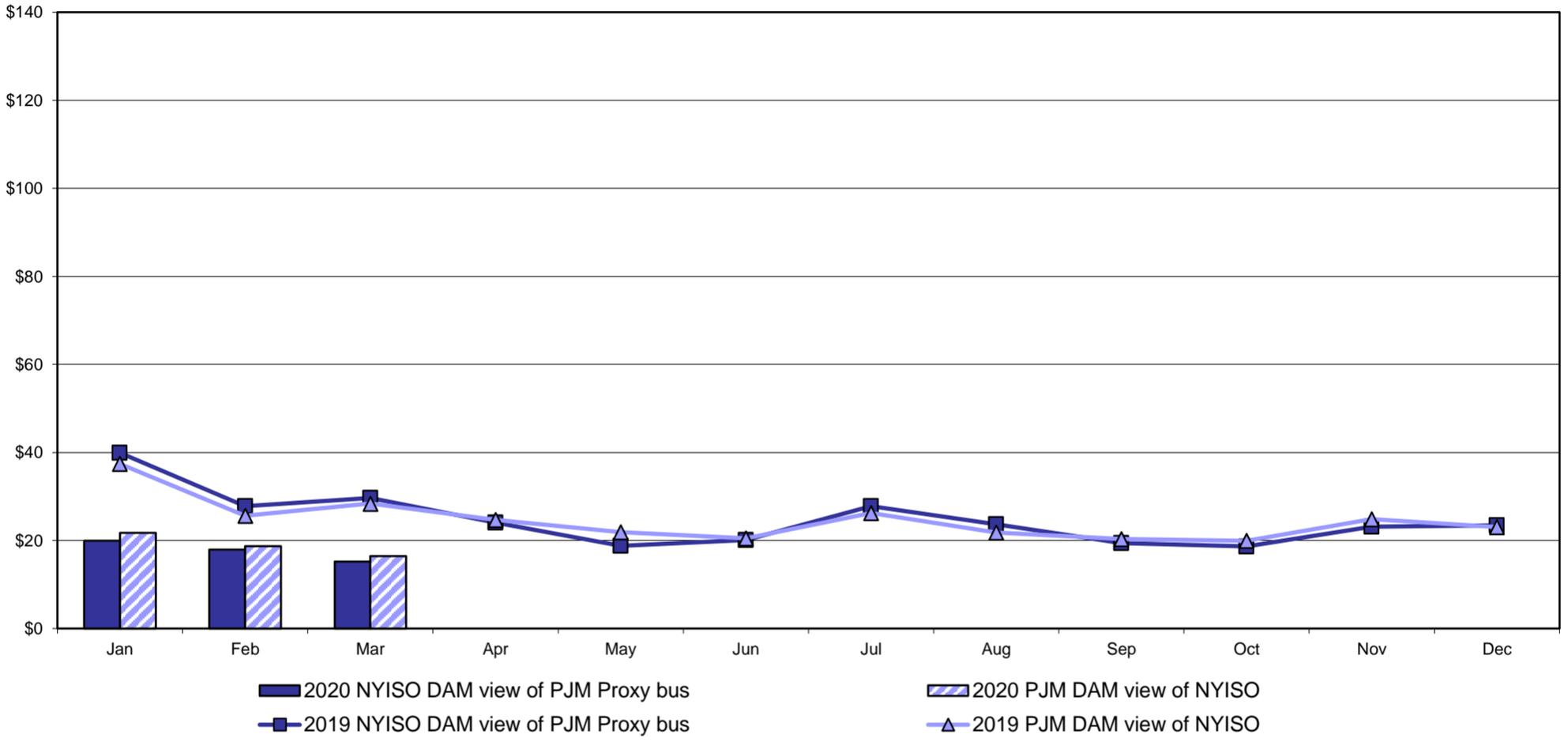


External Comparison ISO-New England

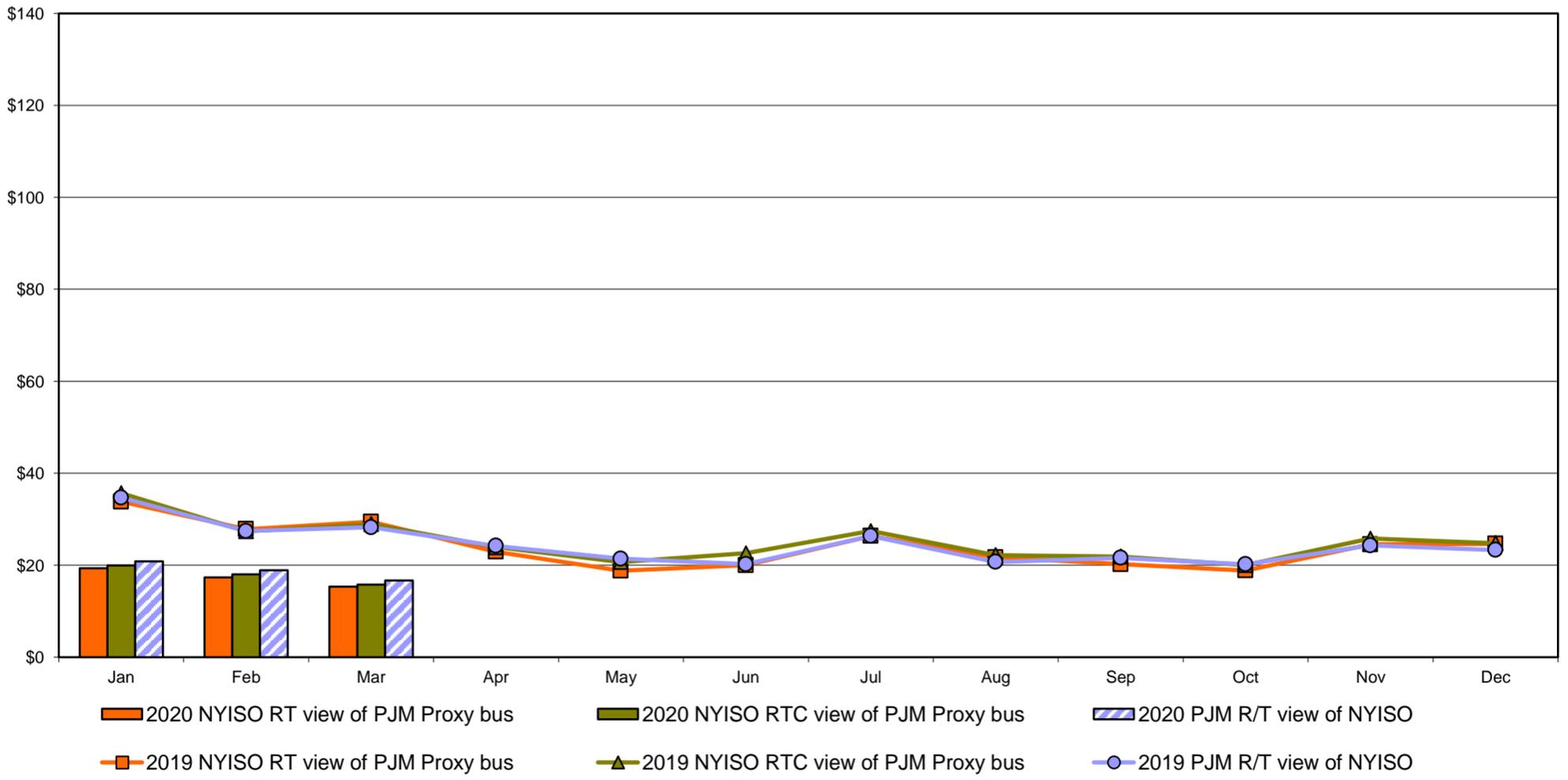


External Comparison PJM

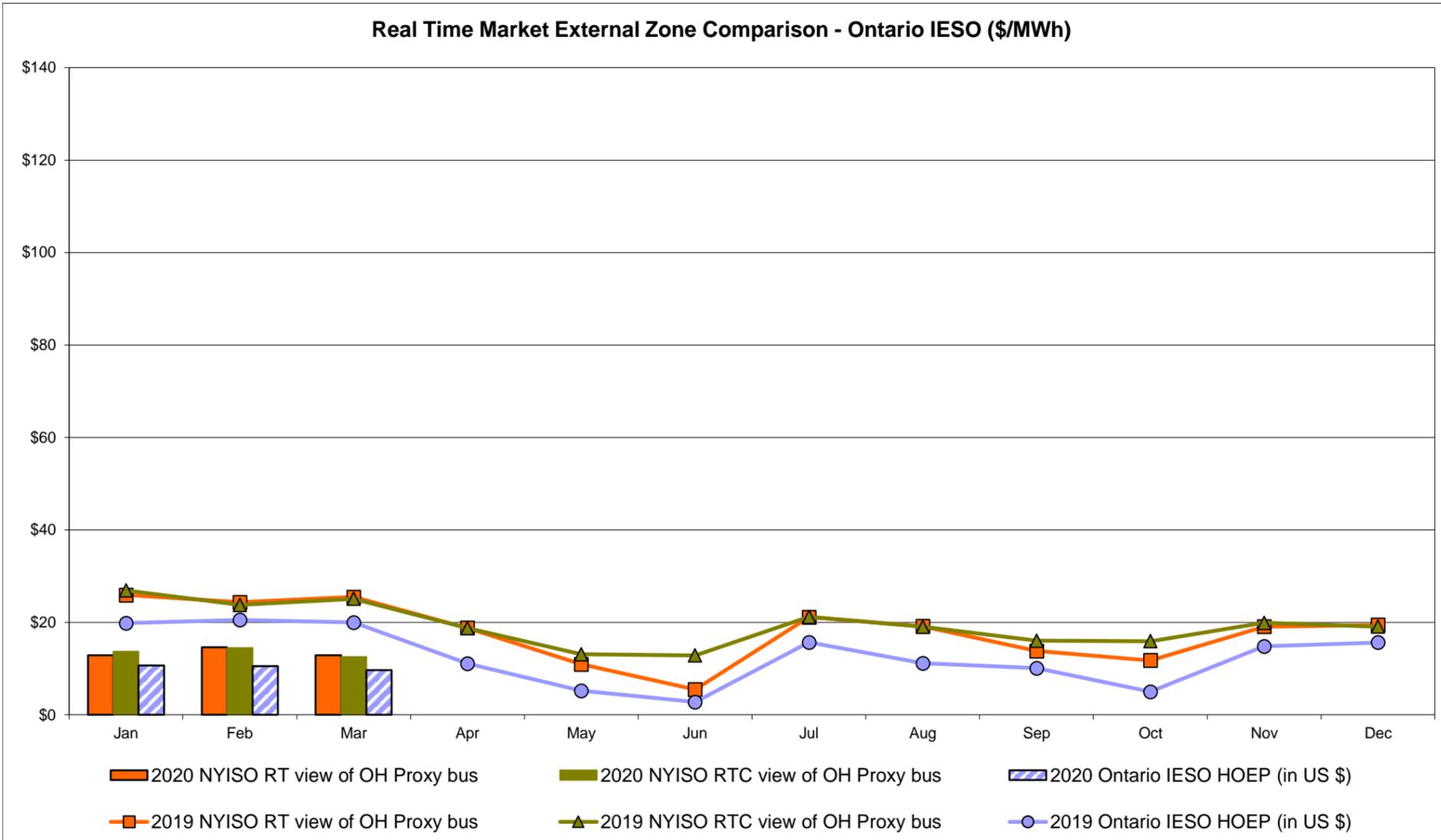
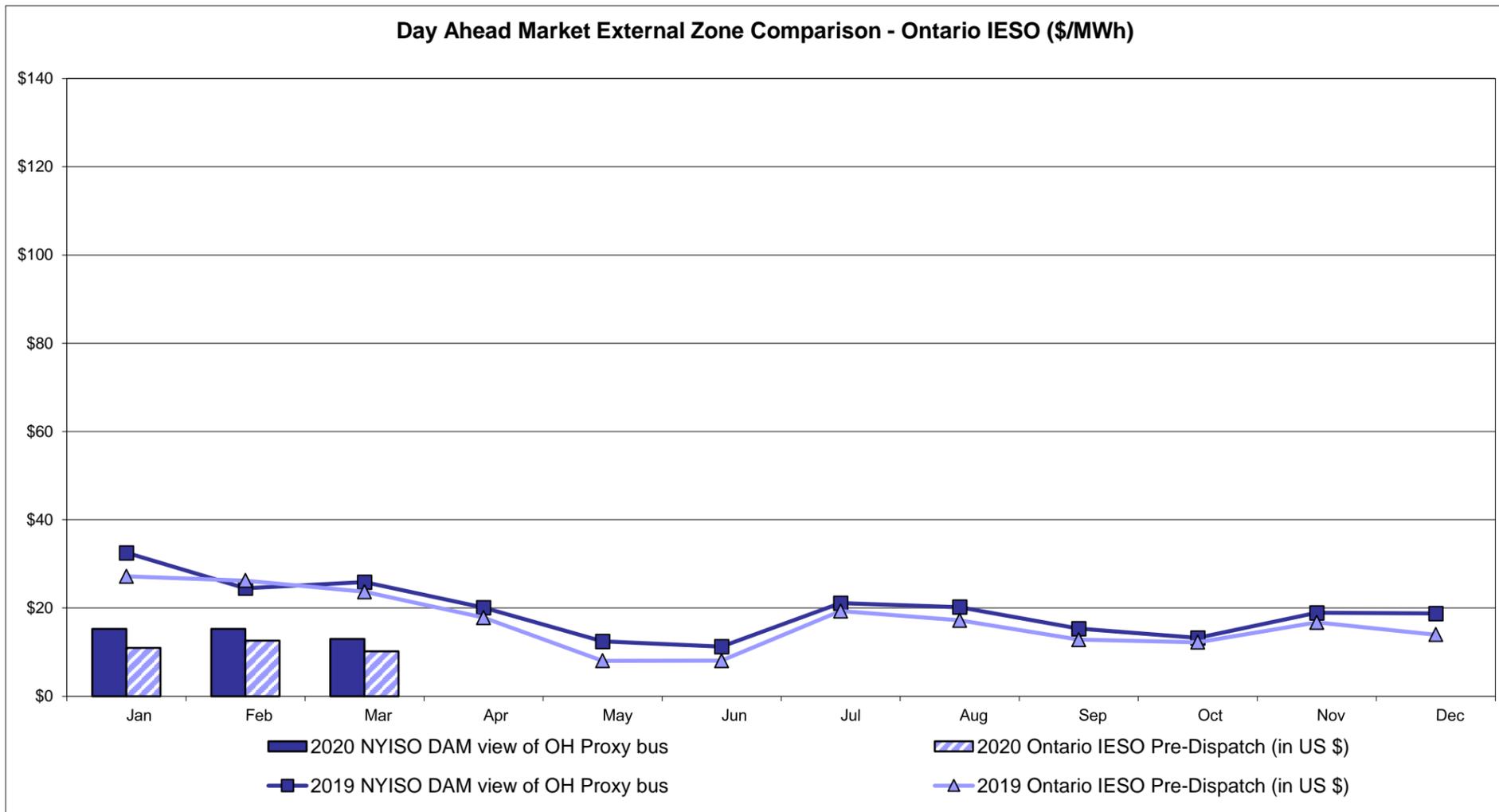
Day Ahead Market External Zone Comparison - PJM (\$/MWh)



Real Time Market External Zone Comparison - PJM (\$/MWh)

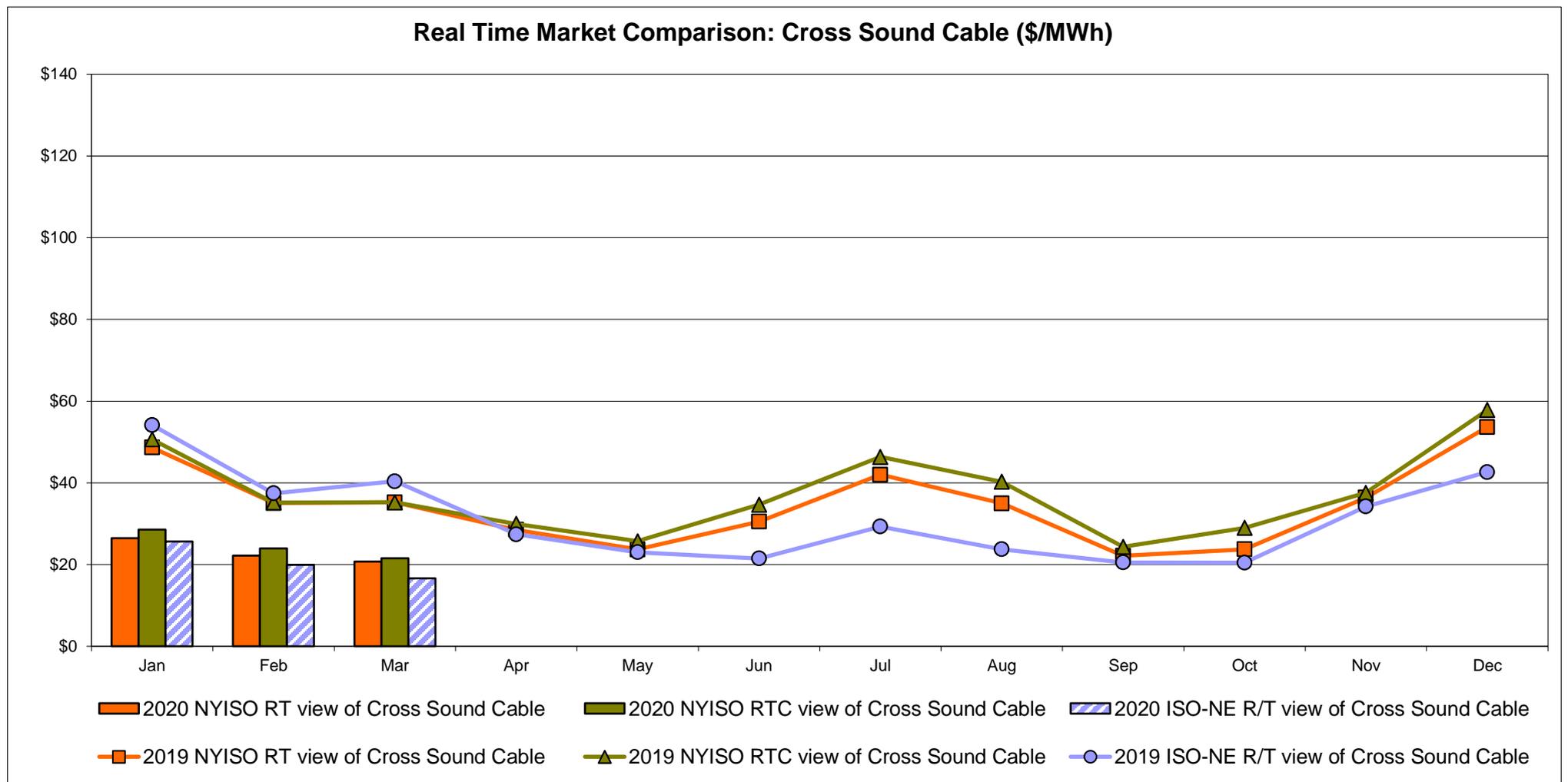
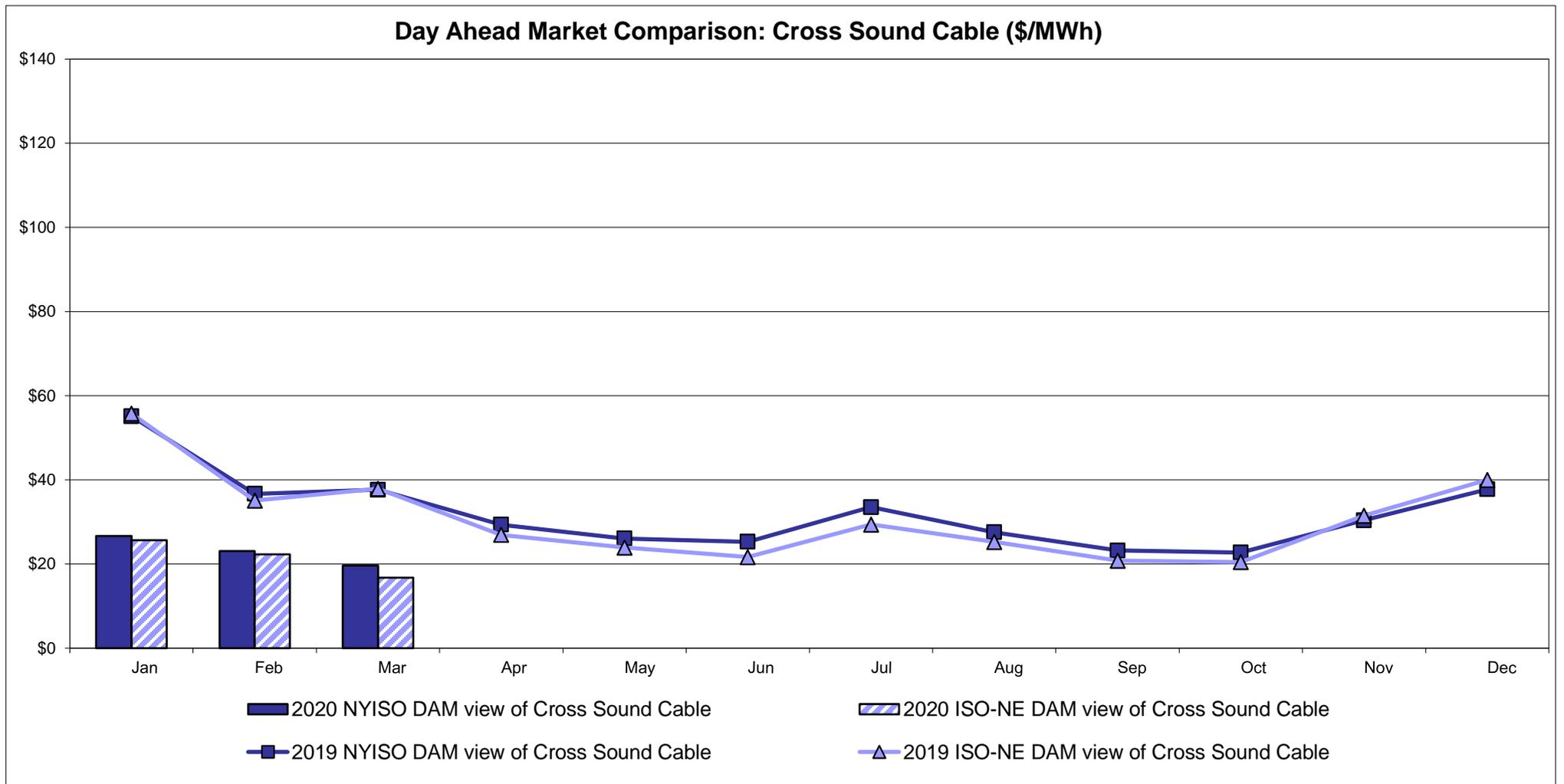


External Comparison Ontario IESO



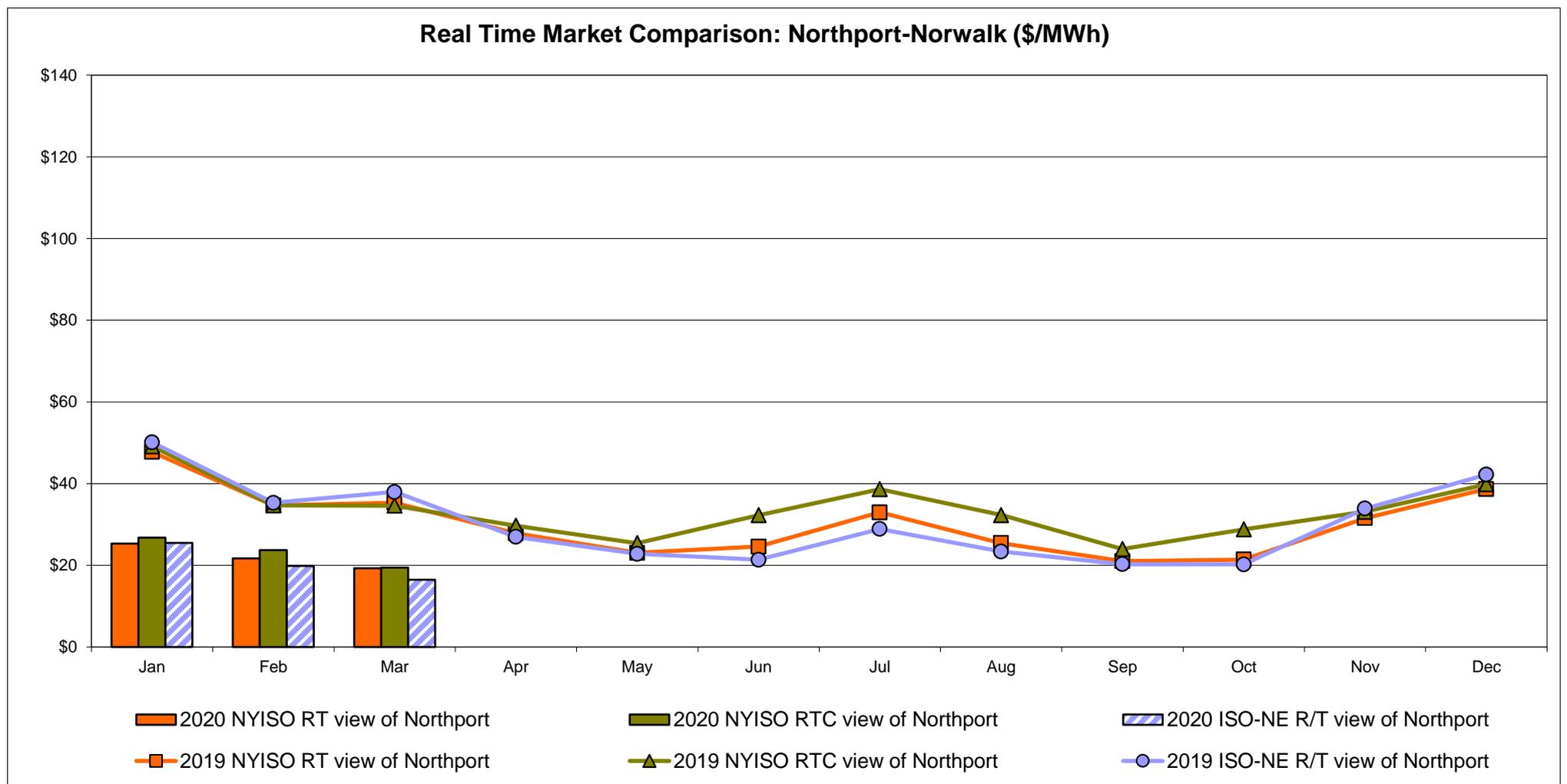
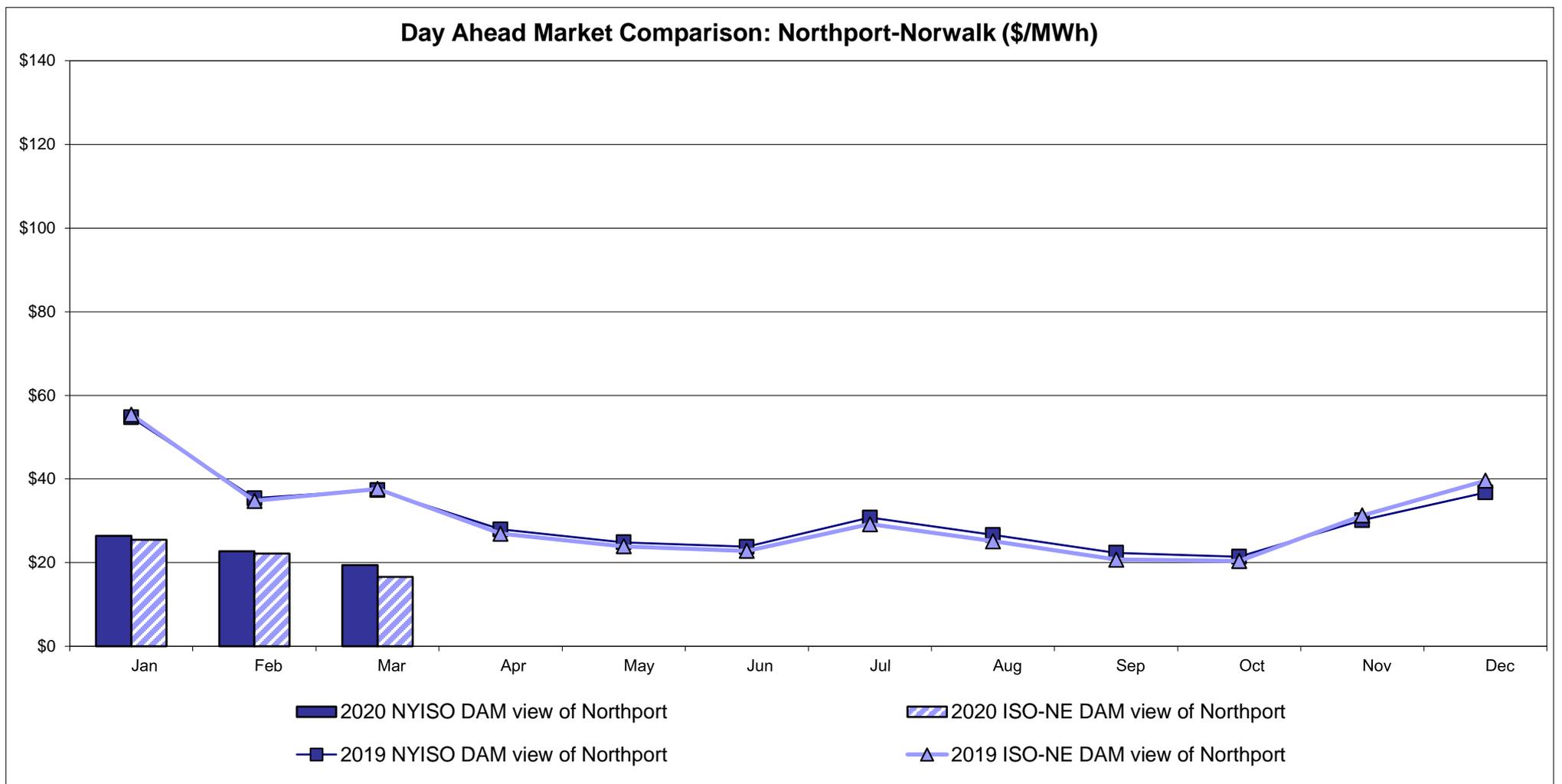
Notes: Exchange factor used for March 2020 was 0.716332378223496 to US
 HOEP: Hourly Ontario Energy Price
 Pre-Dispatch: Projected Energy Price

External Controllable Line: Cross Sound Cable (New England)



Note:
 ISO-NE Forecast is an advisory posting @ 18:00 day before.
 The DAM and R/T prices at the Shorham 13899 interface are used for ISO-NE.
 The DAM and R/T prices at the CSC interface are used for NYISO.

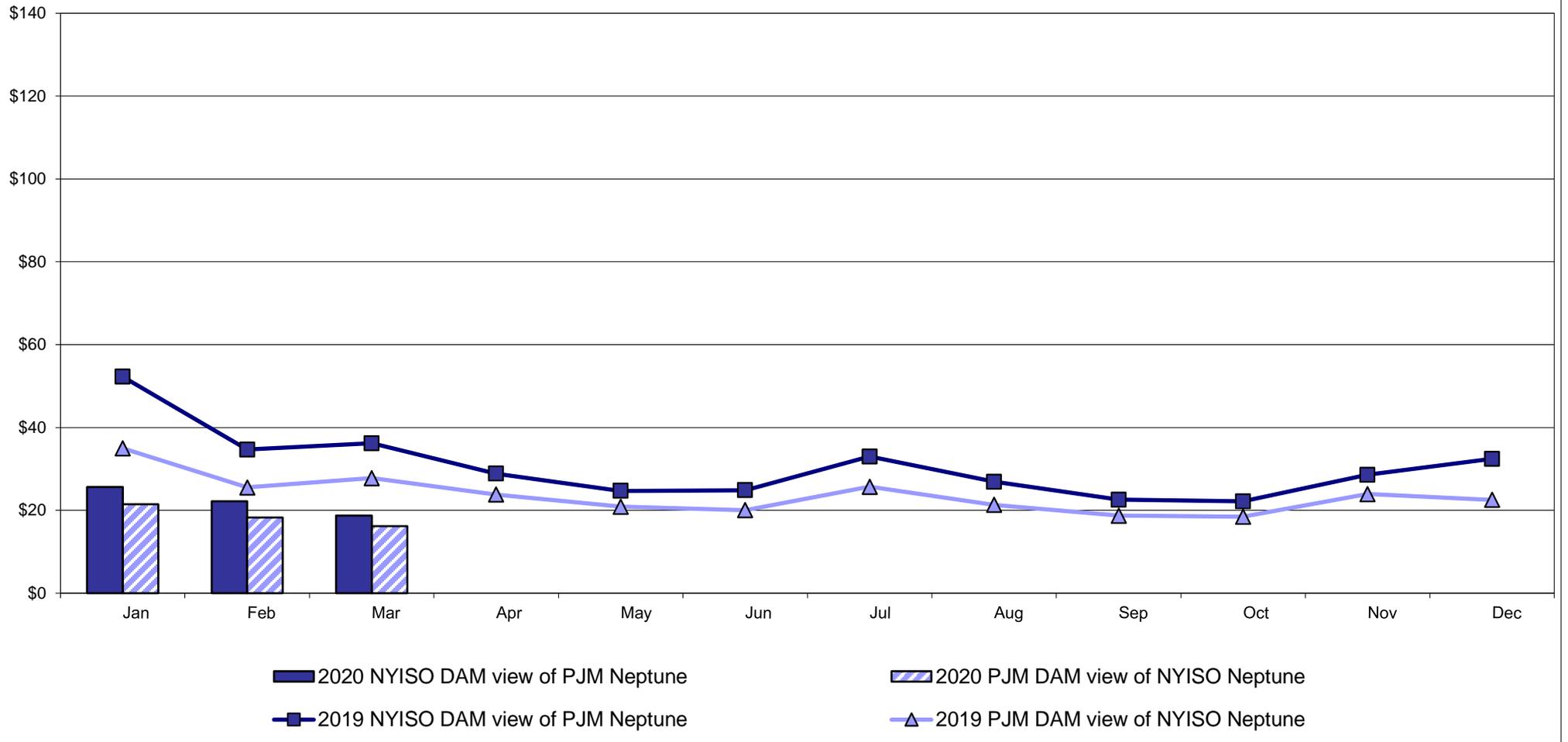
External Controllable Line: Northport - Norwalk (New England)



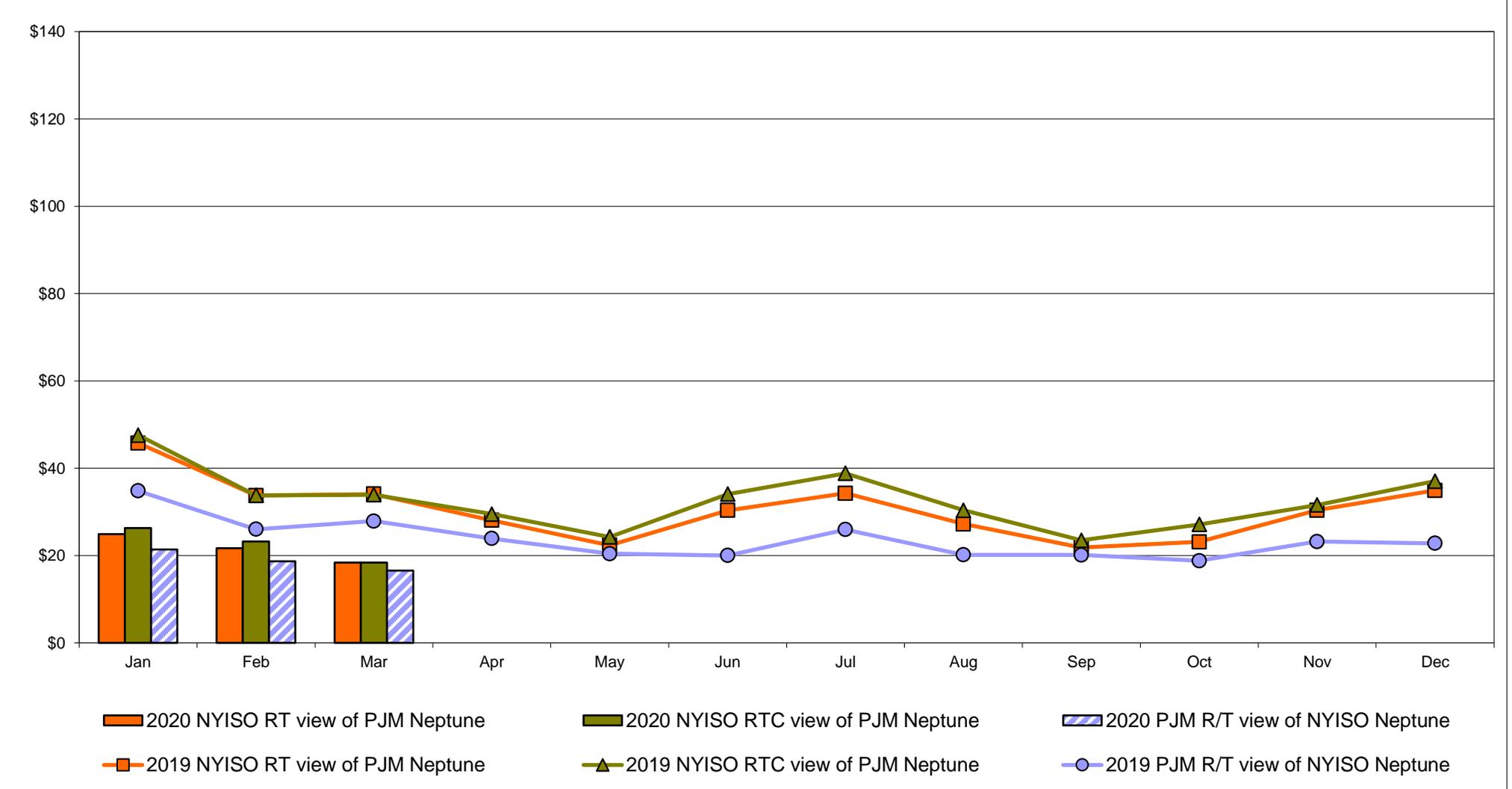
Note:
 ISO-NE Forecast is an advisory posting @ 18:00 day before.
 The DAM and R/T prices at the Northport 138 interface are used for ISO-NE.
 The DAM and R/T prices at the 1385 interface are used for NYISO.

External Controllable Line: Neptune (PJM)

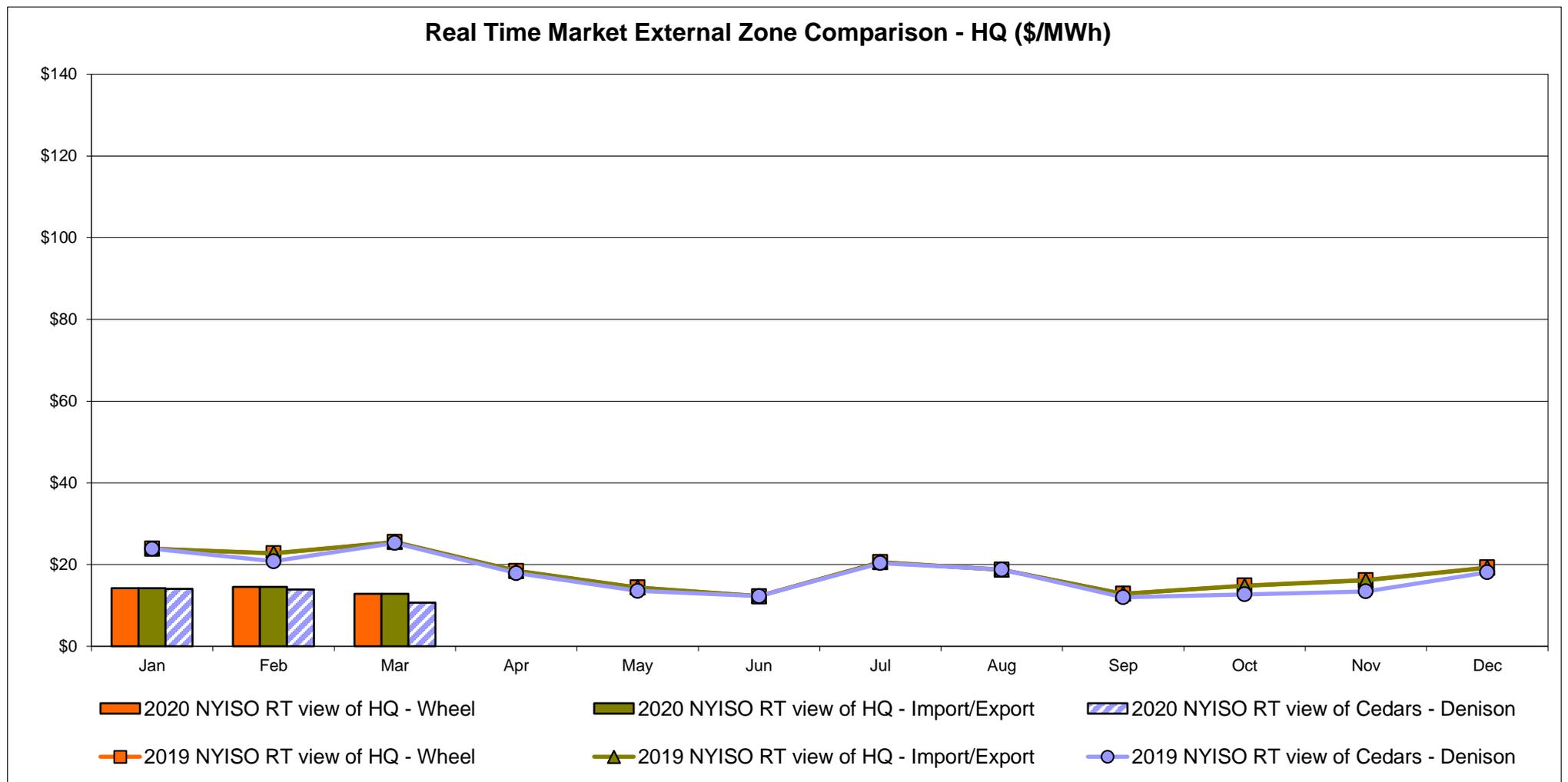
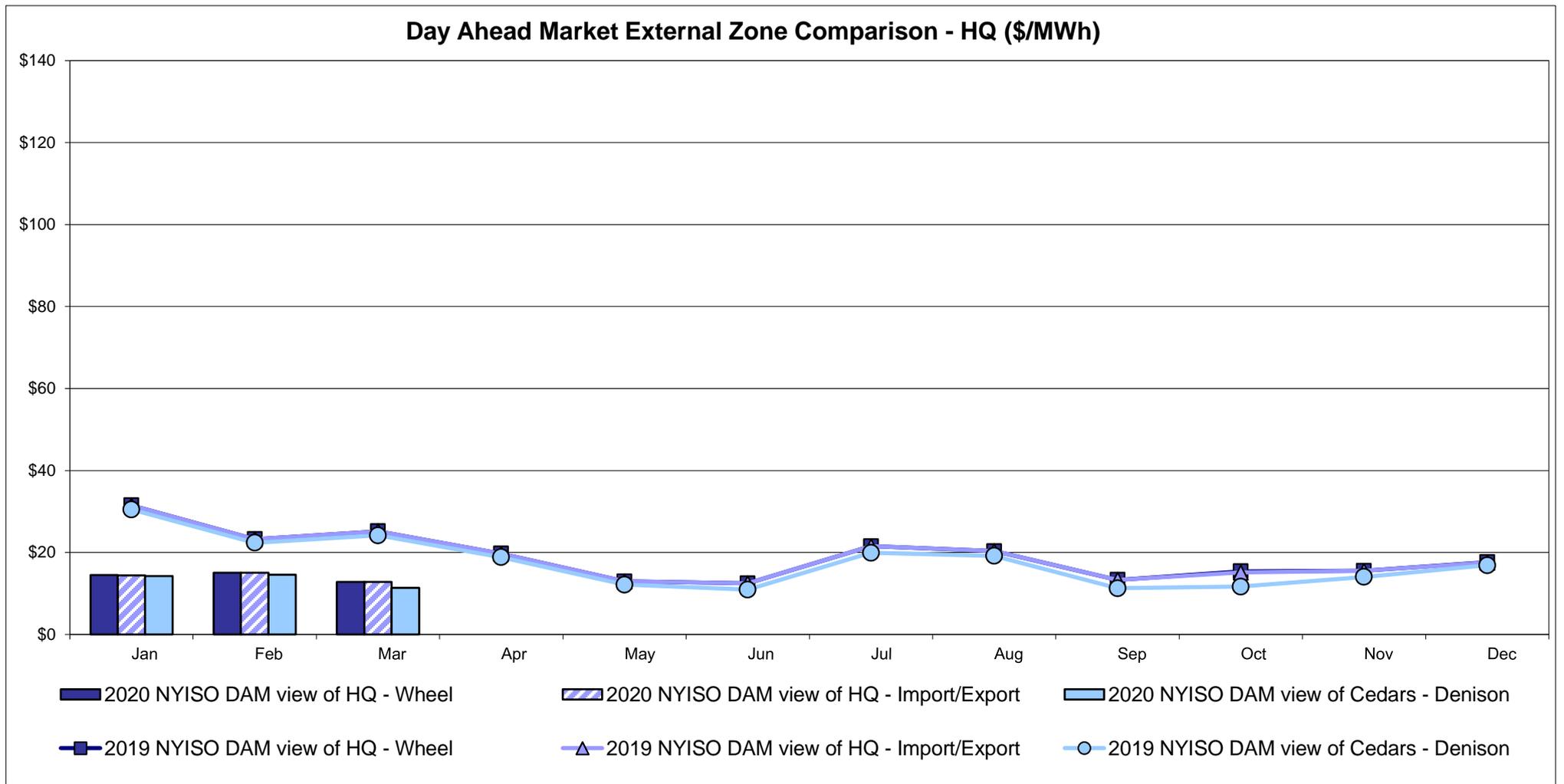
Day Ahead Market Comparison: Neptune (\$/MWh)



Real Time Market Comparison: Neptune (\$/MWh)

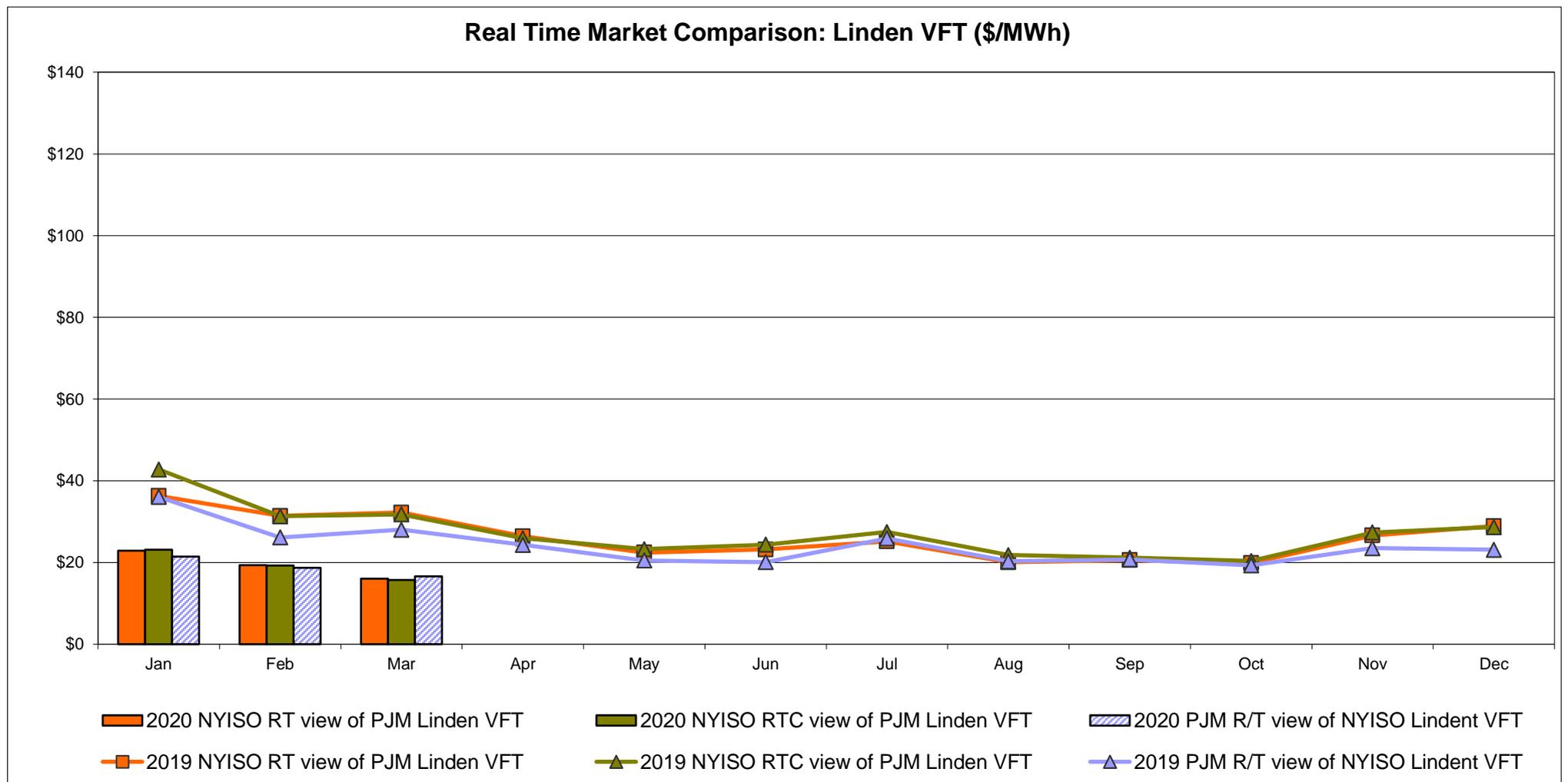
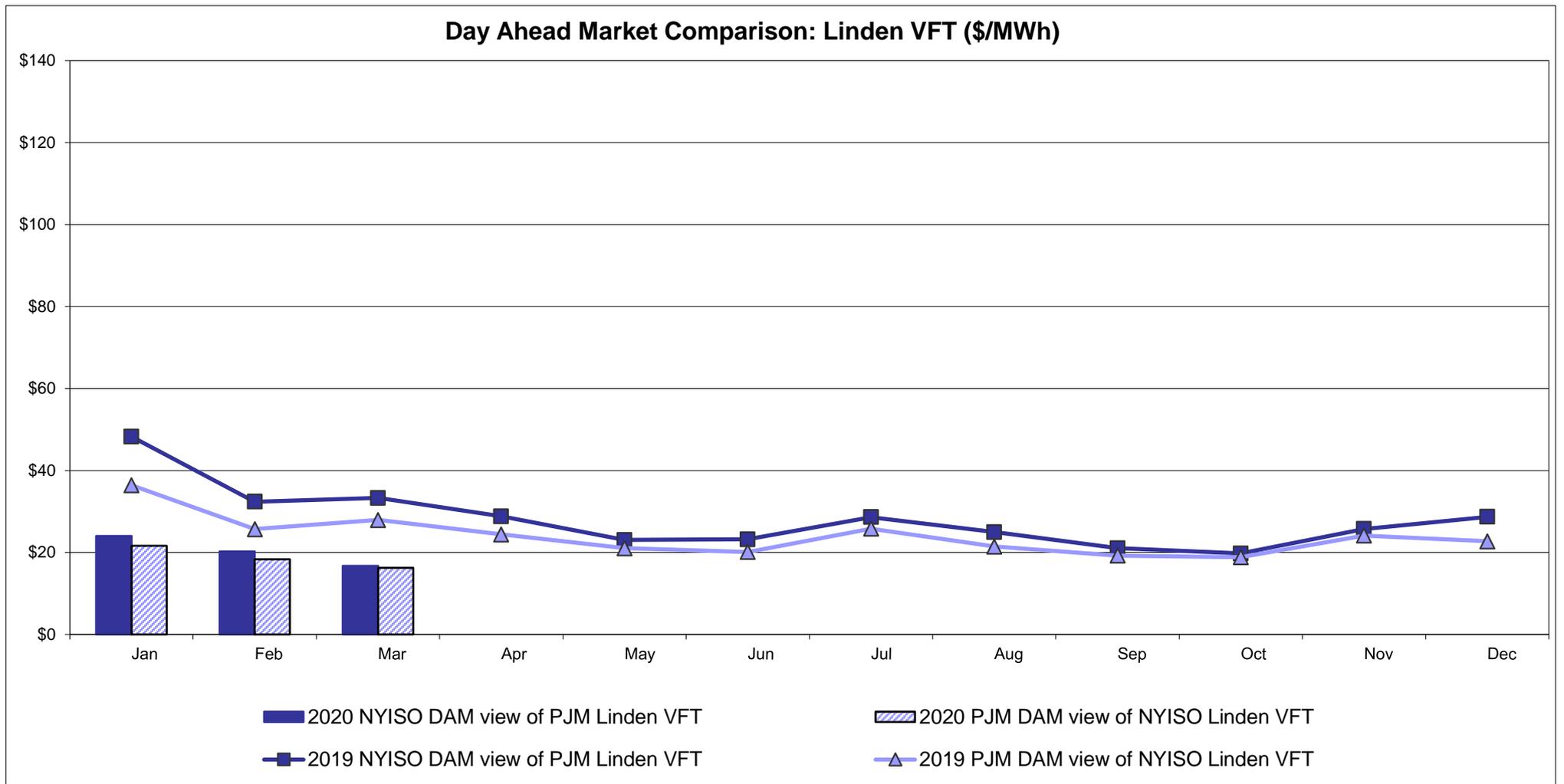


External Comparison Hydro-Quebec

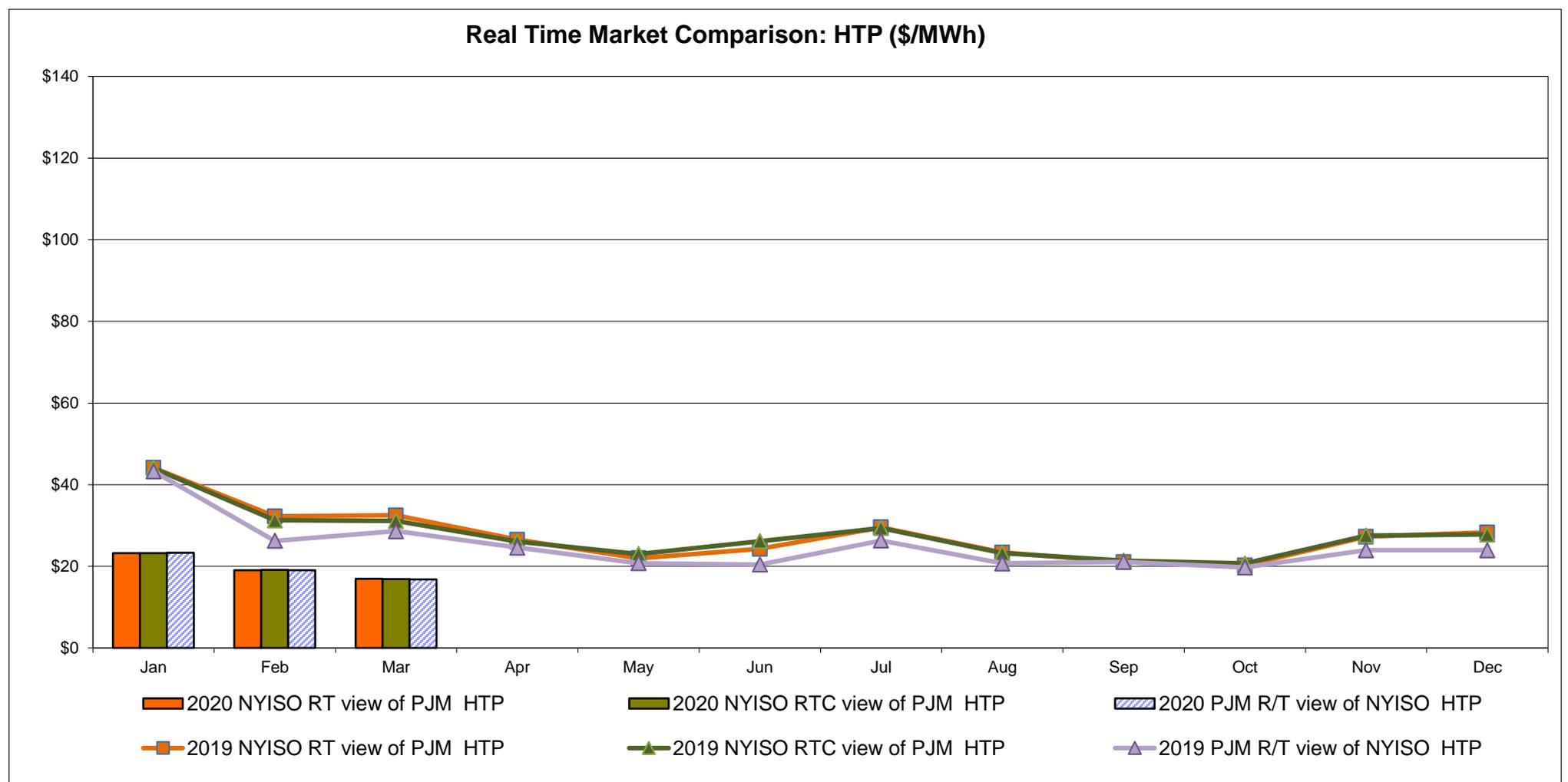
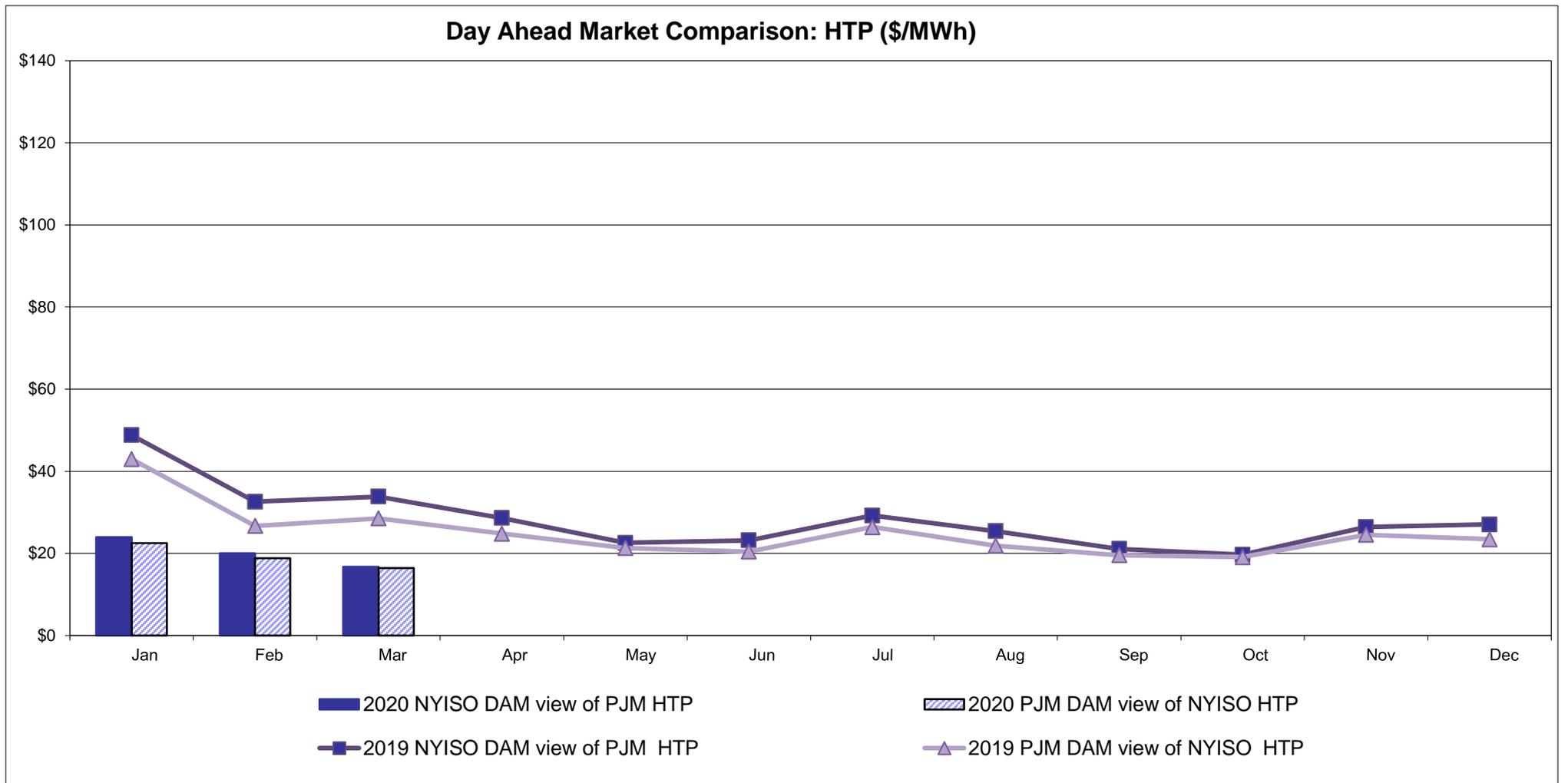


Note:
Hydro-Quebec Prices are unavailable.

External Controllable Line: Linden VFT (PJM)



External Controllable Line: Hudson (PJM)

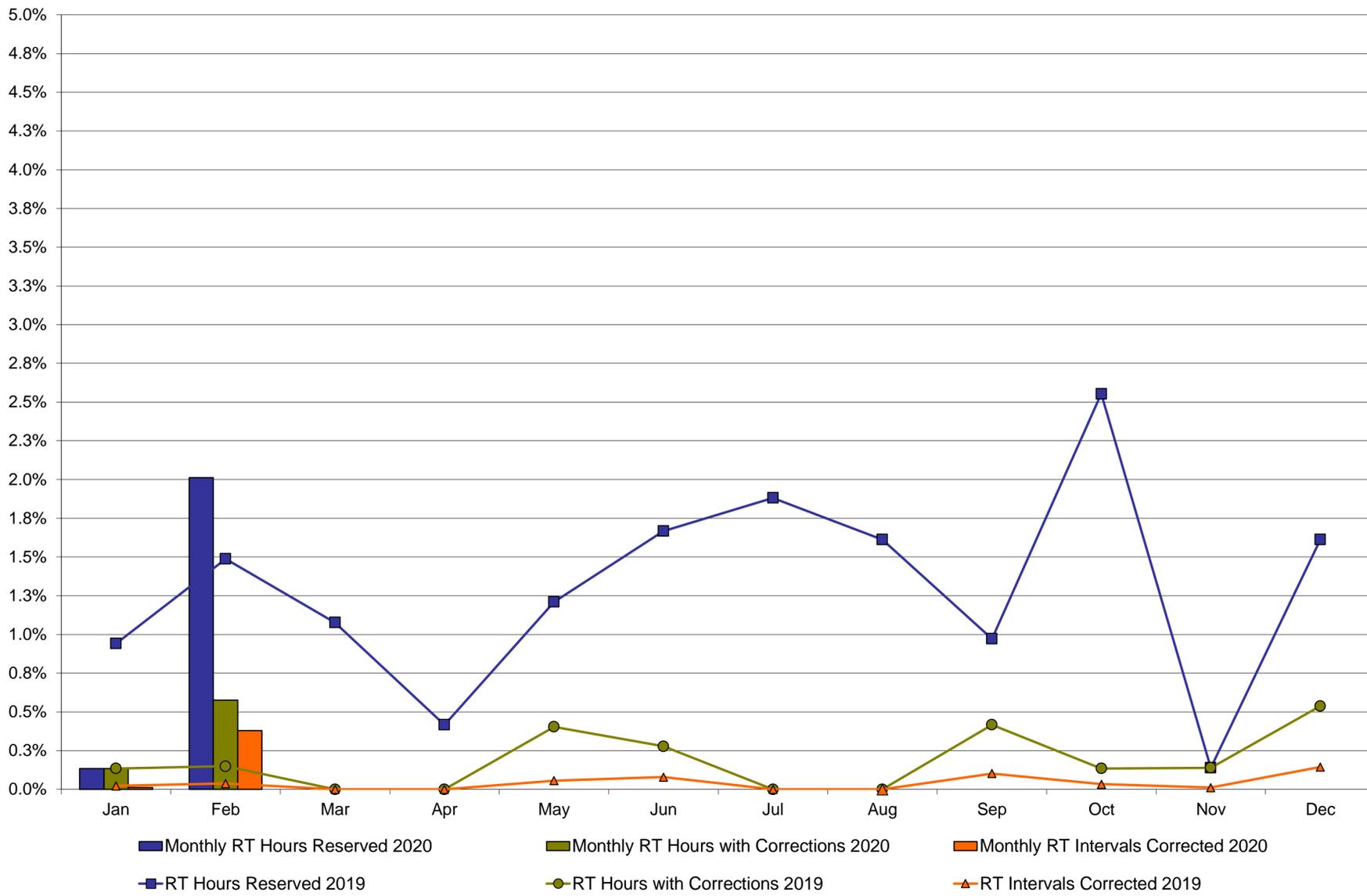


NYISO Real Time Price Correction Statistics

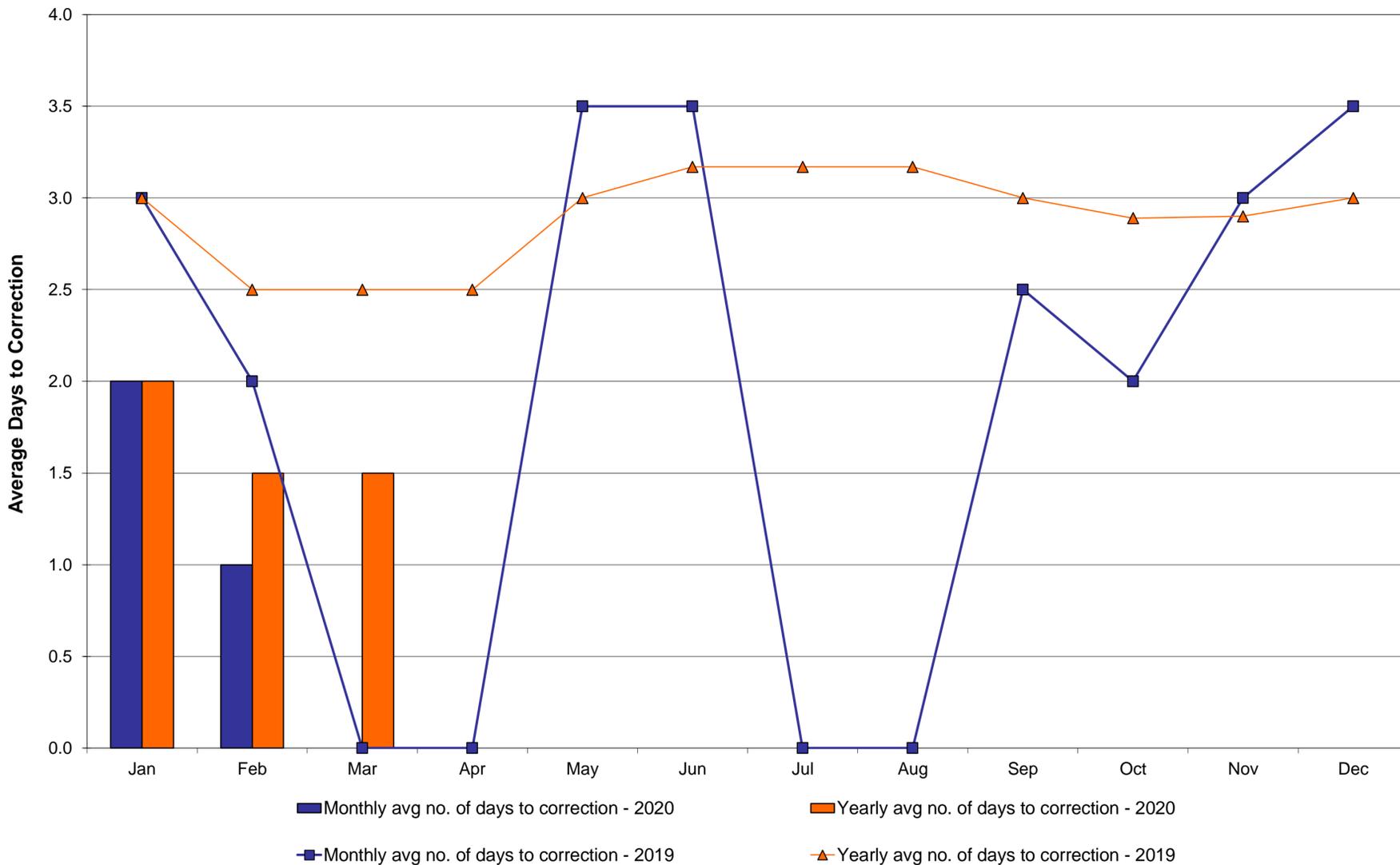
2020		<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Hour Corrections													
Number of hours with corrections	in the month	1	4	0									
Number of hours	in the month	744	696	743									
% of hours with corrections	in the month	0.13%	0.57%	0.00%									
% of hours with corrections	year-to-date	0.13%	0.35%	0.23%									
Interval Corrections													
Number of intervals corrected	in the month	1	32	0									
Number of intervals	in the month	9,088	8,460	9,011									
% of intervals corrected	in the month	0.01%	0.38%	0.00%									
% of intervals corrected	year-to-date	0.01%	0.19%	0.12%									
Hours Reserved													
Number of hours reserved	in the month	1	14	0									
Number of hours	in the month	744	696	743									
% of hours reserved	in the month	0.13%	2.01%	0.00%									
% of hours reserved	year-to-date	0.13%	1.04%	0.69%									
Days to Correction *													
Avg. number of days to correction	in the month	2.00	1.00	0.00									
Avg. number of days to correction	year-to-date	2.00	1.50	1.50									
Days Without Corrections													
Days without corrections	in the month	30	28	31									
Days without corrections	year-to-date	30	58	89									
2019		<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Hour Corrections													
Number of hours with corrections	in the month	1	1	0	0	3	2	0	0	3	1	1	4
Number of hours	in the month	744	672	743	720	744	720	744	744	720	744	721	744
% of hours with corrections	in the month	0.13%	0.15%	0.00%	0.00%	0.40%	0.28%	0.00%	0.00%	0.42%	0.13%	0.14%	0.54%
% of hours with corrections	year-to-date	0.13%	0.14%	0.09%	0.07%	0.14%	0.16%	0.14%	0.12%	0.15%	0.15%	0.15%	0.18%
Interval Corrections													
Number of intervals corrected	in the month	2	3	0	0	5	7	0	0	9	3	1	13
Number of intervals	in the month	9,071	8,131	9,008	8,750	9,033	8,863	9,243	9,048	8,820	9,087	8,788	9,021
% of intervals corrected	in the month	0.02%	0.04%	0.00%	0.00%	0.06%	0.08%	0.00%	0.00%	0.10%	0.03%	0.01%	0.14%
% of intervals corrected	year-to-date	0.02%	0.03%	0.02%	0.01%	0.02%	0.03%	0.03%	0.02%	0.03%	0.03%	0.03%	0.04%
Hours Reserved													
Number of hours reserved	in the month	7	10	8	3	9	12	14	12	7	19	1	12
Number of hours	in the month	744	672	743	720	744	720	744	744	720	744	721	744
% of hours reserved	in the month	0.94%	1.49%	1.08%	0.42%	1.21%	1.67%	1.88%	1.61%	0.97%	2.55%	0.14%	1.61%
% of hours reserved	year-to-date	0.94%	1.20%	1.16%	0.97%	1.02%	1.13%	1.24%	1.29%	1.25%	1.38%	1.27%	1.30%
Days to Correction *													
Avg. number of days to correction	in the month	3.00	2.00	0.00	0.00	3.50	3.50	0.00	0.00	2.50	2.00	3.00	3.50
Avg. number of days to correction	year-to-date	3.00	2.50	2.50	2.50	3.00	3.17	3.17	3.17	3.00	2.89	2.90	3.00
Days Without Corrections													
Days without corrections	in the month	30	27	31	30	29	28	31	31	28	30	29	29
Days without corrections	year-to-date	30	57	88	118	147	175	206	237	265	295	324	353

*Calendar days from reservation date; for June 2018 forward, business days from market date

Percentage of Real-Time Corrections

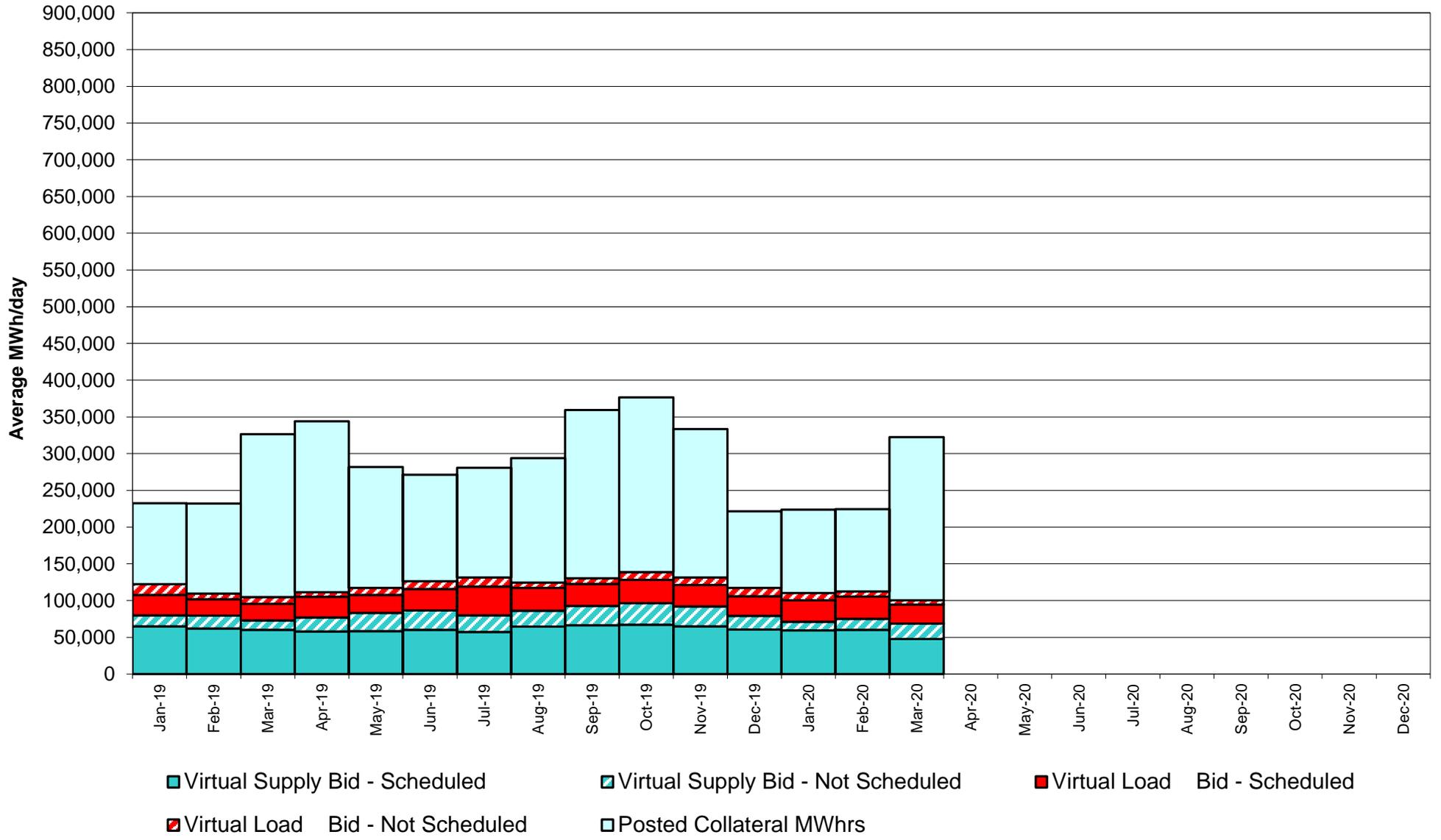


Annual average time period for making Price Corrections (from reservation date) *

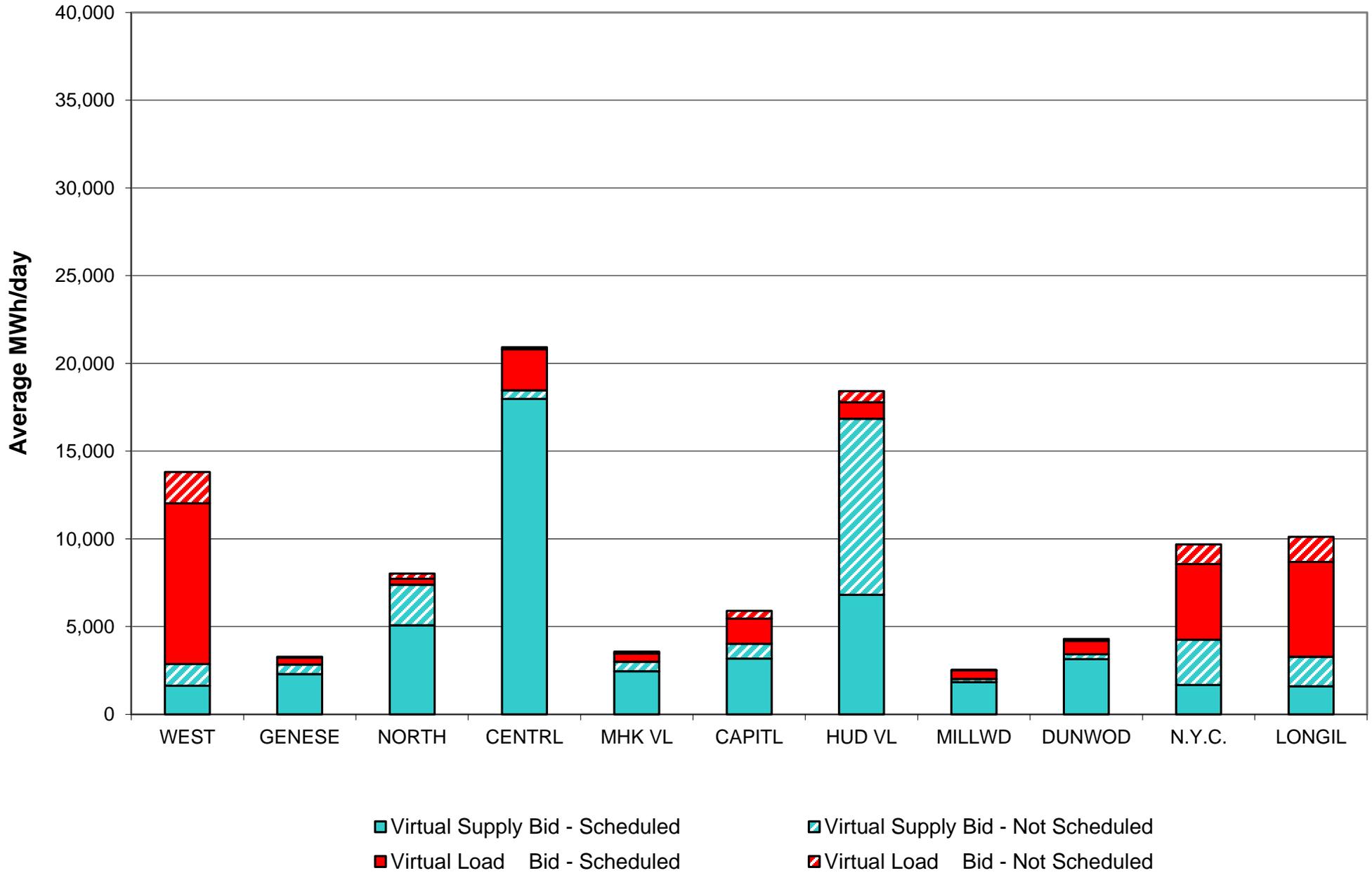


*Calendar days from reservation date; for June 2018 forward, business days from market date

NYISO Virtual Trading Average MWh per day



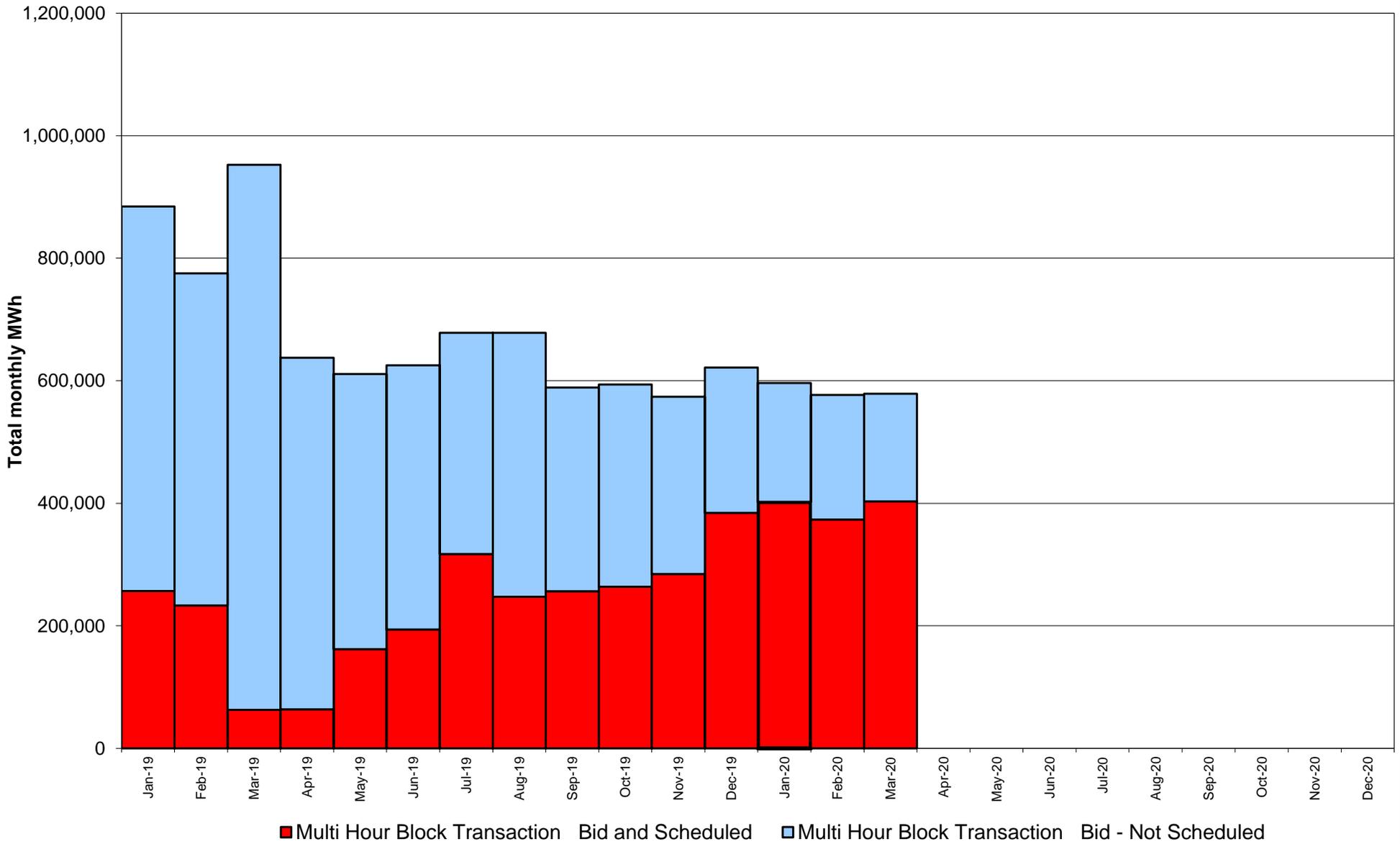
Virtual Load and Supply Zonal Statistics through March 31, 2020



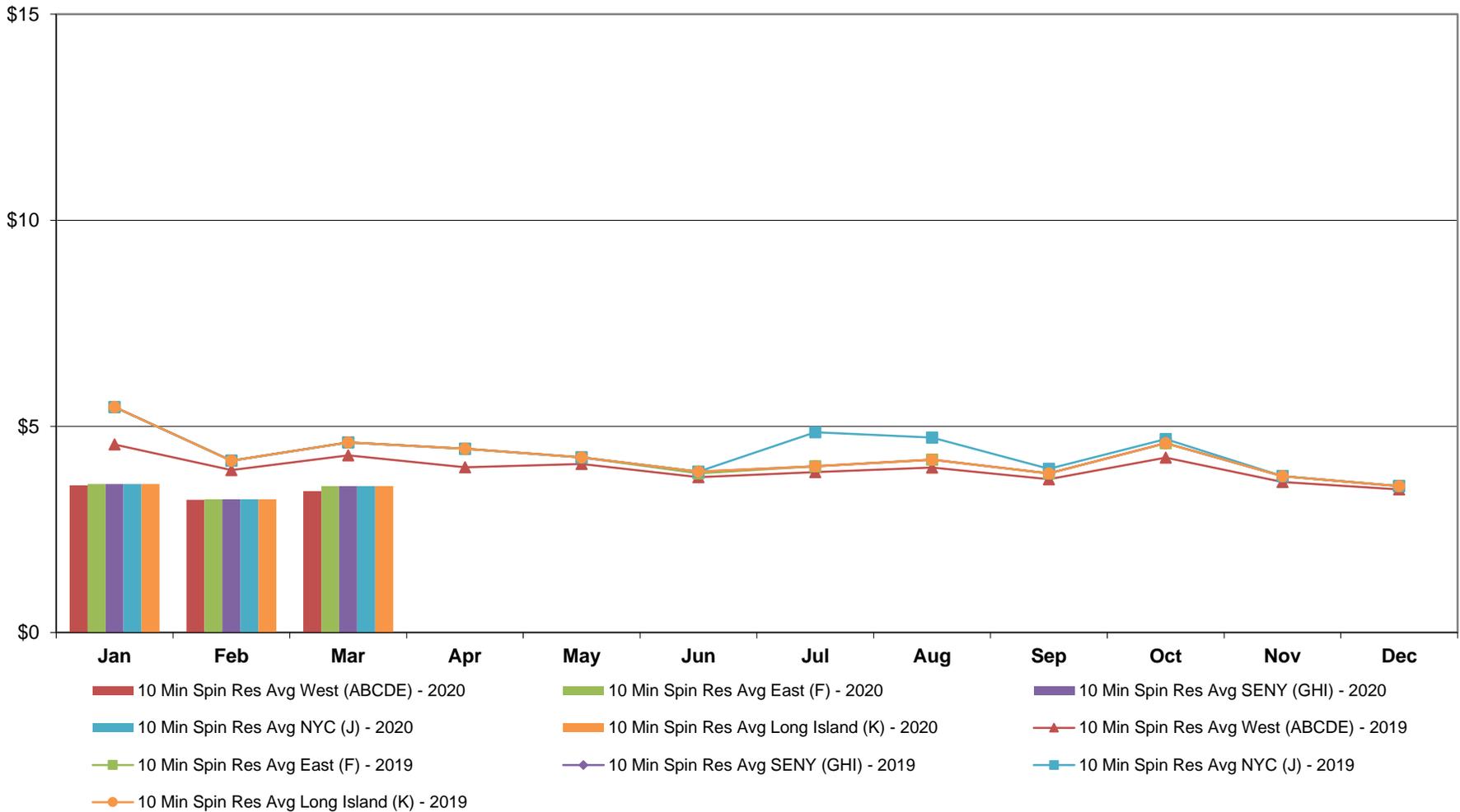
Virtual Load and Supply Zonal Statistics (Average MWh/day) - 2020

		Virtual Load Bid		Virtual Supply Bid				Virtual Load Bid		Virtual Supply Bid				Virtual Load Bid		Virtual Supply Bid	
Zone	Date	Scheduled	Not Scheduled	Scheduled	Not Scheduled	Zone	Date	Scheduled	Not Scheduled	Scheduled	Not Scheduled	Zone	Date	Scheduled	Not Scheduled	Scheduled	Not Scheduled
WEST	Jan-20	7,809	1,328	1,765	984	MHK VL	Jan-20	747	77	2,155	793	DUNWOD	Jan-20	1,120	241	3,191	370
	Feb-20	8,213	1,248	2,597	947		Feb-20	724	88	2,339	504		Feb-20	536	298	3,782	368
	Mar-20	9,155	1,778	1,637	1,236		Mar-20	481	97	2,455	542		Mar-20	766	109	3,143	282
	Apr-20						Apr-20						Apr-20				
	May-20						May-20						May-20				
	Jun-20						Jun-20						Jun-20				
	Jul-20						Jul-20						Jul-20				
	Aug-20						Aug-20						Aug-20				
	Sep-20						Sep-20						Sep-20				
	Oct-20						Oct-20						Oct-20				
	Nov-20						Nov-20						Nov-20				
	Dec-20						Dec-20						Dec-20				
GENESE	Jan-20	553	131	1,749	995	CAPITL	Jan-20	1,772	539	3,324	1,235	N.Y.C.	Jan-20	6,699	2,678	2,148	1,639
	Feb-20	534	79	2,082	640		Feb-20	2,046	418	3,149	673		Feb-20	9,452	1,841	1,316	1,894
	Mar-20	397	46	2,294	550		Mar-20	1,446	443	3,181	837		Mar-20	4,317	1,126	1,676	2,571
	Apr-20						Apr-20						Apr-20				
	May-20						May-20						May-20				
	Jun-20						Jun-20						Jun-20				
	Jul-20						Jul-20						Jul-20				
	Aug-20						Aug-20						Aug-20				
	Sep-20						Sep-20						Sep-20				
	Oct-20						Oct-20						Oct-20				
	Nov-20						Nov-20						Nov-20				
	Dec-20						Dec-20						Dec-20				
NORTH	Jan-20	811	206	5,038	1,765	HUD VL	Jan-20	891	1,274	7,573	2,206	LONGIL	Jan-20	5,640	2,824	2,246	1,109
	Feb-20	402	276	5,144	2,014		Feb-20	886	722	8,517	5,838		Feb-20	4,795	1,683	1,678	1,217
	Mar-20	335	293	5,075	2,315		Mar-20	944	634	6,811	10,029		Mar-20	5,402	1,429	1,602	1,683
	Apr-20						Apr-20						Apr-20				
	May-20						May-20						May-20				
	Jun-20						Jun-20						Jun-20				
	Jul-20						Jul-20						Jul-20				
	Aug-20						Aug-20						Aug-20				
	Sep-20						Sep-20						Sep-20				
	Oct-20						Oct-20						Oct-20				
	Nov-20						Nov-20						Nov-20				
	Dec-20						Dec-20						Dec-20				
CENTRL	Jan-20	3,050	214	28,503	541	MILLWD	Jan-20	270	68	1,646	213	NYISO	Jan-20	29,361	9,580	59,340	11,849
	Feb-20	2,567	118	27,919	487		Feb-20	281	68	1,811	229		Feb-20	30,434	6,838	60,334	14,811
	Mar-20	2,340	113	17,986	481		Mar-20	494	19	1,844	174		Mar-20	26,077	6,087	47,704	20,700
	Apr-20						Apr-20						Apr-20				
	May-20						May-20						May-20				
	Jun-20						Jun-20						Jun-20				
	Jul-20						Jul-20						Jul-20				
	Aug-20						Aug-20						Aug-20				
	Sep-20						Sep-20						Sep-20				
	Oct-20						Oct-20						Oct-20				
	Nov-20						Nov-20						Nov-20				
	Dec-20						Dec-20						Dec-20				

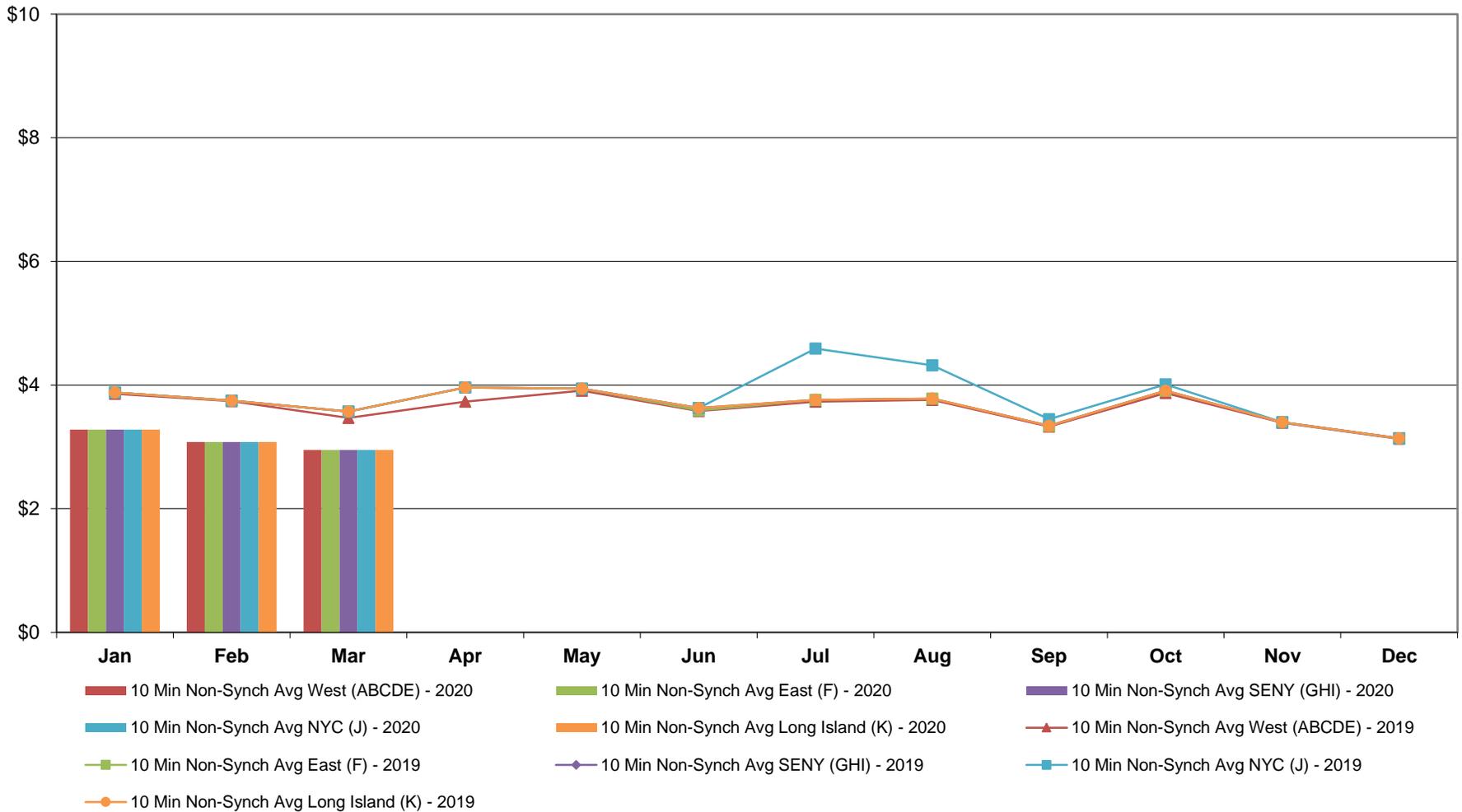
NYISO Multi Hour Block Transactions Monthly Total MWh



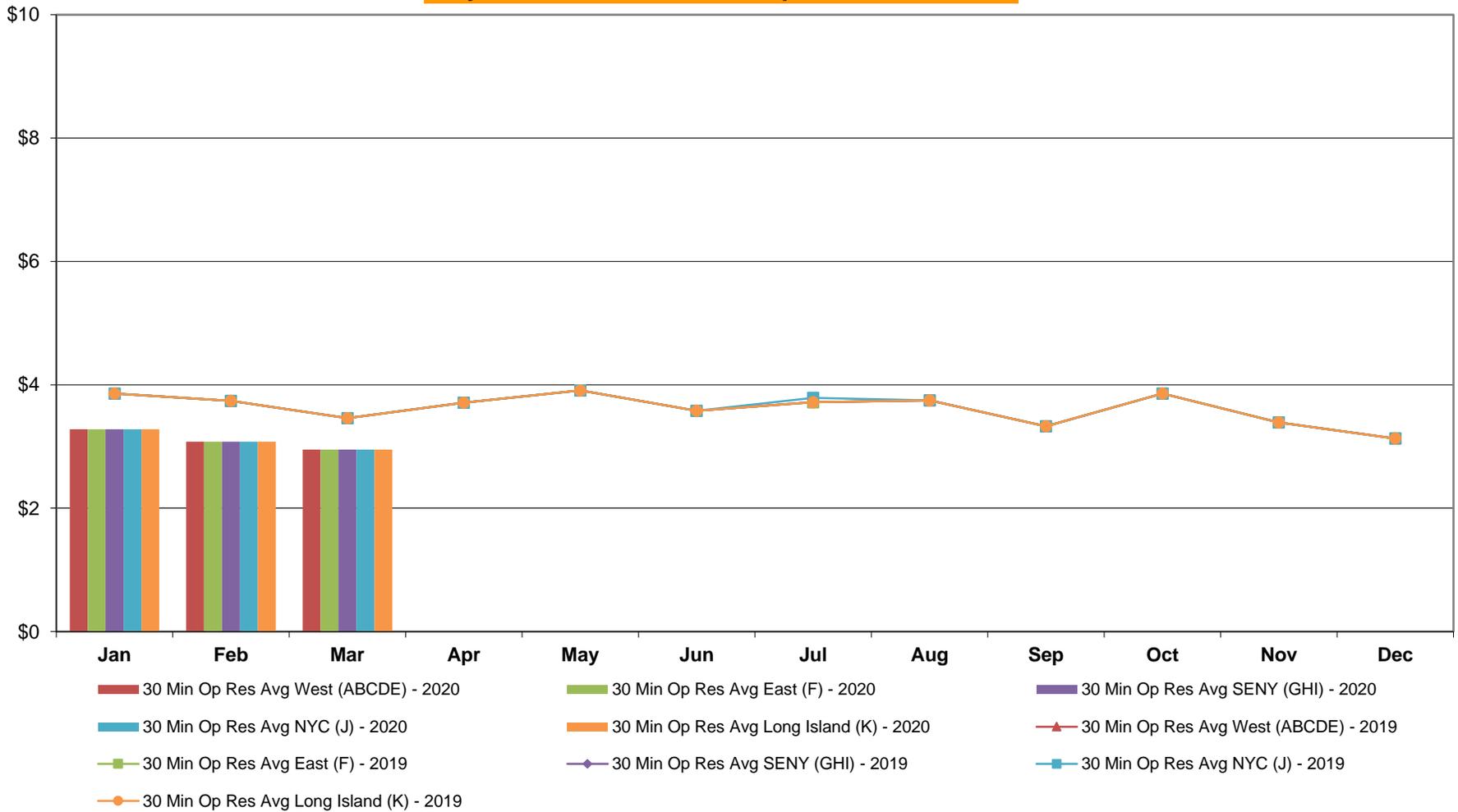
**NYISO Monthly Average Ancillary Service Prices
Day Ahead Market - 10 Min Spin 2019 - 2020**



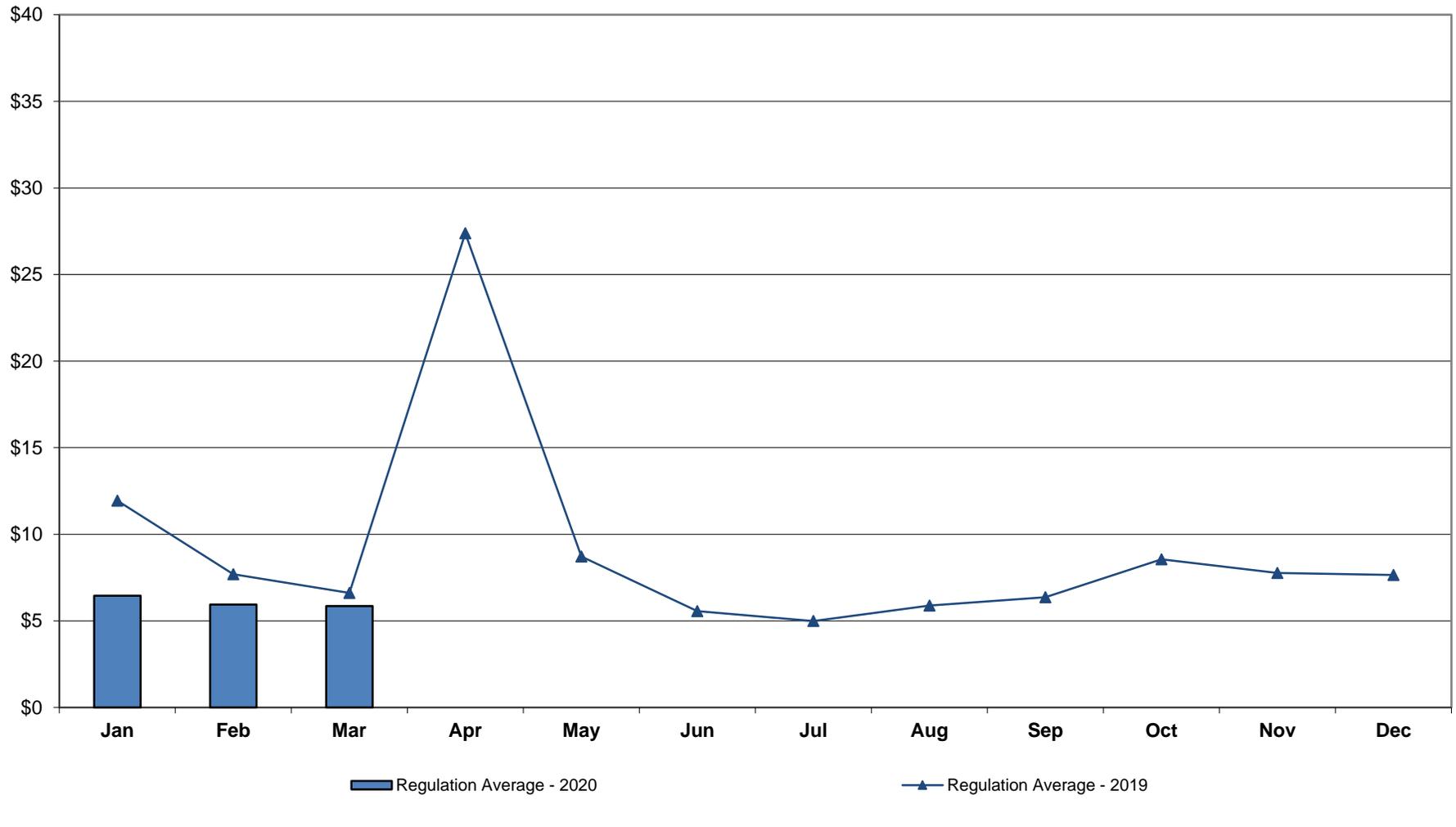
**NYISO Monthly Average Ancillary Service Prices
Day Ahead Market - 10 Min Non-Synch 2019 - 2020**



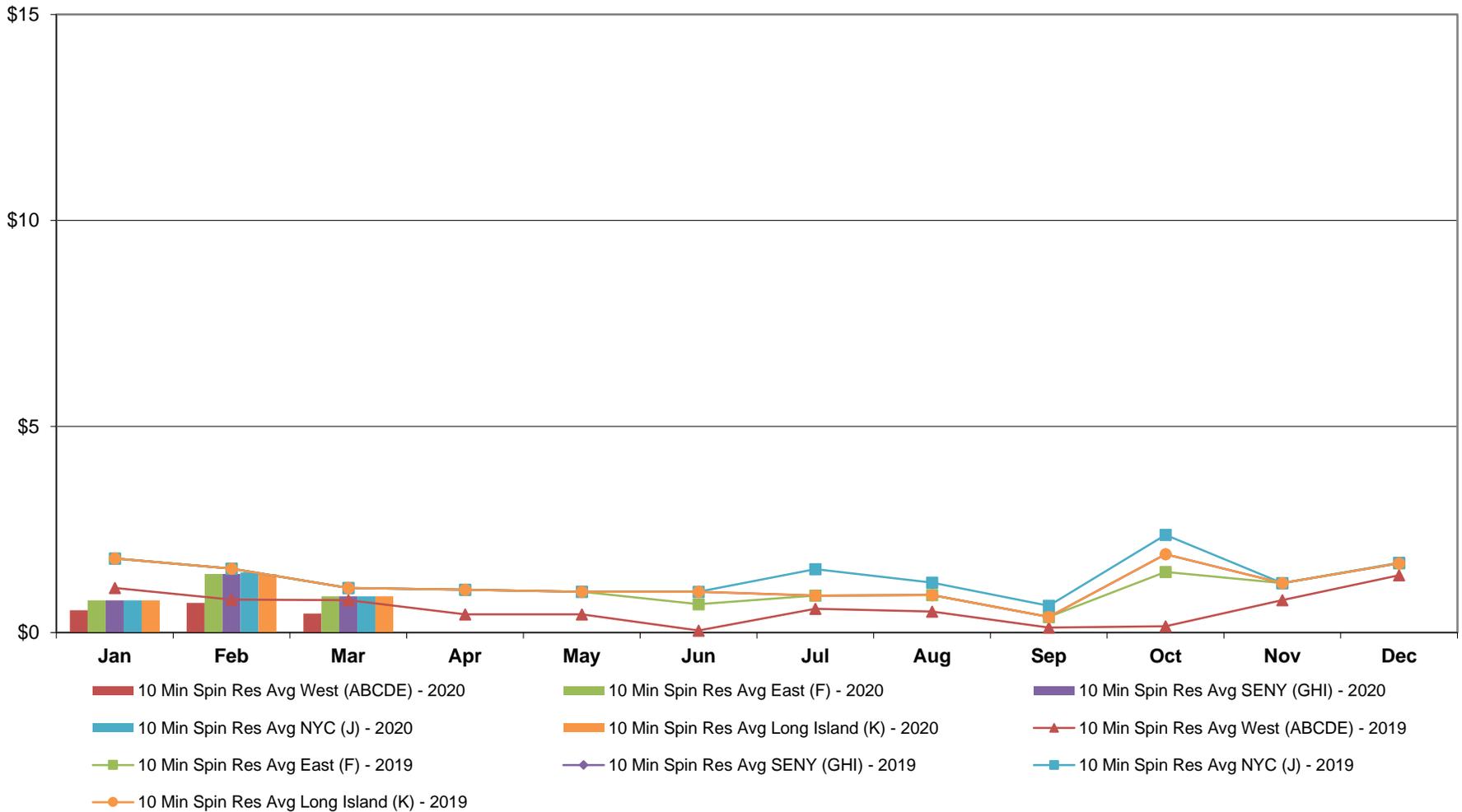
**NYISO Monthly Average Ancillary Service Prices
Day Ahead Market - 30 Min Op Res 2019 - 2020**



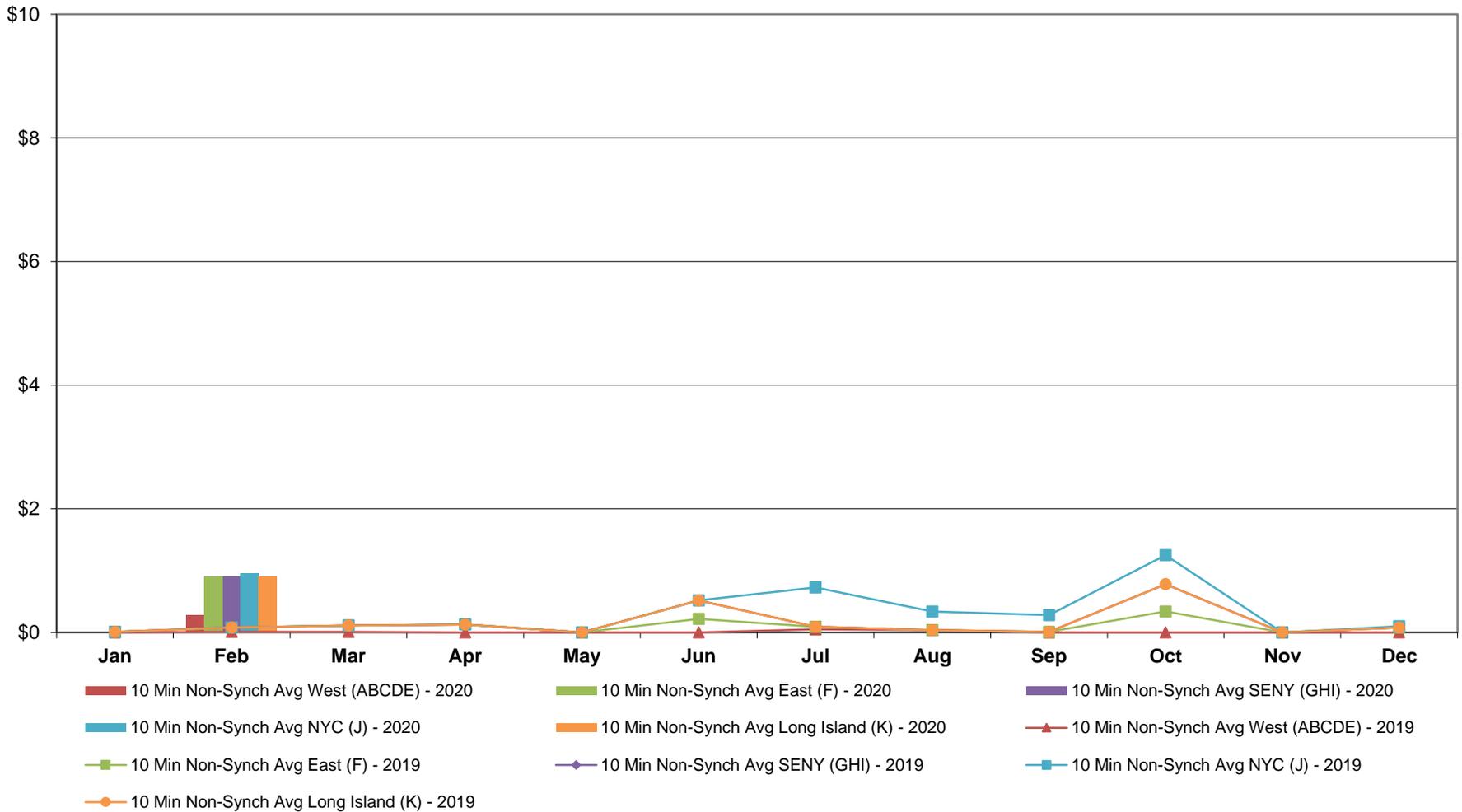
**NYISO Monthly Average Ancillary Service Prices
Day Ahead Market - Regulation 2019 - 2020**



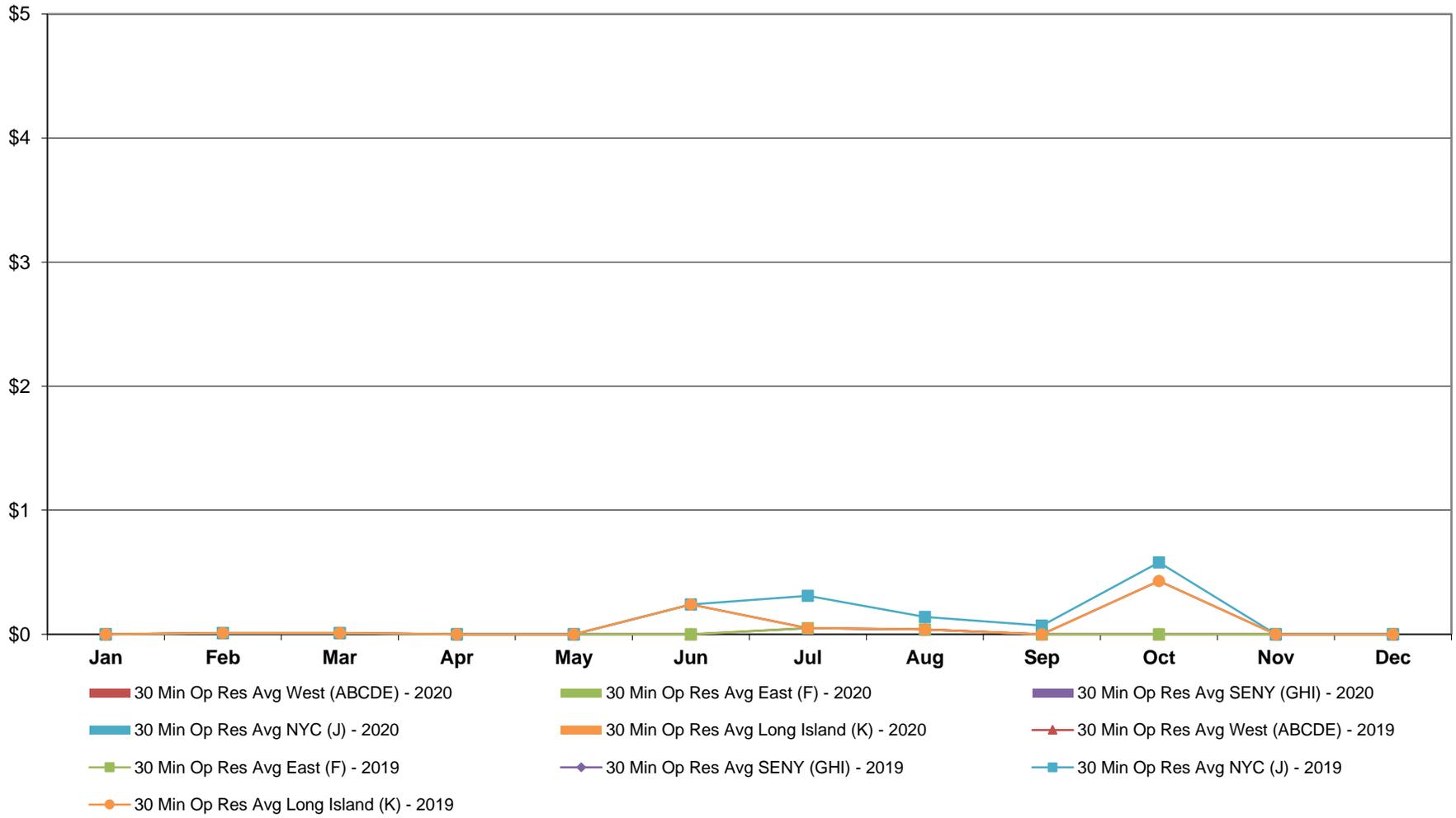
**NYISO Monthly Average Ancillary Service Prices
RTC Market - 10 Min Spin 2019 - 2020**



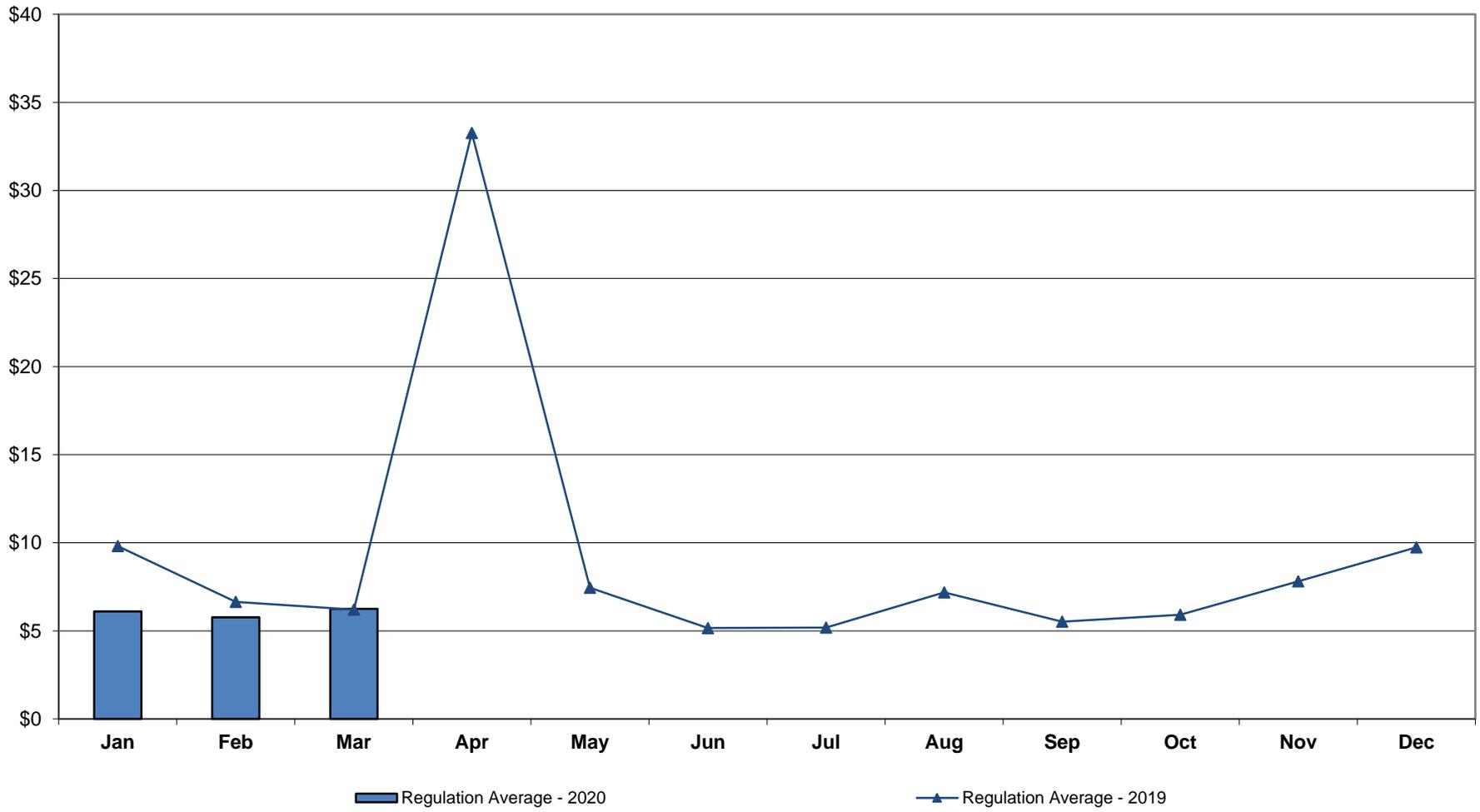
**NYISO Monthly Average Ancillary Service Prices
RTC Market - 10 Min Non-Synch 2019 - 2020**



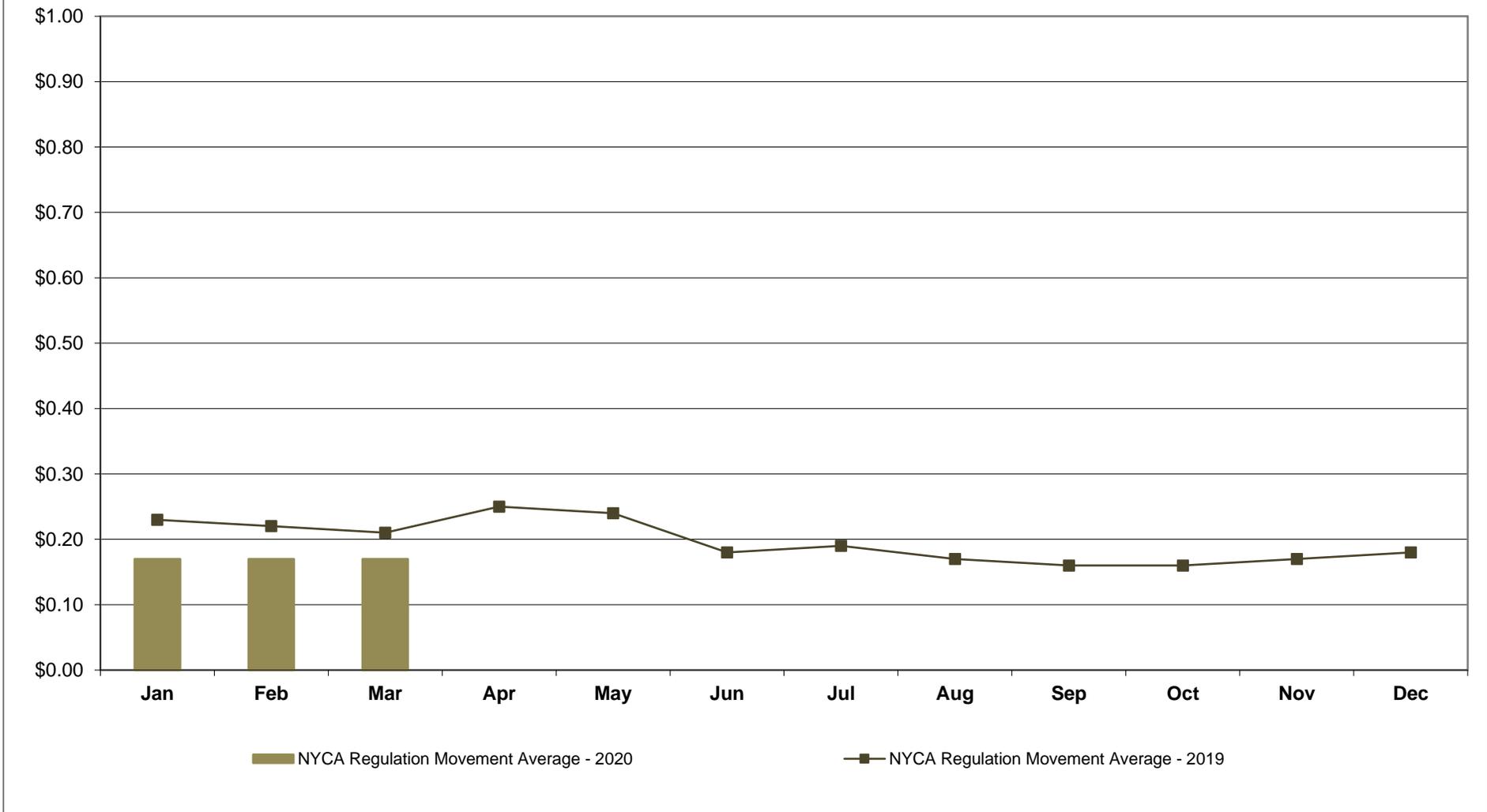
**NYISO Monthly Average Ancillary Service Prices
RTC Market - 30 Min Op Res 2019 - 2020**



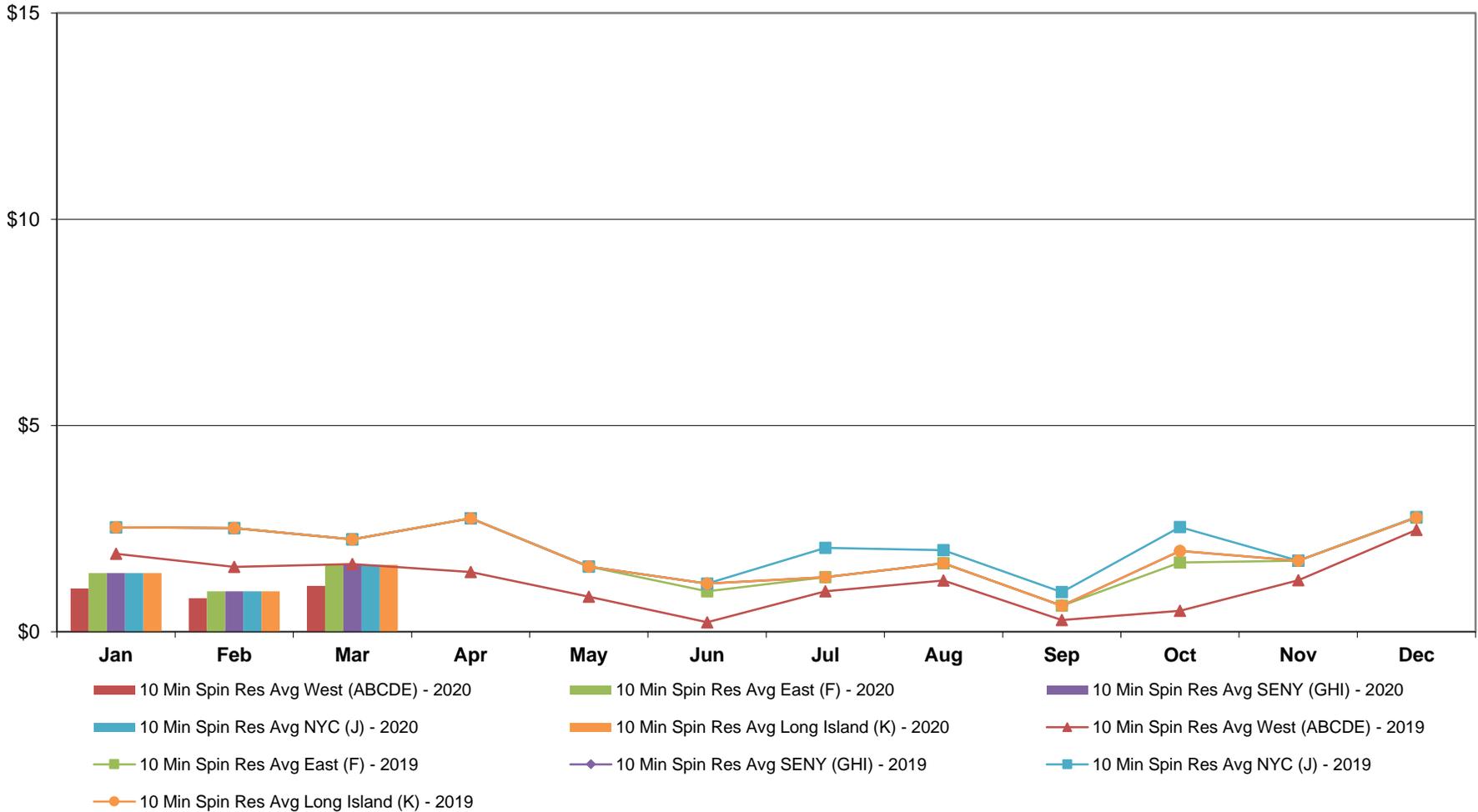
**NYISO Monthly Average Ancillary Service Prices
RTC Market - Regulation 2019 - 2020**



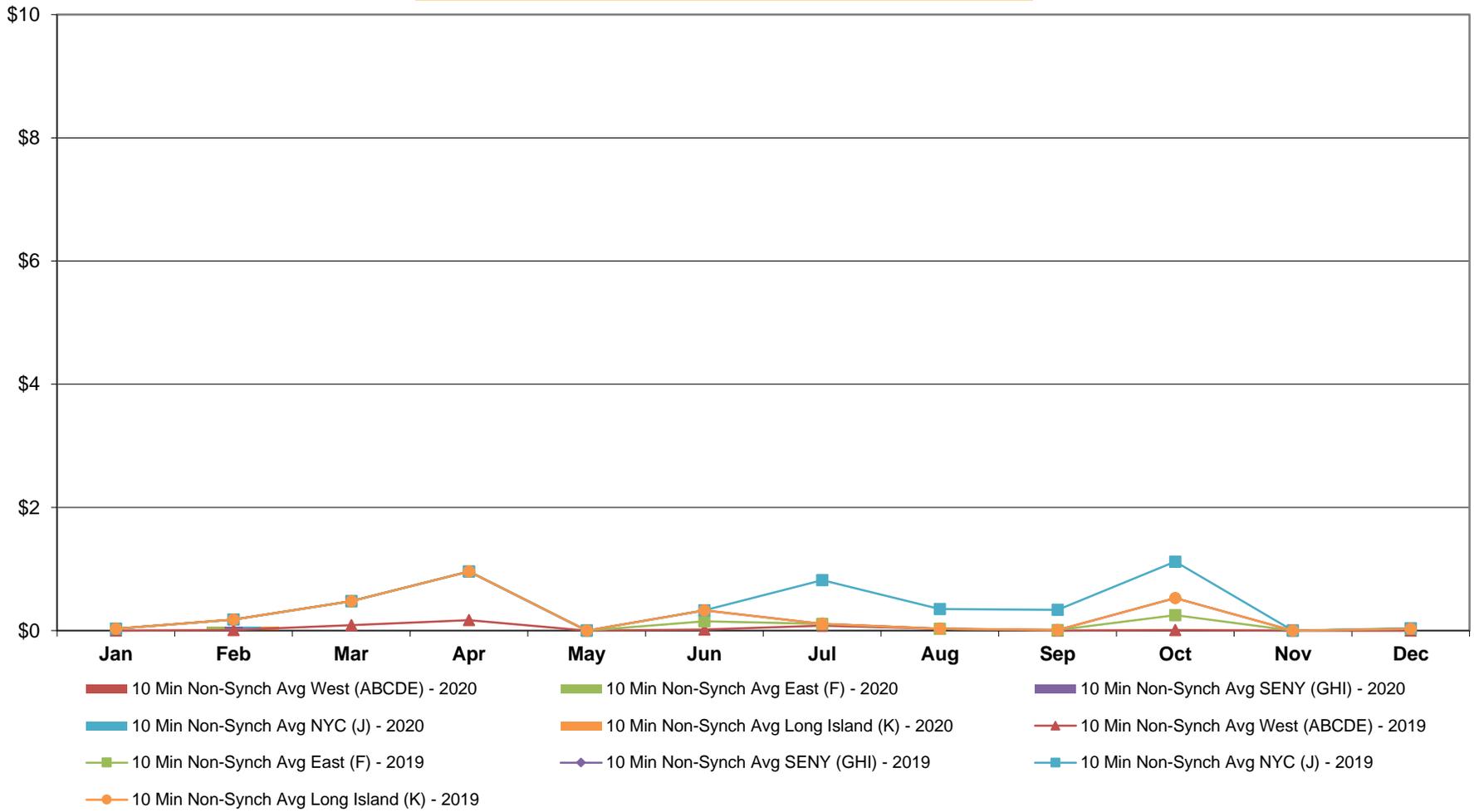
**NYISO Monthly Average Ancillary Service Prices
RTC Market - Regulation Movement 2019 - 2020**



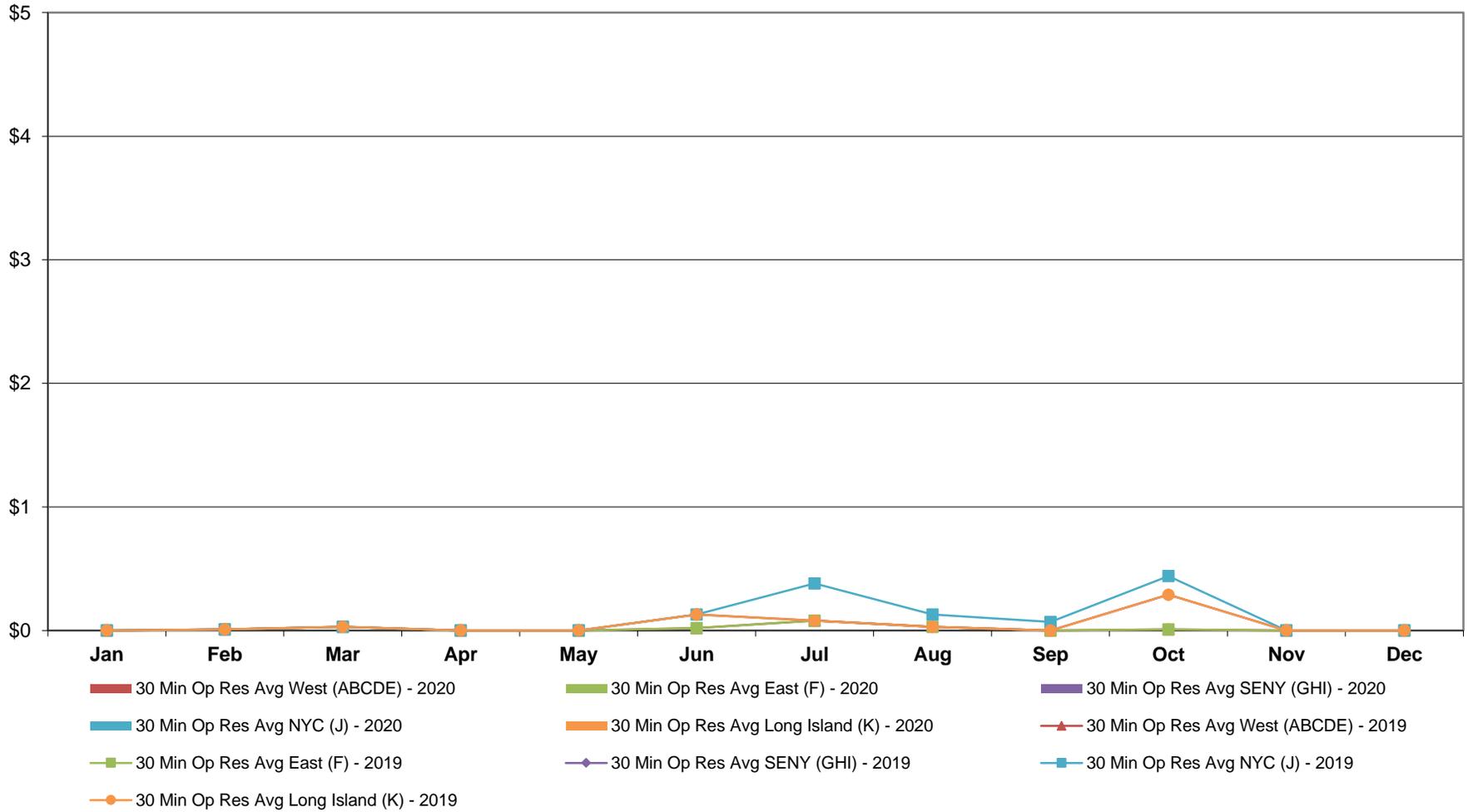
**NYISO Monthly Average Ancillary Service Prices
Real Time Market - 10 Min Spin 2019 - 2020**



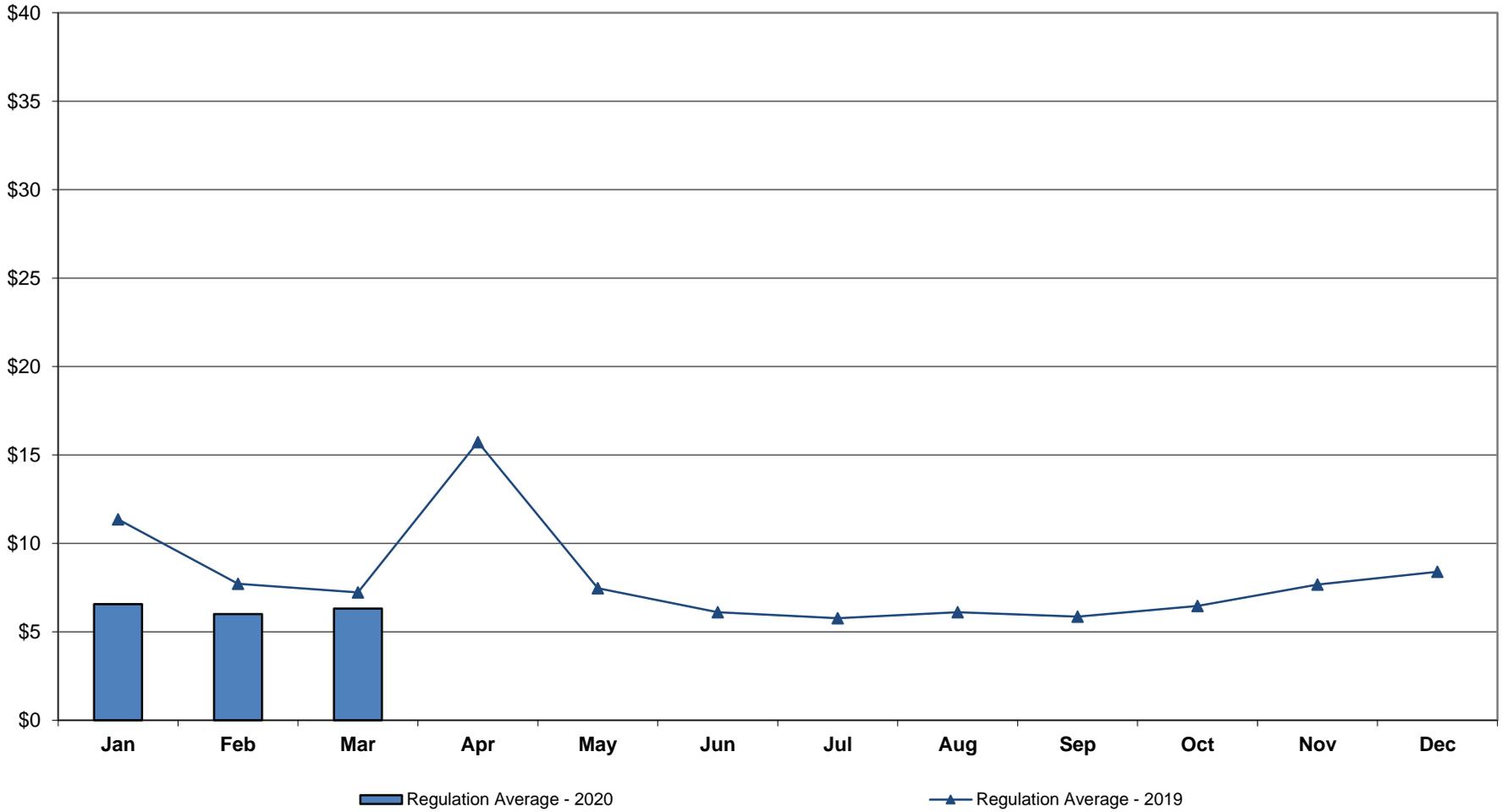
**NYISO Monthly Average Ancillary Service Prices
Real Time Market - 10 Min Non-Synch 2019 - 2020**



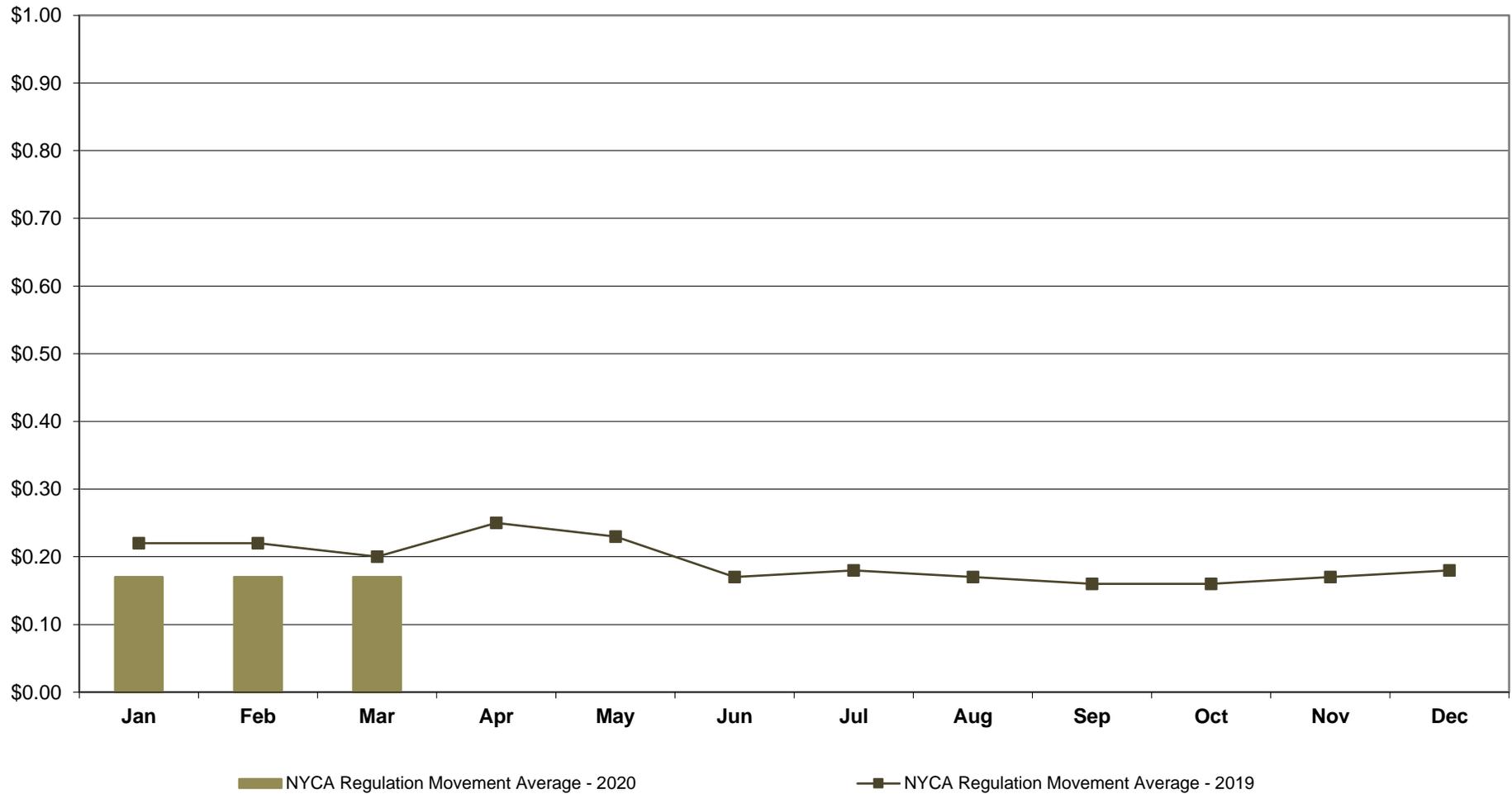
**NYISO Monthly Average Ancillary Service Prices
Real Time Market - 30 Min Op Res 2019 - 2020**



**NYISO Monthly Average Ancillary Service Prices
Real Time Market - Regulation 2019 - 2020**



**NYISO Monthly Average Ancillary Service Prices
Real Time Market - Regulation Movement 2019 - 2020**



NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH) - DAM

<u>2020</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<u>Day Ahead Market</u>												
10 Min Spin Long Island (K)	3.60	3.23	3.55									
10 Min Spin NYC (J)	3.60	3.23	3.55									
10 Min Spin SENY (GHI)	3.60	3.23	3.55									
10 Min Spin East (F)	3.60	3.23	3.55									
10 Min Spin West (ABCDE)	3.57	3.22	3.43									
10 Min Non Synch Long Island (K)	3.28	3.08	2.95									
10 Min Non Synch NYC (J)	3.28	3.08	2.95									
10 Min Non Synch SENY (GHI)	3.28	3.08	2.95									
10 Min Non Synch East (F)	3.28	3.08	2.95									
10 Min Non Synch West (ABCDE)	3.28	3.08	2.95									
30 Min Long Island (K)	3.28	3.08	2.95									
30 Min NYC (J)	3.28	3.08	2.95									
30 Min SENY (GHI)	3.28	3.08	2.95									
30 Min East (F)	3.28	3.08	2.95									
30 Min West (ABCDE)	3.28	3.08	2.95									
Regulation	6.46	5.94	5.86									
<u>2019</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<u>Day Ahead Market</u>												
10 Min Spin Long Island (K)	5.47	5.47	4.61	4.46	4.25	3.90	4.03	4.19	3.86	4.59	3.79	3.55
10 Min Spin NYC (J)	5.47	5.47	4.61	4.46	4.25	3.90	4.86	4.73	3.97	4.69	3.79	3.55
10 Min Spin SENY (GHI)	5.47	4.17	4.61	4.46	4.25	3.90	4.03	4.19	3.86	4.59	3.79	3.55
10 Min Spin East (F)	5.47	4.17	4.61	4.46	4.25	3.86	4.03	4.19	3.86	4.59	3.79	3.55
10 Min Spin West (ABCDE)	4.56	3.94	4.30	4.01	4.09	3.77	3.89	4.00	3.72	4.24	3.65	3.47
10 Min Non Synch Long Island (K)	3.88	3.88	3.57	3.96	3.94	3.63	3.76	3.78	3.34	3.91	3.40	3.14
10 Min Non Synch NYC (J)	3.88	3.88	3.57	3.96	3.94	3.63	4.59	4.32	3.45	4.01	3.40	3.14
10 Min Non Synch SENY (GHI)	3.88	3.75	3.57	3.96	3.94	3.63	3.76	3.78	3.34	3.91	3.40	3.14
10 Min Non Synch East (F)	3.88	3.75	3.57	3.96	3.94	3.59	3.76	3.78	3.34	3.91	3.40	3.14
10 Min Non Synch West (ABCDE)	3.86	3.74	3.47	3.73	3.91	3.58	3.73	3.76	3.33	3.87	3.39	3.13
30 Min Long Island (K)	3.86	3.86	3.46	3.71	3.91	3.58	3.72	3.75	3.33	3.86	3.39	3.13
30 Min NYC (J)	3.86	3.86	3.46	3.71	3.91	3.58	3.79	3.75	3.33	3.86	3.39	3.13
30 Min SENY (GHI)	3.86	3.74	3.46	3.71	3.91	3.58	3.72	3.75	3.33	3.86	3.39	3.13
30 Min East (F)	3.86	3.74	3.46	3.71	3.91	3.58	3.72	3.75	3.33	3.86	3.39	3.13
30 Min West (ABCDE)	3.86	3.74	3.46	3.71	3.91	3.58	3.72	3.75	3.33	3.86	3.39	3.13
Regulation	11.94	7.69	6.62	27.38	8.71	5.57	4.99	5.89	6.36	8.55	7.77	7.65

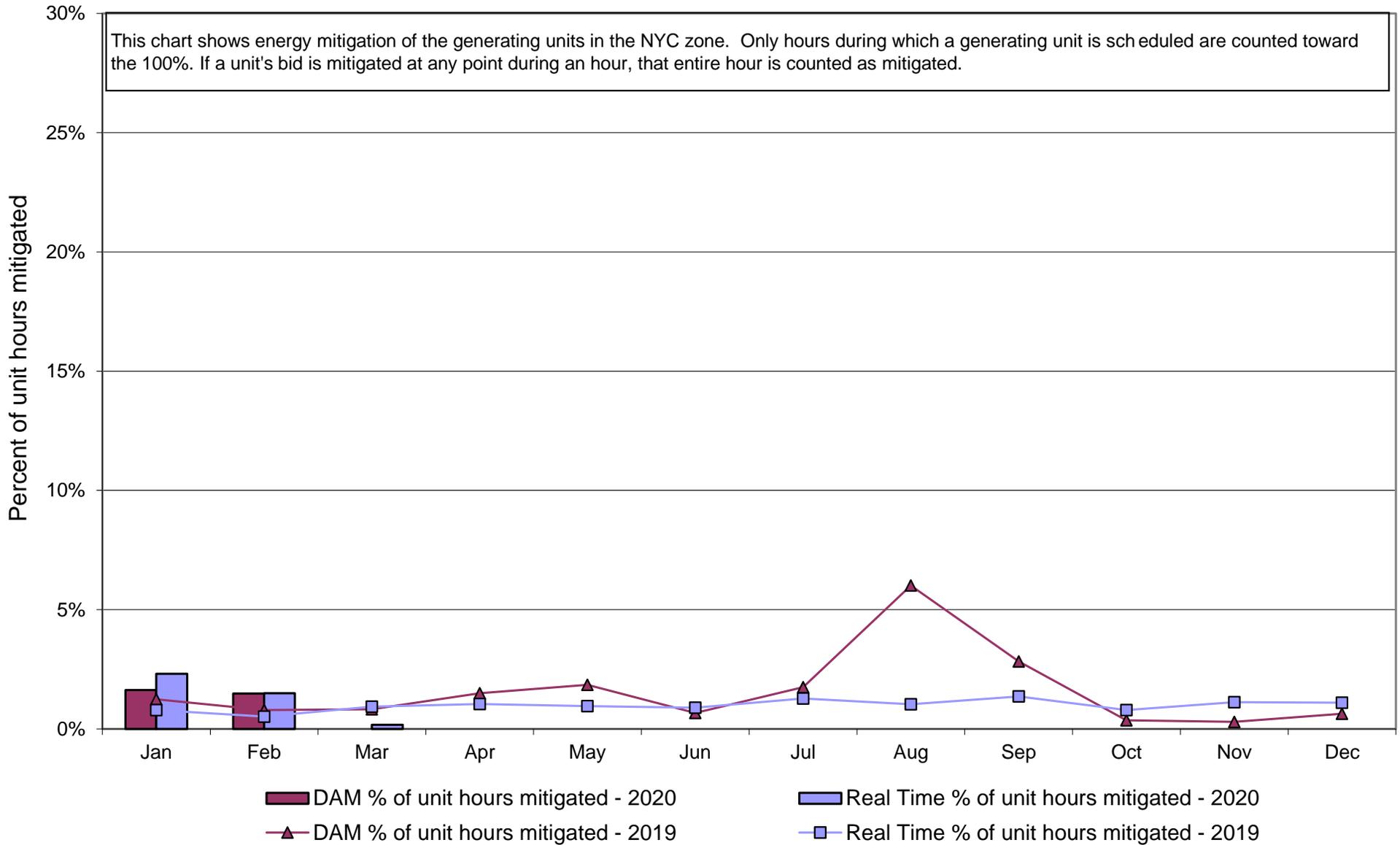
NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH) - RTC

<u>2020</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
RTC Market												
10 Min Spin Long Island (K)	0.78	1.42	0.88									
10 Min Spin NYC (J)	0.78	1.46	0.88									
10 Min Spin SENY (GHI)	0.78	1.42	0.88									
10 Min Spin East (F)	0.78	1.42	0.88									
10 Min Spin West (ABCDE)	0.54	0.72	0.46									
10 Min Non Synch Long Island (K)	0.00	0.91	0.00									
10 Min Non Synch NYC (J)	0.00	0.95	0.00									
10 Min Non Synch SENY (GHI)	0.00	0.91	0.00									
10 Min Non Synch East (F)	0.00	0.91	0.00									
10 Min Non Synch West (ABCDE)	0.00	0.28	0.00									
30 Min Long Island (K)	0.00	0.01	0.00									
30 Min NYC (J)	0.00	0.01	0.00									
30 Min SENY (GHI)	0.00	0.01	0.00									
30 Min East (F)	0.00	0.01	0.00									
30 Min West (ABCDE)	0.00	0.01	0.00									
Regulation	6.11	5.77	6.25									
NYCA Regulation Movement	0.17	0.17	0.17									
2019	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
RTC Market												
10 Min Spin Long Island (K)	1.80	1.80	1.08	1.04	0.99	0.99	0.90	0.91	0.38	1.90	1.20	1.68
10 Min Spin NYC (J)	1.80	1.80	1.08	1.04	0.99	0.99	1.54	1.21	0.65	2.37	1.20	1.69
10 Min Spin SENY (GHI)	1.80	1.55	1.08	1.04	0.99	0.99	0.90	0.91	0.38	1.90	1.20	1.68
10 Min Spin East (F)	1.80	1.55	1.08	1.04	0.99	0.69	0.90	0.91	0.38	1.47	1.20	1.68
10 Min Spin West (ABCDE)	1.08	0.80	0.79	0.44	0.44	0.05	0.58	0.51	0.12	0.15	0.79	1.39
10 Min Non Synch Long Island (K)	0.01	0.01	0.11	0.13	0.00	0.52	0.09	0.04	0.01	0.78	0.00	0.08
10 Min Non Synch NYC (J)	0.01	0.01	0.11	0.13	0.00	0.52	0.73	0.34	0.28	1.25	0.00	0.10
10 Min Non Synch SENY (GHI)	0.01	0.08	0.11	0.13	0.00	0.52	0.09	0.04	0.01	0.78	0.00	0.08
10 Min Non Synch East (F)	0.01	0.08	0.11	0.13	0.00	0.22	0.09	0.04	0.01	0.34	0.00	0.08
10 Min Non Synch West (ABCDE)	0.00	0.01	0.01	0.00	0.00	0.00	0.05	0.04	0.00	0.00	0.00	0.00
30 Min Long Island (K)	0.00	0.00	0.01	0.00	0.00	0.24	0.05	0.04	0.00	0.43	0.00	0.00
30 Min NYC (J)	0.00	0.00	0.01	0.00	0.00	0.24	0.31	0.14	0.07	0.58	0.00	0.00
30 Min SENY (GHI)	0.00	0.01	0.01	0.00	0.00	0.24	0.05	0.04	0.00	0.43	0.00	0.00
30 Min East (F)	0.00	0.01	0.01	0.00	0.00	0.00	0.05	0.04	0.00	0.00	0.00	0.00
30 Min West (ABCDE)	0.00	0.01	0.01	0.00	0.00	0.00	0.05	0.04	0.00	0.00	0.00	0.00
Regulation	9.81	6.64	6.21	33.26	7.45	5.16	5.19	7.19	5.52	5.91	7.81	9.74
NYCA Regulation Movement	0.23	0.22	0.21	0.25	0.24	0.18	0.19	0.17	0.16	0.16	0.17	0.18

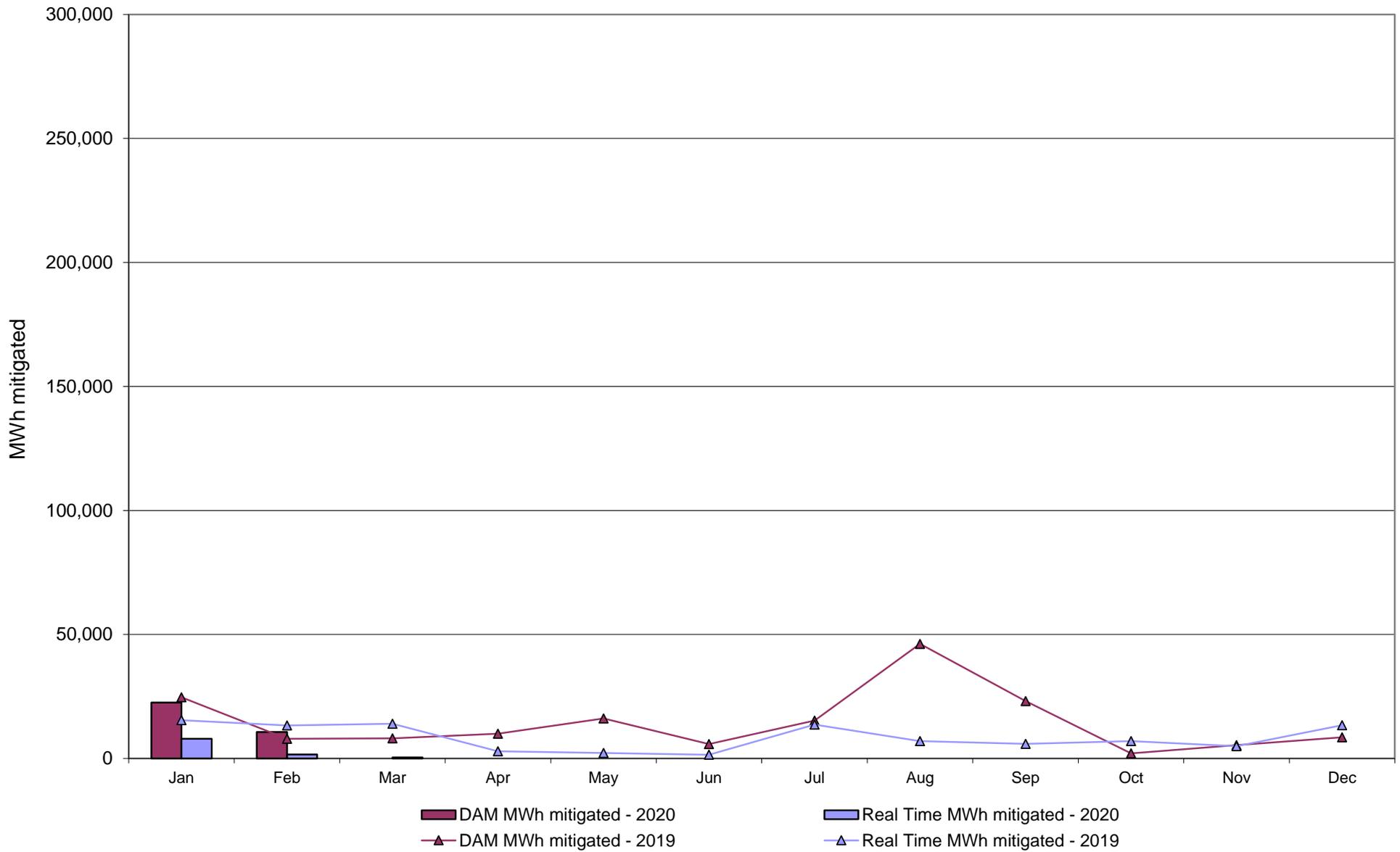
NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH) - RT

<u>2020</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Real Time Market												
10 Min Spin Long Island (K)	1.42	0.98	1.62									
10 Min Spin NYC (J)	1.42	0.98	1.62									
10 Min Spin SENY (GHI)	1.42	0.98	1.62									
10 Min Spin East (F)	1.42	0.98	1.62									
10 Min Spin West (ABCDE)	1.05	0.81	1.11									
10 Min Non Synch Long Island (K)	0.00	0.06	0.00									
10 Min Non Synch NYC (J)	0.00	0.06	0.00									
10 Min Non Synch SENY (GHI)	0.00	0.06	0.00									
10 Min Non Synch East (F)	0.00	0.06	0.00									
10 Min Non Synch West (ABCDE)	0.00	0.00	0.00									
30 Min Long Island (K)	0.00	0.00	0.00									
30 Min NYC (J)	0.00	0.00	0.00									
30 Min SENY (GHI)	0.00	0.00	0.00									
30 Min East (F)	0.00	0.00	0.00									
30 Min West (ABCDE)	0.00	0.00	0.00									
Regulation	6.57	6.00	6.32									
NYCA Regulation Movement	0.17	0.17	0.17									
2019	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
Real Time Market												
10 Min Spin Long Island (K)	2.53	2.53	2.24	2.75	1.58	1.17	1.32	1.66	0.63	1.96	1.72	2.77
10 Min Spin NYC (J)	2.53	2.53	2.24	2.75	1.58	1.17	2.03	1.98	0.96	2.54	1.72	2.78
10 Min Spin SENY (GHI)	2.53	2.51	2.24	2.75	1.58	1.17	1.32	1.66	0.63	1.96	1.72	2.77
10 Min Spin East (F)	2.53	2.51	2.24	2.75	1.58	0.98	1.32	1.66	0.63	1.68	1.72	2.77
10 Min Spin West (ABCDE)	1.89	1.57	1.64	1.45	0.85	0.23	0.98	1.24	0.28	0.51	1.25	2.47
10 Min Non Synch Long Island (K)	0.03	0.03	0.48	0.96	0.00	0.33	0.11	0.03	0.01	0.53	0.00	0.03
10 Min Non Synch NYC (J)	0.03	0.03	0.48	0.96	0.00	0.33	0.82	0.35	0.34	1.12	0.00	0.04
10 Min Non Synch SENY (GHI)	0.03	0.18	0.48	0.96	0.00	0.33	0.11	0.03	0.01	0.53	0.00	0.03
10 Min Non Synch East (F)	0.03	0.18	0.48	0.96	0.00	0.15	0.11	0.03	0.01	0.25	0.00	0.03
10 Min Non Synch West (ABCDE)	0.00	0.01	0.09	0.17	0.00	0.02	0.08	0.03	0.00	0.01	0.00	0.00
30 Min Long Island (K)	0.00	0.00	0.03	0.00	0.00	0.13	0.08	0.03	0.00	0.29	0.00	0.00
30 Min NYC (J)	0.00	0.00	0.03	0.00	0.00	0.13	0.38	0.13	0.07	0.44	0.00	0.00
30 Min SENY (GHI)	0.00	0.01	0.03	0.00	0.00	0.13	0.08	0.03	0.00	0.29	0.00	0.00
30 Min East (F)	0.00	0.01	0.03	0.00	0.00	0.02	0.08	0.03	0.00	0.01	0.00	0.00
30 Min West (ABCDE)	0.00	0.01	0.03	0.00	0.00	0.02	0.08	0.03	0.00	0.01	0.00	0.00
Regulation	11.36	7.72	7.23	15.73	7.47	6.11	5.77	6.11	5.86	6.47	7.67	8.40
NYCA Regulation Movement	0.22	0.22	0.20	0.25	0.23	0.17	0.18	0.17	0.16	0.16	0.17	0.18

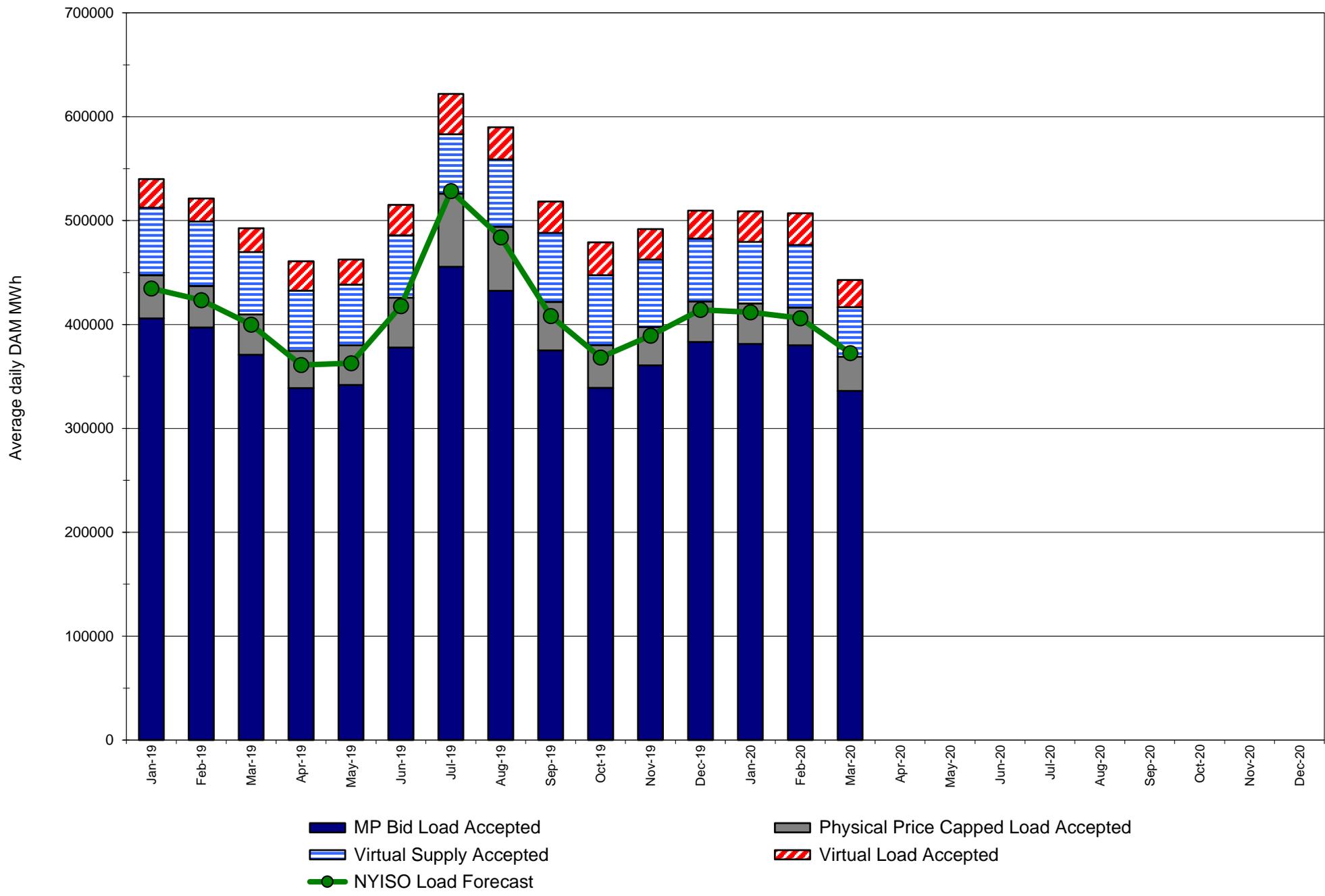
NYISO In City Energy Mitigation - AMP (NYC Zone) 2019 - 2020 Percentage of committed unit-hours mitigated



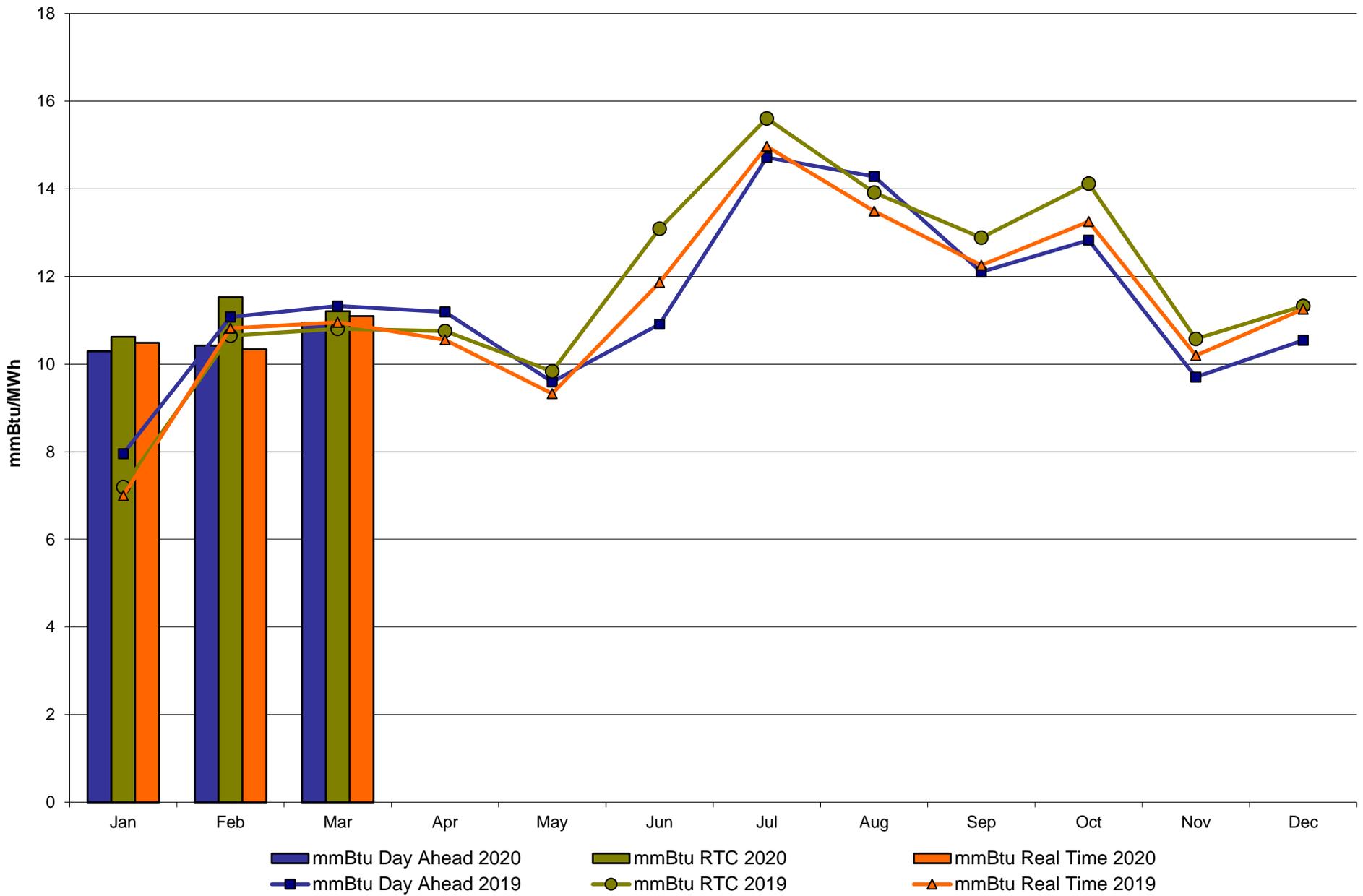
**NYISO In City Energy Mitigation (NYC Zone) 2019 - 2020
Monthly megawatt hours mitigated**



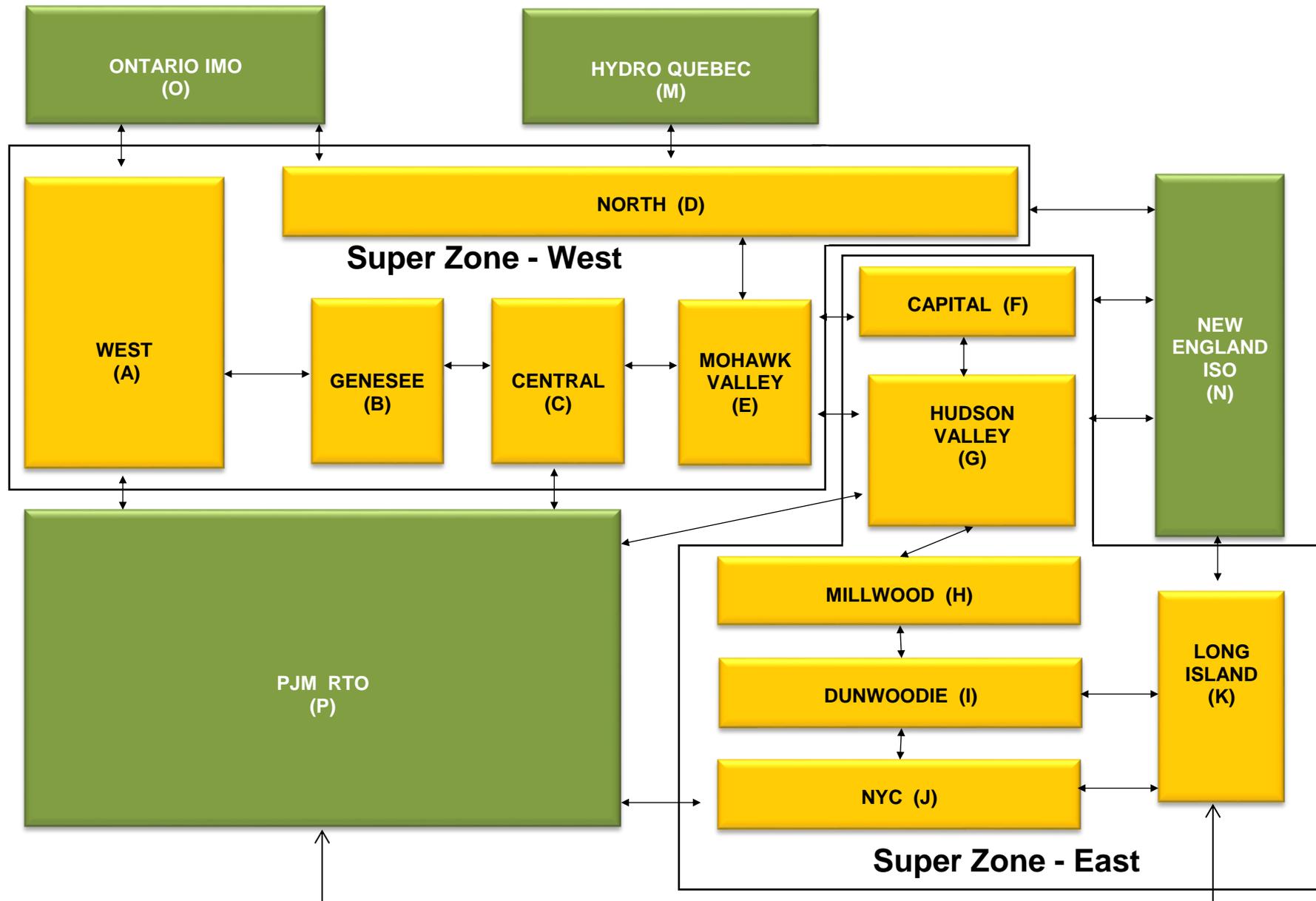
NYISO Average Daily DAM Load Bid Summary



Monthly Implied Heat Rate 2019-2020



NYISO LBMP ZONES



Billing Codes for Chart C

Chart - C Category Name	Billing Code	Billing Category Name
Bid Production Cost Guarantee Balancing	81203	Balancing NYISO Bid Production Cost Guarantee - Internal Units
Bid Production Cost Guarantee Balancing	81204	Balancing NYISO Bid Production Cost Guarantee - External Units
Bid Production Cost Guarantee Balancing	81205	Balancing NYISO Bid Production Cost Guarantee Expenditure due to Curtailed Imports
Bid Production Cost Guarantee Balancing	81208	Balancing NYISO Bid Production Cost Guarantee - Internal Units
Bid Production Cost Guarantee Balancing	81209	Balancing NYISO Bid Production Cost Guarantee - External Units
Bid Production Cost Guarantee Balancing	81213	Balancing NYISO Bid Production Cost Guarantee Expenditure due to Curtailed Imports
Bid Production Cost Guarantee DAM	81201	DAM NYISO Bid Production Cost Guarantee - Internal Units
Bid Production Cost Guarantee DAM	84001	EDRP/SCR Demand Response - Local
Bid Production Cost Guarantee DAM	84101	EDRP/SCR Demand Response - NYISO Wide
Bid Production Cost Guarantee DAM	81401	DAM Price Responsive Load Program
Bid Production Cost Guarantee DAM	81202	DAM NYISO Bid Production Cost Guarantee - External Units
Bid Production Cost Guarantee DAM	81206	DAM NYISO Bid Production Cost Guarantee - Internal Units
Bid Production Cost Guarantee DAM	81207	DAM NYISO Bid Production Cost Guarantee - External Units
Bid Production Cost Guarantee DAM Virtual	81501	DAM Virtual Bid Production Cost Guarantee
DAM Contract Balancing	81315	DAM Contract Balancing
DAM Contract Balancing	81317	DAM Contract Balancing
Local Reliability Balancing	81002	Balancing Local Reliability Bid Production Cost Guarantee
Local Reliability Balancing	83901	Margin Restoration (MOB) Revenue
Local Reliability DAM	81001	DAM Local Reliability Bid Production Cost Guarantee
NYISO Cost of Operations	80901	NYISO Cost Of Operations
NYISO Cost of Operations	80902	NYISO Cost Of Operations
NYISO Cost of Operations	83501	NYISO Cost Of Operations
NYISO Cost of Operations	83502	NYISO Cost Of Operations
Residuals Balancing	81302	Balancing Market Energy Residual
Residuals Balancing	81304	Balancing Market Loss Residual
Residuals Balancing	81305	Balancing Market Congestion Balancing
Residuals Balancing	81306	Emergency Energy Purchases
Residuals Balancing	81307	Emergency Energy Sales
Residuals Balancing	81309	Balancing Market Energy Residual
Residuals Balancing	81311	Balancing Market Loss Residual
Residuals Balancing	81312	Balancing Market Congestion Balancing
Residuals Balancing	81313	Emergency Energy Purchases
Residuals Balancing	81314	Emergency Energy Sales
Residuals DAM	81301	Day Ahead Market Energy Residual
Residuals DAM	81303	Day Ahead Market Loss Residual
Residuals DAM	81308	Day Ahead Market Energy Residual
Residuals DAM	81310	Day Ahead Market Loss Residual

Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

