

# Market Operations Report

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**Rana Mukerji**

SENIOR VICE PRESIDENT – MARKET STRUCTURES, NYISO

**Business Issues Committee Meeting**

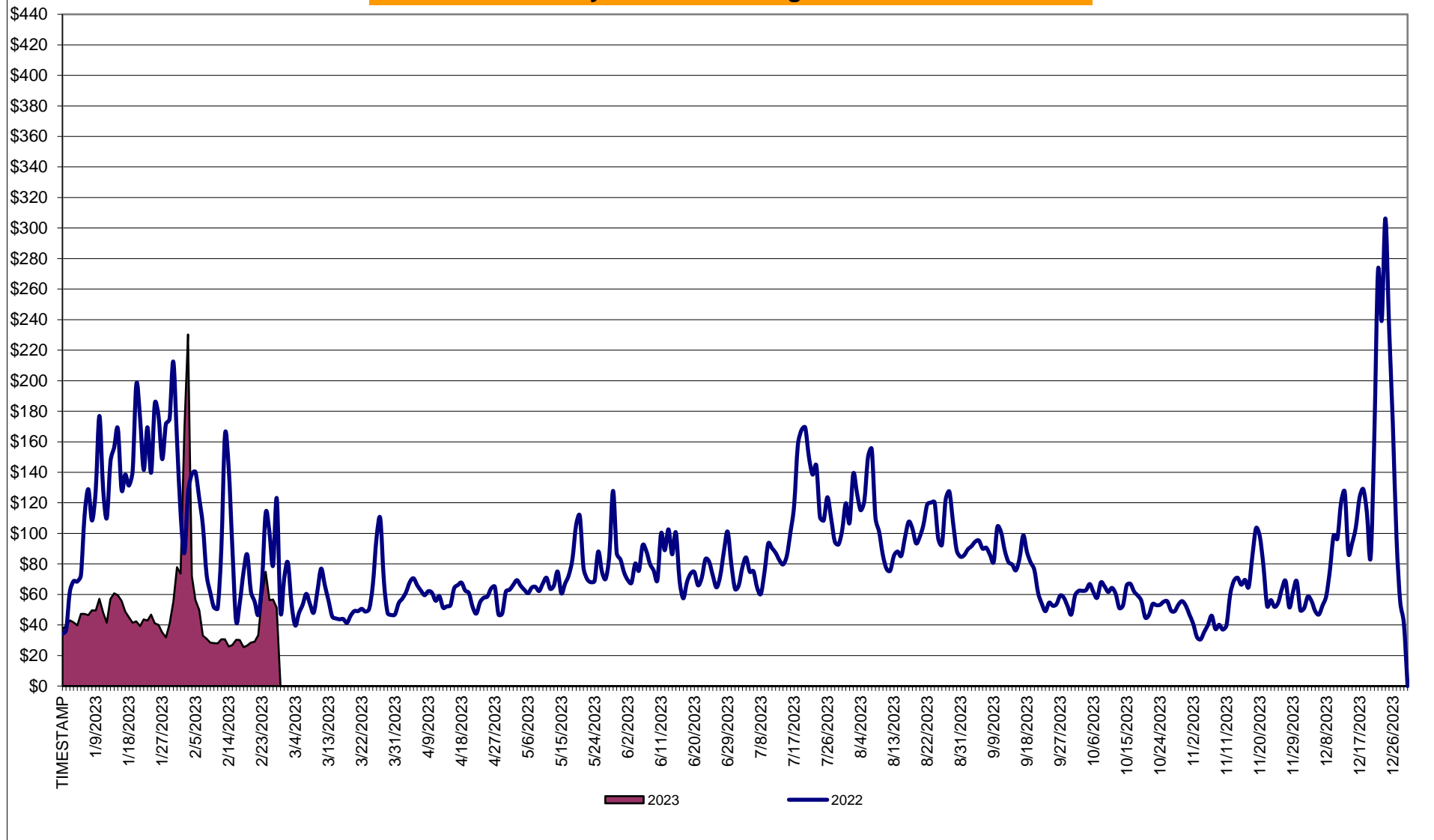
March 15, 2023 Rensselaer, NY

# Market Performance Highlights

## February 2023

- LBMP for February is \$55.47/MWh; higher than \$42.10/MWh in January 2023 and lower than \$94.06/MWh in February 2022.
  - Day Ahead Load Weighted LBMPs and Real Time Load Weighted LBMPs are higher compared to January.
- February 2023 average year-to-date monthly cost of \$52.36/MWh is a 56% decrease from \$118.36/MWh in February 2022.
- Average daily sendout is 408 GWh/day in February; lower than 410 GWh/day in January 2023 and 429 GWh/day in February 2022.
- Natural gas prices are higher and distillate prices are lower compared to the previous month.
  - Natural Gas (Transco Z6 NY) was \$3.43/MMBtu, up from \$3.20/MMBtu in January.
  - Natural gas prices (Transco Z6 NY) are down 44.4% year-over-year.
  - Jet Kerosene Gulf Coast was \$20.57/MMBtu, down from \$26.44/MMBtu in January.
  - Ultra Low Sulfur No.2 Diesel NY Harbor was \$20.23/MMBtu, down from \$23.44/MMBtu in January.
  - Distillate prices are up 1.4% year-over-year.
- Uplift per MWh is higher compared to the previous month.
  - Uplift (not including NYISO cost of operations) is (\$0.27)/MWh; higher than (\$0.38)/MWh in January.
    - Local Reliability Share is \$0.03/MWh, equal to \$0.03/MWh in January.
    - Statewide Share is (\$0.30)/MWh, higher than (\$0.41)/MWh in January.
  - TSA \$ per NYC MWh is \$0.00/MWh.
  - Total uplift costs (Schedule 1 components including NYISO Cost of Operations) are higher than January.

**Daily NYISO Average Cost/MWh (Energy & Ancillary Services)\***  
**2022 Annual Average \$89.23/MWh**  
**February 2022 YTD Average \$118.36/MWh**  
**February 2023 YTD Average \$52.36/MWh**



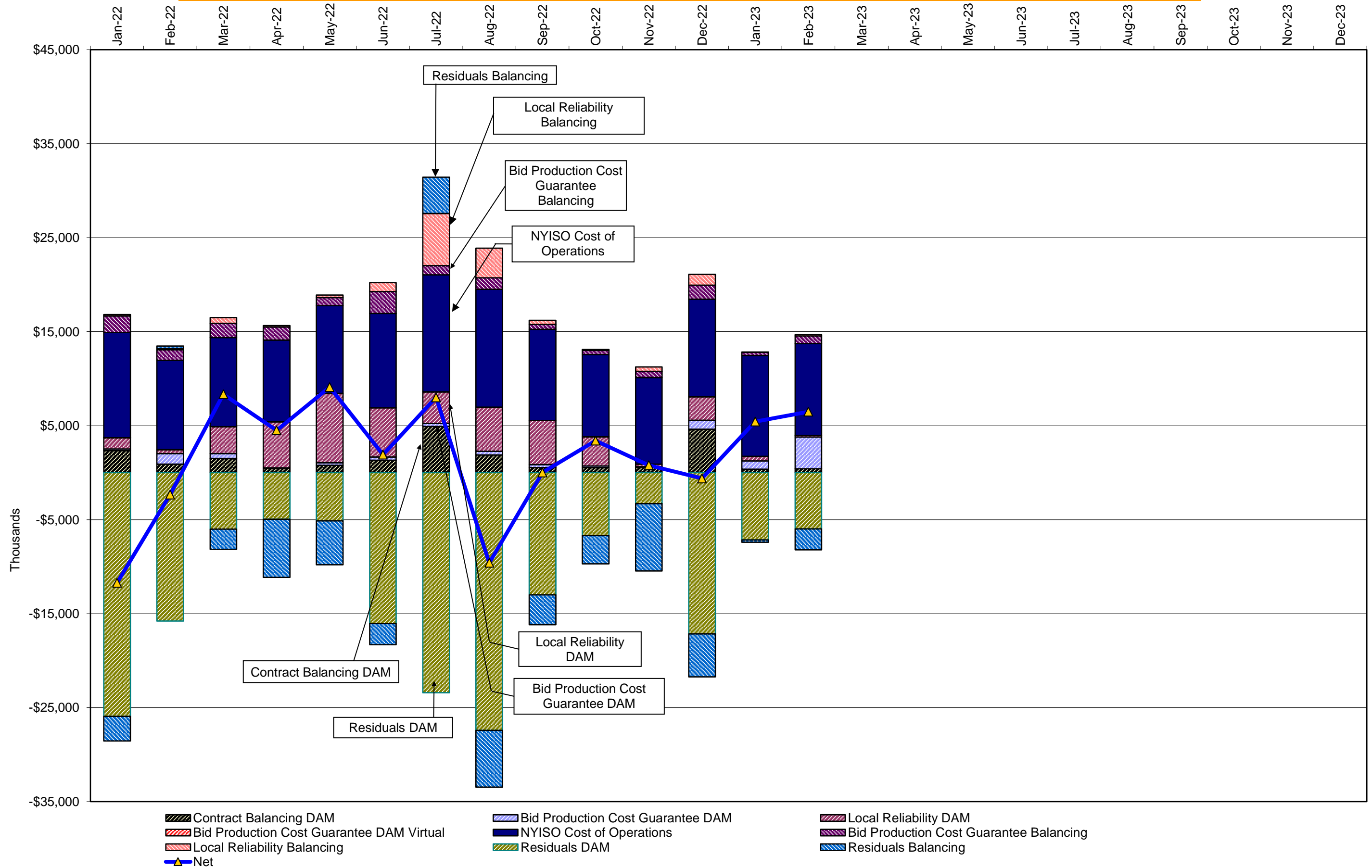
\* Excludes ICAP payments.

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

<b>2023</b>	<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	42.10	55.47										
NTAC	2.82	1.15										
Reserve	0.72	0.90										
Regulation	0.09	0.13										
NYISO Cost of Operations	0.77	0.77										
FERC Fee Recovery	0.08	0.09										
Uplift	(0.38)	(0.27)										
Uplift: Local Reliability Share	0.03	0.03										
Uplift: Statewide Share	(0.41)	(0.30)										
Voltage Support and Black Start	0.42	0.42										
<b>Avg Monthly Cost</b>	46.56	58.58										
 Avg YTD Cost	46.64	52.36										
 TSA \$ per NYC MWh	0.00	0.00										
 <b>2022</b>	<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	134.79	94.06	56.78	56.46	70.60	76.72	99.47	108.85	78.91	53.11	52.47	110.17
NTAC	1.43	0.95	1.48	1.17	2.46	2.07	3.65	1.69	1.44	3.21	3.91	2.23
Reserve	1.26	1.21	0.83	0.81	0.74	0.66	0.87	0.65	0.86	1.02	0.89	0.49
Regulation	0.27	0.19	0.17	0.12	0.13	0.15	0.12	0.13	0.18	0.18	0.15	0.12
NYISO Cost of Operations	0.73	0.72	0.74	0.74	0.74	0.75	0.76	0.76	0.76	0.73	0.74	0.73
FERC Fee Recovery	0.07	0.08	0.09	0.10	0.09	0.08	0.06	0.06	0.09	0.10	0.09	0.08
Uplift	(1.50)	(1.73)	(0.09)	(0.36)	(0.05)	(0.61)	(1.58)	(1.91)	(0.78)	(0.45)	(0.68)	(0.77)
Uplift: Local Reliability Share	0.09	0.04	0.27	0.43	0.60	0.46	0.54	0.47	0.39	0.27	0.06	0.25
Uplift: Statewide Share	(1.59)	(1.77)	(0.36)	(0.79)	(0.65)	(1.07)	(2.12)	(2.38)	(1.18)	(0.72)	(0.74)	(1.02)
Voltage Support and Black Start	0.42	0.41	0.43	0.43	0.43	0.43	0.43	0.43	0.44	0.42	0.42	0.42
<b>Avg Monthly Cost</b>	137.41	95.82	60.34	59.38	75.07	80.17	103.73	110.61	81.81	58.26	57.91	113.40
 Avg YTD Cost	137.49	118.36	100.65	91.92	88.82	87.37	90.31	93.42	92.27	89.47	86.97	89.23
 TSA \$ per NYC MWh	0.00	2.98	0.00	0.00	0.11	0.00	3.98	1.70	0.06	0.00	0.00	0.01

\* Excludes ICAP payments.  
Market Mitigation and Analysis  
Prepared: 3/9/2023 11:55 AM

# NYISO Dollar Flows - Uplift - OATT Schedule 1 components - Data through February 28, 2023



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

<u>2023</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>
<b><u>Day Ahead Market MWh</u></b>	13,662,137	12,355,489										
DAM LSE Internal LBMP Energy Sales	55%	55%										
DAM External TC LBMP Energy Sales	7%	7%										
DAM Bilateral - Internal Bilaterals	28%	29%										
DAM Bilateral - Import/Non-LBMP Market Bilaterals	5%	5%										
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	2%										
DAM Bilateral - Wheel Through Bilaterals	3%	2%										
<b><u>Balancing Energy Market MWh</u></b>	328,840	397,488										
Balancing Energy LSE Internal LBMP Energy Sales	65%	38%										
Balancing Energy External TC LBMP Energy Sales	68%	68%										
Balancing Energy Bilateral - Internal Bilaterals	2%	1%										
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%										
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	7%	6%										
Balancing Energy Bilateral - Wheel Through Bilaterals	-43%	-13%										
<b><u>Transactions Summary</u></b>												
LBMP	63%	63%										
Internal Bilaterals	28%	28%										
Import Bilaterals	5%	5%										
Export Bilaterals	2%	2%										
Wheels Through	2%	1%										
<b><u>Market Share of Total Load</u></b>												
Day Ahead Market	97.6%	96.9%										
Balancing Energy +	2.4%	3.1%										
Total MWH	13,990,977	12,752,977										
Average Daily Energy Sendout/Month GWh	410	408										

<u>2022</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>
<b><u>Day Ahead Market MWh</u></b>	14,327,101	12,477,485	12,137,757	10,992,578	12,176,102	12,945,740	15,905,937	15,770,210	12,467,212	11,527,745	11,952,855	13,768,799
DAM LSE Internal LBMP Energy Sales	57%	56%	59%	56%	55%	60%	64%	63%	62%	58%	56%	56%
DAM External TC LBMP Energy Sales	7%	8%	3%	5%	6%	3%	3%	3%	2%	3%	4%	6%
DAM Bilateral - Internal Bilaterals	28%	28%	29%	31%	31%	29%	26%	26%	27%	30%	31%	29%
DAM Bilateral - Import/Non-LBMP Market Bilaterals	4%	4%	4%	5%	4%	4%	4%	5%	6%	5%	5%	5%
DAM Bilateral - Export/Non-LBMP Market Bilaterals	2%	2%	2%	2%	2%	2%	1%	1%	2%	2%	2%	2%
DAM Bilateral - Wheel Through Bilaterals	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
<b><u>Balancing Energy Market MWh</u></b>	942,823	742,449	758,386	772,666	378,503	464,231	567,602	785,464	361,883	379,932	519,117	528,939
Balancing Energy LSE Internal LBMP Energy Sales	88%	83%	76%	60%	65%	66%	72%	86%	66%	45%	38%	45%
Balancing Energy External TC LBMP Energy Sales	16%	19%	24%	33%	32%	36%	23%	14%	34%	55%	58%	56%
Balancing Energy Bilateral - Internal Bilaterals	1%	2%	2%	0%	5%	2%	1%	0%	1%	0%	2%	2%
Balancing Energy Bilateral - Import/Non-LBMP Market Bilaterals	0%	0%	0%	0%	2%	2%	2%	0%	0%	0%	0%	0%
Balancing Energy Bilateral - Export/Non-LBMP Market Bilaterals	4%	9%	8%	7%	9%	8%	6%	3%	5%	7%	7%	5%
Balancing Energy Bilateral - Wheel Through Bilaterals	-9%	-13%	-10%	-1%	-12%	-14%	-4%	-3%	-5%	-7%	-5%	-8%
<b><u>Transactions Summary</u></b>												
LBMP	67%	66%	65%	62%	63%	64%	68%	68%	65%	62%	62%	64%
Internal Bilaterals	26%	27%	27%	29%	30%	28%	25%	25%	27%	29%	29%	28%
Import Bilaterals	3%	4%	4%	4%	4%	4%	3%	4%	6%	5%	5%	5%
Export Bilaterals	2%	2%	2%	2%	2%	2%	2%	1%	2%	2%	2%	2%
Wheels Through	1%	1%	2%	2%	2%	2%	1%	1%	2%	1%	2%	2%
<b><u>Market Share of Total Load</u></b>												
Day Ahead Market	93.8%	94.4%	94.1%	93.4%	97.0%	96.5%	96.6%	95.3%	97.2%	96.8%	95.8%	96.3%
Balancing Energy +	6.2%	5.6%	5.9%	6.6%	3.0%	3.5%	3.4%	4.7%	2.8%	3.2%	4.2%	3.7%
Total MWH	15,269,924	13,219,933	12,896,143	11,765,244	12,554,605	13,409,971	16,473,538	16,555,674	12,829,095	11,907,677	12,471,972	14,297,738
Average Daily Energy Sendout/Month GWh	451	429	390	359	372	422	509	514	411	359	382	421

+ 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 2022 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>
<b><u>DAY AHEAD LBMP</u></b>												
Price *	\$40.60	\$47.82										
Standard Deviation	\$10.32	\$47.20										
Load Weighted Price **	\$41.37	\$50.55										
<b><u>RTC LBMP</u></b>												
Price *	\$38.28	\$42.67										
Standard Deviation	\$31.37	\$39.75										
Load Weighted Price **	\$39.04	\$44.80										
<b><u>REAL TIME LBMP</u></b>												
Price *	\$38.76	\$43.99										
Standard Deviation	\$45.06	\$43.54										
Load Weighted Price **	\$39.68	\$46.75										
Average Daily Energy Sendout/Month GWh	410	408										

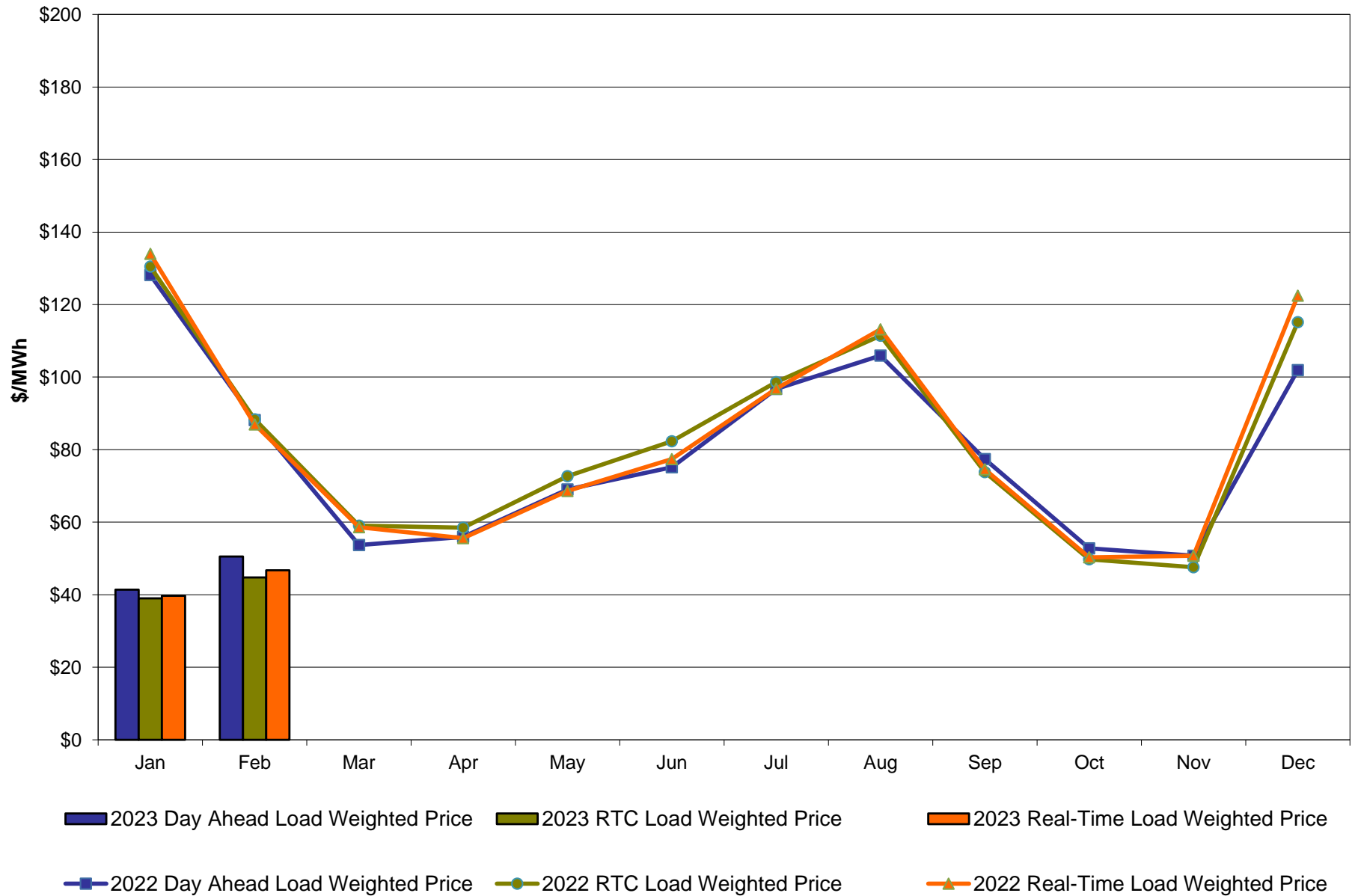
### NYISO Markets 2021 Energy Statistics

	<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>
<b><u>DAY AHEAD LBMP</u></b>												
Price *	\$124.39	\$85.98	\$52.41	\$55.23	\$66.11	\$72.43	\$90.42	\$100.71	\$74.23	\$51.77	\$49.08	\$98.20
Standard Deviation	\$51.94	\$39.56	\$18.64	\$11.05	\$21.60	\$19.84	\$40.00	\$33.52	\$22.13	\$11.85	\$20.31	\$64.21
Load Weighted Price **	\$128.16	\$88.17	\$53.69	\$55.96	\$69.05	\$75.15	\$96.74	\$105.93	\$77.41	\$52.79	\$50.77	\$101.90
<b><u>RTC LBMP</u></b>												
Price *	\$127.16	\$85.48	\$57.58	\$57.33	\$68.27	\$78.66	\$92.25	\$104.69	\$70.59	\$48.87	\$45.91	\$109.15
Standard Deviation	\$77.62	\$55.20	\$38.62	\$21.09	\$42.87	\$49.85	\$49.28	\$51.96	\$28.06	\$13.16	\$24.06	\$190.04
Load Weighted Price **	\$130.45	\$88.33	\$59.03	\$58.49	\$72.67	\$82.33	\$98.61	\$111.42	\$73.81	\$49.76	\$47.58	\$115.16
<b><u>REAL TIME LBMP</u></b>												
Price *	\$130.43	\$83.85	\$57.00	\$54.45	\$65.07	\$74.01	\$90.23	\$105.61	\$71.11	\$49.26	\$48.62	\$114.54
Standard Deviation	\$93.35	\$57.99	\$44.52	\$20.46	\$33.01	\$41.27	\$54.20	\$69.83	\$30.72	\$17.89	\$37.20	\$216.43
Load Weighted Price **	\$133.98	\$86.99	\$58.64	\$55.57	\$68.60	\$77.40	\$96.79	\$113.16	\$74.57	\$50.30	\$50.78	\$122.49
Average Daily Energy Sendout/Month GWh	451	429	390	359	372	422	509	514	411	359	382	421

\* Average zonal load weighted prices.

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

# **NYISO Monthly Average Internal LBMPs 2022 - 2023**



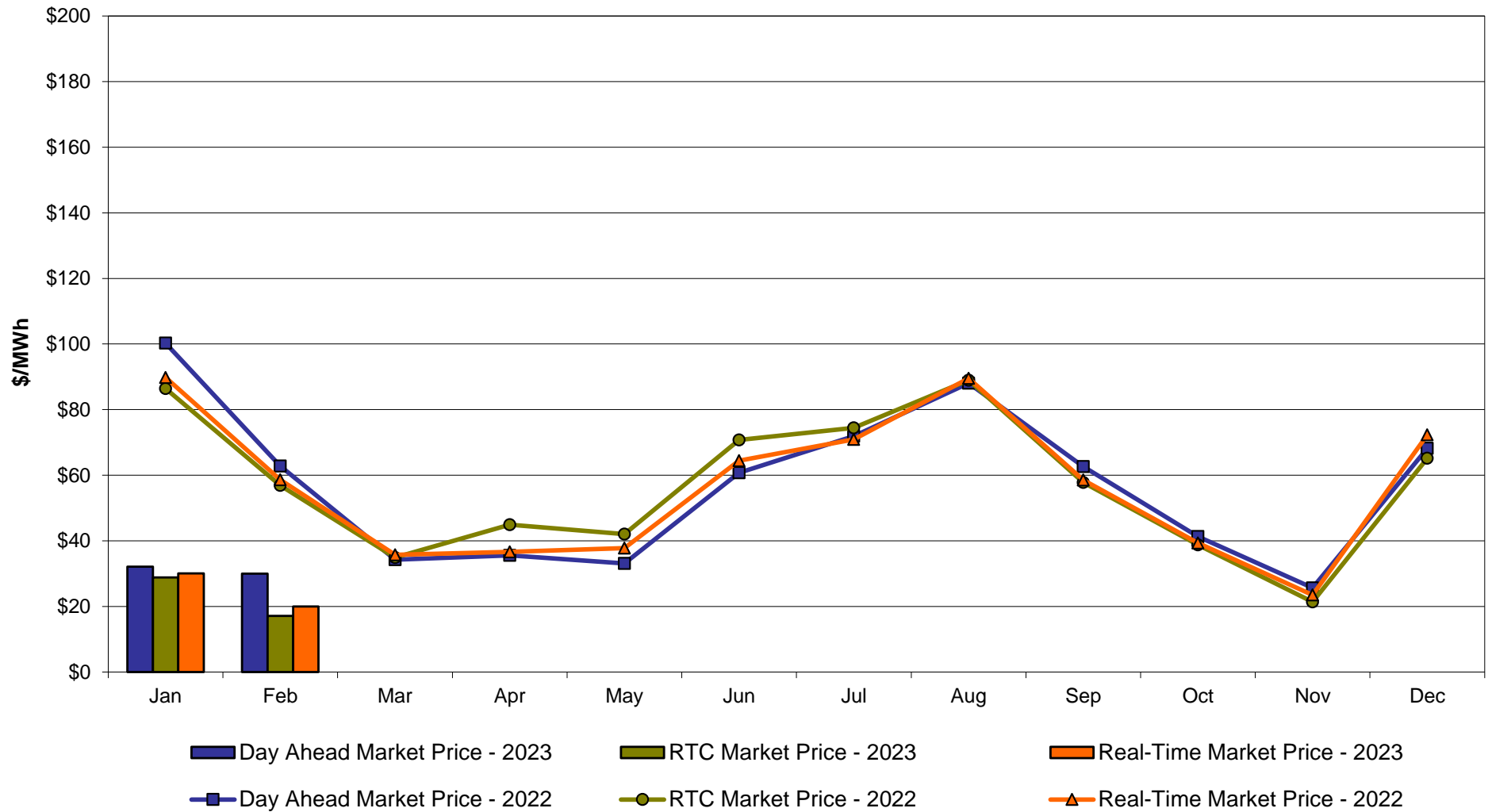


### February 2023 Zonal LBMP Statistics for NYISO (\$/MWh)

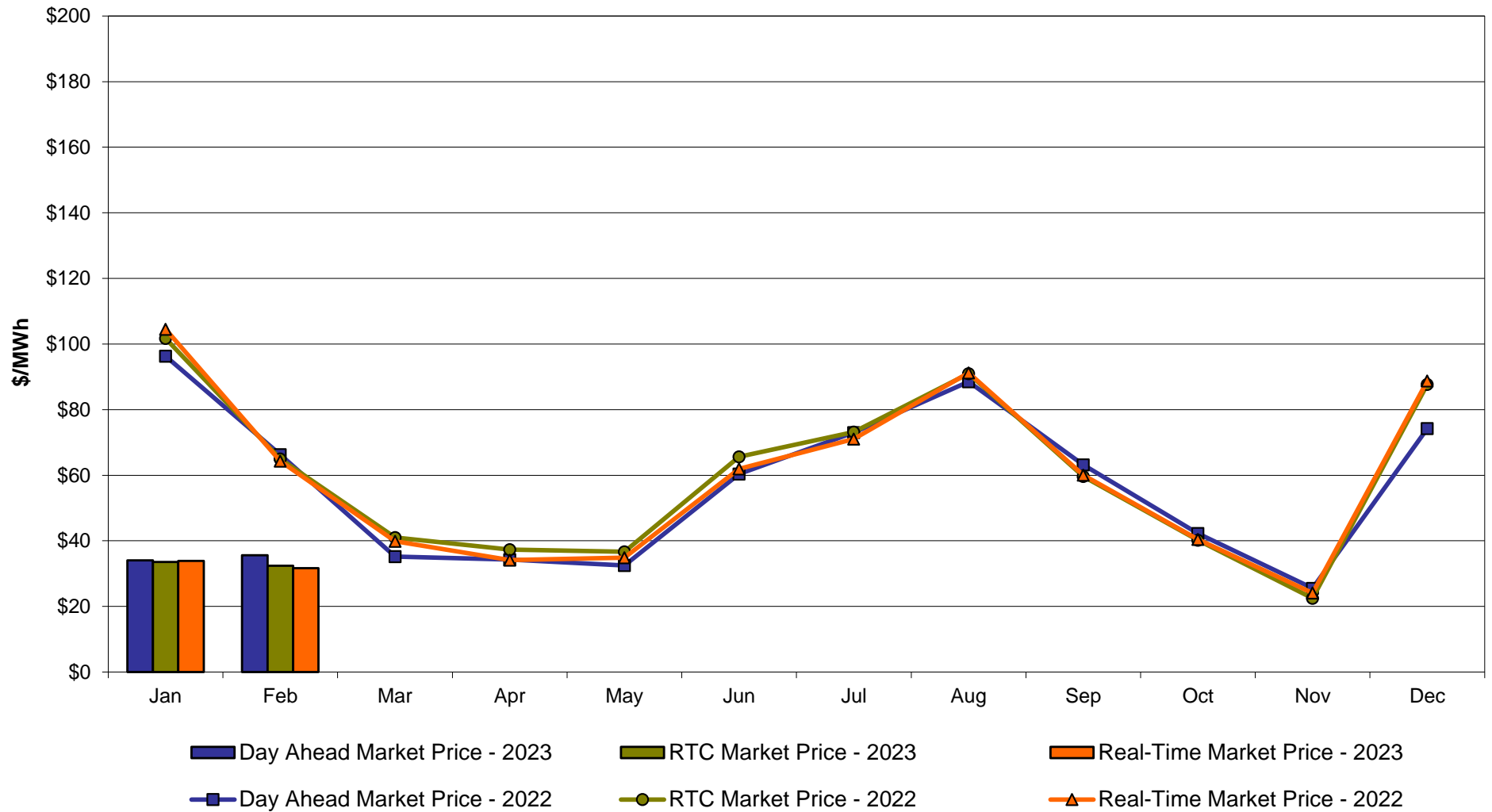
	<u>WEST Zone A</u>	<u>GENESEE Zone B</u>	<u>NORTH Zone D</u>	<u>CENTRAL Zone C</u>	<u>MOHAWK VALLEY Zone E</u>	<u>CAPITAL Zone F</u>	<u>HUDSON VALLEY Zone G</u>	<u>MILLWOOD Zone H</u>	<u>DUNWOODIE Zone I</u>	<u>NEW YORK CITY Zone J</u>	<u>LONG ISLAND Zone K</u>
<b><u>DAY AHEAD LBMP</u></b>											
Unweighted Price *	29.97	32.83	30.00	35.62	36.81	65.38	51.24	51.79	51.71	51.84	65.89
Standard Deviation	33.88	40.09	44.49	44.64	45.41	71.07	49.21	48.51	48.43	48.48	53.64
<b><u>RTC LBMP</u></b>											
Unweighted Price *	17.10	26.47	23.34	32.41	30.88	55.30	45.51	45.95	45.83	46.13	71.96
Standard Deviation	13.16	32.27	46.08	46.37	42.57	52.90	41.99	42.24	42.10	43.05	84.85
<b><u>REAL TIME LBMP</u></b>											
Unweighted Price *	20.02	27.17	22.93	31.66	31.30	59.91	47.63	48.06	47.92	48.37	70.34
Standard Deviation	23.15	36.42	48.08	45.04	45.22	66.31	47.49	47.73	47.56	48.51	75.38
	<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>
<b><u>DAY AHEAD LBMP</u></b>											
Unweighted Price *	29.38	30.76	30.76	36.83	63.28	65.81	65.46	59.33	51.41	51.61	29.90
Standard Deviation	33.15	43.13	43.13	33.70	57.57	53.63	54.40	50.17	48.05	48.23	44.27
<b><u>RTC LBMP</u></b>											
Unweighted Price *	17.55	24.42	24.42	26.53	62.58	71.69	71.38	61.31	45.19	45.45	27.30
Standard Deviation	14.17	37.29	37.29	12.38	60.06	85.18	85.11	65.72	42.65	41.78	74.86
<b><u>REAL TIME LBMP</u></b>											
Unweighted Price *	21.56	24.63	24.63	28.25	60.14	70.38	69.16	61.13	47.44	47.55	25.28
Standard Deviation	26.04	40.39	40.39	20.74	59.82	75.81	75.08	60.49	48.24	47.28	70.52

\* Straight LBMP averages

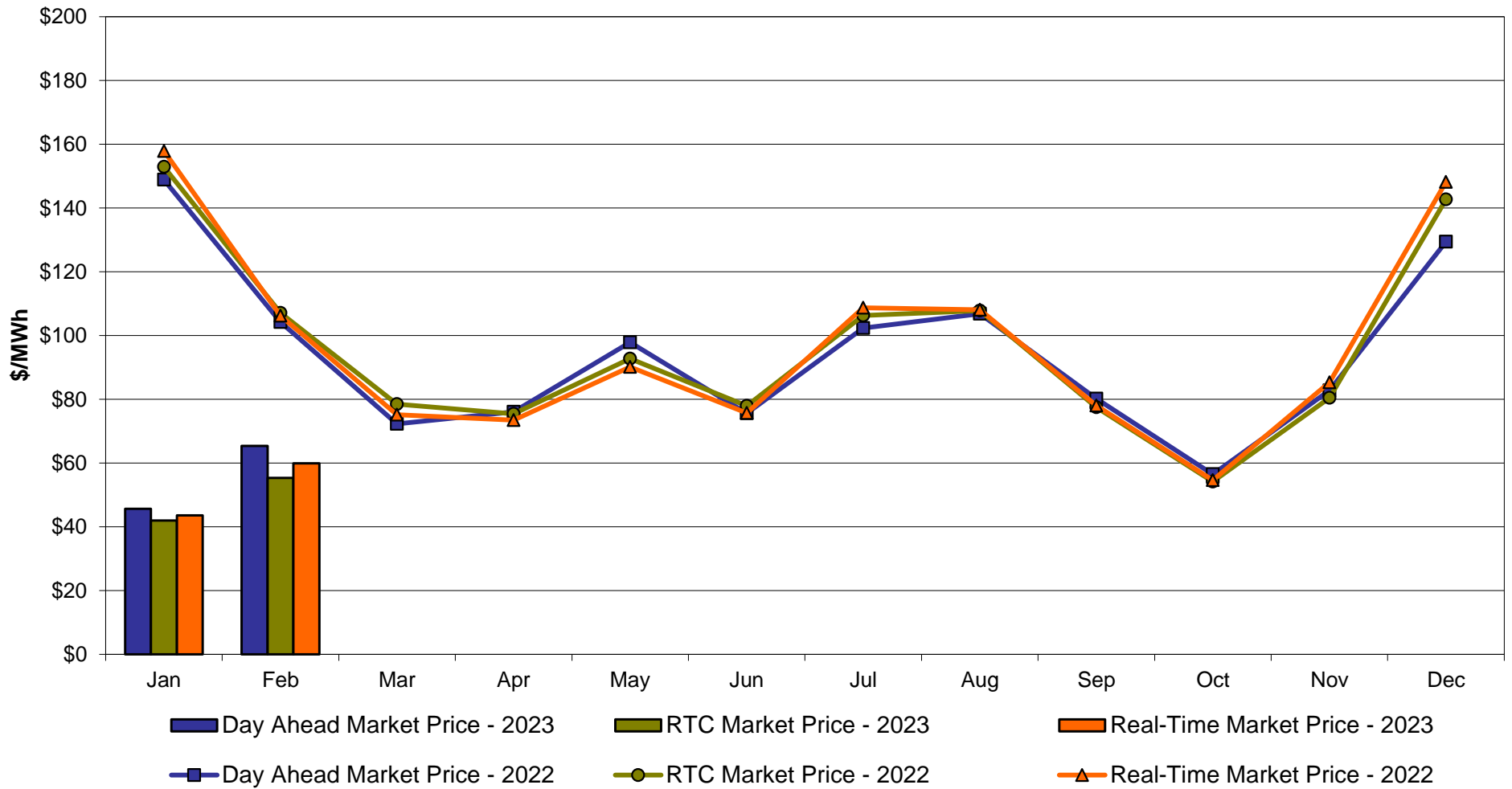
# **West Zone A** **Monthly Average LBMP Prices 2022 - 2023**



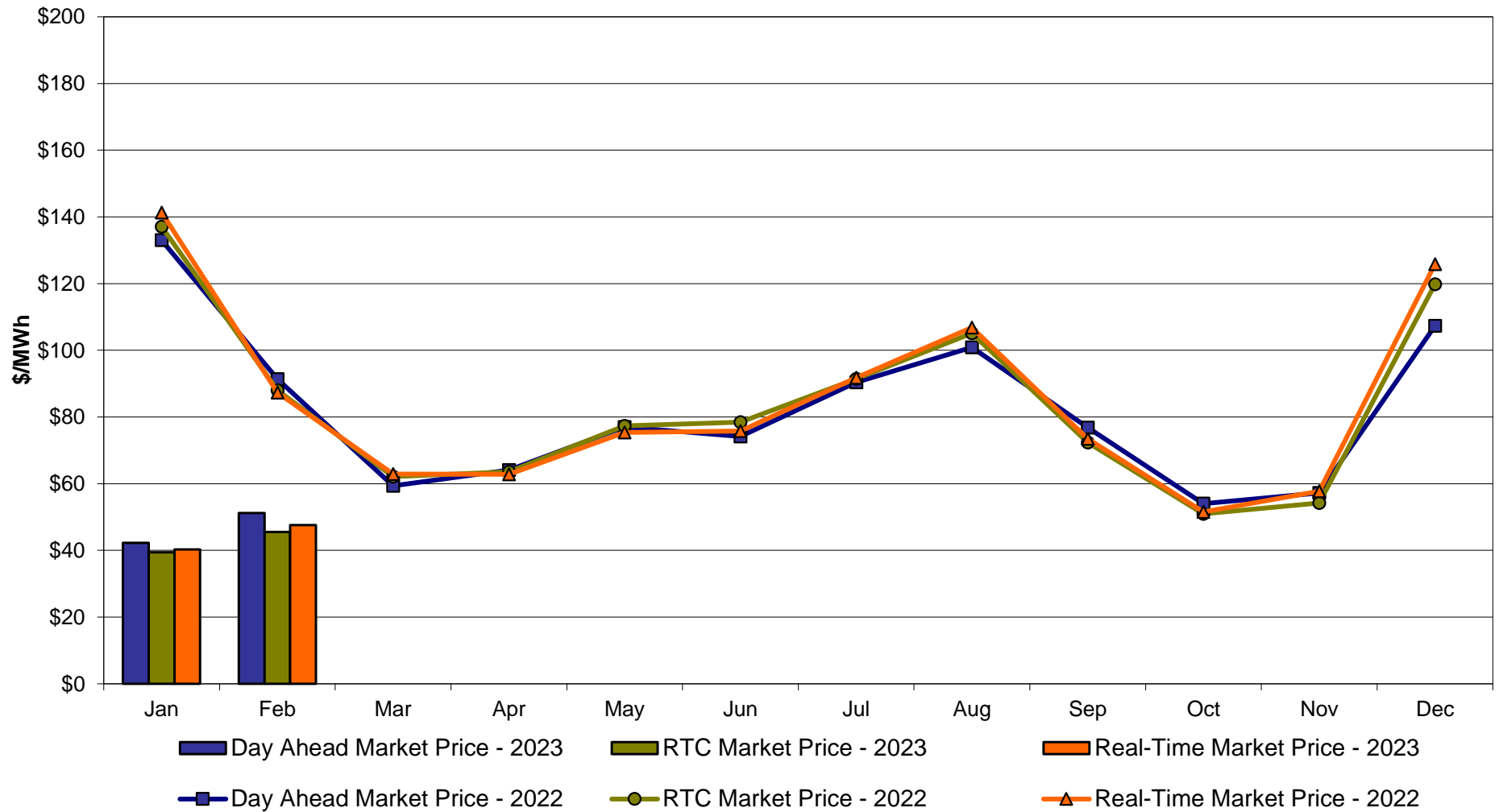
# Central Zone C Monthly Average LBMP Prices 2022 - 2023



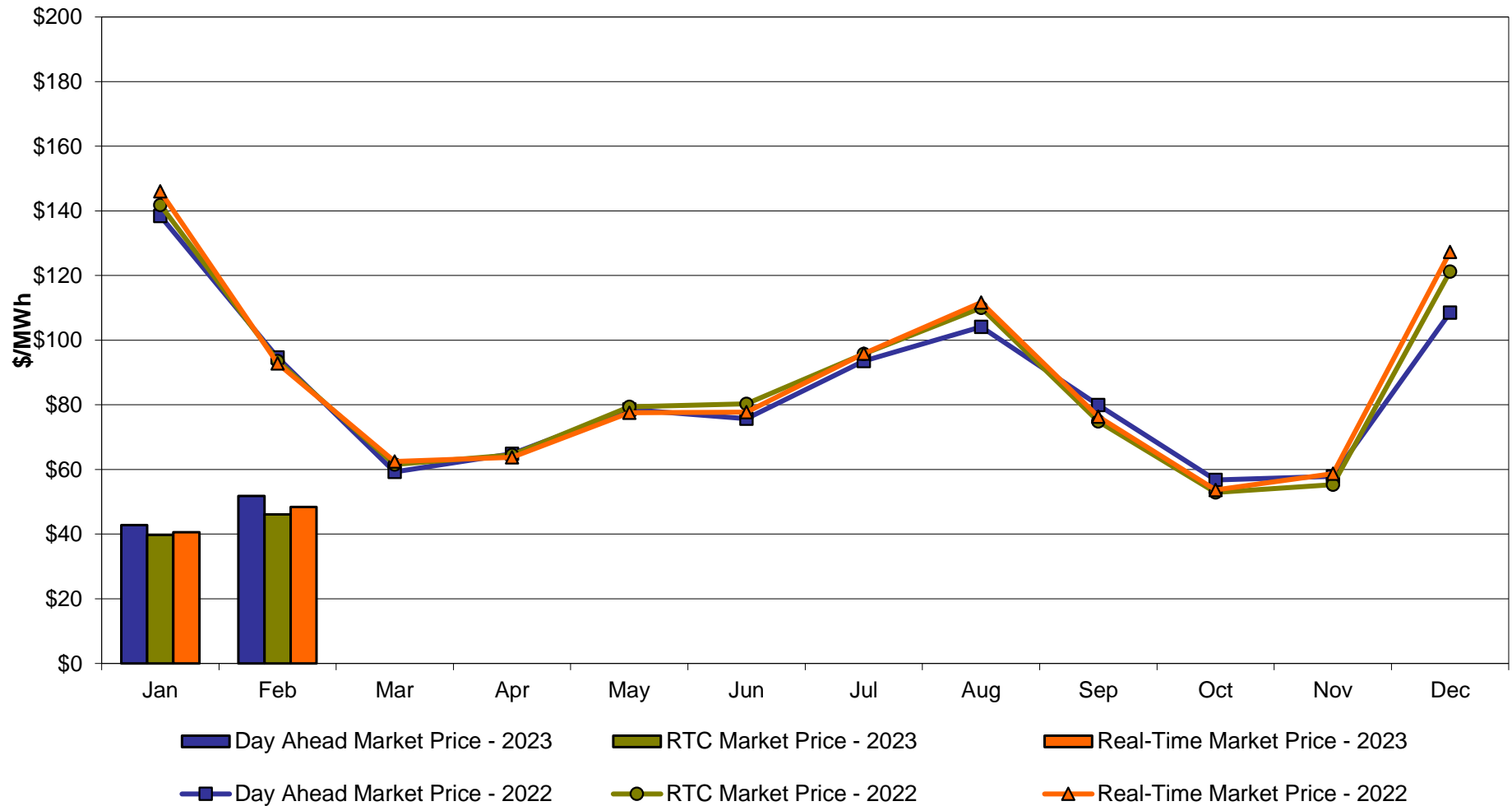
# **Capital Zone F** **Monthly Average LBMP Prices 2022 - 2023**



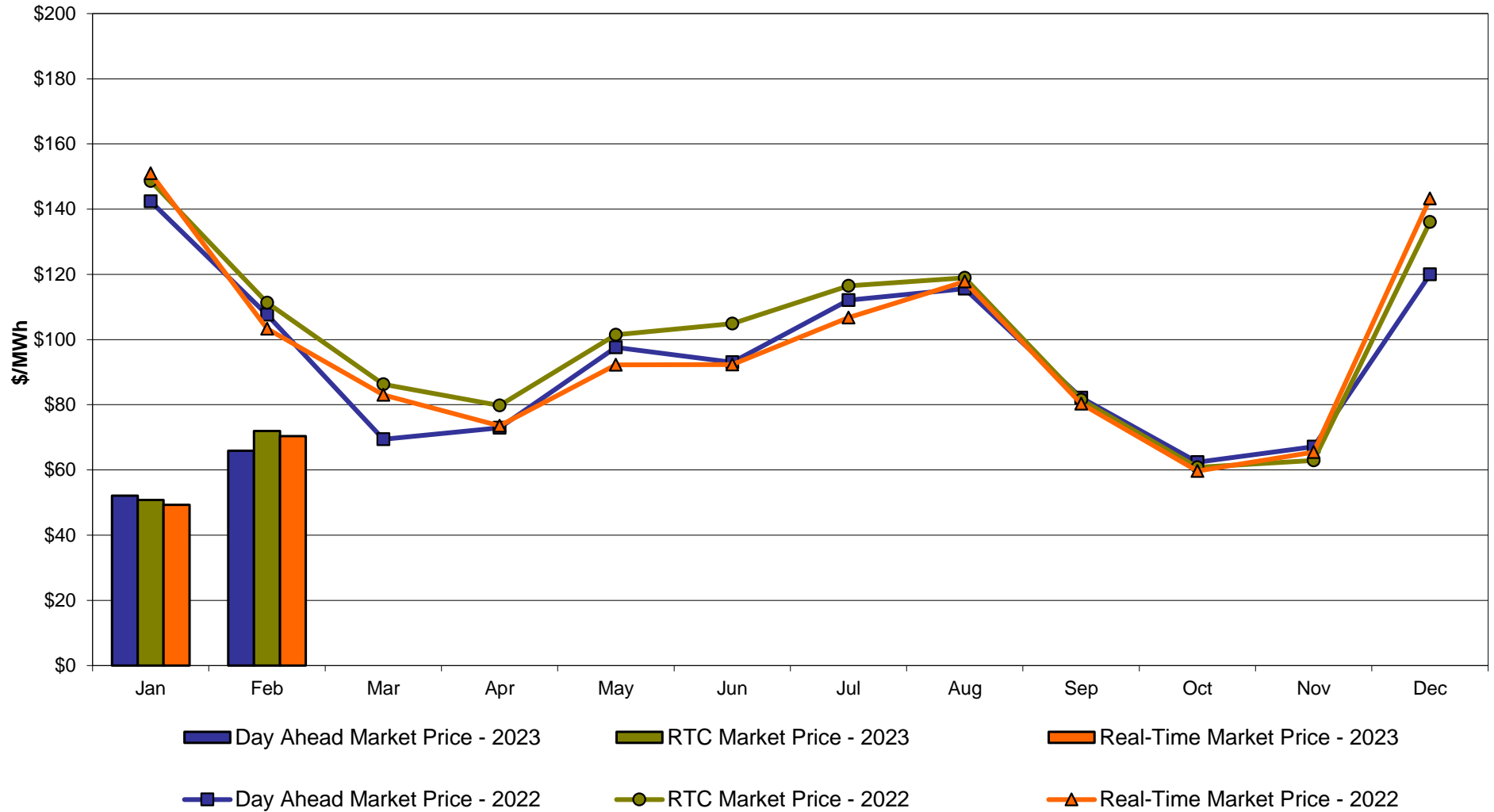
## Hudson Valley Zone G Monthly Average LBMP Prices 2022 - 2023

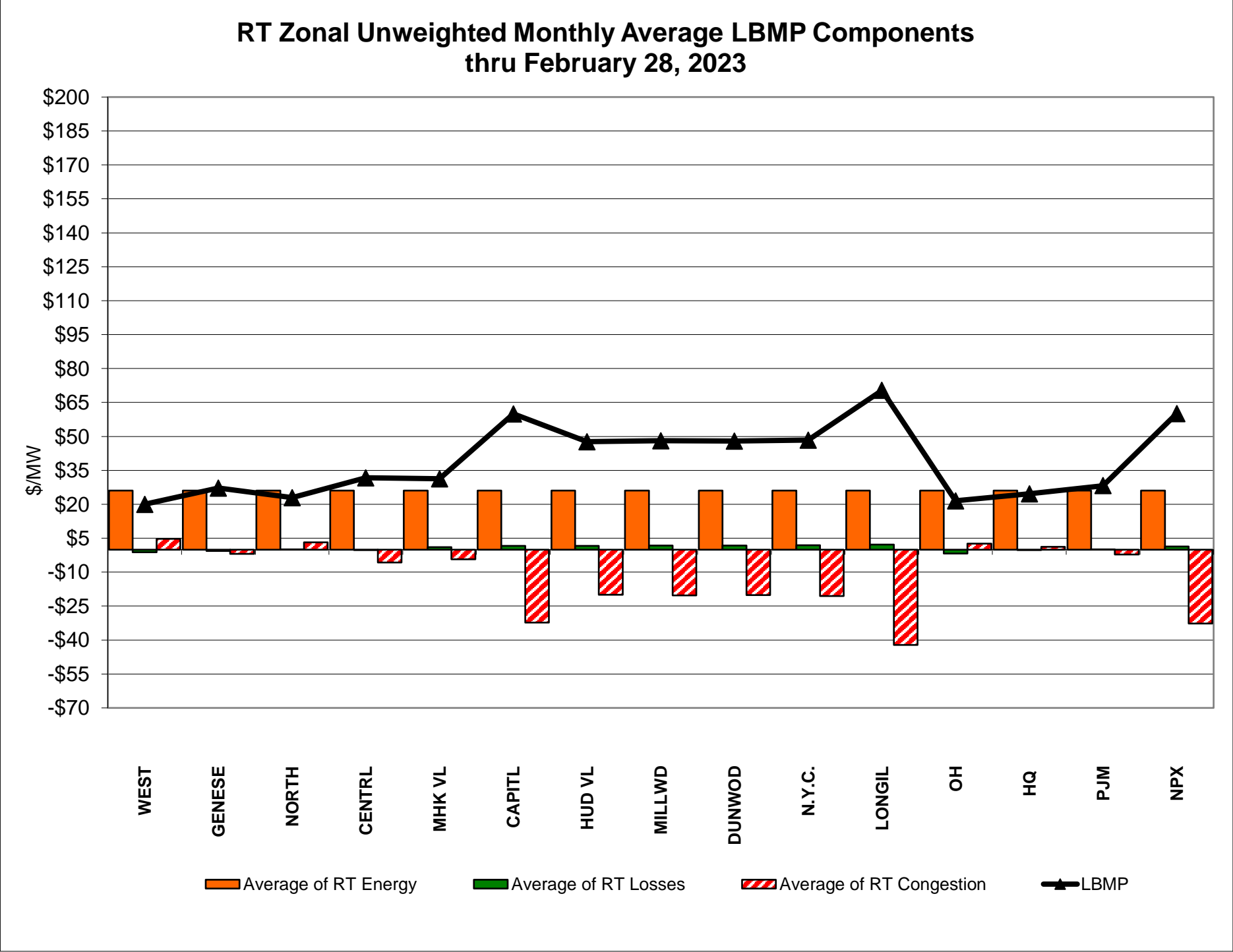
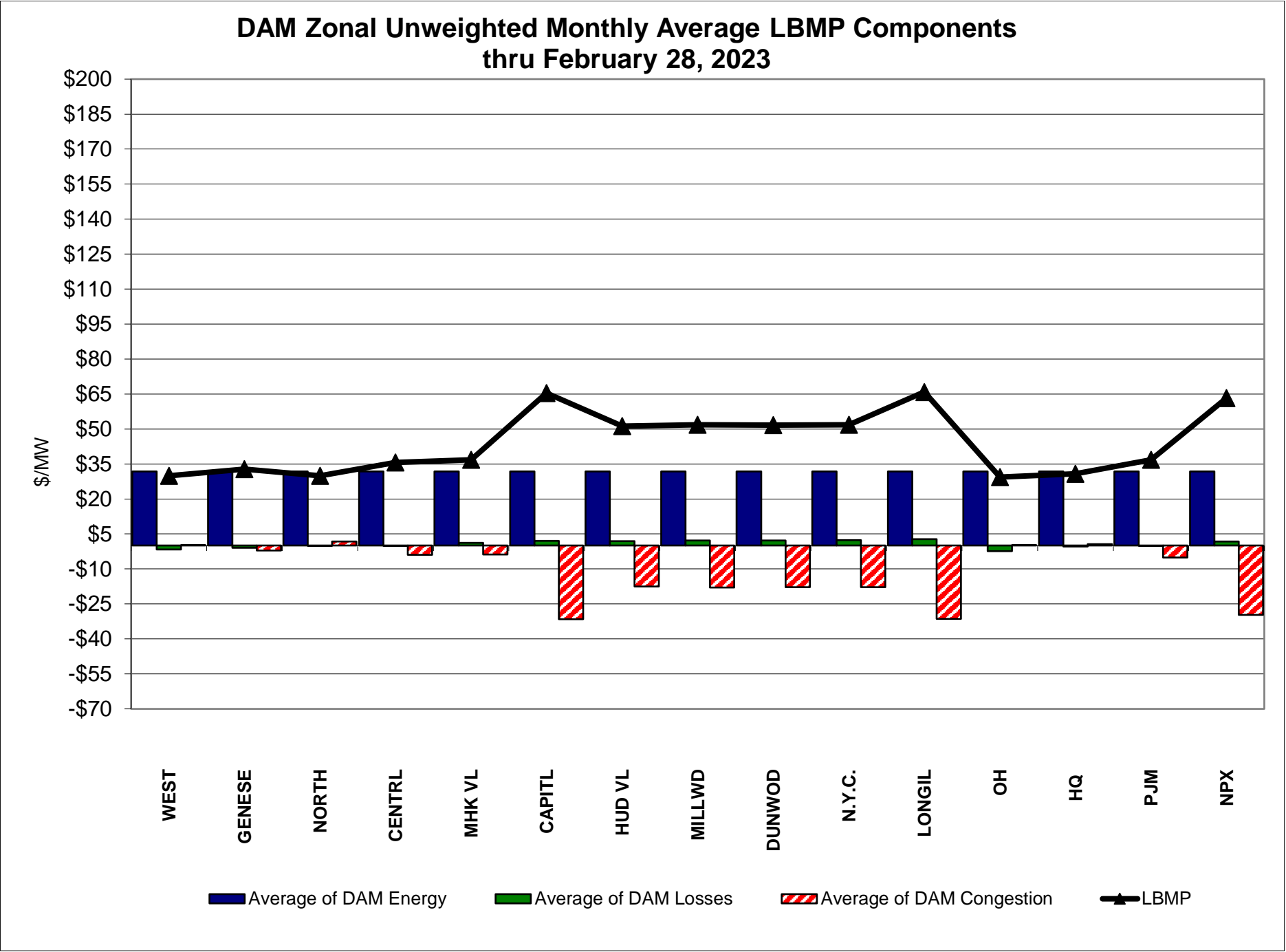


# NYC Zone J Monthly Average LBMP Prices 2022 - 2023



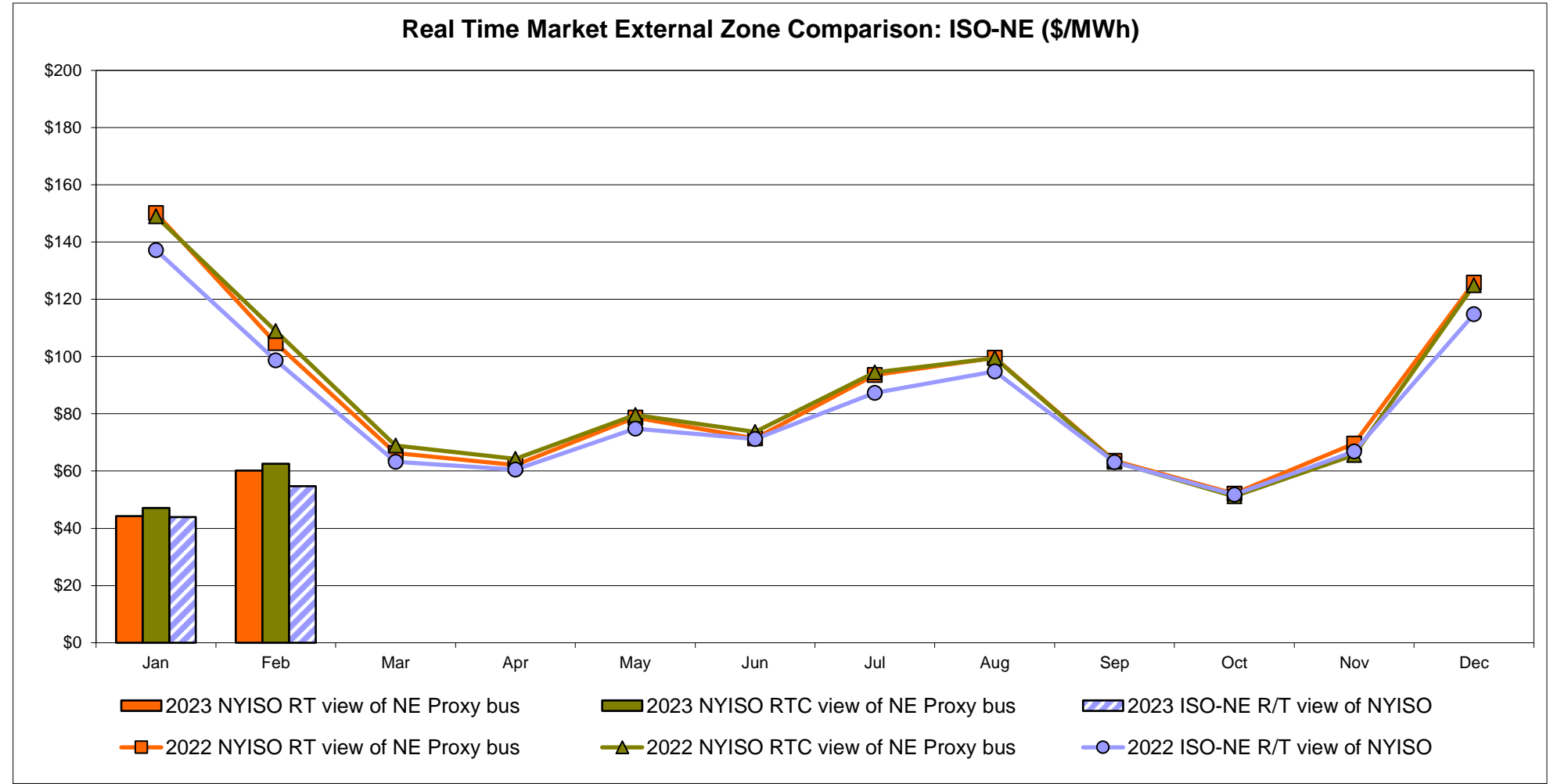
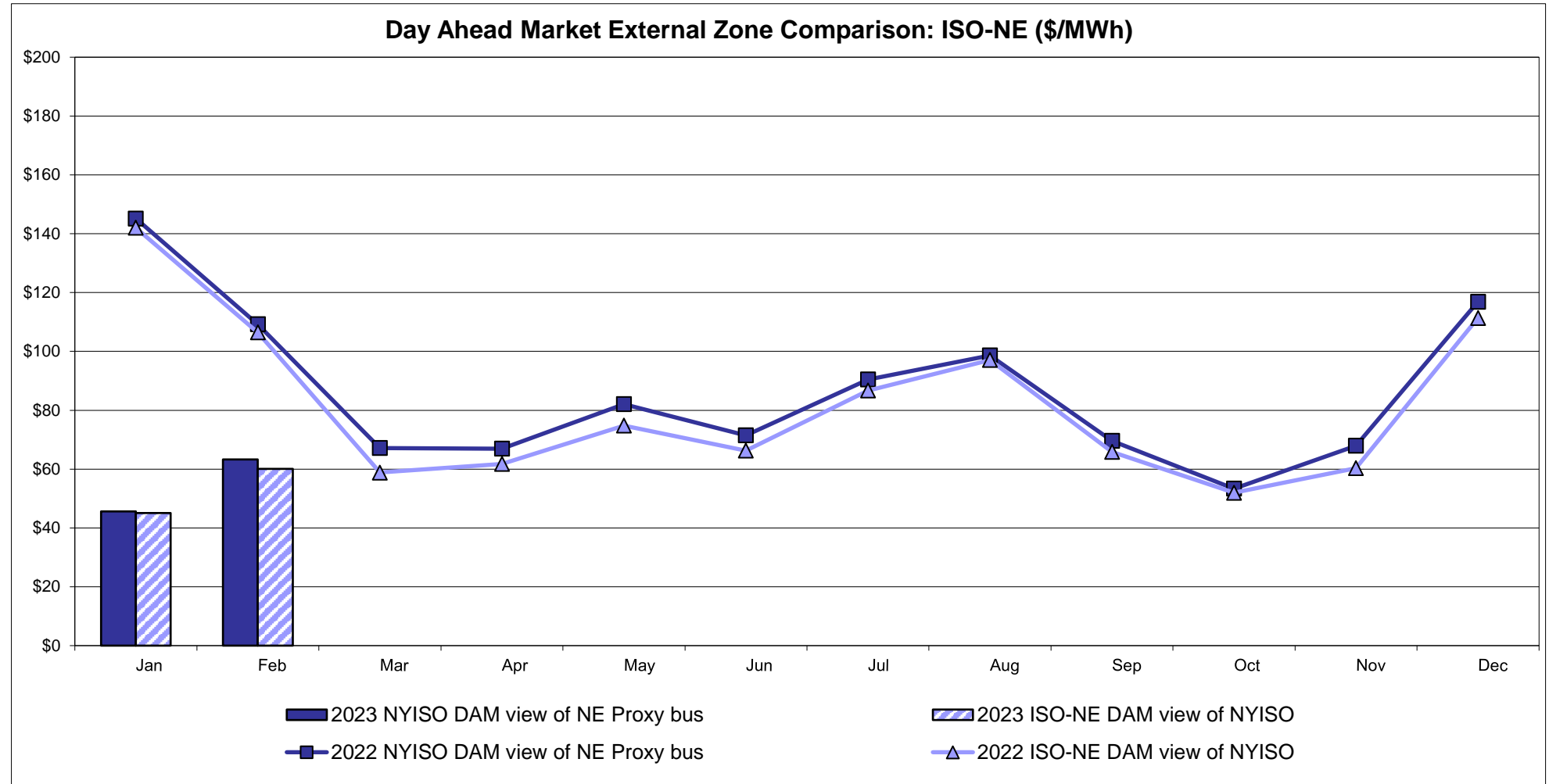
# Long Island Zone K Monthly Average LBMP Prices 2022 - 2023





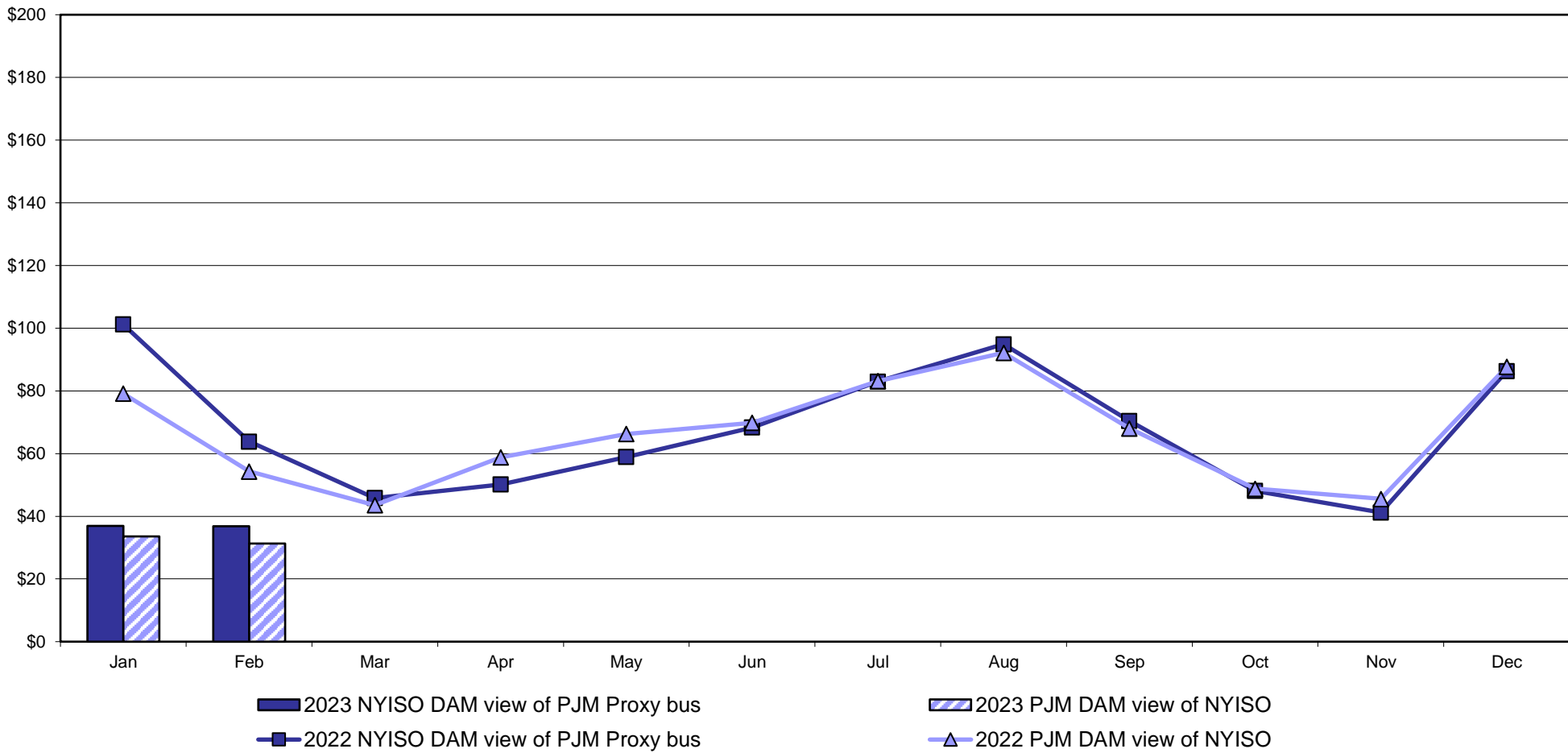


External Comparison ISO-New England

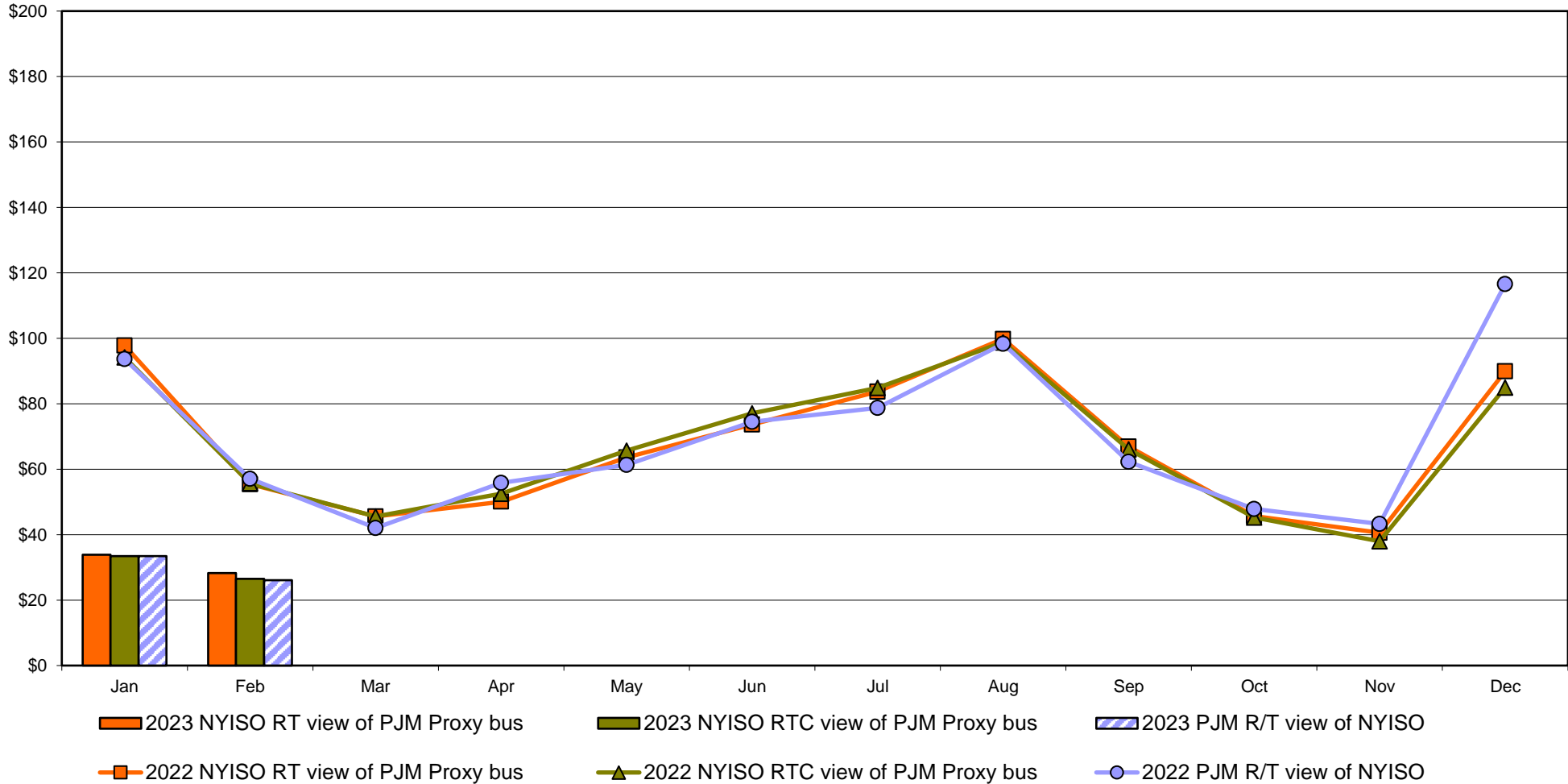


# External Comparison PJM

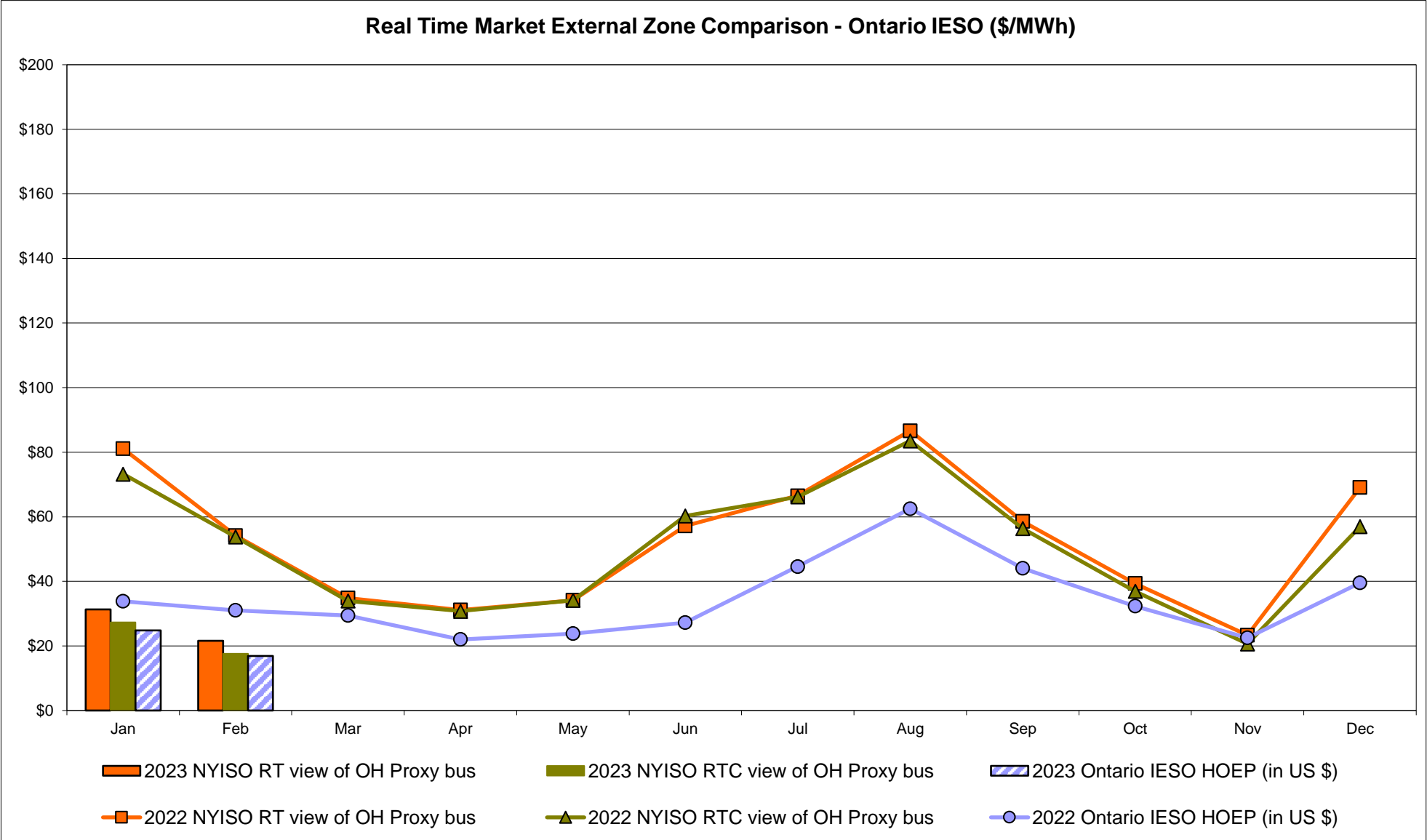
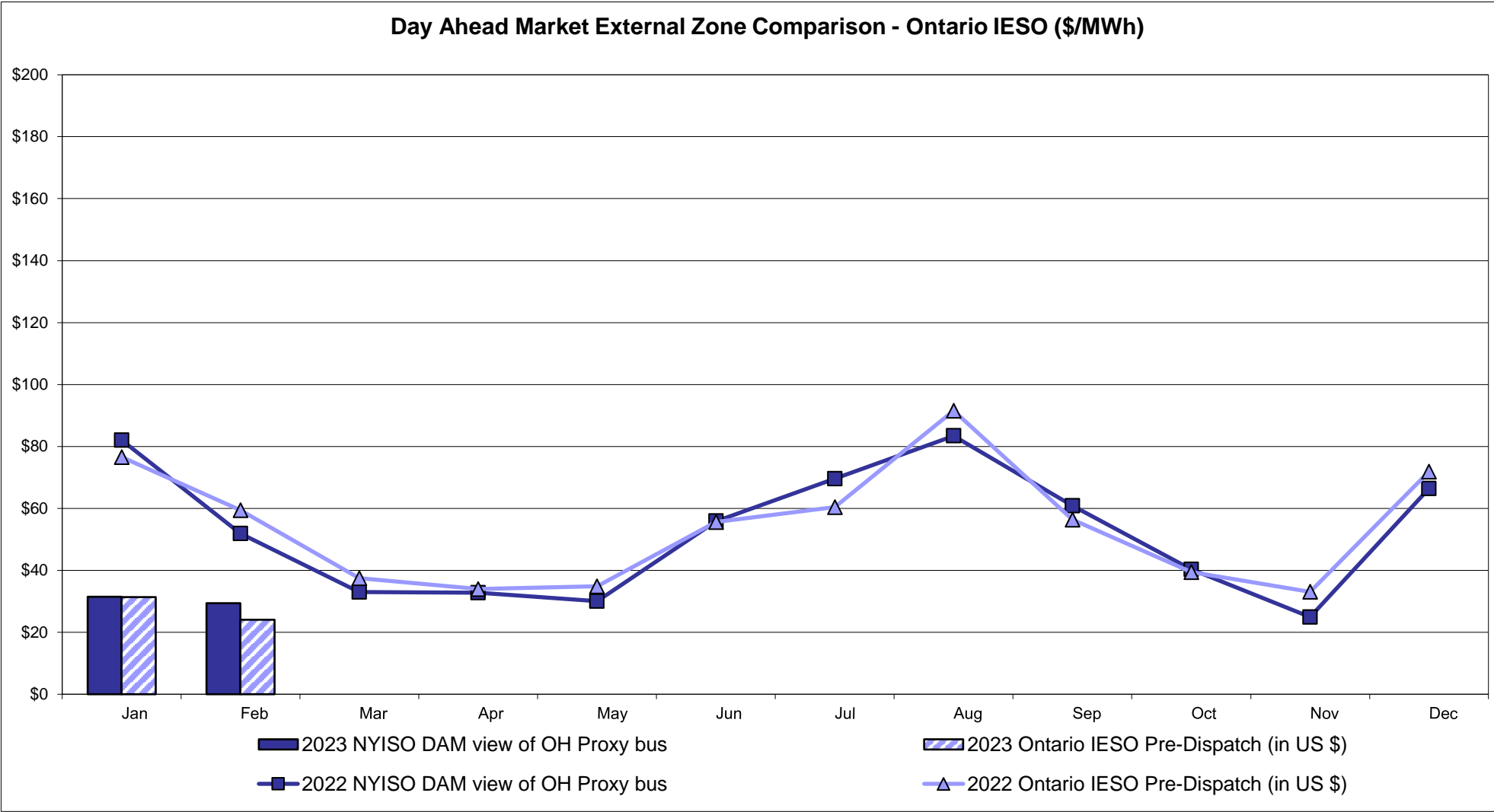
Day Ahead Market External Zone Comparison - PJM (\$/MWh)



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

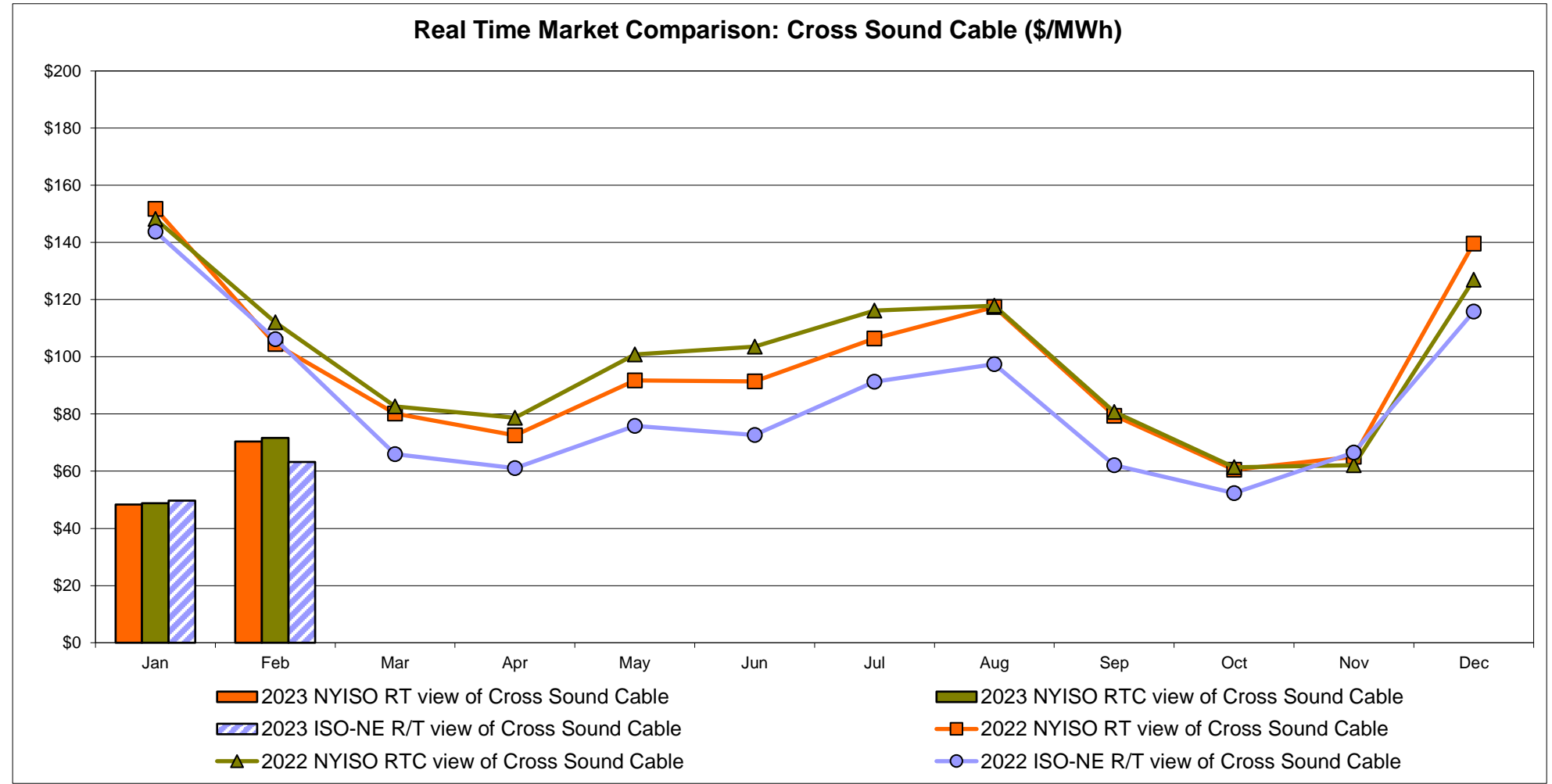
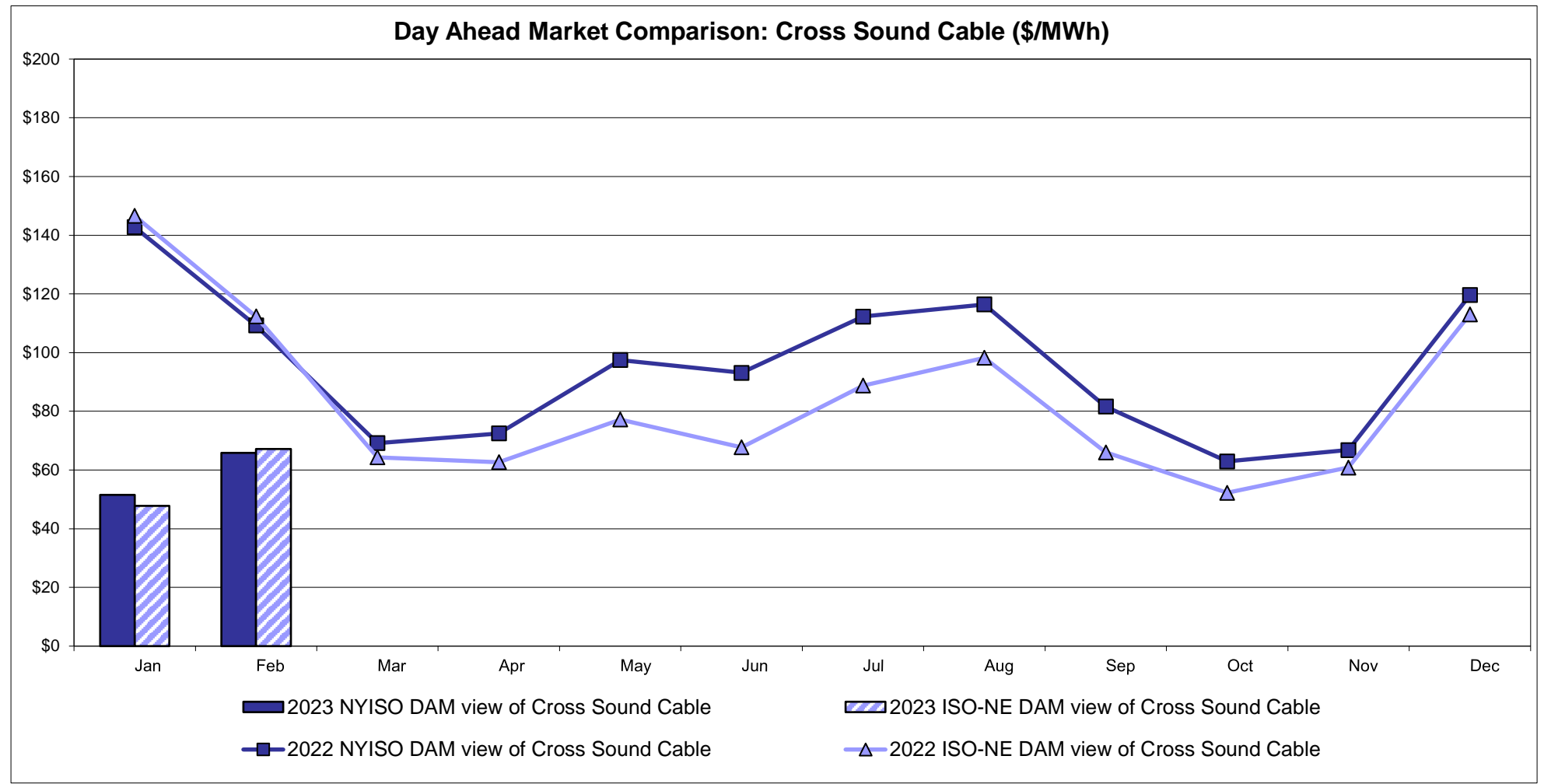


External Comparison Ontario IESO



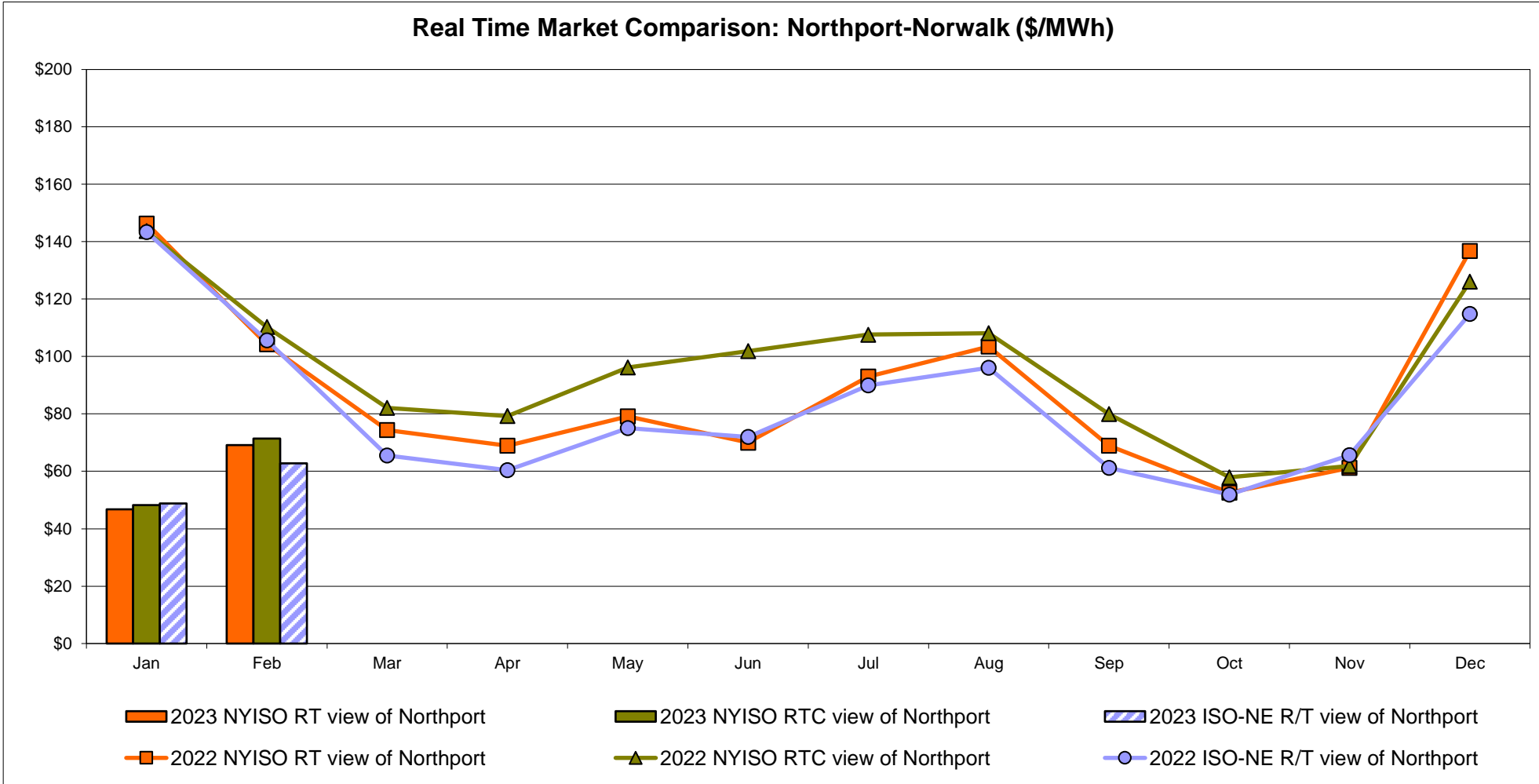
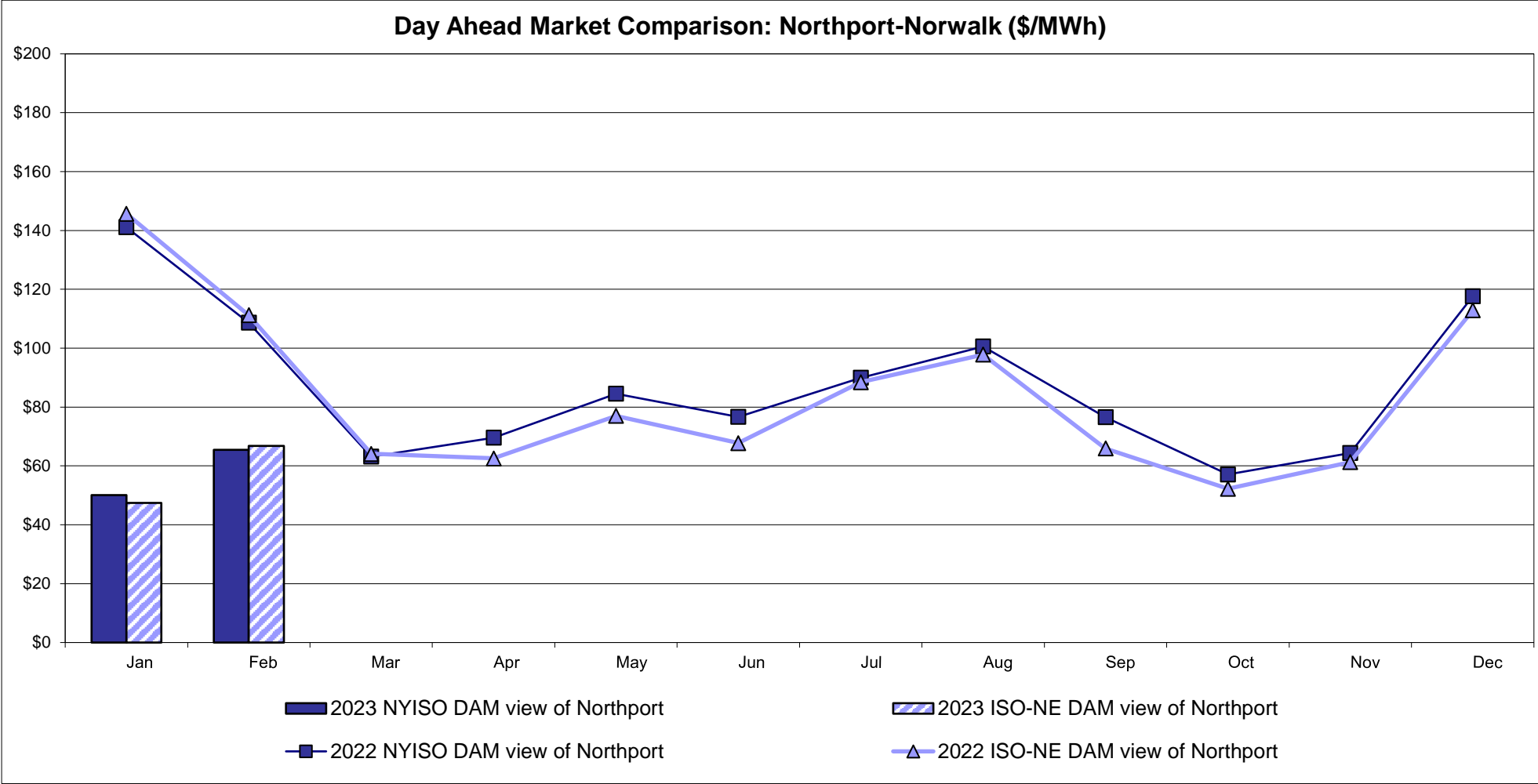
Notes: Exchange factor used for February 2023 was 0.743273375947674 to US  
HOEP: Hourly Ontario Energy Price  
Pre-Dispatch: Projected Energy Price

External Controllable Line: Cross Sound Cable (New England)



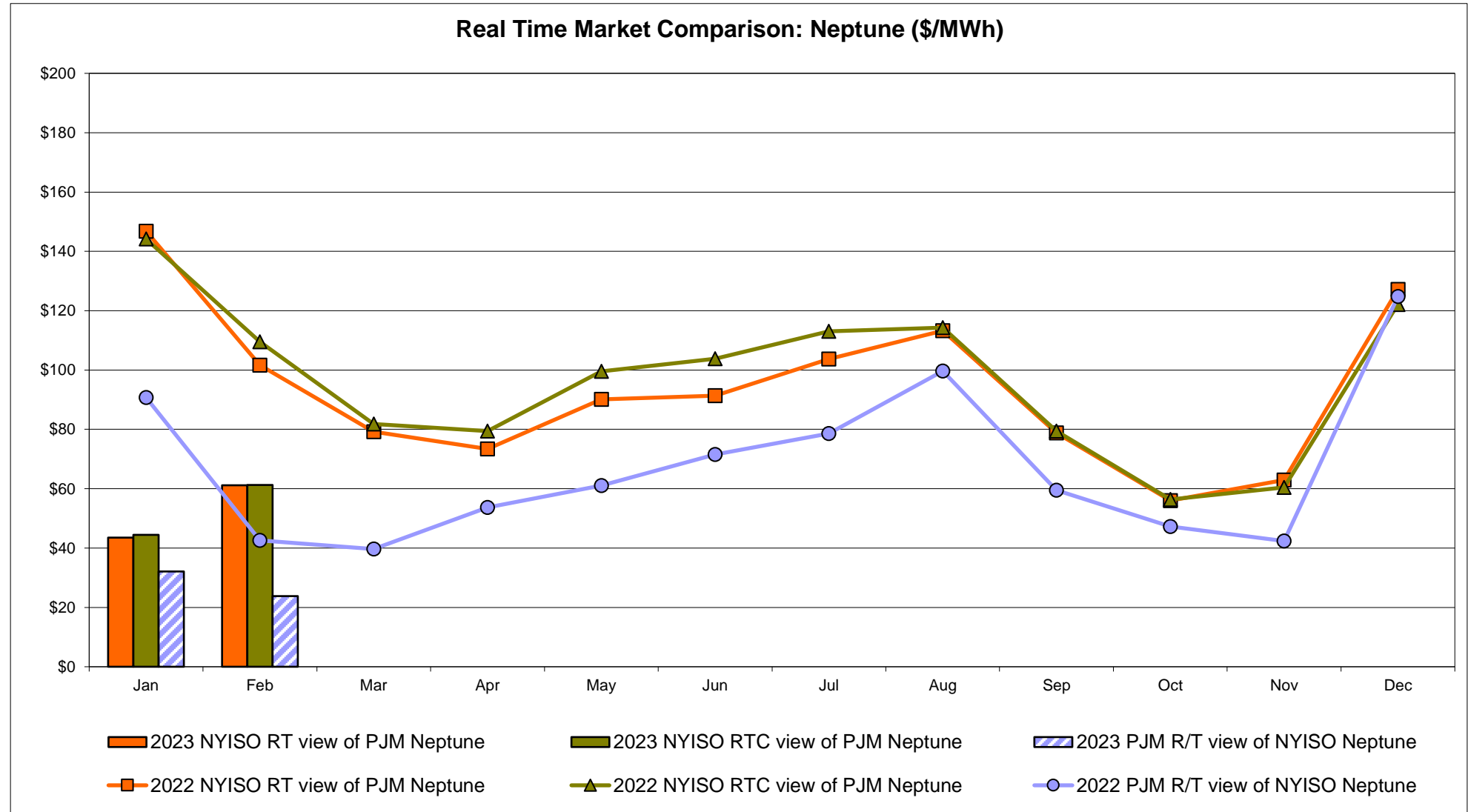
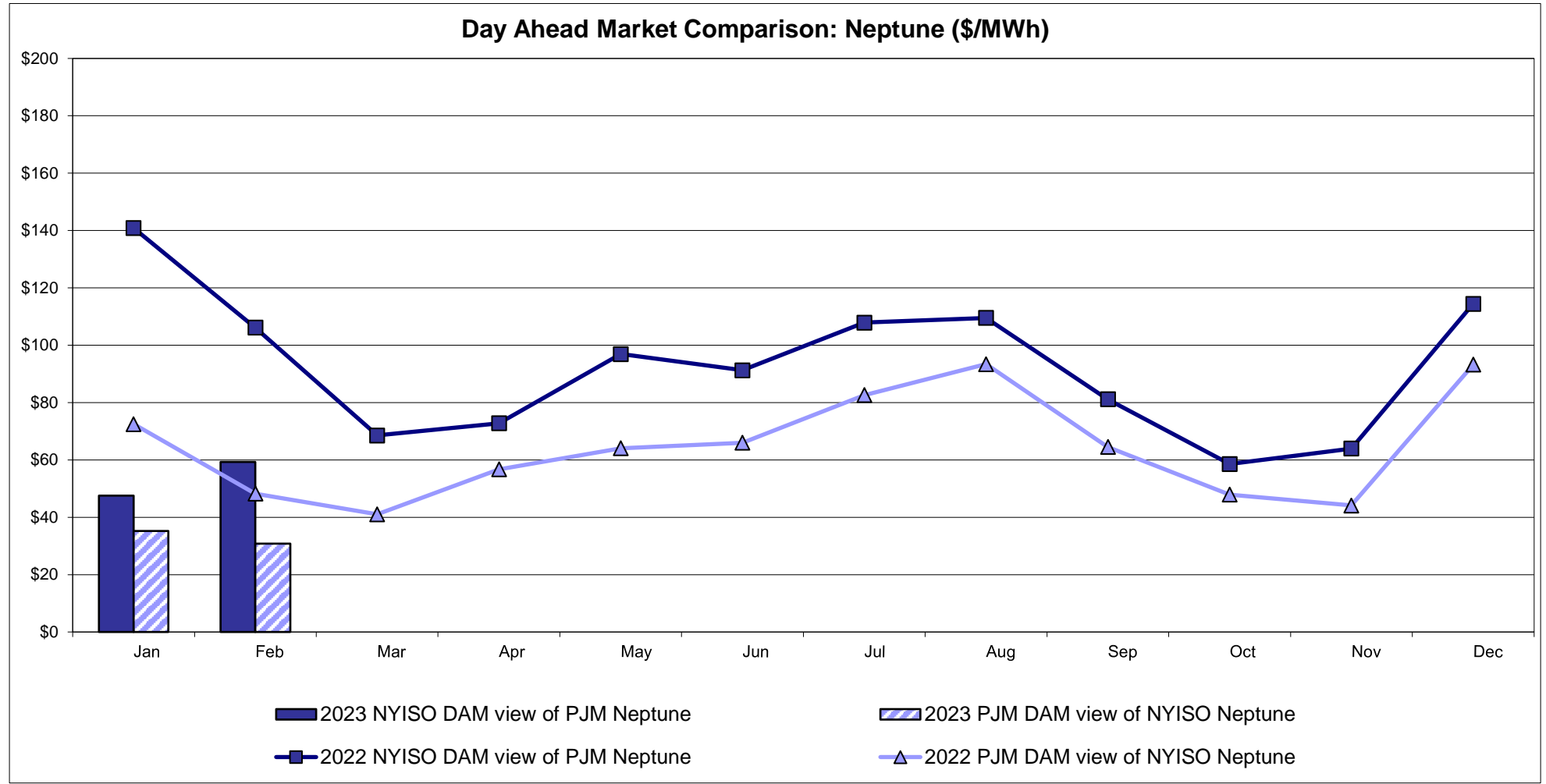
Note:  
ISO-NE Forecast is an advisory posting @ 18:00 day before.  
The DAM and R/T prices at the Shorham 13899 interface are used for ISO-NE.  
The DAM and R/T prices at the CSC interface are used for NYISO.

# External Controllable Line: Northport - Norwalk (New England)

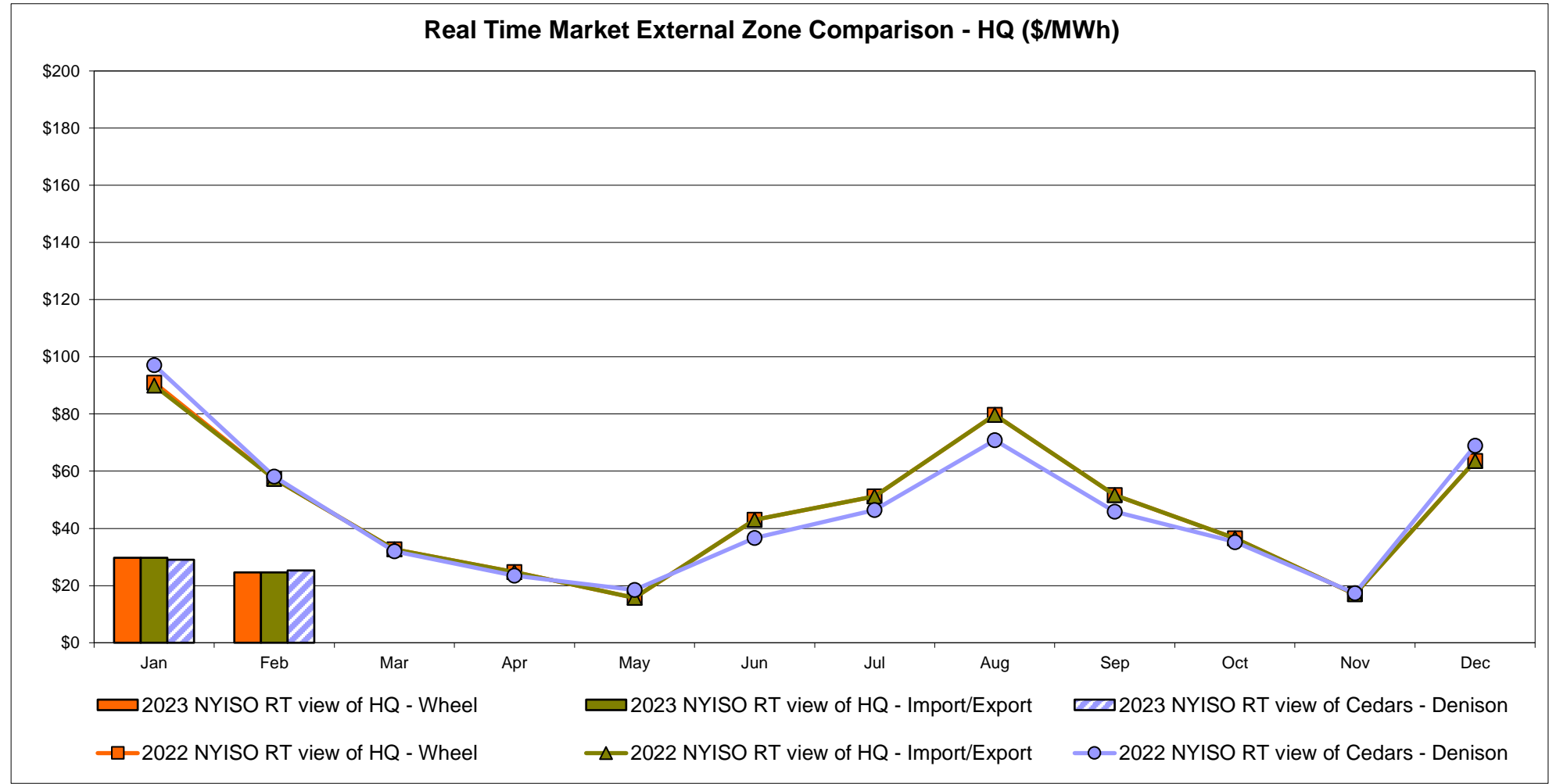
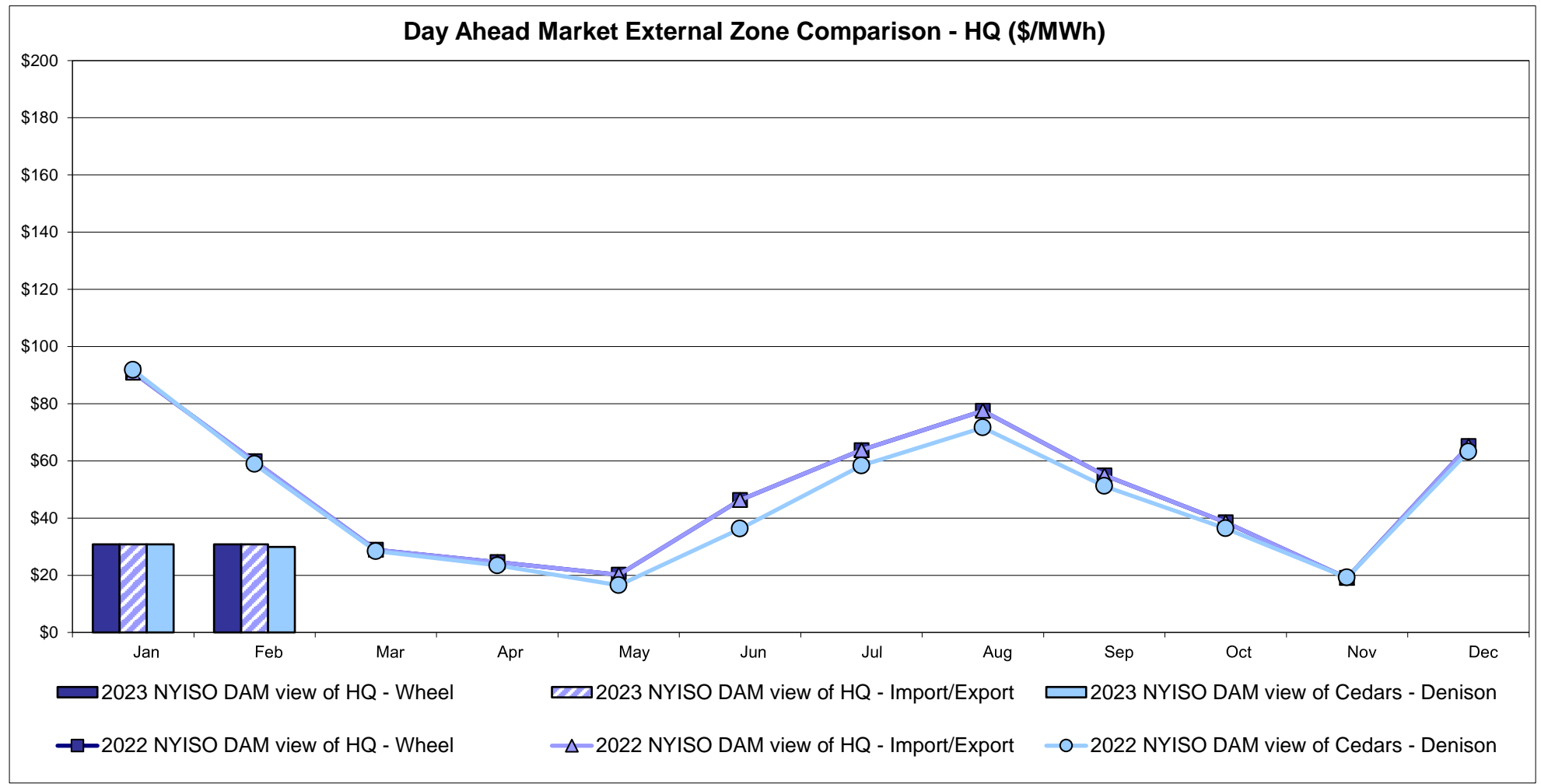


Note:  
ISO-NE Forecast is an advisory posting @ 18:00 day before.  
The DAM and R/T prices at the Northport 138 interface are used for ISO-NE.  
The DAM and R/T prices at the 1385 interface are used for NYISO.

External Controllable Line: Neptune (PJM)

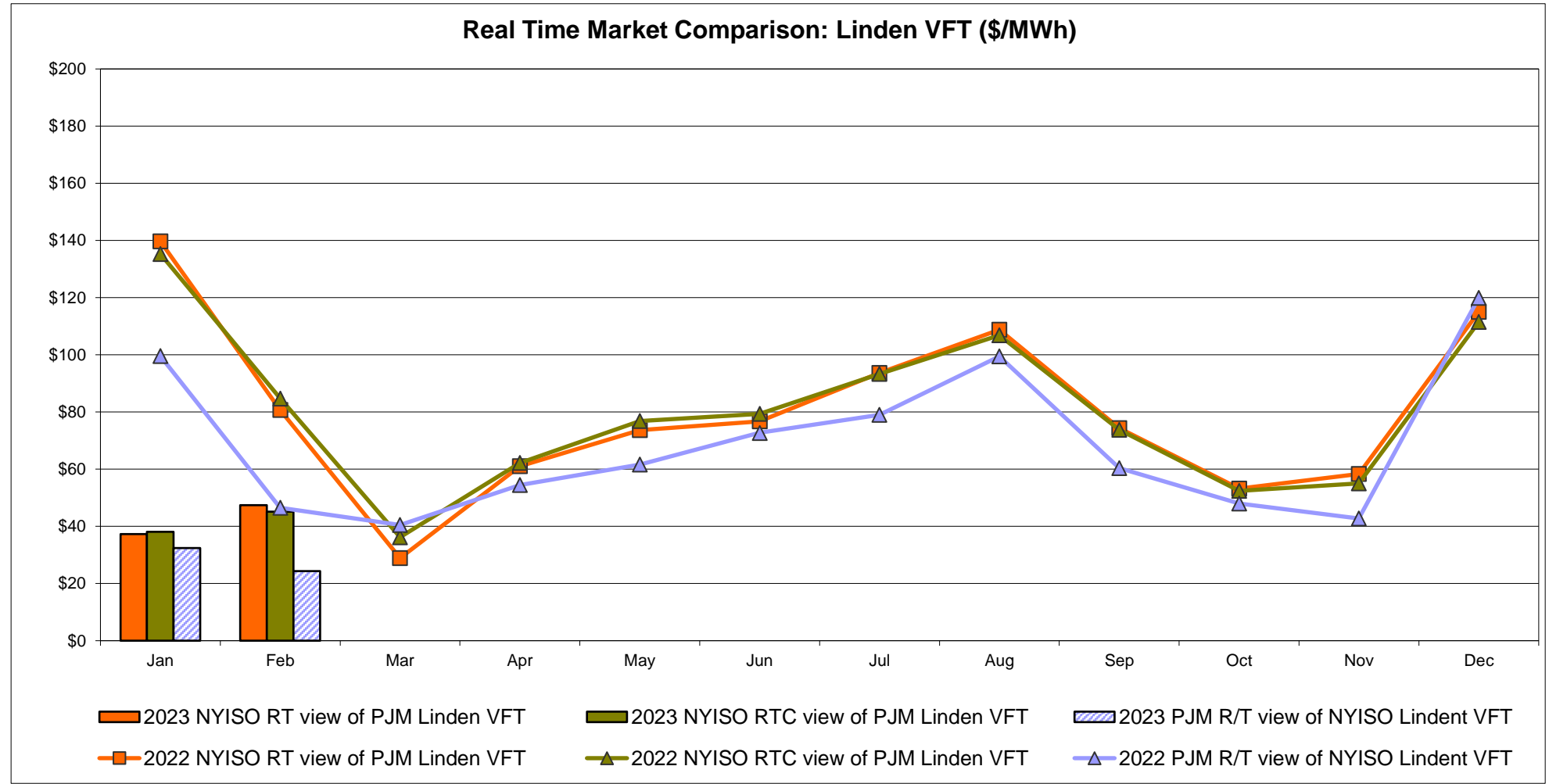
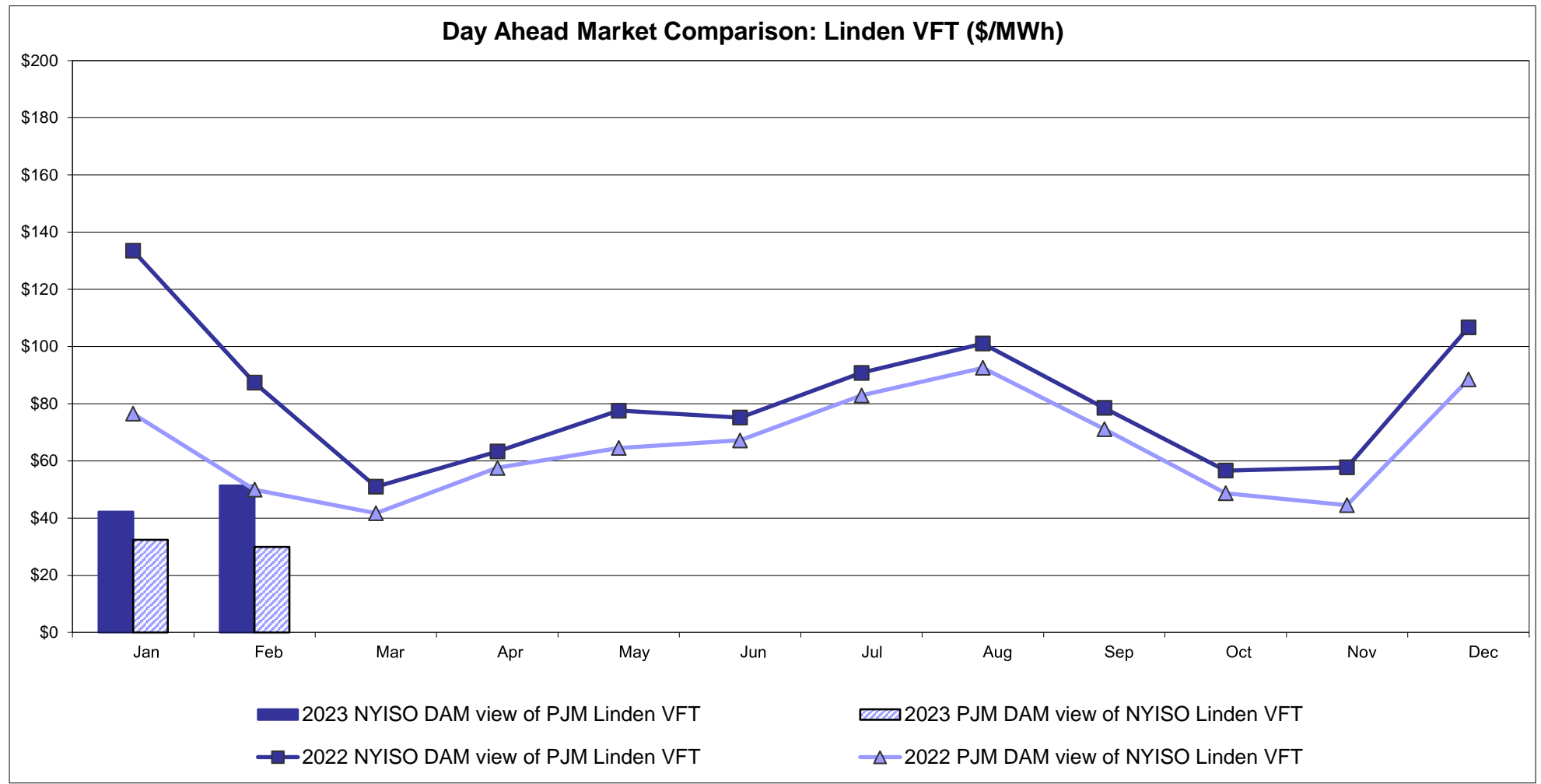


External Comparison Hydro-Quebec



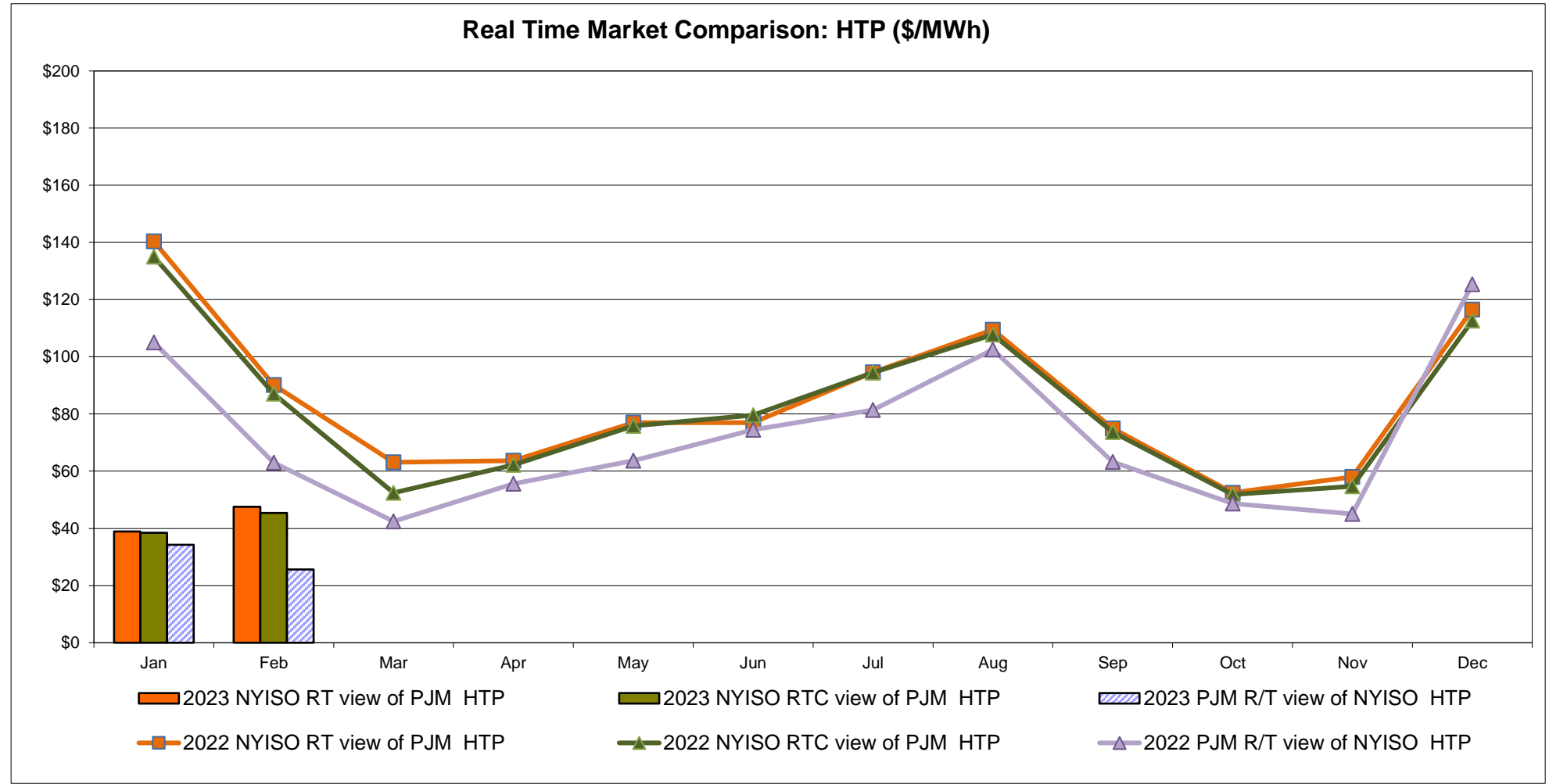
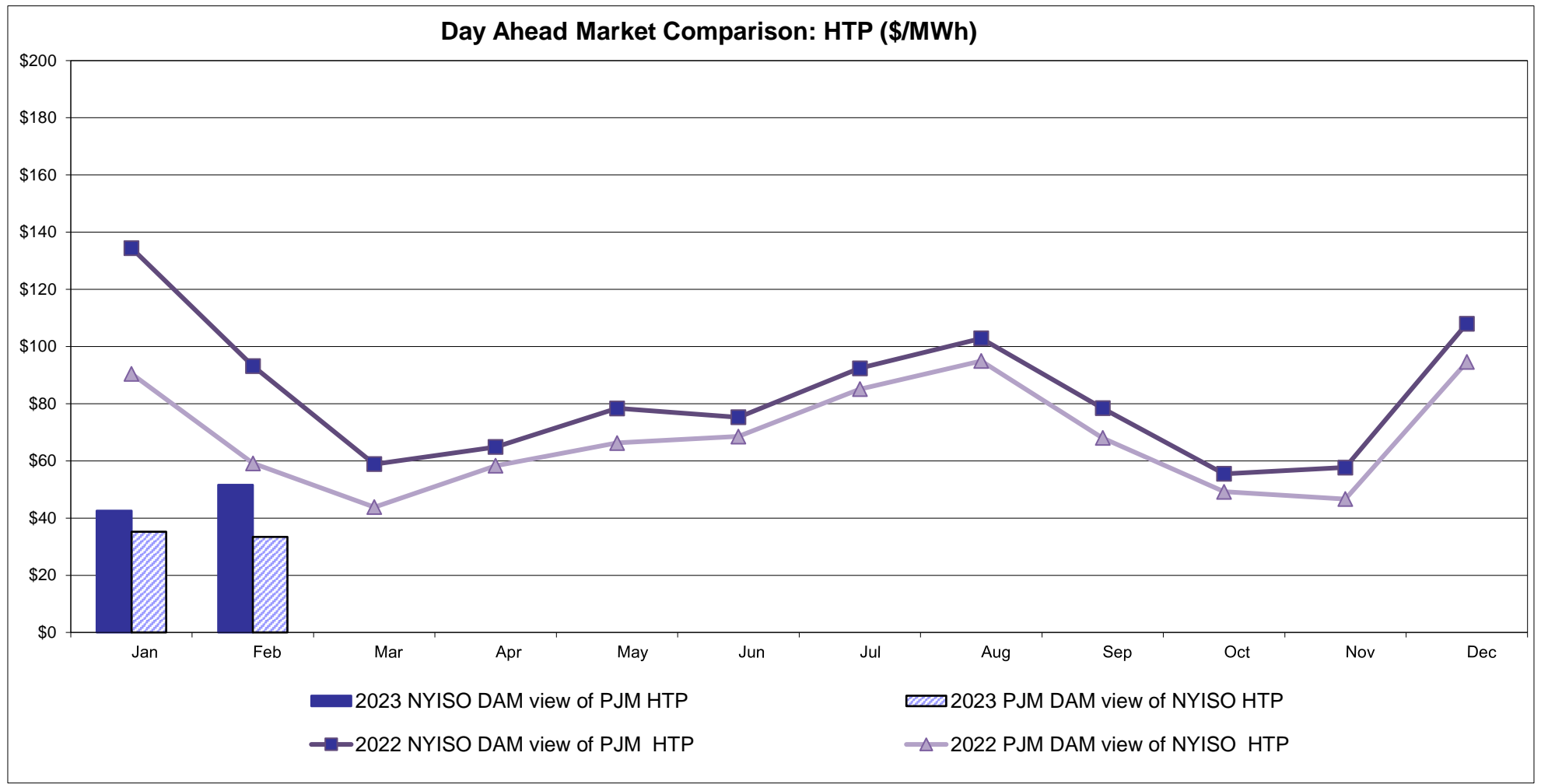
Note:  
Hydro-Quebec Prices are unavailable.

External Controllable Line: Linden VFT (PJM)





External Controllable Line: Hudson (PJM)

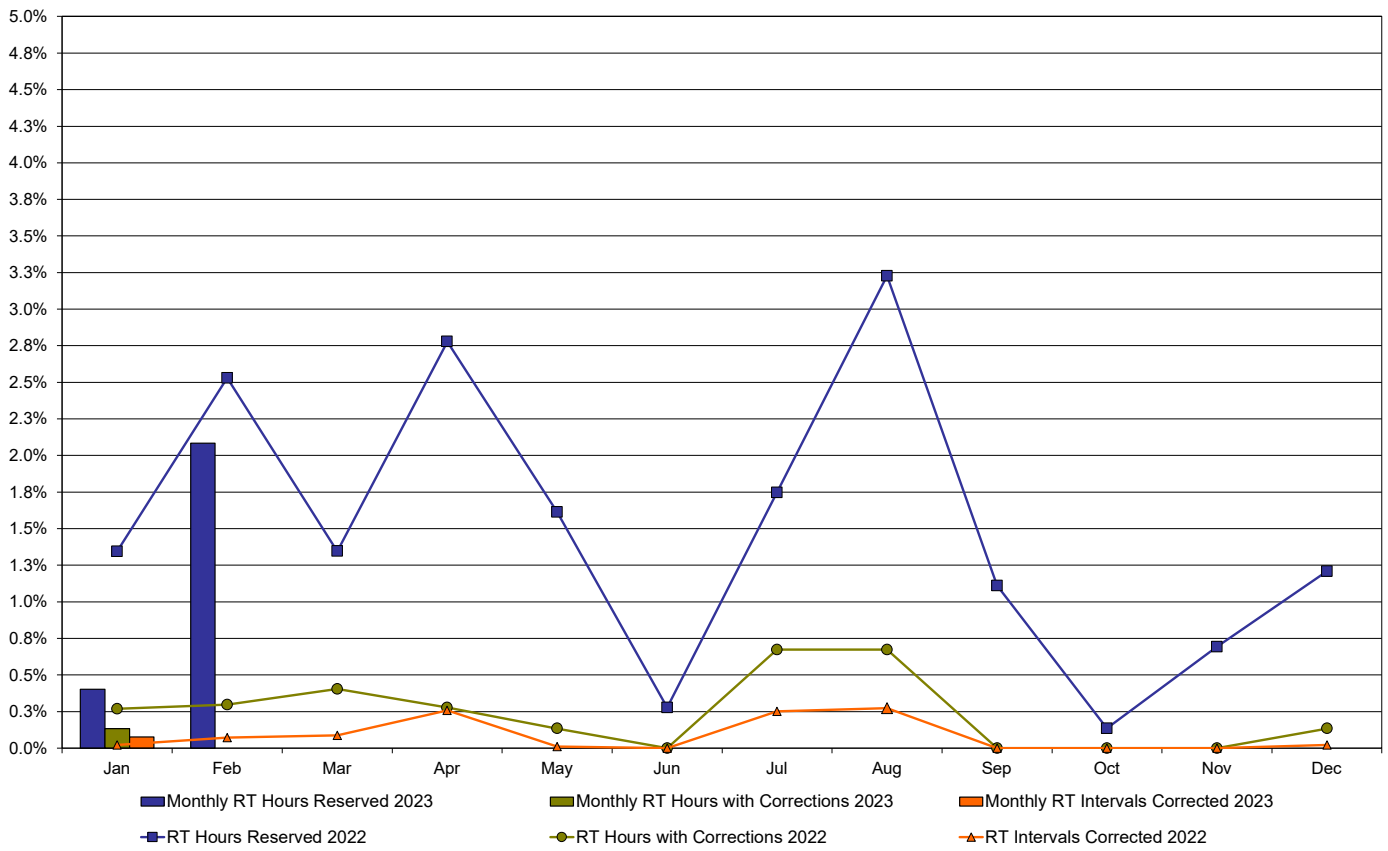


### NYISO Real Time Price Correction Statistics

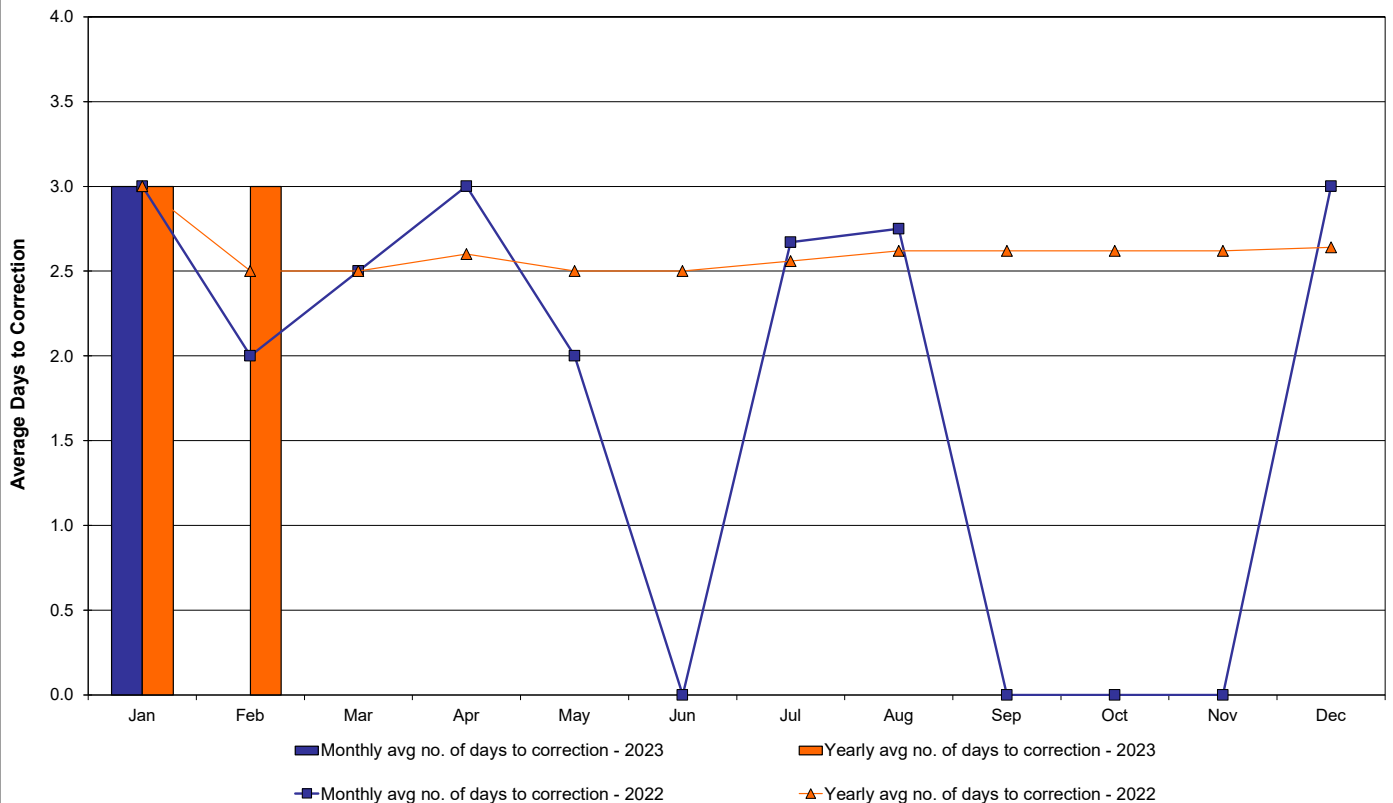
<u>2023</u>		<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>
<b><u>Hour Corrections</u></b>													
Number of hours with corrections	in the month	1	0										
Number of hours	in the month	744	672										
% of hours with corrections	in the month	0.13%	0.00%										
% of hours with corrections	year-to-date	0.13%	0.07%										
<b><u>Interval Corrections</u></b>													
Number of intervals corrected	in the month	7	0										
Number of intervals	in the month	9,082	8,373										
% of intervals corrected	in the month	0.08%	0.00%										
% of intervals corrected	year-to-date	0.08%	0.04%										
<b><u>Hours Reserved</u></b>													
Number of hours reserved	in the month	3	14										
Number of hours	in the month	744	672										
% of hours reserved	in the month	0.40%	2.08%										
% of hours reserved	year-to-date	0.40%	1.20%										
<b><u>Days to Correction *</u></b>													
Avg. number of days to correction	in the month	3.00	0.00										
Avg. number of days to correction	year-to-date	3.00	3.00										
<b><u>Days Without Corrections</u></b>													
Days without corrections	in the month	30	28										
Days without corrections	year-to-date	30	58										
<u>2022</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>
<b><u>Hour Corrections</u></b>													
Number of hours with corrections	in the month	2	2	3	2	1	0	5	5	0	0	0	1
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	0.27%	0.30%	0.40%	0.28%	0.13%	0.00%	0.67%	0.67%	0.00%	0.00%	0.00%	0.13%
% of hours with corrections	year-to-date	0.27%	0.28%	0.32%	0.31%	0.28%	0.23%	0.29%	0.34%	0.31%	0.27%	0.25%	0.24%
<b><u>Interval Corrections</u></b>													
Number of intervals corrected	in the month	2	6	8	23	1	0	23	25	0	0	0	2
Number of intervals	in the month	9,258	8,338	9,118	8,908	9,181	8,864	9,140	9,145	8,825	9,097	8,857	9,317
% of intervals corrected	in the month	0.02%	0.07%	0.09%	0.26%	0.01%	0.00%	0.25%	0.27%	0.00%	0.00%	0.00%	0.02%
% of intervals corrected	year-to-date	0.02%	0.05%	0.06%	0.11%	0.09%	0.07%	0.10%	0.12%	0.11%	0.10%	0.09%	0.08%
<b><u>Hours Reserved</u></b>													
Number of hours reserved	in the month	10	17	10	20	12	2	13	24	8	1	5	9
Number of hours	in the month	744	672	743	720	744	720	744	744	720	744	721	744
% of hours reserved	in the month	1.34%	2.53%	1.35%	2.78%	1.61%	0.28%	1.75%	3.23%	1.11%	0.13%	0.69%	1.21%
% of hours reserved	year-to-date	1.34%	1.91%	1.71%	1.98%	1.90%	1.63%	1.65%	1.85%	1.77%	1.60%	1.52%	1.50%
<b><u>Days to Correction *</u></b>													
Avg. number of days to correction	in the month	3.00	2.00	2.50	3.00	2.00	0.00	2.67	2.75	0.00	0.00	0.00	3.00
Avg. number of days to correction	year-to-date	3.00	2.50	2.50	2.60	2.50	2.50	2.56	2.62	2.62	2.62	2.62	2.64
<b><u>Days Without Corrections</u></b>													
Days without corrections	in the month	30	27	29	29	30	30	28	27	30	31	30	30
Days without corrections	year-to-date	30	57	86	115	145	175	203	230	260	291	321	351

\*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) \*



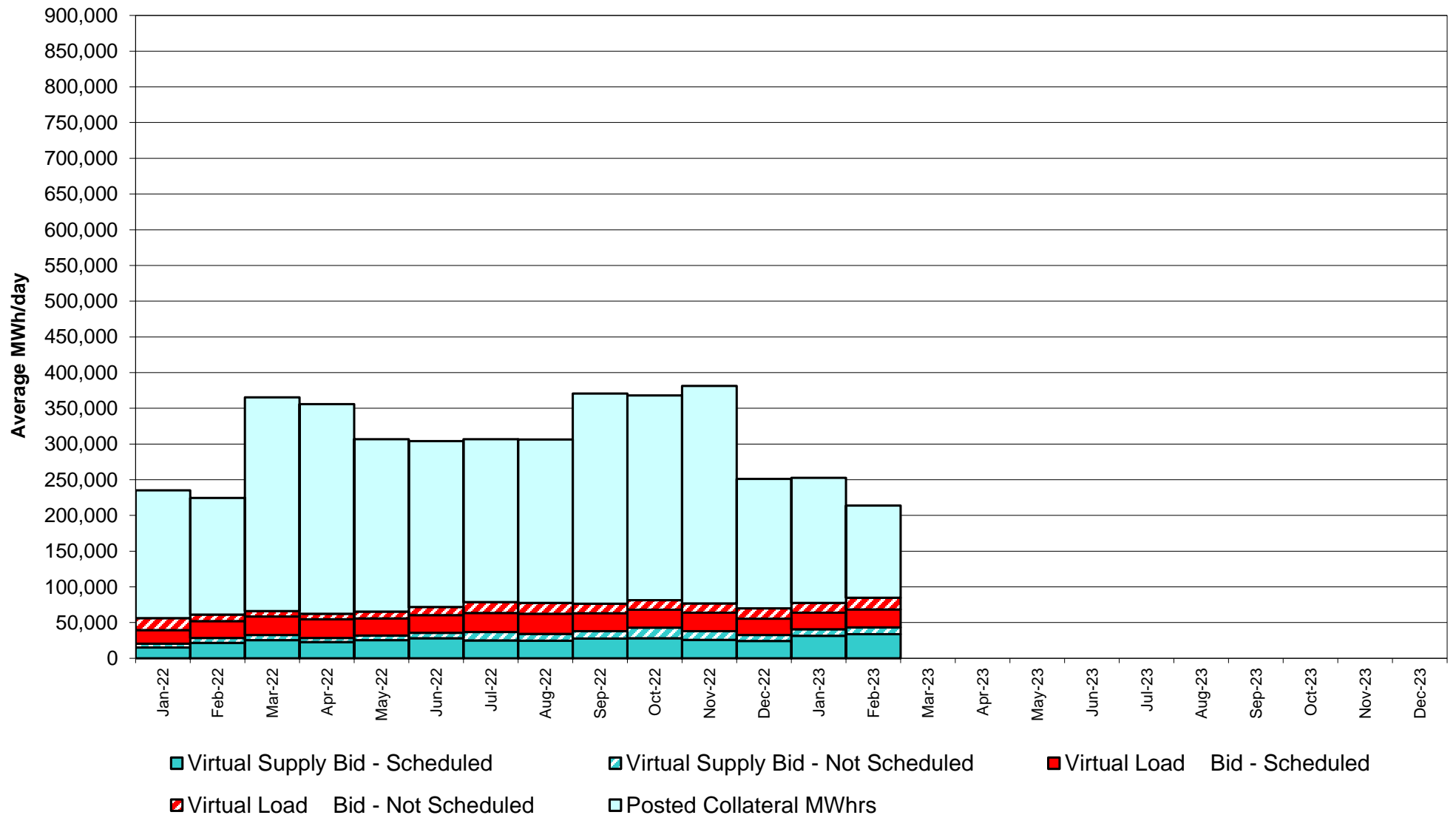
\*Calendar days from reservation date; for June 2018 forward, business days from market date

Market Mitigation and Analysis  
Prepared: 3/9/2023 12:12 PM

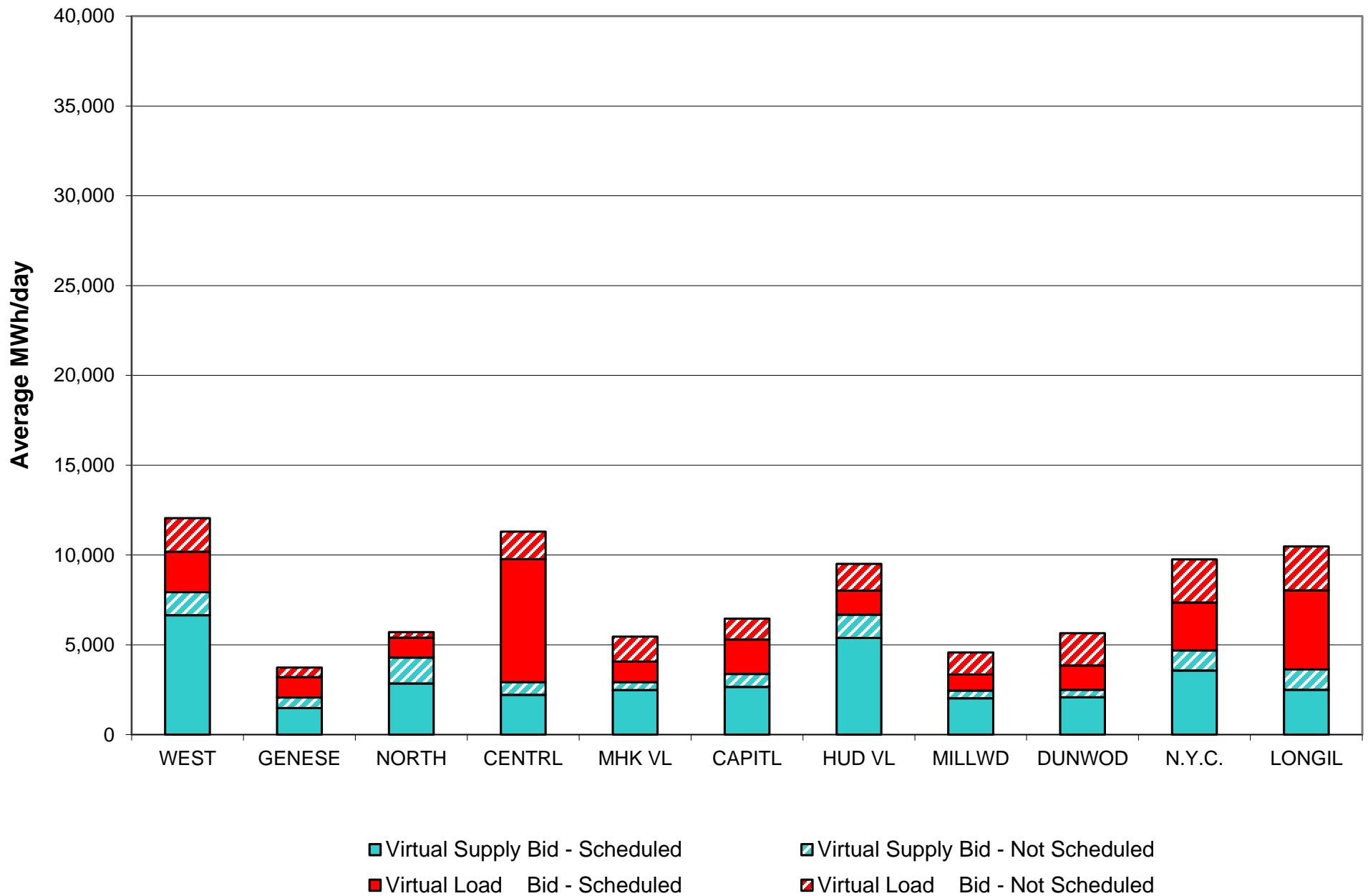
Y

May/June 2017 Hours Reserved data  
has been updated for the July 2017  
Monthly Market Operations Report.

# NYISO Virtual Trading Average MWh per day



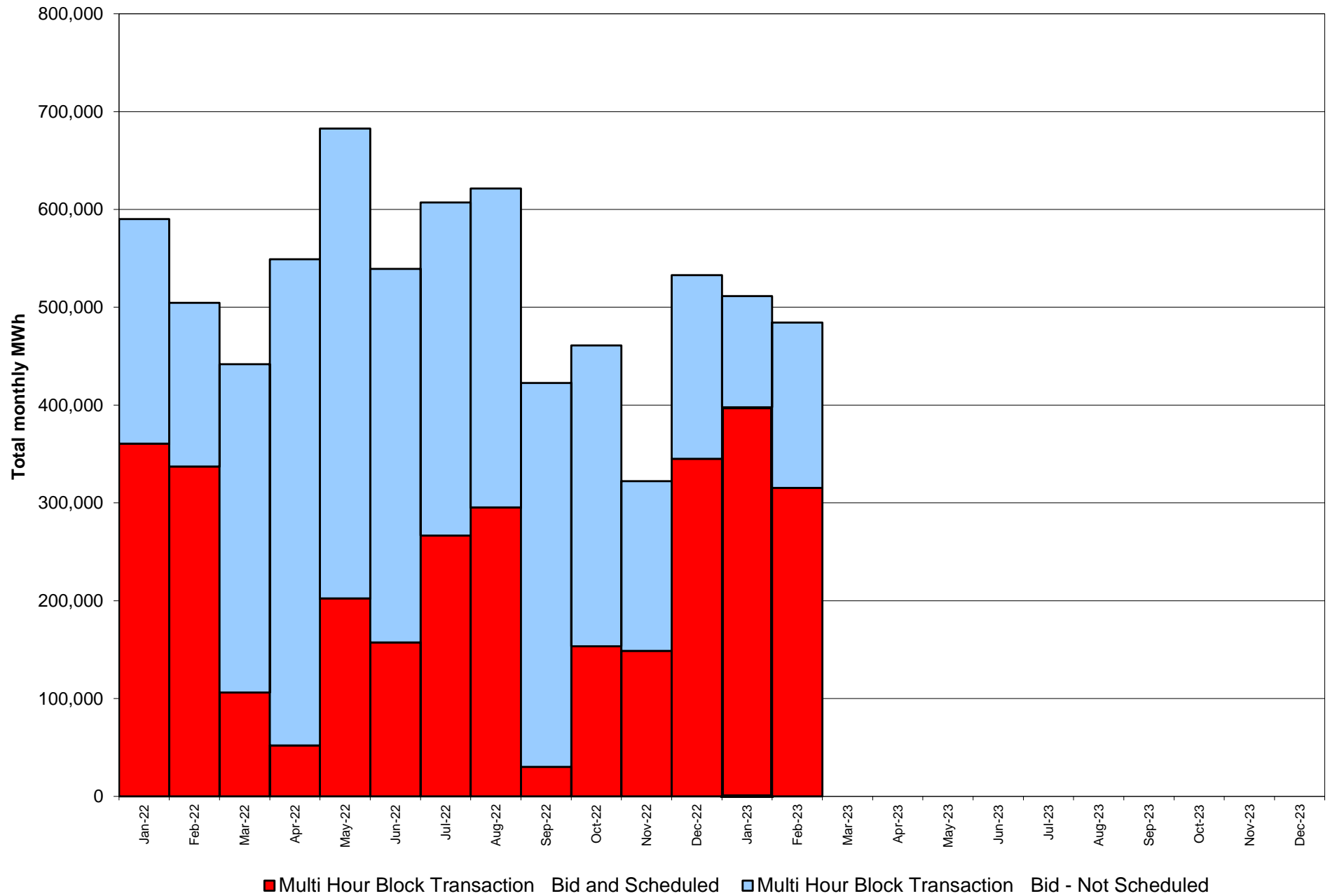
## Virtual Load and Supply Zonal Statistics through February 28, 2023



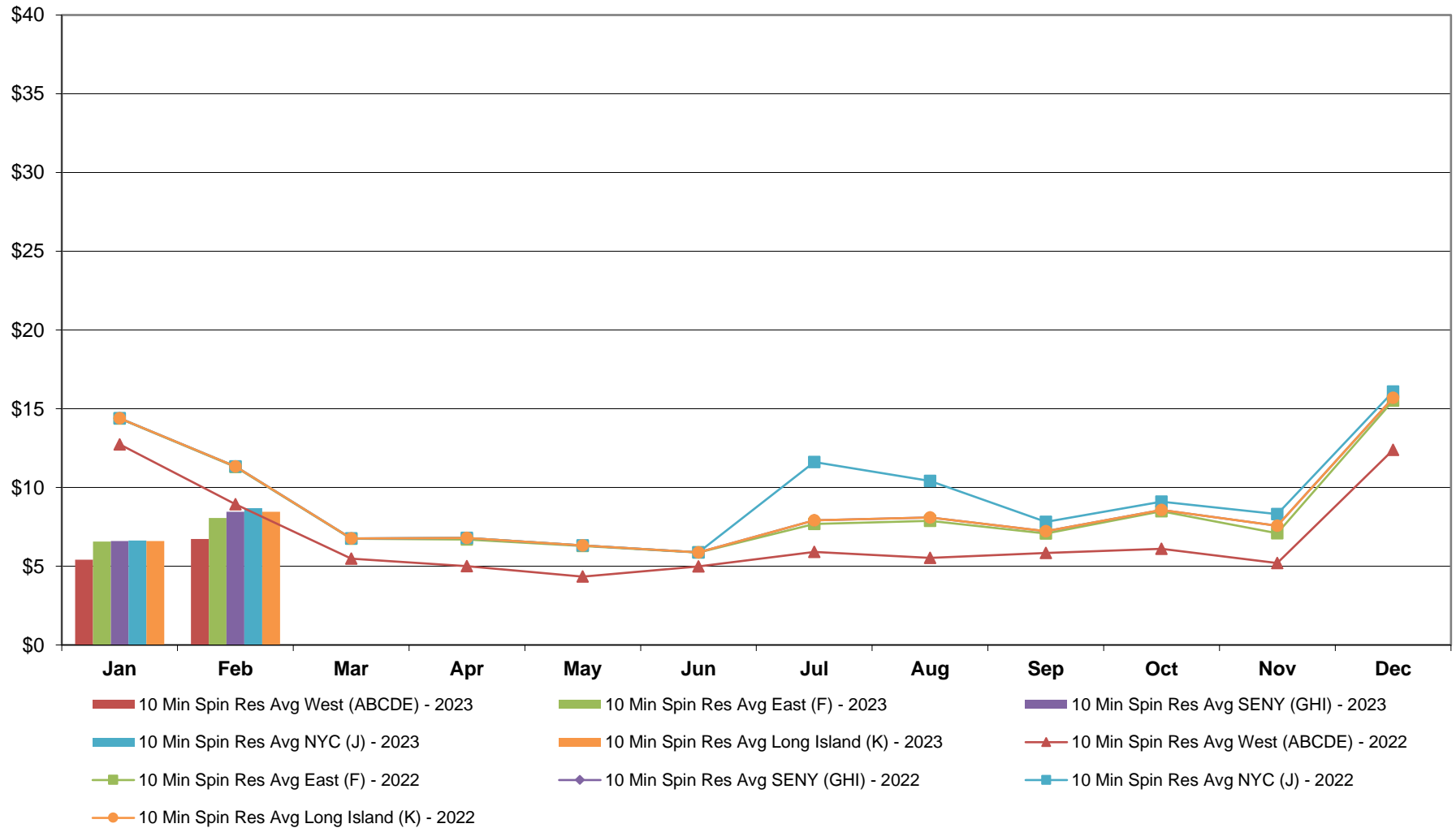
## Virtual Load and Supply Zonal Statistics (Average MWh/day) - 2023

		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-23	3,364	1,605	5,555	1,026	MHK VL	Jan-23	1,312	1,038	1,590	558	DUNWOD	Jan-23	862	1,623	1,884	319
	Feb-23	2,266	1,863	6,652	1,270		Feb-23	1,146	1,395	2,484	436		Feb-23	1,366	1,793	2,082	408
	Mar-23						Mar-23						Mar-23				
	Apr-23						Apr-23						Apr-23				
	May-23						May-23						May-23				
	Jun-23						Jun-23						Jun-23				
	Jul-23						Jul-23						Jul-23				
	Aug-23						Aug-23						Aug-23				
	Sep-23						Sep-23						Sep-23				
	Oct-23						Oct-23						Oct-23				
	Nov-23						Nov-23						Nov-23				
	Dec-23						Dec-23						Dec-23				
GENESE	Jan-23	1,005	469	1,438	255	CAPITL	Jan-23	1,762	834	1,824	917	N.Y.C.	Jan-23	2,674	2,287	4,516	977
	Feb-23	1,136	523	1,480	586		Feb-23	1,902	1,166	2,655	729		Feb-23	2,663	2,398	3,564	1,126
	Mar-23						Mar-23						Mar-23				
	Apr-23						Apr-23						Apr-23				
	May-23						May-23						May-23				
	Jun-23						Jun-23						Jun-23				
	Jul-23						Jul-23						Jul-23				
	Aug-23						Aug-23						Aug-23				
	Sep-23						Sep-23						Sep-23				
	Oct-23						Oct-23						Oct-23				
	Nov-23						Nov-23						Nov-23				
	Dec-23						Dec-23						Dec-23				
NORTH	Jan-23	1,246	284	2,910	1,072	HUD VL	Jan-23	835	1,168	5,672	1,513	LONGIL	Jan-23	4,119	2,358	2,370	1,687
	Feb-23	1,111	302	2,854	1,432		Feb-23	1,335	1,484	5,382	1,297		Feb-23	4,408	2,440	2,494	1,130
	Mar-23						Mar-23						Mar-23				
	Apr-23						Apr-23						Apr-23				
	May-23						May-23						May-23				
	Jun-23						Jun-23						Jun-23				
	Jul-23						Jul-23						Jul-23				
	Aug-23						Aug-23						Aug-23				
	Sep-23						Sep-23						Sep-23				
	Oct-23						Oct-23						Oct-23				
	Nov-23						Nov-23						Nov-23				
	Dec-23						Dec-23						Dec-23				
CENTRL	Jan-23	5,294	1,193	1,715	563	MILLWD	Jan-23	649	1,103	2,019	278	NYISO	Jan-23	23,122	13,963	31,494	9,165
	Feb-23	6,851	1,526	2,219	703		Feb-23	888	1,228	2,021	434		Feb-23	25,071	16,118	33,885	9,552
	Mar-23						Mar-23						Mar-23				
	Apr-23						Apr-23						Apr-23				
	May-23						May-23						May-23				
	Jun-23						Jun-23						Jun-23				
	Jul-23						Jul-23						Jul-23				
	Aug-23						Aug-23						Aug-23				
	Sep-23						Sep-23						Sep-23				
	Oct-23						Oct-23						Oct-23				
	Nov-23						Nov-23						Nov-23				
	Dec-23						Dec-23						Dec-23				

# NYISO Multi Hour Block Transactions Monthly Total MWh

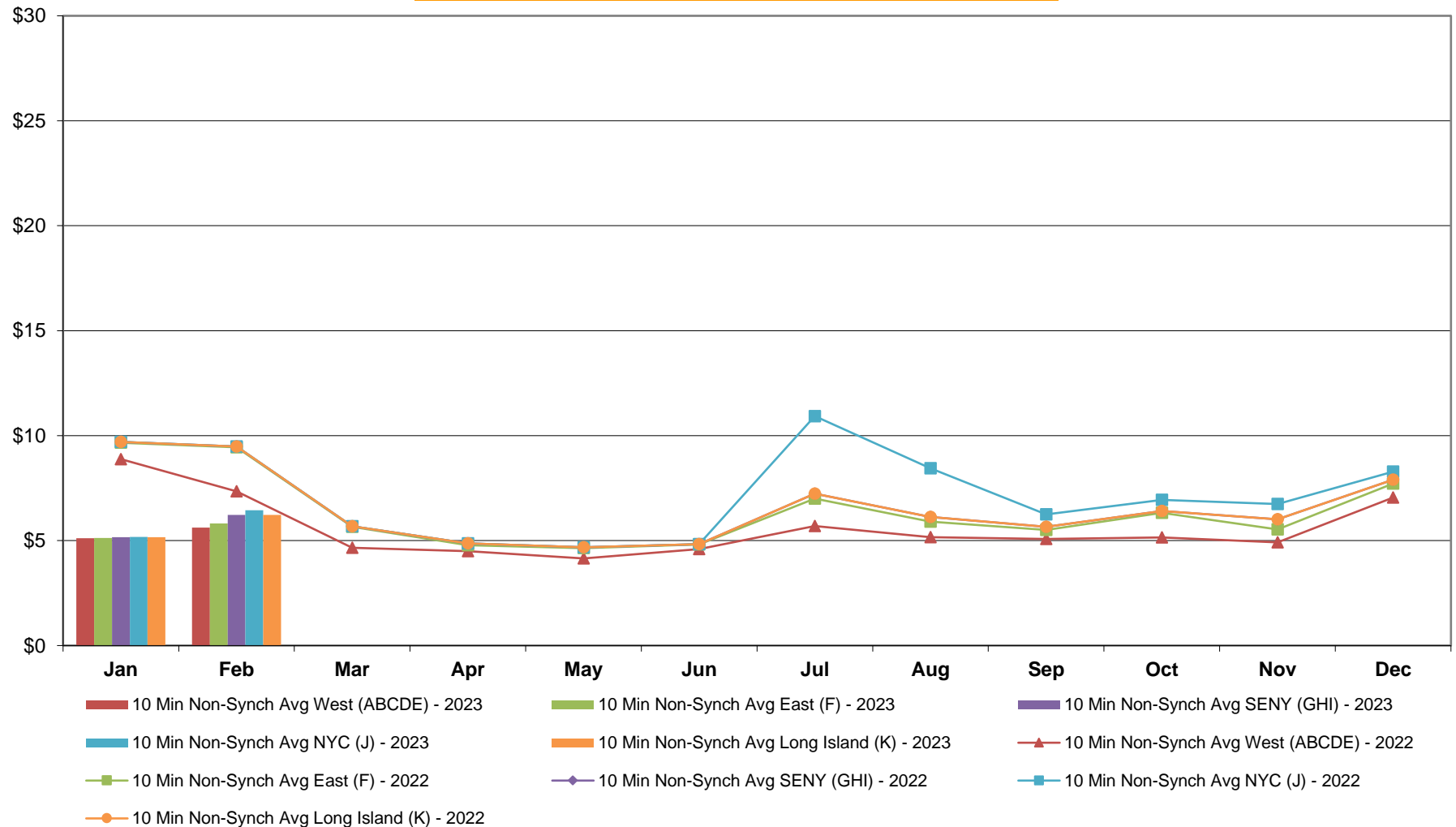


# **NYISO Monthly Average Ancillary Service Prices Day Ahead Market - 10 Min Spin 2022 - 2023**

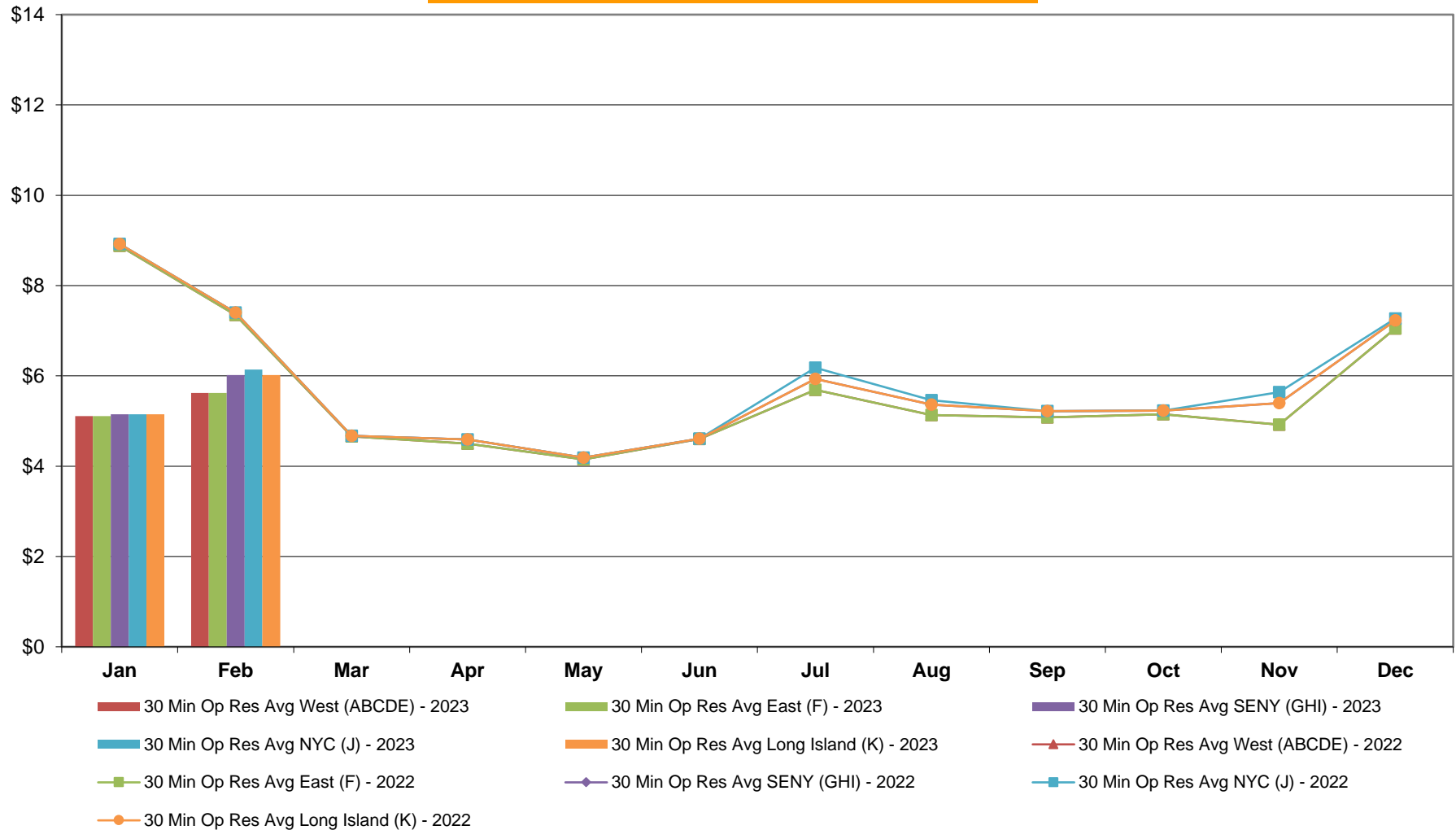




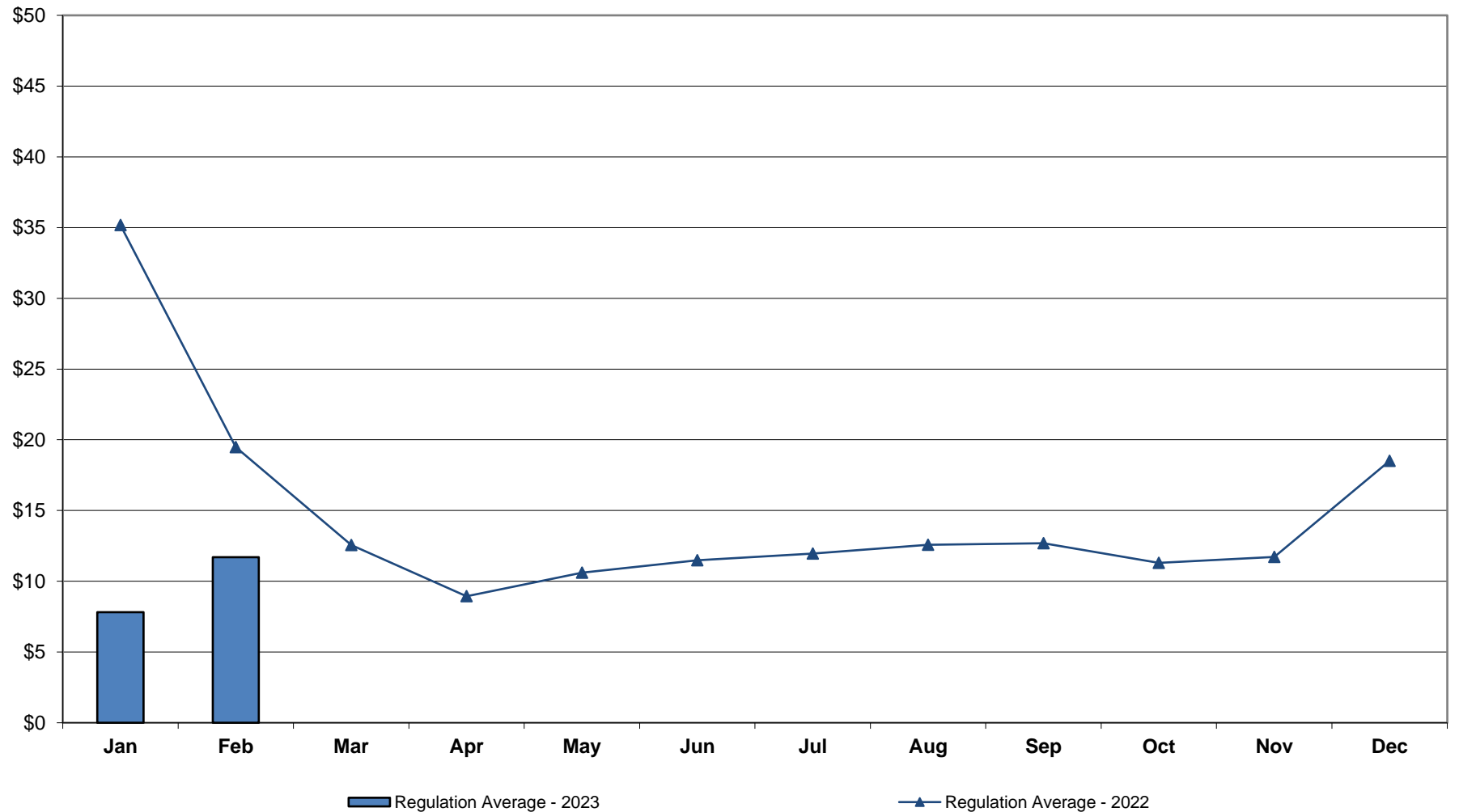
# **NYISO Monthly Average Ancillary Service Prices Day Ahead Market - 10 Min Non-Synch 2022 - 2023**



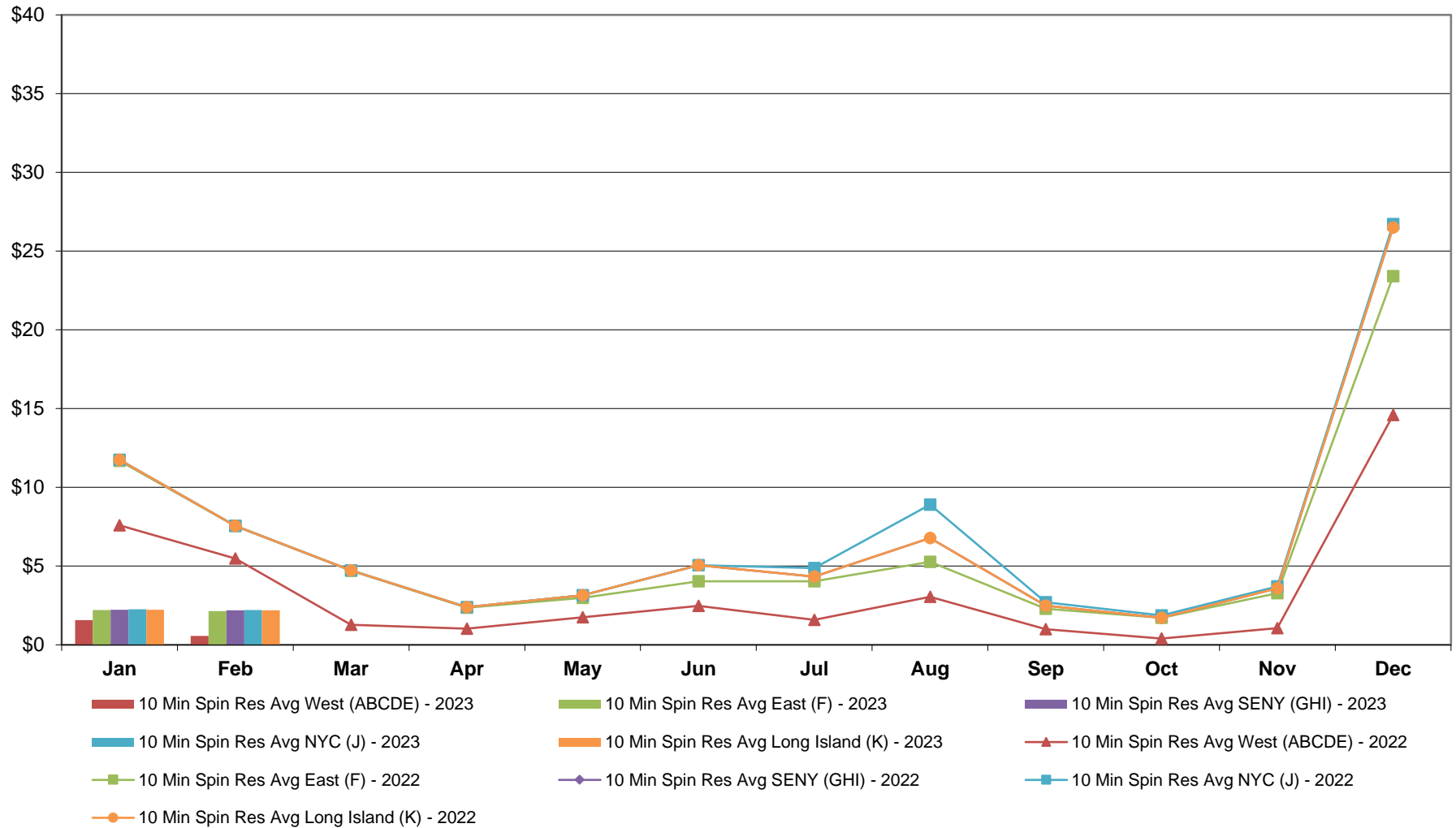
# **NYISO Monthly Average Ancillary Service Prices Day Ahead Market - 30 Min Op Res 2022 - 2023**



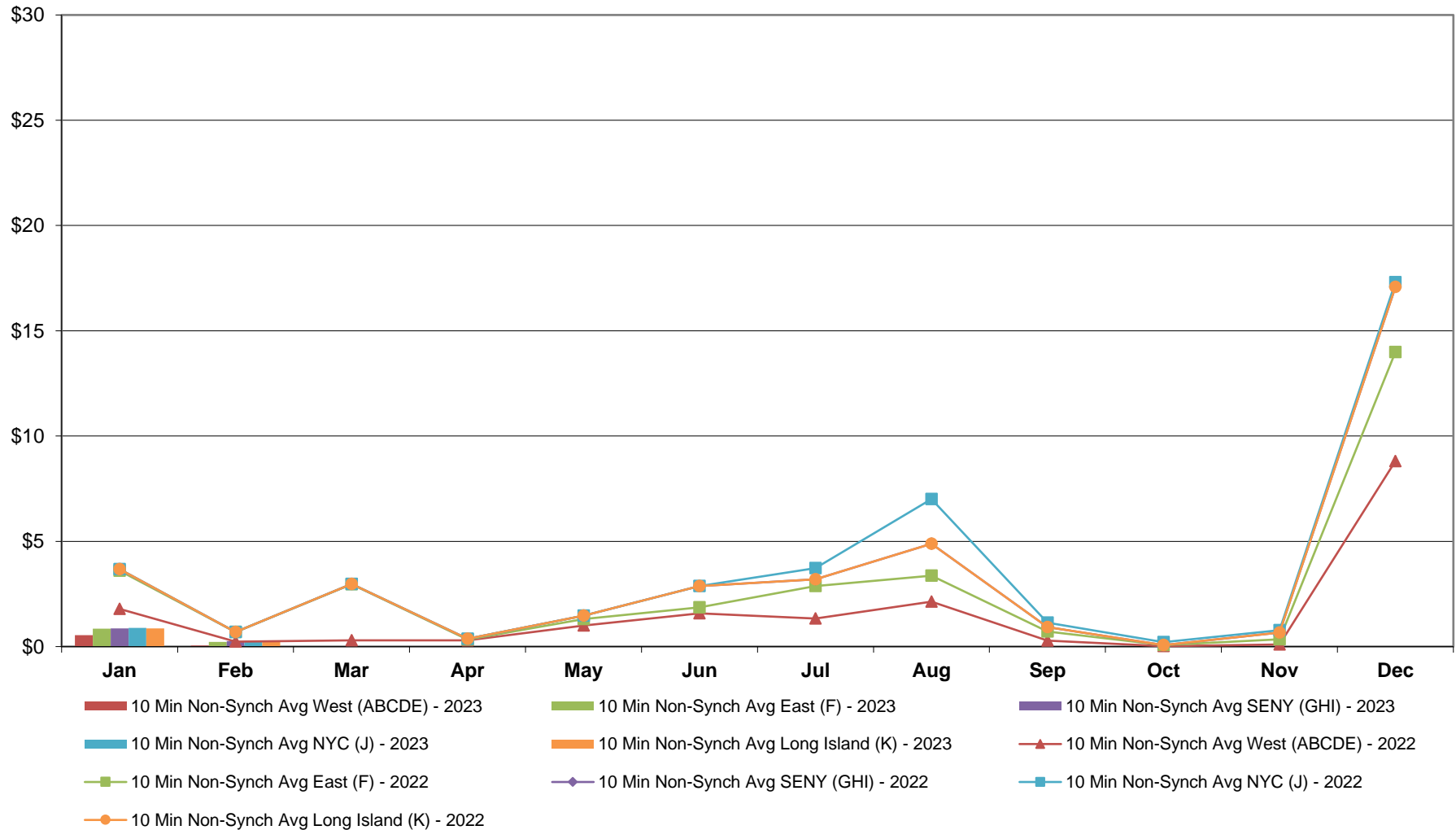
**NYISO Monthly Average Ancillary Service Prices  
Day Ahead Market - Regulation 2022 - 2023**



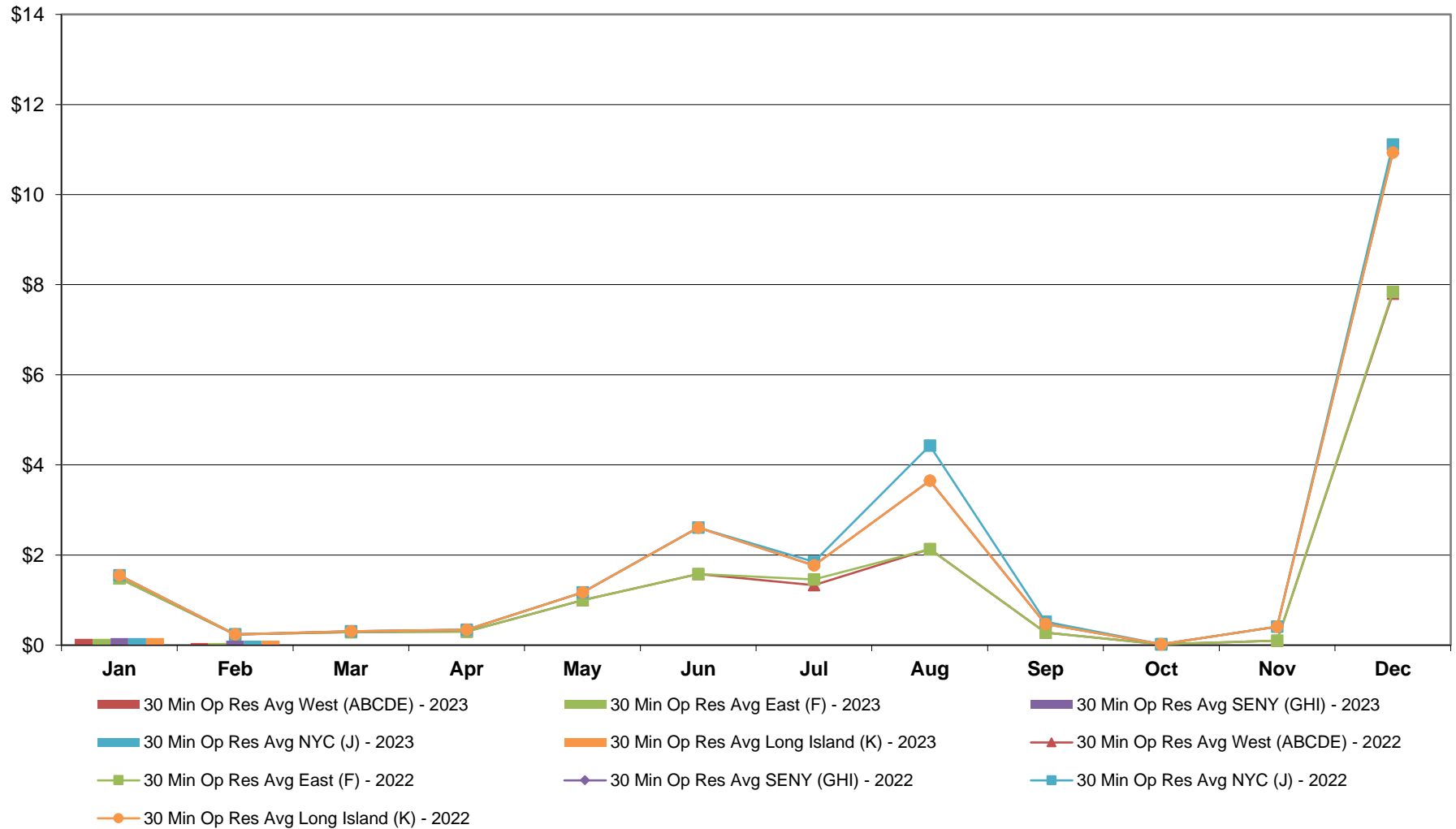
# **NYISO Monthly Average Ancillary Service Prices RTC Market - 10 Min Spin 2022 - 2023**



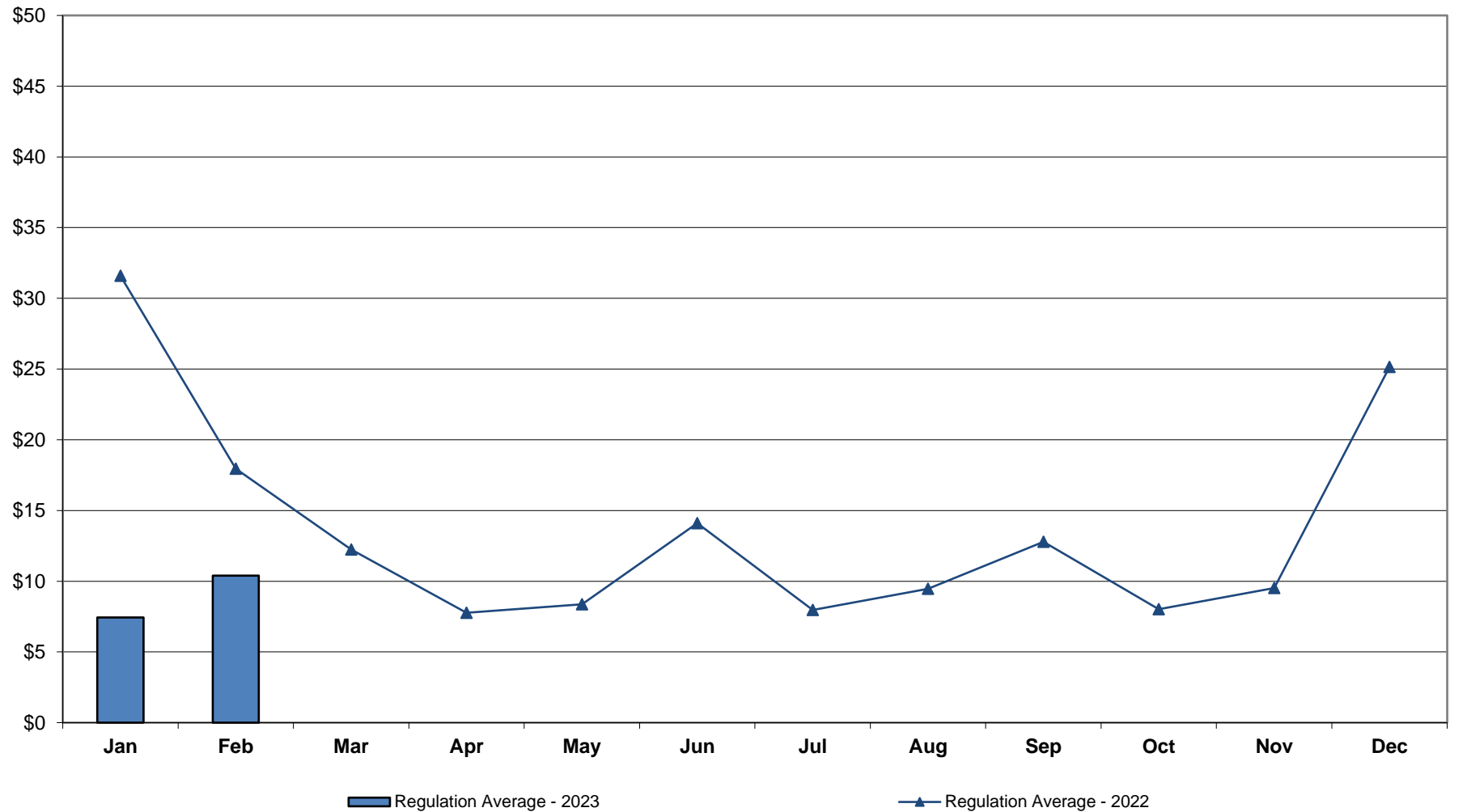
# NYISO Monthly Average Ancillary Service Prices RTC Market - 10 Min Non-Synch 2022 - 2023



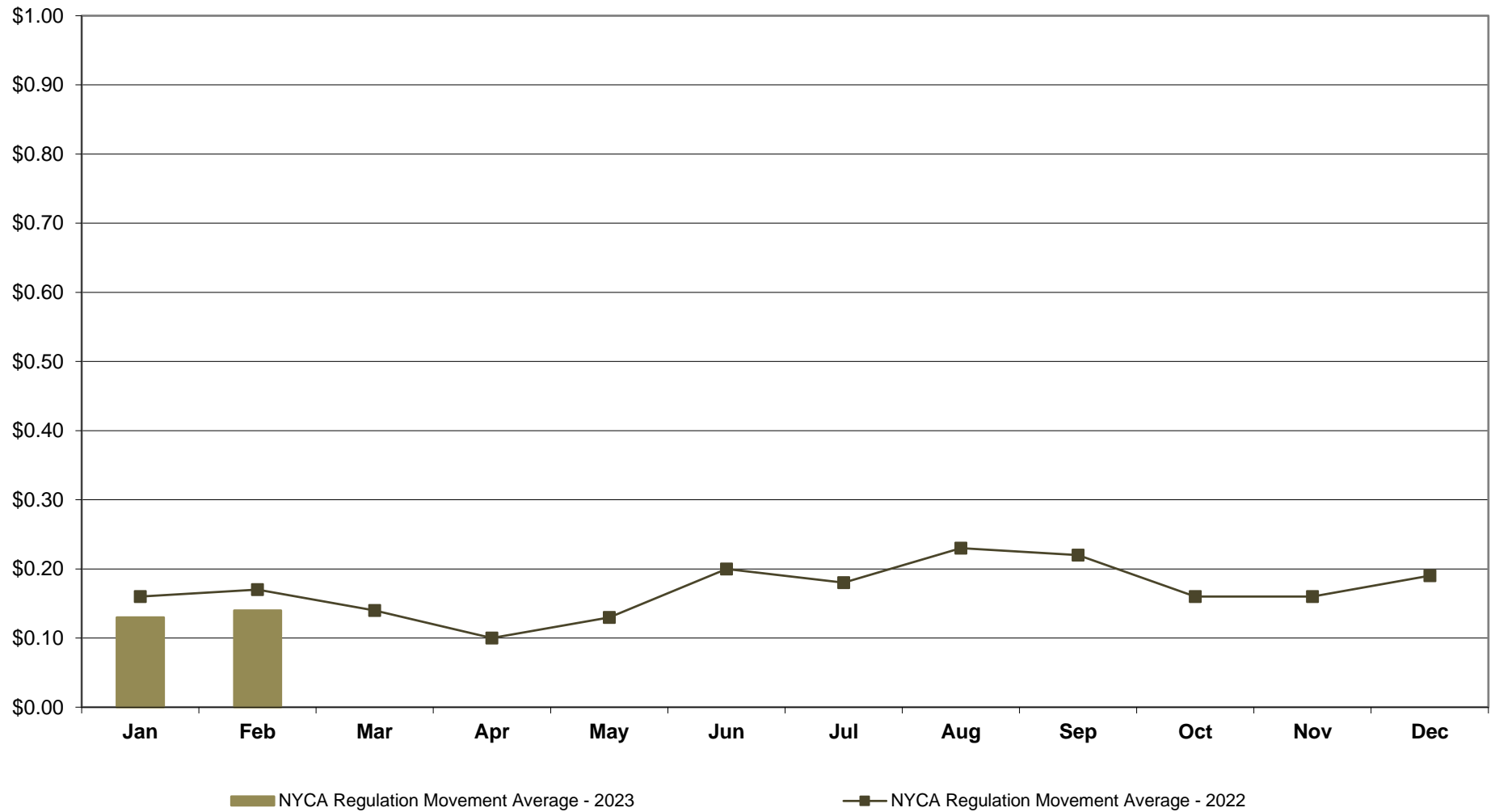
# **NYISO Monthly Average Ancillary Service Prices RTC Market - 30 Min Op Res 2022 - 2023**



**NYISO Monthly Average Ancillary Service Prices  
RTC Market - Regulation 2022 - 2023**

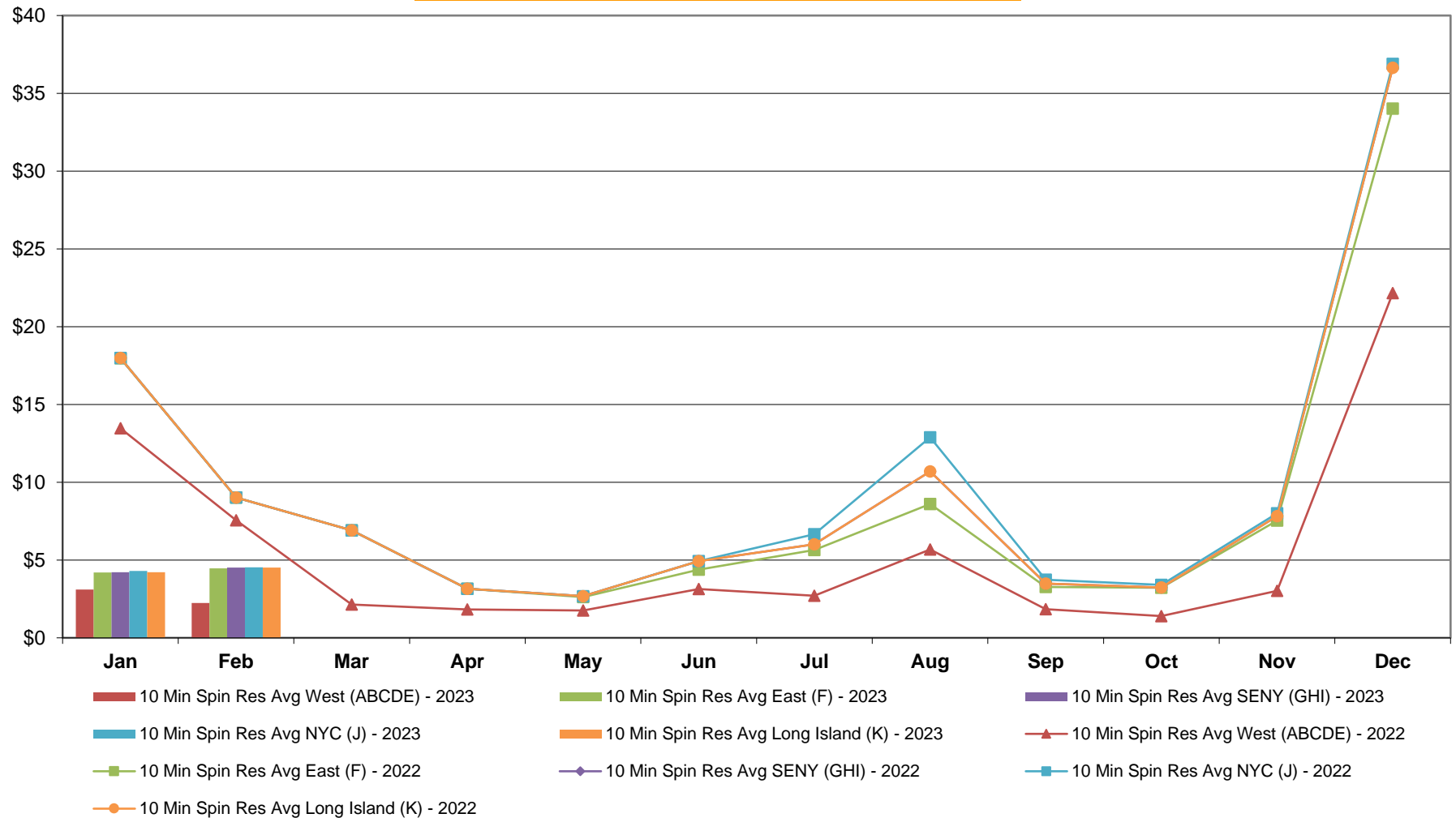


# **NYISO Monthly Average Ancillary Service Prices RTC Market - Regulation Movement 2022 - 2023**

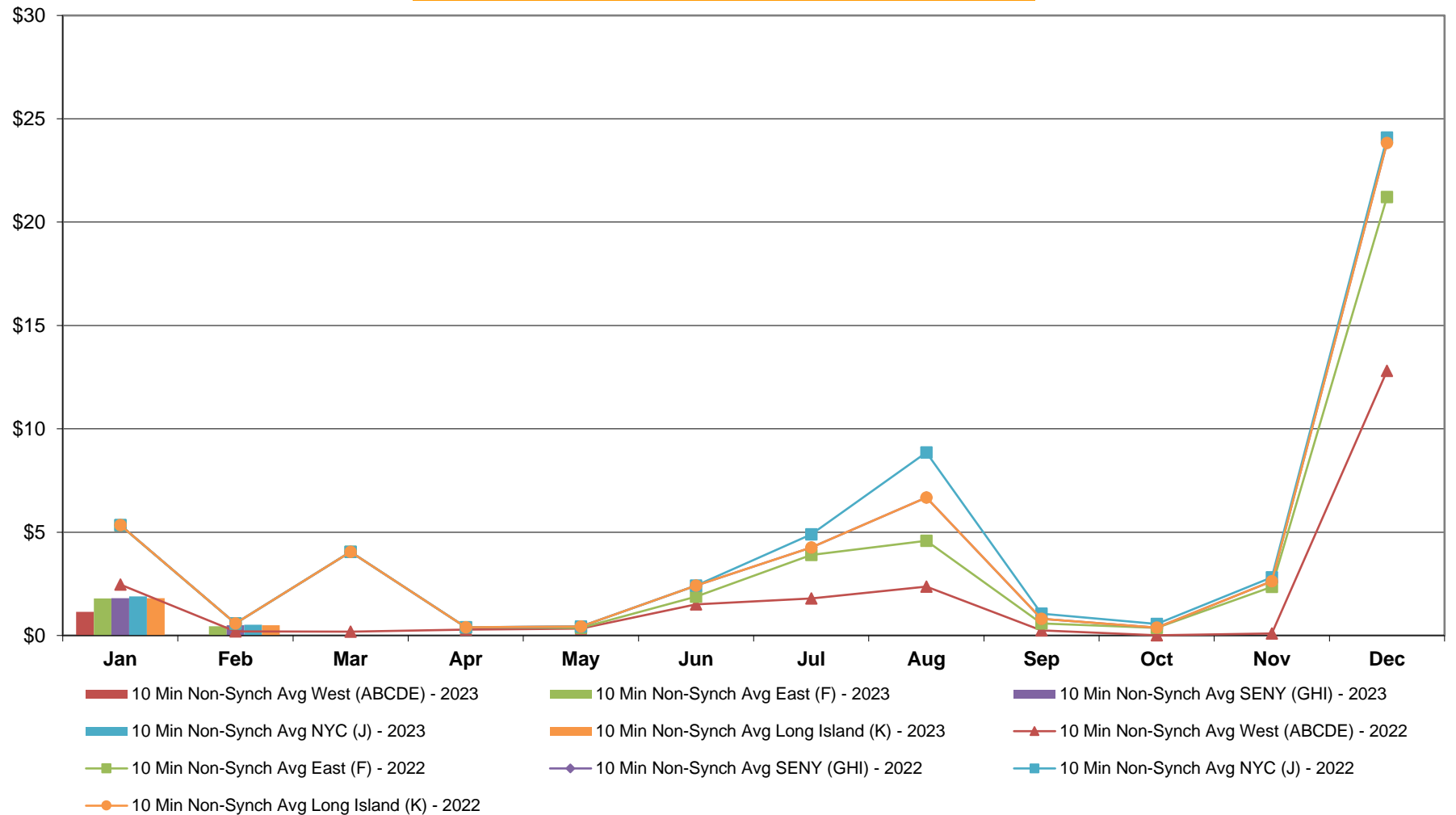




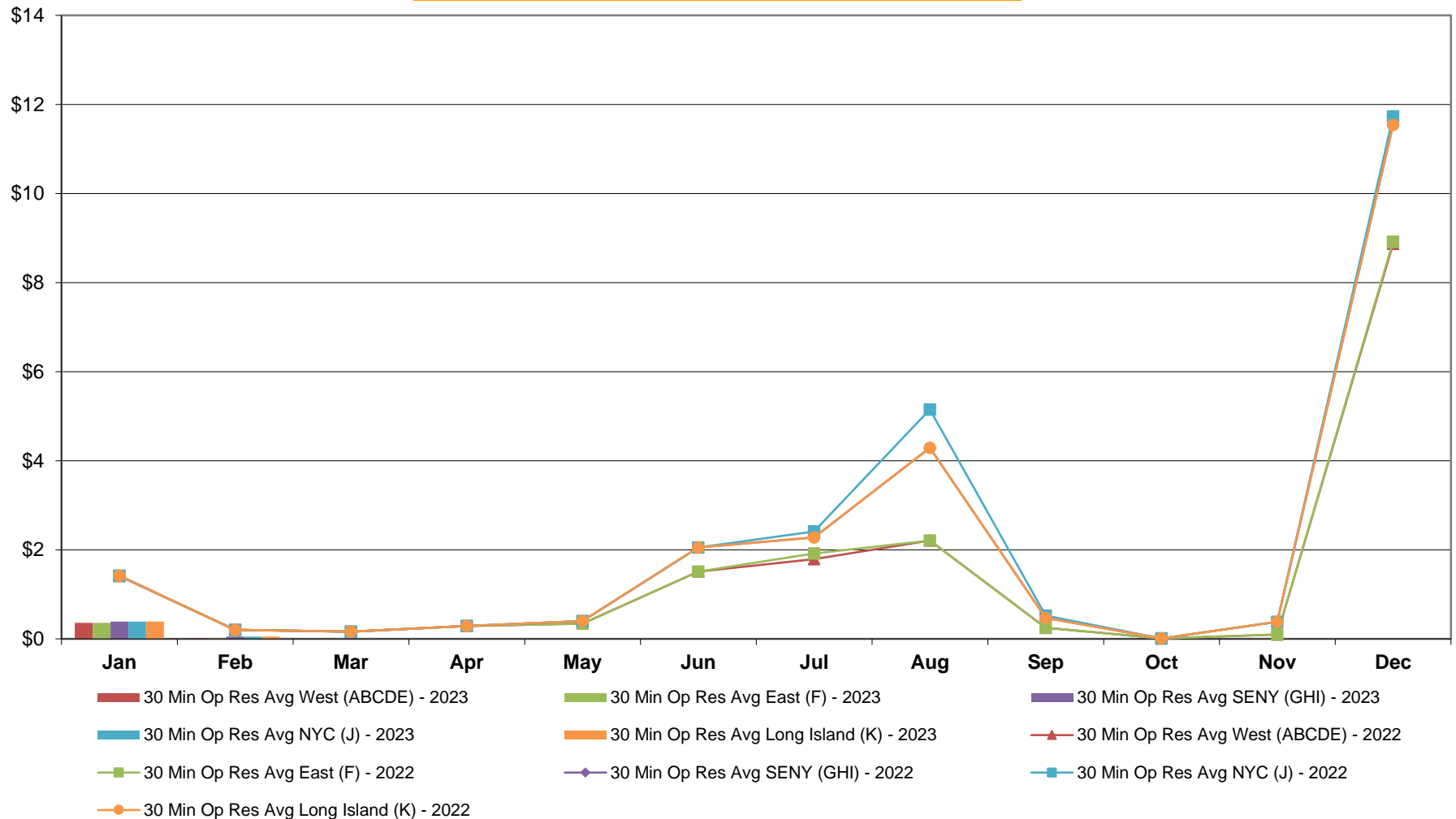
# **NYISO Monthly Average Ancillary Service Prices Real Time Market - 10 Min Spin 2022 - 2023**

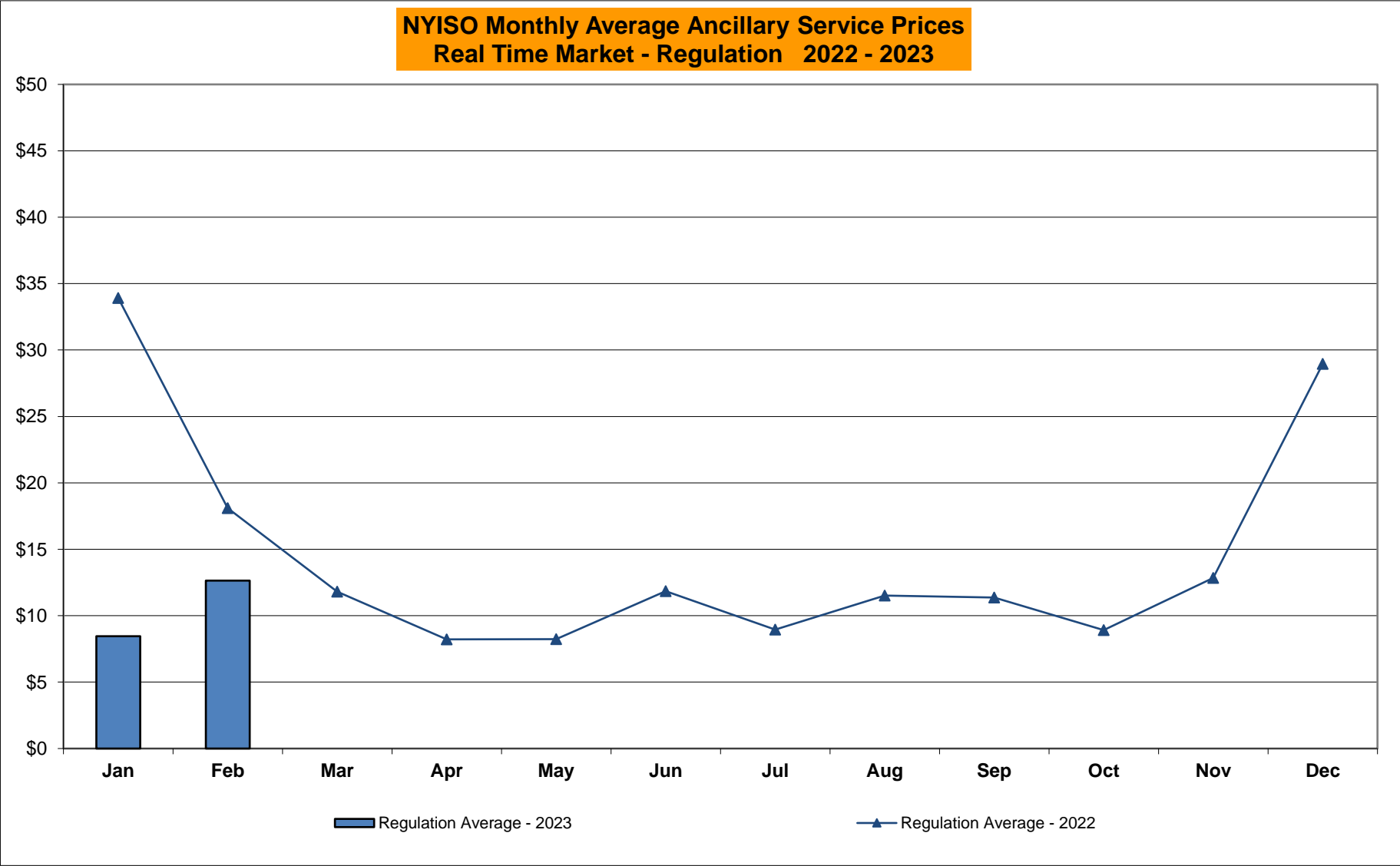


# **NYISO Monthly Average Ancillary Service Prices Real Time Market - 10 Min Non-Synch 2022 - 2023**

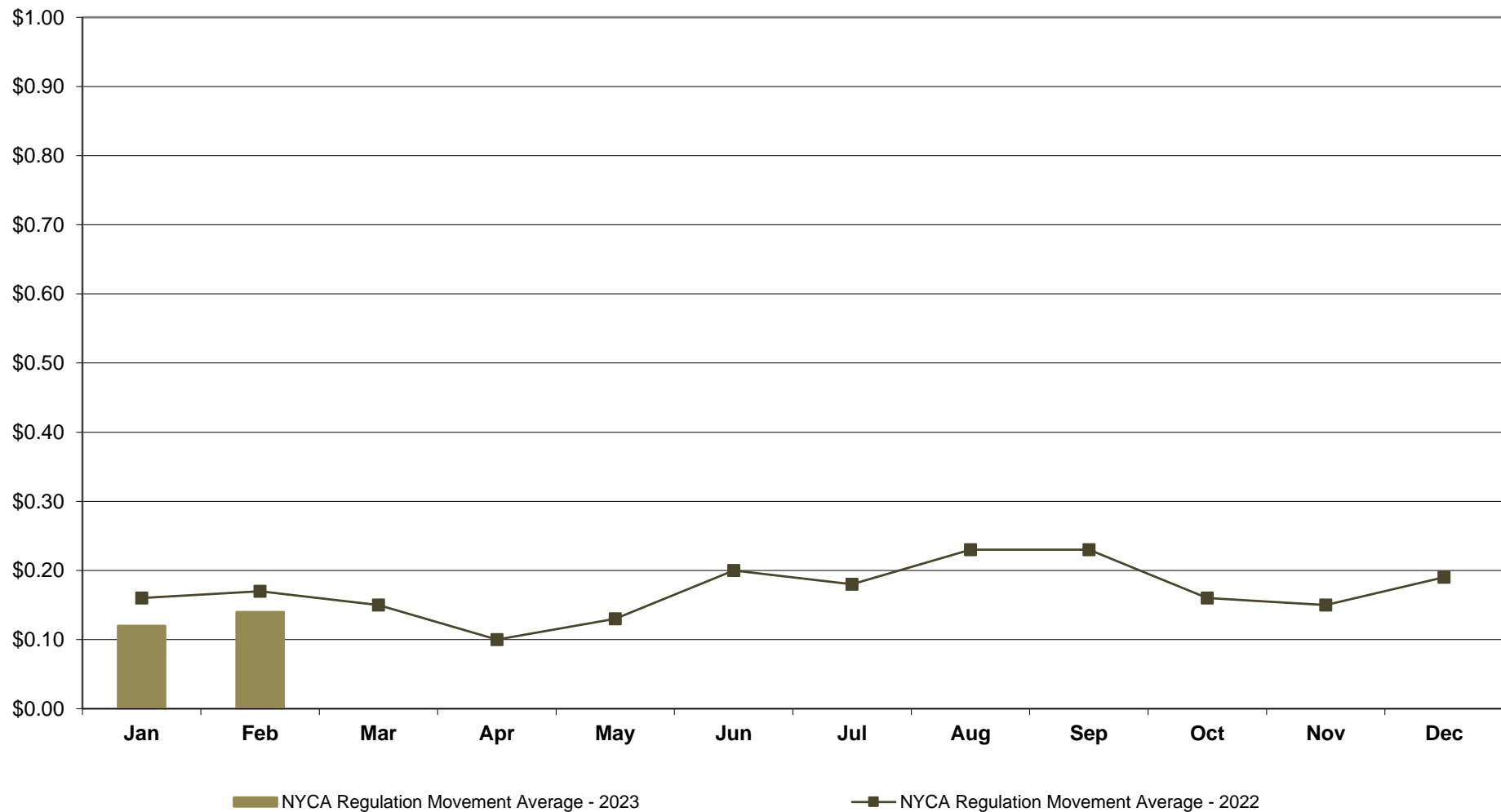


# **NYISO Monthly Average Ancillary Service Prices Real Time Market - 30 Min Op Res 2022 - 2023**





# **NYISO Monthly Average Ancillary Service Prices Real Time Market - Regulation Movement 2022 - 2023**



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

<b><u>2023</u></b>	<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>
<b><u>Day Ahead Market</u></b>												
10 Min Spin Long Island (K)	6.60	8.46										
10 Min Spin NYC (J)	6.63	8.68										
10 Min Spin SENY (GHI)	6.60	8.46										
10 Min Spin East (F)	6.56	8.06										
10 Min Spin West (ABCDE)	5.41	6.73										
10 Min Non Synch Long Island (K)	5.16	6.22										
10 Min Non Synch NYC (J)	5.18	6.44										
10 Min Non Synch SENY (GHI)	5.16	6.22										
10 Min Non Synch East (F)	5.12	5.82										
10 Min Non Synch West (ABCDE)	5.11	5.62										
30 Min Long Island (K)	5.15	6.02										
30 Min NYC (J)	5.15	6.14										
30 Min SENY (GHI)	5.15	6.02										
30 Min East (F)	5.11	5.62										
30 Min West (ABCDE)	5.11	5.62										
Regulation	7.82	11.71										
<b><u>2022</u></b>	<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>
<b><u>Day Ahead Market</u></b>												
10 Min Spin Long Island (K)	14.40	11.34	6.76	6.79	6.32	5.88	7.92	8.10	7.22	8.57	7.57	15.69
10 Min Spin NYC (J)	15.32	12.52	7.29	6.80	7.01	6.12	11.61	10.41	7.81	9.10	8.31	16.08
10 Min Spin SENY (GHI)	14.40	11.34	6.76	6.79	6.32	5.88	7.92	8.10	7.22	8.57	7.57	15.69
10 Min Spin East (F)	14.37	11.30	6.74	6.70	6.28	5.87	7.68	7.88	7.07	8.49	7.10	15.51
10 Min Spin West (ABCDE)	12.74	8.93	5.48	5.01	4.34	4.99	5.91	5.53	5.84	6.11	5.20	12.39
10 Min Non Synch Long Island (K)	9.70	9.48	5.68	4.87	4.68	4.83	7.24	6.13	5.65	6.41	6.01	7.90
10 Min Non Synch NYC (J)	10.61	10.66	6.20	4.89	5.38	5.07	10.93	8.44	6.25	6.94	6.74	8.29
10 Min Non Synch SENY (GHI)	9.70	9.48	5.68	4.87	4.68	4.83	7.24	6.13	5.65	6.41	6.01	7.90
10 Min Non Synch East (F)	9.66	9.44	5.66	4.78	4.64	4.82	7.00	5.90	5.51	6.32	5.53	7.72
10 Min Non Synch West (ABCDE)	8.88	7.35	4.66	4.50	4.15	4.60	5.69	5.16	5.08	5.15	4.92	7.05
30 Min Long Island (K)	8.92	7.40	4.67	4.59	4.19	4.61	5.93	5.36	5.22	5.23	5.40	7.23
30 Min NYC (J)	8.95	7.42	4.67	4.59	4.21	4.61	6.18	5.46	5.22	5.23	5.64	7.27
30 Min SENY (GHI)	8.92	7.40	4.67	4.59	4.19	4.61	5.93	5.36	5.22	5.23	5.40	7.23
30 Min East (F)	8.88	7.35	4.66	4.50	4.15	4.60	5.69	5.13	5.08	5.15	4.92	7.05
30 Min West (ABCDE)	8.88	7.35	4.66	4.50	4.15	4.60	5.69	5.13	5.08	5.15	4.92	7.05
Regulation	35.17	19.48	12.56	8.94	10.61	11.49	11.96	12.58	12.68	11.31	11.72	18.51

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

<u>2023</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>
<b><u>RTC Market</u></b>												
10 Min Spin Long Island (K)	2.22	2.19										
10 Min Spin NYC (J)	2.26	2.21										
10 Min Spin SENY (GHI)	2.22	2.19										
10 Min Spin East (F)	2.21	2.15										
10 Min Spin West (ABCDE)	1.57	0.56										
10 Min Non Synch Long Island (K)	0.86	0.26										
10 Min Non Synch NYC (J)	0.89	0.27										
10 Min Non Synch SENY (GHI)	0.86	0.26										
10 Min Non Synch East (F)	0.85	0.22										
10 Min Non Synch West (ABCDE)	0.54	0.05										
30 Min Long Island (K)	0.16	0.10										
30 Min NYC (J)	0.16	0.10										
30 Min SENY (GHI)	0.16	0.10										
30 Min East (F)	0.14	0.05										
30 Min West (ABCDE)	0.14	0.05										
Regulation	7.44	10.40										
NYCA Regulation Movement	0.13	0.14										
<b><u>2022</u></b>	<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>
<b><u>RTC Market</u></b>												
10 Min Spin Long Island (K)	11.75	7.55	4.73	2.39	3.15	5.06	4.34	6.79	2.49	1.72	3.59	26.50
10 Min Spin NYC (J)	11.75	7.81	4.92	2.53	3.72	5.51	4.88	8.90	2.71	1.87	3.71	26.72
10 Min Spin SENY (GHI)	11.75	7.55	4.73	2.39	3.15	5.06	4.34	6.79	2.49	1.72	3.59	26.50
10 Min Spin East (F)	11.68	7.55	4.71	2.36	2.98	4.03	4.03	5.27	2.29	1.72	3.28	23.41
10 Min Spin West (ABCDE)	7.59	5.49	1.27	1.03	1.75	2.47	1.58	3.05	0.99	0.40	1.06	14.59
10 Min Non Synch Long Island (K)	3.67	0.69	2.97	0.37	1.47	2.88	3.19	4.89	0.92	0.07	0.66	17.08
10 Min Non Synch NYC (J)	3.67	0.95	3.16	0.51	2.04	3.34	3.73	7.00	1.13	0.21	0.78	17.31
10 Min Non Synch SENY (GHI)	3.67	0.69	2.97	0.37	1.47	2.88	3.19	4.89	0.92	0.07	0.66	17.08
10 Min Non Synch East (F)	3.60	0.69	2.96	0.33	1.31	1.86	2.88	3.37	0.72	0.07	0.35	13.99
10 Min Non Synch West (ABCDE)	1.79	0.24	0.29	0.30	1.00	1.58	1.33	2.13	0.28	0.02	0.10	8.81
30 Min Long Island (K)	1.55	0.24	0.31	0.34	1.17	2.61	1.77	3.65	0.47	0.02	0.41	10.93
30 Min NYC (J)	1.55	0.24	0.31	0.34	1.34	2.74	1.85	4.43	0.52	0.02	0.41	11.11
30 Min SENY (GHI)	1.55	0.24	0.31	0.34	1.17	2.61	1.77	3.65	0.47	0.02	0.41	10.93
30 Min East (F)	1.48	0.24	0.29	0.30	1.00	1.58	1.46	2.13	0.28	0.02	0.10	7.84
30 Min West (ABCDE)	1.48	0.24	0.29	0.30	1.00	1.58	1.33	2.13	0.28	0.02	0.10	7.80
Regulation	31.59	17.95	12.23	7.77	8.36	14.11	7.96	9.46	12.79	8.03	9.52	25.14
NYCA Regulation Movement	0.16	0.17	0.14	0.10	0.13	0.20	0.18	0.23	0.22	0.16	0.16	0.19

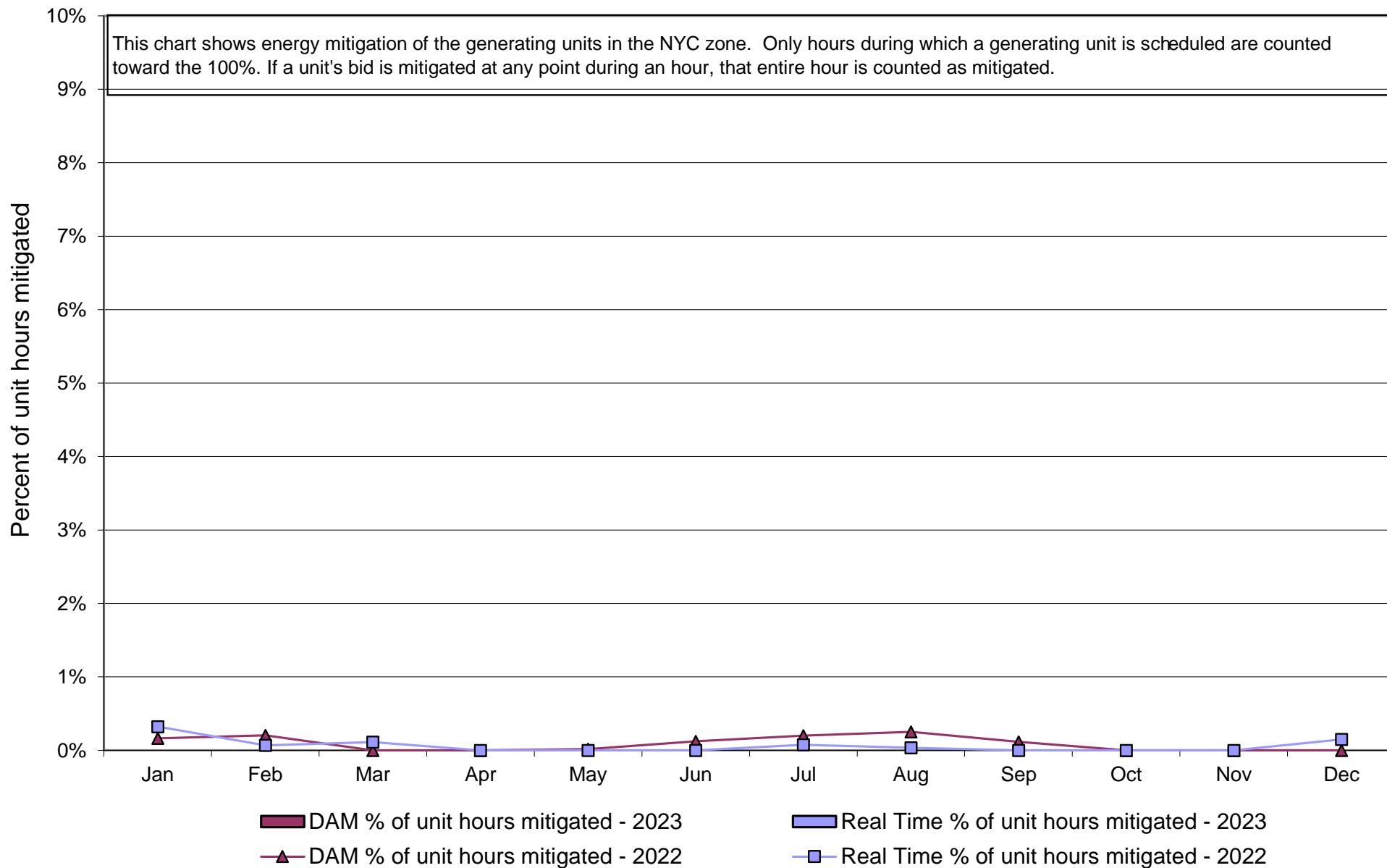
## **NYISO Markets Ancillary Services Statistics - Unweighted Price (\$/MWH) - RT**

<b><u>2023</u></b>	<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>
<b><u>Real Time Market</u></b>												
10 Min Spin Long Island (K)	4.22	4.51										
10 Min Spin NYC (J)	4.30	4.53										
10 Min Spin SENY (GHI)	4.22	4.51										
10 Min Spin East (F)	4.20	4.46										
10 Min Spin West (ABCDE)	3.10	2.24										
10 Min Non Synch Long Island (K)	1.81	0.50										
10 Min Non Synch NYC (J)	1.89	0.52										
10 Min Non Synch SENY (GHI)	1.81	0.50										
10 Min Non Synch East (F)	1.79	0.45										
10 Min Non Synch West (ABCDE)	1.15	0.01										
30 Min Long Island (K)	0.39	0.05										
30 Min NYC (J)	0.39	0.05										
30 Min SENY (GHI)	0.39	0.05										
30 Min East (F)	0.36	0.01										
30 Min West (ABCDE)	0.36	0.01										
Regulation	8.46	12.64										
NYCA Regulation Movement	0.12	0.14										
<b><u>2022</u></b>	<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>
<b><u>Real Time Market</u></b>												
10 Min Spin Long Island (K)	17.99	9.02	6.90	3.15	2.68	4.93	6.01	10.69	3.49	3.23	7.82	36.64
10 Min Spin NYC (J)	18.04	9.27	7.04	3.27	3.17	5.46	6.66	12.88	3.74	3.41	8.01	36.89
10 Min Spin SENY (GHI)	17.99	9.02	6.90	3.15	2.68	4.93	6.01	10.69	3.49	3.23	7.82	36.64
10 Min Spin East (F)	17.97	9.02	6.90	3.15	2.62	4.39	5.65	8.61	3.27	3.22	7.54	34.02
10 Min Spin West (ABCDE)	13.47	7.56	2.14	1.83	1.76	3.13	2.70	5.68	1.84	1.40	3.02	22.15
10 Min Non Synch Long Island (K)	5.34	0.59	4.05	0.40	0.43	2.42	4.26	6.67	0.81	0.38	2.63	23.83
10 Min Non Synch NYC (J)	5.40	0.84	4.19	0.51	0.92	2.95	4.90	8.85	1.06	0.56	2.81	24.09
10 Min Non Synch SENY (GHI)	5.34	0.59	4.05	0.40	0.43	2.42	4.26	6.67	0.81	0.38	2.63	23.83
10 Min Non Synch East (F)	5.33	0.59	4.05	0.40	0.37	1.88	3.90	4.58	0.59	0.37	2.35	21.21
10 Min Non Synch West (ABCDE)	2.46	0.20	0.19	0.29	0.34	1.51	1.79	2.37	0.25	0.01	0.10	12.80
30 Min Long Island (K)	1.42	0.20	0.16	0.29	0.40	2.05	2.28	4.29	0.47	0.01	0.38	11.54
30 Min NYC (J)	1.42	0.20	0.16	0.29	0.56	2.20	2.41	5.15	0.52	0.01	0.38	11.73
30 Min SENY (GHI)	1.42	0.20	0.16	0.29	0.40	2.05	2.28	4.29	0.47	0.01	0.38	11.54
30 Min East (F)	1.41	0.20	0.16	0.29	0.34	1.51	1.92	2.21	0.25	0.01	0.10	8.92
30 Min West (ABCDE)	1.41	0.20	0.16	0.29	0.34	1.51	1.79	2.21	0.25	0.01	0.10	8.87
Regulation	33.92	18.10	11.81	8.22	8.23	11.84	8.95	11.52	11.36	8.91	12.84	28.95
NYCA Regulation Movement	0.16	0.17	0.15	0.10	0.13	0.20	0.18	0.23	0.23	0.16	0.15	0.19

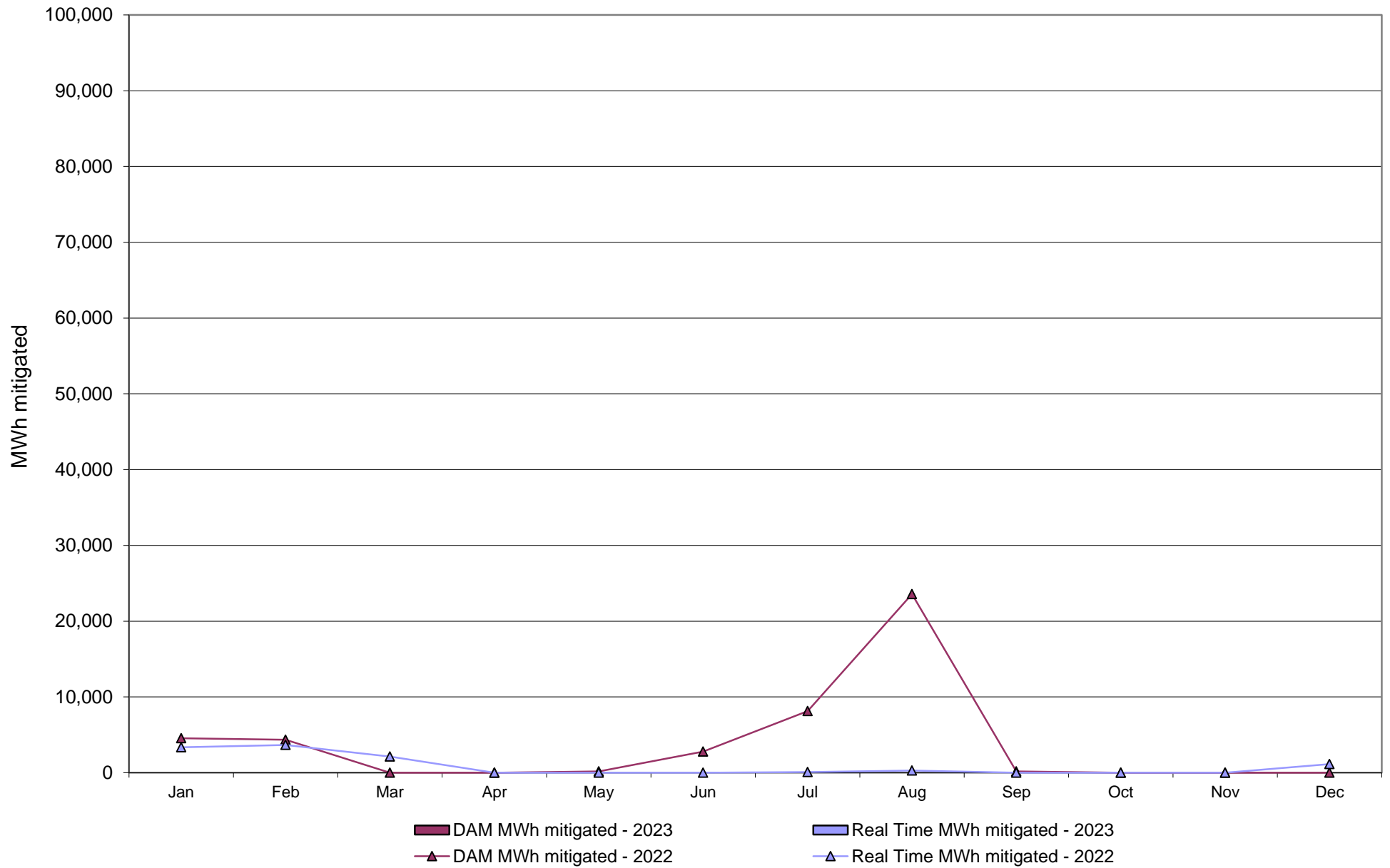


## NYISO In City Energy Mitigation - AMP (NYC Zone) 2022 - 2023

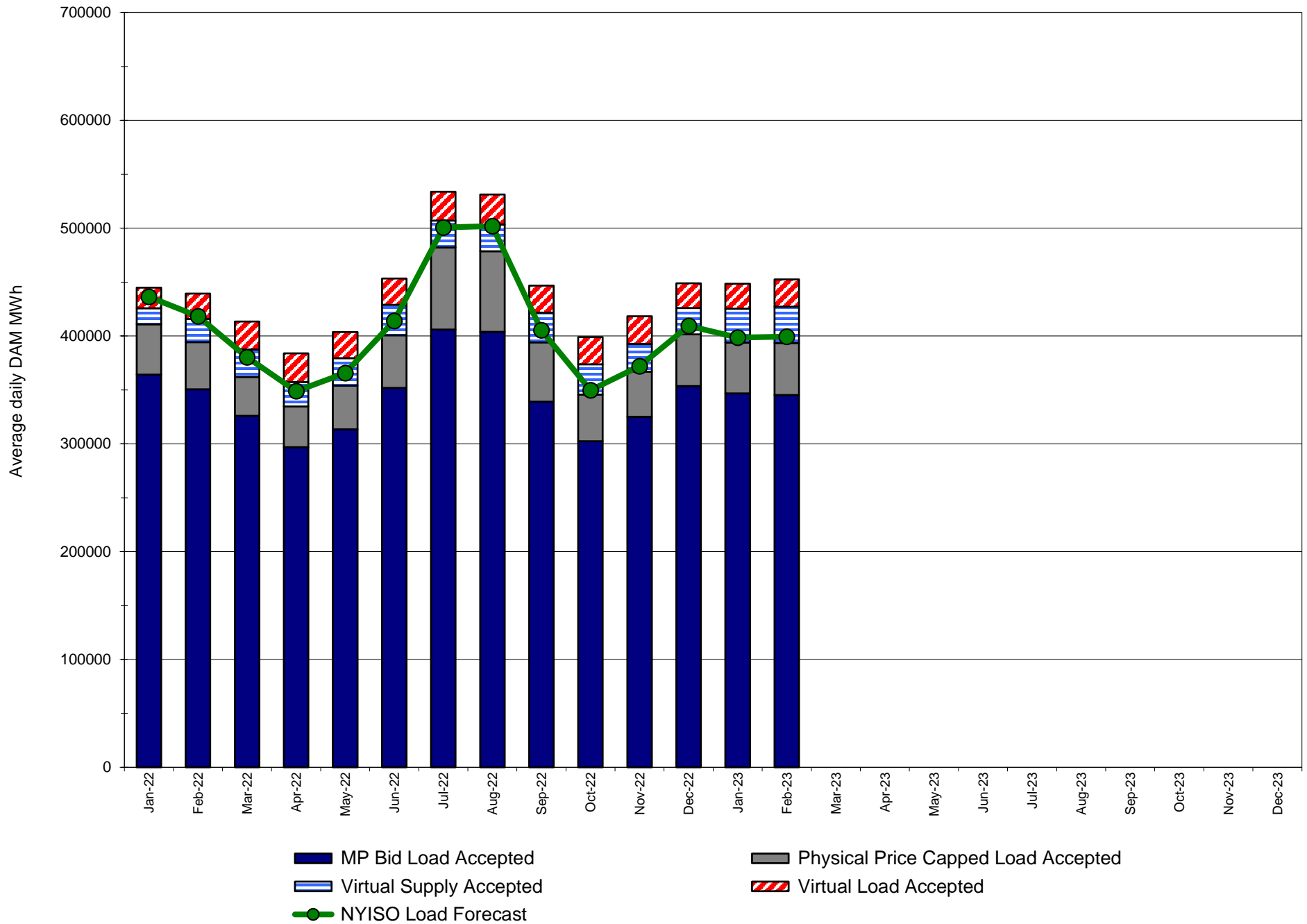
### Percentage of committed unit-hours mitigated



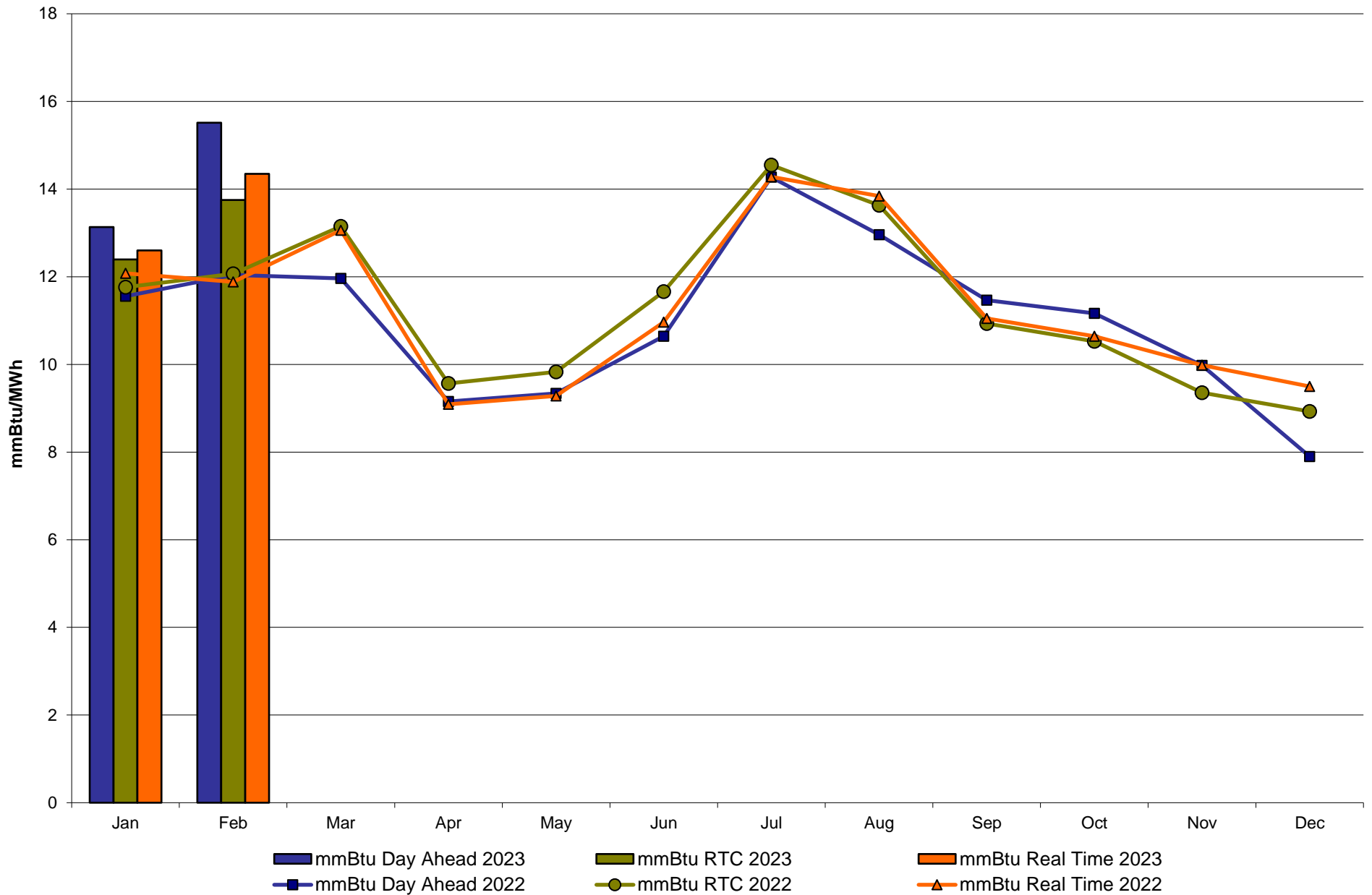
**NYISO In City Energy Mitigation (NYC Zone) 2022 - 2023**  
**Monthly megawatt hours mitigated**



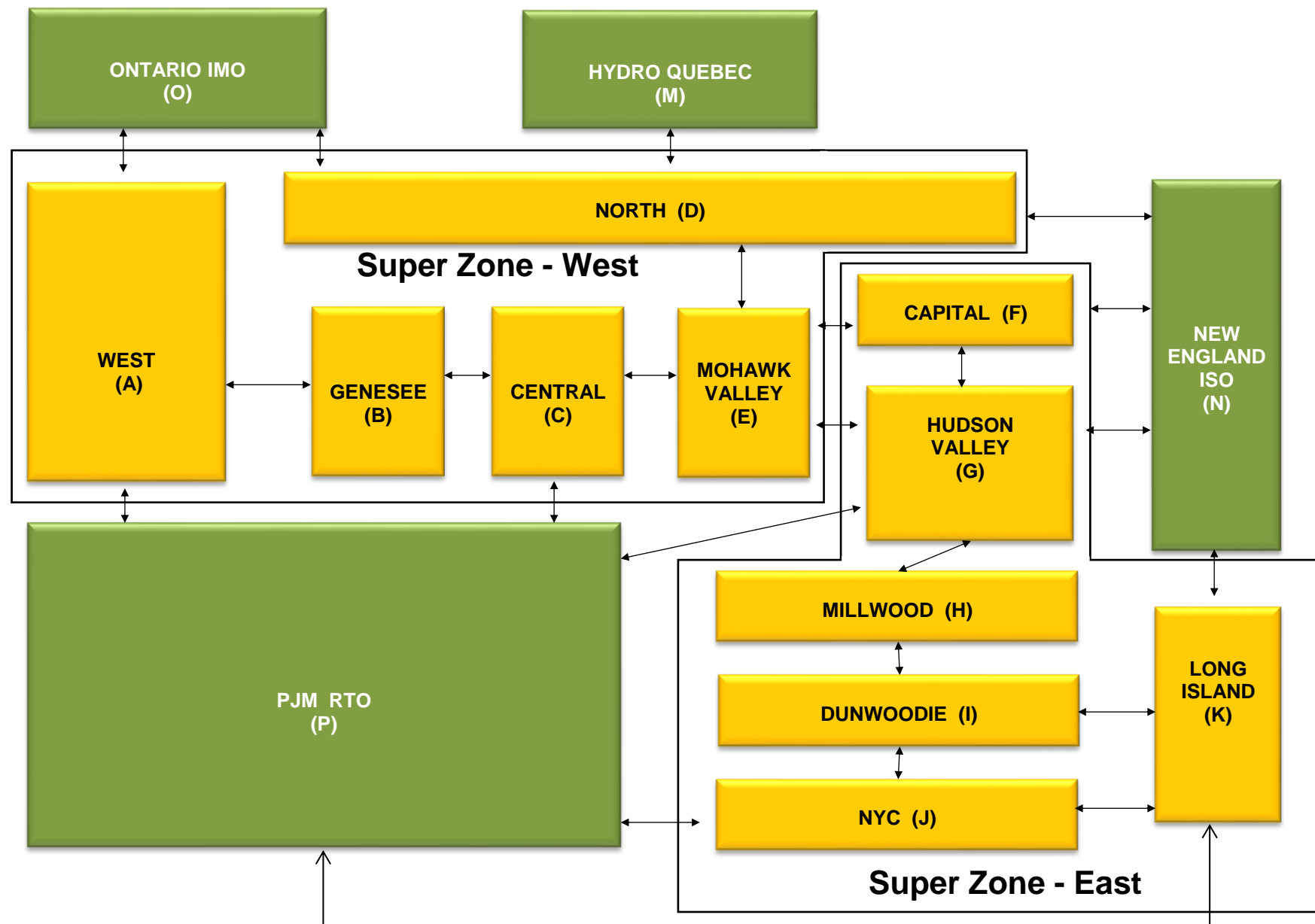
## NYISO Average Daily DAM Load Bid Summary



# Monthly Implied Heat Rate 2022-2023



# NYISO LBMP ZONES



**Billing Codes for Chart C**

<b><u>Chart - C Category Name</u></b>	<b><u>Billing Code</u></b>	<b><u>Billing Category Name</u></b>
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 & Vision



## Mission

Ensure power system reliability  
and competitive markets for New  
York in a clean energy future



## Vision

Working together with stakeholders  
to build the cleanest, most reliable  
electric system in the nation